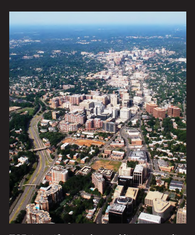
RECONCILE RAILWAY WITH CITY

Integrate Schiedam Centrum Railway Station and its surroundings into local urban context with a view to the Transit-Oriented Development strategy 1/3

Background

Railway station surrounding
Railway stations and their surroundings have become nodes of polycentric network city model due to their high accessibility by different modes of transport at different scale levels, and have emerged as new central places in metropolitan cities in Europe (Kusumo, 2007). As 'nodes' of transportation network, railway stations and their surroundings represent the efficiency and cooperation of regional public transportation networks. Meanwhile, it brings flows of people, which offers sufficient opportunities for developing multi-social and economic activities. On the other hands, railway stations and their surroundings are also new emerged centrality in local urban context. This represents another character of railway stations areas which is 'places'. As a 'place' of city, it should provide space for diverse socio-economic activities (Bertolini & Dijst, 2003). But to balance this dual character of 'Node and Place' often faces many complexities.

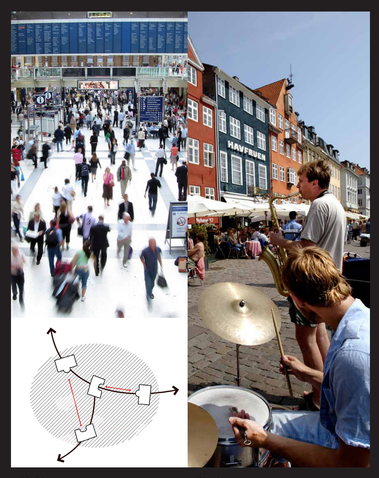
First of all, in the mean time of railway station areas as a junction of different types of transportation bring opportunities; it also creates several difficulties for place-making developments, such as barrier effects of heavy transport and. Secondly, on the local scale level, railway station areas as a new centrality of a city should be integrated into the cohesive local networks, and linked to old city centres and sub centres. Thirdly, on the regional scale level, what are the roles of railway station nodes in the regional networks, how to make these nodes complementary with each other are difficult problems to be solved.



TOD intensification along public transport line in USA.

Stedenbaan startegy
(sourse: http://www.stedenbaan.nl/page/Stedenbaan)

TOD
In recent years, a concept is developed to balance between regional efficient mobility network strategies with local mixed land use developments along public transports within walking radius. The Transit-Oriented Development (TOD) is an integrated land use/transport planning approach operating around urban public transport interchanges or nodal points well served by public transport in which a more specific relationship between development density and public transport service level is instituted (Royal Institution of Chartered Surveyors, 2002). This concept gives us a view on how to develop the potential of dual character of railway station areas.



A 'Node'
Nodes in the networks complimentary with each other.

A 'Place'
A space for different activities and events.

Research Questions

The main research question of this thesis is:
What spatial-functional design interventions can integrate Schiedam Centrum Station and surroundings into its local context with a view to Transit-Oriented Development?

To answer the main question, the sub-questions need to be tackled are:
- What are the roles of Schiedam Centrum Station and its surroundings on regional scale level and local scale level?
- What are the problems and potentials of Schiedam Centrum Station and its surroundings?

- What are the principles of TOD,
based on the spatial-functional design principles for carrying out the roles and potentials and to solve the problems of Schiedam Centrum Station area?
- What are the weaknesses of TOD
for (re)developing Dutch railway stations and its surroundings?
- How to make up for the weakness of TOD?

- How to apply the design principles, which are concluded from theory study and case study into the spatial design of Schiedam Centrum Station surroundings?
- What kind of street pattern?
- What kind of building typology?
- What kind of function program?

Thesis Structure

QUESTION

Part 1 Introduction
- The problems of this thesis focusing on are stated.
- The objective, research relevance
- The methodologies that are used in this thesis are introduced.

Part 2 Schiedam Current Situation
- The general scene of Schiedam is set in the beginning of this part.
- The problems of Schiedam Centrum Station and its surroundings are stated.

Part 3 Learn from Literature
TOD – to find out the principle of TOD for intensify the railway station surroundings in walking radius.

Stedenbaan – to understand the position of Schiedam Centrum Station in the Stedenbaan strategy.
And the way they apply the TOD principle in Dutch city.

Conclusion – design tools for 'learn from case' part and 'design' part.

Part 4 Learn from Case
Rotterdam Alexander
's-Hertogenbosch

- to understand how the design tools, which are concluded from 'learn from literature' part, work in the reality.

- to improve the design tools, which are concluded from 'learn from literature' part, for design Schiedam Centrum Station surrounding.

DESIGN PRINCIPLES

Part 5 Design
- to solve the problems which are asked in 'introduction' and 'Schiedam current situation' part.
- to apply the design tools which are concluded from 'learn from literature' and 'learn from case' part into Schiedam Centrum Station and its surroundings.

APPLY

Schiedam Centrum Station surrounding

By using 'Research driven Design' method, the conclusions from theory underpinning and case study will be test in the design of Dutch city railway station Schiedam Centrum Station, which is one of the nodes of Stedenbaan strategy. From the transit node point of view.

Schiedam Centrum station area combines railway, metro, tram, bus and car transportations, which provides a big potential for the multi-social and economic activities. From the 'place' point of view, the reality shows that the sense of place can not be found around the Schiedam Centrum station area. It more likes a jump-in and jump-out space between different types of transports. And around the station, the areas are vacant for years. Therefore, **'to created a sense of 'place' around Schiedam Centrum station area'** will be the main task for my design.

Meanwhile, the current situation is that Schiedam Centrum Station surrounding is a clear boundary for north industrial site and south old city region. So another task of my design is **'to make Schiedam Centrum Station area into the Schiedam city context'.**

Figure - The south entrance of Schiedam Centrum station.

Figure - The north entance of Schiedam Centrum station.

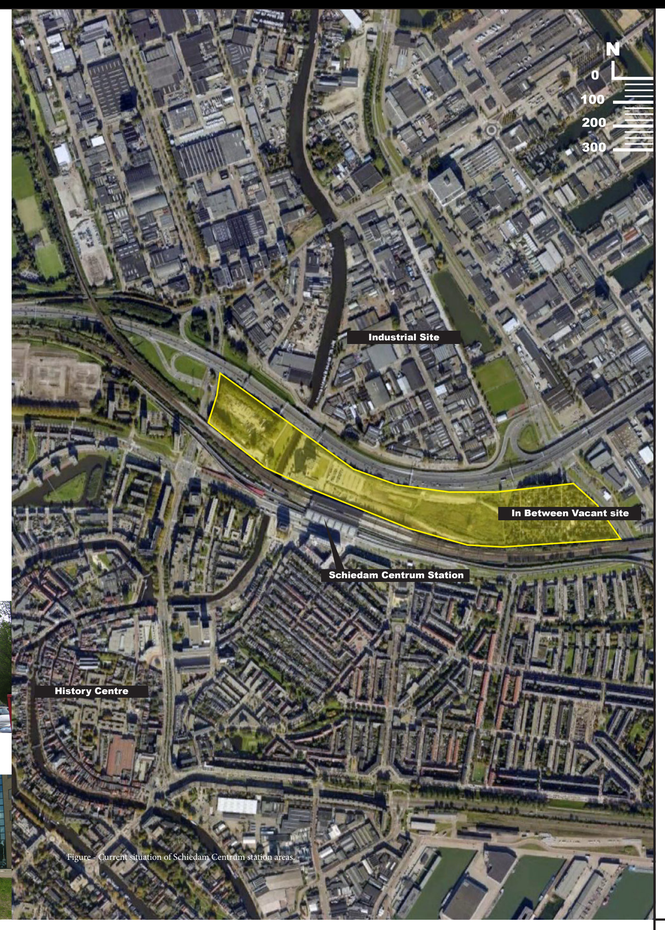
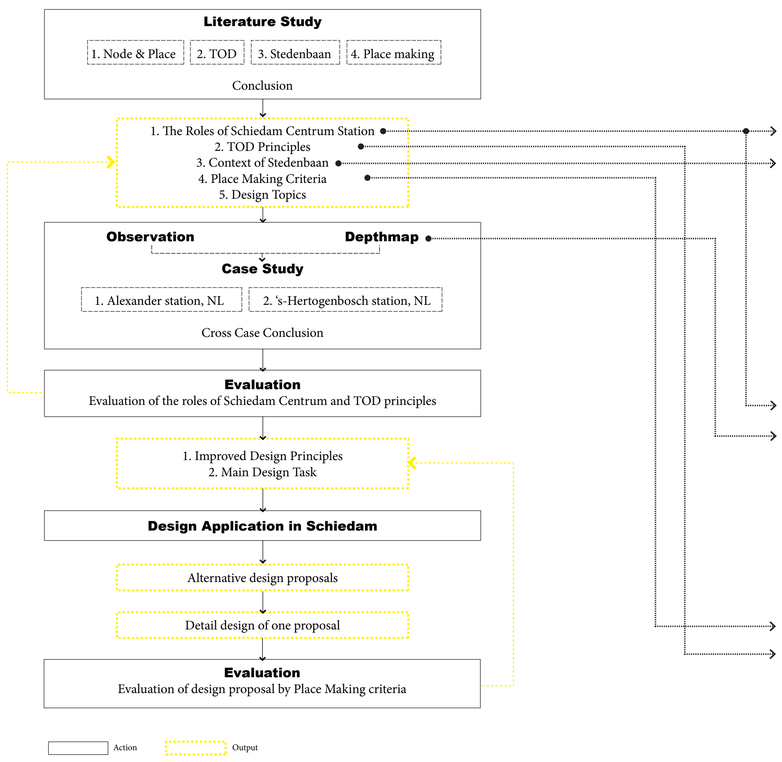


Figure - Catrrent situation of Schiedam Centrum station areas

Methodology Structure



Regional scale
Schiedam in Stedenbaan network
(sourse: http://www.stedenbaan.nl/page/Stedenbaan)

Find the roles for the Schiedam city in the regional networks.
In Stedenbaan and Rotterdam's networks

City scale
Linkings from Schiedam Centrum
Station to other centers and subcenters of Schiedam.

Integrate the intensified Schiedam Centrum surrounding new centrality into local context.
Outside the walking and cycling radius
In Schiedam city boundary

Walking & cycling radius scale
Schiedam Centrum Station's walking and cycling radius.

Make a 'place' sense in Schiedam Centrum surrounding as a new centrality in Schiedam.
In 600m walking and 1200m cycling radius

Problems

In most of Dutch cities, which established before 19th century railway time came, the railway station were originally situated at the city's fringe and near to one of the city's gate. Schiedam is also not an exception. With the improving of transportation technology, the city development much more relied on the railway and the sprawling enveloped the station. Nowadays, most of the stations have a central location in between these old and new areas, which have efficient accessibility at regional scale as infrastructure hub character in the network cities.

But the reality shows that station areas do not have the centrality character in the economic sense. Furthermore, the rails become to be physical and psychological barriers between the old and new areas. That formed the contrast between old centre and new developing area which is called 'Backside' of station. Usually, the 'Backside' of station area has monofunction and weak linking with the 'old' city centre. These problems form the current situation around Schiedam Centrum Station.

The problems exist around Schiedam Centrum Station are:

- **Northern-In Between-Southern**
- **Barriers**
- **In between-Vacant**
- **Southern-Miss Links**
- **Northern-Mono Function Industrial Site**

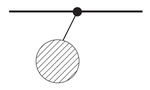


Figure - historical centre and railway station

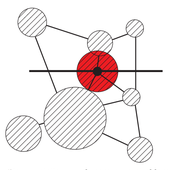


Figure - station area becomes a central location in the city

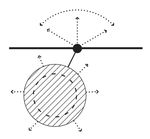


Figure - expanding across the railway

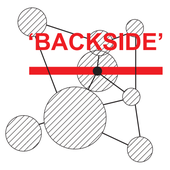


Figure - railway becomes a barrier and forming the so called 'backside' of station

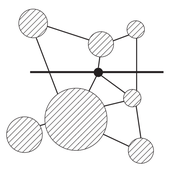


Figure - new centralities and city networks between them

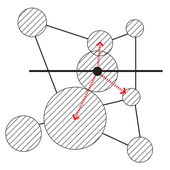


Figure - linking problems for across the barrier

Figure - mono industry site of 'Backside' of Schiedam Centrum Station

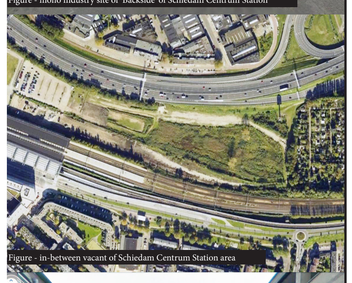
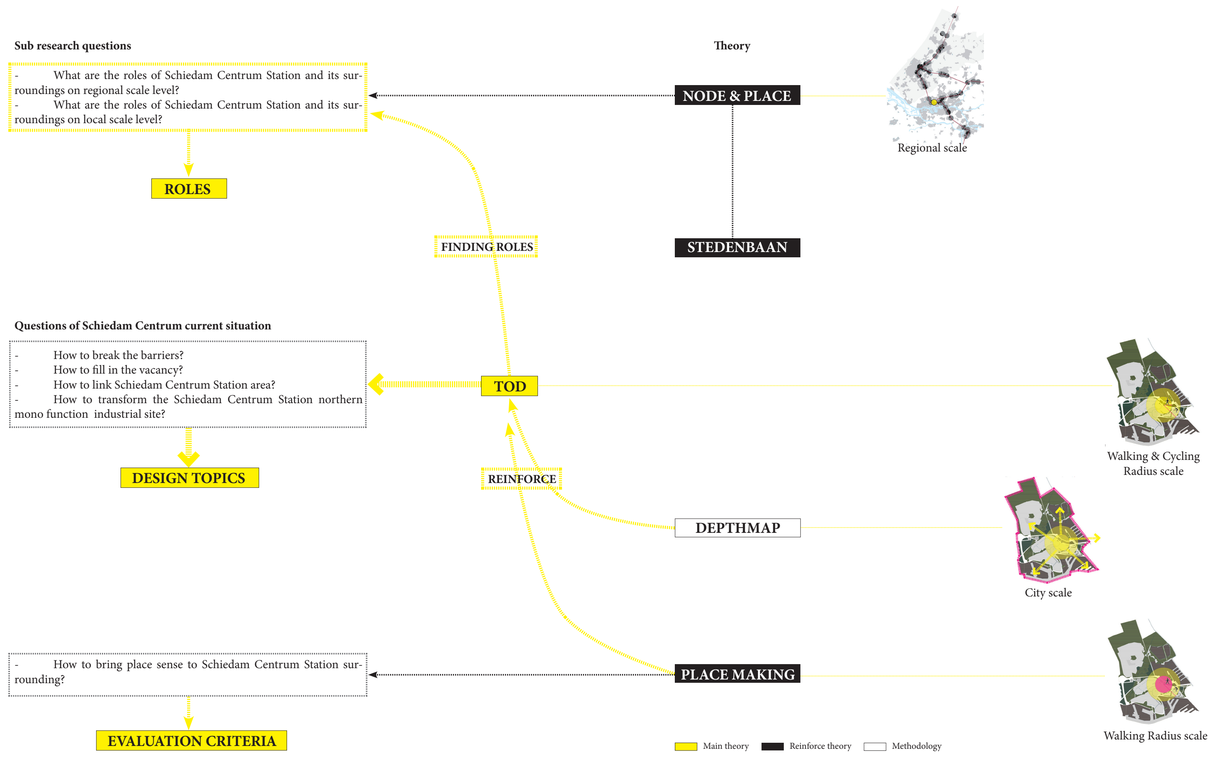


Figure - in-between vacant of Schiedam Centrum Station area

Figure - weak link from Schiedam Centrum Station to historical centre

Theory Study



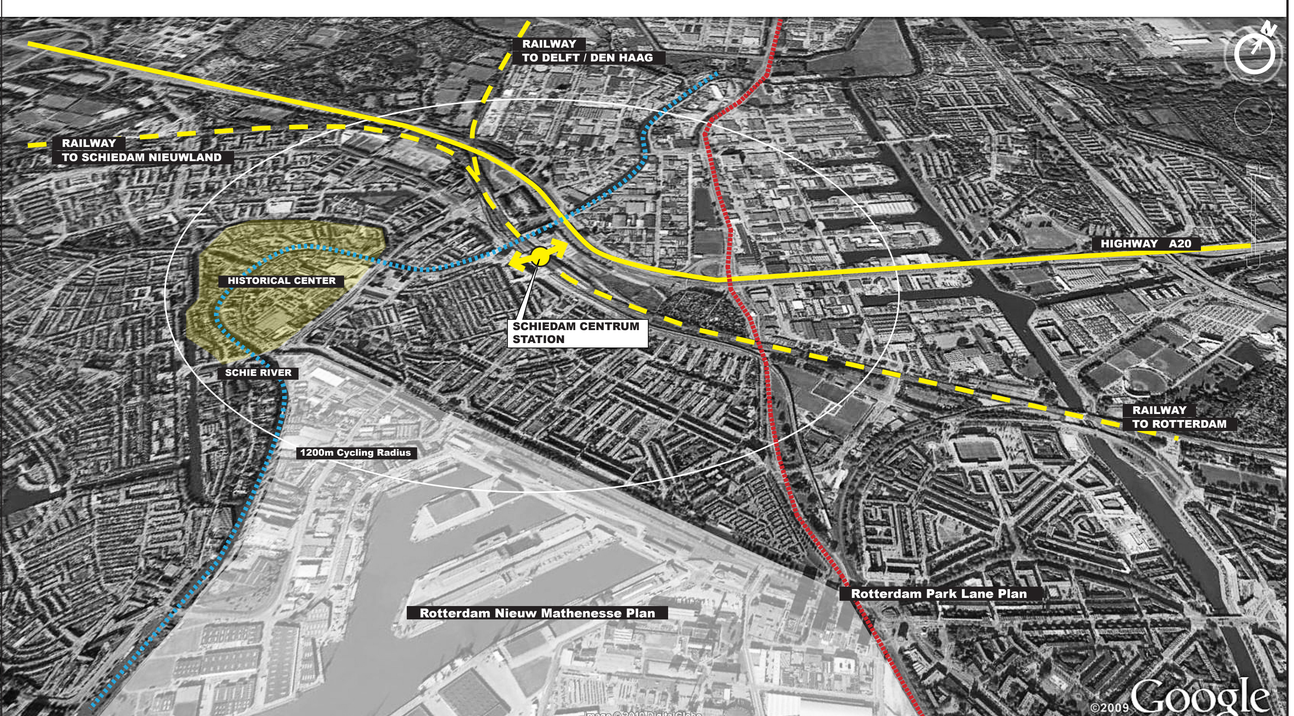
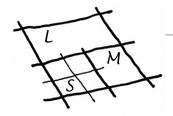
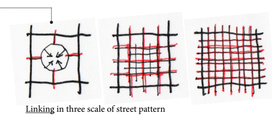


Figure 2.2.16 Schiedam Centrum Station surrounding

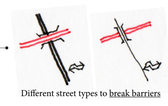
Design Topics

Street Pattern
Different street pattern bring different results of street types, which influences people's activities, such as walking environments, speed of traffic flows.



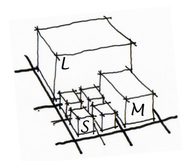


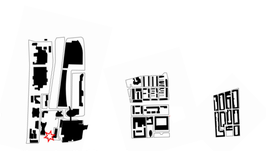
Linking in three scale of street pattern



Different street types to break barriers

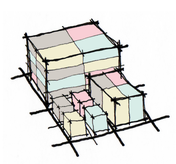
Building Typology
Street pattern is the structure for building typology, which means different scales of building are fit into different street pattern scales.





Three scales of building typology

Function Program
The scale of building typology is related to what kind of function program could happen in the building. Large scale building will be suitable for most of function programs, small scale building fits to fewer function programs but provides a human scale street pattern.



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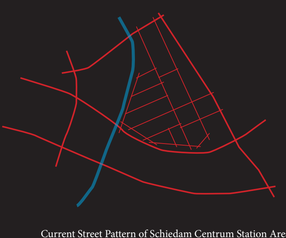
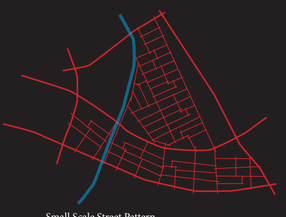
Street Pattern Test

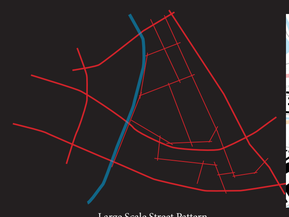


Current Street Pattern of Schiedam Centrum Station Area

Middle- Scale Street Pattern



Small Scale Street Pattern



Large Scale Street Pattern

Building Typology Test

Current Building Typology of Schiedam Centrum Station Area

Middle- Scale Building Typology

Small Scale Building Typology

Large Scale Building Typology

Possible Proposal

Small scale urban pattern is used in the further northern area, which could be residential area within walking radius of station.

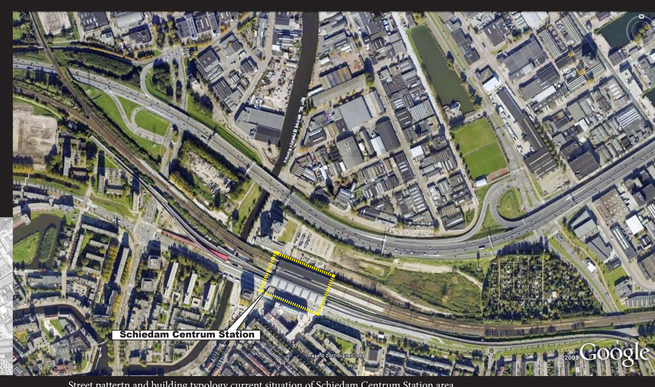
3.

In the northern area of highway, 's-Hertogenbosch urban pattern, which is middle scale, is used in the industrial sites, which could bring a better outdoor walking environments and attract attentions from the people who are driving on highway.

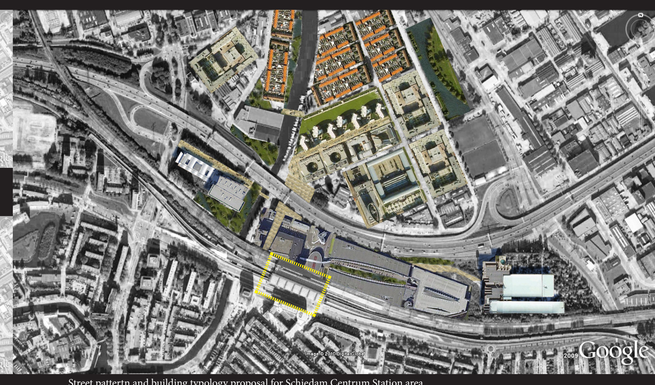
2.

Rotterdam Alexander urban pattern, which is large scale, is used in the in between vacant site to create indoor walking through space for people, to avoid the noise and pollution from railway and highway.

1.



Street pattertn and building typology current situation of Schiedam Centrum Station area



Street pattertn and building typology proposal for Schiedam Centrum Station area

RECONCILE RAILWAY WITH CITY

Integrate Schiedam Centrum Railway Station and its surroundings into local urban context with a view to the Transit-Oriented Development strategy 2/3

Key Project 1

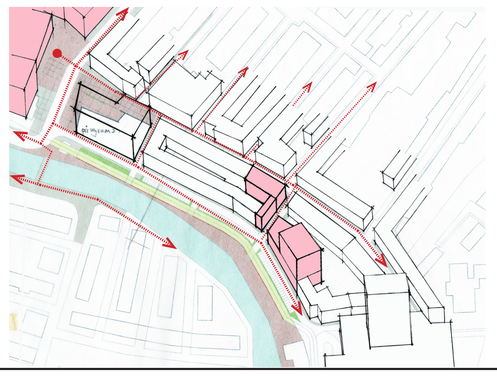
South of Shciedam Centrum Station

Key Project 1 - Program 1

To link east and west, more accessible to water front area.

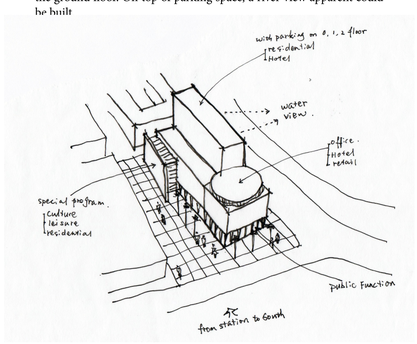
Proposal 1
Transform one ground unit of building 1, make a path for people to walk through.

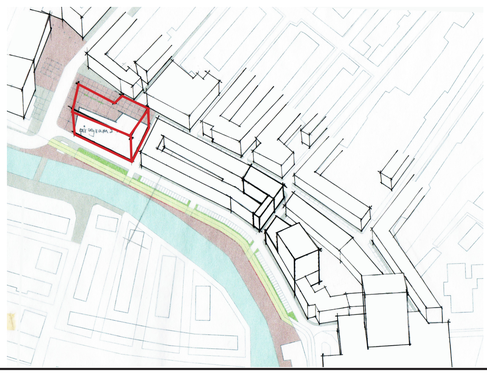
Proposal 2
Demolish building 1&2, build new program combining with the vacant site next building 2.



Key Project 1 - Program2

The existing ground parking area in front of station could be transformed to new program and square for staying since the good accessibility. Parking space will be placed in the building, and the facades which face to station and square could have a good public function on the ground floor. On top of parking space, a river view apparent could be built

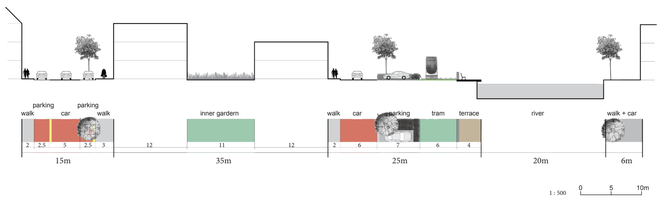




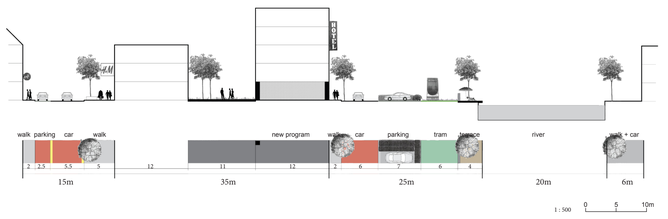
Key Project 1

South of Shciedam Centrum Station Cross Section

Before



After

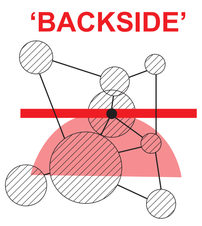


Influence to Schiedam City

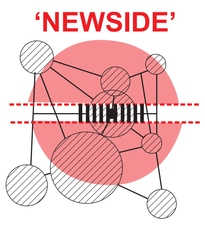
In the current situation, Schiedam Centrum Station are mostly only serve for the south old centre side. Since the highway and railway are barriers for people to walk and cycle to north of station.

The intervention of proposal links south and north and furthermore provides ways to go to east and west from station. Therefore, the service radius of Schiedam Centrum Station could not only for the south, but also for north, east and west. The former 'backside' of station could become to a 'newside' of the city.

Changes of station serve radius after intervention



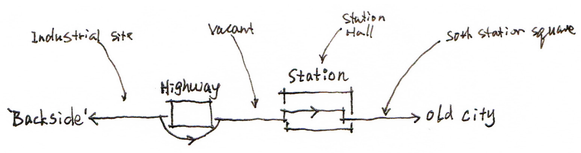
Before

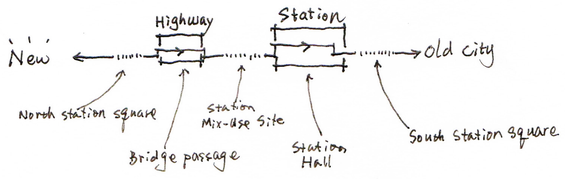


After

The VIsion - Station Sequence of Key Project 1&2

Before





After

Linking & Phasing

The 1st phase areas are essential links and joints for carrying out the whole proposal, which need to be developed in the very beginning as a developing start engine.

The 2nd phase areas have good accessibility brought by the different modes of transformation or have great potential for investments could happen after or at the same time as 1st phase area.

The 3rd phase areas are in the walking and the 4th phase area are in the cycling radius, they could be long term development.

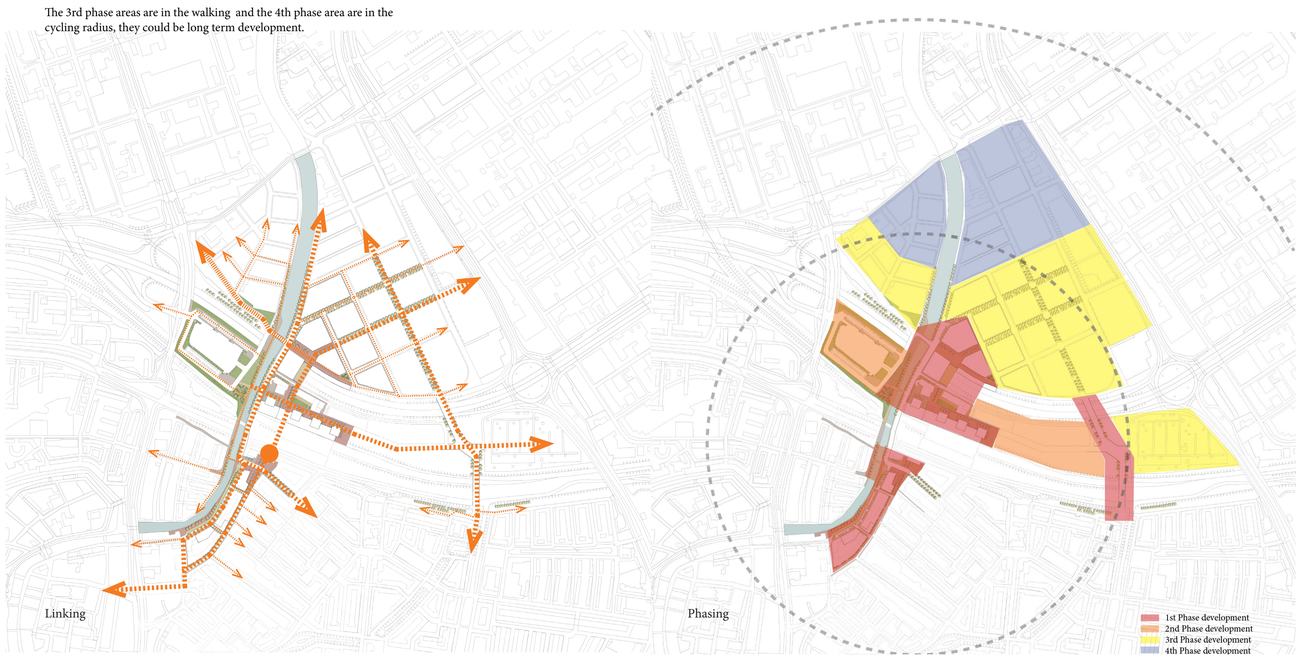


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Figure 5.1.5 Schiedam R= 1 Related to local slow movement — the most vital streets — the least vital streets

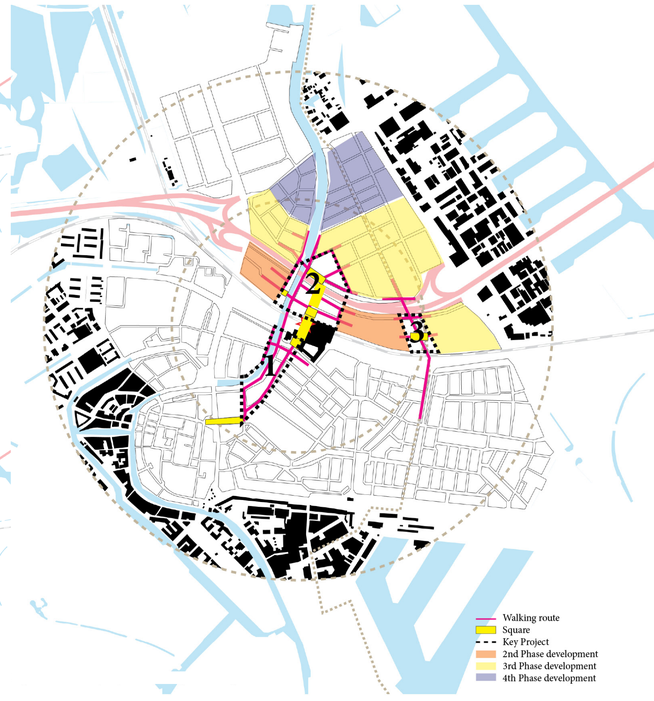
Figure 5.1.6 Schiedam R=10 Related to regional fast movement

The existing routes
which are essential for linking station to other centralities of the city.

The essential proposal links.

The street pattern which could happen in the north, after carrying out the essential proposal links.

The overall proposal for linking.



Key Projects which are the start engine.

RECONCILE RAILWAY WITH CITY

Integrate Schiedam Centrum Railway Station and its surroundings into local urban context with a view to the Transit-Oriented Development strategy 3/3

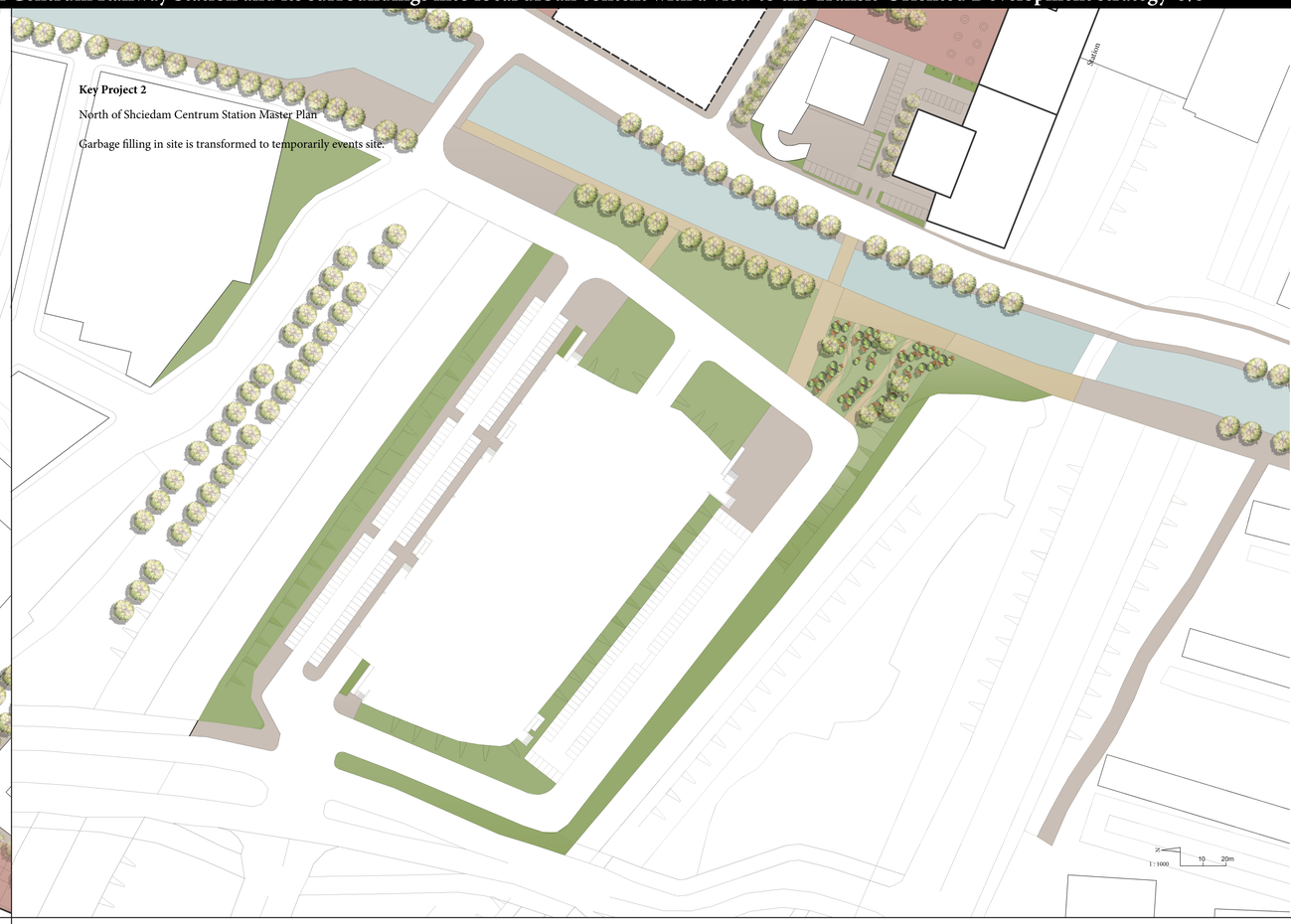
Key Project 2

North of Shciedam Centrum Station Master Plan

Key Project 2

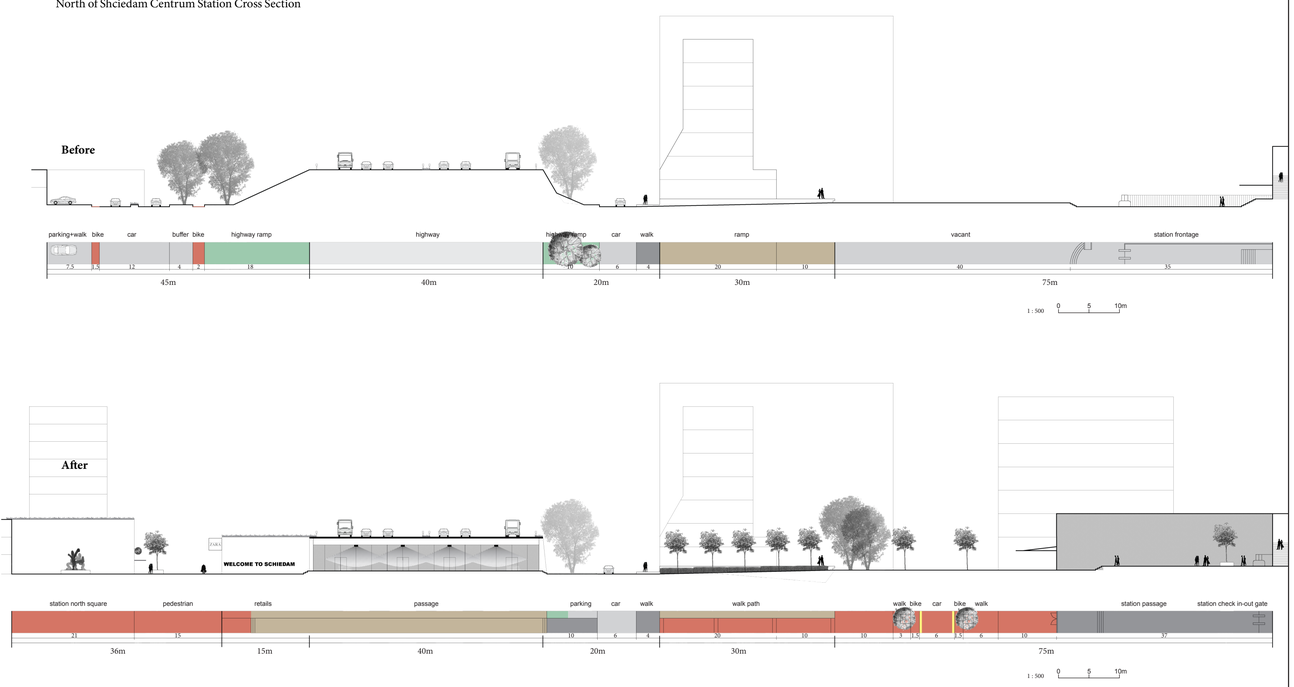
North of Shciedam Centrum Station Master Plan

Garbage filling in site is transformed to temporarily events site.



Key Project 2

North of Shciedam Centrum Station Cross Section

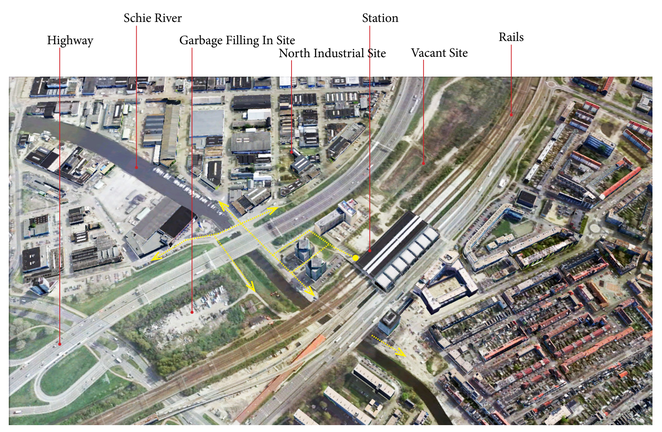


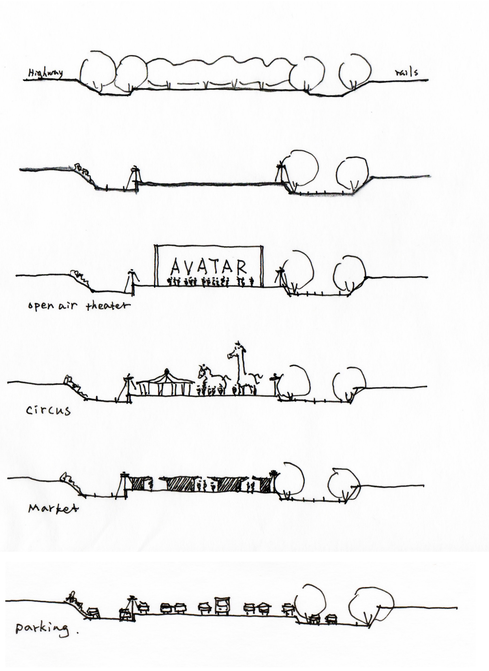
Key Project 2

North of Shciedam Centrum Station

The former vacant site in the in between area is transformed to a mixed-use site with new programs. Extend the station hall to develop a station passage combining the under railway stage space, which was storage space before, and new programs.

Open up the space under the highway, to make a direct connection for people to walk through to north Schiedam Centrum Station square.

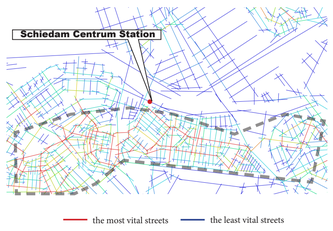




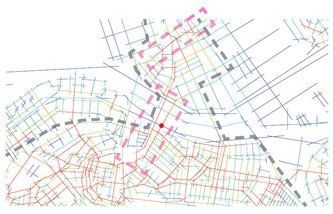
Land Use

The intervention of proposal could change the land use of station surroundings. Station square areas could become to mixed-use site. The in-between highway and railway area and station north former industrial sites could become to residential and commercial areas. A new center in the north could be formed.

Schiedam Centrum Station could become to a regional node not only for transportation but also for many events and activities to be carried out there.



Before



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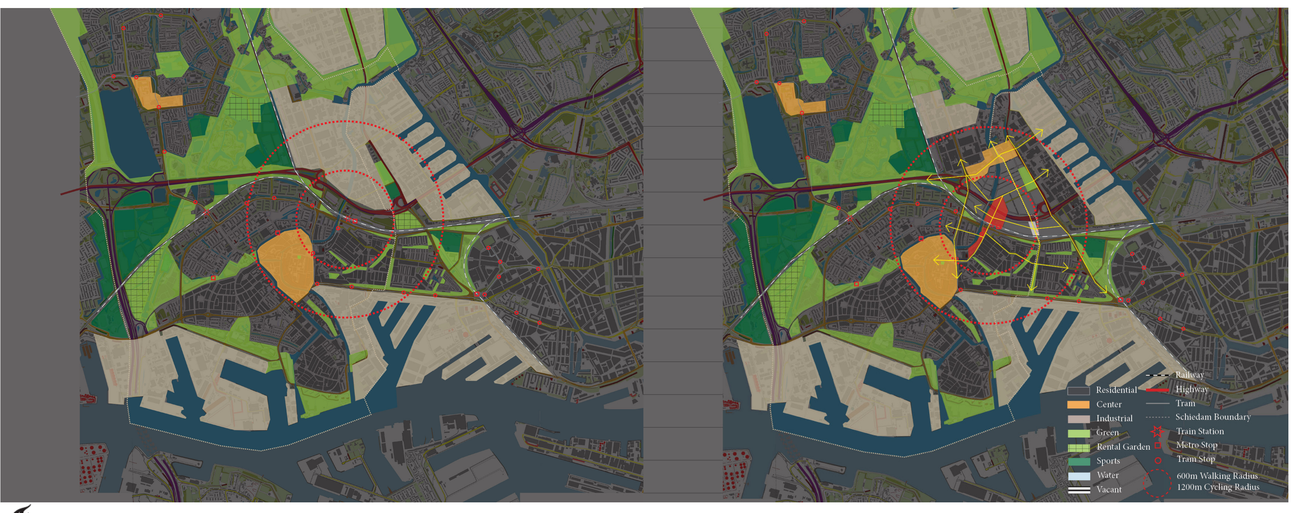
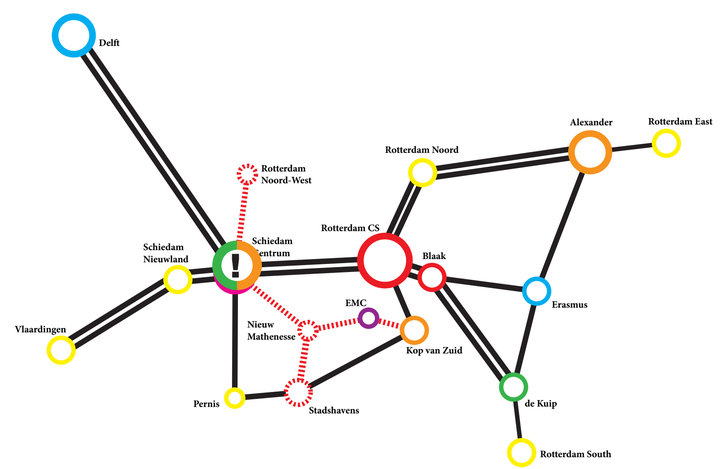


Roles After

Schiedam Centrum Station surroundings as a new comercial and entertainment/culture node in Rotterdam Metropolitan networks.



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