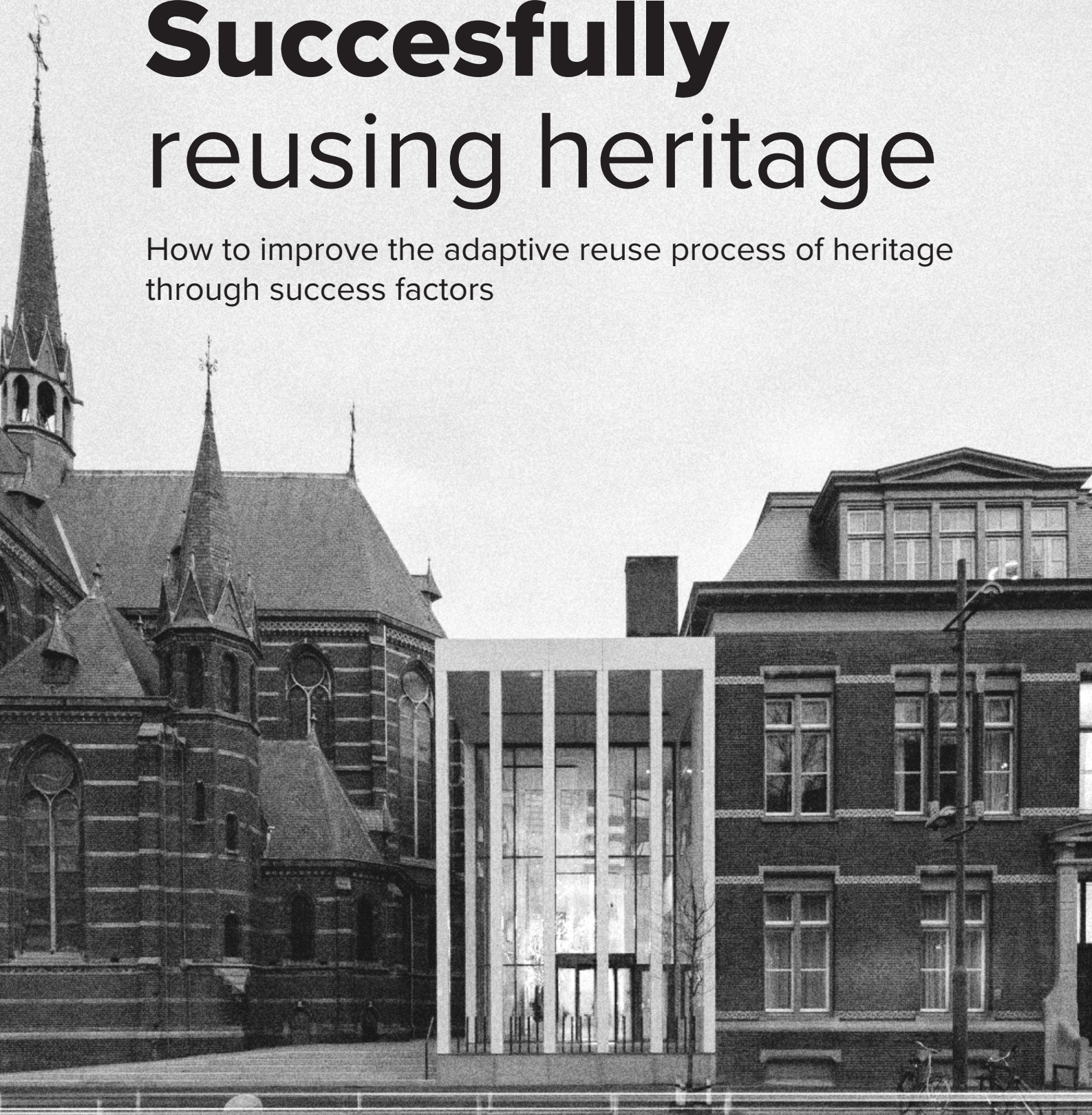


Successfully reusing heritage

How to improve the adaptive reuse process of heritage
through success factors



COLOPHON

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Note: All non-cited images are made by the author.



ABSTRACT

While the benefits of adaptive reusing heritage are widely acknowledged by academic and practice, the process's complexity increases. Stakeholders are not willing to consider reuse as a strategy to deal with heritage vacancy. Studies have tried to grasp this complexity by identifying success factors, but till this point, practitioners have not been able to put this to work to improve the process. This research proposes to find out what the success factors are, and when, how, and why they are present, and give them a place and time within the adaptive reuse process. That way, it becomes easier to align resources and attention in future adaptive reuse projects, leading to process improvement. Doing so facilitates the elements to deliver a project successfully. This research will answer the following question: How can success factors improve the process of adaptive reuse of heritage? This research aims to provide insight and recommendations into the complex issue of adaptive reuse projects.

Through the literature review and three case study projects, all the key aspects of the main research question were covered on the subjects: adaptive reuse of heritage, the reuse process, success and success factors, process improvements and the actual improvement of the reuse process. This has led to a general adaptive reuse process and a list of the twelve success factors that were perceived as being most important in the case study projects, combined into a process map. The process map describes the adaptive reuse process from idea until delivery where the main activities, complexity, degree of freedom, and success factors indicate how stakeholders can manage the process.

This research showed the value and reuse potential of heritage buildings by providing the right tools to increase the chance for successfully delivering a reused building. This research shows that the complex adaptive reuse process can be made simple and insightful by bundling knowledge and experience from practice to ignite the drive to reuse out cultural and historical past. For the process model to impact future adaptive reuse processes, stakeholders have to actively embed the model into their work to learn from it. Next to that, the attractiveness of adaptive reuse projects depends on the collaboration between public and private parties.

Keywords: adaptive reuse, process improvement, process map, success factors, heritage.

Je kunt bedenken hoe een ruïne of een oud gebouw er vroeger uitzag, maar tegelijkertijd kun je fantaseren over wat je ervan zou kunnen maken. Herbestemming gaat niet alleen over hoe mooi, efficiënt en waardevol het kan zijn om een gebouw een nieuwe bestemming te geven, maar ook over respect hebben voor wat er al is. En over wat mensen bezielt om te bouwen wat ze bouwen.

- Piet Hein Eek

In *De Herbestemming* van AVROTROS

PREFACE

This report contains my graduation thesis about successfully reusing heritage in the department of real estate management from the master track Management in the Built Environment. It concludes my studies after seven years at the Faculty of Architecture at Delft University of Technology.

My graduation thesis subject combines two things that just happened to collide. On the one hand, I was working on an assignment for NRP Gulden Feniks 2020 to analyse the submissions of that years' competition on their success. On the other, I had the urge to dive deep into the subject of reusing heritage buildings. Both worlds are a match made in heaven, as up to this date, practitioners still perceive reusing heritage as difficult. I wanted to prove that it can be made easy and insightful, leading to a successful project to be proud of. The final result is a process map that practitioners in adaptive reuse projects can use to help them a little hand into the complex market of reusing heritage.

This research would not be possible without my supervisors' help and feedback, Hilde Remøy and Paul Chan. You both asked critical questions whenever needed to push this research a bit further. Next to that, I would also like to thank my graduation supervisor Arthur van Kempen. You and your colleagues gave me the opportunity to take a look inside an organisation that (almost) never dealt with heritage before which gave tremendous input. You were always willing to discuss anything that was on my mind and brainstorm together towards a practical outcome of this research.

I want to thank all the interviewees who were so kind as to free their time and were willing to share their honest opinions and experience with me. Your input is highly appreciated and played a large role in this research. Your enthusiasm on the projects you worked on and for, and your love for reusing old, underappreciated buildings made me interested in reusing heritage even more!

And last but not least, my friends and family who were there for a call, a coffee, or some necessary cake: Sjors, Lisa, Anneke, Puck, my parents, and everyone else. Thank you all for being there for me.

Happy reading!

Juul van Hout
Delft, January 2021

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GLOSSARY & ABBREVIATIONS

Adaptive reuse: a strategy in which a building will undergo “a major change [...] with alterations of both the building itself and the function it accommodates” (Wilkinson et al., 2014, p.95).

Heritage: umbrella term for tangible and intangible affairs that are considered to be worth preserving for future generations. Monumental listed buildings are a type of tangible heritage (Persoon, 2019).

Client: the contracting party, individual or organisation, that commissions (and possibly funds) the project, directly or indirectly (CIOB, 2014, p.1)

Complexity: when a project “consists of many varied interrelated parts in terms of differentiation and interdependency”, and is mostly caused by limited knowledge and understanding (Baccarini, 1996, p.202).

Monumental building: historical buildings with a certain minimum age that need to be preserved for future generations for the reason that they are the tangible reminders of the past with non-monetary values (SBR, 2011). They receive a national, provincial, or municipal monumental status and thus apply for certain (financial) rights, obligations and protection.

Listed building: synonym for monumental building.

Organisation: information processing systems that, in order to function, have to monitor their environment, take decisions, communicate their intentions and ensure that what they intend to happen does happen (Winch, 2010, p.6).

Process map: method of representation that describes how a process is (Winch, 2010, p.211).

Project: creation of new value through investing resources (Winch, 2010, p.5).

Project manager: the responsible person for “integrating various parties and ensure that progress takes place to the client’s satisfaction”. He/she defines goals and objectives, and manages the project plan, stakeholders, communication, risks, budget, and delivery (Boyd & Chinyjo, 2006, p.16).

Stakeholder: those actors which will incur – or perceive they will incur – a direct benefit or loss as a result of the project (Winch, 2010, p.74).

Success: The definition of success depends on the goals of a stakeholder. In the case of adaptive reuse projects, success is depending on achieving certain goals in the following six aspects: financial, functional, building, communicative, legal, and preparatory.

Success factor: Factors that are either (1) necessary for the success of a project but not sufficient, or (2) criteria with major impact on the success or failure of a project. Each factor has a certain degree of influenceability by the stakeholders.

Ahr/bho: Architectural history research or bouwhistorisch onderzoek (Vervloed, 2013).

AR: Adaptive reuse.

CHA/RCE: Cultural Heritage Agency or *Rijksdienst voor het Cultureel Erfgoed*. It is the national institution for monumental care. It operated mostly as an advisory party in the name of the ministry of The Netherlands (Vervloed, 2013).

College B&W: Dutch abbreviation for *college van Burgemeester en wethouders*, the executive board of a municipality with mayor and alder(wo)men.

G4: A network of the four largest cities in The Netherlands in terms of population and economic position. The cities are Amsterdam, Rotterdam, Utrecht, and The Hague (CBS, 2020b).

MBE: Management in the Built Environment.

PM: project management or project manager.

Reuse: shorter term for adaptive reuse.

Vof: Vennootschap onder firma. A legal partnership with at least two parties or persons.

EXECUTIVE SUMMARY

Introduction

More and more heritage buildings full of character and history are becoming vacant. Times are changing economically and socially, which is especially visible in buildings like churches and industrial complexes. Of the 30.263 non-residential national listed monuments, over 5% is left vacant not considering the numerous square metres of municipal listed monuments (CBS, 2020). Dealing with this vacancy is difficult. Reasons for this are manifold, including arguments such as the difficulty to get finance, complex and sturdy regulations, and the requirement of heritage design expertise (Dyson, Matthews, & Love, 2016; NRP, 2019).

While vacancy previously led to demolition, the buildings' irreplaceability and valuable characteristics make them ineligible for demolition (Meurs & Steenhuis, 2017). Reusing the buildings instead of demolition is getting a larger crowd. Adaptive reuse is a solution where the building is reused, and its function changed to suit the new societal, economic and environmental conditions (Bullen & Love, 2011b). Adaptive reuse is such an option in which the building will undergo "a major change [...] with alterations of both the building itself and the function it accommodates" (Wilkinson, Remøy, & Langston, 2014, p.95). Reusing gives the building a second life, ensuring that its history is not lost in the demolition.

Problem statement

While academics and practice widely acknowledge the benefits of adaptive reuse of heritage, but the management of such processes remains difficult. In an attempt to get a grip on the difficulty of adaptive reuse processes, some studies have identified and ranked the factors that influence the process. All studies, however, stop once the (critical) success factors have been identified. This perceived difficulty of the adaptive reuse process is due to the limited knowledge and understanding of practitioners of what the adaptive reuse process entails and how to manage such a process (Kurul, 2007).

The key to how these success factors should play a role in the reuse process to improve is still missing, as depicted in figure A.

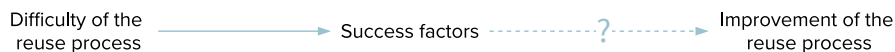


Figure A: problem statement (own ill.)

Proposed solution

This research proposes to identify the success factors of the adaptive reuse process so that a manager or organisation can effectively and efficiently align their resources and attention (figure B) (Tan, Shuai & Wang, 2018). With adaptive reuse processes that are becoming more and more complex, and a lack of knowledge on how to improve this with the help of success- and failure factors, the need for an adequate framework is increasing. This new situation of increasing difficulty requires that the processes need to "re-engineer themselves to accommodate those changes" (Kagioglou et al., 2007, p.102).



Figure B: proposed solution to increase the chance for success (own ill.)

The assumption here is that if you know and understand what the success factors of a reuse process are, and know when, how, and why they are present, it becomes easier to steer and manage the process according to these factors. Presenting these factors and giving them a place and time within the AR process, will increase the chance of overcoming challenges in reuse projects (Vervloed, 2013). A new understanding of the reuse process facilitates the elements to successfully deliver a project (Kagioglou et al., 2007; Kurul, 2003).

Research question(s)

To address the issues with managing adaptive reuse processes in heritage, the following main research question is answered: How can success factors improve the process of adaptive reuse of heritage?

This main research question is answered by combining the answers of the following sub-questions:

1. What is adaptive reuse of heritage in The Netherlands?
2. What does the adaptive reuse process look like?
3. How can you improve an (AR) process?
4. What is a successful adaptive reuse project and what factors influence the process?
5. How can the success factors of adaptive reuse processes be fed forward to improve the process of future adaptive reuse projects?

The main and sub-questions are answered by a thorough literature review and case study research, where three of the most successful adaptive reuse projects of 2020 are analysed: the Greswarenfabriek in Reuver, DomusDELA in Eindhoven, and Timmerfabriek Sphinxkwartier in Maastricht.

Theoretical framework

The findings of this literature review are summarised in a theoretical framework that draws the playing field of this research. The context of reusing heritage is shaped by the uncertainty in the first few stages and the rights and obligations of heritage buildings. This makes the first few stages of the reuse process significantly more complex. To ease this process, the main key stakeholders shape the reuse process according to their assumptions. The activities they undertake are shaped by their perceptions of success and how they help them achieve their definition of success. At the end of the process, you can judge whether or not the project was a success and start the learning curve by reflection on: project (success), the actions you have taken, the tools and instruments you have used and whether or not you (should have) started the (right) project.

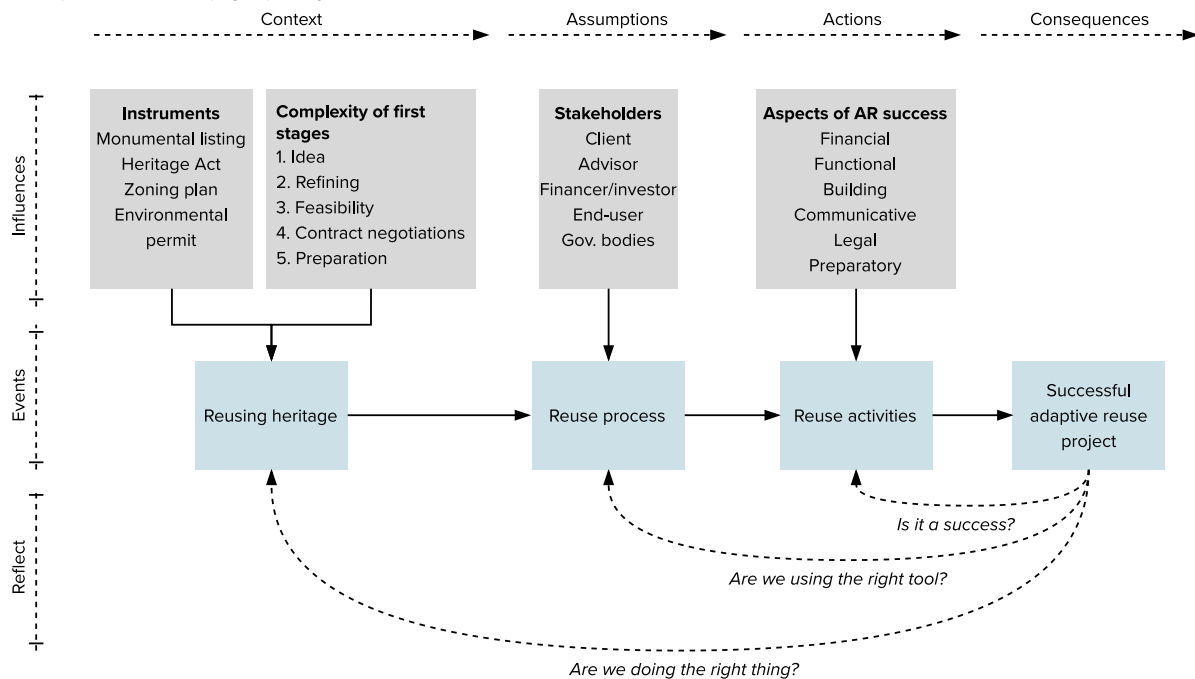


Figure C: theoretical framework and relation to the rest of the research (own ill.)

Empirical research

The empirical research findings are a draft of the adaptive reuse process and a list of the twelve most important success factors in the case study projects. The most important success factors of the projects were:

Table A: success factors that will be taken along in the model.

| Final list of success factors | |
|--|--|
| 1. Find political support | 7. Trust expertise |
| 2. Early involvement of construction team | 8. Maintain ambition & enthusiasm level |
| 3. Innovative financing | 9. Perseverance |
| 4. Financial support by public authorities | 10. Consider overall interest of the wider community |
| 5. Create a clear ambition document | 11. Innovative design |
| 6. Early involvement of end-users | 12. Preservation of history & culture |

Conclusion

The assumption that was drafted at the beginning of this research was that if you know and understand what the success factors of adaptive reuse of heritage are, and you know when, how, and why they are present, it becomes easier to steer and manage the process according to these factors. Presenting these factors will increase the chance of overcoming challenges in reuse projects and facilitating all the elements to deliver a project successfully.

The answer to the main research question is given by the 'adaptive reuse of heritage'-process map, where all the elements of the sub-questions are combined into one single process model (figure D, full version in *Appendix G – Deliverables*). The process map depicts a general adaptive reuse process, enriched with the success factors from successful projects from 2020. Of course, not every adaptive reuse project and process is similar. Depending on the type of building, team of stakeholders, context, and market, the process map can take on different forms. Therefore, this process map can be a source of inspiration for future adaptive reuse projects and facilitate the elements that can be individually put to use in the future.

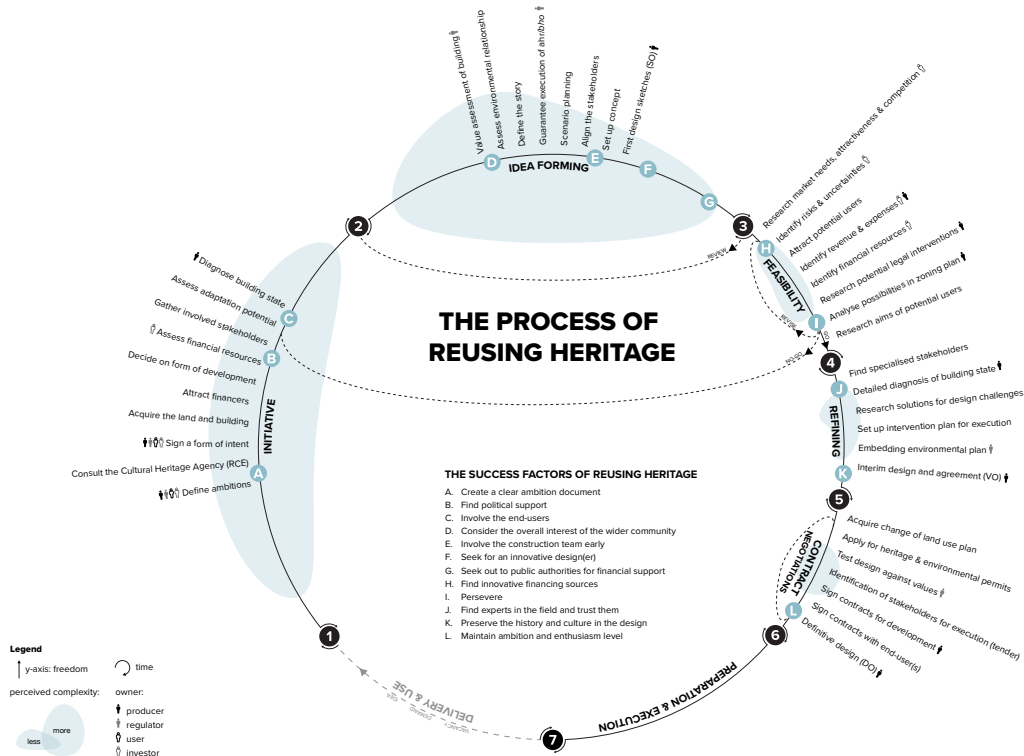


Figure D: the 'adaptive reuse of heritage'-process map to successfully deliver a reused project (own ill.)

Discussion

Of course, the conclusion that has been drawn is not a universal truth. After reading the research, some elements require some nuance.

First of all, this study addressed complexity by combining theories and practical experience in two subjects: adaptive reuse processes and success factors. This research addresses the problem by stating that, one way or the other, using the process map will help to effectively and efficiently align resources according to the information in the process map on the project phases, activities, responsibilities, and success factors. Whether or not this model actually reduces complexity is up to practitioners to experience. To do so, the status quo before and after using the process map must be measured to notice any improvement.

Second, this research tried to draw a universal definition of success for adaptive reuse projects for the sake of this research, while in reality, success is depending on the different viewpoints. There is, however, a higher chance of success once a project ticks multiple boxes of the six aspects of AR success as was defined since it represents multiple stakeholders.

Third, it is good to realize that the process map is not the (only) recipe to success. Even if the project stakeholders decide to enforce all twelve success factors of the process map, success is still not guaranteed. This research does not cover the degree of influence of a factor and its presence and position in the process map is merely dependent on the interviewees' answers. The causal relationship between success and the success factors is, therefore, not covered.

Lastly, this research is specifically written for heritage buildings. This means that the process map includes some activities, elements, and success factors specifically added for dealing with heritage. However, a large part of the model is based on theories from standard (new-built) construction processes and therefore applicable to both.

Some limitations concerning the subject, research methods, and research design are: (1) a possible bias towards verification and validity of case study research, and (2) the applicability of the process map is dependent on whether or not people decide to use it in practice.

Recommendations

Based on the outcomes of this research, the following recommendations apply.

For practice:

- Face complexity
- Work cross-disciplinary
- Consider the collaboration between public and private parties
- Success is relative

For future research:

- Reusing non-monumental buildings
- Impact of COVID-19 on adaptive reuse process
- Degree of influence of a factor on success
- Reusing heritage within G4-cities

NEDERLANDSE SAMENVATTING

Introductie

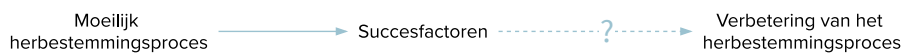
Steeds meer monumentale panden vol karakter en geschiedenis komen leeg te staan. Tijden veranderen economisch en sociaal gezien, wat vooral zichtbaar is in gebouwen als kerken en industriële complexen. Van de 30.263 niet-residentiële rijksmonumenten staat ruim 5% leeg, nog afgezien van de vele vierkante meters gemeentelijke rijksmonumenten (CBS, 2020). Omgaan met deze leegstand is moeilijk. De redenen hiervoor zijn talrijk, waaronder argumenten zoals de moeilijkheid om financiering te krijgen, complexe en moeilijke regelgeving en de vraag naar expertise op het gebied van erfgoed (Dyson, Matthews, & Love, 2016; NRP, 2019).

Vroeger leidde die leegstand vaak tot sloop, maar door de onvervangbaarheid en waardevolle eigenschappen komen ze steeds vaker niet meer in aanmerking voor sloop (Meurs & Steenhuis, 2017). Hergebruik van erfgoed in plaats van sloop krijgt een steeds groter publiek. Herbestemming is een strategie waarbij het gebouw wordt hergebruikt en de functie ervan wordt aangepast aan de nieuwe maatschappelijke, economische en ecologische omstandigheden (Bullen & Love, 2011b). Herbestemming is een optie waarbij het gebouw "een grote verandering [...] ondergaat met aanpassingen aan zowel het gebouw zelf als de functie die het herbergt" (Wilkinson, Remøy, & Langston, 2014, p.95). Hergebruik geeft het gebouw een tweede leven en zorgt ervoor dat de geschiedenis niet verloren gaat bij de sloop.

Probleemstelling

Hoewel academici en de praktijk de voordelen van herbestemming van erfgoed over het algemeen erkennen, blijft het managen van dergelijke herbestemmingsprocessen moeilijk. In een poging grip te krijgen op de complexiteit van herbestemmingsprocessen, hebben enkele onderzoeken de factoren die het proces beïnvloeden geïdentificeerd en gerangschikt. Alle onderzoeken stoppen echter zodra de (kritische) succesfactoren zijn geïdentificeerd. De waargenomen complexiteit van het herbestemmingsproces is te wijten aan beperkte kennis en begrip van wat het herbestemmingsproces inhoudt en hoe een dergelijk proces te managen is (Kurul, 2007).

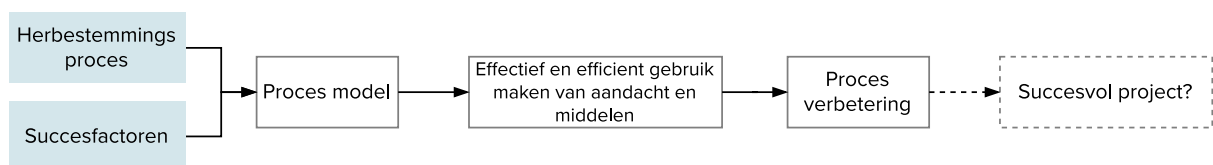
De sleutel tot hoe deze succesfactoren een rol zouden moeten spelen in het herbestemmingsproces om deze te verbeteren ontbreekt nog, zoals weergegeven in figuur A.



Figuur A: probleem stelling (eigen ill.)

Voorstel

Dit onderzoek stelt voor om de succesfactoren van het herbestemmingsproces te identificeren, zodat een manager of organisatie hun middelen en aandacht effectief en efficiënt kan afstemmen op het proces (figuur B) (Tan, Shuai & Wang, 2018). Met herbestemmingsprocessen die steeds complexer worden en een gebrek aan kennis om dit met behulp van succes- en faalfactoren te verbeteren, neemt de behoefte aan een houvast en model toe. De toenemende complexiteit vraagt dat het proces "zichzelf opnieuw moet ontwerpen om aan die veranderingen tegemoet te komen" (Kagioglou et al., 2007, p. 102).



Figuur B: Voorstel om de kans op succes te verhogen (eigen ill.)

De aanname hierbij is dat als je weet en begrijpt wat de succesfactoren van een herbestemmingsproces zijn, en weet wanneer, hoe en waarom ze aanwezig zijn, het makkelijker wordt om het proces op basis van deze factoren te sturen en te managen. Door deze factoren vast te leggen en een plaats en tijd te geven binnen het herbestemmingsproces, vergroot je de kans op succes (Vervloed, 2013). Een nieuw

begrip van het herbestemmingsproces levert de elementen om een project met succes op te leveren (Kagioglou et al., 2007; Kurul, 2003).

Onderzoeksvragen

Om de problemen met betrekking tot de complexiteit van het herbestemmingsproces van erfgoed aan te pakken, wordt de volgende hoofdvraag beantwoord: Hoe kunnen succesfactoren het proces van herbestemming van erfgoed verbeteren?

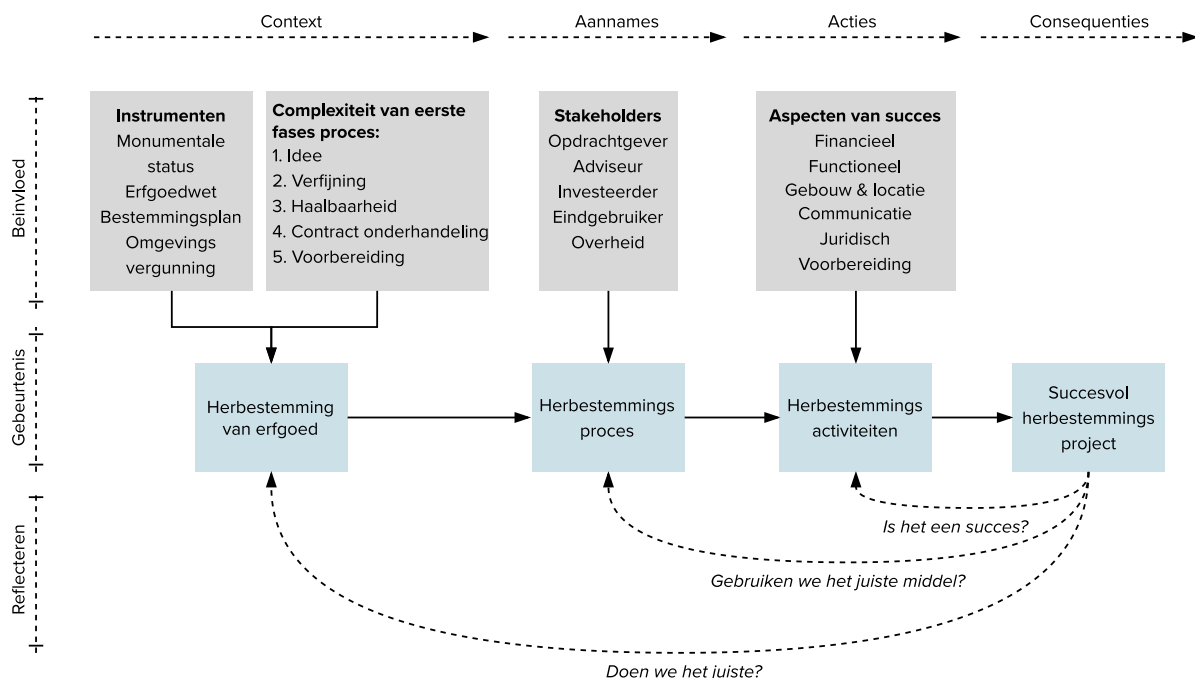
Deze hoofdvraag wordt beantwoord door de antwoorden van de volgende deelvragen te combineren:

1. Wat is herbestemming van erfgoed in Nederland?
2. Hoe ziet het herbestemmingsproces eruit?
3. Hoe kun je een (herbestemmings-) proces verbeteren?
4. Wat is een succesvol herbestemd project en welke factoren zijn van invloed op het proces?
5. Hoe kunnen de succesfactoren van herbestemmingsprocessen worden doorgegeven om het proces van toekomstige herbestemmingsprojecten te verbeteren?

De hoofd- en deelvragen worden beantwoord door een literatuuronderzoek en case-study onderzoek, waarbij drie van de meest succesvolle herbestemmingsprojecten van 2020 worden geanalyseerd: de Greswarenfabriek in Reuver, DomusDELA in Eindhoven en Timmerfabriek Sphinxkwartier in Maastricht.

Theoretisch kader

De bevindingen van het literatuuronderzoek zijn samengevat in een theoretisch kader dat het speelveld van dit onderzoek schetst. De context van hergebruik van erfgoed wordt gevormd door onzekerheid in de eerste fasen en de rechten en plichten van erfgoedgebouwen. Dit maakt de eerste paar fasen van het herbestemmingsproces aanzienlijk complexer. Om dit proces te vergemakkelijken, beïnvloeden de belangrijkste stakeholders het herbestemmingsproces op basis van hun aannames over succes. De activiteiten die ze ondernemen worden gevormd door hun percepties van succes en hoe ze denken hun definitie van succes kunnen bereiken. Aan het einde van het proces kun je beoordelen of het project een succes was en de leercurve starten door na te denken over: project (succes), de acties die je hebt ondernomen, de tools en instrumenten die je hebt gebruikt en of je wel of niet het had project moeten starten.



Figuur C: theoretisch kader en de relatie tot de rest van het onderzoek (eigen ill.)

Empirisch onderzoek

De bevinding van het empirisch onderzoek is (o.a.) een lijst met de twaalf succesfactoren met de meeste invloed op de case-study projecten. De meest belangrijke succesfactoren van de projecten waren:

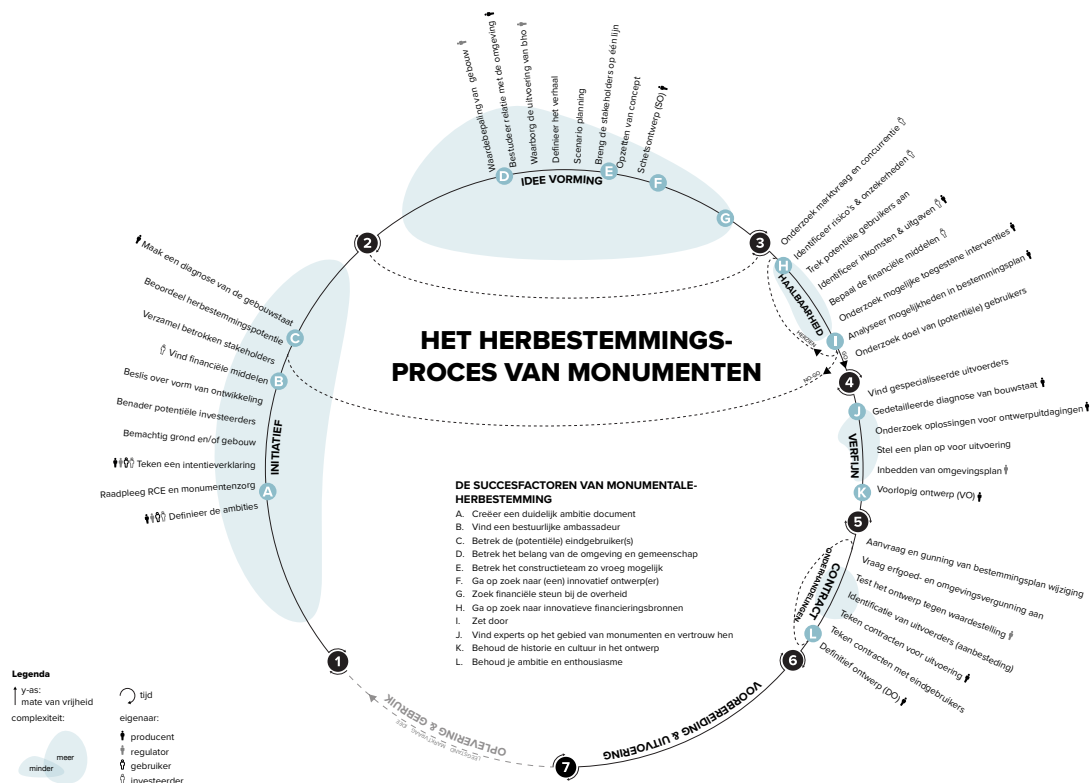
Tabel A: succesfactoren die worden meegenomen in het procesmodel.

| Lijst met succesfactoren | |
|---|---|
| 1. Creëer een duidelijk ambitie document | 7. Zoek financiële steun bij de overheid |
| 2. Vind een bestuurlijke ambassadeur | 8. Ga op zoek naar innovatieve financieringsbronnen |
| 3. Betrek de (potentiële) eindgebruiker(s) | 9. Zet door |
| 4. Betrek het belang van de omgeving en gemeenschap | 10. Vind experts of het gebied van monumenten en vertrouw hen |
| 5. Betrek het constructieteam zo vroeg mogelijk | 11. Behoud de historie en cultuur in het ontwerp |
| 6. Ga op zoek naar (een) innovatief ontwerp(er) | 12. Behoud je ambitie en enthousiasme |

Conclusie

De aanname die aan het begin van dit onderzoek werd opgesteld, was dat als je weet en begrijpt wat de succesfactoren van herbesteding van erfgoed zijn, en je weet wanneer, hoe en waarom ze aanwezig zijn, het gemakkelijker wordt om het proces te managen volgens deze factoren. Het vastleggen van deze factoren zal de kans vergroten om uitdagingen voor te zijn en alle elementen aan te reiken die het vergemakkelijken om een project met succes op te leveren.

Het antwoord op de hoofdonderzoeksvraag is het 'herbestedingsproces van monumenten'-procesmodel, waarbij alle elementen van de deelvragen worden gecombineerd tot één proces figuur (figuur D, volledig figuur in *Appendix G – Deliverables*). Het procesmodel geeft een algemeen herbestedingsproces weer, verrijkt met de succesfactoren van succesvolle projecten uit 2020. Natuurlijk is niet elk herbestedingsproject en proces vergelijkbaar. Afhankelijk van het type gebouw, het team van stakeholders, de context en de markt, kan het procesmodel verschillende vormen aannemen. Daarom kan dit procesmodel een inspiratiebron zijn voor toekomstige herbestedingsprojecten en de elementen faciliteren die individueel in de toekomst kunnen worden gebruikt.



Figuur D: het procesmodel (eigen ill.)

Discussie

Natuurlijk is de conclusie die is getrokken geen universele waarheid. Na het lezen van het onderzoek behoeven sommige elementen enige nuance.

Allereerst richtte deze studie zich op de complexiteit van het herbestemmingsproces door theorieën en praktijkervaring van twee onderwerpen te combineren: herbestemmingsprocessen en succesfactoren. Dit onderzoek pakt het probleem aan door te stellen dat, op de een of andere manier, het gebruik van het procesmodel zal helpen om middelen effectief en efficiënt op één lijn te brengen volgens de informatie in het model over de projectfasen, activiteiten, verantwoordelijkheden en succesfactoren. Of dit model de complexiteit daadwerkelijk vermindert, is aan de praktijk om te ervaren. Om dit te doen, moet er een nulmeting worden gedaan voor, en meting na het gebruik van het procesmodel plaatsvinden om eventuele verbeteringen op te merken.

Ten tweede heeft dit onderzoek getracht een universele definitie van succes te schrijven voor herbestemmingsprojecten behoeve van dit onderzoek, terwijl succes in werkelijkheid afhangt van de verschillende standpunten. Er is echter een grotere kans op succes als een project meerdere vakjes van de zes aspecten van herbestemmings-succes aanvinkt aangezien het dan meerdere stakeholders vertegenwoordigt.

Ten derde is het goed om te beseffen dat het procesmodel niet het (enige) recept voor succes is. Zelfs als de projectstakeholders besluiten om alle twaalf succesfactoren van het model af te dwingen, is succes nog steeds niet gegarandeerd. In dit onderzoek is de mate van invloed van een factor niet onderzocht. Daarnaast is de aanwezigheid en positie van een factor afhankelijk van de antwoorden van de geïnterviewden. De causale relatie tussen succes en de succesfactoren wordt daarom niet besproken.

Ten slotte is dit onderzoek specifiek geschreven voor erfgoedgebouwen. Dit betekent dat het procesmodel enkele activiteiten, elementen en succesfactoren bevat die specifiek zijn toegevoegd voor het omgaan met erfgoed. Een groot deel van het model is echter gebaseerd op theorieën uit standaard (nieuwbouw) bouwprocessen en daardoor op beide toepasbaar.

Enkele beperkingen met betrekking tot het onderzoeksonderwerp, de onderzoeksmethoden en de onderzoeksopzet zijn: (1) een mogelijke voorkeur voor verificatie en validiteit van het casestudy onderzoek, en (2) de toepasbaarheid van het procesmodel is afhankelijk van het al dan niet gebruiken van het model in de praktijk.

Aanbevelingen

Op basis van de uitkomsten van dit onderzoek zijn de volgende aanbevelingen van toepassing.

Voor de praktijk:

- Zie complexiteit onder ogen
- Werk multidisciplinair
- Denk aan de samenwerking tussen publieke en private partij
- Succes is relatief en geen doel

Voor toekomstig onderzoek:

- Hergebruik van niet-monumentale gebouwen
- Impact van COVID-19 op het herbestemmingsproces
- Mate van invloed van een factor op succes
- Hergebruik van erfgoed binnen een van de G4-steden

CONTEXT

introduction

1. problem exploration
2. problem statement
3. proposed solution

1. INTRODUCTION

1.1. Problem exploration

More and more heritage buildings full of character and history are becoming vacant. Times are changing economically and socially, especially visible in buildings like churches and industrial complexes. Halfway 2020, the national Cultural Heritage Agency (RCE) reported 61.827 national listed monuments, of which 30.263 non-residential (RCE, 2020). Of these, a little over 5% is left vacant, not considering the numerous square metres of municipal listed monuments (CBS, 2020). We lose numerous amounts of square metres to functional decay: 1 farm daily, 2 churches weekly, and 1 abbey per month (HEVO, 2012, p.2). But dealing with this vacancy is difficult. Reasons for this are manifold, including arguments such as the difficulty to get finance, complex and sturdy regulations, and the requirement of heritage design expertise (Dyson, Matthews, & Love, 2016; NRP, 2019).

“The greenest buildings are the ones we already have” (Langston, 2011, p.199). Housing shortage, climate adaptation, energy transition, and social imbalance are all issues that benefit from reusing the existing building stock. This will make The Netherlands more future proof (NRP, 2020).

Influential changes in technology and markets will continue to end the functional, technical and economic lifespan of heritage buildings (Scheltens, Van der Voordt & Koppels, 2009). Two million square metres of vacant heritage is still waiting to be renovated or reused, showing that there is a need to make use of it (BOEi, 2016). One way to retain and sustain heritage buildings is to (adaptively) reuse them. Reusing existing buildings is the answer to deterioration due to vacancy, sustainability, climate targets, housing shortage and space issues (Bullen & Love, 2011a; Krol, 2020; Kurul, 2003; Meurs & Steenhuis, 2017; Yung & Chan, 2012).

While vacancy previously led to demolition, the irreplaceability and valuable characteristics of the buildings make them ineligible for demolition (Meurs & Steenhuis, 2017). Reusing the buildings instead of demolition is getting a larger crowd. Adaptive reuse is a solution where the building is reused and its function changed to suit the new societal, economic and environmental conditions (Bullen & Love, 2011b). Adaptive reuse is such an option in which the building will undergo “a major change [...] with alterations of both the building itself and the function it accommodates” (Wilkinson, Remøy, & Langston, 2014, p.95). Reusing gives the building a second life, which ensures that its history is not lost in the demolition.

1.2. Increasing complexity of the process

While the benefits of adaptive reuse of heritage are widely acknowledged by academics and practice, the management of such processes remains difficult. The construction industry is subject to large changes in technology, budgets and development processes. This makes the construction industry much more complex and difficult to manage (Chan, Scott & Chan, 2004). Within the construction industry, adaptive reuse is still the underdog (Kurul, 2003). Adaptive reuse projects are becoming increasingly more difficult to manage. Reuse faces many challenges that do not apply for new construction projects since the process has to move between the boundaries and restrictions of the existing building (Andriessen, 2007). The high number of elements in the adaptive reuse process increases the difficulty to manage successfully such as the difficulty to get finance, unclear view of what the profit will be, decontamination, high levels of uncertainty and complexity, the monumental status of the building, pollution, strict requirements of the building decree and codes, interference of governmental bodies and the building state (Dyson, Matthews, & Love, 2016; Langston, 2011; NRP, 2019). The challenges in adaptive reuse processes are generally perceived as less manageable than a new construction project (Andriessen, 1999).

Construction projects are sometimes perceived as difficult. To connect the different aspects of a construction project to deliver a building, requires people to act under high levels of uncertainty (Winch, 2010). In adaptive reuse projects, the number of stakeholders that are concerned with a project is growing, increasing this difficulty even more (Cicmil & Marshall, 2005). The high number of stakeholders

with an interest in different characteristics of the project and changed interactions further complicate the process and its management (Kurul, 2003, Bos-De Vos, Volker & Wamelink, 2015).

With changing markets, technologies and stakeholders, the process is increasingly becoming more difficult (Kagioglou et al., 2007; Van Straaten, 2008). Increased competition and technology improvement require re-engineering of the processes to accommodate to the changes (Kagioglou et al., 2007). The difficulties of the process are causing initiators, developers, financiers and clients to have the wrong perceptions of what an adaptive reuse process entails and what they can expect (Kurul, 2007). This perceived difficulty of the process is the main barrier to entry and engage adaptive reuse projects (Bullen & Love, 2011c; Dyson et al., 2016; Kurul, 2007). This difficulty in the process is typically conceded by “outsiders”, stakeholders who are unfamiliar with the adaptive reuse process and its practices and procedures (Bond, 2011).

One specific aspect of adaptive reuse of heritage has been underexposed in recent studies, and what might be the solution to the difficulty problem, is to study the reuse process (BOEi, 2009). Managing the process is the key to successful adaptive reuse projects (Kurul, 2003). However, there is limited knowledge and understanding of how to manage the adaptive reuse process (Kurul, 2003).

1.3. Lack of improvement

In an attempt to get grip on the difficulty of adaptive reuse processes, some studies have identified and ranked the factors that influence the process. These studies focus on for example critical success factors (Dyson, Matthews, & Love, 2016; Tan, Shuai, & Wang, 2018), a specific phase or aspect of the reuse process (i.e. stakeholder management by Nwachukwu et al., 2017), or market (i.e. the Dutch market by BOEi, 2009).

The identification of success factors can be a useful reference for stakeholders and policymakers to start new adaptive reuse projects. “Government, building owners, investors, and other parties can focus on these critical factors in future adaptive reuse practices” (Tan, Shuai & Wang, 2018, p.15). Several studies have attempted to increase knowledge on the adaptive reuse process and grasp its difficulty by defining the success factors, key drivers, barriers and challenges (BOEi, 2009; Dyson et al., 2016; Nwachukwu et al., 2017; Tan et al., 2018). All studies, however, stop once the (critical) success factors have been identified.

For the studies on success factors to influence practice, it is meaningful to know how these factors should be put to work to improve the process. Dyson et al. (2016) argue that the next step in these types of studies is to focus on developing guidelines on how to reuse the monumental buildings. The same voice came from BOEi (2009) who developed ten “golden rules” on how to successfully reuse heritage, but claim that a roadmap to guide through the complex process of reusing is still missing. This type of guideline is necessary to make adaptive reuse better accessible (BOEi, 2009).

The studies by organisations that are closely linked to practice such as (social entrepreneur annex developer) BOEi (2009) and (knowledge network) NRP (2019) show that even though the factors are known in practice, practitioners fail to use the factors to improve the process.

This perceived difficulty of the adaptive reuse process is due to the limited knowledge and understanding of practitioners of what the adaptive re-use process entails and how to manage such a process (Kurul, 2007). The construction industry in general favours an ad-hoc approach for dealing with issues and challenges, making it hard to repeat a (successful) process execution (Cooper et al., 1998). The identification of the success factors is the first step towards increasing knowledge and understanding of the reuse process but (still) fails to help future projects (BOEi, 2009; Kurul, 2007).

1.4. Problem statement

While adaptive reuse is seen as a viable strategy to deal with vacant heritage buildings, its process remains difficult to manage and thus not attractive to engage in for many stakeholders. Studies have tried to grasp the complexity by identifying the success factors that will ease the process but practitioners still

fail in using these factors to improve management. The key on how these success factors should play a role in the reuse process to improve is still missing, as depicted in figure 1.

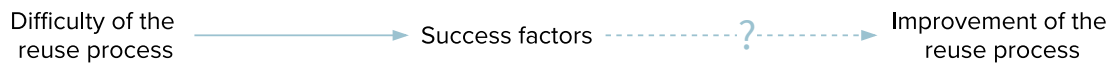


Figure 1: problem statement (own ill.)

1.5. Proposed solution

The scope of this research is depicted in figure 2 below. Based on Dyson et al. (2016), the adaptive reuse process of a (vacant) heritage building looks like a loop. When stakeholders are faced with a (vacant) heritage building that is not suitable anymore for its current use, they can enter the reuse process. This process is made up of several “ingredients”. First is the input, which are the requirements, boundaries, and restrictions from the building, its surrounding and involved parties. These will be converted to a (hopefully) successful reused building. During this conversion, factors come up that either benefit or disadvantage the process and outcome (pink dots). If it benefitted the whole, it was a success factor. The process of converting the inputs to outputs, and managing the factors along the way, is managed through process management (blue line). It is important to analyse what happens between the start (input) and end (output) of the process (Hunt, 1996, as cited in Kurul, 2003).

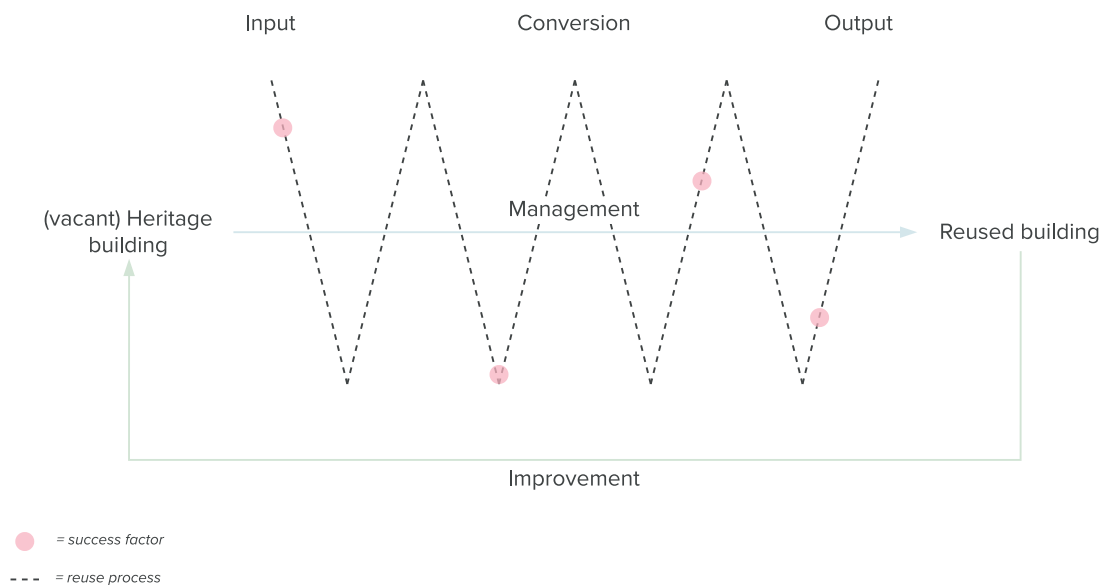


Figure 2: The adaptive reuse process, adapted from Dyson et al. (2016) (own ill.).

Any acquired knowledge during this process about these (success) factors should be fed forward to new adaptive reuse projects and shared with stakeholders (bottom green line). This knowledge about former reuse projects is the most important lesson for future projects, which requires to document experiences, choices and lessons along the way (BOEi, 2009). According to Dyson et al. (2016), this yellow line is what is fundamental for future success of adaptive reuse projects. By studying the success factors, it is possible to improve the effectiveness of a process (Chan et al., 2004).

By identifying the success factors of the adaptive reuse process, a manager or organisation can effectively and efficiently align their resources and attention (figure 3) (Tan, Shuai & Wang, 2018). This will increase the ease of management and benefit the eventual outcome of the process (Tan et al., 2018). What is still missing is a framework, tool or process model that guides managers through the complex reuse process (BOEi, 2009). With adaptive reuse processes that are becoming more and more complex, and a lack of knowledge on how to improve this with the help of success- and failure factors, the need for an adequate framework is increasing. This new situation of increasing difficulty requires that the processes need to “re-engineer themselves to accommodate those changes” (Kagioglou et al., 2007, p.102).



Figure 3: proposed solution to increase the chance for success (own ill.)

The assumption here is that if you know and understand what the success factors of a reuse process are, and know when, how, and why they are present, it becomes easier to steer and manage the process according to these factors. Presenting these factors and giving them a place and time within the AR process, will increase the chance of overcoming challenges in reuse projects (Vervloed, 2013). A new understanding of the reuse process facilitates the elements to deliver a project successfully, see figure 3 (Kagioglou et al., 2007; Kurul, 2003).

RESEARCH

PROPOSAL

methodology

1. research questions
2. research design
3. research methods
4. data plan & ethical considerations
5. research output

2. METHODOLOGY

2.1. Research questions

To address the issues with managing adaptive reuse processes in heritage, the following main research question will be answered in this research:

How can success factors improve the process of adaptive reuse of heritage?

The goal of the sub-questions is to try define and understand the different key aspects that comprise the main question. Each sub-question will explain a key aspect that, when put together, will help to find the answer to the main question. Each sub-question has a different purpose, requiring different research methods. The key aspects and associated sub-questions are as follows:

Q1. Adaptive reuse of heritage - What is adaptive reuse of heritage in The Netherlands?

| | |
|---------|--|
| Purpose | To discover why the Dutch market goes through the hassle of the adaptive reuse process and what the strategy entails. This is to find out why stakeholders choose to reuse a building compared to other strategies for dealing with vacancy and how this is implemented in the Dutch market. |
| Method | A literature review. |

Q2. Process – What does the adaptive reuse process look like?

| | |
|---------|--|
| Purpose | Study literature that describes and discusses the adaptive reuse process, and compare it to the processes in case-studies. This sub-question aims to find out what comprises the process of adaptive reuse of heritage and what the roles, activities, responsibilities and considerations of stakeholders in the process are. |
| Method | A literature review, case study analyses semi-structured interviews. |

Q3. Improve – How can you improve an (AR) process?

| | |
|---------|---|
| Purpose | Study the literature on organisational learning and complementary instruments and tools to find out how to improve a process and learn from it. This sub-question will describe and present the frameworks that have already been developed in an attempt to get grip on the construction and/or reuse process. |
| Method | A literature review. |

Q4. Success factors – What is a successful adaptive reuse project and what factors influence the process?

| | |
|---------|---|
| Purpose | Define the success of an adaptive reuse project and identify the success factors that repeatedly show up in and lead to a successful reuse process and influence the project outcome. |
| Method | Literature review, cross-case analysis, and semi-structured interviews. |

Q5. How – How can the success factors of adaptive reuse processes be fed forward to improve the process of future adaptive reuse projects?

| | |
|---------|--|
| Purpose | To find out how to re-design the list of success factors into a practical framework, tool or process model that will improve future adaptive reuse projects. |
| Method | Semi-structured interviews, cross-case analysis and synthesis. |

2.2. Type of research

The approach of this research is operational oriented, prescriptive, and uses qualitative research methods.

Based on Barendse et al. (2012), the main research question of this research is part of operational research since it will improve the current situation of adaptive reuse processes and its management by proposing a new way to bring a project to a success. The main research question tries to find the answer to a ‘how’, indicating that the research is prescriptive to recommend a new dimension to the current process. The conclusion of this research is a solution to a common and known problem space and will be applied in real-time case studies. Because this research is prescriptive, the outcome can be a recommendation or solution that can involve change and action (Bryman, 2012).

This research also requires to study processes and the (inter)relationships of stakeholders, meaning that qualitative research methods suit this research best (Bryman, 2012). The unique nature of every adaptive reuse process requires insight and understanding, where time, actions, meanings and processes share a large part in. This is best suited to qualitative research methods (Kurul, 2003). Qualitative research methods can focus on naturally occurring events, in its natural setting, which is suitable for the construction industry, as interference may create a bias in the process perception (Miles, Huberman, & Saldaña, 2014). Conducting qualitative research means that the human side of a topic is studied. The qualitative research methods in this research are a literature review, case study analyses, cross-case analysis, and semi-structured interviews.

2.3. Research design

In this research, a mix of different research methods will be used. This research design is structured in three phases, that each represents a different (qualitative) research method and approach, being:

1. Theoretical research;
2. Empirical research;
3. Synthesis & validation.

The first part (1) of this research is done through a literature review. The second part (2) consists of two research methods, being case study analyses and semi-structured interviews. The third part (3) is done by conducting a synthesis of all the conclusions of the former two chapters into a process map. The following paragraphs will present each research method, which questions each part serves, how it will operate, and how it will result in the desired outcomes.

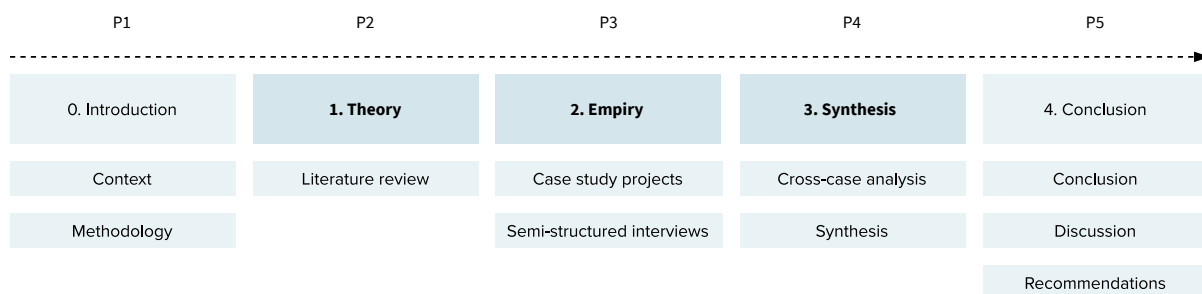


Figure 4: reading guide (own ill.)

2.4. Research methods

2.4.1. Literature review

The research will start with a literature review to find out what is already known in the research area and draft the theoretical background (Bryman, 2012). Cooper et al. (1998) argues that in order to introduce a new way of thinking or improvement in the field, a researcher requires to have a good understanding of what is already going on and the trends in the field. The literature review will help to set the theoretical framework for the next steps in the research.

The goal of the literature review is to study the following three aspects: (1) adaptive reuse of heritage in the Dutch context, (2) reuse processes and management, and (3) success and its contributing factors. The largest part of this literature review is therefore to try and find the definitions of some of the key aspects of this research: adaptive reuse (of heritage), success (factors) and process (improvement and management). The review is also used to find out what theories and methods other studies have been using, if there are any contradicting statements and why so, and who the main contributors in the field are (Bryman, 2012). The outcome of these reviews will be the input for the other phases of the research.

A large part of the literature review will consist of the preliminary search for success factors of adaptive reuse processes. Based on studies about these success factors, a preliminary list will be made in which all factors from different studies will be counted. The idea is that this list will be extended with the success factors coming from the (cross-)case analysis and semi-structured interviews.

Any information and knowledge on the definitions of the three aspects will mostly come from journal papers and other scientific publications. But because the research is partly based on the Dutch context and market, information will also come from books and reports that describe and analyse different projects in The Netherlands.

2.4.2. Cross-case analysis

The main research question is framed in such a way that it tries to find an answer to a 'how' type of question, indicating that a case study analysis is a proper method to answer such a question (Larkham, 1996, as cited in Kurul, 2007). The first part of the empirical research part is a cross-case analysis of real-life cases. A cross-case analysis allows identifying causal links between cases, its factors and events in a real-life context (Groat & Wang, 2013). A cross-case analysis will improve theory building because multiple cases are studied in different circumstances, thus providing ground on where theory will or will not hold (Bryman, 2012). The cross-case analysis is used to discover why these cases are so successful and what contributed to their success. The outcome of the cross-case analysis are success factors that can be added to the preliminary list of success factors from the literature review or that the found success factors are proven to be found in practice.

There are five selection criteria to select the cases that will be studied in the cross-case analysis:

1. The buildings need to be changed substantially both in function and structure (NRP Gulden Feniks, 2019);
2. The project needs to be realised and delivered recently or soon, at the latest in 2020;
3. There needs to be enough documentation available, and possibly more to be found online;
4. All projects are located in The Netherlands to understand the context better, and are preferably located outside of the G4 cities.
5. The projects need to be monumentally listed nationally or municipally, as these types of buildings are generally perceived as the most difficult (BOEi, 2009);
6. They are the extreme types of cases – thus only successful projects with a function change.

The criteria and preferences are summarized in table 1 and will be used later in the research to select the cases for the interviews.

Table 1: case criteria and preferences.

| Criteria | Preferences |
|---|--|
| <ul style="list-style-type: none"> Function- and structural change Realised or delivered recently Enough documentation available | <ul style="list-style-type: none"> Located outside of the G4 cities Monumental listed (national, provincial, or municipal) |

The case studies are selected through purposive sampling. This means that the cases are not selected on a random basis, but strategically chosen so that they are relevant for the research question (Bryman, 2012). The case studies for this research are all derived from the NRP Gulden Feniks 2020 prize, which is a contest for the most prestigious renovation and adaptive reuse projects in The Netherlands. For this prize, 35 projects were submitted by various stakeholders in the category of adaptive reuse to have a chance at winning. These submissions all came with documentation from a stakeholder of the project (the applicant), that conforms with a pre-defined obligatory format, which generates secondary data for the research (Bryman, 2012). From these submissions, 17 projects were considered by the jury to be successful enough to be eligible for the shortlist, called *the contenders* (see figure 5). These contenders are studied for the cross-case analysis to validate the success factors from the literature.

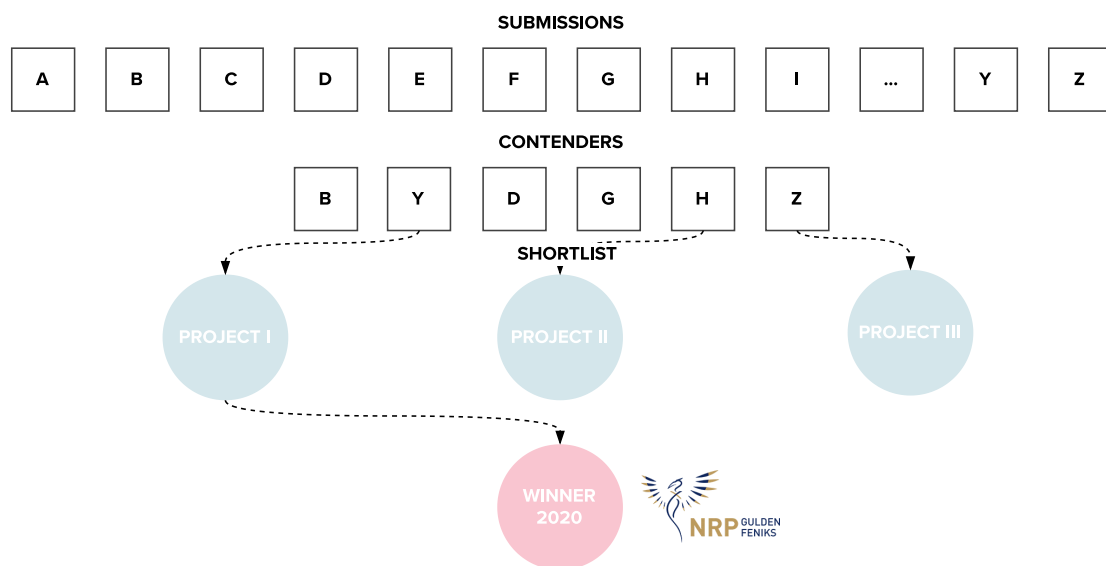


Figure 5: structure of NRP Gulden Feniks and the selection of cases for the cross-case and in-case analysis (own ill.)

The pre-selected cases from NRP Gulden Feniks are chosen to be the cases for this part of the research, since they will most likely represent the most successful and recent cases, all completed and/or delivered in 2019, in The Netherlands. This means that all the boxes of the selection criteria are, most likely, checked. The documentation of these contenders is analysed and complemented by information from the internet and semi-structured interviews with stakeholders.

2.4.3. Semi-structured interviews

According to Groat and Wang (2013), studying the complex dynamics of one case is more important than to look at a large set of cases from the surface. Interviews give more insight into the complex dynamics of individual projects and processes. As introduced in the problem statement, the knowledge on success factors and complexity is there, but practitioners fail to implement these. That is why the second part of the empirical research will go in-depth on three case studies to find out how their knowledge and experience resonates with the literature and how it can be implemented in practice.

The jury of the NRP Gulden Feniks competition selects (maximum) 3 contenders for the shortlist of the prize to visit in person (figure 5). During these debates, multiple projects are considered to be a success and are eligible to be selected for the shortlist. From this list of contenders, three projects will be selected to be studied as case studies for this research based on the selection criteria from table 6. The list of contenders is tested against these criteria. The full checklist of criteria can be found in *Appendix E – Case selection* on page 157, and will be further explained in 4.1. *Case selection*. The selected cases for this research are: Greswarenfabriek in Reuver, DomusDELA in Eindhoven, and Timmerfabriek in Maastricht.



Greswarenfabriek Reuver - DomusDELA Eindhoven - Timmerfabriek Maastricht

The cases are studied more in-depth compared to the cross-case analysis, by conducting semi-structured interviews with the key stakeholders. This will generate more primary data as input for the list of success factors and allows to go in-depth on what the success factors meant for that specific project and process (Bryman, 2012). The aim is to conduct these interviews with stakeholders with different backgrounds who were much involvement in the project, for example: initiator/client, project/process manager, contractor, consultants, etcetera. This multifacetedness of stakeholders is necessary to represent the complex, collaborative processes of adaptive reuse projects and their different views, interests and interdependence in the project (Bond, 2011).

Semi-structured interviews offer the opportunity to talk to a variety of people with an interview protocol to stay connected to a subject and be able to compare the answers to each other, but still have the freedom to interact with the interviewee. The interview is interactive but with a clear goal. Furthermore, semi-structured interviews give a deepened understanding of views and experiences of stakeholders in a process (Kvale, 1996, as cited in Bullen & Love, 2011a).

The following topics will be addressed during the interviews with stakeholders on which the questions in the interview protocol will be based:

- Why these cases are so successful and what made them contenders for the prize;
- What the process looked like in the specific case;
- How the project and process was organised (including the stakeholders and their roles and responsibilities);
- Which factors had led to the success of the project (that were not mentioned in the documentation already);
- How the success factors and challenges were discovered during or after the process;
- What their main lessons learned were that they would like to pass on to future projects;
- How they think the process map should look like to be used in practice and be beneficial for future adaptive reuse processes.

The interview questions that follow from these topics must be structured in such a way that the interviewee understands the question. This is because it is possible that the interviewee is not aware of

scientific and/or academic terminology within the subject or is not aware of the presence of the aspects of this research in their projects.

The purpose of the interviews with practitioners is twofold:

- (1) To better substantiate the found success factors from the literature review and compare them with factors from practice, and to give them a place and time in the reuse process, and;
- (2) To get insight into the reuse process from the cases and compare this to the outcomes of the literature review, which will shape how the process map should look like.

2.4.4. Summary

The scheme below (figure 6) depicts the research design as was explained in the previous paragraphs. It depicts how to get from the research questions (2.1. Research questions) to a conclusion, what type of research method is used for it, which subjects will be addressed, and how information will flow throughout the research. It shows the steps of each phase that have to be taken to get to the final deliverable.

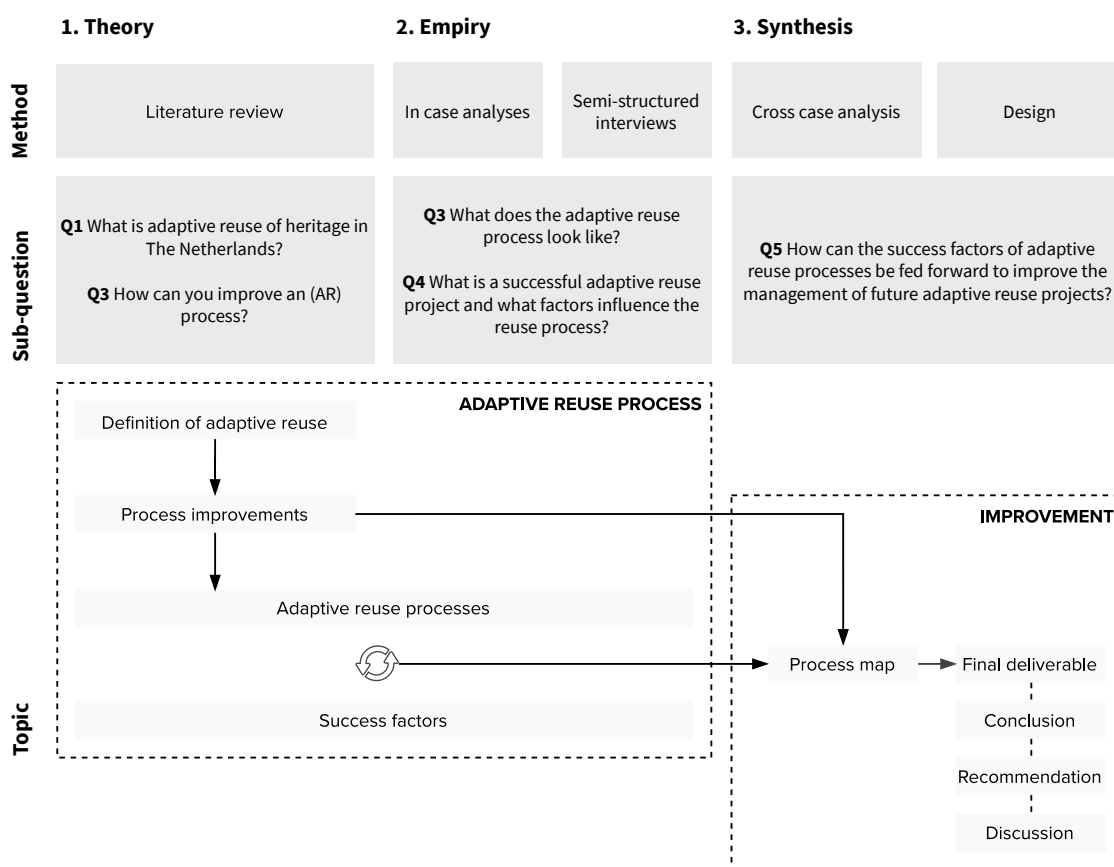


Figure 6: research design (own ill.).

2.5. Data plan and ethical considerations

The data plan is based on the type of data that is expected in this research and how to collect, process and share it. During the research it is expected to gather sensitive data considering: (1) interview notes and recordings, and (2) documentation of the cross-case and in-case analysis. All recordings and note-taking that involves participants will be gathered only with the consent of the participant.

The largest part of the data in this research is owned by the researcher: interview recordings and notes. The researcher takes full responsibility for storing and handling the data after the end of this research. Interim versions will, therefore, be stored on a hard disk and external drive. The final thesis will be publicly accessible in the repository and personally stored on an external drive. A small part of the data is owned by the NRP Gulden Feniks, who is the owner and provider of documentation of the cases in the in- and cross case analysis. The raw data (documentation and any further data) will be deleted after processing

and made untraceable. Participants should not be harmed by participating in any part this research. This means that prior to participating, participants will be informed on the goals of the relevant part. Participants are not obliged to answer if that makes them feel uncomfortable and violates their privacy or ethical beliefs. Also, statements and descriptions of participants will be made unidentifiable to avoid ethical violations after publication.

2.6. Research output

2.6.1. Goals and objectives

The goal of this research is threefold:

1. To show the importance and value of heritage and their adaptive reuse potential and possibilities in (urban) development;
2. To provide developers, designers, contractors, clients, managers, and other main stakeholders with the right tools to increase their chance of successfully delivering an adaptive reused heritage building;
3. Show that the complex adaptive reuse process can be made simple and insightful by bundling knowledge and experiences from practice, and ignite the drive to reuse our cultural and historical past.

To do this, the objective is to study the adaptive reuse process in detail and make it comprehensive for all stakeholders of the process by studying real-life cases with experienced stakeholders as input for the research.

2.6.2. Deliverables

Since the construction process has been studied before, this research builds on existing theory with further exploratory research into the adaptive reuse aspects. The final deliverable of this research is thus a detailed process specifically designed for adaptive reuse projects. New, unexperienced stakeholders of adaptive reuse projects will get a view on the possibilities, problems and opportunities he/she might experience during the process. For experienced stakeholders, the process map will act as a reminder of the most important steps and factors that should not be forgotten or overlooked.

To get to the final deliverable, this research will produce the following deliverables:

- In case analysis of three case study projects
- Cross case analysis
- Protocol, analysis and findings of the semi-structured interviews
- List of success factors
- Final process map for improving the management of adaptive reuse projects
- Final research report

THEORETICAL

BACKGROUND

Literature review

1. adaptive reuse of heritage
2. success factors
3. process improvements
4. summary

3. LITERATURE REVIEW

The following literature review will introduce and define the different key aspects of the research by looking at academic and non-academic studies. The review will build up knowledge and definitions from adaptive reuse, its processes, management of reuse processes and the success of projects, leading to a preliminary list of success factors for adaptive reuse projects. Defining what adaptive reuse and process management entails helps to unravel the adaptive reuse process. Understanding the adaptive reuse process in detail is crucial to pin down the success factors in this process and subsequently redesign the process for better management.

3.1. Adaptive reuse of heritage

This section will try to find the answer to sub-question 1 and 2: What is adaptive reuse of heritage in The Netherlands? And what does the adaptive reuse process look like?

3.1.1. Definition of adaptive reuse

There are four possible strategies to deal with a vacant heritage building: consolidation, renovation or upgrading, demolition and new construction, and adaptation (Remøy, 2010). To fit new economical, societal and environmental conditions, adaptation of the building is best suited. According to Douglas (2006, p.4), adaptation is “any intervention to adjust, reuse or upgrade a building to suit new conditions or requirements”. One way to deal within the adaptation strategy is the adaptation across use and/or mixed use (see figure 7). The difference in these strategies as opposed to adaptation within use, is that not only the building has to undergo major change, but the function has to change as well (either in a new single use or mixed use). This is called adaptive reuse.

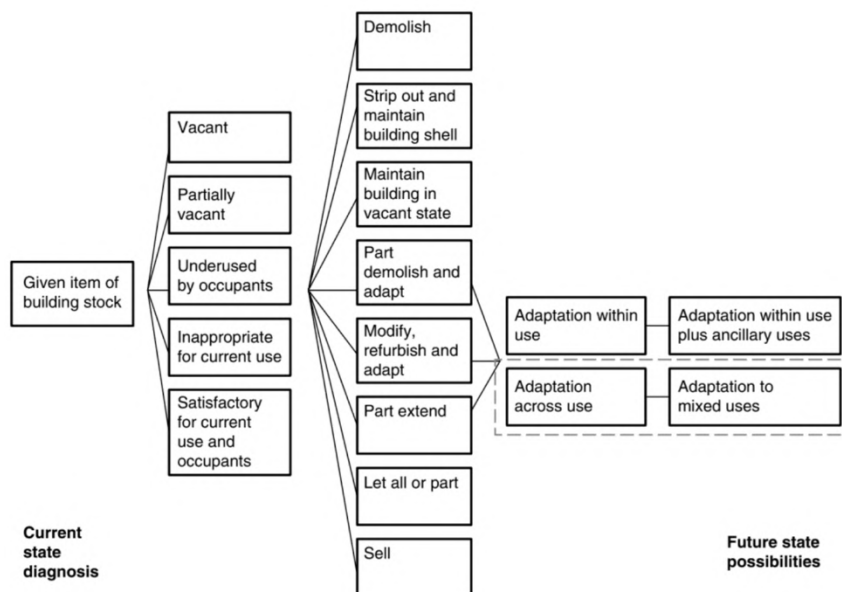


Figure 7: strategies to deal with vacancy (Wilkinson et al., 2014)

Adaptive reuse is such an option within the adaptation strategy in which the building will undergo “a major change [...] with alterations of both the building itself and the function it accommodates” (Wilkinson et al., 2014, p.95). Adaptive reuse makes a building suitable for new conditions (Bullen & Love, 2011b). The key that makes adaptive reuse different from, for example, restoration is that the building will not only undergo a cosmetic change but also requires the function, capacity, purpose or performance to change as well (Douglas, 2006; Wilkinson et al., 2014). The reused building will be upgraded from the old situation (Yung & Chan, 2012).

Some studies stress the economic motive for choosing adaptive reuse strategies, such as Woodcock et al. (as cited in Kurul, 2007) who define adaptive reuse as “a development process by which structurally sound [listed] buildings are developed for economically viable new uses”. Other studies find motivation for adaptive reuse in the end user of the building, such as Douglas (2006) who adapts the view of the client or user in “conversion of a building to undertake a modified change of use required by new or existing owners”. Bullen & Love (2011a) focus the definition more on the change process, indicating that adaptive reuse is the act of changing a disused or ineffective item into a new item with a different purpose. Aigwi, Phipps, Ingham, & Filippova (2020) define adaptive reuse as a sustainable technique “that implies changing the original use of an existing building, while retaining its original structure and fabric, to extend the building’s useful life. In the end, adaptive reuse suits multiple intentions and purposes and is simply a special form of refurbishment and conversion that changes the building into other uses (Tan, Shuai & Wang, 2018).

Other terms can be found in the literature that describes (partially) the same activities as adaptive reuse, for example: renovation, transformation, conversion, revitalization and redevelopment. For the sake of clarity of the research, the only term that will be used here is adaptive reuse where the building’s quality is improved by major renovation and the function changes ‘across use’ (Wilkinson et al., 2014). The alternative terms are, however, considered when reading other studies or when talking to experts in the field.

Adaptive reuse is not a new strategy. Building conversion is an (inter)national phenomenon that has been seen centuries ago and helped to shape historical sites and city centres (Wilkinson et al., 2014). The dense population and scarce space in The Netherlands make adaptive reuse a popular option to generate valuable developments in city centres and popular inner-city areas.

3.1.2. Drivers and challenges

As mentioned in the definition of adaptive reuse, there are multiple drivers for adopting the reuse strategy for dealing with vacancy, most important being economic, social and environmental (see figure 8) (Douglas, 2006). Why do we deal with all the hassle of going through the difficulty process of reusing, and what makes it worth it?

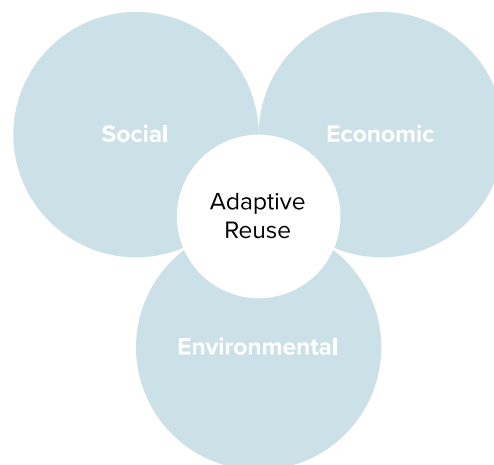


Figure 8: benefits of adaptive reuse strategies (Dyson et al., 2016).

Economic

The economic benefits of the adaptive reuse strategy are expressed in terms of efficiency and effectiveness in delivering a revitalised area and building (Langston et al., 2008, as cited in Dyson et al., 2016). This already begins at the design and construction stage that require fewer construction materials and costly interventions on average compared to demolition and construction of a new building (Bullen & Love, 2010). The reuse of already available material and fewer construction materials causes a reduction of material waste in general (Dyson et al., 2016). Together with the reduced construction time and the affordable purchasing price, makes the design and construction stage economically attractive in reuse projects (Bullen & Love, 2011a; Dyson et al., 2016).

The life expectancy of the building will significantly increase by adapting and reusing it so that it can adapt to new requirements (Dyson et al., 2016). The quality of the building increases (Wilkinson et al., 2014), leading to lower energy and maintenance costs than before (Dyson et al., 2016).

The economic benefits and challenges are the main reason for stakeholders to adopt the adaptive reuse strategies (or not), while the environmental performance and sustainability are often overlooked even though these do have significant influence (Bullen & Love, 2011a). The decision to adopt the adaptive reuse strategy is most of the time based on solely economic considerations (Bullen & Love, 2011a). The contribution of adaptive reuse to sustainability and societal issues makes it eligible for creative forms of self-financing (Yung & Chan, 2012).

Environmental

A key decision, when confronted with a vacant heritage building, is to choose between adaptive reuse and demolition. The adaptive reuse strategy is only valuable if the environmental sustainability and lower energy consumption outweigh the higher costs of 12% (Bullen & Love, 2011a). Adaptive reuse uses less material, transport and energy during construction time compared to new construction projects (Dyson et al., 2016). Also, reusing construction materials or leaving materials in place increases the embodied energy (Yung & Chan, 2012). This, together with the lower amount of pollution during the overall reuse process makes a significant contribution to sustainability (Velthuis & Spennemann, 2007; Yung & Chan, 2012).

Social

High vacancy numbers in a city, neighbourhood or area negatively impacts the social environment (Dyson et al., 2016). By reusing, the social environment and perception of safety in a neighbourhood increases, while blight and social negligence decreases (Bryson, 1997). This benefits the sense of place and community well-being (Bullen & Love, 2011b), and revitalizes community engagement. There is a significant increase in the quality of the building and its surrounding (Wilkinson et al., 2014).

Adaptive reuse has the benefit, as opposed to other strategies, that there is less disruption in the urban fabric and the organisations that deal with the project (Dyson et al., 2016). The social benefits of adaptive reuse outweigh the shortfalls in terms of the ease of performance (compared to new construction buildings) against the social value it creates (Bullen & Love, 2011a).

Adaptive reuse is the most sustainable form of conservation of the building and its culture (Yung & Chan, 2012). Heritage is a tangible reminder of the past that puts demolition out of question. It can bring value is aesthetics, experience, cultural-historical frame of mind, symbolic status, experience (good and bad) and social life (Wilkinson et al., 2014). While vacancy previously inevitably led to demolition, the irreplaceability and valuable characteristics now makes heritage buildings ineligible for demolition (Meurs & Steenhuis, 2017). "In some instances, adaptive reuse may be the only way that a building's structure and form can be properly cared for, revealed or interpreted, while ameliorating the use of its new function." (Bullen & Love, 2011a, p.33). The social and cultural benefits show that preservation of heritage has a high priority.

3.1.3. The Dutch heritage context

The Dutch reuse practices are drawn by the legal and regulatory boundaries from the government and municipal bodies who each has its own legal instruments (Vervloed, 2013). The municipality is a

stakeholder with high influence and control in terms of permits and legislation. The national monumental bodies also influence the legal and regulatory playing field of an adaptive reuse project in terms of the Monument Act and monumental listings. The following instruments from national and municipal bodies have an influence on the adaptability, possibilities and process of an adaptive reuse project of a monument and should therefore be considered during the reuse process.

National instrument: Monument Act and Heritage Act

To preserve and protect historical valuable buildings, the national government introduced the Monument Act (NL: monumentenwet) in 1961 (Vervloed, 2013). The goal of the act is to interweave the preservation of monumental buildings and its cultural historical values into spatial planning and area developments (Van der Staak, 2013). The updated act from 1988 is the one that is currently still in use, and describes the procedure on how to list a historical building as a monument (Van der Staak, 2013). This listing and the accompanying procedure are crucial in dealing with historical buildings for adaptive reuse. Since July 2016, the Monument Act is renamed and redefined in two parts as the Heritage Act (NL: Erfgoedwet) and Environmental code (NL: Omgevingswet) (Monumentenwet 1988, 2016). However, the basic elements of the acts are still the same.

National instrument: Monument listing

When a governmental body in The Netherlands perceives a historical building to have a certain value or significance, it can protect and preserve the building by giving the building a (monumental) listed designation (Rispoli & Organ, 2019). Assigning this listing can be done by three Dutch governmental layers: the state, the province and the municipality (in this order) (Van der Staak, 2013). Each governmental layer has its own specific type of monumental listing. The listings protect a building from deconstructive works or alterations, and any damage done to irreplaceable values (Rispoli & Organ, 2019). The different types of monumental listing are:

1. *National monument* – the status of a national monument is granted by the Agency for Cultural Heritage (ACH) (NL: Rijksdienst voor het Cultureel Erfgoed, RCE) who acts in the name of the state secretary for Education, Culture and Science. The AHC developed a guideline on how to value a building in the following areas: cultural-historical value, architectural- and art historical value, situational and ensemble value, flawlessness and recognizability, and scarcity (Van der Staak, 2013). At this moment, the number of national monuments is 61.827 of which 30.263 non-residential (RCE, 2020).
2. *Provincial monument* – A provincial monumental status can be appointed by a provincial body. All provinces of the Netherlands have the ability to do so, but only two provinces have done so: Drenthe and Noord-Holland (Van der Staak, 2013). The guidelines and rules for appointing a building as a provincial monument differ per province in terms of extensiveness. The benefit of a provincial status is that the building is eligible for financial support during renovation, restoration and reuse of the building, supported by a preservation and archeology department (NL: Monumentenzorg).
3. *Municipal monument* – the status of municipal monument is dependent on the issuing municipality due to the lack of a national guideline. Every municipality is free to draft a guideline as detailed or general as they would like to (Van der Staak, 2013). However, the basis for these guidelines is the same. The guideline for larger municipalities exists out of a valuation of the architectural, urban contextual and cultural-historical values, accompanied by a list of instructions on how to interpret each valuation and appointment. For smaller municipalities, a description of the terms and conditions suffices.

A monumental listing brings benefits and disadvantages, depending on the type of listing. A national monumental listing restricts the possibilities of change of the building, since modifications are contrary to the Heritage Act (Erfgoedwet, 2015). “Breaking down, disruption, moving or changing of a protected monument, or repairing, using or have it used in a way that endangers or disfigures the building” is prohibited by law (art. 4.4 Erfgoedwet, 2015). This limits the architectural possibilities and changes to the structure, characteristics and layout of the building, possibly making it unattractive for parties to collaborate on such buildings.

The monumental listing does have financial benefits as opposed to non-monumental buildings. A national monumental status gives the right for subsidy and funding opportunities, as well as financial support during the reuse process and construction works. In municipal listed monuments, the municipality offers a mandatory maintenance subsidy to take care of the status of the building during its use (Van der Staak, 2013, and personal communication with Van Kempen, 2020). However, a municipal monumental status does not mean that the duties and financial obligations are less hard to deal with than for national monuments (personal communication with Van Kempen, 2020). The mandatory maintenance subsidy for municipal monuments requires more effort and accountability from the owner or developer to take care of the heritage building.

The moment of allocation of the monumental listing is crucial in the perception of benefits and disadvantages. If the listing is announced before the reuse process, parties can early on consider all the boundaries and opportunities of the act (Van der Staak, 2013). The influence of the listing can be taken into account during valuation of the building and during the reuse process (in terms of management of time, budget and quality for example). Early announcement of the monumental listing can also act as an incentive for reuse since its economic value is considerably higher with a monumental status. If the listing is appointed during the reuse process, the restrictive regulations do not outweigh the financial benefits and is thus not beneficial for the project.

And last but not least, the monumental listing brings a level of status and prestige. This is especially seen in the involvement and interference of local residents and their benevolent attitude towards developments. This status is disadvantageous for interested parties in buying the property, as they might lose interest or request a relatively low price for the sale (Van der Staak, 2013).

Local instrument: Zoning plan

A municipality can assign functions or possible functions for each plot of land in a zoning plan (NL: bestemmingsplan). This allows for a strict separation of functions that do not collide with each other in terms of noise- and odor disturbance, hazardous substances and traffic, and creates a stable environment in which it is clear what may or may not be changed in the environment. In these plans you can also find the maximum building height, size and location of a building. This plan is binding for everyone, including the municipality itself.

In the case of adaptive reuse, the function of a building is likely to be changed as opposed to the function that is listed in the zoning plan. This requires to apply for a change of zoning (NL: bestemmingswijziging) that is necessary when the current use is not desirable or an opportunity arises from an external party. In the case of a religious building, there is a lower chance that a change of zoning is necessary, as most religious buildings are marked as *special or social function* which many new functions will fit into as well. The case is different for industrial, residential or public functions (Van der Staak, 2013). The total trajectory to change a zoning plan takes at least twelve weeks and is possible to be declined. This has to be considered during the initiation phase and planning of a reuse project.

Local instrument: Environmental permit

In the case of major changes to a building, a developing party has to apply for an environmental permit. The environmental permit (NL: omgevingsvergunning) comprises permits for construction works, renovations, demolition, flora and fauna, and activities in areas with scenic and cultural-historical value (Ministerie van Infrastructuur en Waterstaat, 2020). Major changes are inevitable in adaptive reuse as a new function requires changes to the layout or construction and new building standards require major modifications to get up to date (Van der Staak, 2013), thus applying for an environmental permit is inevitable. The municipality has a legal period of eight weeks to judge the application and has the possibility to extend this period with another six weeks.

3.1.4. The adaptive reuse process

According to Winch (2010), it is crucial to examine the process to manage effectively. Proper knowledge of what the adaptive reuse (AR) process entails will help to improve the process at the end of this research. However, the AR process is difficult to define and cut down to single elements. This is because the reuse field shows similarities with many other specialist areas, depending on the context, project, and

building (BOEi, 2009). These areas are complex enough in itself already, such as project development (commercial), building technology (restoration and renovation), politics (procedures and support base), values (incentives), marketing (inventing and selling), design (concept development and innovation), and so on.

A few studies have tried to identify how the AR process looks like in stages or phases, summarized in table 2. “By definition, reusing listed building is a development activity” (Kurul, 2003). The AR process is therefore very similar to regular development activities. Both processes (new-build and reuse) show multiple similarities and consist of some kind of initiative phase, a preparation phase with a program- and feasibility study, a design phase, execution, delivery and management (Andriessen, 2007).

Table 2: stages of the adaptive reuse process, summarized from multiple sources as indicated in the first row.

| Nozeman et al. (2008) | Andriessen (1999) | Bond (2011) | Kurul (2007) | Pallada (2017) | Vervloed (2013) |
|------------------------------|--------------------------|---------------------------------|---------------------------------|-----------------------|------------------------|
| <i>New-build</i> | <i>Reuse</i> | <i>Reuse</i> | <i>Reuse</i> | <i>Reuse heritage</i> | <i>Reuse heritage</i> |
| Initiative phase | Initiative | Market feasibility | Initiation | Idea forming | Initiative |
| | Definition | | Emergence of the initial scheme | Refining ideas | Research reuse |
| Development stage | Design | Design | Pre-application negotiations | | Feasibility |
| | | | Planning application | Design | |
| | Design | Financing | Design detailing & tendering | Contract negotiations | |
| Pre-construction | Regulation | Construction, marketing & sales | Preparation and execution | | |
| Realisation phase | Realisation | | | Construction | Execution |
| Exploitation phase | | Aftercare | | | |

What differs AR processes from new-build processes, is (1) the element of thorough research at the beginning of the process, and (2) the uncertainty during the initial stages of the process. The initiative and preparation phase of an AR process are most distinct from a new-build process and are in essence more difficult as can be seen in figure 9 (Pallada, 2017).

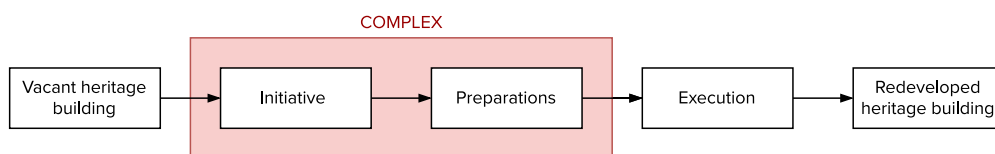


Figure 9: complexity of the AR process (Pallada, 2017)

Working with heritage building requires stakeholders to consider the obliged procedure from the government (Vervloed, 2013). This means that the building should undergo a thorough value assessment about subjective dilemmas like cultural- and historical values versus objective values like profit. Monumental listed buildings are subject to national laws and regulations during the initial stages of the process (Vervloed, 2013). These types of trade-offs, considerations, and thorough research appear in the beginning of the process.

The thorough research is necessary because of the restrictions and requirements of working with an existing building and environment. This includes, for example, a market feasibility study, stakeholder analysis, value assessment, and research into the building and fabric conditions. Dealing with heritage brings more complexity into the process than new-build, since there are more stakeholders (i.e. preservation analysts), specific required expertise, more regulations, and more (financing) creativity (Bond, 2011). Adaptive reuse of heritage requires research to holistically analyse the values, characteristics and potentials of the building, especially so for listed monumental buildings (Misirlisoy &

Günçe, 2016). During the design phase, thorough research into the condition of the building and fabric is necessary to avoid later surprises during executions, and to make sure the building fits the intended use (Bond, 2011; Dyson et al., 2016; Langston, 2011; NRP, 2019). The effort and time that needs to be put into the specific types of research is what substantially distinguishes AR processes the most from new-build processes (Kurul, 2003).

Last but not least, the instruments that were described and discussed in 3.1.3. *The Dutch heritage context* are part of the adaptive reuse process. These instruments will have an appearance during the process and become activities that the stakeholders have to deal with.

3.1.5. The basic elements of AR processes

Now we know that the first stages of an AR process are what makes it so complex, it is possible to define the tasks and activities in those stages. The activities and tasks (hereafter referred to as elements) of the AR process are defined by two main studies. Pallada (2017) summarized multiple studies that focus on the activities of AR and placed them in a sequential model, from 'idea forming' up to preparation and execution (figure 10). Some AR process elements are different from regular new-build processes, show in blue in the figure. An example of such an element is the preliminary assessment of the adaptation potential, where instruments like *Herbestemmingswijzer* (Hek, 2004) and *AdaptSTAR* (Conejos, Langston & Smith, 2013) assess the reuse potential of a building in terms of function, alternatives, or design. Later in the process, the input from experienced professionals is required to speed up the process. The initiation phase overall takes more time and effort to conduct elaborate research before a final design can be made (Slits, 2017).

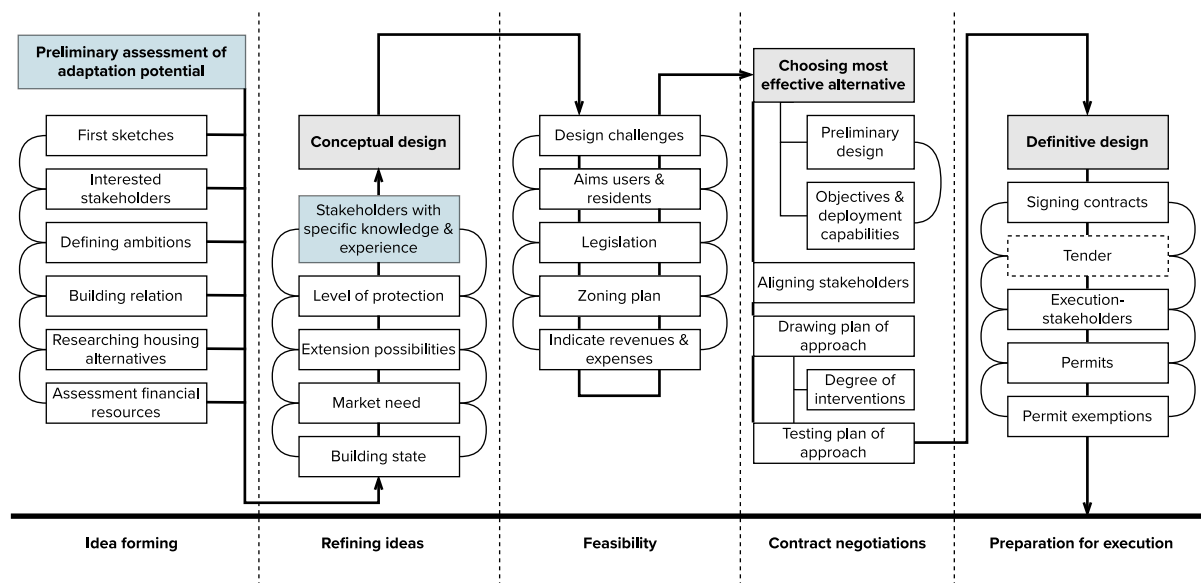


Figure 10: the general sequence of adaptive reuse processes of heritage buildings (Pallada, 2017).

Vervloed (2013) did a similar thing, but focused on the aspects of national monumental listed buildings and the formal tasks that come with the laws and regulations of heritage. The elements are based on the Monument Act that was founded in 1961 (more can be found in 3.1.3. *The Dutch heritage context*) (Vervloed, 2013). A national listed monument requires the involvement of the CHA (Rijksdienst voor het Cultureel Erfgoed) and monument committee (monumentenzorg) to protect the building from radical changes.

The Monument Act obliges to provide two documents during the project that are not applicable for new-build projects. A national monumental listed building comes with a brief legal document of the listing (NL: redengevende omschrijving) that describes the recognition of the listing. The policy requires that the description will be extended with the values of the building to give an impression of its potentials to interested parties (Vervloed, 2013). Once a party decides to start developing the building, the act also requires to conduct a building historical research (NL: *bouwhistorisch onderzoek*).

The studies by Pallada (2017) and Vervloed (2013) are similar in how they defined the AR process, as well as the type of activities they selected to incorporate in the process models. Their studies are based on the literature that is summarized in table 2, and were able to draw a conclusion in the form of a process model. Both studies have produced a similar overview of the process but with different wording and focus (Pallada on organisational structures and Vervloed on regulatory steps that have to be taken). That is why the two studies, and thus two process models, will be combined into one model in this research. The contextual scope of this process model is based on Pallada (2017) and Vervloed (2013) and is comprised of the following: (1) the building for this type of project is municipally or nationally monumental listed, (2) the listing requires collaboration with public monument departments (monument committee or CHA), and (3) the model explores the first five phases before execution.

The project steps, activities and phasing in relation to its complexity is depicted in figure 11 below. The process model is based on the studies by Pallada (2017) and Vervloed (2013), enriched with other studies that have been discussed in this chapter like Kloek (2015). This model will be used as a writing pad for the process map for reusing heritage that will be designed at the end of this study. This model will also be compared to the reuse processes of the case study projects in chapter 5. *Case study research*. Through the empirical study, this model will then be enriched with the success factors for reusing heritage to show the whimsicality of reuse processes.

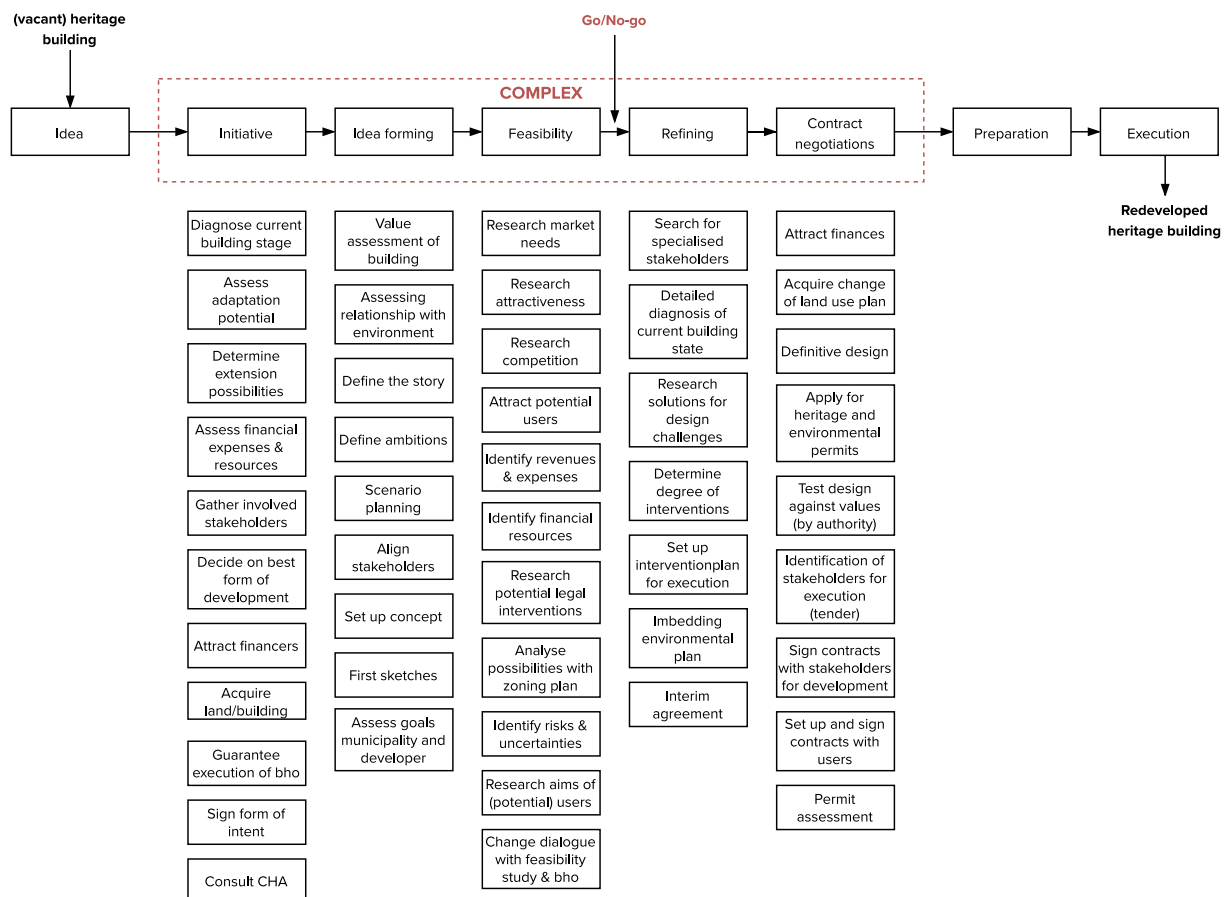


Figure 11: elements of an AR process based on, among others, Kloek (2015), Pallada (2017) and Vervloed (2013).

This research focusses on the adaptive reuse of heritage buildings. The monumental listing of heritage buildings is what makes the adaptive reuse process different than non-heritage reuse projects or general new-built projects. There are activities in the reuse process that are specifically there due to the monumental aspect of the project, such as: value assessment of the building by governmental institutions, the diagnosis of the building state, and the consult and contact with CHA and monument committees.

3.1.6. Key stakeholders

The following section will describe the different stakeholders in the process, how they act and how they might influence the reuse process in the end. As Bond (2011) described, the adaptive reuse process is a perfect example of “an inherently complex and collaborative process”, that requires expertise and trust in one another’s skills and knowledge (p.8). Adaptive reuse projects involve a diverse range of stakeholders that contribute to the plan and cooperate (Miller & Buys, 2008, as cited in Aigwi et al., 2020). Naturally, the relationships between the stakeholders, their influence and their perceptions have an impact on the project outcome.

According to Winch (2010) there are two types of stakeholders: internal stakeholders (demand or supply side) and external stakeholders (private or public side), see table 3. The framework by Winch (2010) explains the contractual relationships between different stakeholders. The internal stakeholders are the actors that are contractually bound to the project and fulfil a role in delivering the building. The external stakeholders have an indirect benefit or loss from the project, intended or not. Next to that, the indirect and direct stakeholders differ in terms of influence, as internal stakeholders have overall less influence on the project than direct stakeholders (Kurul, 2003).

The adaptive reuse process not only requires more steps and characteristics during the process, but also requires more actors and stakeholders to be involved, these can also be found in the table. The new actors are present during the whole process, from initiation up until use and management.

Table 3: stakeholders in the development process based on Winch (2010). The coloured stakeholders are specifically added for the adaptive reuse process based on Bond (2011), Kurul (2003), Pallada (2017), and Winch (2010).

| Internal stakeholders | | External stakeholders | |
|---|---|---|--|
| <i>Demand</i> | <i>Supply</i> | <i>Private</i> | <i>Public</i> |
| Client Financiers Client’s employees Client’s customers Client’s tenants Client’s suppliers Building owners | Architects Engineers Principal contractors Trade contractors Materials suppliers Historic preservation professionals Heritage advisor Planners or managers | Local residents Local landowners Environmentalists Conservationists Archaeologists Non-governmental organisations (NGOs) | Regulatory agencies Local government National government National monument departments (CHA) Local monument departments (monumentenzorg) |

AR stakeholders have conflicting expectations, goals, objectives, resources, beliefs and interests in the project (Aigwi et al., 2020). This is logistically hard to manage, requiring to constantly redefine the project and means (Bond, 2011; Kurul, 2003). Also, adaptive reuse requires stakeholders to act creative, not only the architect that has to design, but just as much the stakeholders on the other end of the spectrum even though this might not be their conventional way of thinking (Velthuis & Spenneman, 2007). This is why team assembly in reuse projects is more important than in new-build projects, to bring specialised knowledge and input in the project (Kurul, 2003).

The chance for success of an adaptive reuse project is dependent on the intention of the stakeholders and their will to preserve a building (Kloek, 2015). In order for stakeholders to collaborate to successfully deliver the project, the adaptive reuse process must include the following stakeholders’ principles (Bond, 2011):

1. The stakeholders must have a diversity of interests. Different expectations, requirements and interest are difficult to manage, but will also bring out the best in the project;
2. Interdependence of the participants. Stakeholders and actors depend on each other’s activities, expertise and works during the process;
3. Enthusiasm, engagement and ambition by all stakeholders throughout the process, especially during dialogues and negotiations.

The success of an adaptive reuse project depends on the characterisation of all the relevant stakeholders that will collaborate within the process. Doing so will benefit the understanding of each other,

collaboration and thus decision-making process during the process timeline (Aigwi et al., 2020). Stakeholders should stay in direct dialogue to avoid conflicts concerning the misunderstanding of stakeholders' interests to increase the chance for success (Innes & Booher, 2010, as cited in Aigwi et al., 2020).

The following key stakeholders repeatedly show up on the literature and are the motive for who to interview in the in-depth interviews. It also explains for whom this research is for and why they would benefit from the redefined reuse process, success factors and process map.

Client/developer

The client is a fundamental stakeholder for construction projects in general and for adaptive reuse projects (Kloek, 2015). A client makes adaptive reuse happen and holds contractual bonds with other parties to bring the project to an execution (Bond, 2011). A client can be a party that takes on many of the stakeholders' roles in a project. In many of the projects for example, the client is also the initiating, financing and catalysing party (Kloek, 2015). The client invests time, money and resources into a project to make it happen (Bond, 2011).

There can be many types of clients, but in general they can be roughly divided into two categories depending on their profit motive and control by the government.

- Private developer, for-profit motive and little control by the government. Examples are homeowners, companies, real estate developers, developing contractors etc.
- Public developer, non-profit motive and controlled by the government. Many of the public clients are restricted (and authorized) by law and jurisdiction (Westra, 2007). Examples are schools, governmental institutions, care institutions, housing associations, etc.

There are however exclusions to this division such as non-profit organisations and foundations, that develop privately but without a profit motive. Housing associations and schools can be classified as semi-public clients (Westra, 2007). Museums are, among others, examples of clients that can be both private and public.

Advisor

An advisor is an external hired party (often by the client) to advise in a specialized area. Due to the specific required knowledge on monumental buildings, adaptive reuse projects often require specialized knowledge. This can be a restoration architect (Kloek, 2015), heritage advisor (BOEi, 2009), building historians, or restoration management supervision (for example). Other advisory parties that are also common in non-monumental building projects are project management bureaus, construction- and installation advisors, tender managers, process managers, and so on.

Investor/financer

Financing a project can be done by many different types of parties. As showed before, a project can be financed by the client, but also by a municipality or other governmental organisation, or external financing party (such as an investor). A governmental organisation or municipality can support a reuse project in terms of subsidies, grants, and incentives.

An investor or financer can be part of a project in two ways: (1) as in investor for a to-be reused building, or (2) as an owner of a reused building (Sprakel & Vink, 2007). Adaptive reuse projects are high-risk investments where the financer or investor has to decide between retain, repel, or reuse (Sprakel & Vink, 2007). This decision often comes up during (structural) vacancy or an economic low tide (such as an economic crisis).

End-user

The end-user of an adaptive reuse project can be a party that is involved in the process from the start, somewhere mid-process, or only after delivery. When a company reuses a building as their office, the client is the same party as the end-user. But it can also be that the end-user is not in any way affiliated with another party. For example, in the case of a development for a housing association, where the end-users are residents that were not involved during the design and development of the project. As was discussed during 3.1.5. *The basic elements of AR processes*, one of the activities during the first stages

of an AR project is to find the end-users when they are not known yet at the beginning of the process. Depending on when they enter the reuse process they have a certain influence on the design and development of the building, without financing the project. If the end-users are not known yet during design and development, parties still have to consider the demands and wishes of the market or possible end-users.

Governmental bodies

There are different types of governmental bodies that are concerned with either the control, financing, regulating, catalysing, or governing of adaptive reuse projects. The following list is a brief list of the most common involved parties:

- The municipality: The municipality is also a fundamental stakeholder of an adaptive reuse project (Kloek, 2015). The municipality also plays a large role in drafting and developing visions and plans for their heritage buildings.
- Monument committee (*monumentencommissie*): every municipality that has one or more national listed monuments is obliged to set up a monument committee in their board consisting of independent experts (RCE, 2009). Permits for the project are issued once the committee(s) approve the design of the project (Kloek, 2015). Important for this committee is the preservation of aesthetics and cultural-historical values.
- CHA (Cultural Heritage Agency): this national governmental body (in Dutch called Rijksdienst voor het Cultureel Erfgoed) is a part of the national Ministry of Education, Culture and Science. It is an organisation focused on developing and implementing policies and research into listed monuments to protect and conserve national heritage sites (Ministerie van Onderwijs, Cultuur en Wetenschap, 2020). The CHA acts mainly as an advisory party.

3.1.7. Key roles

A peek into the case study project reveals that it is possible for a key stakeholder to act in multiple roles throughout the process. In one case (5.4. Timmerfabriek Sphinxkwartier) the municipality acted as initiator, client, user, financier, building owner, *and* project manager at the same time. It does therefore not suffice to describe and assign responsibilities based on stakeholder categories, but rather in terms of their goals and values.

Aigwi et al. (2020) characterized the different roles involved in an adaptive reuse process by identifying their *impact* and *prospects* depending on their interest in the project. The impact of a role is the added value to projects and processes. This ranges from time and resources, to demand and enforcement. The prospects of a role are the goals that they would like to achieve within their role in the project and process.

Doing so led to four key roles in adaptive reuse projects (in no particular order) (summarized in figure 12):

Producer

The producer adds value to the project by drafting and executing the project plan (Aigwi et al., 2020). They are the stakeholders that relate to the question: “who executes the plan?” (Bekkering & Walter, 2009). In adaptive reuse projects, this role is mostly done by heritage building professionals with experience and expertise in working with monumental buildings. This role is hired by either the investor or user as client. Producers play a large role in the execution of a project. They aim to deliver the project successfully in order to gain appraisal and acclaim (Aigwi et al., 2020). They are for example the contractor, project managers, architect, sub-contractors, interior designers, development advisors, landscape designers, urban producers, etcetera.

Investor

The investor role adds value to the project by bringing in monetary resources to make the project happen (Aigwi et al., 2020), and answer to the question “who makes the resources available?” (Bekkering & Walter, 2009). The investor funds the project in exchange for profit or an improved well-being of either the users and/or the entire community. They are overall more business-oriented but the latter is more the case with social parties such as local or national councils who have multiple types of goals to achieve. This role bears the most financial risk in the project (Aigwi et al., 2020). Examples of an investor are the municipality, a private investor, funding organizations, a real estate developer, or a building owner.

Regulator

The regulator adds value to the project by enacting laws and regulations to ensure that the project is complying with relevant regulatory procedures. This can be done in several ways, such as providing information, facilitating developments, granting permission, and reviewing the work (to be) done (Aigwi et al., 2020). According to Mason (2009, as cited in Aigwi et al., 2020), adaptive reuse projects are considered to be successful by a regulator “if it helps accomplish economic, socio-cultural, environmental and functional goals of providing a sustainable regeneration of an era” (p.5). A regulator can be for example a governmental body like the municipality, CHA, or local monument committee.

User

The user adds value to the project by facilitating the demand for new use (Aigwi et al., 2020) and eventually use the result of the project (Bekkering & Walter, 2009). Users are in all forms and shapes. Private companies can seek for new housing, schools can give order to build a new school, private tenants can rent housing in an apartment building, home owners hire an architect to build their dream home, etcetera. They can be present at the beginning of a project, as a client perhaps, or enter the process at the end, when the project was intended to be sold or rented. They range from members of the community, and passers-by, to existing and potential future tenants. The demand of the users is what shapes the looks and design of the building and implement a functional use.

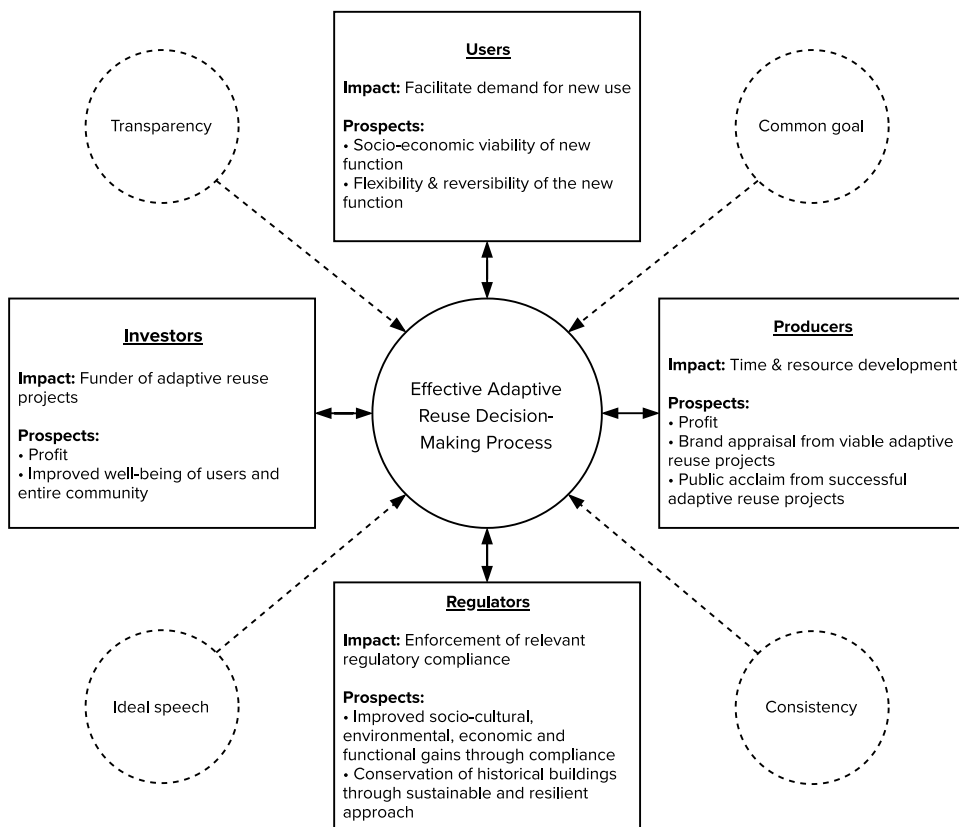


Figure 12: Characterization of adaptive reuse roles and how to communicate and collaborate (Aigwi et al., 2020).

The key in this framework is not to assign names, responsibilities and characteristics to certain parties, but to identify based on impact and prospects. *What value do you (as a party) want to add to the project and process, and what do you want to achieve with your collaboration?* The four roles have similar characteristics as the key stakeholders that were covered before (in 3.1.6. Key stakeholders). However, the difference is that in this theory a stakeholder can fall into different roles.

3.2. Success factors

Now that we know what the adaptive reuse process looks like, we can start to look at the success factors that have an influence on the project and process. This section will try to find the answer to sub-question 4: What is a successful adaptive reuse project and what factors influence the reuse process?

3.2.1. Perception of success

Not every adaptive reuse project is automatically a success. Whether a project is successful or not is difficult to determine since there are different perspectives on what this success means. Every stakeholder will shine a different light on what he or she signifies as a successful project. Since success factors play a large role in this research, the definition of success will have an influence on and shape the type of factors that will be taken along in the research. However, the concept of project success is not universally defined, and professionals and experts in the construction industry have ambiguous definitions (Chan et al., 2004). The definition of success, and thus successful projects, is largely based on who tries to define it.

In adaptive reuse projects there are a number of different types of stakeholders that are either involved in the project or the process. Each stakeholder has its own definition of what success is, how it should be achieved and at what point it is measured. This is closely related to their involvement and influence in a project. To try and draw a definition of success for specifically adaptive reuse projects, one way to start is to define (construction) project success.

3.2.2. The success of (construction) projects

In the field of project management, one theory to determine the success of a project is through three types of success: (1) project management success, (2) product success, and (3) project success (see figure 13) (Bierlaagh, 2018). Dividing success into these three categories means that it is possible to include the view of all levels of stakeholders, from management positions till site-construction workers. All these types of success operate on the level of the market, in other words market success.

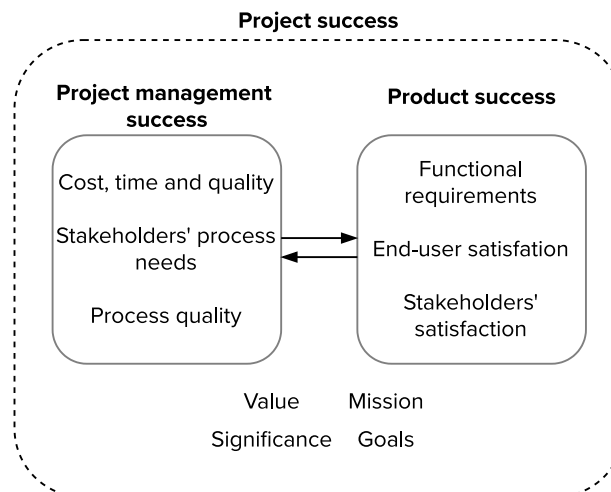


Figure 13: the context of project success (adapted from Bierlaagh, 2018) (own ill.)

Project management success

This type of success takes place in the management of a project and how it is managed (Bierlaagh, 2018). A commonly known perspective of what project management does, is that a project manager effectively and efficiently steers the aspects of time, budget and quality. This is called the Iron Triangle, where the three aspects are managed within a certain set scope (see figure 14) (Atkinson, 1999). In that case a project is considered successful for a manager if the project is delivered within budget, within time, within quality standard in the predefined scope (Winch, 2010). According to Cooper et al. (1998), a successful project is achieved when all external and internal resources are effectively utilized and coordinated.

This type of success also included process perspectives. From a process management viewpoint, success is based on the three principles of controlling, steering and understanding (NL: *beheersen, besturen en begrijpen*) (Bekkering & Walter, 2009). If the process manager can properly handle the three aspects and integrates them into the process, it is a managerial success (Bekkering & Walter, 2009).



Figure 14: the iron triangle, based on Atkinson (1999) (own ill.)

Product success

Product success is the type of success that is visible for outsiders of a project or development but is dependent on the goals and objectives that were set at the start of the project. Product success is thus expressed in (functional) requirements and (end-user and stakeholders') satisfaction (Al-Tmeemy, Abdul-Rahman, & Harun, 2011). According to Bullen & Love (2011a, p.46), "an adaptive reuse project needs to ensure that all stakeholders acquire benefits if it is to be a success".

Smit, Baarveld and Dewulf (2013) argue that the perception of success for contractual stakeholders relates to the intended outcome of the project, and how valuable this outcome is for the organisation. There is a trade-off between the effort organisations are willing to put into a project and their expected outcomes (Bos-De Vos et al., 2015). The result of a project is labelled successful if the intended outcomes are achieved and worth moving their resources and people for in a reasonable amount (Smit et al., 2013). Once the goals of stakeholders are met, a building is considered to be delivered successfully (Dyson et al., 2016). Preservation professionals, for example, look at success from a historical view, labelling a project successful when as much of the characteristics and defining features are preserved as possible (Bond, 2011).

During the initiation phase, stakeholders propose a product, a reused building, so that they can make use of an opportunity or to fulfill a wish, need, or demand (Bierlaagh, 2018). In order to put these requirements of the stakeholders in effect, the delivered building has to be functionally correct and fulfill the goals, wishes and demands of end-users (Bierlaagh, 2018). According to Adams and Tiesdell (2013), the end-users can see if a project was a success based on their experience of the place, the activities that are organised, the aesthetics and feelings of the building and area, and whether or not the safety and comfort have increased.

Part of product success is the ability to minimize client surprise (Winch, 2010). To do this, stakeholders have to face two challenges: (1) manage an appropriate briefing process and drafting a precise project mission, and (2) properly planning and executing the realisation of the briefing and mission on site (Winch, 2010, p.207). Winch (2010) depicted this challenge of client surprise in figure 15. The lower left triangle in the figure represents an adapted version of the iron triangle from figure 14, where a project manager has to manage according the objectives of budget, time (programme/schedule), and quality (conformance (to intention)), which he refers to as process integrity. Where project management success was expressed in process integrity, product success is expressed in product integrity, which is the upper left triangle (Winch, 2010). This is the ability to create appropriate intention of quality. One way to do this is to identify the success factors to possible minimize client surprise, since these factors give an insight in how the process will go and how to get to the successful outcome that clients (or other stakeholders) wish for.

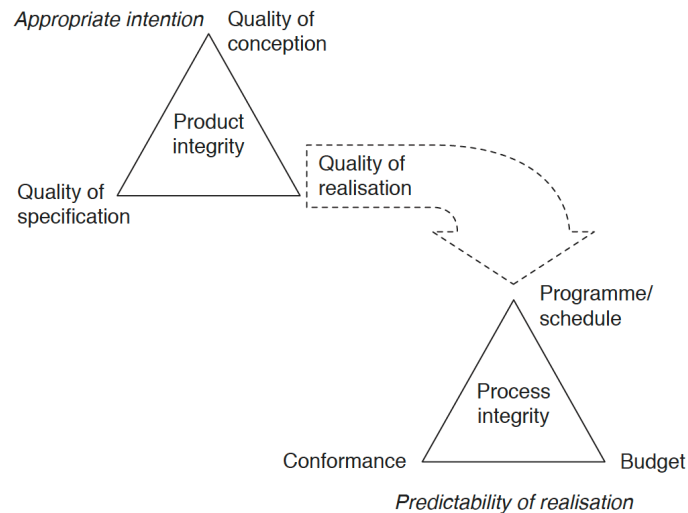


Figure 15: Product and process integrity in construction (Winch, 2010, p.208)

Project success

When a project achieves project management success and product success, the project in itself is considered to be a success (Bierlaagh, 2018). This means that “the right product was completed within the constraints in terms of process quality and schedule, budget, and quality” (Bierlaagh, 2018, p.34). Project success is therefore dependent on “the right people having the right information at the right time (Cooper et al., 1998).

The success of a project is often based on the plan as a whole and all the different aspects separately, inevitably this brings subjectivity in the judgement of success (Lans & Volker, 2008). This subjectivity is expressed in terms such as significance and value. From a policy perspective, successful projects are the ones that “respect and retain a building’s significance [...] and add value for the future” (DEH, 2004, as cited in Bullen & Love, 2011a).

All in all, a successful project requires attention for the process aspects and definition of the mission and goals (De Bruijn, Heuvelhof, & In ‘t Veld, 2010), but also requires the judging actor to step into the viewpoint of different stakeholders in and out of the project.

Market success

According to Bierlaagh (2018) and Al-Tmeemy et al. (2011), project success (and thus project management and product success) is always accompanied by market success where one influences the other and vice versa. Market success is best described as everything that goes on after delivery of the project and where the stakeholders have to use and experience the building. Frequently delivering a project successfully increase the market success of a (developing) organisation. If they perceive market success, “stakeholders build a positive reputation, produced profit, gained knowledge and maybe even market share” (Al-Tmeemy et al., 2011, as cited in Bierlaagh, 2018, p.34). An organisation with market success is more likely to produce projects with success, so both complement each other.

Market success is difficult to influence because it is not something that can be changed for one project. Therefore, market success is out of scope for this research and is not considered during the rest of this research.

3.2.3. How to define success

Which goals need to be met by all stakeholders is best to discuss and communicate before starting the project (Hobma, 2011). As mentioned before, the definition of success is different for each stakeholder and its viewpoint. The following five questions can help stakeholders to define success for their project and when this success is achieved:

1. *“Successful process or successful product? Success can be found in the process (teamwork), the product (quality and satisfaction of the building), and in the project (the development);*
2. *Success for shareholders or stakeholders? The perspective of the judge, who decides whether or not success is achieved, can differ per actor;*
3. *Which criteria for success do we wish to adopt? What criteria are found to be important for the judging actor, and what do they entail;*
4. *When do we measure success? The moment of measuring can bring ambiguity in the valuation of success;*
5. *Are we successful when we have achieved our goals?” There can be explicit and implicit goals in the project, and both can change during the process (Hobma, 2011, pp. 219-222).*

3.2.4. Success for AR projects

For the sake of this research it is important to define success in adaptive reuse projects. As mentioned before, adaptive reuse projects differ in process (3.1.4. *The adaptive reuse process*), stakeholders and agents in that process (3.1.6. *Key*), their drivers to start such a project (3.1.2. *Drivers and challenges*), and the instruments to deal with the project (3.1.3. *The Dutch heritage context* and 3.3.3. *Management toolbox*). Simply adopting the theory for project success is therefore insufficient and does not cover all relevant aspects.

The success of an adaptive reuse project is valued not only within clearly defined aspects such as project management, product, project, and market success, but also in less obvious aspects. Adaptive reuse, and heritage in particular, has some values that cannot be found in new construction projects (Vanderbroucke, 2020). For example: value to the community (Dyson et al., 2016), cultural- and historic value contribution to a place (Vanderbroucke, 2020; Wilkinson et al., 2014), value of experience (Benraad & Remøy, 2014), ensemble- or urban development value, flawlessness, recognizability, rarity (Vanderbroucke, 2020, p.22-28), and “virtue, meaning principles, traditions, ideals, meaning, conception, and decency” (Persoon, 2019, p.28). Valuing heritage is difficult because of its long lifetime, with more significance than only economic or functional characteristics (Vanderbroucke, 2020). Adaptive reuse therefore requires its own definition of success that acknowledges the project success theory but also considers the subjective values of reusing heritage.

The success of an adaptive reuse project is a scale in which every stakeholder puts different values on each side of the scale. For the CHA, the value of heritage is mostly expressed in terms of academic and cultural historical criteria and thus finds preserved historical elements and intactness to be part of the success scale (Bazelmans, 2013). But on the other hand of the scale is a financier who values short-term economic value, or an investor who values long-term economic value. Each stakeholder goal has different weights, or aspects, as a result. When drafting a definition of success for AR projects it is important to consider owners, users, and external stakeholders, as these tend to be left out in most valuations of success (Bazelmans, 2013; Bekenkamp, 2008).

Van der Staak (2013) drafted a definition of success for reusing religious buildings. The definition describes and includes five aspects that are indicated in brackets:

Definition of success for reusing religious buildings

“The adaptive reuse of a religious building is successful if it gets a worthy function with social public support (2), that can financially support itself (1), and is future proof (1, 2). The reuse of the church building is done with respect for the characteristic (and if any, monumental) elements of the building (3). The legal and communicative aspects have a supporting role in the reuse process (4, 5)” (Van der Staak, 2013, p.71).

The five aspects that are addressed in this definition are:

1. *Financial aspect:* as was mentioned in the differences between AR and new build projects, the financial questions at the beginning of the process requires focus and thorough research for the reuse project to be financially healthy (3.1.5. The basic elements of AR processes). Once you can prove the financial viability, reusing becomes a viable strategy and you can proceed into the next steps of the reuse process. In the case of adaptive reuse, projects with a negative financial result are somethings continued with help of national or municipal financial support due to their social values and benefits (Van der Staak, 2013).
2. *Functional aspect:* the new function of a heritage building should be worthy of the building and deemed acceptable by all stakeholders. For example, a religious building requires an appropriate function to adhere to the wishes and demands of local residents and concerned dioceses (which is the case in one of the case study projects). Choosing a function for a reuse project requires thorough research in the following two aspects: (1) is the new function future proof, and (2) do you want to continue the social contribution to the surroundings (Van der Staak, 2013)?
3. *Building aspect:* this aspect deals with the design and construction works. It is important that the reuse activities are done with respect for the building, identity, and cultural-historic values. Both design and construction works should be done while retaining the values on which the decision to reuse were based (Van der Staak, 2013).
4. *Communicative aspect:* the stakeholders of a reuse project should communicate properly and effectively with respect for each other's wishes and demands. It is therefore key that all stakeholders share information, questions, doubts, and problems in a timely manner to minimize surprise. Open communication ignites trust and willingness to cooperate which possibly shortens the overall project time (Van der Staak, 2013).
5. *Legal aspects:* legal issues could challenge the reuse process in terms of time, budget, and effort. All stakeholders, internal and external, should work towards a smooth legal process to influence the process beneficially. This could for example be minimal objections to the zoning plan change, timely application and grant of permits, and a design with minimal change to the provisions of the monumental listing (Van der Staak, 2013).

What is still missing in the definition by Van der Staak (2013), is the cultural-historical value that was so important specifically for heritage projects. That is why the definition should include a reference to the need for value retention and preservation of history (BOEi, 2009). The moments and choices in the initiative phase are also crucial for the success or failure of a project (BOEi, 2009; Pallada, 2017). It also became clear that the success of a project is largely depending on the expectations and satisfaction of end-users, stakeholders, and clients (Bierlaagh, 2018). All these elements are part of a proper preparation of the reuse project and process. This research therefore proposes another aspect of success to the five aspects of Van der Staak (2013), being: (6) preparatory.

The definition below is the adapted definition by Van der Staak (2013), added by principles from the value of heritage, the definition of project, project management, and product success, and the importance of the initiative phases of a reuse project, grouped together in the sixth aspect: *preparatory*. Adaptive reuse success is then achieved when each of the six aspects are dealt with.

Definition of success for reusing heritage

The adaptive reuse of heritage is successful if it gets a worthy function with social public support (2), that can financially support itself (1), and is future proof (1,2). The reuse of the building is done with thorough research **(6)** and respect for the characteristic (and if any, monumental) elements of the building (3). The design and construction work of the new building retain the subjective values and satisfies as much of the internal stakeholders, end-users and external stakeholders **(6)**. The legal and communicative aspects have a supporting role in the reuse process (4,5).

(1) financial (2) functional (3) building & location (4) communicative (5) legal (6) preparatory

3.2.5. Failure

Studying success and success factors is not complete with a research into failure and failure factors. A failure factors is a factor which promotes the possibility of failure (Geiger, 2019). In that way a failure factor is doing the exact opposite of a success factors, as those promote success (figure 16). A failure factor increases the chance for a negative impact and higher probability for risks (Geiger, 2019). The presence of failure factors decreases the chance for a unique opportunity but exposes the project to more risks.

Identifying what went wrong in a situation, process or project is valuable for future projects as it tells you something about what to avoid in future scenarios. It is therefore possible to turn failure factors into success factors. It is highly likely that studies and research that report on success factors are partly based on failure factors (or lessons learned), or failure factors turned into success factors. Examples of this can be found in the study by Rispoli and Organ (2019) where the challenges that they describe match the success factors in the studies, see the selection of examples in table 4.

Table 4: interlinkage between failure- and success factors in the literature

| Failure factor/challenge | Success factor |
|---|--|
| “Communication between parties” (Rispoli & Organ, 2019, p.8) | Communicating and engaging with stakeholders properly and regularly with the right means of communication (Nwachukwu et al. (2017) |
| “Lack of appropriately skilled building professionals” (Rispoli & Organ, 2019, p.8) | Experienced professionals (BOEi, 2009; Volker, 2011) |
| “Loss of historical value” (Rispoli & Organ, 2019, p.8) | Preservation of history and culture (NRP, 2015; Tan et al., 2018) |
| “Uncertainty of costs” (Rispoli & Organ, 2019, p.8) | Phased financing (BOEi, 2009) & integrated design and calculation (Volker, 2011) |

Success factors are evidently the opposite of failure factors in many cases, which interlinks success and failure of a project (figure 16) (Geiger, 2019). This means that failure factors can give an indication of what success factors are missed during a project.

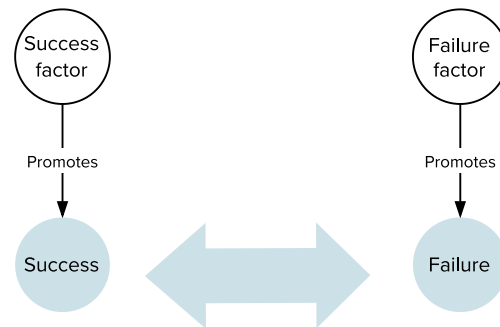


Figure 16: interlinkage between failure and success and how they are influenced by success and failure factors (Geiger, 2019).

3.2.6. The definition of success factors

Success factors are matters that have an influence on the success of an adaptive reuse project (BOEi, 2009). There are multiple explanations of what these factors should look like or what they are about. Baccarini (1999) argues that success factors are necessary to achieve a mission, thus success. Kurul (2003) steps back from the determining aspect of success factors and argues that success factors only “enhance process performance and project output” (p.7). The presence of certain success factors is, according to Kurul (2003) only the basis for of a good functioning reuse process, which increases the chances of success. Dyson et al. (2016) agree with this, and find that success factors provide knowledge on how to guide a project to success and influence their successful delivery. Hobma (2011) argues that a

success factors is not determining for success, but its presence promotes success and its absence will promote failure. “the presence of a success factor does not guarantee success” (Hobma, 2011, p.223).

What all these definitions have in common is that there is a difference between a success factor and a criterion for success. A success factor is, according to the above definitions, a criterion that promotes success (the first), rather than a criterion to measure the success (the latter) (Hobma, 2011). Hobma (2011) defines three levels of success factors: context variables, veto criteria and critical success factors. In table 5 you can find each type of factor and their ability to be influenced and steered by stakeholders.

Since the context variables are not possible to be influenced by actors and is dependent on external factors, these factors will not be taken along in the development of the process map in this research. Veto criteria however promote success (Geiger, 2019), thus these types of factors will be taken along in the development of the process map.

Table 5: types of success factors, based on Hobma (2011)

| Success factor | Description | Influenceability |
|--------------------------|---|---|
| Context variables | Background variables or exogeneous factors that are based on the context of the project (i.e. political and economic climate, cultural background and changing legislation). | Not possible to be influenced by actors |
| Veto criteria | Necessary factors but not sufficient for success. These factors are able to veto the whole project (i.e. timely acquisition of land, project scope and economic feasibility). | Can be influenced by actors |
| Critical success factors | Progression criteria with major impact on the success or failure of the project (i.e. trust, leadership, reduction of complexity). | Difficult to influence by actors |

3.2.7. The success factors of reusing heritage

The success factors that need to be processed into the process map are determined by consulting different types of literature sources. The focus area of these studies differs per study. Even though every adaptive reuse process is unique and dynamic, there are success factors that keep on re-appearing when analysing large groups of literature and case studies (BOEi, 2009).

All success factors are grouped together in themes and categories that can be found in adaptive reuse projects. The categories are grouped by three large themes that are based on the three types of success: project management success, product success, and project success (Al-Tmeemy et al., 2011). Each of these themes are then divided into the six aspects that describe the success of an adaptive reuse project (Van der Staak, 2013). These categories are based on the categories that are used by previous studies and by an iterative process grouped together and put under the corresponding theme. The themes and categories can be found in figure 17.

The success factors that are listed here are the ones that appeared in at least two different sources that specifically described the success of renovation and/or adaptive reuse projects from the last 12 years. The complete list of success factors can be found in *Appendix F – Success factors*. Factors that described the same phenomenon are put together under the same designation. Each factor will be explained shortly below and the sources they are coming from.

The list of success factors from figure 17 will be taken along in the next phase of this research by discussing them during the in-depth interviews with stakeholders from the case studies to find out which factors are deemed the most important. After the most important factors will be placed in the general adaptive reuse process as was unravelled in 3.1.4. *The adaptive reuse process*.

| Project success | | Project management success | | Product success | |
|---|--|---------------------------------|--|---|---|
| Legal | Preparatory | Financial | Communicative | Building & location | Functional |
| Independence of governmental incentives | Early involvement of a construction team | Integrated design & calculation | Create a document with ambitions & missions | Advantageous space layout | Consider the interest of the wider community |
| Timely acquisition of necessary permits | Experienced professionals | Phased finances | Make an inventory of all stakeholders | Status of the neighbourhood and public facilities | Make use of market demand and show market courage |
| Understanding statutory requirements | Early research in building & fabric condition | Innovative financing | Early consultation of interest groups | Technological difficulties are well treated | Innovative design |
| Determine the extent of technological changes permitted | Start quickly | | Early involvement of end-user | Retaining landmark, streetscape & views | Innovative green solutions |
| Find political support | Create public support base | | Engaging local businesses and communities | Minimal change | Functional changeability & flexibility |
| | Clear brief that fits the capabilities of the building | | Communicating properly and regularly with right means of communication | | Preservation of history & culture in design |
| | Understand historical and cultural significance | | Collaborating at every stage | | Economic viability of new use |
| | | | Trust expertise | | Good fit between old & new |
| | | | Maintain ambition and enthusiasm level | | |

References

BOEi (2009)
Dyson, Matthews & Love (2016)
Fleuren (2013)
Meurs & Steenhuis (2017)
NRP (2015) & NRP (2019)
Nwachukwu, Udejaja, Chileshe & Okere (2017)
Rispoli & Organ (2019)
Saris, Van Dommelen & Metzke (2008)
Tan, Shuai & Wang (2018)
Volker (2011)

Figure 17: themes and categories of the success factors in an AR project (own ill.)

Project success factors

Legal:

1. Independence of governmental incentives
Governmental incentives are financially beneficial, but often come with more monitoring checks and an extra stakeholder with high power and influence (BOEi, 2009; Volker, 2011). This means that the overall process can be slacked due to the dependence of the project on the government. However, if the incentive is solely financial, Tan et al. (2018) argue that it will only benefit the driver of adaptive reuse. In that case, the government is a facilitating body, rather than a controlling body which would benefit the overall process (BOEi, 2009).
2. Timely acquisition of necessary permits
Adaptive reuse always involves change of function, which mostly requires a change of the zoning plan (Tan et al., 2018). Regulatory processes are often slow and thorough, meaning that the application is considered to be crucial in the planning of the project (Nwachukwu et al., 2017). The fact that stakeholders know this implies that they accept the “regime” of the governmental bodies and statutory boards (Nwachukwu et al., 2017).
3. Understanding statutory requirements
Understanding the statutory requirements of actions, applications, obligations, and opportunities at the beginning of the process reduces the chance of surprises during the process (Nwachukwu et al., 2017).
4. Determine the extent of technological changes permitted

Every adaptive reuse project should inquire on the regime that the project must comply to by determining the extent of technological changes that are permitted within this regime, the boundaries (Nwachakwu et al., 2017). This shows what is not allowed to change, but also what opportunities there are within these boundaries and the acceptability of the project by the governmental bodies. If the project complies with the regime but explores the possibilities within the boundaries, it is better able to meet policy requirements and granted approval to start (Nwachakwu et al., 2017). Dyson et al. (2016) argues that collaboration with the heritage council (or other governmental body) helps to determine these boundaries. Seeking early advice from such bodies is seen as critical to the success of project to overcome bureaucratic obstacles (Dyson et al., 2016).

5. Find political support

If the project is not driven by the municipality, a political supporter or ambassador can act as a project leader that fights for a successful reuse project. A political ambassador translates the project in a “administrative” language, and thus increase the chance for political approval of the project (BOEi, 2009; Meurs & Steenhuis, 2017).

Preparatory:

1. Early involvement of construction team

By creating the plan and design of the reuse project in collaboration with the construction team, you can reduce the amount of surprises during execution (BOEi, 2009). Involvement of the construction team “collaboration and knowledge exchange” is brought to the table early on in the process and highlights (technical) defects early on in the design process (Volker, 2011, p.8). The type of contract highly influences the involvement of the construction team and thus requires early research into the contractual possibilities (Fleuren, 2013). There are multiple types of contracts possible to involve the construction team in the early phases of design and refining, one frequent Dutch type is a *Bouwteam*.

2. Experienced professionals

Rispoli and Organ (2019) already argued that a lack of skilled building professionals with knowledge of renovation (and thus adaptive reuse) will slack the overall process and quality of the outcome. “There is no substitute for relevant practical knowledge, you cannot underestimate experience” (Dyson et al., 2016, p.53). By working together with (some) experienced professionals, stakeholders can learn and benefit from the skills and knowledge of others. This inevitably increases enthusiasm and perseverance (BOEi, 2009). Volker (2011) argued that experienced professionals also make it easier to focus on sustainability aspects and technologies.

3. Early research of building and fabric condition

The technical status of the building is different per building and has a direct effect on the total costs and feasibility of the reuse project (BOEi, 2009; Fleuren, 2013; Tan et al., 2018). Early insight into the details of the building and fabric will therefore provide more cost certainty and identify the limitations of the building (BOEi, 2009; Dyson et al., 2016). Identifying the underlying latent condition of the building and fabric will minimize the surprises during the process for the project team (BOEi, 2009; Dyson et al., 2016).

4. Start quickly

By starting quickly, the plan can grow organically which has the effect that the process is more effective as it allows room for opportunities (BOEi, 2009). This minimizes the chance that stakeholders might retreat in uncertain, long lasting discussions (personal communication with Van Kempen, 2020). However, it is important to note that starting quickly does not necessarily mean that the total project time is shorter, as this might have the effect that decisions are rushed and not well substantiated (NRP, 2015).

5. Create public support base

Public support is crucial to get consensus and minimize the resistance from outsiders (BOEi, 2009; Tan et al., 2018). “Without support, there is only suspense” (BOEi, 2009, p.17). Creating support can be done by temporary use of the vacant building during the reuse process to put the building in positive light (BOEi, 2009).

6. Clear brief that fits capabilities of the building

A clear brief should fit the building in terms of layout, technical capabilities, surroundings and so on to avoid that the project has to be pushed into the building (Dyson et al., 2016). This increases

the ease of the project and feasibility (Dyson et al., 2016; Fleuren, 2013). “If the right building has been selected, with a good match to the functional requirements of the brief, you don’t need to do much to make them really fantastic” (Dyson et al., 2016, p.53).

7. Understand heritage and cultural significance

Thorough research into the heritage and cultural significance of a building helps the design process and integrity of the final design by retaining as much of the building as possible (Dyson et al., 2016). Designers play a large role in putting this research to work by integrating new design with the existing building (Tan et al., 2018).

Project management success factors

Financial

1. Integrated design & calculation

The involvement of engineers during the whole process has the benefit that it is possible to apply an integrated design approach (Volker, 2011). Designing and calculating simultaneously creates realistic solutions (BOEi, 2009). This ultimately leads to more cost certainty (Nwachukwu et al., 2017).

2. Phased finances

The uncertainty of costs is a prominent failure factor when working with older buildings (Rispoli & Organ, 2019). By phasing the finances, stakeholders have more insight into the costs and payment terms, less uncertainty, less risk, and more creative financial opportunities (BOEi, 2009).

3. Innovative financing

New types of financing (e.g. PPP contracts) can create opportunities for continuing adaptive reuse projects as these types of projects come with a higher financial risk than new-built projects (Tan et al., 2018). These new types of financing possibly encourage and attract financing sources (Nwachukwu et al., 2017).

Communicative

1. Create a clear document of ambitions and missions

A document of ambitions and missions can act as a guiding line throughout the project and describes the framework in which the plan can act (BOEi, 2009). Stakeholders can use the document to monitor and determine the next steps in the process, especially in the beginning (Volker, 2011).

2. Inventory of all stakeholders

Stakeholders have to be analysed on their power, urgency, proximity, influence, goals and wishes. Doing so creates understanding and demarcates the responsibilities (BOEi, 2009; Fleuren, 2013). The higher number of diverse stakeholders in adaptive reuse projects increases the need for such an analysis (Nwachakwu et al., 2017). Doing so decreases the amount of resources that are needed to solve conflicts (Nwachakwu et al., 2017).

3. Early consultation of interest groups

Regular meetings with internal and external stakeholders help to keep all noses into the same direction. This creates more enthusiasm and support within project teams (BOEi, 2009), and creates a sustained relationship with all stakeholders during the process (Nwachakwu et al., 2017).

4. Early involvement of the end-users

The enthusiasm and interest of an end-user can act as a main motivator for the project (Volker, 2011). Their input can help with finding innovative solutions and opportunities, and possibly win them over to rent or buy the building (BOEi, 2009; Volker, 2011)

5. Engaging local businesses and communities

Local businesses and communities can create a connection with the environment of the building. Involving them during the project, by for example allowing temporary use or organizing events, they create commotion and enthusiasm thus creating more support by the environment (Saris et al., 2008).

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7. Communicating & engaging with stakeholders properly & regularly with the right means
The success or failure of a project is partly depending on the (lack of) communication between parties as a form of stakeholder management (Rispoli & Organ, 2019). Regular communication allows for transfer of knowledge and information during the project, especially when done through the right means of communication (e.g. software) (Nwachukwu et al., 2017).
8. Collaborating with stakeholders at every stage of the project:
Success of a project is attributed to the collaboration between stakeholders, so that each stakeholder can take its responsibility (Volker, 2011). One way to reinforce this is to have repetitive interaction (Fleuren, 2013). Keeping and promoting good relationships with other stakeholders throughout the process increases the chance for success.
9. Trust the expertise and knowledge of others
Success of AR is due to its characteristics dependent on the expertise of the various stakeholders (Miles et al., 2015, as cited in Aigwi et al., 2020). The experience, expertise and knowledge of stakeholders should be treasured and seen as a craftsmanship (NRP, 2015). By doing so you can rely on each other's' skills and create collective knowledge (Dyson et al., 2016). Trust creates a constructive collaboration (Fleuren, 2013).
10. Maintain ambition and enthusiasm level throughout the process
Creating a sense of enthusiasm is easier than maintaining the same level of enthusiasm. By maintain the level of ambition and enthusiasm (by for example creating an ambition document) collaboration and inventiveness of the stakeholders runs smoothly, even during tough periods (Volker, 2011).

Product success factors

Building & Location

1. Advantageous space layout
The layout of a building influences the capacity to accommodate a new function (Dyson et al., 2016). This is a factor that can be dealt with during the acquisition of the building and should be assessed prior to commencement of the project (Tan et al., 2018). Some buildings do not have the right qualities to be eligible for adaptive reuse and cannot be pushed into a concept (Fleuren, 2013).
2. Status of the neighbourhood and public facilities
"The location of buildings has long been considered the most important factor for property development" (Tan et al., 2018, p.14). This relates to the adequacy of surrounding public facilities, image of the neighbourhood, and connectivity of the location (NRP, 2015; Tan et al., 2018).
3. Technologic difficulties are well treated
The fact that adaptive reuse deals with change of use and function means that technological difficulties should be fully assessed (Tan et al., 2018). These technological difficulties can be dealt with by inventive solutions and out-of-the-box concepts (NRP, 2015).
4. Retaining landmark, streetscape and views of the area
A building acts in an environment with a streetscape and view, which is most of the time appreciated by the surrounding neighbours. The streetscape and views of the area should be handled with the same attention as stakeholders handle with the building (creating more support and less dissatisfaction of the surroundings) (Nwachukwu et al., 2017).
5. Minimal change
The loss of historical value is one of the main fears in renovation or adaptive reuse projects (Rispoli & Organ, 2019). Minimal change reduces the chance for loss of historical values, which most of the times means you have to reduce the amount of structural change. This will benefit the character of the building and also reduces the total construction costs (Dyson et al., 2016).

Functional

1. Consider the interest of the wider community
Before applying for any permits, it is important to find out what the added value and identity is of the building for the community (BOEi, 2009). Involvement of the wider community increases the support base and less chance of resistance.
2. Make use of market demand and show market ambition/courage

Overall, adaptive reuse is a risky business that requires market ambition and courage (Tan et al., 2018). By introducing new types of living and working you can attract investors, tenants or even subsidies and grants, and create some liveliness (BOEi, 2009). Investing during periods of economic growth can be beneficial and create many opportunities (BOEi, 2009).

3. Innovative design

Innovative design can solve the idiosyncrasies or unfavourable space layout of a building (Dyson et al., 2016). “With imaginative people on the team, you can probably find resolutions for most things.” (Dyson et al., 2016, p.53).

4. Innovative green solutions

Sustainability and energy efficiency in an old, out-dated building is hard to achieve and requires imaginative people. Innovative green technologies can and should be creative enough to adhere to the building codes and legislation, while still being functional enough (Tan et al., 2018).

5. Functional changeability and flexibility

This factor deals with the ease of adaptation of the building and its chance of survival in the future. The more flexible a building is to accommodate different uses, the higher the chance is that it will endure economic shifts. When it is necessary to renovate or change the building again in the future, a flexible structure of the layout and construction increases the changeability of the building, and thus increases its lifetime (Dyson et al., 2016).

6. Preservation of history & culture in design

The historical values of a heritage building are what makes adaptive reuse worthwhile (as was discussed in 3.1.2. *Drivers and challenges*). However, major interventions in the structure and the building make it hard to preserve historical features and characteristics. Attention to this matter is important as these buildings can contribute to the culture of a society in a way that new buildings cannot (Tan et al., 2018). Experienced architects can, for example, be a solution to integrate the new interventions with the existing building (Tan et al., 2018).

7. Economic viability of new use

The new use of the building has to be viable in itself, rather than being continuously financed in order to maintain “itself” (Tan et al., 2018). This new use should match the market demand (NRP, 2015).

8. Good fit between old & new

“The closer the match between functions, the more straightforward it is to complete the adaptation process” (Dyson et al., 2016, p.53). This also means that the amount of interventions is reduced and that the project more cost certain (Tan et al., 2018).

3.3. Process improvements

We now know what the old process looks like and what success factors might have an influence on it. We are now able to start thinking about how we can learn from the success factors and design an improved process. According to Winch (2010), it is crucial to examine the process to improve and manage effectively. However, this brings up questions on how to learn, and how this improved process could look like. Exploring existing instruments and learning mechanisms will help to map out the old process and find ways to map out the new process map. This section will therefore help to find the answer to sub-question 4: How can you improve an (AR) process?

3.3.1. Organisational learning

Like mentioned before, even though studies acknowledge the success factors, they are not yet put to practice (as was covered in 1.3. *Lack of improvement*). The success factors have come to the table by means of experience of past projects, either because they found the success factors, or because they acknowledge the failure and lessons learned and are in turn presented as success factors. The key here is to find out how projects, and in turn organisations, can learn from these factors.

Learning from lessons from previous projects and their success factors happens through organisational learning. Organisational learning is the term to describe how an organisation creates, retains and shares knowledge within an organisation (Argote, 2012). Creating, retaining and sharing knowledge ensures that organisations improve and adapt to changing environments and circumstances (Chan & Cooper, 2005). Doing so properly and effectively might increase their competitive advantage (Kululanga et al., 2001, and Stata, 1989, as cited in Chan & Cooper, 2005). Most organisational learning is done through experiences (Mahdiputra, Giddings, Hogg, & Daws, 2005).

The construction industry however, and in particular the adaptive reuse practices, is a project-based industry and centred around working from project to project (Chan, Cooper, & Tzortzopoulos, 2005; Mahdiputra et al., 2005). And learning from a project is significantly harder than within an organisation, since a development or project never happens twice. Learning from a one-off project is harder since most valuable lessons or information is lost between the end and start of a new project. This is especially so since the construction- and/or project team differs per project (Mahdiputra et al., 2005).

Mahdiputra et al. (2005) describes the difference between learning *in* organisations and learning *by* organisations. In order to make the step from project learning to organisational learning, all experiences and knowledge of the project have to be put into a tangible organisational sub-system, or learning mechanism. Such mechanisms are for example: “drawings, process maps, project management processes, databases, procedures, rules & regulations, etc.” (Mahdiputra et al., 2005, p.1302).

Roux, Murray & Van Wyk (2008) argue that organisational learning in complex situations is most effective when learning is done through an even distribution of single-, double-, and triple loop learning (p.16). The loop learning concepts describe the kinds and levels of learning that an organisation can focus on (depicted in figure 18).

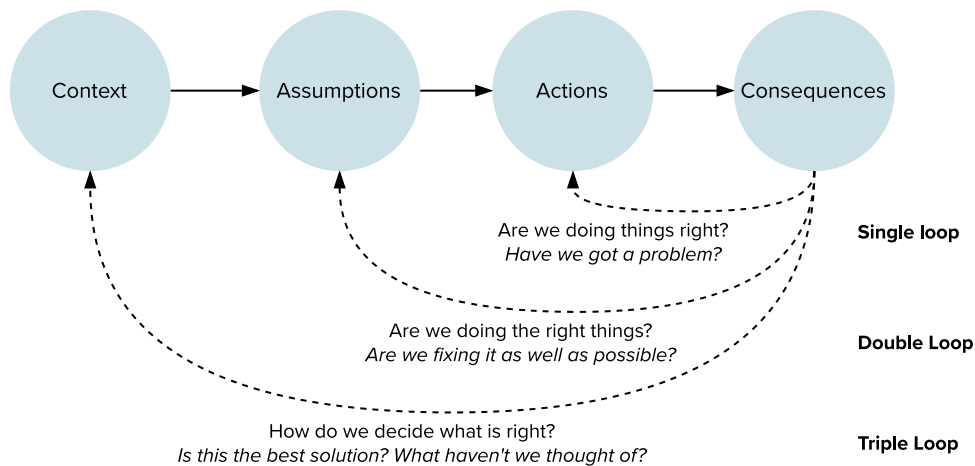


Figure 18: Levels of learning in an organisation (based on Brouwer et al., 2015).

Single loop learning

Single loop learning refers to routines and behaviours that change based on experience and what has not worked in the past (Brouwer & Woodhill, 2015; Roux et al., 2008). This type of learning is a continuing process of learning without overly analysing and examining the reasons behind the behaviour or routines (Brouwer & Woodhill, 2015). This means that organisations will reflect on the actions they perform without changing the underlying frameworks. Single loop learning means that organisations should ask each other the following type of questions:

- Are we doing the things right? (Brouwer & Woodhill, 2015)
- Have we got a problem?
- What are the rules? (McNamara, 2006)

From asking these questions, organisations can change their behaviour or routines relatively quickly. When the new approach fails in improving the behaviour or routine, an organisation should question the framework or strategy that they have created, and thus continue to double loop learning (Roux et al., 2018).

Double loop learning

Double loop learning refers to learning in a complex environment, where organisations have to identify the rules and reflect on whether or not these rules should be changed, like redesigning the framework or strategy (McNamara, 2006; Roux et al., 2018). This means that organisations reflect on the assumptions that they have and how they make decisions (Brouwer & Woodhill, 2015). This type of learning involves critical thinking and “outside of the box” (McNamara, 2006). Double loop learning means asking the following type of questions:

- Are we doing the right things? (Brouwer et al., 2015)
- Are we fixing it as well as possible?
- How can we change the rules? (McNamara, 2006)

The result of double loop learning is drastic and may include organisational structure or function change (Brouwer & Woodhill, 2015). When a new framework or strategy was created but still fails to do as intended, an organisation should question whether or not a new framework or strategy was necessary to begin with, and continue to triple loop learning (Roux et al., 2008).

Triple loop learning

Triple loop learning is the most radical form of learning, going beyond the insights and patterns of single- and double loop learning (Brouwer & Woodhill, 2015). Triple loop learning involves rethinking the way we learn and rethink our context (McNamara, 2006). Triple loop learning requires to ask the following type of questions:

- How do we decide what is right? (Brouwer & Woodhill, 2015)
- Why do we choose to do the things we do? (Brouwer & Woodhill, 2015)
- Is this the best solution?
- What haven't we thought of?
- How do we learn? (McNamara, 2006)

Triple loop learning is especially effective when multiple stakeholders are involved, since all stakeholders have a different context in which they operate. Understanding their context and reflecting on your own worldview and behaviour in comparison to other stakeholders helps to move forward (Brouwer & Woodhill, 2015).

How do we learn from project experience?

To conclude, learning from project-based organisations like in adaptive reuse projects is more difficult than from regular organisations. To overcome this problem, experience and knowledge from previous projects should be adequately recorded in a learning mechanism (Mahdiputra et al., 2005) and processed through a combination of single-, double-, and triple loop learning (Roux et al., 2008).

Identifying the success factors (single-loop learning) and placing them in the adaptive reuse process (double-loop learning) creates a framework in which experiences and knowledge are secured. By designing a tool, an organization can learn from what has been done in the past and change their strategy towards future projects (triple loop learning). The process map can inspire organisations to rethink their strategy and pursue a different path, inspired by the knowledge and experience of other organisations and projects. However, an organisation should facilitate the means to let individuals in the organisation learn through the different types of learning.

Learning is about innovation: “understanding the challenge, identifying new options, and testing until something works” (Brouwer & Woodhill, 2015, p.121).

3.3.2. Generic elements of the construction process

Breaking down the (construction) process will help to map out the old and design the new improved process. In its most basic form, a process is “a series of steps and decision involved in the way work is completed” (Baird, 2017). These steps and decisions take input from A, the starting point, to B, the desired outcome or result. This is in line with the Cambridge Dictionary (process, n.d.) definition: “a series of actions that you take in order to achieve a result”. A process can occur only once, or recurring systematically or random. This defines two different types of processes: (1) the one that starts when necessary and ends at a certain point in time, and (2) the sort of process that will continue to move on (Ould, 1995, as cited in Kagioglou et al., 2007). A construction projects is a type of process that starts at a certain point in time and ends when the building is delivered.

In an engineering language, the steps and decision that take a process from A to B are defined as inputs (A) and outputs (B) that are likely to be carried out by people or organisations (Kagioglou et al., 2007). In the construction and development industry, this input and output is defined by the built environment (see figure 19).

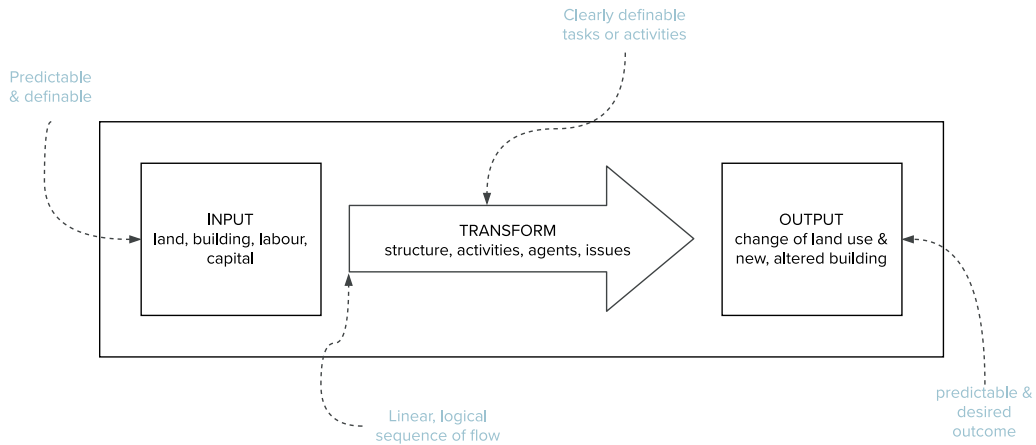


Figure 19: the development process expressed in inputs and outputs (Kurul, 2003).

According to Bulletpoint (1996, as cited in Kagioglou et al., 2007), a construction process should entail the following characteristics:

- A process has predictable and definable inputs;
- It has a linear, logical sequence of flow;
- Contains a set of clearly definable tasks or activities;
- Has a predictable and desired outcome or result (see figure 19).

But, the construction industry processes not predictable, does not have defined inputs, is not always logical, and the activities and tasks are unknown and everchanging. Construction processes are perceived as difficult. Construction projects operate in “highly uncertain environments, are unpredictable and speculative” (Kagioglou et al., 2007, p.99). Connecting the different aspects of a construction process to deliver a tangible building, requires people to act under high levels of uncertainty (Winch, 2010). The issue in construction is that the outputs of the process are most of the time defined, but how to get there, with what inputs and which transformation process, is an evolving process (Bulletpoint, 1996, as cited in Kagioglou et al., 2007). The goal should therefore not be to make the process predictable.

When trying to define a process, it all depends on the context, market and function in which it is defined. The Walnut model (figure 20) from the Swedish Defence University depicts this phenomenon. In the process model, teams have to cooperate to define what they want to achieve (the content), and how they want to achieve this (the process), shaped by the context in which they are collaborating (Vollenbregt, 2018). In this case, the how (the process) describes how teams make decisions and communicate in the context of adaptive reuse.

A development process considers the lifecycle of the development, from conception and initiation to final delivery and use of the building (Kagioglou et al., 2007). According to Kurul (2003), the development process is a process in which social and economic objectives need to be achieved for themselves or for others – the output – by transforming land and constructing or refurbishing buildings – transform.

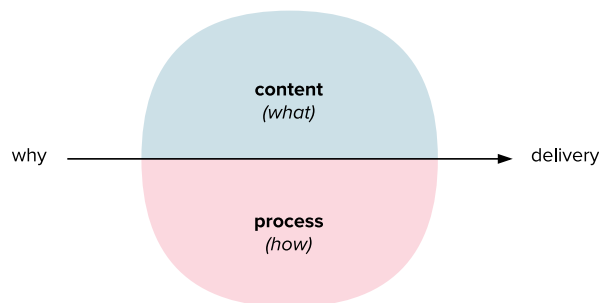


Figure 20: the Process & Content Model, or 'Walnut' model (Vollenbregt, 2018)

When analysing a construction project, it is important to distinguish the different levels and types that can exist. Such a process can be decomposed in levels ranging from top to bottom: process, sub-

process, activity and task (see figure 21) (Kagioglou et al., 2007). The process map should according to this figure contain a general process, process stages, a description of the day-to-day activities, and the responsible persons of the activities.

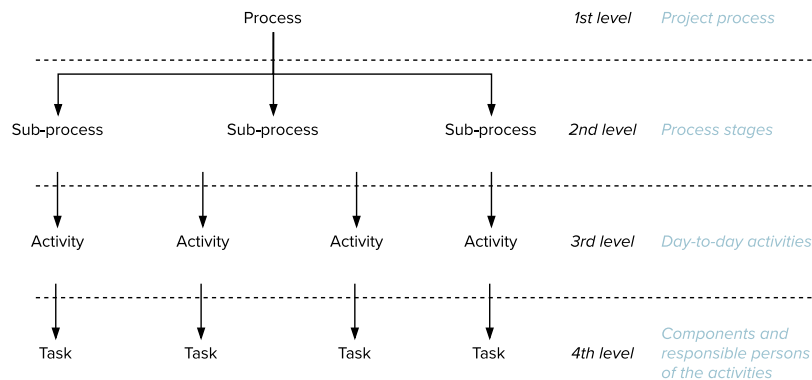


Figure 21: process levels of construction processes based on Kagioglou et al. (2007) (own ill.)

The adaptive reuse of a building is described as a process since its function changes from one (the input, A) to another (the output, B) (Andriessen, 2007). What makes adaptive reuse projects different from development projects is that heritage buildings come with a set of imperfections that make the whole process even more uncertain (Lou, Chan & Hamzah, 2020). The content (in the Walnut model) is imperfect and blurry, but the process should still be (largely) defined beforehand. It therefore does not make sense to try and map the whole adaptive reuse process in one single timeline, guidebook or handbook, but acknowledge that the process benefits from being described in principles or ingredients.

3.3.3. Management toolbox

Existing instruments, tools, frameworks, and strategies help stakeholders to make better informed decisions regarding their buildings (Lou, Chan & Hamzah, 2020). Exploring those existing tools and instruments helps to map out the old process and design a new process. Process models are instruments that “represents the construction process so that they can be described, communicated, analysed and redesigned” (Winch, 2010, p.211). By fixing these processes in a model parties have a better understanding of each other’s’ processes and procedures. There are two types of instruments discussed here:

- Process map: “describes how the process is”;
- Process protocol: “specifies how the process ought to be” (Winch, 2010, p.211).

The following instruments are frequently used models to map a process: The Process Protocol, the Venetian bridge model, the Integrative Design Process, and project- and process management. Each instrument will be briefly introduced hereafter.

A. Process Protocol

The Process Protocol is a process model which shows how a construction process should work (Rosenau, 1996, as cited in Kagioglou et al., 2007). Processes that bring together groups of people based on their skills and specialism, at the right point in time to deliver a complex process, can be broken down in key areas: The Process Protocol (Anumba, Baugh & Khalfan, 2002). The Process Protocol is based on process management principles, such as “stakeholder involvement, teamwork and feedback” (Kagioglou et al., 2007). The key in the protocol is that the placement of people in the model is not based on disciplines, but on Activity Zones.

In the Activity Zones people are put on a process, rather than their specialist tasks. This way the responsibility for completing a part of the process is everyone’s and not only for the one that is assigned to the task. People are distributed in networks based on their skills and tasks, rather than their function and specialism. Using zones instead of disciplines reduces confusion, thus complexation, and increases the ability to communicate and coordinate between (groups of) people (Cooper et al., 1998).

A snapshot of the model can be found in figure 22, the complete Process Protocol can be found in *Appendix C – The Process Protocol*. The model maps the construction process from the point where a client recognizes a need up until operations and maintenance (Cooper et al., 1998). The protocol consists of five key elements:

1. Process – breakdown of all the processes in a project in a set of activities.
2. Deliverable – output of the processes, usually in the form of documents and information.
3. Phase – the 10 phases of a construction project. The 10 phases are arranged into the 4 stages of a project, being: pre-project stage, pre-construction stage, construction stage and post-construction stage (Cooper et al., 1998, p.7; Winch, 2010) (located on the X-axis of figure 22).
4. Activity zone – groups of participants/stakeholders in the project that are assigned to specific zones (i.e. “development management, project management, resource management, design management, production management, facilities management, health and safety, statutory and legal management, and process management” (Kagioglou et al., 2007, p.109) (located on the Y-axis in figure 22).
5. Phase reviews – the deliverables are assessed by (generally) management and representatives of the project team.

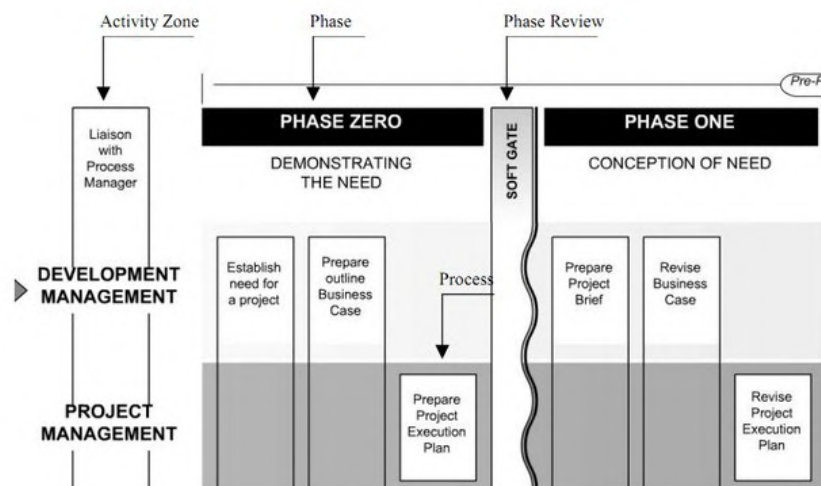


Figure 22: snapshot of the Generic Design and Construction Process Protocol (GDCPP) (Cooper et al., 1998).

The Process Protocol is designed to fit general construction projects. A similar process model for the adaptive reuse process that maps the process from A to Z does not exist yet. According to Kagioglou et al. (2007), a new (adaptive reuse) process tool should consider the following key principles:

- “Sense-making frameworks that consider the whole project;
- Consistency in application;
- Progressive fixity;
- Co-ordination;
- Stakeholder involvement and teamwork;
- Customisation and flexibility;
- Feedback.” (Kagioglou et al., 2007, p.104-107).

The issue with this process protocol is the level of detail. First of all, the process protocol is only understandable for stakeholders in the process who are familiar with working with the model. Second, the design of the model suggests that a construction process can be prescribed, always looks (kind of) the same, and is bound to linear thinking. Lastly, the process protocol is very detailed. Especially in the case of adaptive reuse projects, processes are exposed to change and flexibility. However, the elements that from this model that will be taken along in the next phase are the phase distribution and zones instead of points.

B. Venetian bridge

The Venetian bridge is a tool to map the reuse process and decide what the critical points are in the process and who needs to be involved in terms of cooperation (Saris, 2008). It is specifically designed for adaptive reuse projects. Due to the uncertainty and diversity of these type of projects, the model is more simplified than for example the Process Protocol.

The line displays a degree of freedom (y-axis) through time (x-axis). During the diverging and converging process line, a coalition is created to explore opportunities and possibilities. This coalition is able to 'bridge' the conflicts of interests and subsequently design an action plan and perspective (Saris, 2008).

In the bridge-like model (figure 23), stakeholders are collaborating to define the scope, vision and concept of the project (diverging, inclining line). In the case when no end-user is known yet, the model advises to open up the space for possibilities as much as possible, creating more freedom. This is done by systematically analysing the conditions, revaluation of the location and building, and formulating stakeholders' perspectives.

After this, it is key to limit the stakeholders' freedoms as soon as possible by identifying the program and resources that are necessary for the realisation (converging, declining line). In this stage of the process the focus is on the design and program of the building. The outcome of this stage is the realization of the project. Every phase of the process is ended with a cyclic evaluation and selection of the results.

The model is specifically designed for adaptive reuse projects in city centres, as these are mostly drawn by specific requirements based on location and stakeholders. The market and divergent character of these types of projects requires a fairly loose model for interpretation such as the Venetian bridge (Saris, 2008).

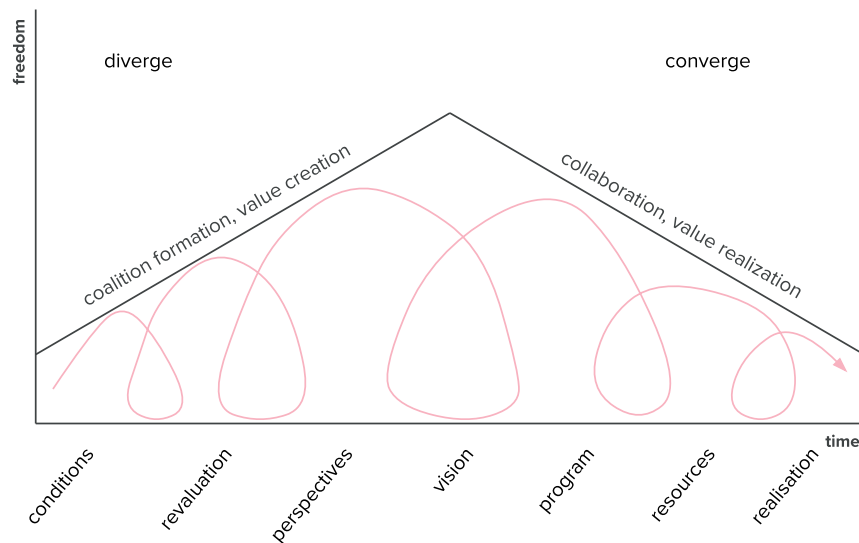


Figure 23: The Venetian Bridge process model, translated from Saris (2008) (own ill.)

The loose interpretation of the model makes it valuable as inspiration for the process map that will be created in this research. The elements that are considered to be useful in the next phase of this research are: (1) the changing degree of freedom along the development process and the change from value creation to value realization (the diverging and converging line), (2) the distribution of the x- and y-axis of time and freedom, and (2) the iterative (pink) line of feedback and reflection. However, in the end this model still lacks the information future adaptive reuse projects need that shows the steps that need to be taken.

C. Integrative Process

The Integrative process has been developed by the American National Standard Institute (ANSI) to improve a design or product. The model depicts a design process of a building with iterative loops that represent intensive feedback within activities and stages (figure 24) (Samy, Nadim, Abdelkader, & Hamdy, 2017). The key in this model is that all disciplines work together to gather information and data, rather

than each for its own discipline (ANSI, 2012). For this to happen, team members should enter the process as early as possible.

Iterative processes are not a new phenomenon. The goal of iterative processes is to reflect on the last steps in order to get closer to a solution, answer, or discovery during design. A project should be applied, tested, tweaked, and tested again in a continuous loop in order to reach a solution (ANSI, 2012).

The model shows that collaboration between different disciplines is crucial to reaching an integrative design solution. The integrative feedback and reflection cycles are therefore important to consider during the next phase of this research. However, just like the venetian bridge model, the model lacks a level of detail to show at a glance what the adaptive reuse process exactly entails.

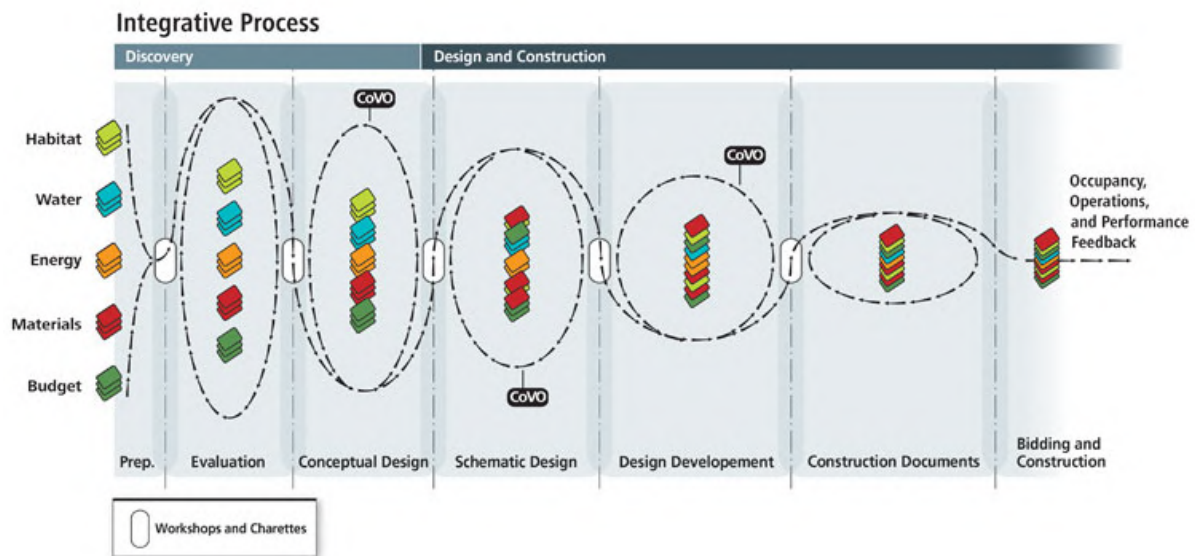


Figure 24: The Integrative Process (ANSI, 2012).

D. Project & Process Management

Project and process managers are the roles in a construction project that deal with the dynamics of changing factors during the process. Project- and process managers have the ability to implement lessons learned and let people reflect on the process. These types of management are therefore the way that the process map that will be designed in this research will enter the world of adaptive reuse.

Process management arises when organisations wish to improve the quality and productivity of the (construction) process (Elzinga et al., 1995, as cited in Kagioglou et al., 2007). It deals with how a project will get done, when, and by whom (Winch, 2010). To improve the process, managers have to define and optimise the different levels and attributes of the process. They have the option to (1) manage and improve an existing process, or (2) design and redesign a new process.

The built environment is produced and managed in a complex process (Kurul, 2003). Tackling complex issues with no predefined answer requires many people and organisations to be involved. The disagreement and different interest in the task, problem, solution and how to get there require efficient and effective management (Bentham, 2019). The management of these processes is usually done by a process manager, who brings together groups of people based on their skills and specialisms (Anumba et al., 2002, as cited in Kagioglou et al., 2007). Once the right people are brought together at the right point, stage, or phase in the process, it is easier to deliver a successful process (Kagioglou et al., 2007). This management is important, since "mis-managed projects have the potential to generate undesired results and adversely impact the community (Dyson et al., 2016, p.46).

A project manager – as opposed to the process manager – manages the project within the requirements and boundaries of a project with the five management aspects of MOTIQ: Money, Organisation, Time,

Information, Quality. These aspects are similar to the definition of success in project management, that was based on the iron triangle of time, budget, scope and quality (figure 14 in 3.2.1. *Perception of success*).

Before the turn of the century it was considered that adaptive reuse processes should be managed within the project management field to meet the requirements of time, budget, information, quality and organisation (Andriessen, 1999). However, the uncertainty, complexity and difficulty of adaptive reuse processes requires different management. According to Egbu et al. (1998, as cited in Kurul, 2003), adaptive reuse projects have specific characteristics that are not found in new construction projects that requires different management.

As opposed to the MOTIQ-method of project management, process management works according to seven variables (Bekkering & Walter, 2009):

1. Theme: defining the subject and scope of the project
2. Timing: choose the right moments for specific actions
3. Pace: determine the speed of the process and project
4. Access: select the participating parties
5. Stage: create the right environment for the project
6. Tone: define how to communicate and to whom
7. Toll: create awareness of everyone's stakes and contributions

The seven variables indicate that a process manager is able to steer activities with a different character and create a solid support base for these activities (Bekkering & Walter, 2009). The manager is also responsible for the creation of the conditions of the project, not necessarily define and operate (within) them. These activities are different in an adaptive reuse project (as opposed to a new construction project) due to the specific characteristics and dimensions of the process (Egbu et al., 1998, as cited in Kurul, 2003). These 'soft' skills and activities in processes are of vital importance for the success of a reuse project (Kurul, 2003).

Project and process managers are the people that bring ideas, to plans, to execution. Bringing the right people together to bring the plan one step further in terms of hardware (project management) and software (process management). According to Kraijo and Van der Heijden (2018), a highly collaborative process looks like a wyber (a traditional Dutch liquorice) in the shape of a diamond. The process should entail the following elements (Figure 25):

- A wyber: a process step in which the team and plan first diverges (exploring possibilities and solutions) and converging (focus on one plan).
- Consolidation: each wyber is consolidated in documents, plans, notes, and so on, to start the next wyber.

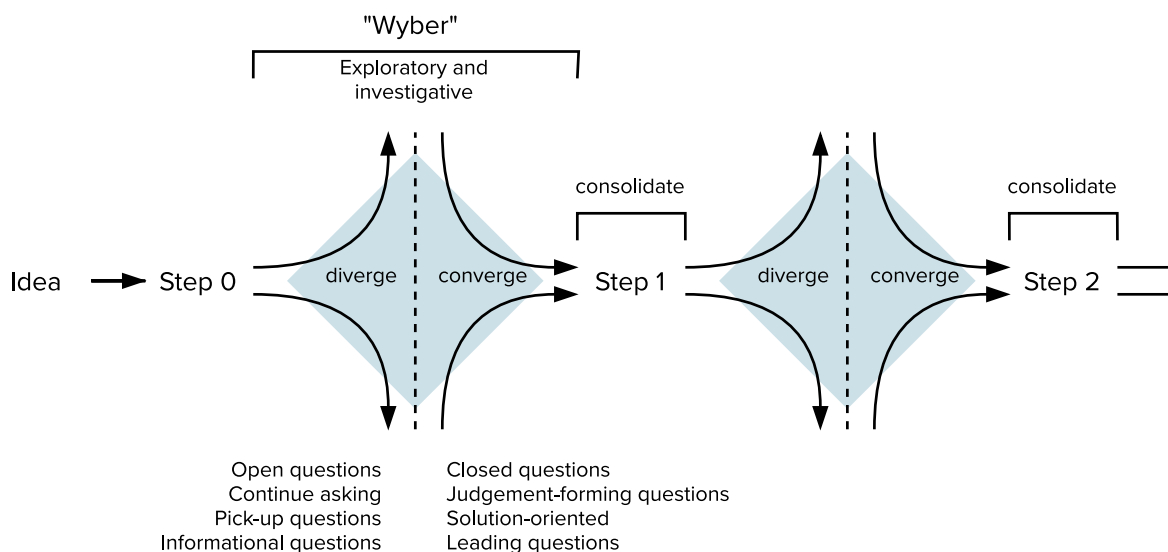


Figure 25: the Wyber model (Kraijo & Van der Heijden, 2018)

3.4. Conclusion

In this paragraph, the first conclusions of the sub-questions are drafted. The paragraph is concluded with a theoretical framework which will be the basis of the next stages of this research.

1 What is adaptive reuse of heritage in The Netherlands?

The first sub-question on adaptive reuse was given to discover why the Dutch market reuses heritage buildings, how the strategy behaves compared to other strategies for dealing with vacancy, and how the Dutch market is shaped by governmental instruments. This sub-question can be answered solely by the literature study.

It became clear that adaptive reuse is a strategy in which a building undergoes a major change, both in use and in structure (based on Wilkinson et al., 2014). Apart from all the economic, environmental and social benefits, reusing a heritage building is mainly done to preserve the building and continue its lifespan for future generations.

Once the decision falls on reusing a building, the developing party should consider the governmental playing field in which the reuse activities take place. National and local instruments play a large role in the laws and regulations, financing, and support of reusing heritage. The national Heritage Act has certain rights and obligations which the national listed monuments apply for, while municipal listed monuments largely depend on the involvement of a (municipal) monument committee. The developing party should therefore consider the type of monumental listing, land use plan, and zoning plan when considering to start the adaptive reuse project.

2 What does the adaptive reuse process look like?

This sub-question was asked to find out what the adaptive reuse process looks like and what main stakeholders play a major role in the process. Part of this question was planned to be answered by the literature review and complemented by the case study analysis.

The literature review revealed that adaptive reuse processes are specifically complex during the first few phases of the process. The complexity of the process is to blame on the high levels of uncertainty due to an increased number of stakeholders, possibilities and opportunities, and laws and regulations. During these first phases, many of the activities are concerned with thorough research.

The outcome of this part was a first draft of the stages of the adaptive reuse process: idea, (1) initiative, (2), idea forming, (3) feasibility, (4) refining, (5) contract negotiations, (6) preparation, and execution. The degree complexity increases and declines during these phases. The phasing is taken along in the rest of this research in order to provide a steady base for future projects.

Lastly, the adaptive reuse process is shaped by a few typical key stakeholders. The main key stakeholder is the client, who can play a dubious role as investor, initiator or governmental body at the same time. AR projects require specialised team members that have experience with heritage buildings, most of the time in the role of an advisor. AR projects should also consider the influence governmental bodies have on the process, such as the executive board of the municipality, CHA, and municipal monument committee.

3 How can you improve an (AR) process?

Sub-question three was asked to find out how a process can be improved and find out if there are instruments already developed to get grip on the construction/reuse process.

The first part of this section focused on the theory on organisational learning in order to find out how this research can contribute to the field of adaptive reuse. Organisational learning is hard to achieve in project-based organisations, as is the case in construction processes. To learn from project-based organisations, experience and knowledge should be captured in a learning mechanism (framework, tool, or model) and combine single-, double-, and triple loop learning. Since this research defines the success

factors, coming from experience and knowledge, for the adaptive reuse process and places them into a process map, which could help future projects, it is possible that these two requirements are met.

This section also covered existing process models that can be used as a source of inspiration for the process map that will be designed in later stages of this research.

4 What is a successful adaptive reuse project and what factors influence the reuse process?

This question was aimed to define AR success and identify the success factors that repeatedly show up in and lead to a successful reuse process and influence the project outcome. The definition of success was drafted according to the five aspects of dealing with heritage, added by a sixth aspect that was frequently mentioned in the literature: legal, financial, communicative, building & location, functional, and the added aspect: preparatory.

This success is influenced by certain factors that can, or cannot, be influenced by stakeholders. It became clear that veto criteria and critical success factors matter the most because they can be influenced by the actors to a certain degree. The most common veto criteria and critical success factors were listed and explained according to the six aspects of AR success. Lastly, failure factors are interlinked with success factors and give an indication of missed success factors.

Summary

The theoretical background and the links between the different subjects can be summarized in a theoretical framework, depicted in figure 26.

To conclude, the context of reusing heritage is shaped by the uncertainty in the first few stages and the rights and obligations of heritage buildings. This makes the first few stages of the reuse process significantly more complex. To ease this process, main key stakeholders shape the reuse process according to their assumptions. The activities that they undertake are shaped by their perceptions of success and how the activities help them to achieve their definition of success. At the end of the process, you can judge whether or not the project was a success and start the learning curve by reflection on: project (success), the actions you have taken, the tools and instruments you have used and whether or not you (should have) started the (right) project.

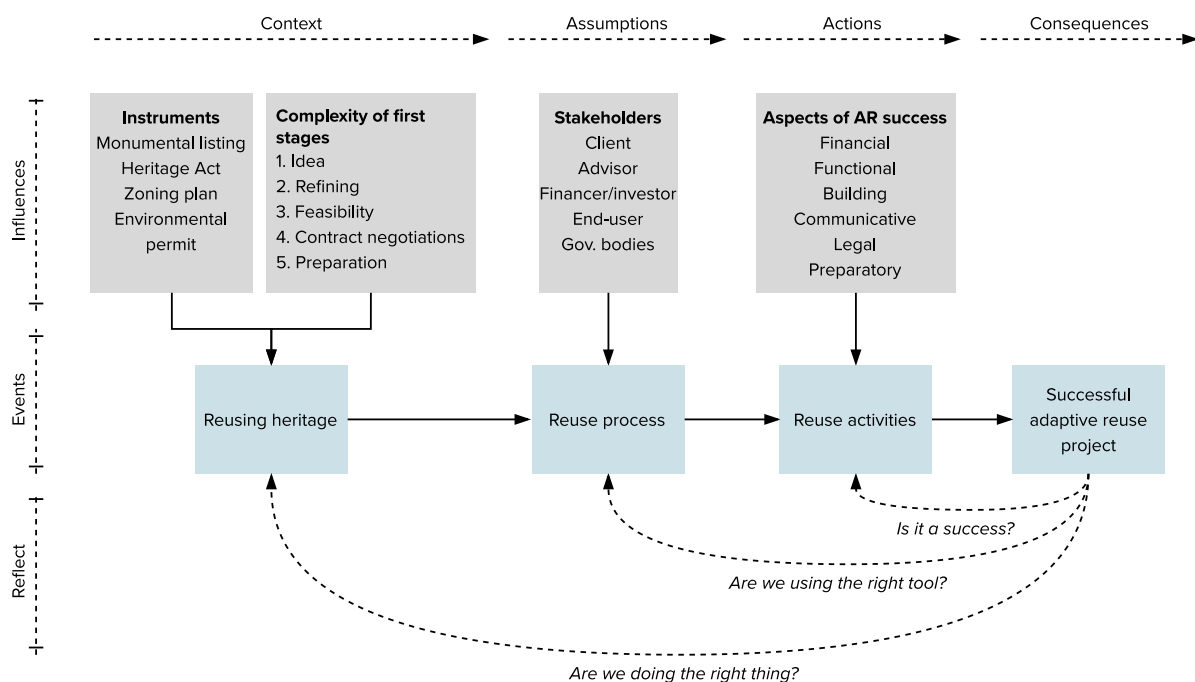


Figure 26: theoretical framework and relation to the rest of the research (own ill.)

EMPIRICAL

RESEARCH

Case study research

1. exploratory cross-case analysis
2. in-depth case study analysis
3. cross-case analysis

4. EXPLORATORY CROSS-CASE ANALYSIS

This chapter describes an exploratory cross-case analysis of 17 cases to identify any causal links between the literature on success factors and real-life factors and events.

4.1. Case selection

As mentioned before, the NRP Gulden Feniks is used to find and select the cases for this research through purposive sampling done to automatically check a large part of the case selection criteria (listed in table 6). From the 35 submissions, the jury selected 17 cases that were eligible as contenders for the prize. Considering the expertise of the jury members and their experience with the award, the 17 projects they select are deemed to be part of the most prestigious and thus successful cases of 2019 in The Netherlands. That is why the research will cover these cases during this exploratory cross-case analysis.

The benefit of choosing these considered submissions of NRP Gulden Feniks as case studies for the cross-case analysis is that the three selection criteria are inevitably checked. The regulations for submitting a project to the prize include a sufficient amount of documentation, delivery in 2019, and functional- and structural change to compete.

Table 6: case criteria and preferences.

| Criteria | |
|--|---|
| Function- and structural change | ✓ |
| Realised or delivered recently | ✓ |
| Enough documentation available | ✓ |
| Preferences | |
| Located outside of the G4 cities | |
| Monumental listed (national, provincial, or municipal) | |

The goal of this exploratory cross-case analysis is to identify causal links between the literature and real-life cases, validate the findings of the literature review, and decide which success factors will be taken along in the remaining part of the research. In total, 17 cases were studied and analysed for this cross-case analysis, listed in table 7. An impression of the case study projects is given in *Appendix D – Exploratory cross case analysis*.

Table 7: eligible cases for the cross-case analysis.

| # | Name | Location | Function | Listing |
|----|-------------------------|---------------------------------|-----------------|-----------|
| 1 | Cultuurzaal Lichtenberg | Landgraaf, Limburg | Culture house | - |
| 2 | Greswarenfabriek | Reuver, Limburg | High school | Municipal |
| 3 | Former V&D** | Amsterdam, Noord-Holland | Office (vacant) | National |
| 4 | Fenix I* | Rotterdam, Zuid-Holland | Mixed-use | - |
| 5 | Watertoren | Zwolle, Overijssel | Residential | Municipal |
| 6 | DomusDELA | Eindhoven, Noord-Brabant | Ceremonial | National |
| 7 | Jansbuitensingel* | Arnhem, Gelderland | Residential | - |
| 8 | RCO House* | Amsterdam, Noord-Holland | Office & studio | Municipal |
| 9 | H-Park** | Hilversum, Noord-Holland | Mixed-use | - |
| 10 | Rijksarchief* | 's-Hertogenbosch, Noord-Brabant | Office | National |
| 11 | Campus RUG Fryslân | Leeuwarden, Friesland | University | National |
| 12 | Timmerfabriek | Maastricht, Limburg | Music venue | National |
| 13 | Park Hoog Oostduin** | The Hague, Zuid-Holland | Residential | - |
| 14 | Trippenhuiscomplex** | Amsterdam, Noord-Holland | Office | National |
| 15 | Move | Amsterdam, Noord-Holland | Office | - |
| 16 | The Lee Towers** | Rotterdam, Zuid-Holland | Residential | - |
| 17 | Christus Koningkerk | Rotterdam, Zuid-Holland | Residential | Municipal |

* = little information available on investment, but includes a total construction budget.

** = excludes information on investments and construction budget.

4.2. Data collection

To compete for the NRP Gulden Feniks prize, the writing parties have to hand in three documents. These three documents are analysed to find an indication on any of the success factors. The discussions of the jury during the selection of the contenders for the shortlist will also provide input. However, the primary source of data will be the three documents of the submission, being:

1. A3 presentation sheet containing the plan and process of the project, supported by visualisations and stories by the stakeholders. This file allows the stakeholders to discuss whatever they find relevant for the specific project, such as architectural interventions, floor plans, schemes, stories and quotes of end-users, photos and videos, motivation, historical analysis, etcetera;
2. A3 presentation sheet with an overview of the budget (including, if possible, costs and revenues) (projects that are indicated with one or two asterisks were submitted without a budget overview ** or with meagre information *);
3. A form of statement, in which the writing party of the submission chooses the category they would like to compete in and a list of all the stakeholders that were concerned in the process.

The criteria that the jury members used to select the contender cases are (in random order) (NRP Gulden Feniks, 2019b, and personal communication with the jury members on August 31, 2020):

- (1) Sustainability: the selected project should have an impact on and increase the awareness of the sustainability of using the built environment. This criterion will be tested by looking at the technical interventions, use of raw and construction materials, and the exemplary function of the project for the energy transition, climate adaptation and/or circular building.
- (2) Sublimation: the selected project should preserve or restore valuable characteristics of the building and strengthen the hidden qualities (intrinsic quality and beauty).
- (3) Economic value creation: the selected project should improve the economic qualities and structure of the real estate object and environment. This criterion is tested against investments and building costs.

- (4) Social value creation: The selected project should increase the quality of the environment and, if applicable, increase the attractiveness of the business climate for companies, stores, and amenities. This criterion should hold for (local) residents, users, and the community.
- (5) Innovation: the selected project and process should show innovative and inventive solutions for challenges and opportunities in terms of organisation, process, communication, and technical interventions. This should show in terms of the lessons that this project presents to future projects.

The documentation of the submission is written by one of the main stakeholders of a project. In these documents, the writing party describes the reason why they think the project should win the prize for the most prestigious adaptive reuse project of 2019, based on the selection criteria of the jury. The selection criteria are known beforehand for all interested parties.

The documents describe the success of a project in the words of the writing party. The writing party wants to persuade the jury of the qualities of the project based on the selection criteria. This means that perceived success is written between the lines. Assuming that the writing party only describes what was truly special about the project, these will be the success factors that differentiate it from other projects. During the analysis, the documents of the submissions will be compared to the list of success factors from the literature and check whether they are intrinsically mentioned in the argumentation.

4.3. Data analysis

The exploratory cross-case analysis is performed in order to validate the success factors that repeatedly show up in the literature. This is to make sure that the success factors that are considered to be the most important by stakeholders will be taken along in the process map of this research. The table that checks each success factor from the cases and the literature can be found in *Appendix D – Exploratory cross case analysis* on page 153.

In table 8, you can find the success factors that appeared in two or more cases. It is chosen only to discuss the factors that have been mentioned in at least two case studies to account for coincidence or misinterpretation from the researcher. Factors that have been mentioned in at least two different case studies have a higher chance of causality and thus a higher chance to have an effect on the success of a project.

Table 8: the number of times a success factor has been mentioned in literature (left) and documentation (right).

| | Success factor | # in literature | # in projects |
|-----------|--|------------------------|----------------------|
| 1 | Find political support | 3 | 4 |
| 2 | Early involvement of construction team | 4 | 2 |
| 3 | Research building condition and fabric | 5 | 3 |
| 4 | Create public support base | 4 | 3 |
| 5 | Understand heritage and cultural significance | 4 | 10 |
| 6 | Plan phased costs | 2 | 2 |
| 7 | Innovative financing | 3 | 2 |
| 8 | Early involvement of end-users | 2 | 5 |
| 9 | Engaging support of local businesses and communities | 2 | 2 |
| 10 | Actively maintain ambition and enthusiasm level | 3 | 2 |
| 11 | Status of the neighbourhood and public facilities | 2 | 3 |
| 12 | Innovative solving of technological difficulties | 2 | 4 |
| 13 | Retain landmark, streetscape and views of area | 2 | 8 |
| 14 | Minimal change: reduce amount of structural change | 4 | 4 |
| 15 | Function follows form | 1 | 3 |
| 16 | Consider overall interest of wider community | 4 | 3 |
| 17 | Make use of market demand (courage & ambition) | 3 | 4 |

| | | | |
|-----------|--|---|---|
| 18 | Innovative design | 3 | 3 |
| 19 | Innovative green design | 2 | 7 |
| 20 | Functional changeability and flexibility | 4 | 6 |
| 21 | Preservation of history and culture | 3 | 7 |
| 22 | Economic viability of new use | 2 | 3 |
| 23 | Compatibility with existing surroundings | 1 | 2 |
| 24 | Good fit between old & new function | 2 | 2 |
| 25 | Mix of users | 1 | 5 |

In total, there were 64 success factors mentioned in the cases of which 25 success factors were present in the 17 cases from the cross-case analysis. Apart from these 25 factors, there were no significant different success factors that were considered to be added to this list based on the documentation. In total, there were 11 literature sources from the literature review and 17 cases.

The following list sums up the things that were striking from table 8:

Popular categories 'Building & location' & 'Functional'

One look at the list of success factors from the cases reveals that the most frequently mentioned factors were in the categories 'building & location' and 'functional', of the product success theme. Two initial ideas come to mind: (1) writing parties of submission do not know how the other categories came through in their process, or (2) writing parties believe that the jury can be persuaded the best in those two categories.

Large difference between literature and case study

There are some factors that appear more in the literature than in the case study projects and vice versa. For example, success factor number 13 'Retain landmark, streetscape, and views of the area' was present in 8 out of 17 (47%) case study projects but was only mentioned by 2 out of 11 (18%) literature sources. Lower percentages are found in factor 25 'Mix of users' with 1 out of 11 (9%) literature sources and 5 out of 17 (19%) case study projects.

The other way around occurs in factor 3 'Research building condition & fabric', which was present in 5 out of 11 literature sources (45%) compared to 3 out of 17 (18%) of case study projects. Factor 3 was the one that was mentioned the most times in the literature, but this clearly does not say anything on the importance in case study projects.

The most significant outlier of the list is factor 5 'Understand heritage and cultural significance, with 4 out 11 (36%) literature sources and 10 out of 17 (59%) case study projects mentioning it. In most of these case study projects, this factor meant that the writing party explicitly says that they have done significant research into the architectural history of the building.

The success factors with the largest absolute differences are listed in table 9 below:

Table 9: success factors with large percentages of absolute difference.

| Success factor | Literature | Case study | Differencel |
|--|-------------------|-------------------|---------------------|
| Determine the extent of technological changes permitted by regulatory bodies | 36% | 0% | 36% |
| Integrated design & calculation | 36% | 0% | 36% |
| Create a clear ambition document | 36% | 0% | 36% |
| Trust the expertise of others | 36% | 0% | 36% |
| Collaborating with stakeholders at every stage of the project | 36% | 6% | 30% |
| Retaining landmark, streetscape and views of the area | 18% | 47% | 29% |
| Research building condition and fabric | 45% | 18% | 28% |
| Make in inventory of the stakeholders | 27% | 0% | 27% |

Factors that just made the cut

There were certain factors from the literature review that were hardly mentioned, just by one or two sources, but were more significant in the case study analysis. For example, factor 25 'Mix of users' was only mentioned by 1 out of 11 (9%) of the literature sources, but by 5 out of 17 (19%) case study projects.

Similar percentages

The following success factors have hardly any absolute difference between the number of times mentioned in the literature and the case studies, see table 10. However, success factors that have a small absolute difference but also have small percentages in the literature and case study mentions are not deemed to have a large influence on the success of a reuse process. The only interesting success factor is the one that is mentioned multiple times in both the literature and case study projects. This is only the case for 'functional changeability and flexibility' (35% in the literature and 36% in case study projects).

Factors like 'site layout and accessibility' do benefit the process of a project, but only have an influence on the process during the first steps. For example, when the need for reuse arises, when acquiring the building, or when the decision is made to start a reuse process.

Table 10: success factors with small percentages of absolute difference.

| Success factor | Literature | Case study | Difference |
|---|-------------------|-------------------|-------------------|
| Economic viability of new use | 18% | 18% | 1% |
| Functional changeability/flexibility | 35% | 36% | 1% |
| Status of the neighbourhood and public facilities | 18% | 18% | 1% |
| Compatibility with existing surroundings | 9% | 12% | 3% |
| Enthusiastic architect | 9% | 6% | 3% |
| Site layout and accessibility | 9% | 6% | 3% |
| Presence of a clear and enthusiastic project initiator | 9% | 6% | 3% |
| Good management & leadership | 9% | 6% | 3% |
| Build a relationship with the client | 9% | 6% | 3% |
| Seek early advice with heritage council | 9% | 6% | 3% |
| Create awareness of urgency through showing worst-case scenario | 9% | 6% | 3% |

4.4. Conclusion

Since this part of the research was done to validate the success factors of the literature review, the factors that were significant in both literature and case studies will be taken along in the process map. Initially, the idea is that the success factors that were hardly mentioned in both the literature review and the case study projects would not be taken along in the next steps of the research. However, the initial idea will be rejected.

The cross-case analysis has been done while also performing the analysis and interviews of the in-depth case studies. During this period, there was personal communication with the jury members of NRP Gulden Feniks, the supervisor at the graduation company, as well as the first semi-structured interviews with main stakeholders of the in-depth case studies. Especially the in-depth interviews revealed that although there are success factors that have hardly been mentioned in the literature as well as in the case study projects, they could have played a role in the in-depth case studies (or one of the cross-case analysis case study projects). It is possible that the case documentation is too much centred towards one of the categories of the success factors. The documentation is written according to the selection criteria of the jury and therefore, may exclude other parts of their success. The decision is, therefore, to not select the success factors for the next part of this research.

It is essential to realise that even though the case study projects are selected because of their nomination for the NRP Gulden Feniks prize, they are not necessarily successful. After all, they did not make the cut to get chosen for the shortlist. The degree of their success differs and is not taken along in this cross-case analysis.

5. CASE STUDY RESEARCH

5.1. Approach

5.1.1. Case selection

For the in-depth case studies, this research will zoom into three projects that are examples of successful adaptive reuse projects in the Netherlands. The next step is therefore to run through the list of submissions of NRP Gulden Feniks (of which were 21 eligible cases) and check those for the case preferences. The steps and filters that were taken to select the cases that were relevant enough for the in-depth interviews is depicted in figure 27. The final filter of the monumental listing of the building (either municipal or national listing) narrowed the selection down to six projects. The final decision was based on personal preference and the ease to get in contact with the stakeholders.

The case criteria and preferences were:

1. **Function and structural change**
The definition of adaptive reuse that was chosen in the literature review described that in order to be classified as adaptive reuse, the building should undergo a major change in both the building and the function it accommodates (Wilkinson et al., 2014, p.95).
2. **Realised or delivered recently**
The buildings that are delivered recently are presumably initiated after the financial and economic crisis of 2008. Projects that were initiated during the economic crisis might have different motives and constraints.
3. **Enough documentation available**
Due to the current pandemic, it is important to find enough documentation of the project without having to divert to external, physical sources. Also, there is the common belief that if there is enough press attention, the project is either considered to be a fail or a success and thus worth writing (news)articles about.
4. **Located outside of the G4 cities**
Adaptive reuse involves high risks concerning finances, legislation, support, stakeholder involvement and the state of the building. In the G4 cities of The Netherlands, public authorities are more used to innovative practices and thus is adaptive reuse in such cities easier to get legally approved. Also, the market demand in the larger cities of The Netherlands make financial feasibility easier than in non-common locations. Studying the projects that are not located in the G4 cities will therefore be more of a lesson than the famous ones from the larger cities.
5. **Monumental listed**
Monumentally listed buildings are perceived to be more complex than non-monumental listed buildings due to a higher number of stakeholders and the heritage-related rights and obligations concerning design and execution.

The final selected cases for this research are:

- (1) Greswaren Fabriek in Reuver, Limburg
- (2) DomusDELA in Eindhoven, Noord-Brabant
- (3) Timmerfabriek in Maastricht, Limburg

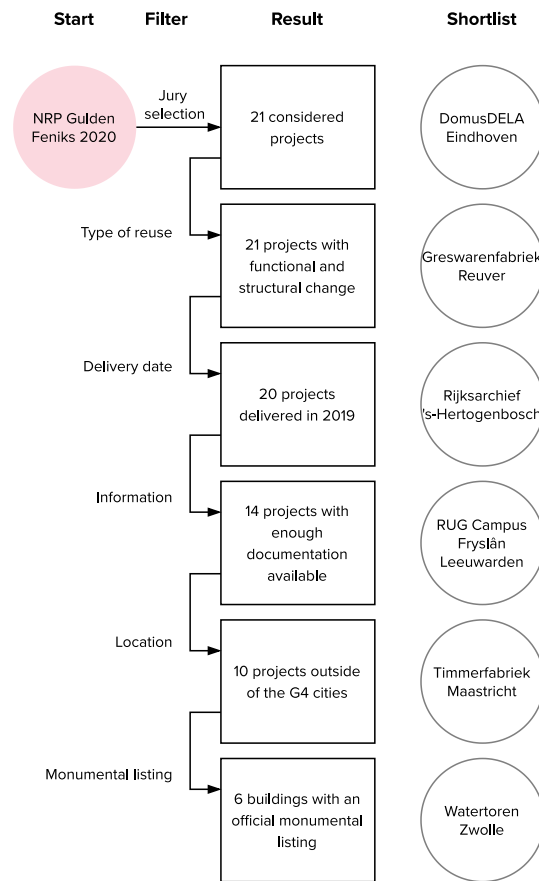


Figure 27: procedure of case selection according to the criteria and preferences (own ill.)

5.1.2. Data analysis

The three cases represent a diverse mix of functions and type of clients and end-users. From each of these cases at least one interview is conducted with one of the main stakeholders. These interviews are guided by the following themes and aspects:

1. General: a general introduction to their role at the company, their background, and their role within the case study project;
2. Process: a detailed run through of the development process from the point where the interviewee stepped into the project until they ended, and how it was organised;
3. Success: whether or not the interviewee perceives the project as a success, and what factors have (or have not) contributed to its success.

Figure 28 represents the approach of the case study research and the process towards the final deliverable. Each case study will be analysed based on the three subjects: project details, the reuse process and success factors. After that, a cross-case analysis on each subject will reveal the similarities and differences between the three cases. The theory from the literature review shaped this analysis, specifically on the adaptive reuse process that was drafted and the list of success factors. The outcomes of the two subjects in the cross-case analysis are combined in the synthesis towards the process map. The project details of the three cases serve as input for the discussion of the research findings and limitations.

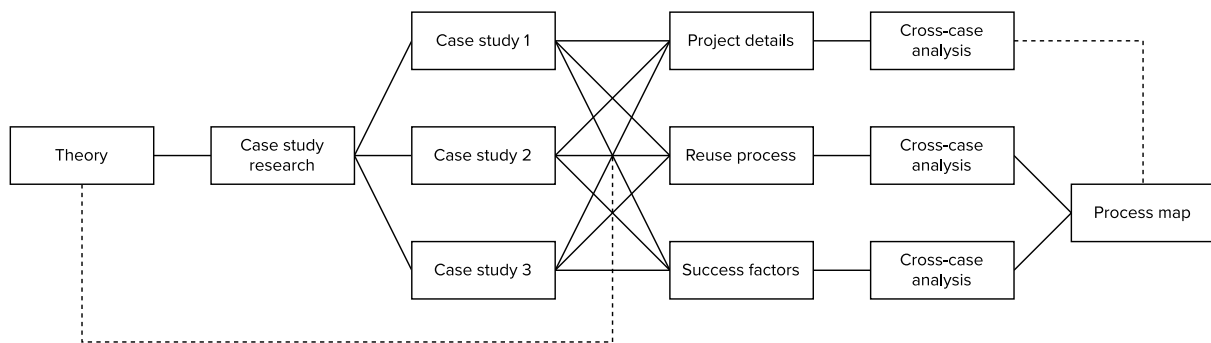


Figure 28: empirical research approach leading to the final deliverable (own ill.)

The interviews are conducted in Dutch but will be loosely translated to English for the sake of this research. In the next part of this chapter, each case will be described and analysed according to the following subjects:

Case description

In this part the context, location, and building(s) are introduced to the reader as well as fun facts and the current use of the building. The projects will be described according to the documentation that was submitted for the NRP Gulden Feniks, as well as information that was found on the internet, books, discussed by the jury during selection, and the interviews.

Data collection

Here will be discussed who of the main stakeholders will be interviewed and why, based on their roles and involvement in the process.

The process

In this part the process of the project will be described from initiation until delivery. Each process is depicted in a process model on a timeline according to the phases that were explored in 3.1.5. *The basic elements of AR processes.*

The success factors

In this part a list of success factors that the interviewees perceived during the process will be presented. Each success factor will be briefly explained according to quotes from the interviews. The list of success factors is presented in random order.

Main takeaways

This section presents the success factors that the interviewees would have liked to have during the process or what they had missed (their lessons learned). This might indicate the failure factors or success factors that they would have liked to see.

Conclusion

The conclusion of each individual case study analysis presents the success factors that were perceived by the interviewees compared to the success factors from the literature review. This part presents the factors that will be taken along in the rest of this research.

Greswarenfabriek

Reuver, Limburg

from:
vacant factory

to:
high school, social restaurant,
office



5.2. Greswaren fabriek

5.2.1. Project details

| | |
|------------------------------------|---|
| <i>Address</i> | Keulseweg 36, Reuver |
| <i>Municipality & province</i> | Gemeente Beesel, Limburg |
| <i>Year of construction</i> | 19 th Century |
| <i>Timeframe reuse</i> | 2012 – 2019 |
| <i>Delivery date</i> | Q4 2019 |
| <i>Monumental status</i> | Municipally listed |
| <i>Gross floor area</i> | New - 5626 m ² (+ 765 m ² reserved for another program) |
| <i>Program</i> | Old – (vacant) industry New – High school, restaurant and offices |
| <i>Owner</i> | Old – Gemeente Beesel New – SOML |

Location

Reuver is a small municipality in the northern part of the province of Limburg, closely located to the larger cities Venlo and Roermond. Reuver is one of the smallest municipalities in the province of Limburg and The Netherlands with only around 10.000 inhabitants (director, SOML, A1). The village is sandwiched between the river the Meuse (Maas) and the border of Germany. Officially, Reuver is a village that is part of the municipality Beesel. The area is known for its history in the production of gres, a type of clay.

The Greswarenfabriek is part of a larger urban area development of six hectares called Oppe Brik (project manager, Gemeente Beesel, B1). The area was initially used as industrial area for greswaren, a type of clay where they made windowsills from for example. The area was left vacant and is used to develop housing by and for the municipality.

Building

The Greswarenfabriek is an industrial building part of the greswaren factory Molenveld-Zuid where they produced the gres-clay. The type of building is one of the last buildings from that age that has to do with the gres-industry (HEVO, 2020). The factory provided a lot of work and employment for the village and surrounding municipalities in its heyday in the sixties.

The building has been an industrial municipal listed monument since 2014. Municipally listed monuments are not publicly published. Information on their value assessment (*waardestelling*) by governmental organisations is therefore not available.

Current situation

The Greswarenfabriek is currently used as a high school called Het Grescollege. This location is part of an educational foundation called Stichting Onderwijs Midden Limburg (SOML). The building houses multiple end-users, the largest user in the building is the Grescollege. Apart from that it also houses multiple companies like Rabobank, a commercial restaurant called the Gresbuus, local clubs and associations, and smaller self-employed companies. The reason for this is that the school educates based on the principle that their students have to collaborate with the companies. They call this cross-pollination. For example, the students have the possibility to do an internship at one of the companies in the building during their studies.

5.2.2. Data collection

Key stakeholders

| | |
|---------------------------|---|
| <i>Initiator</i> | Gemeente Beesel & Stichting Onderwijs Midden Limburg (SOML) |
| <i>Client</i> | HEVO |
| <i>End-user</i> | Het Grescollege, Rabobank, de Gresbuus |
| <i>Financer</i> | Gemeente Beesel, Provincie Limburg, SOML |
| <i>Project management</i> | HEVO, BOEi |
| <i>Contractor</i> | Phase I - MBB-KW VOF (Maasveste Berben Bouw & Koninklijke Woudenberg) Phase II – Van Heur Bouw & Onderhoud |
| <i>Architect</i> | Janssen Wuts Architecten |

For the case of the Greswarenfabriek there were eight interviews conducted. This was based on the availability and willingness the parties, as well as the ability to get in contact with them. Both SOML and Grescollege as initiator and end-user had an influence in the process and are thus both chosen to be interviewed. The director of SOML will go in depth on the educational and housing vision of the organisation and why they have decided to reuse the Greswarenfabriek. The location director of the Grescollege will go in more depth on the use of the building and their input on the program of requirements. The project was initiated by Gemeente Beesel, of which the project manager of the area development ‘Oppe Brik’ (where Greswarenfabriek is a part of) is interviewed.

The building is developed by HEVO as a delegate client of SOML in a risk-bearing project management contract, of which the project manager is interviewed. The contractor was a building combination (a VOF) of two different contractors: Maasveste Berben Bouw (MBB) and Koninklijke Woudenberg (KW), who are both interviewed. Lastly, the advisor that supported the decision-making concerning heritage, monumental elements, and supervision during construction was BOEi.

Table 11: Interviewees of the Greswarenfabriek case.

| Interview | Company | Role interviewee | Party |
|------------------|-----------------|-------------------------|-------------------|
| A1 | SOML | Board member | Client |
| B1 | Gemeente Beesel | Project manager | Municipality |
| C1 | BOEi | Heritage advisor | Advisor |
| D1 | MBB | Director | Contractor 1 vof |
| E1 | KW | Project leader | Contractor 2 vof |
| F1 | Het grescollege | Location director | End-user |
| G1 | HEVO | Project manager | Client (delegate) |

Figure 32: front view
(HEVO, 2020)



Figure 31: cafeteria
(HEVO, 2020).



Figure 30: inside view
(HEVO, 2020).



Figure 29: inside view
(Grescollege, n.d.).



5.2.3. Reuse process

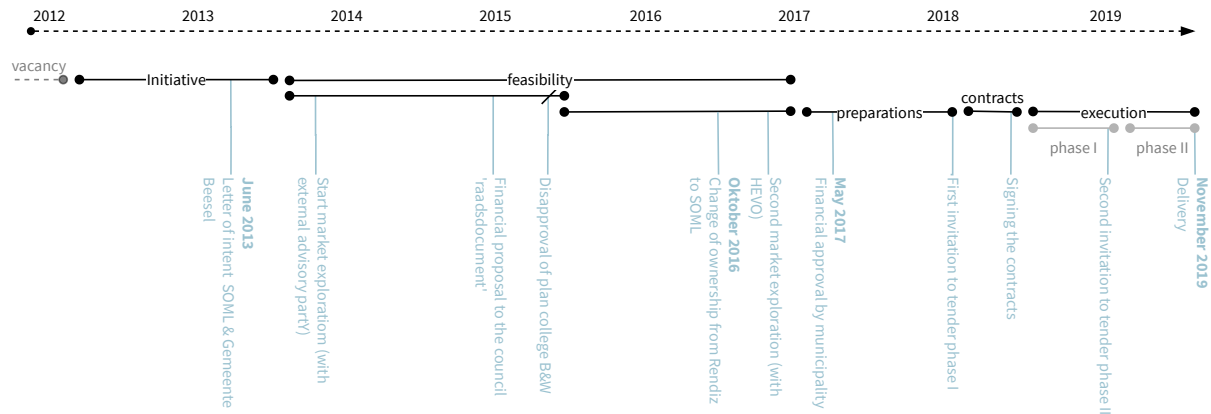


Figure 33: process timeline of the Greswarenfabriek project (own ill.)

The municipality and SOML were already talking about finding a possible location for a new location of a school to merge two independent smaller locations (project manager, Gemeente Beesel, B1). SOML had two options: (1) stop providing high school education in the municipality and let the students go to neighbouring municipalities, or (2) find a new building to merge the two smaller locations (director, SOML, A1). The idea initiated to find out whether or not it was possible to involve the Greswarenfabriek in that plan. To seal their plan, the municipality and SOML signed a form of intent (*intentieverklaring*) (project manager, Gemeente Beesel, B1). The municipality had the intention to keep the building because they said: “you know, we better keep the building for now because demolishing is always possible in the future”¹ (project manager, Gemeente Beesel, B1).

The council of the municipality was hesitant to accept that the Greswarenfabriek could become a part of the plan to found a school in their village¹. Reuver is located close to Roermond, a city where they reused an old industrial building into a ‘culture factory’ (ECI Cultuurfabriek), which became a financial disaster for the board of the municipality. Gemeente Beesel wanted everything but becoming the next Roermond (project manager, Gemeente Beesel, B1). However, it was in the interest of the municipality to develop a school in the area and to preserve the building. This interest was so high that they eventually decided to put more than twice the amount of money in the project later in the process (project manager, Gemeente Beesel, B1).

“You can only preserve a building if you have the right use for it.”
- Project manager, Gemeente Beesel¹

Together with an external advisory party, the municipality and SOML performed a market research in 2014. BOEi entered the project to advise them on the value assessment and monumental aspects of the building, together with a feasibility study. The proposal that came out of this market research was disapproved by the council. At that time there was already an architect and constructor selected to design the first plans to bring forward to the council. According to the EU government procurement (*Europese aanbesteding*), it is legally not possible to send out a second invitation to tender for the same project (project manager, HEVO, G1).

Due to the financial disapproval of the municipal council, a commercial developing party, Rendiz, entered the project to develop the building and rent out the space to SOML. However, legally this is not possible because a municipality cannot financially support a commercial party (even if it is indirectly) (project manager, Gemeente Beesel, B1). The municipality found it irresponsible to become the owner of the building.

¹ Those are not the literal words of the municipality, but loosely interpreted by the project manager of Gemeente Beesel.

“However, we did not want to let go of this project. I wanted to lead this project, but we were not able to at that time. The Alderman and I saw that it was important to preserve the building and offer high school education in the municipality.”

- Board member, SOML

The director of SOML reached out to external parties to help him set up a plan to make it happen. The director of SOML knew HEVO, and their risk-bearing development formula, from previous projects (director, SOML, A1). HEVO set up a market research and feasibility study with different scenarios for housing het Grescollege in the factory building (project manager, HEVO, G1). This led to a proposal for the council in May 2017, which was approved by all council members (project manager, Gemeente Beesel, B1).

To get it financially feasible, the province of Limburg had to contribute financially. The project manager of Gemeente Beesel was the pawn between the municipality, SOML, and the province to get it done. The main stakeholders realised that a new-build school would cost less, but reusing the Greswarenfabriek opened doors to multiple subsidies. The extra costs of reusing the old building would outbalance the margin of a new-build school (director, SOML, A1).

The first phase of the project was put on the market at the end of 2017 in a Best Value Procurement (then called EMVI-procurement in Dutch). This procurement entailed the restoration of the building shell to preserve historical elements and make the building water- and windproof. Doing so made it possible to invite regional companies and contractors to compete. The regional partnership MBB-KW VOF was selected based on their presentation, but mainly because of their price (advisor, BOEi, C1). The contractor started working on the shell at the beginning of 2018. The preparation time for this was fairly short. According to the director of Maasveste Berben Bouw, the timeframe was very strict: “the construction works started soon after the result. We submitted a price at the 20th of April, signed the contracts at 9th of May, and started construction works a few days later” (D1).

At that point BOEi was involved in the project again, this time as supervisor during construction and as spokesperson to governmental bodies concerning monuments (advisor, BOEi, C1).

During the execution of phase I, there were some difficulties with the state of the structure of the building which was worse than anticipated (advisor, BOEi, C1; project leader, Koninklijke Woudenberg, E1). According to the project leader of Maasveste Berben Bouw, the concrete structure had to be replaced for 80%, which was way more than they anticipated during the procurement (D1). Due to the quality of the concrete structure, among other things, the construction works took 3 months more than planned, which had an influence on the start of phase II of the project. The project leader of Koninklijke Woudenberg said: “the solutions that we had come up with could not be used in the rest of the building and thus required a lot of customization” (E1).

The second phase, the finishing of the interior, was done by another contractor via a second invitation to tender. The building was delivered three months later than planned in November 2019.

5.2.4. Success factors

The success factors that were derived from the interviews are listed here below in random order.

Innovative contracting (in 5 interviews)

Almost all interviewees mentioned something about the type of contracting that was being used in this project. There were three specific contract that were mentioned: (1) the risk-bearing delegate client contract of HEVO, (2) the split of the execution phase into two different contracts, and (3) the ownership construction between SOML and Gemeente Beesel.

As was mentioned before, the building is eventually developed by HEVO as a delegate client of SOML. This means that SOML paid a standard fee and HEVO takes on all the risks and responsibilities until delivery (within reason). They call this an RPM-contract (*risicodragend project management*/risk-bearing project management). This way, SOML had control over the quality and main decisions, while not bearing

the risks of planning and process. This gave the organisation more security and continue doing their work instead of leading the project at the same time (director, SOML, A1). After all, the primary tasks of SOML is provide education and not developing new buildings.

Second, the execution phase was divided into two different phases and tendered that way. The first phase was reserved for the building shell renovation, while the second phase was reserved for the finishing and interior. According to HEVO this required different types of contractors (project manager, HEVO, G1). The advisor from BOEi appreciated the phasing: “it gave them a price advantage that was very favourable in this situation” (C1). It also had the benefit that during the process there will still some details that could change before starting the second phase of the execution (project manager, HEVO, G1). During the first phase tender, the director of Maasveste Berben Bouw appreciated the type of award criteria HEVO used to select the contractors. Even though the tender itself was a fairly standard EMVI-procurement, there were points allocated to alternatives that the contractors presented (director, MBB, D1).

Lastly, the project manager from Gemeente Beesel points out that the contract SOML and Gemeente Beesel signed on the ownership of the building is very special. Normally a municipality would not like to be the owner of such a type of building, and therefore many projects like this are discontinued. However, in this case the parties signed a contract where SOML becomes the owner of the building after 30 years (project manager, Gemeente Beesel, B1). This assured that the municipality was willing to cooperate in the financing of the project.

“You can see here that the knife cuts both ways: SOML is happy that they have been able to house education in the surroundings and acquire the building after 30 years. The municipality is happy that they got a deal whereby the risk no longer falls to the municipality”
- Project manager, Gemeente Beesel

Uniqueness of the building (in 4 interviews)

According to three of the interviewees, the uniqueness of the building is what made the project such a success despite the setbacks during the process (A1, B1, C1 & E1). The director of SOML said his drive to reuse this building was because of this: “a building has to be unique to preserve it so that people will actually back up the plan. We shouldn’t keep 100 weaving looms just to proof that we used to weave. If we preserve one of each type and we cherish it, that’s enough” (A1). The uniqueness of the building is what made it feasible according to him: “the uniqueness of this building, in this context, is what made it feasible” (director, SOML, A1). The building brings added value to the environment and the client (advisor, BOEi, C1).

“You can only preserve a building if you have the right use for it.”
- Project manager, Gemeente Beesel

Socio-geographic demand for education

The educational function that the building had to house made it worthwhile to go through the different plans. The municipality had been willing to triple their financial contribution just because they highly valued a high school in their village (project manager, Gemeente Beesel, B1). He said: “if you have such a small municipality of just 10.000 inhabitants and you have this kind of high school in your community, that is super special. But we all know adaptive reuse is risky, you cannot afford this as a municipality. That is why you need a bearer for this plan, and that was education” (B1). The fact that SOML was considered to be the right candidate was because they just received an excellent score on a quality test (project manager, Gemeente Beesel, B1).

Financial support of public authorities

The plan and project were dependent on the financial and political support of the municipality and province of Limburg. Both parties have substantially supported the project by financing a large part of the total budget. The relationship and legal steps that had to be taken with both parties was initiated and controlled by the project manager of Gemeente Beesel (B1). This is because the province only has one point of contact, which is the municipality (project manager, Gemeente Beesel, B1).

“If the municipality and province had not given so much money, the plan would have never been executed.”
- Project manager, Gemeente Beesel

Guts and ambition

The project had a few setbacks along the way. One way to overcome this is through the willpower of the main stakeholders. As the project manager of Gemeente Beesel said: “if you do not have guts and ambition, you would have never achieved this” (B1). Complex processes depend on the type of persons that you work with, because it asks for expertise and a network (project manager, Gemeente Beesel, B1). “Everyone wanted to make it into a success, so the ambition was there from the beginning” (director, SOML, A1). According to the advisor from BOEi, it was therefore crucial that SOML continued to believe in their ambition (C1).

Firmness in new housing concept

While they were drafting the program of requirements according to the new educational vision, the board of SOML received many complaints from their employees (director, SOML, A1). They wanted to implement a new type of education concept in the building with open classrooms that the employees were not used to. Managing this expectation and the move to the new building was one of the aspects that they had to deal with, while still standing their ground. The location director of het Grescollege recited a famous quote from Henry Ford to illustrate this: “If I had asked people what they wanted, they would have said faster horses” (F1). Both the director and location director are happy that they stood their ground during the whole process (A1 & F1).

Arthur

Trust expertise (in 1 interview)

HEVO stepped into the process once the first plan was withdrawn. This means that many studies had already been done on the building, legislation, finances, and so on. Instead of going back to square one, they decided to “build on the success that was already there, there were many things already well organized” (project manager, HEVO, G1). This requires trust in your predecessors and what they have done.

Think in term of opportunities instead of threats (in 2 interviews)

According to the project manager of HEVO, the most important success factor in this project was the honesty about the pros and cons of this building (project manager, HEVO, G1). The building is now being used as a high school. In the Netherlands, schools have specific guidelines on comfort and indoor climate. However, according to the project manager of HEVO it was important to realize that such high-quality standards were not feasible in such an old building. “You have to think in terms of opportunities instead of threats” (project manager, HEVO, G1). For this you have to keep communicating with the other parties, as well as the client and end-user, on what is possible and what is not possible within the MOTIQ-constraints and remain solution-oriented (project leader, Koninklijke Woudenberg, E1).

5.2.5. Main takeaways

During the interviews the interviewees were asked what they have learned from the process and what they would have liked to change if they could. The literature showed that failure factors are interlinked with success factors. The answer that the interviewees gave is an indication what success factors they missed during the project. The lessons learned are listed down below in random order.

Early involvement of the construction team

According to the director of Maasveste Berben Bouw (D1), the project leader of Koninklijke Woudenberg (E1), and the advisor from BOEi (C1), early involvement of the construction could have avoided the issues during execution. When the construction team is involved early on in the process, many issues concerning the state of the structure could have been avoided because it would have benefitted the depth of the structural research into the building state and fabric. The director of Maasveste Berben Bouw said: “during the process I missed the vision of an executive party. The more disciplines look at a building, the more issues will come to the surface” (D1)

Function follows form

If the form of the building would be more leading in the function it was going to accommodate, many major (structural) interventions could have been avoided (advisor, BOEi, C1). Obviously, the team made it work to put an educational function into an industrial building, this is special and well-done in itself already. However, there were structural interventions done in one part of the building that could have been avoided if the final use of the building would not have been educational. Also, the requirements of the construction were stricter due to the educational use.

Thorough research into the building & fabric condition

The contractors of the restoration and renovation phase, phase I, indicated that the project lacked a thorough research on the condition of the building and the fabric before the procurement. This would mean that more money had to be invested in the beginning, but that would have cut in the final costs. The building was insufficiently mapped before the preparation phase and single theories on construction had been projected on the whole building. Better historical research was desired as well as more specialized parties in adaptive reuse (director, Maasveste Berben Bouw, D1). The project leader of Koninklijke Woudenberg said that this was a case of “penny wise, pound foolish, with a year longer preparation time, more quality could be achieved with a lower budget” (E1). Thorough research into the building and fabric condition could have been done by involving the construction team earlier on in the process, which is one of the other desired success factors.

5.2.6. Summary

The in-depth study into the project, history, process, and success factors of the Greswarenfabriek increased the understanding of reusing municipal heritage in uncommon locations. This case study project was drawn by its sparsely populated surroundings and highly motivated end-user.

The success factors that were perceived during the reuse process by the interviewees are summarised and compared to the success factors from the literature review in figure 34. The full comparison of the success factors against the success factors from the literature review can be found in *Appendix B – Interview results*.

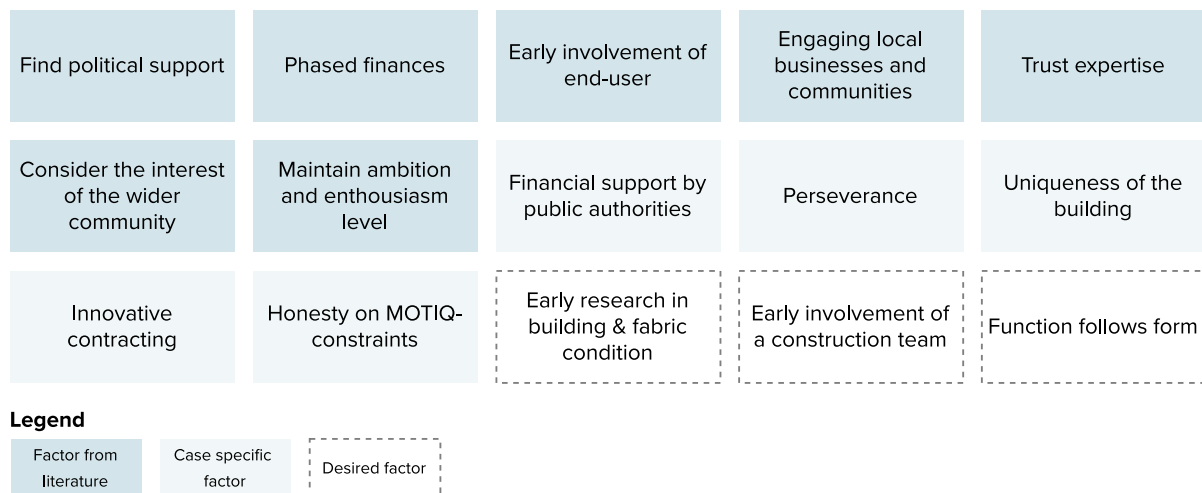


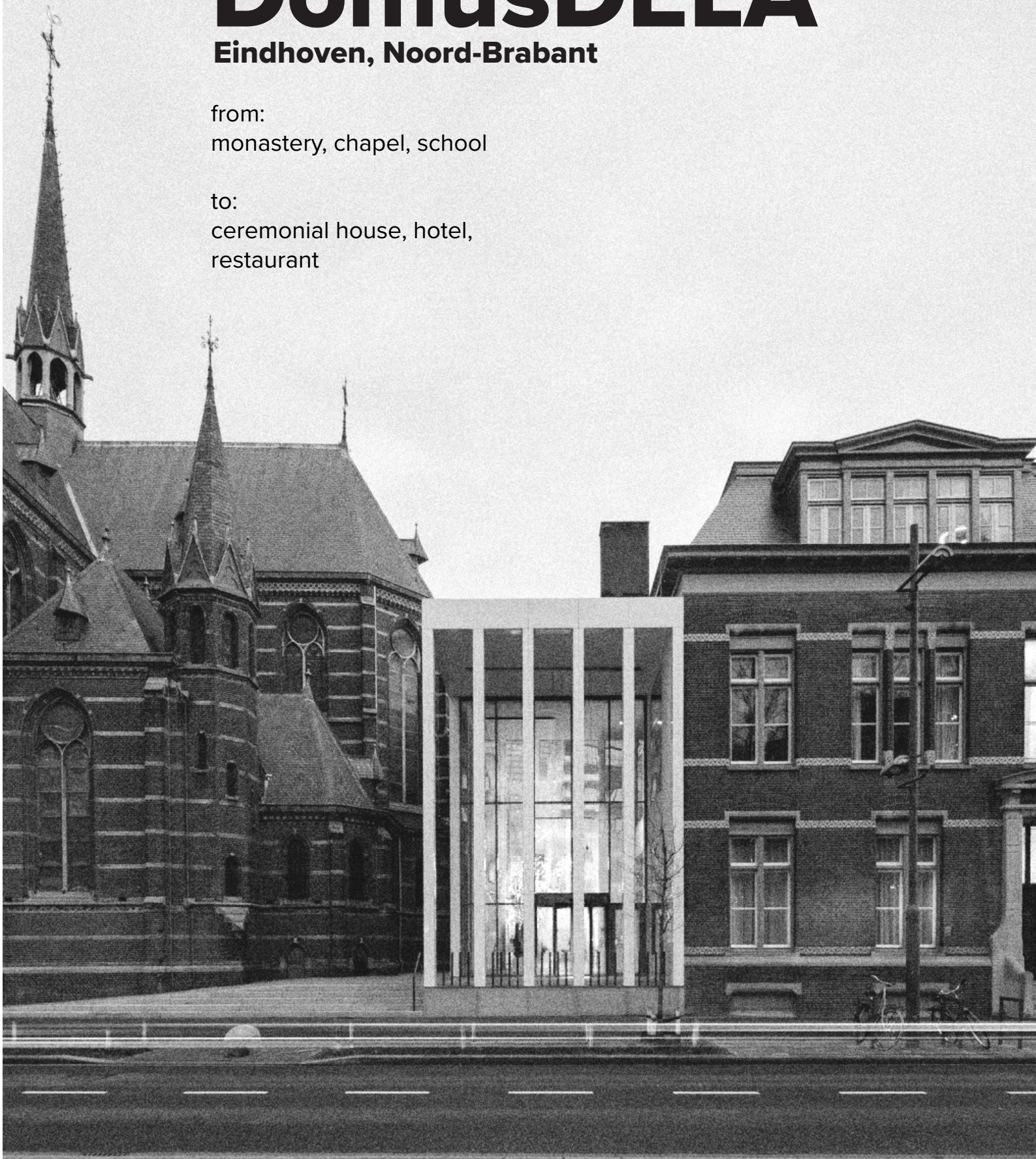
Figure 34: summary of the perceived success factors by the interviewees of the Greswarenfabriek case (own ill.)

DomusDELA

Eindhoven, Noord-Brabant

from:
monastery, chapel, school

to:
ceremonial house, hotel,
restaurant



5.3. DomusDELA

5.3.1. Project details

| | |
|------------------------------------|--|
| <i>Address</i> | Kanaalstraat 4, Eindhoven |
| <i>Municipality & province</i> | Gemeente Eindhoven, Noord-Brabant |
| <i>Year of construction</i> | 1628 |
| <i>Timeframe reuse</i> | 2012-2019 |
| <i>Delivery date</i> | Q4 2019 |
| <i>Monumental status</i> | Nationally listed (<i>Rijksmonument</i>) since 1972, 2001, and 2002 |
| <i>Gross floor area</i> | New - 9.200 m ² |
| <i>Program</i> | Old - Monastery, chapel & boys' boarding school New - Multifunctional ceremonial building, hotel & restaurant |
| <i>Owner</i> | Old - Augustinium fathers (<i>Paters Augustijnen</i>) & Gemeente Eindhoven New - Coöperatie DELA |

Location

Eindhoven is a city in the southern part of the Netherlands. It is originally a catholic city and hence still owns many catholic churches. The city is famous for housing one of the largest electronics companies in the Benelux, Philips, and is therefore known for its working-class mentality. Eindhoven is often called the city of light due to its rich history with the lightning company Philips. It is one of the more modern looking cities of the country, specifically famous for its reused mixed-use industrial area Strijp-S.

Eindhoven is not an old city, especially its city centre is relatively new compared to other large cities in the Netherlands. The oldest part is a little over 125 years old (CEO, Coöperatie DELA, B2). DomusDELA is located in the oldest area of the city of Eindhoven. The complex was a small pearl in the city, but was heavily neglected (project manager Gemeente Eindhoven, D2).

History

Complex Mariënhage is part of the oldest area in the city. The history of the complex traces back to the 11th century, where at the same location a castle was built which acted as the first fundamentals for the monastery (Coöperatie DELA, 2020). In 1420 lord Jan van Schoonvoorsten gifted adjacent land of his castle to the Augustinium fathers. They built a monastery on the piece of land since they had inherited the right to tax and were permitted to fish in the Dommel. Klooster Mariënhage was officially founded in 1472 and soon became one of the most influential knowledge institutes of the Netherlands in the 15th century (Verhoeven, 2018).

During the Eighty Years' war (*Tachtigjarige oorlog*), parts of the monastery were burned down and the fathers fled elsewhere. In 1628, the restoration of the complex started and the fathers stayed in Eindhoven, regardless of the disagreements of the municipality's inhabitants (the catholic religion was questioned during that period). The main activities of the Augustinium fathers turned into care for the poor and providing education (Verhoeven, 2018).

In 1890, after a turbulent period, the new Augustinium fathers built two buildings adjacent to the monastery: a church, currently known as the Paterskerk, and a boys' boarding school, currently known as Augustinarium. The complex, at that point called Complex Mariënhage, was then used by the Augustinium fathers until 2006 with a remaining of 14 fathers (Verhoeven, 2018).

Building

The complex consists out of three buildings, called together Mariënhage:

- Paterskerk (church)
- Augustinianum (chapel and boys' boarding school)
- Klooster Mariënhage (monastery)

The Paterskerk is a neogothic style church, built in 1897 and 1898, and has the typical cross-shape floorplan that is so typical for catholic churches. This part of the complex received the national monumental status, mainly because of its cultural-historical values (RCE, 2001). The expression of

neogothic catholic style (public) church is typical for the development of the catholic movement in the south of the Netherlands and is thus deemed significantly important. The style and details of the neogothic interior is also deemed special due to the involvement of the Augustinium movement. A special and striking detail of this building is the large statue of Jezus on the top of the church tower, that looks out over the city with wide spread arms (and therefore affectionally called Jezus Waaghals, *Jezus Daredevil*, by the city's inhabitants) (RCE, 2001).

The Augustinianum was originally designed to be the chapel of the Augustinium fathers. The CHA describes the value of this building as being part of the flourishing of orders and congregations of catholic education in the Netherlands, as well as the typological development of boarding schools. The rareness of its condition and preservation is deemed special by the CHA (RCE, 2002).

The monastery Klooster Mariënhage was built in the 15th century, with major renovations in 1628 and 1632. The old wing of the monastery is housed into a more modern looking building from the 19th century. It received its national monumental status (rijksmonument) already in 1972. There is therefore little information available on the value assessment by the CHA (RCE, 1972).

The total ensemble of buildings is perceived by the RCE as valuable because of its unity (RCE, 1972, 2001, & 2002). The buildings are located in the heart of the city center of Eindhoven, right next to a river called de Dommel that crosses the city. The Kanaalstraat is a street can bring you to the east of the city, and is one of the main (non-highway) roads into the eastern part of the province Noord-Brabant. Within 10 minutes by foot you can reach the central train station of the city, as well as multiple bus stops within 2 minutes walking distance.

Current situation

The ensemble of buildings, originally owned by the Augustinium fathers (the Paterskerk and Klooster Mariënhage) and Gemeente Eindhoven (the Augustinianum), has been reused by Coöperatie DELA. Coöperatie DELA is a company founded in 1937 and is originally from Eindhoven. It is an insurance company specialized in funeral services without profit motive. They have 3 million insured customers, of which 100.000 are from Eindhoven. They own a large real estate portfolio with crematoria and funeral homes in the Netherlands and Belgium.

5.3.2. Data collection

Key stakeholders

| | |
|--------------------------|---|
| <i>Initiator</i> | Augustinium fathers & Gemeente Eindhoven |
| <i>Client</i> | Coöperatie DELA |
| <i>End-user</i> | Coöperatie DELA, Hotel Mariënhage, Hutten, Muziekgebouw Frits Philips |
| <i>Financer</i> | Gemeente Eindhoven, Coöperatie DELA, Provincie Noord-Brabant |
| <i>Projectmanagement</i> | Bureau FRANKEN |
| <i>Contractor</i> | Bouwbedrijf van de Ven |
| <i>Architect</i> | Diederendirrix & Architectenlenlen |

The project was initiated by the Augustinium fathers and Gemeente Eindhoven. In this collaboration, Gemeente Eindhoven took the lead with the management of an in-house project manager together with a plan economist who guided two of the fathers through the development of a program of requirements. That is why the project manager is interviewed as representative from Gemeente Eindhoven.

The stories of the Augustinium fathers, Gemeente Eindhoven and Coöperatie DELA collides when the building was put on the market. However, the CEO of Coöperatie DELA already had the idea to develop a multifunctional ceremonial building in preferably Eindhoven. That is why the CEO of Coöperatie DELA has been interviewed, as well as their in-house project manager.

Last but not least the project leader during preparation and construction works on behalf of the contractor was interviewed as an expert in renovation, restoration and reuse.



Figure 38: the Paterskerk (DomusDELA, 2020).



Figure 37: Jezus Waaghals (DomusDELA, 2020).



Figure 36: hotel room (DomusDELA, 2020).



Figure 35: back entrance (BASE Photography, 2020).

Table 12: interviewees of the DomusDELA case.

| Interview | Company | Role interviewee | Party |
|-----------|------------------------|------------------------|------------------------|
| A2 | Bouwvedrijf van de Ven | Project leader | Contractor |
| B2 | Coöperatie DELA | General director (CEO) | Client/initiator |
| C2 | Coöperatie DELA | Project manager | Client |
| D2 | Gemeente Eindhoven | Project manager | Municipality/initiator |

5.3.3. Reuse process

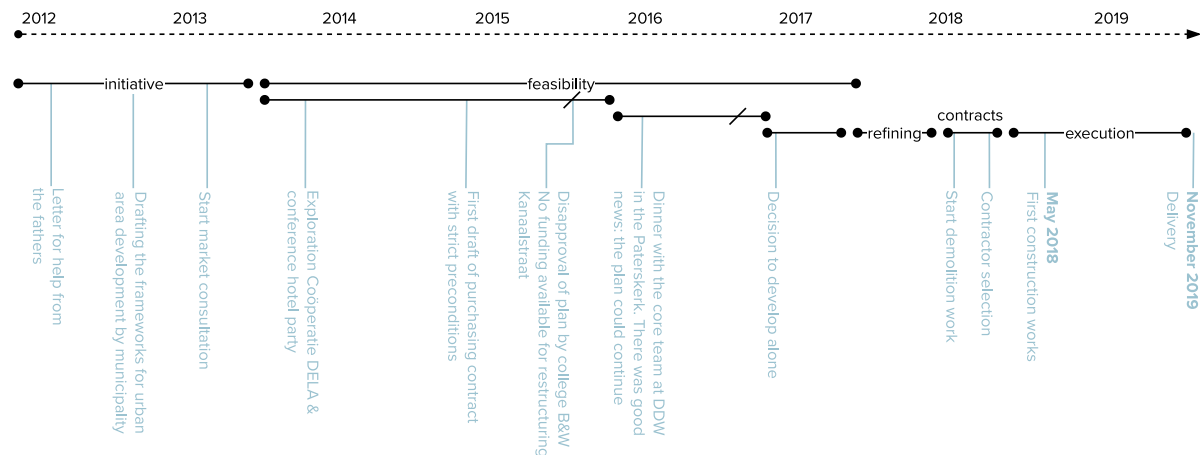


Figure 39: process timeline of project DomusDELA (own ill.)

The story of the development of Mariënhage starts in 2011, when the Augustinium fathers sent a letter for help to the *college van B&W* (executive board of the municipality Eindhoven)¹ (Project manager, Gemeente Eindhoven, D2). They could no longer continue their practices as religious fathers while maintaining the church (Augustijnenkerk) financially. The municipality owned the Augustinianum which was adjacent to the church. Since this building was a financial burden for the municipality (Project manager Gemeente Eindhoven, D2), they decided to start a market exploration. They set up a team with two of the fathers, a plan economist and herself, with backup from the alder(wo)man.

“They basically told us: We are becoming extinct. We can no longer provide our services in the church. Can you please take over the building for €1? Oh, and by the way, it is about to collapse”²
 – Augustinium fathers¹

At that time, the market was in the middle of the financial and economic crisis. Adaptive reuse of a church building was undesirable for the municipality and did not have many market possibilities since the successes before the crisis hit were not the solution at these times. During the international Biënnale Leegstand & Herbestemming (*Biennial vacancy & reuse*) organised by CHA in Maastricht, they analysed their possibilities to find the latent need to reuse this building with the help of architects and calculators.

Based on this event, the project manager of Gemeente Eindhoven drafted the first frameworks for the complex in April 2012 which was presented to college B&W with five main pillars (project manager, Gemeente Eindhoven, D2):

1. Preservation of heritage and history by development
2. Open and accessible for everyone
3. Multifunctional programme to invite everyone to come
4. Greenify the city centre by incorporating the Dommel-zone
5. A new function that suits the DNA of the place

² Those are not the literal words of the Augustinium fathers, but loosely interpreted by the project manager of Gemeente Eindhoven.

By drafting this framework, the municipality agreed to conduct an official market research. This market research had a social theme 'met hart en ziel' (*with heart and soul*) because the Augustinium fathers highly valued a new function that appreciated the heritage of the fathers³ (Project manager, Gemeente Eindhoven, D2). The fathers established foundations in the past that cared for homeless people, so that downsized the possible functions for this location. Because of this the fathers and municipality were looking for a 'lord of the castle', a party that would eventually use the building as an end-user and would take good care of it.

"You could see their despair: we have to get rid of it, we should do something, but we want something good done with the building and we don't know how. It was important for the fathers to pass on their legacy"
- Project manager, gemeente Eindhoven³

The market consultation 'met hart en ziel' was published in 2013. Over 29 potential parties answered, from commercial developers, a hotel, to care institutions and so on, including Coöperatie DELA. To accommodate the speed of the process and the satisfaction of potential stakeholders, the municipality organised two full days of speed-dating with the interested parties. In these speed dates, the fathers and the municipality met with the parties in an informal setting and discussed their wishes and professionalism⁴. This led to two interesting parties: Coöperatie DELA and a conference hotel party. The ambition of DELA to transform it into a ceremonial building resonated with the vision of the fathers the most⁵.

"Paper is patient. But if you meet the people and talk with them, you will soon realize what kind of people you have in front of you and whether or not there is a match."
- Project manager, Gemeente Eindhoven⁴

"The former owners of the building, the Augustinium fathers, were instantly in love with our plan. They told us: you continue our story. You keep on taking care for beautiful encounters, you make sure people interact with each other in a meaningful way, and you respect the spiritual power of the environment. People are less religious, but are not less spiritual".
- CEO, Coöperatie DELA⁵

The CEO of Coöperatie DELA had the idea to create a ceremonial house already before the development of complex Mariënhage started⁶. Once the opportunity arose to execute this in the middle of the city of Eindhoven, their city of birth, they decided to step into the process. However, Coöperatie DELA also wanted to house their headquarters in the complex, which went against the idea of the fathers and Gemeente Eindhoven to turn the complex into a public, multifunctional building (Project manager, Gemeente Eindhoven, D2). At that time there was a high office vacancy rate so selling the old headquarters would be problematic. To make the plan profitable without including their headquarters, the organization decided to look for a second party to develop with (CEO & project leader, Coöperatie DELA, B2 & C2; project manager, Gemeente Eindhoven, D2). This was the conference hotel party that already showed interest during the market consultation.

"Right now, you see that everything that has to do with mourning is pushed to the outskirts of a city, with crematoria outside of the city. We want these big events to take place in the middle of society and can be seen. We want to create something in the middle of society where you can mourn and marry, in one and the same building".
- CEO, Coöperatie DELA⁶

After 1,5 years of market research, the conference hotel party quit because they were financially not able to support this project and continue with their own practices at the same time (project leader, Coöperatie DELA, C2). When the hotel party quit in 2015, Coöperatie DELA had to decide whether or not they should look for another party to develop with, or develop the hotel by itself and find tenants later (project leader, Coöperatie DELA, C2). For the sake of progress, they decided to develop the complex themselves. They did find a partner during the next stage who was willing to bear some risks but not the financial burdens, but had experience with developing hotels, a valuable skill that Coöperatie DELA still lacked. However, after two years of trying to get this plan into a feasible plan to execute within the financial and time boundaries, the party withdrew. Coöperatie DELA then decided to continue on its own and develop the hotel section without a tenant (project leader, Coöperatie DELA, C2).

The plan came onto the market via a Best Value Procurement (BVP) since the client was looking for flexibility and expertise in monumental buildings. They asked an advisory party to execute this procurement because Coöperatie DELA was not skilled in such type of processes or procedures. It was difficult to find a contractor, since the prices for building workers and materials were booming in 2017 (project leader, Coöperatie DELA, C2). However, after pitching their ideas and plans to potential contractors, they received late night calls from the companies that this type of procurement was not desired. They advised a best value presentation, but with a different type of selection based on motivation and flexibility⁷.

“You want to be transparent about everything, but then you are told that they do not want that at all. We started talking with all the parties and asked them how they would proceed with this process. They advised me to present the plan and boundaries, and select the party within one day without asking them to dive deep into all the materials”

- Project leader, Coöperatie DELA⁷

The plan was cut into two phases: they first stripped the building until its shell and then put it on the market. Based on the feedback from the potential contractors, the brief of the tender asked the contractors to show their flexibility. This way Bouwbedrijf van de Ven submitted their proposal to purchase the building materials themselves to provide a better market price (project leader, Coöperatie DELA, C2). Based on this they were selected. The contractors' contract was signed in February 2018 and construction works started in May 2018. Eventually the building was delivered in November 2019. This means that the construction works only took 18 months, which was perceived as a tough time planning (project leader, Bouwbedrijf van de Ven, A2; project leader, Coöperatie DELA, C2). During the construction works they stumbled upon the old city walls from the 16th century.

5.3.4. Success factors

The success factors that were derived from the interviews are listed here below in random order.

Party with the financial means (in 2 interviews)

An adaptive reuse project, and in particular those projects with a size like DomusDELA, are perceived as financially riskier than a new build project. This requires a client and/or financier that is able to financially bear these risks. Coöperatie DELA is such a party, and in this case as client and financier, that has the financial means to do so and has the social obligation to justify their investments because they are an insurance company with over 3 million members. Both the CEO and project leader of the client agree that Coöperatie DELA was able to cover a large part of the risks, thus reducing uncertainties on financing (interview B2 and C2). This made it possible to take risks and develop the hotel part of the building without a potential tenant. The client's project leader put it like this: “we have the ability to draw on reserves and investments. But we also have a large responsibility towards our members, because it is not like we can invest in something and not being able to explain why we are not making any profit” (C2). It is however important to note that this does not mean that there are endless possibilities, says the project leader from Bouwbedrijf van de Ven: “we did not have endless money, all in all it's money from DELA who have to justify their investments. You cannot say ‘sky is the limit’, even though the ambition is there” (A2).

Story and ambition (in 2 interviews)

One of the key aspects of this project is that two strong stories collide, as the CEO of Coöperatie DELA argues: “the story of the adaptive reuse was enormously important, one that inspires. This helps eventually to create a support base. The story of a developing party who only wants to make money is less inspiring” (B2). The story of creating a ceremonial house is one that gives back to the wider community and accidentally collided with the cry for help by the Augustinium fathers. The intentions of the Augustinium fathers was strong enough to draw the framework for urban area development on by the municipality (D2). Eventually this framework with the five main pillars for the development were held high during the next phases and are still visible in the delivered building (Project manager, gemeente Eindhoven, D2).

Innovative financing (in 1 interview)

The financial contribution of the municipality was hard to get done. The collaboration with Provincie Noord-Brabant and their connections with the Nationaal Renovatiefonds (*national renovationfund*) was

crucial to renovate and reuse the building. This did mean that the municipality had to put in the same amount of money as the province did to accommodate in the middle, the project manager of gemeente Eindhoven said: “as municipality we had to share the costs with the province. That was a hard task. We did not have this money right away but we have worked hard to make it happen” (D2). To make it happen they came up with an innovative financial construction (a savings fund) where they combined the future tourist tax and higher property tax (*OZB belasting, onroerendezaakbelasting*) as coverage (project manager, gemeente Eindhoven, D2).

Perseverance (in 3 interviews)

The first phases of this process were significantly more complex than later in the process. There were for example the moments where the municipality was not able to get the financial means, or when a possible commercial party stepped out of the project and Coöperatie had to develop it themselves. According to the CEO of Coöperatie DELA, it was very important to persevere during these harder times: “We started on this pink cloud of enthusiasm and unity. But the devil sits in the detail and that is when you need to dare to persevere and stay on track” (B2). The CEO and project leader of Coöperatie DELA (B2 and C2), as well as the project manager of Gemeente Eindhoven (D2) argue that perseverance was key even when it was not going as planned. There is a Dutch saying that was quotes: “*waar een wil is, is een weg* (where there’s a will, there’s a way) (project manager, Gemeente Eindhoven, D2).

Enthusiastic and inspiring initiator (in 3 interviews)

All the interviewees praised the involvement and passion of the CEO of Coöperatie DELA (which is interviewee B2). The dream to create a ceremonial house in the middle of a city was already evident a few years earlier. The project leader of Coöperatie DELA said that: “Within the corporation only 1 person knew about the idea of DomusDELA, or the potential it had, and that was our CEO” (C2). This expressed itself into a personal drive into making the project happen⁹ (project leader, Bouwbedrijf van de Ven, A2). The project manager at Gemeente Eindhoven also said: “It was his dream and we were able to make it happen with all of us” (D2).

“This was his thing. He was the inspiration for this project and the one that pulled the cards, definitely on the main points. He was the most important pawn”

- Project leader, Bouwbedrijf van de Ven⁹

“For the success of an adaptive reuse project, you need to have a leader that has vision and balls. Someone who has a shelf in front of his head and doesn’t want to hear the word no. This means you constantly have to look for a creative solution”

- Project leader, Coöperatie DELA¹⁰

Economic viability of extra function (in 2 interviews)

To make the plan profitable, a congress hotel and restaurant were added and outsourced to the third parties Hutten and Hotel Marienhage (FRITS, 2019). The profit that Coöperatie DELA makes with the building is marginal. Even by adding the outsourced elements they make a low return, less than what is expected with the amount of investment says the CEO of Coöperatie DELA: “It is not that this building costs us a lot of money, but we could’ve invested the same amount of money somewhere else and we would’ve made a lot more profit” (B2).

Function follows form (in 1 interview)

Minimal structural change is possible to be achieved when the new function follows the form of the building. The contractor argues that in DomusDELA this was done by putting the right functions at the right spots in the building(s). He says: “what is perfectly done here, by DELA and by the architect, is that they found a way to put all the functions in the buildings that were already there. The functions conference, bar, kitchen, and so on are put exactly where they should. That is one of their strengths, how they were able to combine all the individual buildings by adding the new entrance building (A2).

Focus on end-user (in 1 interview)

The involvement of the end-user Coöperatie DELA is special compared to some other projects. The Augustinium fathers had the intention to find an end-user and not a commercial developer who would leave the building after they are finished. By involving the end-user from the beginning, they were able to develop the building in such a way that it suited the client and take on only parts of the risks. The

project manager of the municipality was involved from the beginning, since the moment they received the letter, until the finalisation of the plans in mid-2016. She was therefore part of the most complex phases of a reuse project (Pallada, 2017). According to her, DomusDELA is successful since the municipality's goals were accomplished and: "we found our lord to take care of the castle" (D2).

Unity of the team (in 4 interviews)

Everyone was fighting for the same cause. All the interviewees mentioned that everyone had the same goal in the end, and that was to preserve the building and give something back to the city of Eindhoven. For this you need a group of people to lead the pack. The project leader of Coöperatie DELA also mentions that not only the passion and ambition of the initiator is important, but also that of the core group of people and the rest of the stakeholders¹¹.

"What is important is that you have a small group of passionate people who go for it. Internally at DELA that was the steering committee and the core team, there you could see who was on the same side as you. Externally there were people like the project leader from Bouwbedrijf van de Ven, the project manager from Gemeente Eindhoven, the advisory project manager and his team, and the architects who made the difference."

- project leader, Coöperatie DELA¹¹

Communicating properly (in 3 interviews)

The relationship and communication between the client and the contractor were good and personal. The contractor was selected because of the personal connection they had with the project leader of the client. According to the project leader of Coöperatie DELA: "the relationship and potential collaboration were leading in the choice for the contractor" (C2). Everyone knew their role and that of the others, and by doing so they were able to solve problems as equals instead of enemies. "We always approached it like this: first recognizing the problem, then solving the problem, and then trusting the other, instead of pointing fingers towards the culprit" (project leader, Coöperatie DELA, C2). According to the project leader at Bouwbedrijf van de Ven: "we always kept talking, no matter how hard the problem was" (A2). A complex project requires parties to work together, as the project manager of Gemeente Eindhoven puts it: "you have to collaborate over the walls of the other organisations" (D2).

Trust expertise (in 3 interviews)

The expertise of the stakeholders' roles was important in this project. The project leader of Coöperatie DELA says: "everyone knew his or her domain and responsibilities. The CEO trusted me to take my responsibility as PM if he knew that was the right time" (C2). The CEO agrees: "listen to the people about what they have to say in their expertise, and give them their space" (B2). The contractor of this case, and the project manager from the municipality, all had experience in renovation, restoration and/or adaptive reuse projects before. The project manager of Gemeente Eindhoven put it this way: "Who chooses will be chosen. You need to invite the right people to achieve something" (D2).

"Everyone knew his/her own domain and responsibilities"

- Project leader, Coöperatie DELA

Pre-defined goals achieved (in 3 interviews)

Some stakeholders had a clear list of goals that they wanted to achieve during the project. For the project leader of Coöperatie DELA it was the MOTIQ-aspects of project management¹² (C2). For the CEO of Coöperatie DELA, it was the creation of a ceremonial house for the company (B2). For the project manager of Gemeente Eindhoven it was to fulfil the wishes of the Augustinium fathers, find a lord for the castle, and make use of an underappreciated part of the city (D2). According to all of them, the project was a success because their goals were achieved.

"I am most proud of that: that we managed it with the absurd ambitions that existed"

- Project leader, Coöperatie DELA¹²

Preservation of history & culture

The history of the building was mentioned often during the interviews. The involvement of the Augustinium fathers and their wish to preserve their heritage and legacy in the building did have an enormous influence on the type of development (Project manager, gemeente Eindhoven, D2). During the

process, the CHA, monumental department of Eindhoven, and the Van Abbestichting each had its influence during the conversations and design of the building (CEO & project leader, Coöperatie DELA, B2 & C2). This naturally arose from the monumental listing of the building, but also from the social involvement of the different organisations such as Van Abbestichting. Their hard negotiation strategy did make sure that many historic elements have been preserved in the building.

5.3.5. Main takeaways

In this case the interviewees were also asked what they have learned from the process and what they would have liked to change. This led to the following two lessons learned in random order:

Early involvement of the construction team

The tight schedule and planning of the execution phase could have been made easier by involving the construction team during the design of the building (project leader, Bouwbedrijf van de Ven, A2).

Better relationship with the public authorities

The CEO of Coöperatie DELA wished that the relationship with the municipality at the end of the process was as good as at the beginning of the process. Making agreements through time is hard when it comes to political organisations. He says: “You have to praise an officer when he dares to stand out from the crowd. The public authorities have to dare to take risks and we have to reward them for that” (B2).

Relationship with Non-governmental organisations (NGOs)

The relationship with the Van Abbestichting, an NGO focused on heritage conservation, was according to the CEO of Coöperatie DELA not beneficial to the process. The Van Abbestichting is a self-appointed heritage committee that stepped into the process multiple times to discuss the design interventions that went against their beliefs. Earlier involvement of the interested party would have led to a better relationship, and thus benefit the process.

5.3.6. Summary

The in-depth study into the project, history, process, and success factors of DomusDELA increased the understanding of reusing national heritage in inner-city locations. This case study project was especially useful as it covered reusing a religious building by a commercial developer, in close collaboration with the municipality.

The success factors that were perceived during the reuse process by the interviewees are summarised and compared to the success factors from the literature review in Figure 40. The full comparison against the success factors from the literature review can be found in *Appendix B – Interview results*.

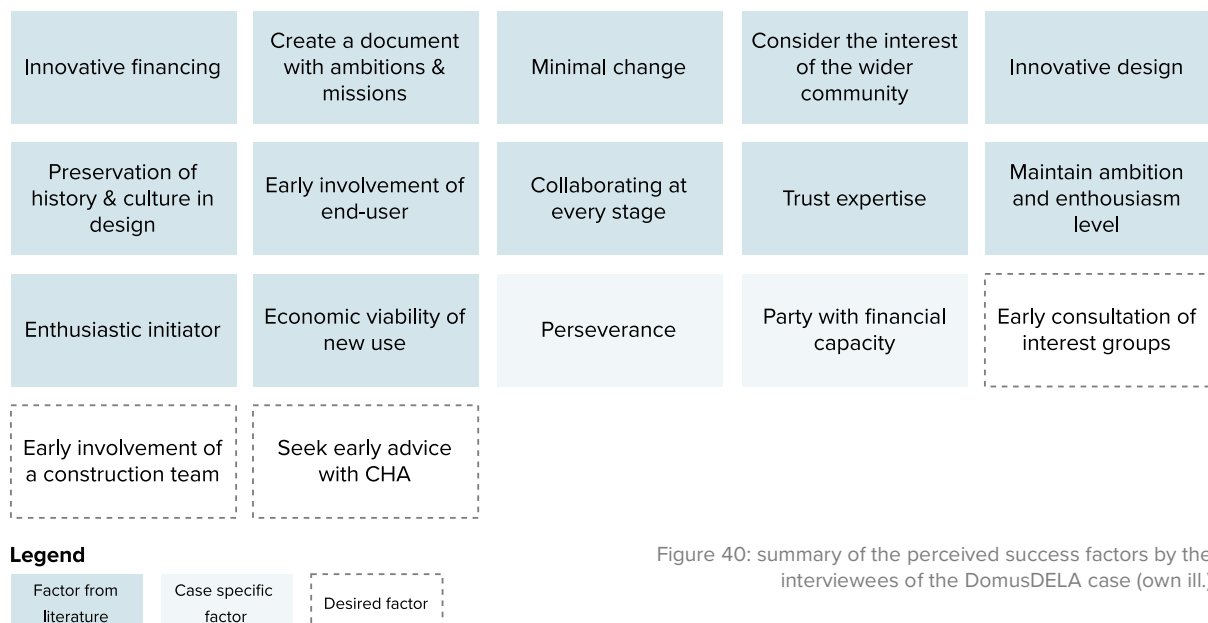


Figure 40: summary of the perceived success factors by the interviewees of the DomusDELA case (own ill.)

Timmerfabriek Sphinxkwartier

Maastricht, Limburg

from:
vacant factory,
temporary music venue

to:
music venue, museum, office



5.4. Timmerfabriek Sphinxkwartier

5.4.1. Project details

| | |
|------------------------------------|---|
| <i>Address</i> | Boschstraat 7-9, Maastricht |
| <i>Municipality & province</i> | Gemeente Maastricht, Limburg |
| <i>Year of construction</i> | 1905-1911 |
| <i>Timeframe reuse</i> | 2006-2019 |
| <i>Delivery date</i> | Q3 2019 |
| <i>Monumental status</i> | Nationally listed (<i>Rijksmonument</i>) since 1997 |
| <i>Gross floor area</i> | New – 4.200 m ² |
| <i>Program</i> | Old – vacant & temporarily used as creative hotspot New – Music venue, museum & office |
| <i>Owner</i> | Old & new – Gemeente Maastricht |

Location

The city of Maastricht is located on the most southern part of the Netherlands in the province of Limburg. It is strategically located on the Maas river which leads from Belgium all the way to the port of Rotterdam, and only a 30-minute ride from the border of Aachen, Germany. This strategical location helped this city to flourish in the medieval era as well as the industrial revolution. The city centre is typified by medieval architecture and has a deeply-rooted cultural history. The city houses the second most monumental buildings of the country, just after Amsterdam.

The city of Maastricht is known for the saying that the city should be 'sjiek & sjoen'. This is an expression in Maastricht's dialect which means chic and beautiful (project leader, Gemeente Maastricht, C3). It is based on a medieval event, but is nowadays used as slogan during governmental decisions and the review of architectural proposals.

History

Although the project is currently called Timmerfabriek (which is Dutch for woodwork factory), it was not a factory in its younger years, but instead functioned as a warehouse for the porcelain of Koninklijke Sphinx. This explains the typical saw-tooth roof with glass on the steeper side of the triangle, to protect the ware from sun-damage.

Koninklijke Sphinx was one of the major producers of ceramics, glass, porcelain and household pottery in The Netherlands. The company originates from Maastricht and was one of the instigators of the Dutch industrial revolution. It is especially known for producing household pottery like toilets, sinks, and the well-known Dutch boerenbont tableware. Until the twentieth century, Sphinx was the largest employer of Maastricht (Sphinx Kwartier, 2020). However, in 2008 the company went bankrupt and left a large industrial area on the edge of the city centre (Mestreechter Steerke, 2020).

The municipality had the intention to use the building as exposition space to increase their chance for becoming the Cultural Capital in 2018. Unfortunately, they did not win the title and were forced to use the space in another way. That is where Muziekgieterij and Bureau Europa enters the story.

Building

The Timmerfabriek Sphinxkwartier consists of a collection of seven buildings in total according to the project leader of gemeente Maastricht (interview C3):

1. Remisegebouw (*depot building*)
2. Timmerfabriek (*carpentry factory*)
3. Magazijn (*warehouse*)
4. Directiekantoor en toonzaal (*executive office and showroom*)
5. Hotel de Ossekopp
6. Transformatorgebouw (*transformer building*)
7. Hennebique gebouw

The buildings that were transformed and reused are the Remisegebouw (1), the Timmerfabriek (2), the warehouse (3) and the executive office and showroom (4). Hotel de Ossekopp (5) was demolished and

used as space for the new-build part of the project. The adjacent reused buildings (3 and 4) received the national monumental listing due to two reasons: (1) it was the first industrial building in The Netherlands where they applied a new technique for windows called “koudlasramen”, and (2) it was the first factory in the surroundings where they build solely with H-beams (breedflensbalken) (creative director, Muziekgieterij). The creative director pointed them out clearly in the hallway (the middle beam) of the building.

The buildings stem from different time periods. The oldest part of the complex is the depot building where the old horse tram of the city was stored. This building was built in 1888 and has the typical saw-tooth roof which is visible from far away. The design of this building is typical for the zeitgeist but its intactness is rare (RCE, 1997).

The ensemble of buildings is part of a larger industrial area, the Sphinxkwartier, and is sandwiched between the Eiffelgebouw and a water basin. The ensemble of the buildings received the monumental listing partly because of the role they played in the development of the Koninklijke Sphinx factory and Maastricht as industrial city (RCE, 1997).

Current situation

Currently the buildings are being used as music venue and museum. The most northern part is occupied by Muziekgieterij, the music venue, and the southern part by Bureau Europa, the museum. The Muziekgieterij is a music venue that originally started in 2004 temporarily housed in the L1 building (creative director, Muziekgieterij). After complaints from the surroundings they were forced to close the building as their permit was withdrawn by the municipality and had to find temporary housing in the Timmerfabriek. Today they host music events, rent out rehearsal studios and a recording studio in the Remisegebouw (1), Timmerfabriek (2) and warehouse (3). Bureau Europa, now housed in the executive office and showroom of the building (4), is a museum that hosts exhibitions, workshops and lectures related to architecture and urbanism.

5.4.2. Data collection

Key stakeholders:

| | |
|-------------------|--------------------------------|
| <i>Initiator</i> | Gemeente Maastricht |
| <i>Client</i> | Gemeente Maastricht |
| <i>End-user</i> | Muziekgieterij & Bureau Europa |
| <i>Financer</i> | Gemeente Maastricht |
| <i>Architect</i> | Maurer United Architects |
| <i>Contractor</i> | BAM Bouw & Techniek Maastricht |

The case of the Timmerfabriek is different from the other two cases. The development happened in a triangle organisation of the client (Gemeente Maastricht) and the two end-users (Muziekgieterij and Bureau Europa). The client and the end-user are therefore not the same party. This means that the relationship and communication between the three parties might become an interesting topic. The decision is therefore to interview Gemeente Maastricht as client and financer.

The largest end-user in this project was Muziekgieterij who take up over 75% of the building and were therefore selected to be interviewed. Unfortunately, the involved director at Bureau Europa is no longer active at the organization and is therefore not interviewed, even though that role was part of the initiating triangle. The involvement of the architect is in this case special and personal, and thus there is decided to interview the architect as well. The contractor was not willing to cooperate in the interviews.

Table 13: interviewees of the Timmerfabriek case.

| Interview | Company | Role | Party |
|-----------|--------------------------|-------------------|-----------------|
| A3 | Muziekgieterij | Creative director | End-user |
| B3 | Maurer United Architects | Architect | Architect |
| C3 | Gemeente Maastricht | Project leader | Client/financer |



Figure 44: saw-tooth roof (Maurer United Architects, 2020).



Figure 41: grote zaal (Muziekgieterij, n.d.).



Figure 42: kleine zaal (Muziekgieterij, n.d.).



Figure 43: kleine zaal (Muziekgieterij, n.d.).

5.4.3. Reuse process

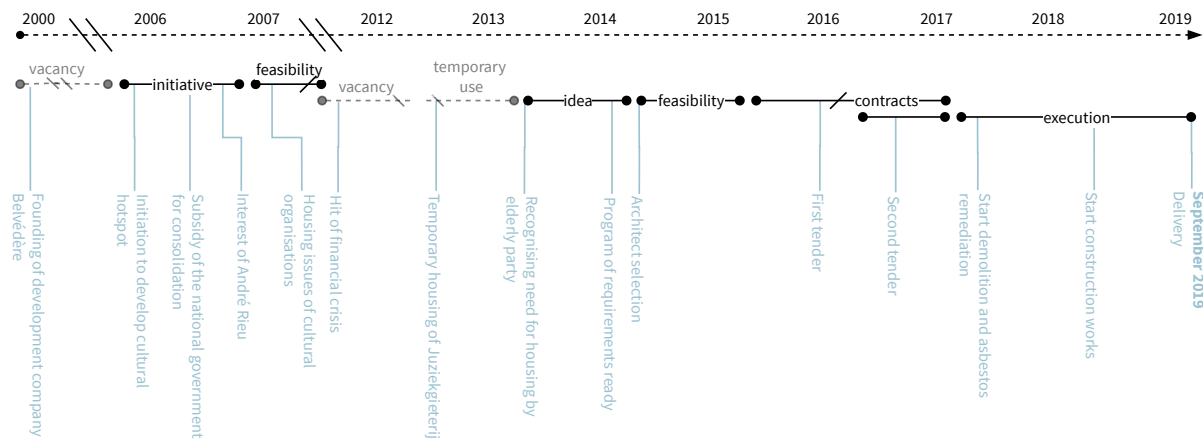


Figure 45: process timeline of the Timmerfabriek project (own ill.)

In the year 2000 the Sphinx factory became vacant. The municipality had the initial plan to develop the whole area. They established a joint-venture with a land development company called Belvédère. In this joint-venture were three parties: Gemeente Maastricht (share = 34%), ING Bank (share = 33%), and bpfBOUW (share = 33%). The plan entailed culture, urban ecology, room for new initiatives, and mainly housing (project leader, Gemeente Maastricht, C3). Housing was the main contributor to the budget to develop. When the housing market shrank, both partners stepped out of the joint-venture, leaving Gemeente Maastricht alone to develop.

In 2006 the plan economist of Gemeente Maastricht acquired an assignment to consolidate the ensemble of buildings from the Timmerfabriek. The CHA offered a subsidy to consolidate national monumental building (rijksmonumenten) to make them wind- and waterproof for the future. One of the four project leaders at the municipality, the project leader that was interviewed, jumped onto the wagon to lead the development. At that time some cultural organisations were struggling with their housing, so the municipality developed a plan to create a cultural hotspot at the Sphinx area. The project leader took on the assignment and had to achieve two goals in the development (for the sake of this research called: phase I):

1. The vacant buildings must be filled with a cultural destination to create a cultural hotspot;
2. The subsidy flows of the cultural organisations had to be reduced (project leader, Gemeente Maastricht, 3C).

At that time there was an interested party for the Transformatorgebouw (6) and Hennebique gebouw (7), André Rieu (a famous violinist and conductor from Maastricht). The other buildings were being used to host events and part of it was squatted. The project leader said: "it still had to become a cultural hotspot, even though there was no income from housing yet. But a European cultural subsidy became available" (C3). The first plan was to house five different cultural organisations in the building. But that plan could not continue due to financial cutbacks.

"We had the financing ready for 97%. But then Halbe Zijlstra (Secretary of State for Education, Culture and Science) announced cutbacks on the national budget for culture, nothing remained as it was".
- Project leader, Gemeente Maastricht

André Rieu dropped out and they decided to house movie theatre Lumière in that part of the complex. The other buildings (including the actual Timmerfabriek, executive office and showroom) were still empty. The story of Timmerfabriek and Muziekgieterij collide in 2013, when the temporary permit of the music venue was withdrawn. The municipality offered the Muziekgieterij to use the empty warehouses (the southern part of the building) as temporary location while they continued their search for a permanent location. At the same time Bureau Europe moved into the executive office and showroom temporarily.

The muziekgieterij could house 250 guests back then. The director of the venue had one goal when they housed the building: to make it such a big success that the municipality could not disagree to let them stay there (creative director, Muziekgieterij, A3). And that is what happened. The Muziekgieterij became so successful that they soon had to expand their floor area and were offered by the municipality to renovate the building.

The executive board of the municipality was not excited about the project. The daily operations of the venue caused disturbance at their current location, hence why the permit was withdrawn. But the elderly party in the board addressed the wish to keep the Muziekgieterij as main tenant for the building, the project leader of Gemeente Maastricht said.

“The point where the elderly party stepped into the discussion was very unique. They said: the students are moving away, we need to develop the neighbourhood into a place where young people want to live. We need to step away from sjiek & sjoen”.

- Project leader, Gemeente Maastricht

Since the local government changed its mind. Soon after the Muziekgieterij, Bureau Europa and Gemeente Maastricht sat together to develop a vision, ambition, and plan their goals. Since the Muziekgieterij was already temporarily using the Timmerfabriek as music venue, they could experiment with how to operate their business at that location and develop a vision for the future of the organisation.

“The end-user was already on the location with a provisional music venue. That way they had a kind of test setup about which you could talk and discuss the situation that they had equipped. This helped to find out what the new situation had to look like”

- Architect, Maurer United Architects

At that point the project changed from plan I to plan II. The goals were defined as:

1. House the Muziekgieterij while they could continue their daily business;
2. Redesign the executive office and showroom to make a permanent exhibition space for Bureau Europa.

Based on this the three partners started to draft the program of requirements. The program of requirements for the Muziekgieterij part was written solely by the creative director of the Muziekgieterij. His experience in music as an artist, producer and director let him write the program of requirement through the eyes of the end-user (the artist) without consulting any of the artists itself (creative director, Muziekgieterij, A3)).

During the architect selection, each partner was able to nominate one architect. The project grew in size and budget during the process. Initially the project was presented as less than €10 million, and thus the criteria were lower. However, eventually the reuse assignment was listed a little over €10 million. Since the criteria were lower at the beginning of the assignment, Maurer United Architects were able to compete in the selection, nominated by the director of Bureau Europa (architect, Maurer United Architects). The viewpoint of the end-user was a key element in the spatial vision for the area, so one of the criteria for the architect was to incorporate the end-users needs. Bob van Reeth (Chief Government Architect of Flanders) helped in the selection to get rid of bias.

“The architect was selected based on a desired image, which became a part of the spatial vision of the area. That included a certain profile of an architect for which each of the users and the municipality could propose one architect”

- Architect, Maurer United Architects

The design of the building caused discussions with the Welstandscommissie (a committee of the municipality that tests the aesthetics of the design against the spatial plans and frameworks of the rest of the city). Being a national listed monument asks for a higher quality design than usual new-build designs, which went against the out-of-the-box and quirky design that the end-users envisioned (Architect, Maurer United Architects, B3). The municipality of Maastricht is known for having strict rules, based on an old Maastricht tradition called ‘sjiek & sjoen’ (a synonym in dialect for chic and beautiful, referring to traditional architecture). The feedback from the environment, the city, the users, and professional world on the design was however positive. The welstandscommissie has therefore accepted the current design.

Today the spatial vision for the Sphinx area has been changed to 'sjiek, sjoen & sjore', referring to the traditional vision but has the added element of sanding (sjore). This indicates that the area may be rawer than the other areas in Maastricht (Sphinx Kwartier, 2020).

At the end of 2015, the tender phase started. They initially put the tender into the market at €7 million for the execution, based on the design by Maurer United Architects. Sadly, not a single offer was deemed valid. They were either too expensive or had too many conditions. Since a new tender is not possible according to the European Procurement Law, they offered the contractors to submit a list of possible cuts and a new offer at the beginning of 2016.

"You know how it works, you cannot cut budget with a cheese slicer, major interventions had to be done. We needed a large budget for that. Part of it was a subsidy by the province of Limburg, part of it were the revenues from housing developments of Belvédère, and the largest part was the cultural subsidy from Europe (over 60%)"

- Project leader, Gemeente Maastricht

Eventually at the end of 2016 demolition works started. During the demolition they found old fortifications and city walls that needed preservation. They were able to start building in September 2017, so the total building period took 15 months.

5.4.4. Success factors

The success factors that were derived from the interviews are listed here below in random order.

Understand historical significance (in 2 interviews)

Studying the history of the building was very important in the project. The consolidation of the buildings in 2007 was done poorly due to a limited budget. The project leader of the municipality says: "The CHA was therefore quite critical. We knew we had to ensure as few interventions as possible were done. That is where the architect continued studying" (C3). They started with studying the guidelines of the monumental values by the CHA. But they soon dived deep into old construction drawings to find changes into the structure of the building during its lifetime to find the (what they call) DNA of the building (architect, Maurer United Architects, B3).

Clear ambition of the end-user (in 1 interview)

The ambition of the end-user, and in particular that of the Muziekgieterij, was convincing enough to work with. When an end-user has a clear vision of how they would like to organise their business and daily operations, the design of the building will follow (architect, Maurer United Architects, B3).

Good leadership & management (in 2 interviews)

The project leader of Gemeente Maastricht was able to dive deep into the project and think along with the architect and end-user (architect, Maurer United Architects, B3). He was on top of the general GOTIK-requirements, while also listening to the out-of-the-box ideas and wishes (creative director, Muziekgieterij, A3).

Early involvement of the end-user (in 2 interview)

Eventually the municipality was satisfied with the type of end-users that they housed in the building. The building suits the end-user and vice versa. The decision to let go of Plan I with the five cultural organisations was grounded as it would not have worked as well as Plan II. Two end-users made the conversations with the welstandscommissie and CHA easier (project leader, Gemeente Maastricht, C3). All in all, the end-users are content with their buildings (creative director, Muziekgieterij, A3).

Personal relationship between stakeholders (in 2 interviews)

The creative director of the Muziekgieterij obliged the architects to volunteer at some of the events they organised. This way they were getting used to the way the organisation works and what should be embedded in the design (creative director, Muziekgieterij, A3). The main stakeholders of the project also met outside of working hours to visit music events at the location and drink a beer together. This made the communication between all parties personal and pleasant (architect, Maurer United Architects, B3).

“We have a personal connection with all the stakeholders, from urban designer until end-user. That facilitating role was played by the Muziekgieterij who made sure there was a bond between all of us. We were a part of the music scene and drank some beer together at festivals to improve the relationship”
- Architect, Maurer United Architects

Friendly takeover (in 1 interview)

The provisional music venue made it possible to experiment with the building. The architect states: “the process is approached from an integrated approach. A kind of organized servant leadership, a friendly takeover” (B3).

Learning by doing (in 1 interview)

The parties that worked on this project were fairly new in this type of development. The municipality was used to work with national listed monuments and adaptive reuse projects, but the rougher approach of the Sphinx area was out of their comfort zone. The end-users Muziekgieterij and Bureau Europa have never worked on a redevelopment or reuse project before. The architect was not selected for their track record of projects over €10 million, but were selected based on their vision. By knowing this from each other, every party could grow during the process. The architect states: “This way the project grew organically. We did ‘learning by doing’ and that has worked out well for all parties, but it did require confidence from the client” (B3). Essentially the project took on quite early in the process and developed in size and maturity along the way.

Innovative design (in 2 interviews)

The architect that was selected came with innovative solutions for the acoustic requirements of the venue. They eventually lowered the floor to make up for the height of a stage, a so-called ‘clearance’. One major part of the design was also to manoeuvre around the large technical installations and acoustic requirements of a music venue. The old industrial walls for example had to be adjusted to endure 150 dB because of the neighbouring housing projects (project leader, Gemeente Maastricht, C3).

Preservation of historical elements (in 3 interviews)

They were able to implement the technologies for the studio, stage and sound systems, plus acoustic insulation, while still maintaining the historical elements. All the interviewees praised that they were able to preserve the building while still showing parts of the old situation, as well as adding a new quality to the complex.

Political support (in 1 interview)

The plans for developing the Timmerfabriek complex gained momentum when the elderly party of Gemeente Maastricht advocated to welcome the Muziekgieterij in the building (project leader, Gemeente Maastricht, C3). The elderly party advocated that the city had to invest in the youth of Maastricht. The reason why the local government agreed to the plans is because of the plan economist of Gemeente Maastricht (project leader, Gemeente Maastricht, C3). He was a main pawn in the conversations with the executive board of the municipality that eventually resulted in public support.

Clear goals (in 1 interview)

The project leader of Gemeente Maastricht argues that the project is a success because part of the goals of the municipality are achieved. By drafting them clearly beforehand, the municipality is now able to test them against the development and find out whether or not they are achieved. For example:

- One of these was to create friendly commotion (*reuring*) in the neighbourhood, which is achieved.
- They wanted to create a cultural hotspot. This is not achieved because as the project leader of Gemeente Maastricht says: “smaller cultural organisations do not exist anymore due to the covid-19 pandemic, they are cut down or are not able to pay the rent anymore. We lost the support base for that. The mishmash of culture does not exist anymore” (C3).
- The current cultural organisations that are housed in the Timmerfabriek had to become an entrepreneur themselves and be cut down from subsidies. Due to the covid-19 pandemic that is not achieved as well.
- The vacant building had to be filled. This is also not achieved because 2.500 m² of the building is still vacant, even though they are looking for potential (commercial) tenants.

Financial support by public authorities (in 2 interviews)

The project leader of Gemeente Maastricht explained that the European subsidy made the project feasible: “At this point the housing developments are going fine, but at the time of the Timmerfabriek project the developments of Belvédère limited us massively. We had to get it elsewhere and that is where Europa jumped in” (C3). Eventually the project was depending on the subsidies of Europe and the province of Limburg. The subsidies were provided based on the cultural cluster that needed to be created, as well as an economic boost after the financial crisis (project leader, Gemeente Maastricht, C3).

5.4.5. Main takeaways

Based on the interviews there are a few lessons learned that the interviewees would have hoped for or would like to take on to next projects:

Positive relationship with CHA

The creative director of Muziekgieterij pities the relationship with CHA. If they would have discussed the design of the building earlier on in the process it would not have been such a hassle at the end of the project. If the relationship with CHA would have been better, they might have been more flexible in approving quirky or out-of-the-box ideas.

Never underestimate the budget

According to the project leader of the municipality, only 60% of the total budget was spend on construction. The other 40% was reserved for the first initial stages of the process and the preparation (C3). The creative director also mentions that many things have not yet been addressed because of the budget (A3).

Related to this was the goal of the municipality to create a cultural hotspot and that the cultural organisations would become independent of subsidies. However, due to the spread and development of covid-19, and budget cuts, this goal has not been achieved. According to the project leader of the municipality there is no more public support to develop such a creative hotspot. They are now looking for commercial developers in the part of the building that has not yet been reused in order to make the urban area better feasible.

Early involvement of the construction team

The contractor had been selected through a standard procurement. According to the architect, a bouwteam or other type of collaboration contract would have been nice to foresee problems in the execution phase of the project (architect, Maurer United Architects, B3).

Composition of the core team

Project leader, Gemeente Maastricht, C3: “when composing your core team, you need to listen to the end-user: what do they want and which people do we need to accomplish that? For example, we left part of the design and execution over to the end-user, but you shouldn’t. Prepare the end-users for all the pitfalls of responsibility”. The core team should be composed of the right people. In this case it would have been wise to make an inventory ahead of time on the tasks and responsibilities of the different end-users. Or the project leader could have considered to involve a project- or process manager to take on the role of translator between the different parties.

5.4.6. Summary

The in-depth study into the project, history, process, and success factors of Timmerfabriek increased the understanding of reusing national heritage in inner-city locations. This case study project was specifically useful to show the multifacetedness of stakeholders, especially that of the municipality who played a large role during this project. The extensive documentation of the CHA on monumental values showed that the building holds important industrial features and characteristics, while the city is better known for its traditional approach to dealing with heritage (sjiek & sjoen).

The success factors that were perceived during the reuse process by the interviewees are summarised and compared to the success factors from the literature review in figure 46. The full comparison of the

success factors against the success factors from the literature review can be found in *Appendix B – Interview results*.

| | | | | |
|---|---|---|--|--|
| Find political support | Create a document with ambitions & missions | Preservation of history & culture in design | Innovative design | Clear brief that fits the capabilities of the building |
| Early involvement of end-user | Start quickly | Understand historical and cultural significance | Communicating properly and regularly with right means of communication | Good leadership & management |
| Financial support by public organisations | Seek early advice with CHA | Early involvement of a construction team | Make an inventory of all stakeholders | Innovative financing |

Legend

| | | |
|------------------------|----------------------|----------------|
| Factor from literature | Case specific factor | Desired factor |
|------------------------|----------------------|----------------|

Figure 46: summary of the perceived success factors by the interviewees of the Timmerfabriek Sphinxkwartier case (own ill.)

5.5. Cross-case analysis

This chapter will analyse and compare the three case study projects with each other, looking for similarities and differences. The outcome will be: (1) a list of lessons learned, (2) a general adaptive reuse process, and (3) a list of the success factors that were considered to be the most important in the case study projects. The three elements are used to design the process map in the next chapter.

In this paragraph, the project details, history and building characteristics will be analysed. From the table below (table 14), the following observations can be made concerning the project details and reuse process.

Table 14: summary of the project details and process analyses.

| | Greswarenfabriek | DomusDELA | Timmerfabriek |
|----------------------------------|---|--|--|
| Type of building | Industrial | Religious | Industrial |
| Year of construction | ± 1880 | 1628 | ± 1910 |
| Monumental listing | Municipal | National | National |
| New use | High school, restaurant, office | Ceremonial house, hotel, restaurant | Music venue and museum |
| Motivation | Vacancy | Demand | Idea |
| Initiating party | Municipality & end-user | Owner & municipality | Municipality |
| Formal client | Delegate/advisor | Commercial organization | Municipality |
| Type of client | Semi-public | Private | Public |
| End-user | Semi-public | Semi-public | Semi-public |
| Involvement end-user | Initiative stage | Idea forming stage | Initiative stage |
| Involvement of political support | Initiative stage | Initiative stage | Initiative stage |
| Timeframe | 2012 - 2019 | 2012 - 2019 | 2006 - 2019 |
| Initiative & idea forming | ± 1.5y No idea phase | ± 2y No idea phase | ± 1y No idea phase |
| Feasibility | ± 3y Iteration and revision | ± 3,5y Iteration and revision | ± 1y |
| Refining | - | - | - |
| Contract negotiations | ± 3mo | ± 6mo | ± 1,5y Iteration and revision |
| Preparation | ± 1y | - | - |
| Execution | ± 1,5y | ± 1,5y | ± 2,5y |
| Type of financing | <ul style="list-style-type: none"> Private funding Municipal funding Provincial funding and subsidy | <ul style="list-style-type: none"> Private funding Municipal funding Provincial funding and subsidy | <ul style="list-style-type: none"> Municipal funding Provincial funding and subsidy EU subsidy |
| Main issue(s) during process | <ul style="list-style-type: none"> Public financing Municipal approval Bad condition of the building and structure | <ul style="list-style-type: none"> Procurement type Public financing Very strict planning | <ul style="list-style-type: none"> Procurement type Finding end-users Inexperience of the parties |

5.5.1. Project details

Location and history

The case study projects are all located outside of the G4 cities. Both DomusDELA and Timmerfabriek are located in one of the larger cities of the Netherlands, Eindhoven and Maastricht. The Greswarenfabriek is located in a small village on the border of Germany. The location might have an influence on the experience of the municipality and their familiarity of working with monumental buildings. After all, the municipality of Maastricht is known for its vast number of listed monumental buildings and the municipality of Eindhoven has had major adaptive reuse projects in their city already (e.g. Strijp-S and De Witte Dame).

A quick dive into the history of the case study projects revealed that all the buildings have a rich history and connection with the community. The Greswarenfabriek was one of the most important factories that produced gres in the region, for which they became famous. The history of DomusDELA even traces back to 1400 and played an important role in the spread of the catholic movement in Brabant. In his project this meant that external foundations were invested in the project and influenced the plans (Van Abbestichting). The Timmerfabriek was part of what you could call the golden era of Maastricht, that flourished partly thanks to the production of ceramics by Koninklijke Sphinx. All the buildings are therefore part of the history and culture of the city or village and are considered to be important to keep by the residents and municipal board.

Similarities: All located outside of G4 cities; all played an important role in the history of the place.

Differences: DomusDELA and Timmerfabriek are located in inner-city areas; Greswarenfabriek is located in a small village.

Type of building

Both the Greswarenfabriek and the Timmerfabriek are industrial buildings with an open floor plan. DomusDELA was a religious building and thus had a restricting floor plan. However, it appears that this characteristic did not have that much of an influence on the type of use, design, and structural modifications. After all, Greswarenfabriek had major structural issues in combination with the legal guidelines for education. And the design and function of DomusDELA was praised because it followed the principle of function follows form.

In the current situation, all three buildings house a semi-public function. The Greswarenfabriek education, DomusDELA ceremonies, and Timmerfabriek is a music venue and museum. Perhaps this is the reason why all three municipalities were so invested in the project and process.

Similarities: All have a semi-public function.

Differences: The Greswarenfabriek and Timmerfabriek are industrial buildings, open floor plan; DomusDELA is a religious building.

Monumental listing

DomusDELA (1972, 2001 & 2002) and the Timmerfabriek (1997) both had a national monumental listing before the project was initiated. National monumental listings are eligible for more national subsidies and require the collaboration with CHA early on in the process. This collaboration was mentioned in multiple interviews as being difficult because the expectations did not align between the parties. The Greswarenfabriek however had a municipal monumental listing since 2014, which was assigned during the initiating stages of the process. According to multiple interviewees, this opened the door to subsidies that outweighed the financial obligations.

Similarities: All projects had close contact with municipal monument committees; all project used their listing for financial benefits and subsidies.

Differences: DomusDELA and Timmerfabriek have a national monumental listing, Greswarenfabriek a municipal monumental listing; DomusDELA and Timmerfabriek required collaboration with CHA; Greswarenfabriek received listing during reuse process based on financial benefits.

Key stakeholders

All the interviews revealed that the municipality had a key role during all three projects. The case of Timmerfabriek is special because of the involvement of Gemeente Maastricht. They acted in different roles throughout the process: as initiator to find accommodation for the Muziekgieterij and find a purpose for the building(s), as facilitator (granting permission and approval of the executive board of the municipality), as investors, as project managers throughout the process, and as building-owner (before and after the reuse had taken place). This has the benefit that the municipality has more doors open to financial sources and knows the formal steps that have to be taken through the executive board.

The municipality in the case of the Greswarenfabriek played a large role in the (financial) feasibility of the plan, since they went through all the stages of the process since initiation together with the client SOML.

The project manager of the municipality acted as a link between the project and local (and regional) politics.

In all three case study projects, the end-users were invested in the project from the beginning. In two of them, the end-user was (one of) the initiating party (Greswarenfabriek and Timmerfabriek). In the case of DomusDELA, the end-user was involved from the initiative phase. Coöperatie DELA acted in this case as a (semi) commercial developer whose prior business is not in real estate (apart from real estate specifically for the afterlife). It is possible that their view on the budget, design, and so forth had an impact on the outcome of the project.

The developing parties for the case study projects were an educational party (Greswarenfabriek), an insurance company (Coöperatie DELA), and a municipality (Timmerfabriek). In many construction projects, a commercial developing party develops a building, takes on the risks and financial burdens, collects the profit and leaves the project. Commercial developers might therefore behave differently during the process (because they assess risks and setbacks differently) and might have different perceptions of success and success factors than the clients of the case study projects.

Similarities: All municipalities played a large role in the development of the project; all projects were initiated by the municipality; all end-users were involved in the process from the beginning.

Differences: The municipality of Maastricht played multiple roles in the process; DomusDELA had a (semi-)commercial developer; Greswarenfabriek was developed by a delegate client.

5.5.2. Reuse process

In figure 47 you can find a comparison of the three process timelines in the same timeframe. This paragraph will compare the three timelines of the case study project with each other in terms of timing, phasing, and issues

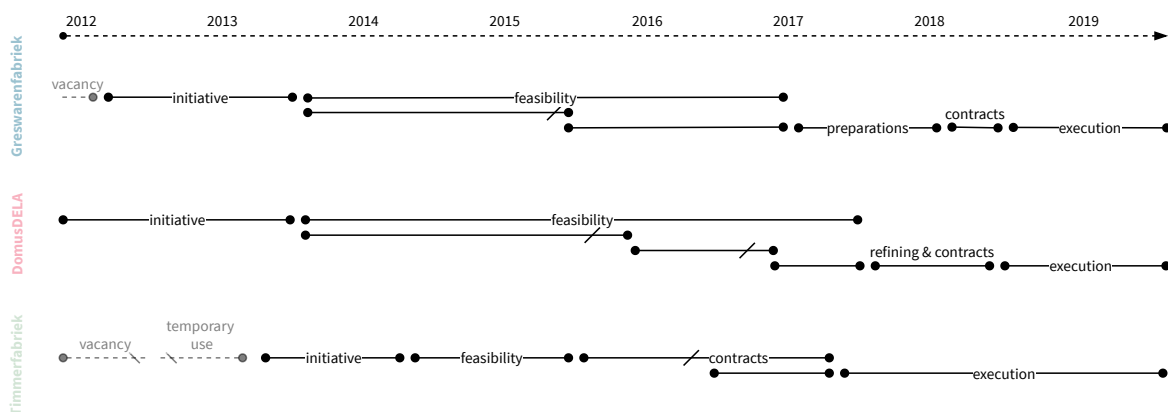


Figure 47: the three project processes compared in the same timeframe (own ill.)

Initiating party and client

In all three cases, the municipality was a part of the main initiating parties for the development. In the DomusDELA project, the project manager teamed up with the Augustinium fathers to set up a plan for the future. In the Greswarenfabriek case, the municipality had a large role in developing the urban area Oppe Brik, and therefore indirectly with the Greswarenfabriek itself, and developing the plan together with SOML. In the case of the Timmerfabriek, the municipality is the actual initiating and developing party. A municipality can assist in the initiating process, as well as help in finding the right sources to make the development feasible. In all three cases, the project managers/leaders were the connection to the executive board of the municipality, as well as a starting point for applying for provincial, national or European subsidies.

Similarities: The municipality was in all three cases one of the main initiating parties;
Differences: The motive behind DomusDELA was a demand rather than vacancy; DomusDELA is developed by a commercial party; Both Greswarenfabriek and Timmerfabriek are developed by a (semi-)public party; for DomusDELA, the client is also the end-user; for Greswarenfabriek, the client was a delegate client; for Timmerfabriek, the client was not the end-user but remains the owner of the building.

Timeframe

Of course, every process timeline is based on the stories of the interviewees and are thus biased based on their viewpoint. It is, therefore, not wise to compare the process timelines one-on-one. However, what is immediately visible is that the initial stages of the adaptive reuse process span in two of the cases over more than five years (Greswarenfabriek and DomusDELA). Compared to those two cases, the initial stages of the Timmerfabriek are relatively short. But the execution time for this case is significantly longer compared to the others. This indicates that it might be possible that a longer preparation time shortens the execution time.

Similarities: All cases went through more than one plan before arriving at the final plan; the processes of the final plan all took around seven years;
Differences: Timmerfabriek went through the whole process cycle already before arriving at the latest plan in 2012; the initiation and preparation of Timmerfabriek took less time than for DomusDELA and Greswarenfabriek. The execution took twice as long as for the other cases; The tenders of Timmerfabriek and DomusDELA resulted in a stagnation of the process and had to be redone and evaluated.

Complexity of the building

The interviews confirmed that the first few stages of an adaptive reuse process are the most complex and time-consuming. Issues that arose during the initial phase of the AR process were seen as issues that could have been solved or prevented during the initial stages (project leader, Bouwbedrijf van de Ven, A2). But, as some of the interviewees pointed out that you should not over-analyse and over-prepare, because working with an old(er) building means you will find surprises along the way. As the contractor from DomusDELA points out: “You have to find a compromise in preparation. Not preparing anything can be a pitfall, as well as over-preparing” (A2).

Other than the preparation and building layout that influenced the complexity of the building, the building condition also had its influence. In the case of Greswarenfabriek, multiple interviewees mentioned the bad condition of the building which was worse than anticipated.

Similarities: Interviewees from all case studies agreed that the first few stages of developing ideas and plans are the most complex; All parties discovered building parts that were not on the initial drawings during demolition or construction works.
Differences: Timmerfabriek and Greswarenfabriek were industrial buildings with open floor plans; DomusDELA is a religious building with restricting floor plan.

Feasibility and finances

Greswarenfabriek was made financially possible due to subsidies from the province and national government. They were also financially supported by the municipality. DomusDELA was made feasible by a large investment of the client, funding by the municipality, and a provincial subsidy. The municipal funding came from an innovative financial construction that created a piggy bank from future taxes. Timmerfabriek was funded by the municipality and province, but also received a large sum of money from a European subsidy. Next to that, the financial means that the municipality put into the project were direct revenues from housing in the Belvédère development project.

Similarities: All case studies had issues during the feasibility phase; all case studies are partly funded by the government as investor; all case studies are partly funded by the government as financier through subsidies.
Differences: DomusDELA was funded by the municipality through an innovative piggy bank construction; Timmerfabriek was funded by an EU subsidy for culture and heritage.

5.5.3. Success factors

The most important success factors from each case, together with the lessons learned (or failure factors), are summarized in table 15 below. The total list of success factors per success theme are listed in table 16. There are multiple things that stand out.

Table 15: the most important success factor for the three case study projects in this research.

| Greswarenfabriek | DomusDELA | Timmerfabriek |
|--|--|--|
| <i>Perceived</i> | | |
| <ul style="list-style-type: none"> • Find political support • Innovative contracting • Phased finances • Financial support by public authorities • Early involvement of end-users • Engage the support of local businesses and communities • Trust expertise • Maintain ambition and enthusiasm level • Honesty on MOTIQ-constraints • Perseverance • Consider the overall interest of the wider community • Socio-geographic demand for education | <ul style="list-style-type: none"> • Innovative financing • Party with financial means • Clear ambition document • Early involvement of end-users • Collaborating with stakeholders at every stage • Trust expertise • Maintain ambition and enthusiasm level • Clear and enthusiastic project initiator • Perseverance • Function follows form • Consider the overall interest of the wider community • Innovative design • Preservation of history & culture • Economic viability of new use | <ul style="list-style-type: none"> • Find political support • Start quickly • Clear brief that fits capabilities of the building • Understand heritage and cultural significance • Financial support by public authorities • Clear ambition document • Early involvement of end-users • Communicate with stakeholders properly & regularly with right means of communication • Good management & leadership • Innovative design • Preservation of history & culture |
| <i>Desired</i> | | |
| <ul style="list-style-type: none"> • Early involvement of construction team • Thorough research on building & fabric condition • Function follows form | <ul style="list-style-type: none"> • Early involvement of construction team • Seek early advice with CHA • Early consultation of interest groups (NGOs) | <ul style="list-style-type: none"> • Early involvement of construction team • Seek early advice with CHA • Make inventory of composition of core team |

Similarities

First of all, it became clear that the most mentioned success factors are human factors, such as leadership, ambition, perseverance, and enthusiasm. Almost all interviewees mentioned the enthusiasm and ambition of a sole initiator, initiating party and/or core team. The project manager of Gemeente Eindhoven in the DomusDELA case put it nicely: “If the software is leading, hardware will follow” (D2). In this case, the software is the human factors of success, while the hardware is more related to the MOTIQ-conditions. This is no surprise, as Kloek (2015) already pointed out, the chance for success of a reuse project is dependent on the intention of all stakeholders to keep and preserve the building for the future.

Second, all the case study projects were dependent on municipal, provincial, national, or European grants. BOEi (2009) argued that these types of grants are not beneficial for the project because it brings a public party (and thus restrictions and rules) into the process. However, without these grants, the case study projects were not able to continue. The ability to get a subsidy from a governmental organisation is dependent on the relationship with the political board of a municipality. In all three cases, the subsidies were made possible by a political ambassador in the project group or because of an (inter)national general subsidy. Next to that, a good relationship with the political board of a municipality eases the process to get permits and increases the public support base.

Third, all the contractors from the case study projects quoted that they would have liked to have a contract with a form of involvement during the design phase of the process. Some of the contractors mentioned the word *bouwteam*, which is a specific Dutch early contractor involvement contract. In these types of contracts, the client and contractor are in one construction team, together with for example an architect, engineering advisor, installation companies, and/or specialised advisors, work together on the preliminary and definitive design. However, there are multiple forms of collaborative contracts possible where an executing party is involved in the design process. Other parties than contractors were not so fond of a collaborative contract.

Fourth, the value of expertise is deemed especially important during the preparation and execution phase. In this phase, specialised (sub-)contractors in heritage renovation or restoration are working together with non-specialised parties. In the case of *Greswarenfabriek* and *DomusDELA*, the client was not specialised in adaptive reuse nor in development. The collaboration with trusted experts is therefore of crucial importance. In the case of *Timmerfabriek*, the client was experienced in adaptive reuse but had to work with end-users that were not.

Fifth, the relationship with CHA or the monuments committee seems to be fragile. In the case of *DomusDELA* and *Timmerfabriek*, the monument committee or CHA had much influence on the final design of the building. However, the relationship could have been improved if they had been consulting them in the early stages of the process before design decisions have been made. In this case, it is better to ask for advice ahead of the process, than to change the design afterwards.

Differences

The credo 'function follows form' has come up in two of the case study projects. When the form changes, the function should change as well (which is the opposite of what architect Louis Sullivan famously quoted in 1896). In the case of *DomusDELA*, the contractor praises that the functions of the ceremonial house are located according to the place where they fit. In the case of *Greswarenfabriek*, function follows form is something that has been wished for. The contractor and location director blame that the educational function is not fitting the building, for which major structural interventions were necessary.

The quality of the preservation of history and culture differs per case. In the case of *Timmerfabriek*, the client and end-users praised the architectural historical research that had been done by the architects in the beginning stages of the design. This eventually led to a level of preservation of the historical elements that all parties appreciate in the current building. In the case of *Greswarenfabriek*, there had not been enough research done into the history and culture of the building, as well as the condition of the building and fabric. This led to some major surprises and setbacks during the execution of the design, which are now solved with solutions that, according to some interviewees, do not do justice to the history of the building. In the case of *DomusDELA*, the municipality and end-user/client are satisfied with the number of historical elements that have been preserved. This is partly caused by the (reluctant but crucial) involvement of CHA, monument committee, and *van Abbestichting*. In the cases where the preservation of history and culture is sufficiently done, the board of the municipality has strict and concerned monument committees.

Table 16: overview of success factors experienced of each project.

| | | Greswarenfabriek | DomusDELA | Timmerfabriek | Total | Total |
|---------------------|--|------------------|-----------|---------------|-------|-------|
| Legal | Find political support | X | | X | 2 | 3 |
| | Innovative contracting | C | | | 1 | |
| Preparatory | Early involvement of construction team | D | D | | 2 | 8 |
| | Research building condition and fabric | D | | | 1 | |
| | Start quickly | | | X | 1 | |
| | Clear brief that fits capabilities of the building | | | X | 1 | |
| | Understand heritage and cultural significance | | | X | 1 | |
| | Seek early advice with CHA | | D | D | 2 | |
| | | | | | | |
| Financial | Phased finances | X | | | 1 | 6 |
| | Innovative financing | | X | D | 2 | |
| | Party with financial means | | X | | 1 | |
| | Financial support by public authorities | C | | C | 2 | |
| Communicative | Clear ambition document | | X | X | 2 | 19 |
| | Inventory of the stakeholders | | | D | 1 | |
| | Early consultation of interest groups | | D | | 1 | |
| | Early involvement of end-users | X | X | X | 3 | |
| | Engage local businesses and communities | X | | | 1 | |
| | Communicate with stakeholders properly & regularly with right means of communication | | | X | 1 | |
| | Collaborating at every stage | | X | | 1 | |
| | Trust expertise | X | X | | 2 | |
| | Maintain ambition and enthusiasm level | X | X | | 2 | |
| | Good management & leadership | | | X | 1 | |
| | Clear and enthusiastic project initiator | | X | | 1 | |
| | Honesty on MOTIQ-constraints | C | | | 1 | |
| | Perseverance | C | C | | 2 | |
| Building & location | Minimal (structural) change | | X | | 1 | 2 |
| | Uniqueness of the building | C | | | 1 | |
| Functional | Consider interest of the wider community | X | X | | 2 | 7 |
| | Innovative design | | X | X | 2 | |
| | Preservation of history & culture | | X | X | 2 | |
| | Economic viability of new use | | X | | 1 | |
| Total | | 14 | 17 | 14 | | |

X = factor from literature review. C = case specific factor. D = desired factor.

Summary

To find out which success factors are considered to be the most important for reusing heritage buildings, the success factors of each case are summed and compared to the other case study projects (see table 16). This led to the following three lists: (1) the success factors that were only mentioned by one of the case study projects, (2) the success factors that were excluded by the literature review but appeared in the case study analysis more than one time, and (3) the final list of success factors that were mentioned at least two case study projects. The final list can be found in the conclusion hereafter.

5.6. Conclusion

From the cross-case analysis regarding project details and the reuse process, there are certain lessons learned with reusing monumental buildings that will be taken along in designing the process map:

- The type of building does not influence the use and design of the building in the case study projects.
- The history of the building and environment increases the willingness of the community and municipality to preserve the building and cooperate with the plans.
- All the case studies have relatively the same planning of the process phases. The basic elements of the adaptive reuse process are therefore confirmed through the case study research.
- The initiative and idea phase were considered to be the most complex. The feasibility, contract negotiations, and execution were not considered to be complex by the interviewees, but caused delay in all three case study processes.
- The division of roles and stakeholders is not prescribed. Municipalities played different roles in the case study projects such as client (Timmerfabriek), initiator (Greswarenfabriek), and financier (DomusDELA). Their influence on the projects was significant.
- The expertise and experience of producers with working with old, monumental buildings has significant influence on any problems later in the process during preparation and execution.
- Both municipal and national monumental listing made conversations with CHA and municipal monument committee more difficult and more important. There was no significant difference between the complexity of the two listings.

To draw the final list of success factors that were perceived as being the most important for successfully reusing heritage in the case study projects, a few steps have been taken:

1. Count the number of cases a success factor has been mentioned;
2. Add the case-specific success factors and count the number of cases the factor has been mentioned;
3. Add the desired success factors based on the lessons learned and count the number of cases the factor has been mentioned.
4. Sum the total amount of cases a success factor (literature, case-specific and desired) has been mentioned.

The success factors that have a score '≥ 2', meaning that at least two cases had or wanted the success factor, are taken along in the final step of the research: the process map. The final list of success factors is presented in table 17 below.

Table 17: success factors that will be taken along in the model.

| Final list of success factors | |
|--|--|
| 1. Find political support | 7. Trust expertise |
| 2. Early involvement of construction team | 8. Maintain ambition & enthusiasm level |
| 3. Innovative financing | 9. Perseverance |
| 4. Financial support by public authorities | 10. Consider the overall interest of the wider community |
| 5. Create a clear ambition document | 11. Innovative design |
| 6. Early involvement of end-users | 12. Preservation of history & culture |

SYNTHESIS

Process map

1. rules of thumb
2. audience
3. the process map

6. PROPOSAL

The goal of this research was to develop a process map for future adaptive reuse projects to increase the chance of successfully delivering a reuse project. This chapter will therefore present the process map that was made based on the proposed solution as was presented in the introduction of this research (see 1.5. *Proposed solution*). Drafting, designing and analysing the process map will help to answer sub-question 5: How can success factors of adaptive reuse processes be fed forward to improve the process of future adaptive reuse projects?

6.1. Rules of thumb

The rules of thumb for the design of this process map are based on the proposed solution as was presented in the introduction (figure 48). By combining the findings of sub-questions 1, 2, 3 and 4, it is possible to draft a process map. This means that the theories on adaptive reuse processes (its phasing, elements and complexity) are combined with the theory on success factors (according to the six aspects of AR success). The theories and conclusions that will be used here are coming from the literature review (chapter 3), exploratory cross-case analysis (chapter 4), in-depth case analysis, and the final cross-case analysis (chapter 5).



Figure 48: the proposal of this research as explained in the introduction (own ill.)

According to the proposal, all the information that is now available on the adaptive reuse process of heritage and its success factors will be combined into the process map. The complexity of the adaptive reuse process and the uncertainty of working with a heritage building makes it impossible to capture the entire adaptive reuse process in one single guideline. After all, the case study projects revealed that working with heritage brings many surprises, and small mistakes can have big consequences. What is an excellent solution for one project, may be the wrong one for another.

The process map will therefore contain the following rules of thumb:

- The map will show a possible route to successful delivery, but is no guarantee to success;
- The map has a changing degree of freedom in the plan through time;
- Instead of traditional phasing in a process, the map proposes checkpoints where you can reflect on past activities;
- It should be clear where to expect the most complexity throughout the process;
- One should be able to reflect and take a step back when the plans are not going according to plan, this leaves room for iteration;
- Success factors can be picked up along the way, but are by no means a user's manual on successfully reusing heritage.
- The map helps stakeholders of adaptive reuse on when to decide on main issues.

During the last chapters of this research a few steps have been taken to find out which success factors were perceived as most important. This was done in three rounds: (1) by counting the times a success factor had been mentioned in the literature, (2) analysing the 17 considered cases of NRP Gulden Feniks, and (3) analysing and counting the success factors of the case studies (figure 49). All these rounds needed reflection. As became clear in the analysis of the in-depth case studies is that some success factors were relevant in practice, but were hardly significant in the literature or the other way around (as was already explained in 5.5.3. Success factors). This eventually led to 12 success factors that will be taken along in the process map.

The ‘adaptive reuse of heritage’ process map is made by the building blocks of adaptive reuse processes, combining:

- (1) The basic elements and events of an adaptive reuse process from the literature review;
- (2) The elements and events from the actual in-depth case study projects processes;
- (3) The elements and events that came up during the in-depth interviews and were recommended as lessons learned for future projects.

The process map will also combine the principles of process improvements that were covered in 3.3.2. *Generic elements of the construction process*. This means that the map will contain four elements: (1) the overall process, (2) the sub-process (the stages), the activities, and the responsible persons of the activities (see figure 50).

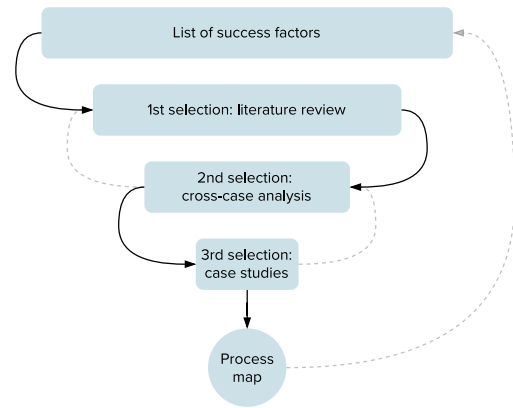


Figure 49: selection of the success factors for the process map (own ill.)

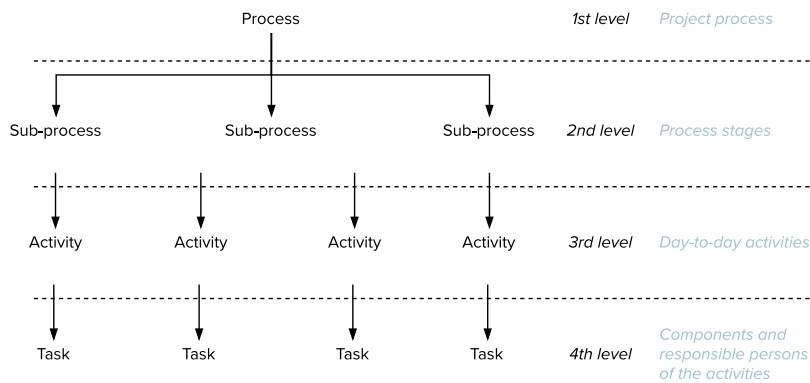


Figure 50: basic elements of a construction process based on Kagioglou et al. (2007) (own ill.)

6.2. Audience

The target audience to use the process map is aimed at all main key stakeholders of the reuse process of monumental listed buildings. The main key stakeholders were defined as the four key roles of adaptive reuse: (1) producers, (2) regulators, (3) investors, and (4) users. Within these groups, different types of stakeholders can be categorised such as advisors, financiers, CHA, municipalities, real estate developers, private companies, etcetera. The audience is therefore defined as the direct stakeholders of an adaptive reuse project.

The audience can use this model in several ways:

- As a reminder of what you are familiar with in the process, for the stakeholders that already have experience in reusing heritage;
- As a recipe with what makes dealing with heritage different from regular adaptive reuse projects, for the stakeholders that have experience in reuse, but not yet in working with monumental listed buildings;
- As a guide of what is to come during the process, for the stakeholders that have no experience in reuse nor in working with monumental buildings.

6.3. The process map

While the process map is no prescription to success, an adaptive reuse project still requires milestones, activities and phasing. In the next paragraphs, a description of all the elements of the process map will be given. The process map itself can be found in *Appendix G – Deliverables* on page 160. There you will find a guide and explanation of the process map for practitioners in Dutch and English.

0. Start

The 'adaptive reuse of heritage' process map is a map where you can find the different elements, steps, checkpoints, degree of freedom and complexity, and success factors for reusing heritage buildings. It can be read from left to right. The start of this process is in the bottom left corner.

On the y-axis you can find the degree of freedom in the plan and on the x-axis is time. On the line are checkpoints given, circled in black. Each checkpoint represents a point where a new phase of the process begins and allows looking back on what has been done in the past activities. The checkpoints' placement is based on the degree of freedom stakeholders have in the plan at that certain point. The shape represents the complexity of the process. This is because in the beginning there is an unclear timeframe, lesser amount of predefined activities, and unclear activities with an undefined goal.

You can find the twelve most important success factors along the process line according to three successful case study projects of 2020. Each success factor is placed along the process line where the factors can achieve the most impact according to the case study projects. For example, 'create an ambition document' is placed right at the beginning of the process to ensure that all the stakeholders who come aboard face the same direction. 'Seek out to public authorities for financial support' is placed right at the feasibility phase's beginning. Because according to the literature, the interference of public authorities during earlier phases slows the overall process time and effort, while their financial support can cause the project to receive a GO on the financial feasibility. Therefore, the placement of the success factors is carefully done based on the case study projects, so take your advantage.

1. Initiative

The adaptive reuse process starts with one idea, one person or a small number of people, and one ambition. The degree of freedom is in this stage small since the possibilities are not yet explored.

Adaptive reuse projects can start in three ways:

- As a strategy for dealing with a vacancy;
- As an answer to a rising demand for inner-city developments and/or using a heritage building;
- As an idea to start an interesting project as a building owner, initiator or municipality.

The initiative stage is drawn by activities that are very particular to working with heritage buildings or reusing non-monumental buildings. The importance of thorough research into the condition of the building and fabric, as well as the involvement of the CHA and obligation to perform an ahr (architecture historical research), make an appearance during the initiative phase.

This stage is when you need to get the right people on board to kickstart developing a plan and ambition. Find a political ambassador and potential end-users to ease the development of a plan and possibilities. A clear ambition will guide you throughout the process.

2. Idea forming

The idea forming phase where the idea starts to take form brings along the highest degree of complexity. The number of possibilities is endless, and there are many people involved at this stage. This phase requires to collaborate with many potential stakeholders. According to the case study projects, this is also the point where you would like to involve the construction team to draft the first designs and assess the building state. With an innovative design(er), this can help anticipate future problems with the construction works in old buildings.

The idea forming phase has the peak of complexity. The later stages always deliver tangible products, like a permit, design, or contract. The initiative and idea forming stage's activities and deliverables are

less tangible, like a set of ideas, plans, and ambitions. Complexity during these early stages is, therefore, higher than in later stages. This is because the set of activities of these later stages is better defined.

3. Feasibility

The feasibility phase is the phase to narrow down the plan. Because the number of possibilities declines, the perceived complexity of this phase declines too. Working with numbers requires the plan to narrow down to a pre-definitive stage. The phase does require rounds of iteration if you find out that the current plan is not feasible. You can do two things: (1) reassess the financing sources in the feasibility phase, or (2) redesign the plan.

Since adaptive reuse is hard to get financially feasible due to the many uncertainties at this stage, public authorities' financial support and innovative ways to finance the project can benefit the ease of this phase. Reach out the political ambassador(s) on board to find out the different financing possibilities of municipalities, provinces, the state, and Europe.

4. Refining

The refining stage is used to get to a final plan that will be put on the market to find (specialised) stakeholders for execution. The goal is to deliver an interim agreement (VO) to start the negotiation on the contracts. This means that the plan will be narrowed down, further reducing complexity. According to the case study projects, this phase was considered to be the easiest. To be prepared for problems during the execution phase, experienced partners can help to develop the design. This also helps to prepare for the contract negotiation phase.

5. Contract negotiations

This is the most formal phase of the adaptive reuse process that is very similar to new-build construction projects. Depending on the client and function of the final building (public or private), the plan must be put on the market or tendered. Adaptive reuse projects require specialized disciplines for execution concerning the preservation and handling of historic elements.

Contract negotiations can be hard. Keep up the ambition and enthusiasm by referring back to the ambition document that lists all the project's reasons to start.

6. Preparations & execution

The last stage before delivering the reused project is the preparation for execution. In most cases, this is done by the contractor, who gathers all construction materials and human resources. During the construction works, keep in mind that working with old buildings requires flexibility as many surprises can come up during this phase despite the thorough preparations.

A smaller version of the 'adaptive reuse of heritage'-process map can be found on the next page. The full version in both Dutch and English can be found on page 160, in Appendix G – Deliverables.

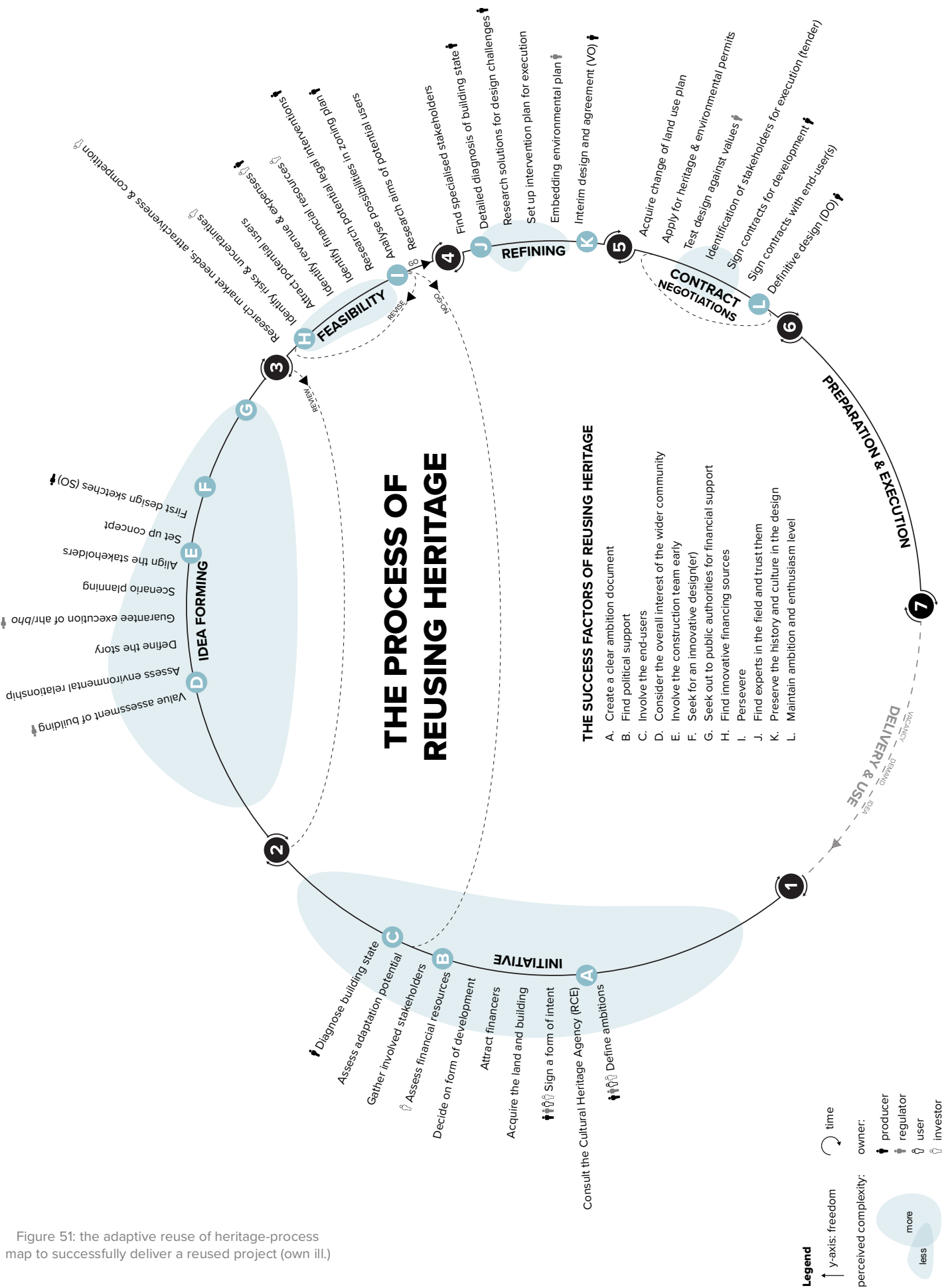


Figure 51: the adaptive reuse of heritage-process map to successfully deliver a reused project (own ill.)

RESEARCH

conclusions

1. research questions
2. general conclusion
3. recommendations
4. discussion
5. reflection

7. CONCLUSIONS

This research was written to find out how to successfully reuse heritage buildings to improve the process of future adaptive reuse projects. The goal of this research was threefold:

- (1) To show the importance and value of heritage and their potential in (urban) development;
- (2) Provide main stakeholders with the right tools to increase the chance of reusing successful;
- (3) Show that the complex adaptive reuse process can be made simple and insightful.

To do so this research tried to study the adaptive reuse process and success in detail and make it comprehensive for all stakeholders by studying real-life cases and talk to experienced stakeholders. The outcome of this research is a process map that can be used by main key stakeholders as reminder, recipe, and guideline for future adaptive reuse projects. Next to that, this research also led to the most important success factors of reusing heritage. This chapter will summarise the answers to the sub-questions and main question, as well as presenting the recommendations for practice and future research.

7.1. Research questions

The main question of this research was: “How can success factors improve the process of adaptive reuse of heritage?”. To answer this, five sub-questions were asked based on the five key aspects of this main research question: adaptive reuse of heritage, process, improve, success factors, and how. Each sub-question will be supported by a part of the figure that represented the scope of this research (figure 52).

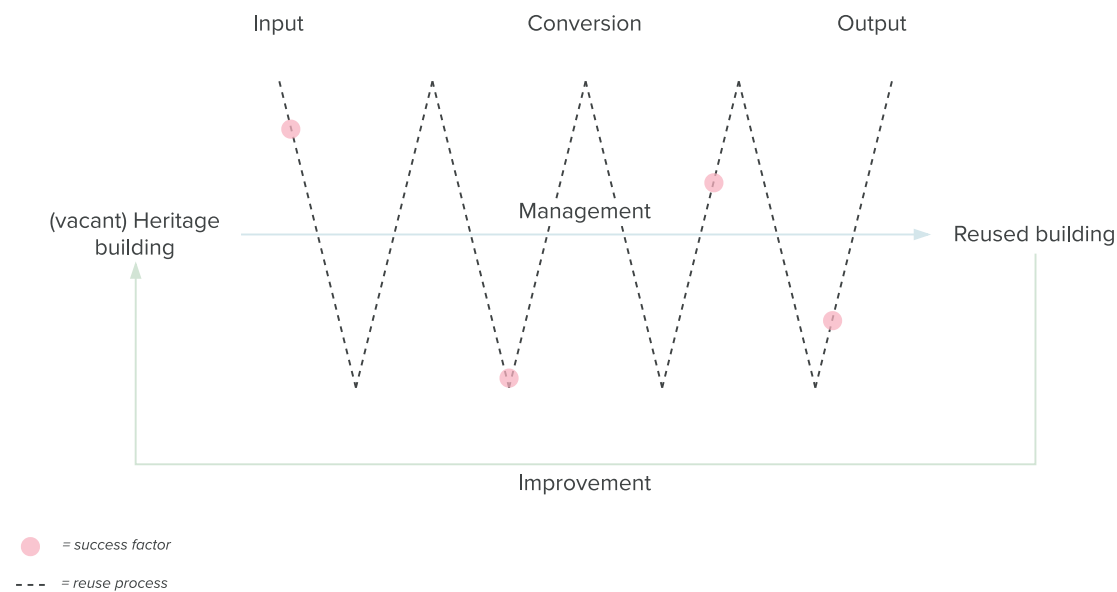


Figure 52: the scope of this research as was presented in the introduction (own ill.).

Q1. Adaptive reuse of heritage – What is adaptive reuse of heritage in The Netherlands?

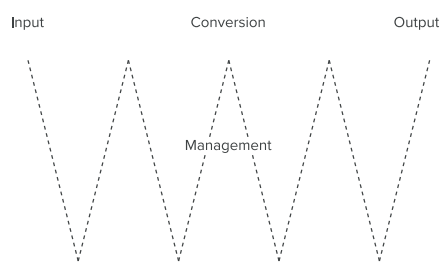


The objective of this sub-question was to find out why building owners and developers go through the hassle of reusing a heritage building and what the strategy entails, represented by the blue arrow in figure 52.

It became clear that adaptive reuse is a strategy to deal with (among others) vacancy in which a building undergoes a major change in both the function and the structure to make it suitable for new conditions. These conditions are often economic, environmental or social requirements. The main reason behind the reuse strategy is to preserve the building for future generations in the long-term, while economic, environmental, and social benefits have shorter-term effects.

Working with heritage buildings shapes the adaptive reuse market in The Netherlands in terms of laws and regulations. Different types of monumental listings (national, provincial, and municipal) come with certain rights and obligations in terms of finances, maintenance, preservation, and governmental support. All laws and obligations are written down in the national Heritage Act (Erfgoedwet) and are enforced by the CHA and (municipal) monument committee. Next to the rights and obligations of the monumental listing, the playing field of adaptive reuse is also drawn by the possibility to get permits to change the zoning plan and land use plan due to the fact that adaptive reuse requires that the use of the building changes.

Q2. Process – What does the adaptive reuse process look like?



This research question was aimed at finding out what the adaptive reuse process looks like according to the literature, and compare those outcomes to the processes in the case study projects. The key in this question was to find out what comprises this process in terms of phasing, activities and milestones, as well as the key stakeholders that influence the process.

Adaptive reuse projects are most complex during the first stages of the process. This is due to the uncertainty and high degree of freedom in those early stages. The case study projects confirmed this statement as all case study projects had to go through several rounds of revising the plan. An important output of this question was a standard adaptive reuse process, which was phased in six different phases: initiative, idea forming, feasibility, refining, contract negotiation and preparation & execution. Each phase had a specific set of activities that need to be completed in order to continue to the next phase and responsible stakeholders. Based on the case study analyses, the idea forming-, feasibility-, and contract negotiations phases should include a round of iteration and redesign of the plan. Especially the feasibility phase was considered to be complex since adaptive reuse projects are more difficult to get financed.

The degree of complexity increases and decreasing during the process. The case study analyses confirmed that thorough research and preparation in the early phases is the key to minimize complexity during the later phases of the process.

Part of this research question was also to find out who the key stakeholders were and what their influence is on the process. Especially the role of the client, financier, and governmental bodies are considered to have a large(r) influence on the process. The main key stakeholders' roles can intertwine, as for example clients can act as end-users, financiers, and advisors, and municipalities can act as initiators, clients, and project managers at the same time. That is why it is better to categorize stakeholders in roles based on their added-value and goals: producer, investor, regulator, and user.

Q3. Improve – How can you improve an (AR) process?



The third question aimed at finding out how this research could contribute to the field of reusing heritage by improving a process. This question helped to map out the old adaptive reuse process and reflect on instruments, models, and frameworks

that had already been developed to map out the new process.

First step in this question was to find out how a project team (or organisation) can learn from knowledge and experience of previous adaptive reuse projects. Doing so helped to reflect on how the development of the process map could be used by project teams to improve the process. Learning in project teams is significantly harder than in non-project-based organisations. To learn from project-based organisations, experience and knowledge should be captured in a learning mechanism (framework, tool, or model) and combine single-, double-, and triple loop learning. Since this research defined the success factors from experience and knowledge, and places them on the adaptive reuse process in a process map, the two requirements are met.

This part of the research also covered the existing instruments, frameworks, and tools that could help to map out the new process map. Each instrument contained elements that are taken along in the design of the model: (1) the phasing and involvement of disciplines of the Process Protocol, (2) the degree of freedom through time of the Venetian Bridge model, (3) the exploratory and investigative stance of the Wyber Model, and (4) the iterative processes in the Integrative Process.

Q4. Success factors – What is a successful adaptive reuse project and what factors influence the reuse process?

The goal of this sub-question was twofold: (1) define success for adaptive reuse projects, and (2) identify the factors that repeatedly show up in and lead to successful reuse processes and project outcome. The sub-question was answered partly by a literature review on the definition of success and the success factors that were repeatedly mentioned in studies.

It became clear that success in general construction projects comprises of three different types of success: project management success, product success, and project success. The three types of success focused on specific aspects of the construction process. Where project management success is measured according to the management of MOTIQ-requirements, product success was measured by stakeholder satisfaction. Success in both aspects means that project success is achieved in terms of value, significance, mission and goals.

But because adaptive reuse projects deal with many less-obvious, long-term, intangible values and aspects, a new definition is drafted based on the six aspects of adaptive reuse projects: legal, financial, preparatory, communicative, building and location, and function. Based on this categorization a list of success factors is made that consists of factors that stakeholders can influence during the process.

The second part of this question was to draw a list of success factors that repeatedly show up in successful projects of 2020 through in-case- and cross-case analysis. Based on the literature review, in-case analysis, and cross-case analysis, the most important success factors for reusing heritage are:

1. Create a clear ambition document
2. Find political support
3. Involve the end-users
4. Consider the overall interest of the wider community
5. Involve the construction team early
6. Seek for an innovative design(er)
7. Seek out to public authorities for financial support
8. Find innovative financing sources
9. Persevere
10. Find experts in the field and trust them
11. Preserve history & culture in the final design
12. Main ambition & enthusiasm level

Q5. How – How can the success factors of adaptive reuse processes be fed forward to improve the process of future adaptive reuse projects?

The fifth, and final, sub-question question was aimed at finding out how the findings of the previous four sub-questions could be designed in order to improve future adaptive reuse processes. This was done by designing a process map which combines all the data and info on adaptive reuse, process improvements, and the success factors that were perceived to be most important by the case study projects. The design of the process map (or, the how) was discussed with the interviewees during the semi-structured interviews. Here they were asked how they would like to pass on their lessons learned of the case study projects.

The answers lead to a design that is based on all four process models from the management toolbox. The key elements were: (1) an inclining and declining line that represents the degree of freedom, (2) a representation of the degree of complexity, and (3) the assignment of responsibilities, all in the form of a cyclical process of adaptive reuse accompanied by a written guide.

7.2. General conclusion

The sub questions all lead to answering the main research question: “How can success factors improve the process of adaptive reuse of heritage?”. The assumption that was drafted at the beginning of this research was that if you know and understand what the success factors of adaptive reuse of heritage are, and you know when, how, and why they are present, it becomes easier to steer and manage the process according to these factors. Presenting these factors will increase the chance of overcoming challenges in reuse projects and facilitate all the elements to deliver a project successfully.

The answer to the main research question is given by the ‘adaptive reuse of heritage’-process map, where all the elements of the sub-questions are combined into one single process model (figure 53). The process map depicts a general adaptive reuse process, enriched with the success factors from successful projects from 2020. Of course, not every adaptive reuse project and process is similar. Depending on the type of building, team of stakeholders, context, and market, the process map can take on different forms. This process map can therefore be a source of inspiration for future adaptive reuse projects and facilitate the elements that can be individually put to use in the future.

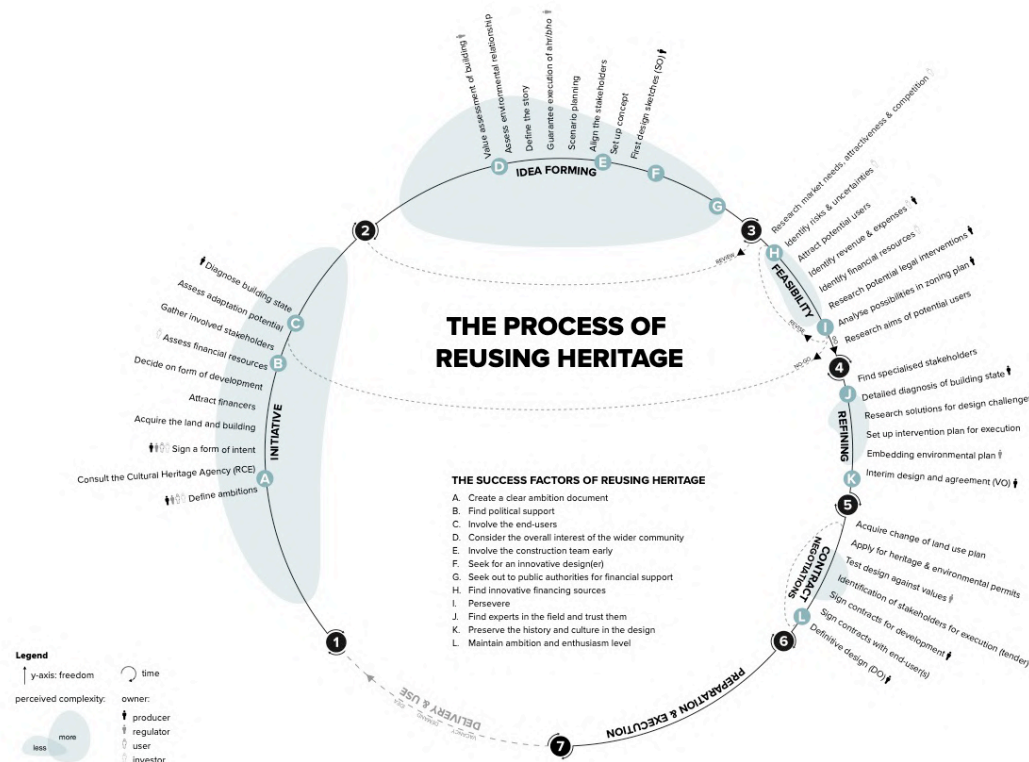


Figure 53: the 'adaptive reuse of heritage'-process map (own ill.), full version can be found in Appendix G – Deliverables.

7.2. Recommendations

7.2.1. For practice

Based on the outcomes of this research, the conclusions to the main research question, and feedback from the interviewees, there are several recommendations for practice related to reusing heritage buildings and the applicability of this research to practice.

- **Face complexity**
The interviewees and literature studies made very clear that complexity is not avoidable. Trying to prepare for complexity is impossible and should therefore never be part of the strategy. Focussing on complexity will exhaust energy and resources of all stakeholders. It is possible to reduce the amount of uncertainties and risks by preparing up until a certain point. Preparation is key to facing this complexity.
- **Work cross-disciplinary**
Try to avoid traditional division of roles and work cross- (or multi)-disciplinary. This collaboration will help to ease problems and challenges as everyone is willing to help each other. Step out of your own bubble to collaborate with all the other stakeholders. Creativity and innovativeness are key in adaptive reuse projects
- **Consider the collaboration between public and private parties**
The role of municipalities was broadly covered in this research. It became clear that their role was vital for the success of the case study project due to several reasons:
 - Municipalities play the role of driver and initiator in adaptive reuse projects. Early collaboration between private and public parties (in this case municipalities) is necessary to kickstart adaptive reuse projects.
 - A good relationship with the municipality helps in the cooperation of the executive board of the municipality (college B&W) and approval of permits (monumentencommissie and commissie van welstand).
 - Municipalities are the key to access governmental funds and subsidies on multiple levels.
 - Many municipalities own beautiful, but often neglected buildings which are eligible for reuse. They can also act as the building owner after the reuse process has taken place to take care of the building.

Early collaboration with municipal parties will kickstart developments. They are focussed on many different aspects of the project, such as economic, ecological, socio-cultural, etcetera so they have a certain interest in the plans that you cannot avoid.

- **Success is relative**
Success is relative and depends on your viewpoint. It is hard to steer on success when it is not clear what it means and whose success you are measuring. It should, therefore, never be the goal in adaptive reuse projects. But rather enjoy the ride.⁹

Last but not least, the final recommendation is (of course) to use the process map.

7.2.2. For future research

This research did not cover everything. There are therefore several subjects and problems that could lead to future research:

- **Reusing non-monumental buildings**
This research focused on monumental listed buildings. The question arises whether the same process map and success factors are applicable for non-monumental buildings (new heritage) or new-built projects. Non-monumental buildings are not perceived as valuable at the moment and

therefore do not apply for certain grants and do not require CHA and monument committees' interference.

- **Impact of COVID-19 on adaptive reuse**

The development of COVID-19 and, consequently, the economic crisis that will follow might impact the real estate markets. Adaptive reuse projects are not seen as very profitable and might lose popularity in the long run. Next to that, the market demand is slowly changing. Will non-G4 developments gain popularity because living in busy cities is decreasing in popularity?

- **Degree of influence of a factor on success**

It was mentioned before and will be further explored in the discussion, but the degree of influence and impact of a success factor on success is not measured in this research. Doing so would help to find out whether or not the right success factors have been chosen to put in the process map.

- **Reusing heritage within G4-cities**

Due to personal preference, this research focused on adaptive reuse projects outside of the G4 cities. Partly because it is believed that adaptive reuse projects are easier to do within one of the G4 cities. This could be due to a higher market demand and governmental institutions like municipalities that are more used to reuse affairs. The question rises whether the adaptive reuse process map would look the same in these four cities or if different success factors apply (Amsterdam, Rotterdam, The Hague, and Utrecht).

- **Further research into reducing complexity**

As mentioned before, mapping the adaptive reuse process and combining it with success factors is one way to deal with complexity. As Pallada (2017) mentioned already, further research into reducing complexity is needed to get a grasp on what it entails and how to deal with it.

7.3. Discussion & limitations

7.3.1. Discussion

1. Relation between findings and problem statement

This research started with stating the problem statement that the success factors identified to grasp the complexity of the adaptive reuse process still fail to ease the process. It states that this was because practitioners still do not know how these success factors should play a role in the reuse process to improve it.

There are three main findings on this research: (1) the "standard" adaptive reuse process, (2) the list of success factors that were perceived as being most important, and (3) the adaptive reuse process map. In this research, the frame of mind is that the adaptive reuse process map is the key to combining two fields of study that have been studied vigorously before, being adaptive reuse processes and success factors (of adaptive reuse). In that sense, this research addresses the problem statement by delivering the process map so that practitioners have a guideline on implementing the success factors in their process.

A proposal was also presented in the introduction. This proposal was a kind of hypothesis that states that if you know and understand what the success factors of a reuse process are, and know when, how, and why they are present, it becomes easier to steer and manage the process according to these factors. This is achieved by diving deep into real-life cases' success factors to find out how and why they (- the interviewees) perceived these factors. The interviews revealed that the case study projects' key stakeholders think that the process map can help in easing the process.

The research and problem statement also stated that the key to success should also improve the process. Of course, this depends on what you define as an improvement. Just like the definition of success, the definition of improvement depends on the viewpoint. Next to that, improvement can only be perceived if you know the status quo before and after using the process map. This measurement or observation is not done in this research. Partly because the existing literature already stated that the adaptive reuse

process needs improvement, but do not define what this improvement should entail. This research addresses that problem by stating that, one way or the other, using the process map will help to effectively and efficiently align resources according to the information in the process map on the project phases, activities, responsibilities, and success factors.

2. Perceived success vs. actual success

This research explored the possibilities of an “universal” definition of success for adaptive reuse projects. As was explained before, the perception of success is always based on the satisfaction of the individual stakeholders and is thus based on their predefined goals. The definition of success that is given in the research however tries to cover all aspects of an adaptive reuse project. This means that is likely that the definition covers multiple perceptions of success from different stakeholders. Thus, if a project ticks all the boxes of this definition, there is a higher chance of overall perceived success since it represents the goals of multiple stakeholders.

The success factors in the process map cover all six aspects of success according to the definition (table 18). As you can see, there are significantly more communicative success factors in the process map than other aspects (42%). This could imply that the stakeholders from the case study projects consider the communicative aspect of reuse processes to be the most important for the success of the project. Or the stakeholders feel that these success factors are easiest to influence. In the end, a project is a success once the stakeholders perceive success, regardless of a universal definition.

The interviewees of the case study projects were asked if they perceived their project as successful and why. However, it would have been interesting to see their definition of success before diving into the project. The richness of their definition of success could have been analysed and compared to the literature.

Table 18: distribution of aspects of success in the process map.

| Theme | Factors from literature | Factors in process map | Share of total |
|---------------------|-------------------------|------------------------|----------------|
| Legal | 3 | 1 | 0,08 |
| Preparatory | 8 | 1 | 0,08 |
| Financial | 6 | 2 | 0,17 |
| Communicative | 19 | 5 | 0,42 |
| Building & location | 2 | 1 | 0,08 |
| Functional | 7 | 2 | 0,17 |
| Total (check) | 45 | 12 | 1,00 |

3. Causal relationship between success and success factors

The process map is not the (only) recipe to success. Even if the project stakeholders decide to enforce all twelve success factors of the process map, success is still not guaranteed.

Success factors are not the only thing that played a role in the success of adaptive reuse projects. Certain externalities could have impacted the outcome of success that are not covered in this research. For example, when all twelve success factors are covered in a process, but the market collapses due to an economic crisis, the project could still fail to be delivered or sold/rented. Alternatively, when the political arena changes due to changing terms or a national political crisis, plans may be discontinued regardless of their chance for success.

Next to that, the degree of influence of a success factor on the project's actual success has not been measured in this study and other studies. This study did try to determine whether or not a factor had an influence (in one or more of the case study projects), but just not the degree. If a success factor did not influence success, it would not have been present in the case study projects. For example, it is possible that a success factor had more impact on the reuse process, but was not mentioned by the interviewees and thus not taken along in the process map. This does not say anything about the impact or importance of a factor but is merely the interviewee's conviction of what they deemed to be the most important in their role. Therefore, it is possible that during the process of this research, some success factors are left

out that might have had a greater influence on the process than the ones that are in the process map. After all, more than 70 success factors were studied from the literature that each had an influence on a project but were just not present in the case study projects.

4. The difference with new-built

Now that the research is written, the question rises whether or not the findings are exclusively applicable for reusing heritage buildings, or that it also covers new-built projects or reusing non-heritage buildings. After all, the adaptive reuse process that was studied at the beginning of this research stemmed from a general construction process such as that from Nozeman et al. (2008).

The heritage elements and activities that were later added to this general process were derived from studies that specifically cover reusing heritage processes, such as Vervloed (2013) and Pallada (2017).

Taking a look at the success factors, you can argue that they are all applicable for new-built construction processes. For example: a clear ambition document, innovating sources of finance, perseverance, and experienced stakeholders. There just are certain factors that are special for working with monumental listed buildings, such as: the monumental expertise of stakeholders, the relationship with governmental bodies like CHA and monument committee, the financial support of the government, and preservation of history and culture. All in all, the impact of success factors has a greater importance in heritage reuse processes than in new-built processes.

5. NRP Gulden Feniks

The case studies for this research were derived from the list of submissions of the NRP Gulden Feniks 2020 contest. The jury selected three projects for the shortlist to receive the NRP Gulden Feniks prize on adaptive reuse. These cases are not the cases that are used as case studies in this research. The selected shortlist for the 2020 edition of the NRP Gulden Feniks were:

1. Park Hoog Oostduin, The Hague
2. Fenix I, Rotterdam
3. RCO House, Amsterdam

The winner of the adaptive reuse category was Park Hoog Oostduin in The Hague. This shortlist was not known before selecting the case studies for this research. Eventually, the shortlist projects of the jury were located in Amsterdam, Rotterdam, and The Hague, and could therefore not be selected for this research due to their location. But assuming that the jury is composed of experts, the shortlist cases would have been the three most successful projects of 2020. This might mean that the jury had a different perception of what success means or that their selection criteria were different from those in this study.

7.3.2. Limitations

1. Case study research

Using case study research methods for this study has two downsides (among others): it might create a bias towards verification or falsification, affecting the validity of the study results (Flyvbjerg, 2006).

Bias towards verification or falsification

Critics of case study research argue that case study research might create a tendency to confirm a researcher's preconceived notions. This study started with a problem statement and proposed solution on how to tackle the problem. This proposed solution was a personal tendency towards a certain hypothesis that the key to success would be to combine studies on adaptive reuse processes and success factors. The research design is set up in such a way to research this proposed solution. That means that the case study projects are chosen with a bias towards the proposed solution. However, Flyvbjerg (2006) argues that case study research does not create a bias towards verification, as researchers can adjust their hypotheses based on reflection (as is done in this discussion). This bias is dealt with by studying three case study projects instead of one and critically evaluating the research findings in the discussion.

Validity

Because this research covered case study research as the research method, the findings and generated knowledge is context-dependent. In the world of research, there is a general tendency of critics to favour

theoretical, context-independent knowledge over practical knowledge that is generated in this research. To overcome this problem, this research tried to use the triangulation of data (Bryman, 2012). This means that multiple data sources are used to perform the in-case and cross-case analysis: documentation of the submissions, jury input, internet sources, (if possible) site observations, and the semi-structured interviews with key stakeholders. Doing so will help to increase the validity of the study results.

2. The model

Designing and developing the model is the first step, but putting the model in use is the second. The applicability of the model is dependent on whether or not practitioners will use it. This model contributes to the field of adaptive reuse of heritage since it mixes the theories from literature with the whimsicality of reusing heritage. This research is a mix of theory and practice, hoping to give a chance for a little room within the hardware of reuse and construction projects.

Eventually, the applicability of the process map all depends on whether or not people will use it. Learning should therefore be a part of the project team's ambition. Eventually, all projects involve human interaction and relationships, despite all the requirements and constraints in terms of technique, finances, planning, etc. Implementing the model in a project always involves human interaction.

Identifying the success factors and adaptive reuse process, and pouring both theories in a model might not be the triple loop learning that this research was aiming for. Double-loop learning means to ask are we doing the things right (in this case, redesigning the adaptive reuse process is double-loop learning). Triple loop learning reflects on how we learn (Roux, Murray & Van Wyk, 2008). In this research, we assume that success factors contribute to an organisation's knowledge and adaptive reuse processes. If that was the case, we (and with "we" meaning all the studies that discuss the success factors of adaptive reuse projects) should question whether or not the identification of success factors is even the answer to the problem of complexity. This question goes too deep into the theory of organisational learning to discuss in this research.

3. COVID-19

The spread and development of COVID-19 and the subsequent lockdown(s) had a major impact on this research design. The empirical study was planned for September until December. However, due to the travel restrictions and credo to work from home, it was impossible to visit all the case study projects and interviewees. Because of this, the interviews had to be conducted online, which obviously saved time and made clear communication and personal connection a struggle. Only two out of three case study projects were visited in person. The visited ones are seen in an entirely different setting (without being operationally open) than they were at the beginning of the year.

The initial research plan was designed around the NRP Gulden Feniks 2020 competition. Once the pandemic set through, parts of the research in terms of methodology and planning had to be changed according to new national measures.

The number of interviewees was limited and less than expected. Ideally, each case study project was covered with the same number of interviewees with more or less the same roles for easier (and more valid) comparison.

However, it was not easy to contact the right persons and planning the meetings took more time than expected. The graduation internship made it easy to get in contact with the stakeholders for the Greswarenfabriek. But this also had the consequence that I interviewed more stakeholders for this case study project than for the other two case study projects. This may have influenced the amount of success- and failure factors for this case.

8. REFLECTION

1. Topic

This research was conducted at the Faculty of Architecture, within the Management in the Built Environment (MBE) track. Within this track, there are three research sections: Real Estate Management (REM), Design & Construction Management (DCM), and Urban Development Management (UDM). This graduation research is conducted within the REM department, a chair that focuses on the interests, requirements, and constraints of the stakeholders of a building, portfolio, location or market in different phases from initiation till use. Within this section, a laboratory called adaptive reuse focuses on sustainably reusing the existing (vacant) building stock in a world where disposing anything that is not usable is the norm.

While the focus point of this research is the adaptive reuse lab within REM, it also touches upon subjects like process improvements and process/project management researched within the chair of DCM.

The goal of this research was to propose a process map that would help future adaptive reuse projects to effectively and efficiently manage the reuse process, and in that way, increase the change for a successful outcome. In that way, this research will contribute to the field of adaptive reuse by giving a detailed insight into the reuse process and factors that lead to success. It builds a bridge between REM and DCM by managing adaptive reuse projects. In doing so, this research wants to give stakeholders the confidence to take on more of the same projects and contribute to making the built environment more sustainable, bit by bit.

2. Relevance

Scientific

This research is scientifically relevant because it combines aspects that have been studied thoroughly recently (see figure 54). Previous studies are often based on one of the aspects of this study, while there is no study yet that combines them all three: adaptive reuse, success factors and process improvements is still missing.

Within the existing literature on adaptive reuse, studies mostly focus on one aspect of an adaptive reuse process. There is for example research on the benefits and challenges of the adaptive reuse strategy (Bullen & Love, 2011b; De Silva & Perera, 2016; Wilkinson, Remøy & Langston, 2014; Yung & Chan, 2012;) or why and how to reuse (Langston, 2011; Meurs & Steenhuis, 2017; Remøy, 2010). Some studies focus on the values (functional, monetary or social) of the building and reuse strategy (Benraad & Remøy, 2007; Persoon, 2019; Scheltens et al., 2009; Shipley, Utz & Parsons, 2006). Besides that, there are studies done that present a guideline such as the Herbestemmingswijzer which guides initiators into finding the most suitable function for the buildings (Hek, 2004) and decision making in terms of what strategy to choose (Bottero, D'Alpaos, & Oppio, 2019; Gelinck & Strolenberg, 2014; Slits, 2017). Studies still lack the next evaluation step.

A few studies focus on the adaptive reuse process (Andriessen, 1999, 2007; BOEi, 2009; Saris, 2008) but lack the translation from a list or explanation to a recommendation, guideline or model. The studies on success factors of an adaptive reuse process focus either on the building or a phase of the process, but all conclude with a list or summary of the factors (BOEi, 2009; Bullen & Love, 2011c; Chan et al., 2004; Dyson et al., 2016; Nwachukwu et al., 2017; Scheltens et al., 2008; Tan et al., 2018).

Studies on the difficulty of the adaptive reuse process dive deep into what this complexity, difficulty and manageability of the process entail but do not propose a recommendation or solution. Since the beginning of the 20th century, researchers have tried to grasp the notion of complexity in construction projects (Baccarini, 1996; Bosch-Rekveltdt, 2011; Cicmil & Marshall, 2005; Maylor, Vidgen & Carter, 2008). Complexity in adaptive reuse processes are specifically covered by studies, but mostly focus on one of the aspects of what this complexity entails (Kurul, 2007; Pallada, 2017). A list of ingredients to deal with the complexity is still lacking.

The scientific gap between the three aspects might be the key to improve the management of the process. The conversation of how the three aspects of adaptive reuse, process management and success factors relate to the management of reuse processes is new in the field of heritage.

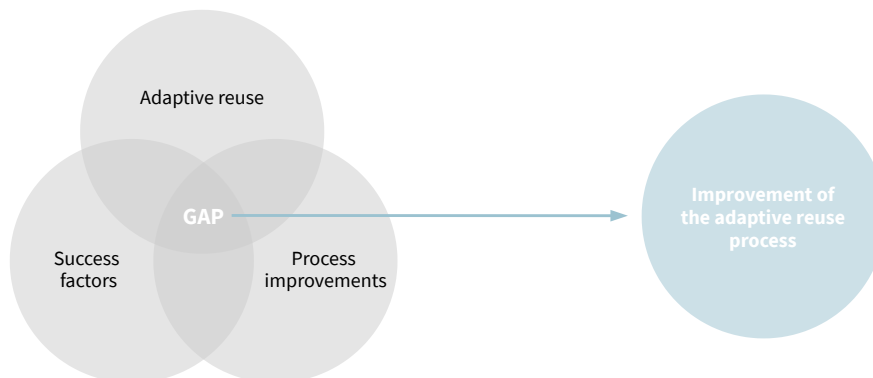


Figure 54: Relationship between the three aspects of this research (own ill.)

Social

This research is also socially relevant. While adaptive reuse is gaining popularity in The Netherlands, initiators, developers, financiers and clients are reluctant to consider the strategy in the first place (Kurul, 2007). By carefully studying the adaptive reuse process and its success factors it is possible to increase knowledge and understanding of using adaptive reuse as a strategy. Improving the current reuse process makes it more viable and accessible for stakeholders that consider adaptive reuse as one of their strategies to preserve heritage. This eliminates part of the wrong perception of stakeholders of what an adaptive reuse process entails and what they can expect (Kurul, 2007). In the end, it does not matter if a project will cost a few hundred euros more, stakeholders ultimately want more clarity of the process (Volker, 2019).

More importantly, improving the current process by using success factors will increase the chance of successfully delivering a reuse project. There is a need for guidelines that are based on effective practical examples and not on copy-paste strategies (Saris et al., 2008). Such guidelines on how to successfully reuse heritage do not exist yet (Dyson et al., 2016). This research will provide the knowledge that is needed to increase the success of future adaptive reuse projects, making them more attractive. Adaptive reuse and development are closely related (Asselbergs, 1996, as cited in Velthuis & Spenneman, 2007). “Eventually, re-use would move towards the centre of the property development domain, and subsequently our capacity for sustaining architectural heritage would have increased” (Kurul, 2003, p.4).

Applicability

Due to the complex nature of adaptive reuse projects and various involved stakeholders, the outcome of this research can be relevant for multiple audiences. This research will both be an addition to scientific literature as it is an addition to practice. The research specifically addresses, not excluding others, the following audiences:

1. Project/process managers – can use the detailed description of the process and recommendation of this research to effectively manage the adaptive reuse processes and know where to focus on. They can use the outcome as their hands-on source to be hired by clients.
2. Initiators and clients – can use the overview of this research to start an adaptive reuse project with more confidence and ignite developments.
3. Developers – can use the overview of this research to engage in adaptive reuse projects with more confidence and increase their projects' effectiveness and efficiency.
4. Investors and financiers – can use the detailed process description as a tool to map risks and opportunities to make adaptive reuse projects more attractive to finance.

Next to that, the research specifically benefits future adaptive reuse projects located outside of the G4 cities. Personal communication with colleagues, interviewees and experts in the field early on revealed that adaptive reuse projects are easier to initiate in G4 cities due to the market demand and supply,

willingness and acquaintance of the municipality to facilitate such projects, and the familiarity of local (sub-)contractors and other parties. Since adaptive reuse projects are well-known practices in the G4 cities, but less in the uncommon location in the more sparsely populated parts of The Netherlands, those locations would benefit the most from the research and process map.

3. Product

I thought (or better: wished) I had superpowers. But I found out that it is not possible (timewise, but also due to limited research experience) to define the most important success factors for an adaptive reuse project. Doing so requires thorough quantitative research and detailed information and data from a case.

The P4 report was the first time all of the research came together. It, therefore, still lacked the depth and richness that I would have liked to give. Up until the P3 presentation, all that was there was the theory. The case study analysis provided a peek into the adaptive reuse field of practice, but also showed that there is a lack of connection between theory and practice. I believe that I was able to complement all the above issues in this P5 report.

4. Process

Due to the development, spread and control of COVID-19, the research methods and process changed between P2 and P4. The research depended on the NRP Gulden Feniks contest, which was rescheduled to the autumn semester. Because of this, I had to redesign my research process, as well. This meant that the jury observation was left out of the research and the goal of the cross-case analysis that changed from validating to exploratory.

At the beginning of this research, I drafted a scope and research design (figure 2 and figure 6). Doing so helped tremendously with sticking to a plan instead of redesigning the problem statement repeatedly. The project's scope helped in drafting the sub-research questions and understanding of the contribution of this research to the adaptive reuse field.

The pandemic obviously had a lot of impact on the graduating process. Especially the lack of contact with fellow (graduating) students was unfortunate. Discussing and listening to each other's ideas, plans, brainstorming, joys, and misery was doable online. Still, it would have been better if we could have met at the faculty. Graduating in these terrible times required a lot of perseverance and strong mentality, which I am not particularly good in. Luckily, I was able to continue without any hassle and graduate in two semesters as was initially planned. But a small holiday after the presentation is much appreciated.

Literature review

The literature review was conducted using the snowball effect. Starting from better-known publications, their references were used to find other publications in the field relating to the same subject. The literature review's goal is to set the theoretical framework that will be used as a base layer for the next steps in the research. A main source of information happened to be master theses of former students from both the master Management in the Built Environment (MBE) at TU Delft and Urban Systems and Real Estate (USRE) at TU Eindhoven. This helped the overall process since their conclusions could easily be combined in this research, without inventing the wheel by myself.

However, it remains clear that it is difficult to write a literature review from the large amount of literature that has been read. Searching for studies and sources according to the snowball effect and reviewing former TU Delft or TU Eindhoven students may have created a bias in how I see adaptive reuse.

The feedback from the P2 and P3 presentation was to be more analytic when reviewing the literature. I now see that part of this issue was the approach of finding the sources.

(In-depth) case studies & interviews

The cross-case analysis was performed to validate the literature's success factors and find out whether these factors were also relevant in real-life cases. Due to the pandemic of covid-19, this part of the research was performed using the submitted documents for the NRP Gulden Feniks prize. This requires some imagination to "read between the lines". Even though this was doable and provided some great

insights, it is not as scientific as was wished for. The documents for the submissions are subjectively written.

Contrary to what other students might experience, I was not looking forward to this thesis's empirical research. I enjoy to work rigid and structured and knew that once the invitations to participate in the interviews were sent, I would lose some control in terms of planning and quality. Luckily the people that I spoke to were fascinating and enthusiastic. Due to them, I was able to regain my interest in the topic.

Of course, there were some setbacks that I experienced during the case study research. A project that seems successful at first might not be so successful as hoped for. The cases were selected based on the submissions of the NRP Gulden Feniks, and here you see that you can sell a project based on marketing, stories and people. During the interviews, many issues regarding collaboration, stakeholders, financing, execution, and so on came forth, which I was not anticipating.

Case studies might not have been the right research method to gather the data I was hoping for. The interviews' personal touch made it hard to stay scientific and find out which success factors were the most important during these projects. Until this point, I do not (yet) see what other research methods could have achieved in the timeframe given. It became clear that the stakeholders who were being interviewed up until now love to talk about their project, but are not so fluent in the scientific terminology of the success factors even though I tried to account for that in the questions' wording.

Next to that, the development of the covid-19 pandemic made it hard to get in contact with the right persons. 12 out of 14 interviews had to be carried out online instead of physically. This meant that only 2 out of 3 project-visits were able to continue. This influences the perception of the project and the building since the projects' image is now drawn by personal communication with stakeholders rather than by yourself. Some parties were not willing to cooperate and take part in the research for unknown reasons.

In hindsight, I would like to have gone into more detail on the definition of success by the key stakeholders of the case study projects. Measuring and defining success is interesting and insightful, but has hardly been touched upon in this research.

Ethical issues

During the interviews, many interviewees used the moment to reflect on their project, process and influence. This means that issues came up during the interviews directed towards one of the other parties (that I did or did not interview). It is possible that during the weeks that were reserved for the interviews, my view on projects and people became biased based on previous interviews. Working on adaptive reuse projects requires parties to focus their attention and resources to this one project for many years, often longer than five years. It is no surprise that things can get rough during these projects, especially between two parties who are not on the same line. It was, therefore, difficult to conduct and analyse the interviewees without pointing fingers towards one another. However, I was aware of this after a few interviews, so I truly hope that the ethical issue that arose here did not have that much influence on the outcome of the research.

Goals

During the P2 period, I drafted personal goals that I wanted to achieve during graduating. One of them was to feel that I was able to help practice with research that applies to real-life cases and encourage others to develop more heritage reuse projects. The interviewees' feedback on this was very positive since I received compliments on the subject and scope that they also deemed relevant.

The second goal was to gain practical experience during an internship in the area of heritage and/or adaptive reuse processes to find out what area I want to work in. I was able to do so at HEVO B.V. who specialises in advice and project management for semi-public projects. Even though COVID-19 made it impossible to work at the office, I felt welcome and appreciated by the employees I worked with.

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APPENDICES

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2. Appendix B – Interview results
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4. Appendix D – Exploratory cross case analysis
5. Appendix E – Case selection
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Appendix A – Interview protocol

The following parties have been interviewed:

| | Function | Company | Role | Date |
|-----------|--------------------------------------|------------------------------------|---|-------------|
| A1 | Director | Stichting Onderwijs Midden-Limburg | Client | 14/10/2020 |
| B1 | Project manager | Gemeente Beesel | Municipality Initiator & financier | 20/10/2020 |
| C1 | Project manager | BOEi | Advisor construction management heritage | 23/10/2020 |
| D1 | Director | Maasveste Berben Bouw | Contractor | 27/10/2020 |
| E1 | Location director | Het Grescollege | End-user | 29/10/2020 |
| F1 | Project leader | Koninklijke woudenberg | Contractor | 30/10/2020 |
| G1 | Project manager | HEVO | Delegate client | 10/11/2020 |
| A2 | Project leader | Bouwbedrijf van de Ven | Contractor | 26/10/2020 |
| B2 | CEO | Coöperatie DELA | Client & end-user | 2/11/2020 |
| C2 | Project leader | Coöperatie DELA | Client & end-user | 5/11/2020 |
| D2 | Project manager and Urban planner | Gemeente Eindhoven | Municipality Initiator & financier | 5/11/2020 |
| A3 | Creative director | Muziekgieterij | End-user | 16/10/2020 |
| B3 | Architect | Maurer United Architects | Architect | 23/10/2020 |
| C3 | Project leader | Gemeente Maastricht | Municipality Initiator & financier | 10/11/2020 |

Depending on their role in the project, each interviewee had a specific interview protocol with small nuances based on their involvement in the process. The interview protocol questions are listed below.

Client/initiator/end-user

1. Algemeen

1. Kunt u wat vertellen over uw rol bij [NAAM BEDRIJF]?
 - a. Wat was uw rol tijdens het project?
 - b. Hoe bent u betrokken geraakt bij dit project?
 - c. Bent u nog steeds betrokken bij het project sinds de oplevering?
2. Heeft u ervaring met (het herbestemmen van) monumentale gebouwen?
 - a. Zo ja, wat voor soort projecten/ervaring?
 - b. Zo nee, hoe heeft u het ervaren?
3. Wat was de aanleiding om te gaan voor een herbestemmingsopgave?
4. Wat was uw drijfveer om dit project te starten?
5. Gemeente: Wat was de sociaal-maatschappelijke visie van de gemeente/huisvestingsvisie/onderwijsvisie en hoe sluit deze aan bij het project?
6. Wat waren de drie belangrijkste doelen die u wilde behalen met de realisatie van dit project?
 - a. Zijn die doelen behaald?

2. Het proces

1. Zou je me misschien mee kunnen nemen in het verhaal en tijdlijn van het Grescollege?
2. Kunt u mij vertellen uit welke fases het project bestond en bij welke fases u expliciet betrokken was als [NAAM BEDRIJF]?
 - a. Wanneer bent u gestart (datum) en geëindigd (datum)?
 - b. Afhankelijk van de betrokken fases:
 - i. Hoe verliep de initiatief/definitiefase?
 - ii. Hoe verliep de ontwerpfase?
 - iii. Hoe verliep de voorbereidingsfase?
 - iv. Hoe verliep de uitvoeringsfase?
 - v. Hoe verliep de opleveringsfase?
3. Hoe heeft u het gehele proces en uw betrokkenheid daarin ervaren?
4. Wat voor tools, instrumenten of projectaanpak vormen heeft u ervaren als bevorderend voor het procesverloop?
5. Wat waren de grootste mijlpalen die behaald moesten worden?
 - a. Wat had er anders gekund?
6. Wat waren volgens u de belangrijkste rollen en partijen binnen dit project?

3. De succes factoren

1. Vindt u [NAAM PROJECT] succesvol?
 - a. Zo ja, waarom?
 - b. Zo nee, welk aspect had volgens u meer aandacht mogen verdienen?
2. Welke factoren hebben geleid tot dit succes?
 - a. Wie of wat was er verantwoordelijk voor dit succes?
 - b. In welke fase van het project kwam deze factor naar voren?
 - c. Wanneer ontdekte u wat de factoren waren in dit proces?
3. Wat zijn de belangrijkste lessen uit dit project?
 - a. Zijn er lessen die u zou willen doorgeven aan toekomstige projecten?
 - b. In welke vorm denkt u dat deze lessen moeten worden doorgegeven aan toekomstige projecten?

Aannemer/adviseur/architect

1. Algemeen

1. Kunt u wat vertellen over uw rol bij [NAAM BEDRIJF]?
 - a. Wat was uw rol tijdens het project?
 - b. Wanneer bent u betrokken geraakt bij dit project?
2. Heeft u ervaring met (het herbestemmen van) monumentale gebouwen?
 - a. Zo ja, wat voor soort projecten/ervaring?
 - b. Zo nee, hoe heeft u het ervaren?
3. Hoe bent u in aanraking gekomen met de opgave/het project?

4. Wat was uw belangrijkste doel tijdens dit project?
 - a. Is uw doel behaald?

2. Het proces

1. Kunt u mij vertellen uit welke fases het project bestond en bij welke fases u expliciet betrokken was als [NAAM BEDRIJF]?
 - a. Wanneer bent u gestart (datum) en geëindigd (datum)?
 - b. Afhankelijk van de betrokken fases:
 - i. Hoe verliep de initiatief/definitiefase?
 - ii. Hoe verliep de ontwerpfase?
 - iii. Hoe verliep de voorbereidingsfase?
 - iv. Hoe verliep de uitvoeringsfase?
 - v. Hoe verliep de opleveringsfase?
2. Hoe heeft u het algehele proces en uw betrokkenheid daarin ervaren?
3. Wat voor tools, instrumenten of projectaanpak vormen heeft u ervaren als bevorderend voor het procesverloop?
4. Wat waren de grootste mijlpalen die behaald moesten worden?
 - a. Wat had er anders gekund?
5. Wat waren de belangrijkste rollen en partijen binnen dit project waar u mee samenwerkte?
 - a. Voor welke partij waren jullie in opdracht en hoe verliep deze samenwerking?

3. De succes factoren

1. Vindt u dit project succesvol?
 - a. Zo ja, waarom?
 - b. Zo nee, welk aspect had volgens u meer aandacht mogen verdienen?
2. Welke factoren hebben geleid tot dit succes?
 - a. Wie of wat was er verantwoordelijk voor dit succes?
 - b. In welke fase van het project kwam deze factor naar voren?
 - c. Wanneer ontdekte u wat de factoren waren in dit proces?
3. Wat zijn de belangrijkste lessen uit dit project?
 - a. Zijn er lessen die u zou willen doorgeven aan toekomstige projecten?
 - b. In welke vorm denkt u dat deze lessen moeten worden doorgegeven aan toekomstige projecten?

Financer/investor/permit issuer/provincial state/municipality

1. Algemeen

1. Kunt u wat vertellen over uw rol bij [NAAM BEDRIJF]?
 - a. Wat was uw rol tijdens het project?
 - b. Wanneer bent u betrokken geraakt bij dit project?
2. Heeft u ervaring met herbestemmingsprojecten?
 - a. Zo ja, wat voor soort projecten/ervaring?
 - b. Zo nee, wat was voor u de reden om eraan mee te doen? Wie of wat haalde u over de streep?
3. Hoe bent u in aanraking gekomen met de opgave/het project?
4. Wat was voor u en voor [NAAM BEDRIJF] de grootste reden om financieel bij te dragen aan dit project?
5. Wat was uw belangrijkste doel tijdens dit project?
 - a. Is uw doel behaald?

2. Het proces

1. Kunt u mij vertellen uit welke fases het project bestond en bij welke fases u expliciet betrokken was als [NAAM BEDRIJF]?
 - a. Wanneer bent u gestart (datum) en geëindigd (datum)?
 - b. Afhankelijk van de betrokken fases:
 - i. Hoe verliep de initiatief/definitiefase?

- ii. Hoe verliep de ontwerpfase?
 - iii. Hoe verliep de voorbereidingsfase?
 - iv. Hoe verliep de uitvoeringsfase?
 - v. Hoe verliep de opleveringsfase?
2. Hoe heeft u het gehele proces en uw betrokkenheid daarin ervaren?
 3. Wat voor tools, instrumenten of projectaanpak vormen heeft u ervaren als bevorderend voor het procesverloop?
 4. Wat waren de grootste mijlpalen die behaald moesten worden?
 - a. Wat had er anders gekund?
 5. Wat waren de belangrijkste rollen en partijen binnen dit project waar u mee samenwerkte?

3. De succes factoren

1. Vindt u dit project succesvol?
 - a. Zo ja, waarom?
 - b. Zo nee, welk aspect had volgens u meer aandacht mogen verdienen?
2. Welke factoren hebben geleid tot dit succes?
 - a. Wie of wat was er verantwoordelijk voor dit succes?
 - b. In welke fase van het project kwam deze factor naar voren?
 - c. Wanneer ontdekte u wat de factoren waren in dit proces?
3. Wat zijn de belangrijkste lessen uit dit project?
 - a. Zijn er lessen die u zou willen doorgeven aan toekomstige projecten?
 - b. In welke vorm denkt u dat deze lessen moeten worden doorgegeven aan toekomstige projecten?

Projectmanager/projectleader

1. Algemeen

1. Kunt u wat vertellen over uw rol bij [NAAM BEDRIJF]?
 - a. Wat was uw rol tijdens het project?
 - b. Wanneer bent u betrokken geraakt bij dit project?
 - c. Bent u nog steeds betrokken bij het project sinds de oplevering?
2. Heeft u ervaring met (het herbestemmen van) monumentale gebouwen?
 - a. Zo ja, wat voor soort projecten/ervaring?
 - b. Zo nee, hoe heeft u het ervaren?
3. Wat was de aanleiding om te gaan voor een herbestemmingsopgave?
4. Hoe bent u in aanraking gekomen met de opgave/het project?
5. Wat was uw belangrijkste doel tijdens dit project?
 - a. Is uw doel behaald?

2. Het proces

1. Kunt u mij vertellen uit welke fases het project bestond en bij welke fases u expliciet betrokken was als [NAAM BEDRIJF]?
 - a. Wanneer bent u gestart (datum) en geëindigd (datum)?
 - b. Afhankelijk van de betrokken fases:
 - i. Hoe verliep de initiatief/definitiefase?
 - ii. Hoe verliep de ontwerpfase?
 - iii. Hoe verliep de voorbereidingsfase?
 - iv. Hoe verliep de uitvoeringsfase?
 - v. Hoe verliep de opleveringsfase?
2. Hoe heeft u het gehele proces en uw betrokkenheid daarin ervaren?
3. Wat voor tools, instrumenten of projectaanpak vormen heeft u ervaren als bevorderend voor het procesverloop?
 - a. Zijn deze tools expliciet voor dit project gebruikt of zijn het standaard gebruiken?
 - b. In welk opzicht hebben ze bijgedragen aan het project en het proces?
4. Wat waren de grootste mijlpalen die behaald moesten worden?
 - a. Wat had er anders gekund?
5. Wat waren de belangrijkste rollen en partijen binnen dit project waar u mee samenwerkte?

- a. Voor welke partij waren jullie in opdracht en hoe verliep deze samenwerking?

3. De succes factoren

1. Vindt u dit project succesvol?
 - a. Zo ja, waarom?
 - b. Zo nee, welk aspect had volgens u meer aandacht mogen verdienen?
2. Welke factoren hebben geleid tot dit succes?
 - a. Wie of wat was er verantwoordelijk voor dit succes?
 - b. In welke fase van het project kwam deze factor naar voren?
 - c. Wanneer ontdekte u wat de factoren waren in dit proces?
3. Wat zijn de belangrijkste lessen uit dit project?
 - a. Zijn er lessen die u zou willen doorgeven aan toekomstige projecten?
 - b. In welke vorm denkt u dat deze lessen moeten worden doorgegeven aan toekomstige projecten?

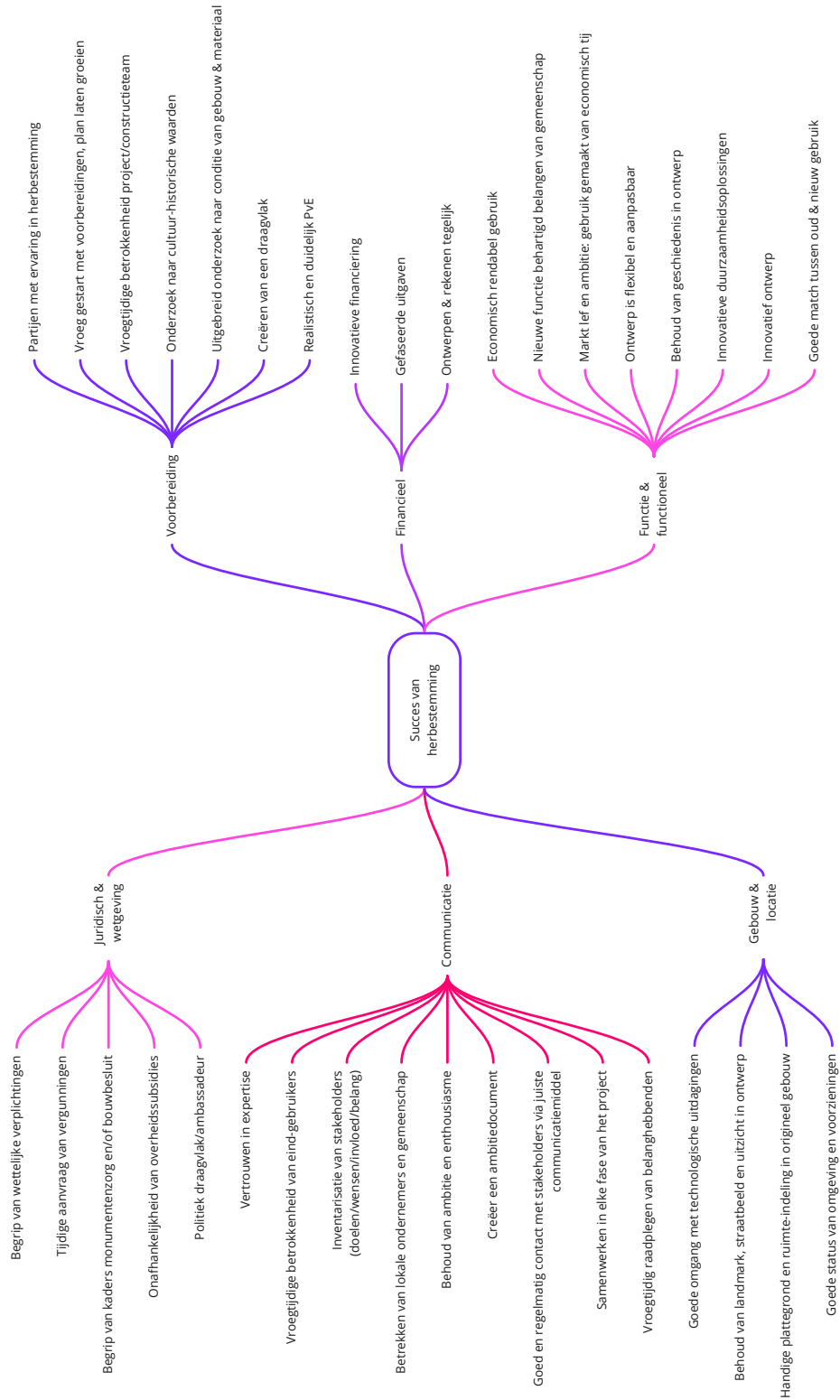


Figure 55: success factors from the literature in Dutch (own ill.)

After each interview, the participants are asked to take a look at the above scheme (figure 55) in which all the success factors from 3.2.7. *The success factors of reusing heritage* are listed based on the success themes. By doing so, the participant can reflect on their story and answers and make a connection with the literature.

Appendix B – Interview results

In this appendix you can find the results of the semi-structured interviews where the perceived success factors were discussed together with the main stakeholders. The success factors of each case are presented together with the success factors from the literature review. A table will then give an overview of the interviewees that mentioned the specific factor during the interviews.

1. Greswarenfabriek

| Project success | | Project management success | | Product success | |
|---|--|---|--|---|---|
| Legal | Preparatory | Financial | Communicative | Building & location | Functional |
| Independence of governmental incentives | Early involvement of a construction team | Integrated design & calculation | Create a document with ambitions & missions | Adventageous space layout | Consider the interest of the wider community |
| Timely acquisition of necessary permits | Experienced professionals | Phased finances | Make an inventory of all stakeholders | Status of the neighbourhood and public facilities | Make use of market demand and show market courage |
| Understanding statutory requirements | Early research in building & fabric condition | Innovative financing | Early consultation of interest groups | Technological difficulties are well treated | Innovative design |
| Determine the extent of technological changes permitted | Start quickly | Financial support by public authorities | Early involvement of end-user | Retaining landmark, streetscape & views | Innovative green solutions |
| Find political support | Create public support base | | Engaging local businesses and communities | Minimal change | Functional changeability & flexibility |
| Innovative contracting | Clear brief that fits the capabilities of the building | | Communicating properly and regularly with right means of communication | Uniqueness of the building | Preservation of history & culture in design |
| | Understand historical and cultural significance | | Collaborating at every stage | | Economic viability of new use |
| | | | Trust expertise | | Good fit between old & new |
| | | | Maintain ambition and enthusiasm level | | Function follows form |
| | | | Perseverance | | |
| | | | Honesty on MOTIQ-constraints | | |

| |
|--|
| Factor from literature - mentioned |
| Case specific factor |
| Desired factor |
| Factor from literature - not mentioned |

2. DomusDELA

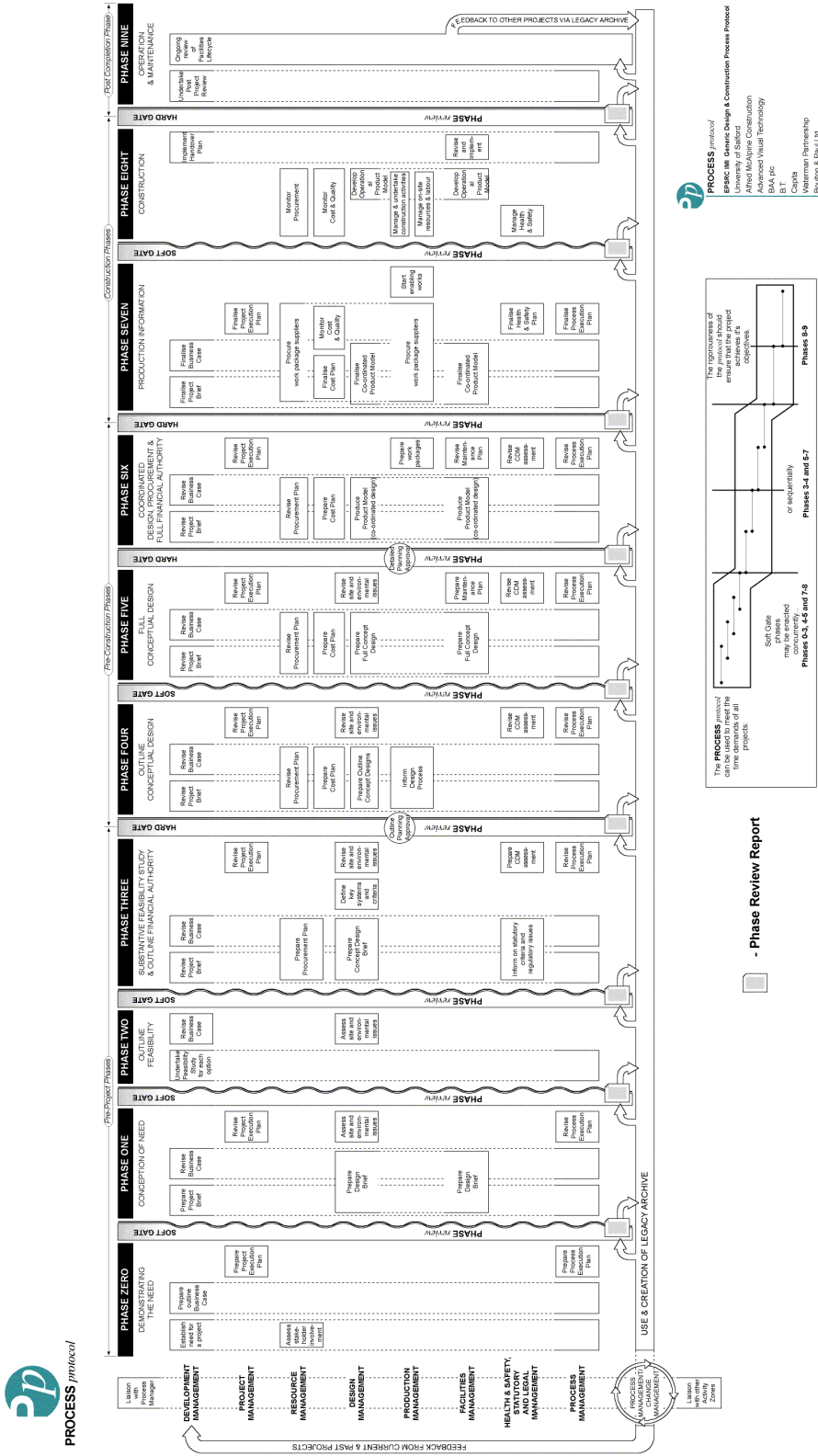
| Project success | | Project management success | | Product success | |
|---|--|---------------------------------|--|---|---|
| Legal | Preparatory | Financial | Communicative | Building & location | Functional |
| Independence of governmental incentives | Early involvement of a construction team | Integrated design & calculation | Create a document with ambitions & missions | Adventagous space layout | Consider the interest of the wider community |
| Timely acquisition of necessary permits | Experienced professionals | Phased finances | Make an inventory of all stakeholders | Status of the neighbourhood and public facilities | Make use of market demand and show market courage |
| Understanding statutory requirements | Early research in building & fabric condition | Innovative financing | Early consultation of interest groups | Technological difficulties are well treated | Innovative design |
| Determine the extent of technological changes permitted | Start quickly | Party with financial capacity | Early involvement of end-user | Retaining landmark, streetscape & views | Innovative green solutions |
| Find political support | Create public support base | Perseverance | Engaging local businesses and communities | Minimal change | Functional changeability & flexibility |
| | Clear brief that fits the capabilities of the building | | Communicating properly and regularly with right means of communication | | Preservation of history & culture in design |
| | Understand historical and cultural significance | | Collaborating at every stage | | Economic viability of new use |
| | Seek early advice with CHA | | Trust expertise | | Good fit between old & new |
| | | | Maintain ambition and enthusiasm level | | |
| | | | Enthusiastic initiator | | |

| |
|--|
| Factor from literature - mentioned |
| Case specific factor |
| Desired factor |
| Factor from literature - not mentioned |

| Project success | | Project management success | | Product success | |
|---|--|---|--|---|---|
| Legal | Preparatory | Financial | Communicative | Building & location | Functional |
| Independence of governmental incentives | Early involvement of a construction team | Integrated design & calculation | Create a document with ambitions & missions | Adventageous space layout | Consider the interest of the wider community |
| Timely acquisition of necessary permits | Experienced professionals | Phased finances | Make an inventory of all stakeholders | Status of the neighbourhood and public facilities | Make use of market demand and show market courage |
| Understanding statutory requirements | Early research in building & fabric condition | Innovative financing | Early consultation of interest groups | Technological difficulties are well treated | Innovative design |
| Determine the extent of technological changes permitted | Start quickly | Financial support by public organisations | Early involvement of end-user | Retaining landmark, streetscape & views | Innovative green solutions |
| Find political support | Create public support base | | Engaging local businesses and communities | Minimal change | Functional changeability & flexibility |
| | Clear brief that fits the capabilities of the building | | Communicating properly & regularly with right means of communication | | Preservation of history & culture in design |
| | Understand historical and cultural significance | | Collaborating at every stage | | Economic viability of new use |
| | Seek early advice with CHA | | Trust expertise | | Good fit between old & new |
| | | | Maintain ambition and enthusiasm level | | |
| | | | Good leadership & management | | |

| |
|--|
| Factor from literature - mentioned |
| Case specific factor |
| Desired factor |
| Factor from literature - not mentioned |

Appendix C – The Process Protocol



The Process Protocol by Kagioglou, Cooper, Ouad, & Sexton (2000).

Appendix D – Exploratory cross case analysis

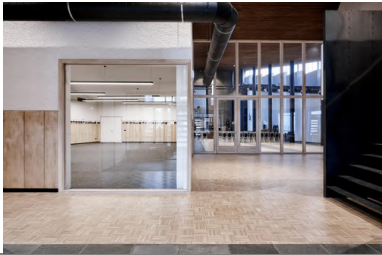





1. Success factors in each case







| REUSE ASPECT | TAG | FACTOR | Cultuurbuis | Lichtenberg | Greswarenfabriek | Voormalig V&D | Fenix I | Watertoren | DomusDELA | Jansbuitensingel | RCO House | H-Park | Rijksarchief | Campus RUG Fryslân | Timmerfabriek | Park Hoog Oostduin | Trippenhuiscomplex | Move | The Lee Towers | Christus Koningkerk | TOTAL | |
|---------------------|-------|---|-------------|-------------|------------------|---------------|---------|------------|-----------|------------------|-----------|--------|--------------|--------------------|---------------|--------------------|--------------------|------|----------------|---------------------|-------|----|
| Legal | PL1 | Make agreements with government on metalevel | | | | | | | | | | | | | | | | | | | | 0 |
| | PL2 | Governmental incentives | X | | | | | | | | | | | | | | | | | | | 1 |
| | PL3 | Government steers instead of controls | | | | | | | | | | | | | | | | | | | | 0 |
| | PL4 | Ownership of building | | | | | | | | | | | | | | | | | | | | 0 |
| | PL5 | Timely acquisition of necessary permits from statutory board | | | | | | | | | | | | | | | | | | | | 0 |
| | PL6 | Understanding statutory requirements | | | | | | | | | | X | | | | | | | | | | 1 |
| | PL7 | Determine the extent of technological changes permitted by regulatory bodies | | | | | | | | | | | | | | | | | | | | 0 |
| | PL8 | Find political support | | X | X | | | | | | | X | | | X | | | | | | | 4 |
| Preparatory | PP1 | Early involvement of construction team | | | | X | X | | | | | | | | X | | | | | | 2 | |
| | PP2 | Early brainstormsessions with all stakeholders | | | | | | | | | | | | | | | | | | | | 0 |
| | PP3 | Experienced professionals | | | | | | | | X | | | | | | | | | | | | 1 |
| | PP4 | Create awareness of urgency through showing worst-case scenario | | | | X | | | | | | | | | | | | | | | | 1 |
| | PP5 | Visit reused projects | | | | | | | | | | | | | | | | | | | | 0 |
| | PP6 | Research building condition and fabric | | | | | | | | | | X | | | | X | | X | | | | 3 |
| | PP7 | Start quickly | | X | | | | | | | | | | | | | | | | | | 1 |
| | PP8 | Create public support base | | X | | | | | | | | X | | | | X | | | | | | 3 |
| | PP9 | Avoiding damage to the environment or ecosystem during activities | | | | | | | | | | | | | | | X | | | | | 0 |
| | PP10 | Clear brief that fits capabilities of the building | | | | | | | | | | | | | | | | | | | | 0 |
| | PP11 | Understand heritage and cultural significance | | | X | X | X | X | X | | X | X | | | X | | X | X | | | | 10 |
| | PP12 | Seek early advice with heritage council | | | | | | X | | | | | | | | | | | | | | 1 |
| | PP13 | Good preparation | | | | | | | | | | | | | | | | | | | | 0 |
| Financial | PMF1 | Integrated design & calculation | | | | | | | | | | | | | | | | | | | 0 | |
| | PMF2 | Financial incentives | | | X | | | | X | | | | | | | | | | | | 2 | |
| | PMF3 | Plan phased costs | | | | | | | | | | | | | | | | | | | 0 | |
| | PMF4 | Innovative financing | | X | | | | | | | X | | | | | | | | | | 2 | |
| | PMF5 | Successful pilots | | | | | | | | | | | | | | | | | | | 0 | |
| | PMF6 | Successful tender | | | | | | | | | | | | | | | | | | | 0 | |
| Communicative | PMC1 | Create a clear ambition document | | | | | | | | | | | | | | | | | | | 0 | |
| | PMC2 | Give everyone an interest or purpose and be altruistic | | | | | | | | | | | | | | | | | | | 0 | |
| | PMC3 | Understand other parties' activities & responsibilities | | | | | | | | | | | | | | | | | | | 0 | |
| | PMC4 | Make in inventory of the stakeholders | | | | | | | | | | | | | | | | | | | 0 | |
| | PMC5 | Early consultation of interest groups | | | | | X | | | | | | | | | | | | | | 1 | |
| | PMC6 | Early involvement of end-users | | X | | X | | | | X | | | | X | X | | | | | | 5 | |
| | PMC7 | Let young people experience buildings and areas | | | | | | | | | X | | | | | | | | | | 0 | |
| | PMC8 | Intervening to resolve conflicts among stakeholders effectively | | | | | | | | | | | | | | | | | | | 0 | |
| | PMC9 | Engaging the support of local businesses and communities to whom benefits arising from the project do not relate to heritage/conservation matters | | X | | | | | | X | | | | | | | | | | | 2 | |
| | PMC10 | Communicating and engaging with stakeholders properly and regularly with the right means of communication | | | | | | | | | X | | | | | | | | | | 1 | |
| | PMC11 | Collaborating with stakeholders at every stage of the project | | | | | | | | | X | | | | | | | | | | 1 | |
| | PMC12 | Build a relationship with the client | | | | | | | | | X | | | | | | | | | | 1 | |
| | PMC13 | Trust the expertise of others | | | | | | | | | | | | | | | | | | | 0 | |
| | PMC14 | Attention for social aspects | | | | | | | | | | | | | | | | | | | 0 | |
| | PMC15 | Maintain ambition and enthusiasm level | | | | | | | X | | X | | | | | | | | | | 2 | |
| | PMC16 | Good management & leadership | | | | | | | | | X | | | | | | | | | | 1 | |
| | PMC17 | Clear agreements | | | | | | | | | | | | | | | | | | | 0 | |
| | PMC18 | Presence of a clear and enthusiastic project initiator | | | | | | | | | X | | | | | | | | | | 1 | |
| Building & Location | PBL1 | Site layout and accessibility | | | | | | | | | | | | X | | | | | | | 1 | |
| | PBL2 | Space layout | | | | | | | | | | | | | | | | | | | 0 | |
| | PBL3 | Status of the neighbourhood and public facilities | | | | | | | X | | | | | X | | | | | X | | 3 | |
| | PBL4 | Building age | | | | | | | | | | | | | | | | | | | 0 | |
| | PBL5 | Technologic difficulties | | | | X | | | X | X | | | | | | X | | | | | 4 | |
| | PBL6 | Retaining landmark, streetscape and views of the area | | X | X | X | X | | X | | | | | | X | X | | | | X | 8 | |
| | PBL7 | Minimal change: reduce the amount of structural change | | X | | | | | | | | | X | | | X | | | | | X | 4 |
| | PBL8 | Enthusiastic architect | | | | | | | | | | | | | | X | | | | | | 1 |
| Functional | PF1 | Function follows form | | | | | | | | | | | X | | | X | X | | | | 3 | |
| | PF2 | Consider the overall interest of the wider community | | | X | X | | X | | | | | | | | | | | | | 3 | |
| | PF3 | Make use of market demand | | | X | X | X | | | | | | | | | X | | | | | 4 | |
| | PF4 | Innovative design | | | X | X | | | | | | | | | | X | | | | | 3 | |
| | PF5 | Innovative green design | | | | | X | | X | X | | | | X | X | X | X | | | | 7 | |
| | PF6 | Functional changeability/flexibility | | | X | X | X | | | | X | X | | | X | X | X | | | | 6 | |
| | PF7 | Preservation of history & culture | | X | X | | | | | | X | X | | | | X | X | | | X | 7 | |
| | PF8 | Economic viability of new use | | | | | | | X | X | | | | | | X | | | | | 3 | |
| | PF9 | Comptability with existing surroundings | | | | X | | | | | | | | | | X | | | | | 2 | |
| | PF10 | Good fit between old & new function | | | | | | | | | | | | X | X | | | | | | 2 | |
| | PF11 | Mix of users | | | X | X | | X | | | X | | | | | | | X | | | 5 | |






Figure 56: screenshot of the cross-case analysis in Excel, and the total number of mentions of each success factor (own ill.)

2. Impressions of the cases

(All photo sources are property of NRP Gulden Feniks 2020).

| Name | Location | Use | Photo |
|--|------------------------------|---|--|
| <p>Cultuurzaal Lichtenberg</p> <p>Source: Dreessen Willemse Architecten (2020)</p> | Landgraaf, Limburg | <p>Old: religious New: culture hub</p> |  |
| <p>Greswarenfabriek</p> <p>Source: HEVO (2020)</p> | Reuver, Limburg | <p>Old: industry New: educational and offices</p> |  |
| <p>Former V&D</p> <p>Source: Office Winhov (2020a)</p> | Amsterdam, Noord- Holland | <p>Old: department store (vacant) New: offices (vacant)</p> |  |
| <p>Fenix I</p> <p>Source: Mei architects and planners (2019)</p> | Rotterdam, Zuid- Holland | <p>Old: warehouse New: residential</p> |  |
| <p>Watertoren</p> <p>Source: 19 het atelier architecten (2020)</p> | Zwolle, Overijssel | <p>Old: watertower New: residential</p> |  |
| <p>DomusDELA</p> <p>Source: Coöperatie DELA (2020)</p> | Eindhoven, Noord- Brabant | <p>Old: religious New: ceremony house</p> |  |

| | | | |
|--|--|--|--|
| <p>Jansbuitensingel</p> <p>Source: A3 Architecten (2020)</p> | <p>Arnhem, Gelderland</p> | <p>Old: offices New: residential</p> |  |
| <p>RCO House</p> <p>Source: Team V Architectuur (2020)</p> | <p>Amsterdam, Noord-Holland</p> | <p>Old: offices (vacant) New: rehearsal building and offices</p> |  |
| <p>H-Park</p> <p>Source: ZZDP Architecten (2020)</p> | <p>Hilversum, Noord-Holland</p> | <p>Old: industry New: mixed-use</p> |  |
| <p>Rijksarchief</p> <p>Source: Tarra Architectuur & Stedenbouw (2020)</p> | <p>'s-Hertogenbosch, Noord-Brabant</p> | <p>Old: archive (vacant) New: office</p> |  |
| <p>Campus RUG Fryslân</p> <p>Source: J.O.N.G. Architecten (2020)</p> | <p>Leeuwarden, Friesland</p> | <p>Old: New: educational</p> |  |
| <p>Timmerfabriek Sphinxkwartier</p> <p>Source: Maurer United Architects (2020)</p> | <p>Maastricht, Limburg</p> | <p>Old: warehouse and offices New: music venue and offices</p> |  |

| | | | |
|---|---------------------------------|--|--|
| <p>Park Hoog Oostduin</p> <p>Source: cepezed (2020)</p> | <p>Den Haag, Zuid-Holland</p> | <p>Old: office New: residential</p> |  |
| <p>Trippenhuiscapex</p> <p>Source: Office Winhov (2020b)</p> | <p>Amsterdam, Noord-Holland</p> | <p>Old: office (vacant) New: office</p> |  |
| <p>Move</p> <p>Source: BiermanHenket (2020)</p> | <p>Amsterdam, Noord-Holland</p> | <p>Old: showroom New: office</p> |  |
| <p>The Lee Towers</p> <p>Source: diederendirrix (2020)</p> | <p>Rotterdam, Zuid-Holland</p> | <p>Old: office (vacant) New: residential</p> |  |
| <p>Christus Koningkerk</p> <p>Source: Architectenbureau Rutten van der Weijden (2020)</p> | <p>Rotterdam, Zuid-Holland</p> | <p>Old: religious New: residential</p> |  |

Appendix E – Case selection

| Details Naam | Locatie | Provincie | Check criteria | | | Check preferences | | Check |
|--------------------------------------|-------------------|---------------|----------------|----------------|---------------|-------------------|--------------|-------|
| | | | Change | Delivered 2019 | Documentation | G4 cities | Monumental | |
| <u>Greswarenfabriek</u> | Reuver | Limburg | x | x | x | x | Gemeentelijk | 5 |
| <u>Damus Dela</u> | Eindhoven | Noord-Brabant | x | x | x | x | Rijks | 5 |
| Cultuurhuis | Landgraaf | Limburg | x | x | x | x | | 4 |
| H-Park | Hilversum | Noord-Holland | x | x | | x | | 3 |
| <u>RUG Campus Fryslân</u> | Leeuwarden | Friesland | x | x | x | x | Rijks | 5 |
| <u>Rijksarchief</u> | Den Bosch | Noord-Brabant | x | x | x | x | Rijks | 5 |
| <u>Timmerfabriek</u> | Maastricht | Limburg | x | x | x | x | Rijks | 5 |
| Trippenhuiscomplex | Amsterdam | Noord-Holland | x | x | | | Rijks | 3 |
| Transformatie historische boerderij | Goutum | Friesland | x | x | | x | Rijks | 4 |
| BOLD | Noordwijk aan Zee | Zuid-Holland | x | x | x | x | | 4 |
| Move | Amsterdam | Noord-Holland | x | x | x | | | 3 |
| The Lee Towers | Rotterdam | Zuid-Holland | x | x | | | | 2 |
| Voormalig warenhuis Vroom & Dreesman | Amsterdam | Noord-Holland | x | x | | | Rijks | 3 |
| Bunkerboerderij | Arnhem | Gelderland | x | x | x | x | | 4 |
| Fenix I | Rotterdam | Zuid-Holland | x | x | x | | | 3 |
| Transformatie Christus Koningkerk | Rotterdam | Zuid-Holland | x | x | x | | Gemeentelijk | 4 |
| <u>Transformatie Watertoren</u> | Zwolle | Overijssel | x | x | x | x | Gemeentelijk | 5 |
| Transformatie Jansbuitensingel | Arnhem | Gelderland | x | x | x | x | | 4 |
| RCO House | Amsterdam | Noord-Holland | x | x | x | | Gemeentelijk | 4 |
| Transformatie VOC Zeemagazijn | Rotterdam | Zuid-Holland | x | | x | | Rijks | 3 |
| Park Hoog Oostduin | Den Haag | Zuid-Holland | x | x | | | | 2 |

Appendix F – Success factors

1. Literature review

| SUCCESS THEMES REUSE ASPECT | | TAG | FACTOR | STAGE | BOE (2009) | Tari et al. (2018) | Nwachukwu et al. (2017) | Dyson et al. (2016) | Volker (2011) | Fleuren (2013) | NRP (2015) | NRP (2019) | Sarik, Van Dommelen & Metz (2008) | Meurs & Steenhuis (2017) | Rospal & Organ (2019) | COUNT | |
|-----------------------------|---------------------|-------|---|---------------------|------------|--------------------|-------------------------|---------------------|---------------|----------------|------------|------------|-----------------------------------|--------------------------|-----------------------|-------|---|
| Project | Legal | PL1 | Make agreements with government on metalevel | ... | x | | | | | | | | | | | 1 | |
| | | PL2 | Governmental incentives | Feasibility | x | x | | | | | | | | | | | 2 |
| | | PL3 | Government steers instead of controls | ... | x | | | | | | | | | | | | 1 |
| | | PL4 | Ownership of building | ... | | x | | | | | | | | | | | 1 |
| | | PL5 | Timely acquisition of necessary permits from statutory board | Contract neg. | x | x | | | | | | | | | | | 2 |
| | | PL6 | Understanding statutory requirements | Feasibility | | | x | | | | | x | | | | | 2 |
| | | PL7 | Determine the extent of technological changes permitted by regulatory bodies | Feasibility | | x | x | x | | | | | | | | x | 4 |
| | | PL8 | Find political support | Initiative | | | | | | | | | | x | | | 3 |
| | Preparatory | PP1 | Early involvement of construction team | Idea forming | x | | | | | x | x | x | | | x | | 4 |
| | | PP2 | Early brainstormingsessions with all stakeholders | ... | x | | | | | | | | | | | | 1 |
| | | PP3 | Experienced professionals | Refining | x | | | | | x | | | | | | x | 3 |
| | | PP4 | Create awareness of urgency through showing worst-case scenario | ... | x | | | | | | | | | | | | 1 |
| | | PP5 | Visit reused projects | ... | x | | | | | | | | | | | | 1 |
| | | PP6 | Research building condition and fabric | Initiative/Refining | x | x | | | x | | x | x | | | | | 5 |
| | | PP7 | Start quickly | Initiative/Idea fo | x | | | | | | | x | x | | | | 3 |
| | | PP8 | Create public support base | Idea forming | x | x | | | | | | x | x | | | | 4 |
| | | PP9 | Avoiding damage to the environment or ecosystem during activities | ... | | | | x | | | | | | | | | 1 |
| | | PP10 | Clear brief that fits capabilities of the building | Idea forming | | | | | x | | x | | | | | | 2 |
| Project management | Financial | PMF1 | Integrated design & calculation | Feasibility | x | | x | | x | x | | | | | | 4 | |
| | | PMF2 | Financial incentives | ... | | x | | | | | | | | | | 1 | |
| | | PMF3 | Plan phased costs | Feasibility | x | | | | | | | | | | x | 2 | |
| | | PMF4 | Innovative financing | Feasibility | | x | x | | | | | | | x | | 3 | |
| | | PMF5 | Successful pilots | ... | | | | | | x | | | | | | | 1 |
| | | PMF6 | Successful tender | ... | | | | | | x | | | | | | | 1 |
| | Communicative | PMC1 | Create a clear ambition document | Idea forming | x | | x | | | x | x | | | | | | 4 |
| | | PMC2 | Give everyone an interest or purpose and be altruistic | ... | x | | | | | | | | | | | | 1 |
| | | PMC3 | Understand other parties' activities & responsibilities | ... | | | | | | | x | | | | | | 1 |
| | | PMC4 | Make in inventory of the stakeholders | Initiative | | x | | x | | | x | | | | | | 3 |
| | | PMC5 | Early consultation of interest groups | ??? | x | | x | | | | | | | | | | 2 |
| | | PMC6 | Early involvement of end-users | ??? | x | | | | | x | | | | | | | 2 |
| | | PMC7 | Let young people experience buildings and areas | ... | x | | | | | | | | | | | | 1 |
| | | PMC8 | Intervening to resolve conflicts among stakeholders effectively | ... | | | x | | | | x | | | | | | 2 |
| | | PMC9 | Engaging the support of local businesses and communities to whom benefits arising from the project do not relate to heritage/conservation matters | Idea forming | | | x | | | | | | | x | | | 2 |
| | | PMC10 | Communicating and engaging with stakeholders properly and regularly with the right means of communication | ALL? | | | x | | | | | | | | | x | 2 |
| | | PMC11 | Collaborating with stakeholders at every stage of the project | ALL | | | x | | | x | x | x | | | | | 4 |
| | | PMC12 | Build a relationship with the client | ... | | | | | x | | | | | | | | 1 |
| Product | Building & Location | PBL1 | Site layout and accessibility | ... | | | x | | | | | | | | | 1 | |
| | | PBL2 | Space layout | Initiative | | x | | | | x | | | | | | | 2 |
| | | PBL3 | Status of the neighbourhood and public facilities | Idea forming | | x | | | | | | x | | | | | 2 |
| | | PBL4 | Building age | ... | | x | | | | | | | | | | | 1 |
| | | PBL5 | Technologic difficulties | Refining | | x | | | | | | x | | | | | 2 |
| | | PBL6 | Retaining landmark, streetscape and views of the area | Refining | | | x | | | | | x | | | | | 2 |
| | | PBL7 | Minimal change: reduce the amount of structural change | ... Design | | | | | x | | x | x | | | | x | 4 |
| | | PBL8 | Enthusiastic architect | ... | | | | | | | | x | | | | | 1 |
| | Functional | PF1 | Function follows form | ... | x | | | x | | | | | | | | | 1 |
| | | PF2 | Consider the overall interest of the wider community | Idea forming | | x | | | | | x | x | | | | | 4 |
| | | PF3 | Make use of market demand | Initiative/Idea fo | x | | x | | | | | x | x | | | | 3 |
| | | PF4 | Innovative design | Refining | | | | | x | | | x | x | | | | 3 |
| | | PF5 | Innovative green design | Refining | | | x | | | | | | | | | x | 2 |
| | | PF6 | Functional changeability/flexibility | ...Design | | x | | | x | | | x | x | | | | 4 |
| | | PF7 | Preservation of history & culture | ...Design | | x | | | | | | | | | | x | 3 |
| | | PF8 | Economic viability of new use | Idea forming | | x | | | | | | x | | | | | 2 |
| | | PF9 | Comptability with existing surroundings | ... | | | x | | | | | | | | | | 1 |
| | | PF10 | Good fit between old & new function | Idea forming | | | x | | | x | | | | | | | 2 |
| PF11 | Mix of users | ... | | | | | | | | | | | x | | 1 | | |

2. In-depth case studies

| REUSE ASPECT | NR. | FACTOR | Greswazerfabrie k | DomusDELA | Timmerfabriek | TOTAL |
|---------------------|-----|---|----------------------|-----------|---------------|-------|
| Legal | 1 | Make agreements with government on metalevel | | | | 0 |
| | 2 | Governmental incentives | | | | 0 |
| | 3 | Government steers instead of controls | | | | 0 |
| | 4 | Ownership of building | | | | 0 |
| | 5 | Timely acquisition of necessary permits from statutory board | | | | 0 |
| | 6 | Understanding statutory requirements | | | | 0 |
| | 7 | Determine the extent of technological changes permitted by regulatory bodies | | | | 0 |
| | 8 | Find political support | | | | 2 |
| | 9 | Innovative contracting | | | | 1 |
| Preparatory | 1 | Early involvement of construction team | | | | 2 |
| | 2 | Early brainstormsessions with all stakeholders | | | | 0 |
| | 3 | Experienced professionals | | | | 0 |
| | 4 | Create awareness of urgency through showing worst-case scenario | | | | 0 |
| | 5 | Visit reused projects | | | | 0 |
| | 6 | Research building condition and fabric | | | | 1 |
| | 7 | Start quickly | | | | 1 |
| | 8 | Create public support base | | | | 0 |
| | 9 | Avoiding damage to the environment or ecosystem during activities | | | | 0 |
| | 10 | Clear brief that fits capabilities of the building | | | | 1 |
| | 11 | Understand heritage and cultural significance | | | | 1 |
| | 12 | Seek early advice with heritage council | | | | 2 |
| | 13 | Good preparation | | | | 0 |
| Financial | 1 | Integrated design & calculation | | | | 0 |
| | 2 | Financial incentives | | | | 0 |
| | 3 | Phased finances | | | | 1 |
| | 4 | Innovative financing | | | | 2 |
| | 5 | Successful pilots | | | | 0 |
| | 6 | Successful tender | | | | 0 |
| | 7 | Party with financial means | | | | 1 |
| | 8 | Financial support by public authorities | | | | 2 |
| Communicative | 1 | Create a clear ambition document | | | | 2 |
| | 2 | Give everyone an interest or purpose and be altruistic | | | | 0 |
| | 3 | Understand other parties' activities & responsibilities | | | | 0 |
| | 4 | Make in inventory of the stakeholders | | | | 1 |
| | 5 | Early consultation of interest groups | | | | 1 |
| | 6 | Early involvement of end-users | | | | 3 |
| | 7 | Let young people experience buildings and areas | | | | 0 |
| | 8 | Intervening to resolve conflicts among stakeholders effectively | | | | 0 |
| | 9 | Engaging the support of local businesses and communities to whom benefits arising from the project do not relate to heritage/conservation matters | | | | 1 |
| | 10 | Communicating and engaging with stakeholders properly and regularly with the right means of communicaiton | | | | 1 |
| | 11 | Collaborating with stakeholders at every stage of the project | | | | 1 |
| | 12 | Build a relationship with the client | | | | 0 |
| | 13 | Trust the expertise of others | | | | 2 |
| | 14 | Attention for social aspects | | | | 0 |
| | 15 | Maintain ambition and enthusiasm level | | | | 2 |
| | 16 | Good management & leadership | | | | 1 |
| | 17 | Clear agreements | | | | 0 |
| | 18 | Presence of a clear and enthusiastic project initiator | | | | 1 |
| | 19 | Honesty on MOTIQ-constraints | | | | 1 |
| | 20 | Perseverance | | | | 2 |
| Building & Location | 1 | Site layout and accessibility | | | | 0 |
| | 2 | Space layout | | | | 0 |
| | 3 | Status of the neighbourhood and public facilities | | | | 0 |
| | 4 | Building age | | | | 0 |
| | 5 | Technologic difficulties | | | | 0 |
| | 6 | Retaining landmark, streetscape and views of the area | | | | 0 |
| | 7 | Minimal change: reduce the amount of structural change | | | | 1 |
| | 8 | Enthusiastic architect | | | | 0 |
| | 9 | Uniqueness of building | | | | 0 |
| Functional | 1 | Function follows form | | | | 0 |
| | 2 | Consider the overall interest of the wider community | | | | 2 |
| | 3 | Make use of market demand | | | | 0 |
| | 4 | Innovative design | | | | 2 |
| | 5 | Innovative green design | | | | 0 |
| | 6 | Functional changeability/flexibility | | | | 0 |
| | 7 | Preservation of history & culture | | | | 2 |
| | 8 | Economic viability of new use | | | | 1 |
| | 9 | Comptability with existing surroundings | | | | 0 |
| | 10 | Good fit between old & new function | | | | 0 |
| | 11 | Mix of users | | | | 0 |
| | | Success factor from the literature review | | | | |
| | | Case specific success factor | | | | |
| | | Desired success factor (lessons learned) | | | | |

Appendix G – Deliverables

On the next page you can find the main deliverable of this research: the process map of adaptive reuse projects of heritage. The process map is guided by a reading guide for the responsible party in the process that will bring the map into the project and is the main responsible party for implementing and monitoring according to the information on the map.

1. Guideline for reusing heritage in English
2. Handleiding voor herbestemming van monumenten in het Nederlands

The process of reusing heritage

What is it?

Adaptive reuse projects are unique and complex, definitely for heritage building. This guideline describes a process model that shows how an adaptive reuse process (in general) looks like and what to expect. In this model you can find different elements, ranging from phases, activities, complexity, freedom, and the large players of the reuse process.

Along the process line you can find the twelve success factors that are perceived as being most important by three of the most successful reuse projects of 2020. All the factors have a place and time in the process where they think the factors can have the most impact. Make use of that. All the success factors are explained on the next page.


The goal of this model is to make the adaptive reuse process insightful for you, but also for the people and stakeholders you will work with in the project. With this you stimulate a discussion to create a custom process and deliver a successfully reused building.


How does it work?


Use the model at the beginning of the process. Hang it up, discuss it with your co-workers, assess points of attention and make goals according to it. The model is read from left to right (start at 1) and from bottom to top, and back again.


1 Phase = each phase represents a theme of the process with a set of activities and success factors.

A The successfactor = attention to the success factors during the process increases the chance for a successful delivery. The success factors are the soft components of the model.

 Complexity = the degree of complexity increases and decreases during the process.

 Y-axis = degree of freedom.
X-axis = time.

 Responsible owner = (almost) all activities are appointed to an owner. This role is the end-responsible person for that activity. If there is no owner appointed, stakeholders have to discuss the expectations with each other.

 Activity = the day-to-day tasks are the operational side of the adaptive reuse process.

By and for whom?

The producer

I invest time, knowledge and resources to **design** and **build** the work.

I want:

- Profit
- Brand appraisal
- Public acclaim

The investor

I bring in the **financial means** that make the project reality.

I want:

- Profit
- Improved well-being of the users and community

The regulator

I enforce relevant **regulatory compliance**.

I want:

- Improved socio-cultural, ecological, economic, and functional gains
- Sustainable and resilient preserved historical buildings

The user

I will **use** the building in the future and facilitate the **demand**.

I want:

- Socio-economic viability of new use
- Flexibility & reversibility of new use

How does it become a success?

1. Create a clear **ambition document**

A clear ambition document (with hard and soft) demands, wishes and ambitions help to keep everyone on the same page, also in later phases.

2. Find a **political ambassador**

A political ambassador, mascot or delegate is behind the project and will be the link to the administrative apparatus. This is going to help with funding, permit applications, and political assistance.

3. Involve the **end-users**

The sooner the potential end user is involved in the process, the more enthusiasm there is generally. Former users have the best insight into the strengths and weaknesses of the building.

4. Consider the overall interest of the **wider community**

Find out the value and identity of the building for the community. When you involve them in the process, you have less chance of resistance and you create a support base.

5. Involve the **construction team early**

By involving the construction team at an early stage, you avoid surprises during the execution. In this way defects are identified earlier. Think about this when determining the contract and development form.

6. Seek for an **innovative design(er)**

Monumental buildings are not easy to work with for many functions. An innovative design can solve a building's unfavorable layout and other quirks.

7. Seek out to **public authorities** for financial support

Reuse is expensive. The government (at local, national and continental level) can help fund the project in the form of grants and financial support.

8. Find **innovative financing sources**

Money does not have to be put on the table immediately. Think outside the box and look for what the building, the environment, or something completely different can deliver in the future.

9. **Persevere**

Redevelopment processes become heavy and complex due to difficult procedures, financial setbacks, many stakeholders and long-term thinking. But it is worth it. Perseverance is important here.

10. Find **experts in the field and trust them**

Reusing monuments requires special expertise. This expertise must be valued so that people can rely on each other's knowledge and skills for constructive collaboration.

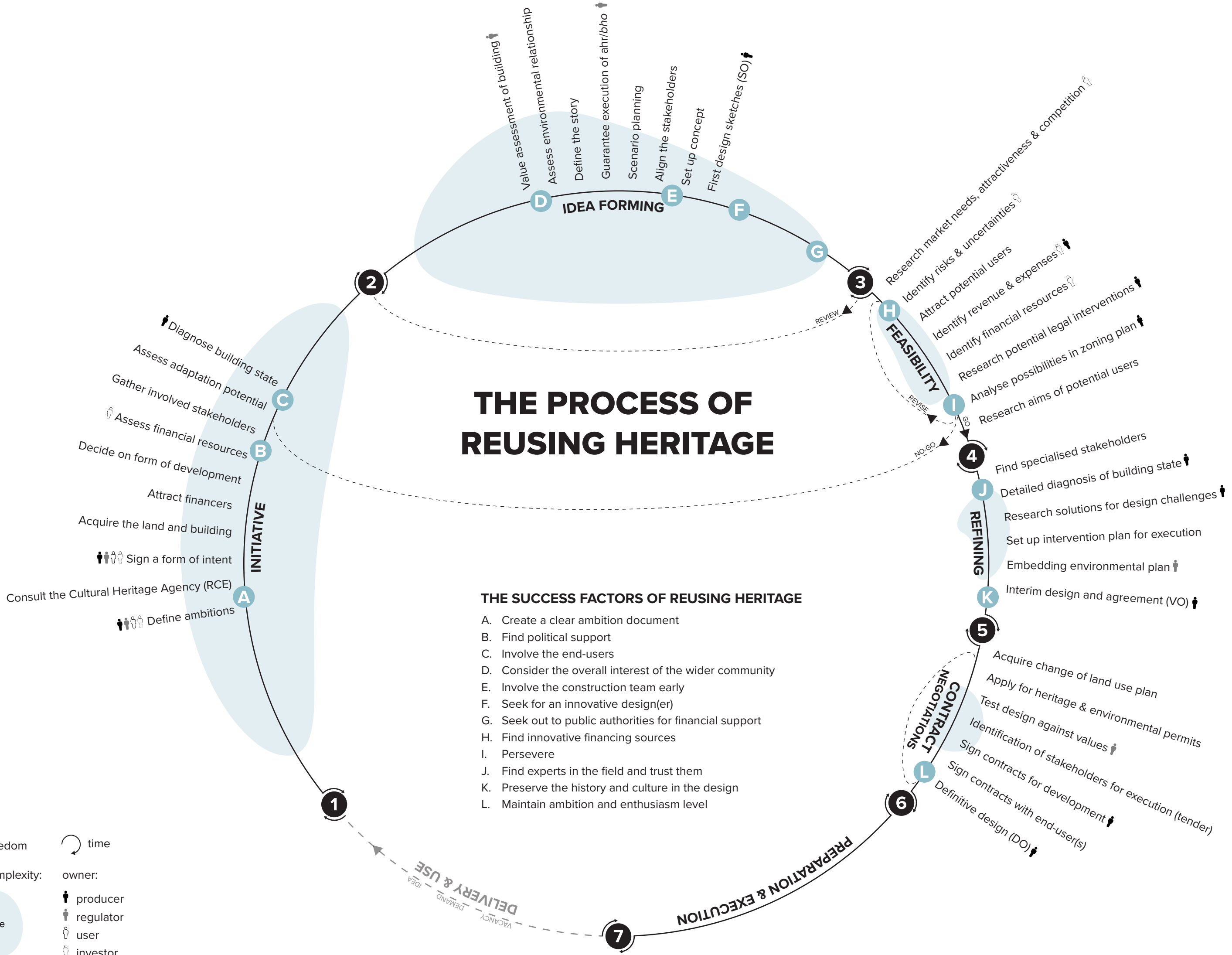
11. **Preserve the history and culture in the design**

The historical values of the building make reuse so special. When major changes are made to the construction and to the characteristic elements, it loses its value. If attention is paid to this, the building can add value to the community in the future.

12. **Maintain ambition and enthusiasm level**

Perseverance is important, but being proud of the result is ultimately even more important. Therefore, keep your ambition and enthusiasm up by being courageous and stick to the ambition document.

THE PROCESS OF REUSING HERITAGE



Het herbestemmingsproces

van monumentale gebouwen

Wat is het?

Herbestemmingen zijn uniek en complex, zeker bij monumentale gebouwen. Deze handleiding beschrijft een model die laat zien hoe een herbestemmingsproces er (in het algemeen) uit kan zien en wat je kunt verwachten. In dit model vind je de verschillende elementen, stappen, activiteiten, complexiteit en de grote spelers van het herbestemmingsproces.

Gedurende het proces vind je twaalf succesfactoren, zoals ondervonden door de de partijen van drie van de meest succesvolle herbestemmingsprojecten van 2020. De factoren staan op de plek waar wordt geacht dat ze de meeste invloed kunnen hebben. Maak daar gebruik van. De factoren staan 1 voor 1 uitgelegd op de volgende pagina.


Het doel van dit model is om het herbestemmingsproces inzichtelijker te maken voor u, maar ook voor de mensen en partijen waar u mee samen gaat werken. Hiermee jaag je een discussie aan om de mindset te creëren om maatwerk te leveren en het gebouw succesvol her te bestemmen.


Hoe werkt het?


Gebruik het model bij de start van het project. Hang het op, bespreek het samen met uw mede-herbestemmers, en stel doelen en aandachtspunten aan de hand daarvan. Het model wordt gelezen van links naar rechts (start bij 1) en van onder naar boven, en weer terug.


1 De fase = elke fase beschrijft een algemeen thema van het proces met daarin een set activiteiten en succes factoren.

A De succes factor = aandacht voor de succes factoren gedurende het proces vergroot de kans op een succesvolle oplevering. De succes factoren zijn de zachte componenten van het model.

 Complexiteit = de mate van complexiteit groeit en neemt af gedurende het proces.

 Y-as = de mate van vrijheid in het plan.
X-as = tijd.

 Eigenaar = (bijna) iedere activiteit is toegewezen aan een eigenaar. Deze rol is de eindverantwoordelijke voor de activiteit. Als er geen rol is toegewezen is het de bedoeling om samen met elkaar in gesprek te gaan over de verwachtingen.

 De activiteit = de dag-tot-dag taken zijn de operationele kant van het herbestemmingsproject.

Door en voor wie?

De producent

Ik investeer tijd, kennis en middelen om het plan uit te werken en te bouwen.

Dit wil ik:

- Winst
- Bedrijfswaardering
- Publieke bijval

De investeerder

Ik breng de financiële middelen in die het project mogelijk maken.

Dit wil ik:

- Winst
- Verbeterd welzijn van gebruikers en gemeenschap

De regulator

Ik zorg ervoor dat de wet- en regelgeving wordt nageleefd.

Dit wil ik:

- Verbeterde sociaal-culturele, ecologische, economische en functionele omstandigheden
- Duurzaam en veerkrachtig behoud van historisch gebouw

De gebruiker

Ik ga het gebouw in de toekomst gebruiken en wakker dus een vraag aan.

Dit wil ik:

- Levensvatbaar nieuw gebruik
- Flexibiliteit & omkeerbaarheid in de nieuwe functie

Hoe wordt mijn gebouw een succes?

1. Creëer een duidelijk ambitie document

Een duidelijk ambitie document met (harde en zachte) wensen, doelen, eisen en ambities helpen in een later stadium alle ogen dezelfde kant op te laten staan.

2. Vind een bestuurlijke ambassadeur

Een bestuurlijke ambassadeur, mascotte of afgevaardigde staat achter het project en zal de link zijn naar het bestuurlijke apparaat. Dit gaat helpen bij de financiering, vergunningaanvraag, en politieke bijstand.

3. Betrek de (potentiële) eindgebruiker(s)

Hoe eerder de potentiële eindgebruiker betrokken wordt bij het proces, hoe meer enthousiasme er over het algemeen is. Voormalige gebruikers hebben het meeste zicht op sterkte en zwakte punten van het gebouw.

4. Betrek het belang van de omgeving en gemeenschap

Zoek uit wat de waarde en identiteit is van het gebouw voor de gemeenschap. Wanneer je hen betrekt in het proces heb je minder kans op weerstand en creëer je draagvlak.

5. Betrek het constructieteam zo vroeg mogelijk

Door het constructieteam vroeg te betrekken voorkom je verrassingen tijdens de uitvoering. Op die manier worden defecten vroeger gesignaleerd. Denk hierover na tijdens het bepalen van de contract- en ontwikkelingsvorm.

6. Ga op zoek naar (een) innovatief ontwerp(er)

Monumentale gebouwen zijn voor veel functies niet makkelijk om mee te werken. Een innovatief ontwerp kan de ongunstige indeling en andere eigenaardigheden van een gebouw oplossen.

7. Zoek financiële steun bij de overheid

Herbestemmingen zijn kostbaar. De overheid (op lokaal, nationaal en continentaal niveau) kan helpen met het bekostigen van het project in de vorm van subsidies en financiële steun.

8. Ga op zoek naar innovatieve financieringsbronnen

Geld hoeft niet direct op tafel te komen. Think outside the box en ga op zoek naar wat het gebouw, de omgeving, of iets totaal anders in de toekomst op kan leveren.

9. Zet door

Herbestemmingprocessen worden zwaar en complex door eventuele moeilijke procedures, financiële tegenvallers, veel stakeholders en het lange-termijn denken. Maar het is het waard. Doorzettingsvermogen is daarbij belangrijk.

10. Vind experts

op het gebied van monumenten en vertrouw hen

Herbestemming van monumenten vraagt om speciale expertise. Deze expertise moet worden gewaardeerd zodat men op elkaars kennis en kunde kan vertrouwen voor een constructieve samenwerking.

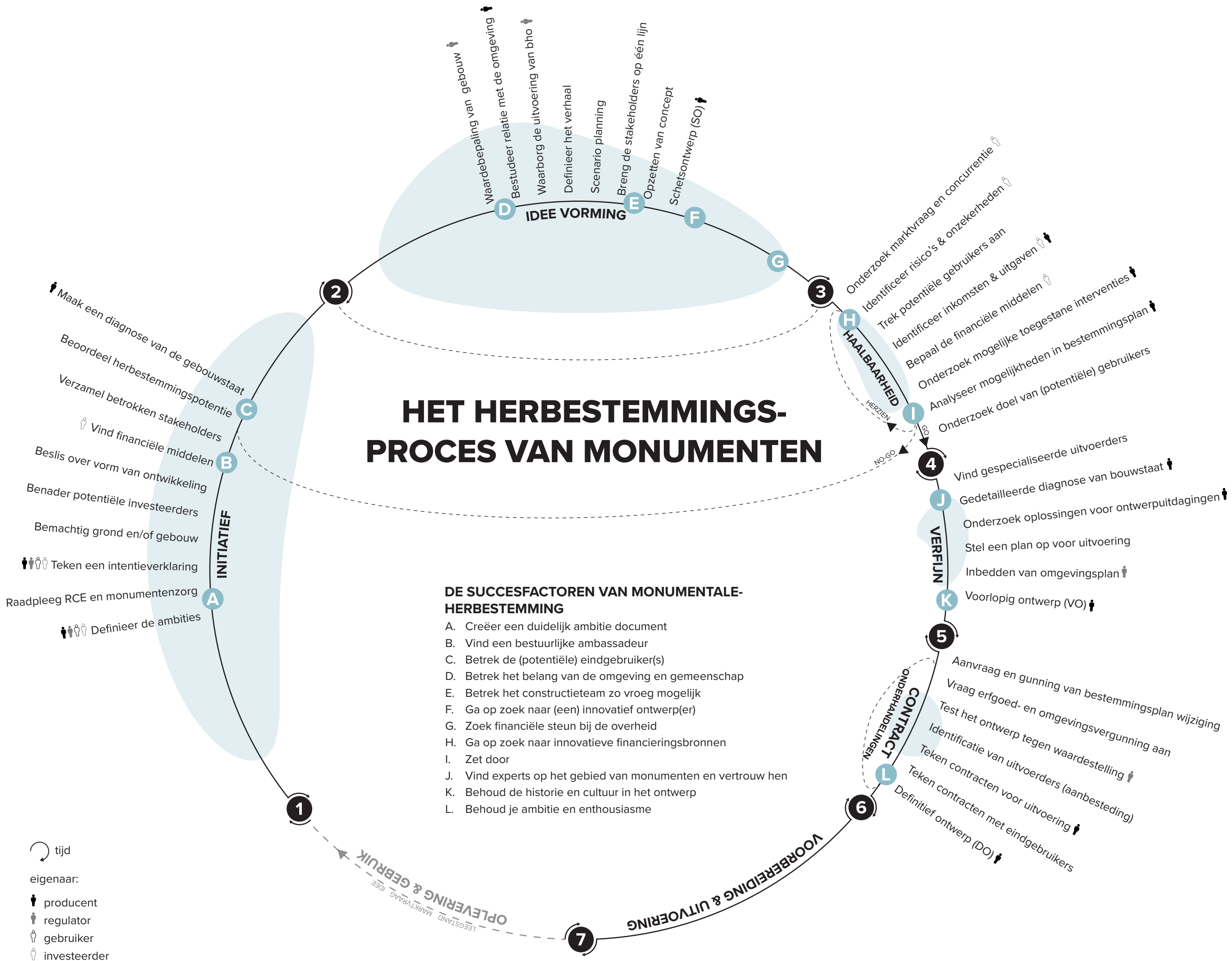
11. Behoud de historie en cultuur in het ontwerp

De historische waarden van het gebouw maakt wat herbestemming, herbestemming is. Wanneer er grote ingrepen worden gedaan in de constructie en aan de karakteristieke elementen verliest het zijn waarde. Wanneer hier aandacht aan wordt besteed kan het gebouw in de toekomst een meerwaarde zijn voor de gemeenschap

12. Behoud je ambitie en enthousiasme

Doorzettingsvermogen is belangrijk, maar trots zijn op het resultaat is uiteindelijk nog belangrijker. Behoud daarom je ambitie en enthousiasme door de moed erin te houden en vast te houden aan het ambitiedocument.

HET HERBESTEMMINGS- PROCES VAN MONUMENTEN



DE SUCCESFACTOREN VAN MONUMENTALE-HERBESTEMMING

- A. Creëer een duidelijk ambitie document
- B. Vind een bestuurlijke ambassadeur
- C. Betrek de (potentiële) eindgebruiker(s)
- D. Betrek het belang van de omgeving en gemeenschap
- E. Betrek het constructieteam zo vroeg mogelijk
- F. Ga op zoek naar (een) innovatief ontwerp(er)
- G. Zoek financiële steun bij de overheid
- H. Ga op zoek naar innovatieve financieringsbronnen
- I. Zet door
- J. Vind experts op het gebied van monumenten en vertrouw hen
- K. Behoud de historie en cultuur in het ontwerp
- L. Behoud je ambitie en enthousiasme

Legenda

↑ y-as: mate van vrijheid

↑ x-as: complexiteit

meer

minder

⌚ tijd

👤 eigenaar:

- 👤 producent
- 👤 regulator
- 👤 gebruiker
- 👤 investeerder