

Accelerating the Modernisation and Expansion of the Defence Real Estate Portfolio: Practices, Causes and Interventions

A Design-Oriented Analysis

AR4MBE010 Graduation
Management in the Built Environment
Delft University of Technology

Emiel Wolfs
6160468

02-06-2026

Dr. M.H. (Monique) Arkesteijn
Dr.ir. A. (Ad) Straub

ABSTRACT

This thesis explores acceleration interventions to enhance the modernisation and expansion pace of the Dutch Defence real estate portfolio. The transition to a real estate portfolio that supports military readiness in light of the deteriorating European security conditions is hindered by a series of complex systemic bottlenecks, including fragmented governance, restrictive regulations, deficient information, and a lack of execution capacity. Adopting a mixed-method, design-oriented approach, this thesis focuses on designing implementable solutions through iterative design cycles that bridge theoretical frameworks and the findings from an empirical study involving (inter)national professionals into a targeted strategy to the Dutch Defence case. Results indicate that the '*Defence Real Estate Acceleration Model*', has the potential to fundamentally accelerate real estate modernisation and expansion for the Dutch Ministry of Defence by introducing interventions that address the limiting factors.

KEYWORDS

Defence Real Estate | Real Estate Acceleration | Portfolio Modernisation | Military Readiness | Organisational Bottlenecks | Infrastructure Expansion | Defence Transformation

PREFACE

From the outset, this thesis was shaped by the urgency and complexity surrounding Defence real estate. During my time at the Real Estate and Living Environment department, I encountered daily challenges in aligning processes, capacity, and collaboration with the organisation's rapidly evolving needs. Rather than discouraging me, this environment proved motivating and led me to explore how Defence can more effectively modernise and expand its real estate portfolio. Contributing, even in a modest way, to this challenge has been both meaningful and inspiring.

Throughout the research process, I was continually challenged by the pace of organisational change. Integrating ongoing developments required constant adaptation, but also provided valuable insight into an organisation in transition, one in which real estate is becoming increasingly important. Combining this context with a design-oriented research approach resulted in an intensive yet rewarding process, characterised by reflection, iteration, and continuous improvement.

I would like to express my sincere gratitude to my supervisors, Dr M.H. (Monique) Arkesteijn and Dr ir. A. (Ad) Straub, for striking the right balance between encouraging exploration and keeping me focused.

I am also grateful to G. (Gerja) Koldenhof for her support throughout the research process and for the opportunity to gain valuable perspectives during my time spent at the Real Estate Command Post.

Finally, I would like to thank everyone who supported me along the way. Their contributions, trust, and encouragement made it possible to complete this thesis and reach this milestone.

Emiel Wolfs
Delft, June 2026

EXECUTIVE SUMMARY

Context

“In the eighty years since the AIVD and its predecessors were established, there has never been a threat assessment quite like the current one, in which national security is under pressure from so many fronts at once, and for such a prolonged period.” Simone Smit, Director-General AIVD

This announcement, published on 23 April 2026, underscores the deteriorating security environment which has fundamentally re-oriented Dutch Defence policy towards territorial protection, making the reinforcement of military readiness the primary imperative. Real estate is a critical enabler of that readiness. At the same time, the Defence portfolio is ageing, under-invested, and misaligned with modern operational requirements.

Research premise

This thesis identifies implementable interventions to unlock acceleration potential for the modernisation and expansion of the Defence real estate portfolio. These interventions expose a critical disconnect between practices, causes and the real estate objective to support combat readiness rather than limiting it. To bridge this gap, the thesis proposes a *‘Defence Real Estate Acceleration Model’* that enables the quantification of interventions and incorporates prerequisite for operational readiness and applicability within the organisation. The model therefore provides both a practical framework for the Ministry of Defence and a conceptual basis for further theoretical development within the context of military real estate management.

Methodology

The thesis adopts a mixed-method, design-oriented approach following Dym and Little (2013). Three complementary methods are combined: systematic document analysis, Delphi-structured expert panels at institutional (n=3), governance (n=9), process (n=6) levels and a cross-level session (n=9), and thirdly, semi-structured interviews with professionals from NATO Defence real estate organisations (n=4). The analysis is structured using Winch's (2010) Tectonic Approach, anchored by Scott's (2001) institutional theory and a constellation of governance and project management frameworks.

Key findings

Two analytical dimensions were examined: while the institutional, governance, and process levels each yielded distinct findings, a consistent cross-cutting pattern emerged: acceleration is structurally blocked not by any single bottleneck, but by a mutually reinforcing set of bottlenecks that must be addressed in sequence. A key factor determining intervention effectiveness was the conditionality architecture, the extent to which certain interventions function as prerequisites for others, which rendered technically valid interventions ineffective when deployed without their enabling conditions.

Even under favourable political conditions, nitrogen licensing and grid congestion constitute systemic institutional barriers that halt a significant number of projects before governance or process improvements can take effect. Nevertheless, the analysis demonstrates that existing legal instruments offer more room for manoeuvre than is currently utilised, and that the gap between described and performed governance, rather than structural absence, is the primary source of delay at the governance level.

Consultation of six international Defence real estate organisations revealed a broadly consistent pattern: countries achieving genuine acceleration had in each case grounded their efforts in explicit legislative mandates, integrated governance architectures, and proportional capacity investments initiated ahead of volume growth. Transferable lessons were identified across all three levels, with integrated on-site project office and standardised building type catalogue receiving particular validation. However, direct takeover of institutional instruments, such as the Danish Defence Act or Finland's permit exemption, is viewed as more complex in the Dutch context.

This is because few countries share the Netherlands' combination of Natura 2000 exposure, dense spatial planning constraints, and an institutionally separated real estate chain operating across four hierarchical lines. These contextual conditions make the sequencing of interventions, institutional unblocking first, system-governance integration second, capacity and process investment third, both more demanding and more consequential than in comparable cases.

Implications

In relation to the main research question:

"How can Defence accelerate the modernisation and expansion of its real estate portfolio to support organisational objectives?"

The '*Defence Real Estate Acceleration Model*' demonstrates that political will and increased budgets are necessary but insufficient conditions for acceleration. What the research adds is a conditionality architecture: the sequencing and mutual dependency of interventions matters as much as their content. Deploying technically sound interventions without their enabling conditions in place is itself a source of delay, a pattern the expert panels identified as persistent in the current organisation. International benchmarking confirms that countries achieving genuine acceleration did so through context-sensitive adaptation rather than the adoption of ready-made instruments. The Dutch combination of Natura 2000 exposure, dense spatial planning, and a four-line institutionally separated real estate chain makes this sequencing logic both more demanding and more consequential than in comparable cases. The model is therefore offered not as a prescriptive action plan, but as a structured framework for making real estate a genuine enabler of combat readiness rather than a constraint upon it.

DEFENCE REAL ESTATE ACCELERATION MODEL

Tectonic Approach (Winch, 2010) · AI #1–23 + 6 additions · 6-country NATO benchmark n=4 (LP#1–36) · Expert panels n=18

★★ Prerequisite · ★ High priority · ↑ Start · long lead time · ● Depending on · → Conditionality relation priority H/M/L

Institutional level — creates enabling conditions

Regulative, normative and cultural-cognitive pillars (Scott, 2001) · Current political window: supportive but possibly time-limited

REGULATORY REFORM

★★ AI#1 – Framework simplification

★★ AI#2 – Targeted exceptions

Thematic framing: N2 + grid congestion strategies

Internal overregulation review

LP#1-4 · DK FI UK DE · Article 346 TFEU; project-specific exemptions; energy microgrids

INSTITUTIONAL LEGITIMACY

★ AI#4 – Legislative mandate

★ AI#5 – Societal alignment

Underutilised public value narrative

Dual-use/ societal resilience

LP#6-9 · NO DE DK UK FI · Parliamentary mandate (NO); lifecycle safeguard (DK); resilience framing (FI/DK)

SPATIAL & POLITICAL

● AI#3 – Limit political friction

Time-bound political window

WODG + VRO coordination

Decentralised permit friction

LP#5 · DE DK FI · Geopolitical urgency; structural action must precede closure of window

↓ Institutional conditions enable governance coordination

Governance level — organises coordination and decision-making

Chain-wide governance · Integration · Market strategy · Capacity steering | Gap between formal structure and lived practice is the central governance finding

CHAIN GOVERNANCE & ROLES

★★ AI#7 – Chain-wide governance structure

AI#16 – Unfragment institutional decisions

Governance system analysis (meta-intervention)

Thematic coordination roles (N2 / grid / PFAS / ect.)

LP#10-14 · DK DE NO SE FI · Direct command DK (LP#10); three-tier failure DE (LP#12x); PRINSIX NO (LP#14)

INTEGRATION & TEAMS

★★ AI#10 – Integrated area teams

★ AI#6 – Early real estate integration

AI#9 – Decentralised decision-making

● AI#8 – Informal mechanisms (→ follows AI#7)

LP#15-19 · DE UK DK FI SE · On-site office DE (LP#15); ECI UK/DK/FI (LP#16); decentralised mandate SE (LP#19-20)

MARKET STRATEGY

● AI#13 – Standardised procurement (→ follows AI#1, AI#2)

AI#15 – Long-term contracts (portfolio strategy required)

AI#12 – Risk allocation (not shared responsibility)

AI#11 – Contiguous market dialogue

LP#22-26 · DK NO FI DE · Industry day DK (LP#22); dialogue as capacity development (LP#23); 8-year plan NO (LP#26)

CAPACITY & ESCALATION

↑ AI#14 – Capacity balance (3 dimensions)

Bundling function: projects → political level

Political escalation route

Portfolio prioritisation (prerequisite for process)

LP#18-21 · DK SE UK · Portfolio vs. capacity DK (LP#18); autonomous threshold SE (LP#20); single role UK/DK (LP#21)

↓ Governance coordination enables process execution

Process level — enables execution

Information management · Digital transformation · People and capability | Technical possibility consistently precedes organisational readiness

PORTFOLIO & INFORMATION

★ AI#17 – Transparent project information

★ AI#19 – Parallel information acquisition

KPI-driven strategic real estate plan

Portfolio rationalisation (stop lower-priority projects)

LP#27, #29 · DK SE · Mandatory site survey phase DK (LP#27); infra-materiel sync SE/DK (LP#29)

DIGITAL TRANSFORMATION

↑ AI#20 – Platform-based approach

↑ AI#18 – AI / BIM / digital twins / FCC

Phase 1: RVB-Defence shared environment

Phase 2-3: market connectivity (security-gated)

LP#28, #35 · FI NO SE · 20yr data maturity; Nordic knowledge exchange

PEOPLE & CAPABILITY

↑ AI#23 – Targeted capability development

↑ AI#22 – Rapid recruitment & retention

AI#21 – Dedicated project leadership

Pre-screened consultant pool (DE model)

LP#30, #36 · ALL · Clearance binding bottleneck; social legitimacy DK

Shaping of structure

Structuring of action

TABLE OF CONTENTS

ABSTRACT	1
PREFACE	2
EXECUTIVE SUMMARY	3
THE DEFENCE REAL ESTATE ACCELARATION MODEL	5
TABLE OF CONTENTS.....	6
ABBREVIATIONS	9
1. INTRODUCTION.....	11
1.1 Research problem	12
1.1.1 The national audit office	12
1.1.2 Internal maturity scan of the real estate chain	12
1.1.3 Findings from the real estate command post	12
1.1.4 Execution capacity	13
1.1.5 External regulatory friction	13
1.1.6 Program of requirements.....	13
1.2 Research purpose	14
1.3 Main research question	14
1.3.1 Sub-questions	14
1.4 Relevance.....	15
1.5 Conceptual model.....	15
1.6 Reading guide	15
1.7 Research scope	16
2. CASE DESCRIPTION.....	17
2.1 The Defence organisation and real estate (answer to RQ1)	17
2.2 Current military real estate governance structure (answer to RQ2)	17
2.2.1 Mapping the current inter-organisational real estate chain.....	18
2.3 Conceptual assessment metrics.....	19
3. LITERATURE REVIEW	20
3.1 Regulatory and institutional constraints on acceleration	20
3.1.1 Interventions for acceleration at the institutional level	21
3.2 (Fragmented) governance and real estate	21
3.2.1 Decision-making.....	22
3.2.2 Strategy and procurement	22
3.2.3 Interventions for acceleration at the governance level.....	22

3.3 Information and capacity management	23
3.3.1 Information management, digital technology, uncertainty and communication	23
3.3.2 Leadership and capable teams.....	23
3.3.3 Interventions for acceleration at the process level	24
3.4 Synthesis of the acceleration interventions (answer to RQ3)	24
3.5 Conceptual intervention design	26
4. MIXED METHOD RESEARCH DESIGN	27
4.1 Research type	27
4.2 Research design	27
4.3 Data collection	28
4.3.1 Document analysis	29
4.3.2 Expert panel – Delphi method	29
4.3.2 Semi-structured interviews	29
5. EMPIRICAL ANALYSIS TO ACCELERATE DEFENCE REAL ESTATE MODERNISATION	31
5.1 Acceleration interventions at the institutional level	31
5.1.1 AI #1 — Structural simplification of the regulatory framework.....	31
5.1.2 AI #2 — Targeted regulatory exceptions	32
5.1.3 AI #3 — Limiting political interference in project execution	32
5.1.4 AI #4 and AI #5 — Institutional legitimacy and societal alignment	33
5.1.5 Specifications/additions to the interventions and cross-cutting patterns	33
5.1.6 Sub-conclusion from the institutional level expert panel;.....	33
5.2 Acceleration interventions at the governance level.....	34
5.2.1 AI #6 — Early integration of real estate into broader military planning	34
5.2.2 AI #7 — Systematic, chain-wide governance structure with clear roles.....	35
5.2.3 AI #8 — Supplementing formal governance with informal mechanisms	35
5.2.4 AI #9 — Decentralised decision-making combined with physical co-location.....	36
5.2.5 AI #10 — Integrated project teams	37
5.2.6 AI #11 — Continuous dialogue with market parties.....	38
5.2.7 AI #12 — Shared public-private responsibility	38
5.2.8 AI #13 — Standardisation and collaboration via the procurement instrument.....	39
5.2.9 AI #14 — Balance between internal capacity and external expectations.....	39
5.2.10 AI #15 — Integrated contracts	40
5.2.11 AI #16 — Addressing fragmented decision-making across institutional boundaries.....	40
5.2.12 Additional bottlenecks and interventions	41

5.2.13 Sub-conclusion from the governance level expert panel	41
5.3 Acceleration interventions at process level.....	42
5.3.1 AI #17 — Transparent and accessible project information.....	42
5.3.2 AI #18 — Digital transformation: AI, AR, digital twins, BIM and FCC.....	43
5.3.3 AI #19 — Parallel information acquisition for front-end acceleration	43
5.3.4 AI #20 — Platform-based approach for chain integration.....	44
5.3.5 AI #21 — Mandated and dedicated project leadership.....	45
5.3.6 AI #22 — Rapid recruitment and retention of experienced professionals	45
5.3.7 AI #23 — Training, learning and organisational development.....	46
5.3.8 Additional interventions and cross-cutting patterns	47
5.3.9 Sub-conclusion from the process level expert panel.....	47
5.4 Synergy (answer to RQ4).....	48
6. COMPARATIVE INTERNATIONAL ANALYSIS	50
6.1 International defence real estate modernisation analysis.....	50
6.2 In-depth international bottleneck and acceleration strategy analysis.....	50
6.2.1 Norway.....	51
6.2.2 United Kingdom	52
6.2.3 Germany	53
6.2.4 Finland	57
6.2.5 Sweden	60
6.2.6 Denmark	65
6.3 Synergy: International learning points (answer to RQ5)	69
6.3.1 Integral governance as the foundation for acceleration	69
6.3.2 Market continuity as a strategic instrument	70
6.3.3 Institutional legitimacy as an acceleration licence	70
6.3.4 Knowledge and capacity as prerequisite investments.....	70
6.3.5 Overview of international acceleration lessons	70
7. DESIGN AND VALIDATION OF THE DEFENCE REAL ESTATE ACCELERATION MODEL	72
7.1 Introduction	72
7.2 Towards a final design (answer to RQ6)	72
7.2.1 The Defence Real Estate Acceleration Model: bottlenecks, interventions and design	72
7.2.2 Management recommendations for implementation.....	77
8. DISCUSSION	80
8.1 Interpretation.....	80

8.2 Contribution and implications.....	81
8.3 Limitations	83
8.4 Further research	84
9. CONCLUSION.....	86
9.1 Concluding remarks	86
10. REFERENCES.....	87
11. APPENDICES.....	95
Appendix I: Planning	95
Appendix II: Expert panel list	95
Appendix III: Expert panel protocols	95
Appendix IV: Expert panel transcripts	95
Appendix V: Expert panel scorecards	95
Appendix VI: Interview list	95
Appendix VII: Interview protocol	95
Appendix VIII: Interview transcripts.....	95
Appendix IX: Atlas.ti transcript coding	95
Appendix X: Data management plan.....	95
Appendix XI: AI tool disclosure.....	95
Appendix XII: Plagiarism check.....	95

ABBREVIATIONS

AI	Acceleration Intervention
BAIUDBw	Bundesamt für Infrastruktur, Umweltschutz und Dienstleistungen der Bundeswehr
BIM	Building Information Modelling
BImA	Bundesanstalt für Immobilienaufgaben
BMVg	Bundesministerium der Verteidigung
BN	Bottleneck
CDS	Chief of Defence
CPV	Real Estate Command Post
DDEC	Danish Defence Estate Command
DE	Germany
DGB	Directorate-General for Policy (Directoraat-Generaal Beleid)
DIO	Defence Infrastructure Organisation
DK	Denmark
DMLVD	Defence Equipment, Logistics and Real Estate Directorate
DOSCO	Defence Support Command
DPF	Defence Properties Finland

DS	Defence Staff
DVD	Defence Real Estate Service
DVM	Defence Real Estate Management
ECI	Early Contractor Involvement
EU	European Union
F-35	Lockheed Martin F-35 Fighter Jet
FAF	Future Acquisitions for the Defence Sector
FB	Forsvarsbygg
FI	Finland
FortV	Fortifikationsverket
GAO	Government Accountability Office (US)
HR	Human Resources
IMS	Infrastructure Management System
KPI	Key Performance Indicator
LP	Learning Point
MoD	Ministry of Defence
NAD	National Armaments Director
NATO	North Atlantic Treaty Organisation
NO	Norway
NORDEFECO	Nordic Defence Cooperation
PID	Project Initiation Document
PPP	Public-Private Partnership
PRINSIX	Norwegian Government Project Model
RGD	Government Buildings Agency
RQ	Research Question
RVOB	Central Government Real Estate and Development Agency
RVB	Central Government Real Estate Agency
RVL	Ressort Real Estate and Living Environment
SDR	Strategic Defence Review
SE	Sweden
TFEU	Treaty on the Functioning of the European Union
UK	United Kingdom
VR	Virtual Reality
VRO	Ministry of Housing and Spatial Planning
WODG	Defence Readiness Act

1. INTRODUCTION

The Dutch government has initiated a fundamental shift in its Defence policy. Increased geopolitical tensions and a deteriorating threat picture in Europe have led to a reassessment of the strategic course of the Ministry of Defence (MoD). In April 2026, the General Intelligence and Security Service (AIVD) warned that national security and the democratic rule of law in the Netherlands were facing the greatest threat in 80 years. Since the service was established in 1945, the threat has never been so serious (AIVD, 2026) Whereas the emphasis was previously on expeditionary deployment and crisis management, the primary focus is now on protecting the Netherlands' own territory and that of its allies, (Ministerie van Defensie, 2024a). This change requires structural reinforcement of military readiness. Real estate acts as a critical enabler¹ in this regard. NATO, (2014) emphasises that readiness depends not only on personnel and equipment, but also on the pace with which supporting real estate can be modernised and expanded when the threat level increases as shown in figure 1 (Schellens, 2023). With the launch of the Real Estate Command Post on September 2025, the MoD (2025a) is setting a new agenda to accelerate the modernisation and expansion of Defence real estate.

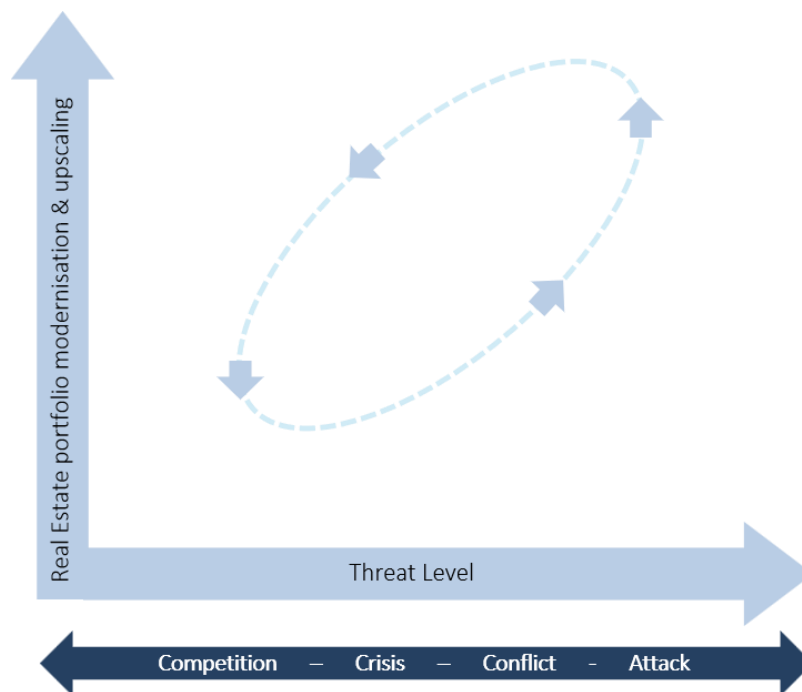


Figure 1: The relationship between threat level and Defence real estate portfolio based on (Schellens, 2023).

To fulfil the tasks as enshrined in the constitution, the MoD must be an operational organisation capable of deployment at any time, requiring specific people, materiel, and training (Ministerie van Defensie, 2015). Consequently, the real estate portfolio is categorised by the MoD as a critical enabler that directly supports the primary process of creating deployable military units (Ministerie van Defensie, 2025b). This not only requires substantial investment, but above all calls for accelerating modernisation and expansion of the real estate portfolio to meet the organisational requirements. International audit and doctrine documents show that an outdated or suboptimal real estate portfolio directly limits deployability (UK Ministry of Defence, 2025a; GAO, 2023).

¹ Within the NATO context, the term critical enabler refers to capabilities that are prerequisites for the execution of military operations, such as logistics, infrastructure, maintenance facilities and command structures (NATO Allied Command Transformation, 2018; NATO Standardisation Office, 2019).

1.1 Research problem

The current state of Defence's real estate has deteriorated significantly over decades due to long-term budget cuts (Ministerie van Defensie, 2025a). The deterioration challenge compounded by the fact that the average age of the 11,000 buildings across the 468 Defence locations stand at nearly 40 years (Ministerie van Defensie, 2022). If the 40-year-old real estate cannot support information-driven operations, secure logistics, or the high-tech component maintenance required for modern materiel such as the F-35 fighter jets (Ministerie van Defensie, 2019), real estate becomes a limiting factor for military readiness. This pressure is further exacerbated by the armed forces' ambitions for the increased space requirements resulting from the National Programme for Defence Space which was irrevocably adopted by the House of Representatives in December 2025 (Ministerie van Defensie, 2025b). This means that the task extends beyond the current portfolio and directly affects national spatial planning and social issues such as sustainability, integration and public accountability.

1.1.1 The national audit office

The structural nature of the challenges affecting the modernisation and expansion of the Defence real estate portfolio has been evident for a considerable period. The National Audit Office has repeatedly highlighted these interrelated issues in successive accountability audits, identifying persistent shortcomings in information provision (bottleneck 1), fragmented responsibilities (bottleneck 2), and limited financial control over the real estate portfolio (bottleneck 3), (Algemene Rekenkamer, 2019; 2021; 2023; 2026). In particular, the organisational division between various internal and external actors. Moreover, inconsistent decision-making, unclear prioritisation, and limited predictability in planning and project feasibility amplify this (bottleneck 5). Finally, the current organisational model remains largely oriented towards maintenance and risk management, reflecting a historical context of constrained real estate budgets (bottleneck 7). Therefore, the current structure facilitates real estate development and investments in a limited way. (Algemene Rekenkamer, 2019; 2021; 2023; 2026).

1.1.2 Internal maturity scan of the real estate chain

An internal study from March 2025 assessed the maturity of the real estate organisation with regard to its capacity to accelerate and tackling the challenges ahead (Ministerie van Defensie, 2025e). The study examined the extent to which bottlenecks constrain effective chain performance. The findings indicate that the bottlenecks can be attributed to a cumulative set of interrelated factors. First, demand articulation and upfront planning lack sufficient precision and strategic alignment (bottleneck 8). Second, there is an absence of effective chain integration, as key stakeholders and operational links do not consistently work towards a shared objective (bottleneck 6). Third, deficiencies in information availability, quality (bottleneck 11) and insufficiently skilled employees undermine effective monitoring and performance management (bottleneck 10). Fourth, there is a lack of clarity regarding roles, responsibilities, governance, and control mechanisms across the chain (bottleneck 2). Finally, the existing governance structure is overly complex and insufficiently streamlined (bottleneck 9). On the basis of these findings, the study concludes that the maturity of the real estate chain is assessed at a two on a five-point maturity scale, with the aforementioned factors identified as the primary underlying causes for the low score (Ministerie van Defensie, 2025e).

1.1.3 Findings from the real estate command post

Following the establishment of the Real Estate Command Post, additional analyses were conducted to identify bottlenecks within the real estate chain. The findings point to a structural imbalance within the

real estate project portfolio and an insufficiently focused chain (bottleneck 8), which together limit effective prioritisation and lead to repeated reassessments of demand at multiple stages of the process, largely driven by rapid organisational change. Furthermore, the expertise of the Government Real Estate Agency (RVB) is introduced too late in the process (bottleneck 4). The high number of handovers between actors causes significant duplication of effort, while the absence of information standards across chain partners further undermines process efficiency and coordination (bottleneck 9) (Ministerie van Defensie, 2025f).

1.1.4 Execution capacity

The MoD/RVB's historical interface with the market results in a capacity shortcoming. Market parties require predictability to invest in specialised labour and equipment. RVB's approach does not provide a reliable 'continue dealflow' of upcoming contracts, resulting in sub-optimal commissioning (bottleneck 12) (Rijksvastgoedbedrijf, 2025).

1.1.5 External regulatory friction

The MoD is reaching the limits of what is permitted in the licensed area (Ministry of Defence, 2024b). The expansion of the licensed area for defence activities is mainly affected by the nitrogen limitations (Ministerie van Defensie, 2025c). As a result of the ruling by the Council of State and the District Court of The Hague, internal offsetting has become subject to a permit. Given the location of most defence sites in or near Natura-2000 areas, it will be virtually impossible to get a permit (bottleneck 13). It is stated that a solution must be sought in the legal and political domain (TNO, 2025). Furthermore, due to the density of the Netherlands and environmental impact of military activities, integral portfolio plan and permit decisions require coordination with regional and local authorities regarding spatial planning, environment, and land use. This reliance on decentralised administrative processes adds time to the planning cycle (Ministerie van Defensie, 2025b).

1.1.6 Program of requirements

The table below (table 1.1.6) summarises the bottlenecks described in the sections 1.1.1 to 1.1.5 and shows that the obstacles to acceleration are structural and mutually reinforcing. Fragmented governance, weak chain integration, and inadequate information provision lead to inconsistent decision-making, limited oversight, and repeated reassessments. These issues reduce predictability for both internal stakeholders and the market, constraining execution capacity. In addition, external legal and administrative constraints further limit feasibility and prolong planning cycles.

CHAPTER 1		
BN Nr.	Bottleneck	Sources
BN #1	Inadequate provision of information throughout the entire chain	(Algemene Rekenkamer, 2019; 2021; 2023; 2026; Ministerie van Defensie, 2025e)
BN #2	Fragmented governance and unclear responsibilities and roles	(Algemene Rekenkamer, 2019; 2021; 2023; 2026; Ministerie van Defensie, 2025e)
BN #3	Limited financial control over the real estate portfolio	(Algemene Rekenkamer, 2019; 2021; 2023; 2026)
BN #4	Lack of predictability for internal and external stakeholders and late involvement	(Algemene Rekenkamer, 2019; 2021; 2023; 2026; Ministerie van Defensie, 2025f)
BN #5	Inconsistent decision-making	(Algemene Rekenkamer, 2019; 2021; 2023; 2026)
BN #6	Unclear prioritisation	(Algemene Rekenkamer, 2019; 2021; 2023; 2026)
BN #7	Current organisational model is oriented on maintenance and risk management	(Algemene Rekenkamer, 2019; 2021; 2023; 2026)
BN #8	Poor demand articulation, prioritisation and upfront planning	(Ministerie van Defensie, 2025e; 2025f)
BN #9	An overly complex chain that lacks effective chain integration	(Ministerie van Defensie, 2025e; 2025f)
BN #10	Insufficiently skilled employees	(Ministerie van Defensie, 2025e)
BN #11	Absence of information standards	(Ministerie van Defensie, 2025f)
BN #12	Insufficient external commissioning	(Rijksvastgoedbedrijf, 2025)
BN #13	Legal and administrative barriers beyond sphere of influence	(Ministerie van Defensie, 2024b; 2025a; 2025c; TNO, 2025)

Table 1.1.6: Bottlenecks constraining acceleration of Defence real estate modernisation and expansion.

1.2 Research purpose

The primary purpose of this research is to provide knowledge to change (Blaikie & Priest, 2019, p. 83) and design interventions (Aken et al., 2009) aimed at accelerating the modernisation and expansion of the Defence real estate portfolio. In doing so, the thesis addresses a case description, critical bottlenecks and acceleration interventions to improve.

1.3 Main research question

How can Defence accelerate the modernisation and expansion of its real estate portfolio to support organisational objectives?

1.3.1 Sub-questions

Case description and program of requirements

1. What strategic and operational requirements do the organisational objectives impose on the real estate portfolio?
2. What is the structure and scale of the Defence real estate supply chain and how effective is it in meeting these requirements?

Theoretical frameworks and first conceptual design

3. What theoretical models and concepts can contribute to acceleration?
4. Which interventions identified in RQ3 are most relevant for accelerating the modernisation and expansion of the real estate portfolio?

Best practices, expert validation and final detailed design

5. What acceleration strategies are employed by comparable international Defence organisations, and what lessons can be derived from these?
6. How can the selected interventions be clustered, validated and designed into an integrated approach to accelerate modernisation and expansion?

Sub-questions 1–3 focus on analysing existing knowledge and frameworks, while questions 4–6 add an empirical perspective to identify and design interventions for accelerating real estate modernisation.

1.4 Relevance

The establishment of the Real Estate Command Post aims to scale and accelerate the modernisation and expansion of the Defence real estate portfolio, recognising it as a critical enabler for fulfilling the constitutional tasks. The command post is responsible for driving acceleration, operating within an institutional framework specifically mandated to ensure its implementation (Ministerie van Defensie, 2025a). In December 2025, an action plan was published internally, which is scheduled for revision every six months, meaning that the findings of this thesis will inform the mid-2026 policy update. Therefore, the practical objective is to provide concrete interventions that enable the MoD to accelerate modernisation and expansion to prevent real estate becoming a limiting factor in readiness (Ministerie van Defensie, 2025d). In addition to this practical objective, this research also makes a scientific contribution by linking existing academic and new empirical insights to the domain of military real estate management.

1.5 Conceptual model

Real estate acts as an enabler for the defence organisation's objectives. To ensure that real estate does not become a limiting factor, more real estate is needed more quickly. This research adopts a design-oriented approach to acceleration interventions, in which theory, empirical analysis and benchmarking reinforce one another. This choice is in line with the objective of developing interventions that are both scientifically sound and practically applicable. This takes the form of an iterative process, in which insights from theory and practice mutually deepen one another (figure 1.5).

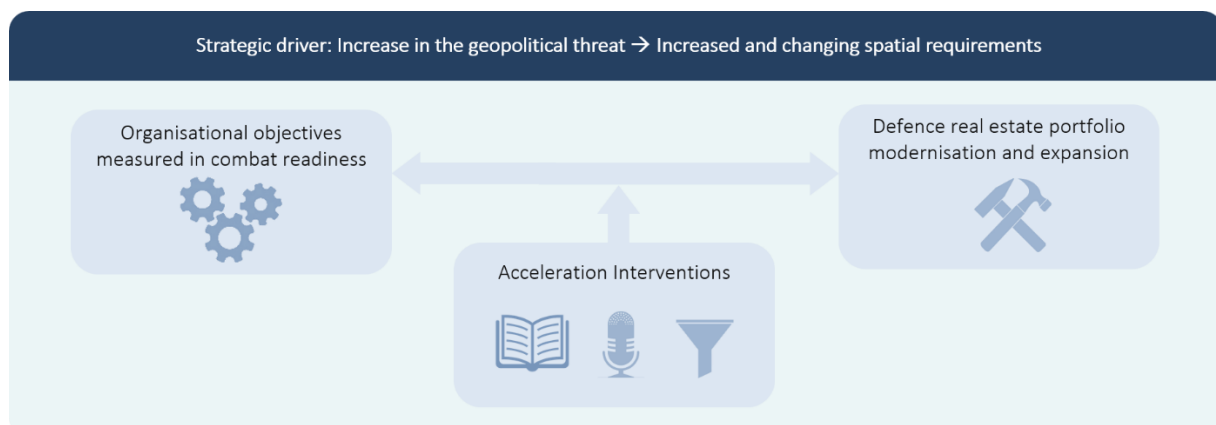


Figure 1.5: Conceptual model, design research towards acceleration interventions as an iterative process.

1.6 Reading guide

This thesis comprises nine chapters which, taken together, provide an answer to the central research question. This chapter identified bottlenecks, chapter 2 establishes the case description, chapter 3 establishes the theoretical framework, in which the selected concepts and models are explained and integrated into a conceptual acceleration design. Chapter 4 describes the research design, methodology and the way in which theory and practice are linked. Chapter 5 and 6 contains the empirical study. Chapter 7 brings theory, empirical analysis and benchmarking together in a synthesis of findings. Chapter 8 concludes with a discussion on the theoretical framework and chapter 9 finishes with the conclusion.

Reading tip for the Ministry of Defence: for policymakers and managers within the MoD who are primarily interested in the key findings, chapter 7 provides a summary of the key findings and recommendations. Chapter 1, 2, 3, 5 and 6 contains the problem, case, theory and empirical analysis on which these conclusions are based and can serve as further reading.

1.7 Research scope

This thesis focuses on developing acceleration interventions. It does not aim to provide a comprehensive overview of all Defence real estate projects, nor a financial allocation model or detailed implementation plan. The scope is bounded to the Dutch MoD strategic context, with international benchmarking serving as a frame of reference rather than a prescriptive comparison. Together, these elements form the basis for the integrated acceleration intervention design presented in chapter 7.

2. CASE DESCRIPTION

The case description analyses the MoD organisational objectives (RQ1), and the structure and scope of the real estate chain (RQ2).

2.1 The Defence organisation and real estate (answer to RQ1)

Operational readiness is the guiding principle for policy, planning, and resource deployment at the MoD (NATO, 2018). In Dutch accountability chains, operational readiness is broken down into three interrelated components: personnel readiness, material readiness, and training readiness (figure 2.1). This three-pronged approach forms the basis for monitoring, managing, and accounting for operational readiness (Ministerie van Defensie, 2025a). Real estate formally falls under material readiness, but in practice influences all three components. Various policy documents provide guidance on future-proof real estate, such as: Strategic Real Estate Plan (Ministerie van Defensie, 2022), Day order of the commander of the armed forces (Ministerie van Defensie, 2025d), National Programme Space for Defence (Ministerie van Defensie, 2025b), Defence base of the future (Ministerie van Defensie, 2024c).

In addition to the bottlenecks mentioned in the introduction, Van den Eijkel (2025) identified a mismatch between policy and practice: real estate management is often reactive and lacks adaptability; project lead times are slow and policy ambitions on standardisation and modular construction are not fully implemented; multifunctional use is restricted by security and availability constraints; location decisions are fragmented across units; real estate expertise is engaged too late in decision-making. These factors result in a partial misalignment between real estate and operational priorities, leaving the potential contribution of real estate underutilised. Addressing this mismatch requires integrating policy ambitions, operational priorities, and implementation practices into clear standards, processes, and mandates (Van den Eijkel, 2025).

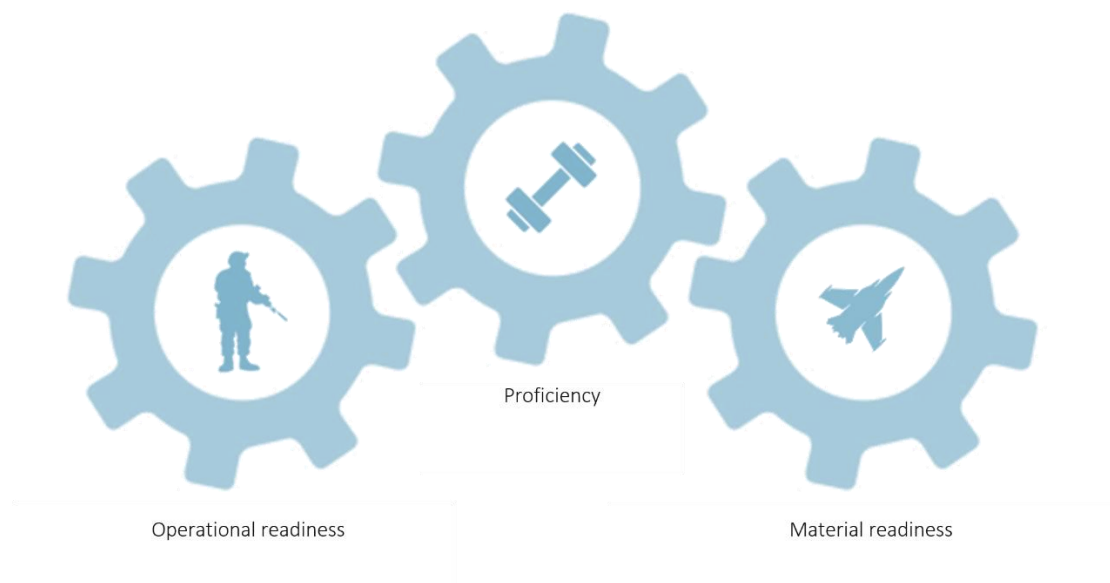


Figure 2.1: Defence readiness (Van den Eijkel, 2025).

2.2 Current military real estate governance structure (answer to RQ2)

In 2014, a government real estate reorganisation led to the abolition of the Defence Real Estate Agency (DVD) and the merger of DVD, RVOB, and RGD into the Central Government Real Estate Agency (RVB) (Ministerie van Defensie, 2015). Since then, the RVB has been responsible for operational management

and maintenance for the MoD, while the MoD focuses on policy and real estate demand. This change established a formal customer–supplier relationship between the MoD and RVB.

2.2.1 Mapping the current inter-organisational real estate chain

The Defence real estate chain is large in scale, multi-layered in structure, and characterised by long project lead times. It is organised through a fragmented governance model in which policy formulation, operational demand articulation, and execution are institutionally separated across multiple actors within Defence, while RVB operates as an interdepartmental delivery partner. Although this structure is formally defined (shown in figure 2.2), in practice it results in overlapping roles, unclear mandates, parallel demand channels, and late involvement of key chain partners. Decision-making and prioritisation are dispersed across different governance forums and planning cycles, which slows project delivery. Lead times are further extended by capacity constraints, insufficient standardisation, fragmented information systems, and a governance model that prioritises procedural carefulness over speed and scalability. As a result, the supply chain is currently insufficiently effective in meeting the strategic and operational requirements for the timely modernisation and expansion of the Defence real estate portfolio. (Van den Eijkel, 2025).

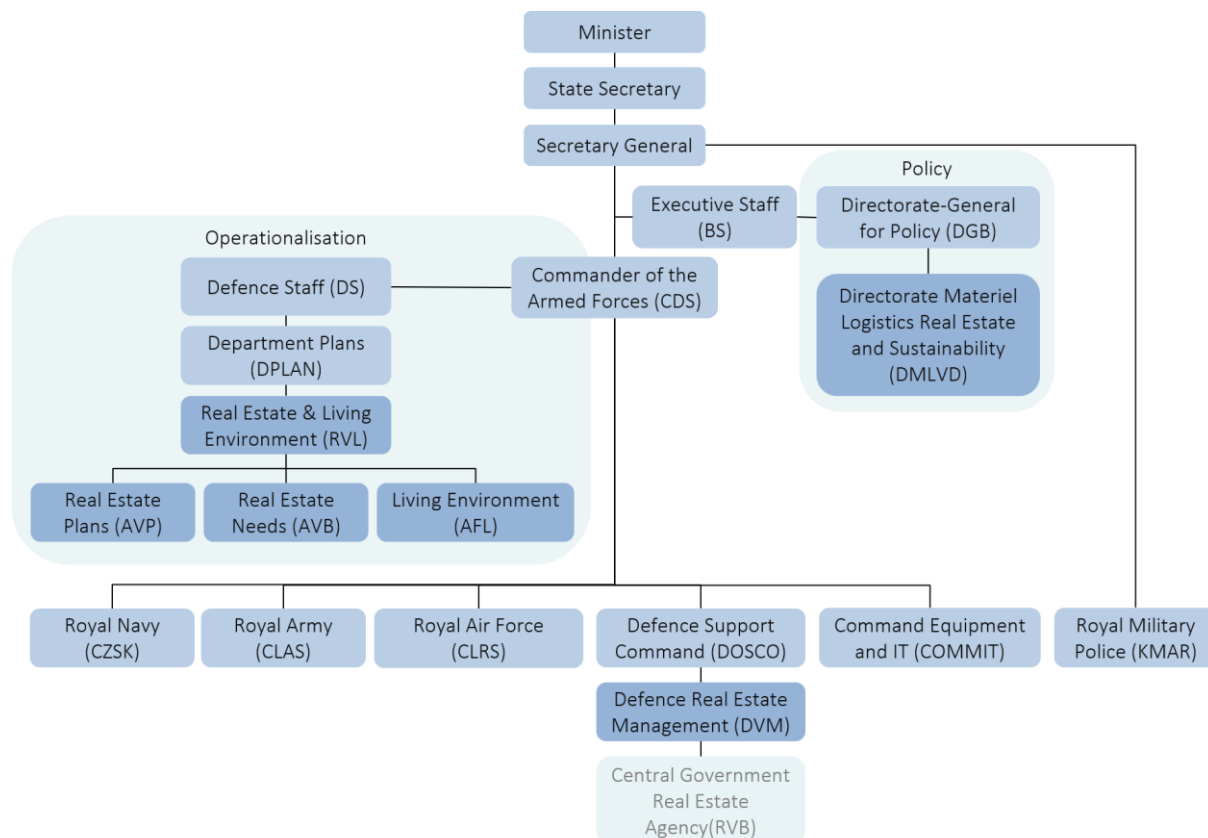


Figure 2.2: Organisational chart Defence real estate management (Van den Eijkel, 2025).

Within this governance structure, strategic policy frameworks are established by DMLVD, which forms part of the Directorate-General for Policy (DGB). Operational requirements are defined by the Chief of Defence (CDS) and the Defence Staff (DS) and are translated into concrete real estate demands by RVL. Project commissioning and execution are organised through DVM, which operates under the Defence Support Command (DOSCO) and acts as the formal client towards RVB. Consequently, the real estate chain is governed through a multi-line structure in which policy (DGB/DMLVD), operations (CDS/RVL), and execution (DOSCO/DVM) fall under separate hierarchical lines within Defence, while the RVB is

positioned outside the Defence line organisation. This institutional separation reinforces coordination dependencies and contributes to the limited oversight, capacity and long lead times observed across the chain. (Van den Eijkel, 2025).

2.3 Conceptual assessment metrics

Sections 2.1 and 2.2 establish that accelerating Defence real estate modernisation is context dependent. Acceleration interventions must support operational readiness (2.1) and function within the broader Defence organisation structure (2.2). Two conceptual assessment metrics drawn from this ensure that theoretical models are evaluated against these conditions, functioning as structuring mechanisms.

The first metric evaluates whether concepts support operational readiness, Defence's dominant principle encompassing personnel, materiel, and training readiness. The second metric examines whether concepts function within the broader Defence organisation structure characterised by institutional separation, formal customer-supplier relationships, and dispersed decision-making authority. The two metrics bridge the bottlenecks to the theoretical literature and empirical study, ensuring identification of strategically relevant and institutionally feasible intervention concepts to inform the design, shown in table 2.3.

CHAPTER 1 →		CHAPTER 2
BN Nr.	Bottleneck	Assessment metrics
#1	Inadequate provision of information throughout the entire chain	Support operational readiness & function within the broader defence organisation structure (Van den Eijkel, 2025)
#2	Fragmented governance and unclear responsibilities and roles	
#3	Limited financial control over the real estate portfolio	
#4	Lack of predictability for internal and external stakeholders and late involvement	
#5	Inconsistent decision-making	
#6	Unclear prioritisation	
#7	Current organisational model is oriented on maintenance and risk management	
#8	Poor demand articulation, prioritisation and upfront planning	
#9	An overly complex chain that lacks effective chain integration	
#10	Insufficiently skilled employees	
#11	Absence of information standards	
#12	Insufficient external commissioning	
#13	Legal and administrative barriers beyond sphere of influence	

Table 2.3: Bottlenecks from chapter 1 and assessment metrics based on the Defence case from chapter 2.

3. LITERATURE REVIEW

The literature review examines theoretical models and concepts that contribute to acceleration/effective execution (RQ3). It is systematically structured to directly contribute scientific rigor to the acceleration bottlenecks. The reviewed literature domains are derived from the bottlenecks and shortcomings identified by the introduction (chapter 1). These friction points are analysed by cause and effect, enabling the clustering of acceleration bottlenecks into three interrelated root-causes domains; institutional (regulatory) constrains (3.1), governance fragmentation (3.2), and the lack of information and capacity (3.3), Each domain is explored to identify theoretical insights relevant to achieving acceleration.

The literature review does not aim for completeness, but for relevance and integrated applicability to the Defence real estate context. To this end, it derives contextual conditions regarding operational readiness and organisational structure from chapter 2, which identified two assessment metrics that serve as analytical benchmarks for the Defence context. Together, the root causes identified in chapter 1 and the assessment metrics derived from chapter 2 form a focused analytical lens for the literature review.

To provide a theoretical foundation and structure, this thesis adopts Winch's (2010) Tectonic Approach (figure 3.1), which explains how real estate projects are shaped by dynamic interactions across organisational layers. 3.1 Institutional regulatory constraints (institutional level) concerns the external context defined by the national system and industry recipes. 3.2 Governance fragmentation (governance level) addresses the structuring of the portfolio of real estate projects (real estate chain). 3.3 Lack of information, capacity and personal skills (process level) focuses on operational delivery.

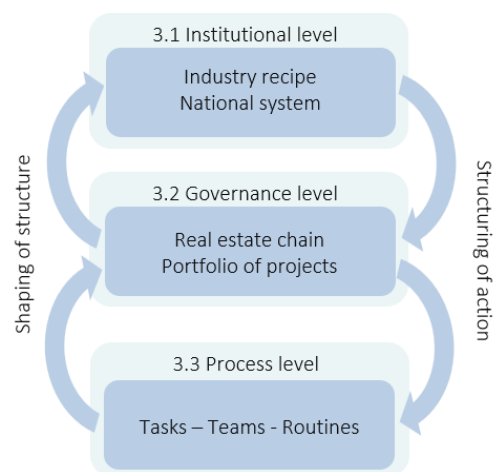


Figure 3: Tectonic approach, (Winch, 2010).

3.1 Regulatory and institutional constraints on acceleration

Starting with the institutional level, existing literature has examined the role of institutional theory in shaping organisational behaviour and project delivery. Institutional theory provides an analytical foundation for understanding regulatory rules, norms and shared belief systems (Scott, 2001). While these theoretical foundations are widely documented, a comprehensive review of institutional theory falls beyond the scope of this literature review. Instead, this section addresses institutional mechanisms selectively based on the assessment metrics relevant to the acceleration challenge.

Research demonstrates that regulatory streamlining can significantly reduce delivery timescales. Locatelli et al. (2017) found that regulatory complexity represents one of the primary causes of schedule overruns in megaprojects. Therefore, minimising the impact of political influence by ensuring that projects are embedded and aligned with the institutional framework (Mahalingam and Levitt, 2007; Patanakul et al., 2016). Those findings align with the research from Hartley & Belin (2019) on the exclusion of projects from standard regulatory requirements resulting in accelerated timelines. However, such exemptions must be carefully balanced against accountability mechanisms. Institutional interventions aimed at acceleration are subject to a fundamental tension. Flyvbjerg (2014) argues that

measures designed to increase speed risk undermining democratic legitimacy and accountability. Consequently, durable acceleration is more likely to depend on explicit legislative authorisation and clearly articulated public justifications.

Scott's (2001) institutional framework further clarifies this by distinguishing three pillars of institutional theory: the regulative, the normative and the cultural-cognitive (Scott, 2001). Organisations do not act solely on the basis of rational efficiency, but are embedded in an institutional environment that both constrains and legitimises choices. For Defence, this is particularly striking. Real estate decisions are shaped simultaneously by formal rules such as defence legislation and international treaties (regulative), by professional and societal norms about what constitutes responsible and legitimate land use (normative), and by broader taken-for-granted assumptions about the role of the armed forces within society (cultural-cognitive). This institutional embeddedness explains why defence real estate projects cannot be reduced to a purely technical or economic optimisation. Decisions that fail to align with the institutional environment may encounter political opposition or societal resistance.

The relationship between acceleration and institutional theory lies mainly in their explanatory nature. Although real estate decisions are made under political pressure, allied obligations, and demands for adaptability, literature from the public administration domain remains relatively underexposed in the context of public real estate (Klijn & Koppenjan, 2016). The literature convincingly explains why organisations conform to their institutional environment, but offers little guidance for acceleration. In the military context in particular, there is often tension between international obligations, national regulations, and operational necessity. This can lead Defence to make choices that are militarily effective but institutionally difficult to accommodate. The theory emphasises conformity and stability, yet provides only limited guidance in situations where, due to military urgency or alliance commitments, Defence must depart from existing institutional arrangements.

3.1.1 Interventions for acceleration at the institutional level

However, based on the literature there are still institutional interventions that can be identified. First, research by Locatelli et al. (2017) and Hartley & Belin (2019) shows that regulatory streamlining (AI #1) and targeted exceptions to standard procedures (AI #2) can reduce processing times. Secondly, minimising the impact of political influence (AI #3) (Mahalingam and Levitt, 2007; Patanakul et al., 2016). Third, Flyvbjerg (2014) emphasises that sustainable acceleration depends on explicit legislative authorisation and public legitimacy (AI #4). Thirdly, the work of Scott (2001) suggests that interventions are effective aligned with three institutional pillars: regulatory, normative and cultural-cognitive (AI #5). For the MoD, this means interventions must be underpinned by both formal regulations and social and political legitimacy.

3.2 (Fragmented) governance and real estate

Fundamental research has highlighted frameworks structuring and analysing the application of governance models in general. Miller and Lessard (2000) covered an extensive literature review into the broad concept of governance, followed by a study from Brunet et al. (2016) about governance for public real estate. This thesis adopts their definition of governance. 'An organised structure established as authoritative within the institution, comprising processes and rules established to ensure projects meet their purpose'. It becomes clear that fundamental categorisation has already been explored; however, a detailed analysis of each subsection would fall beyond the scope of this literature review. It is thus

essential to set the focus towards a contextual selection of governance frameworks using the assessment metrics and the acceleration bottlenecks described in chapter 1 and 2.

3.2.1 Decision-making

Interventions on the Defence real estate governance level include alignment between real estate and operational priorities (Van den Eijkel, 2025) through early intervention of real estate into boarder military planning, which increases predictability and feasibility (Lynch et al., 2021). Considering the study by Zelli (2013) (AI #16), which examined that decision-making authority across multiple, weakly coordinated institutions, leads invariably to coordination breakdowns, inconsistent policies, and implementation failures. Research by Eriksson et al. (2019) highlights that decentralised decision-making when fostered by physical co-location and high collaboration depth, enables minor issues to be resolved at lower hierarchical levels, thereby mitigating the decision paralysis typical of fragmented management structures.

3.2.2 Strategy and procurement

It is very difficult to achieve high productivity in terms of resources allocation and respond flexibly to changing needs. Public real estate organisations tend to opt for flexibility rather than productivity (Winch, 2010). According to Locatelli et al. (2014), designing a system-based governance structure encompassing the entire project delivery chain cures unnecessary delays. Klakegg et al. (2016); Chen and Manley, (2014); and Naderpajouh et al. (2014) argue that supplementing the formal governance structures with informal mechanisms enhances performance. In addition to the internal governance, the theory of collaborative governance from Ansell & Gash (2008) focuses on decision-making processes in which public organisations work together with private actors to address complex challenges such as the real estate domain. Successful cooperation requires long-term investment in dialogue, transparency, and shared responsibility (Emerson et al., 2012). Supporting this view, Andrews et al. (2011) emphasised that public organisations only operate effectively when internal capacities and external expectations are in balance, requiring methodologies such as standardisation and collaboration, which are enforced through the procurement vehicle (Mosey, 2021). According to Almohsen and Ruwanpura (2016); Love et al. (2017); and Locatelli et al. (2014), adopting integrated project teams to deliver projects, involving key decision makers from institutional to supply chain cures long lead times characterised by repetition in the traditional linear project chain. Based on the studies from Ibbs et al. (2003); Love, Zhou, et al. (2017) and Rose and Manley (2010) state that involving key decision makers means considering early engagement of the contractor to capture its project management expertise and experience. In addition to this, lifecycle modernisation is supported by long-term contracts that shift the contractor's focus from the lowest initial price to life-cycle cost optimisation. The alignment of incentives encourages the use of high-quality materials and technical innovation (Eriksson et al., 2019). Existing research therefore indicates that there is a high potential in improved efficiency through the governance structure for the Defence real estate domain, while as a result, well-established processes, organisational structures and actor roles must be rethought and redefined.

3.2.3 Interventions for acceleration at the governance level

The literature points to eight governance interventions. First, Van den Eijkel (2025) and Lynch et al. (2021) show that early integration of real estate into broader military planning increases feasibility (AI #6). Second, a system-based governance structure encompassing the entire real estate chain (AI #7) (Locatelli et al. 2014). Third, supplementing the formal governance structures with informal mechanisms

(AI #8) (Klakegg et al. 2016; Chen and Manley, 2014; Naderpajouh et al. 2014) Fourth, Eriksson et al. (2019) shows that decentralised decision-making, supported by physical co-location and intensive collaboration, can resolve bottlenecks at lower levels and prevent decision-making paralysis (AI #9). Fifth, adopting integrated project teams to deliver projects (AI #10) (Almohsen and Ruwanpura, 2016; Love et al. 2017; Locatelli et al. 2014). Sixth, Ansell & Gash (2008) and Emerson et al. (2012) emphasise that collaborative governance with private parties can be effective when investing in long-term dialogue (AI #11) and shared responsibility (AI #12). Seventh, Andrews et al. (2011) and Mosey (2021) suggest that standardisation and collaboration through the procurement instrument contribute (AI #13) to a balance between internal capacity and external expectations (AI #14). Eight, Eriksson et al. (2019) shows that long-term contracts promote acceleration by shifting to life cycle optimisation and innovation (AI #15).

3.3 Information and capacity management

Complimentary to the institutional interventions and governance interventions, this final section addresses the process level interventions through the lenses of the process, information management, capacity, and the lack there off.

3.3.1 Information management, digital technology, uncertainty and communication

A lack of transparent and accessible information can lead to delays in real estate projects. Tang (2017) shows that incomplete information influences decision-making and encourages strategic postponement. Research indicates that better information provision can reduce delays (Tang et al., 2017). Al-haimi (2025) positions digital transformation (AI, AR/VR and digital twins, BIM legal), as a crucial lever for efficiency and scalability in the real estate domain. Specifically, the implementation of AI is an interconnected process where success depends on organisational readiness, technological maturity, and high-quality data (Wuni, 2025; Luo et al., 2017) argue that to improve communication, new and mature technologies, integrating work teams, a project information management system, and digital models increases efficiency. Establishing public outreach strategies through aggressive marketing campaigns can help increase public acceptability at both the national and local levels by facilitating communication with a wider audience (Bruzelius et al., 2002; Locatelli et al., 2017; Lopez et al., 2013). At the same time, it is made clear that implementation challenges, such as integration complexity and data security can slow down the upscaling (Al-haimi et al., 2025). Boateng et al. (2015); Charette (1996); Giezen (2012); Genus (1997); and Jia et al. (2013) all argue that the focus on simplification to keep it in the manageable domain, where risks and their impacts can be assessed is critically important. In addition to simplification, an flexible project management approach balancing flexibility and control to navigate the multiple interfaces of the project (such as strategic input from outside and market requirements) also ensures effective project delivery (Barnes and Wearne, 1993). Empirical findings also suggest a platform-based approach is the optimal mechanism to overcome public sector limitations (Cao et al., 2023). In addition research by Eriksson et al. (2019) identifies front-end efficiency through parallel processing of information by allowing design and engineering to commence before all regulatory permits are secured. Parallel processing provides a strategic mechanism to accelerate long linear project chains inherent in public-sector procurement.

3.3.2 Leadership and capable teams

This theme refers to relationships among project team members, individual competencies, required skills, and organisational capabilities that contribute to the performance of projects. The three most predominant concepts are: First, project leadership: the need for project champions, dedicated leaders

who are committed to the success of the project, according to Barnes and Wearne, (1993) this can be accomplished by establishing leaders who are empowered, dedicated and committed to success. Eweje et al. (2012); Genus, (1997) and Mahalinggam and Levitt, (2007) argue that combining and reconciling contrasting, complementary and interrelated perspectives to promote motivation towards a common goal. Second, competencies: competencies and skills that individuals forming project teams need to possess. Based on the research from Assaf and Al-Hejji, (2006) and Barnes and Wearne, (1993); investing in fast staff recruitment and retention to develop commitment and accumulate knowledge through experienced project professionals is conditional; and Third, capabilities: the ability of the MoD to produce specific real estate relying upon collective organisational knowledge (Denicol et al. 2020). In order to build these capabilities, investing in the learning skills for the project team on how to deal with problems at individual, team, and organisational level supports effective project delivery (Klakegg et al. 2016).

3.3.3 Interventions for acceleration at the process level

The literature points to seven process-level interventions. First, Tang (2017) demonstrates that transparent and accessible information prevents strategic postponement and reduces delays (AI #17). Second, Al-haimi (2025) and Wuni (2025) position digital transformation (AI, AR/VR, digital twins) as a crucial lever for efficiency and scalability, with success depending on organisational readiness, technological maturity and data quality (AI #18). Third, Cao et al. (2023) suggest that a platform-based approach is the optimal mechanism for overcoming public sector constraints (AI #19). Fourth, Eriksson et al. (2019) identify parallel information acquisition as a front-end acceleration mechanism, whereby design and engineering can commence before all regulatory permits have been obtained (AI #20). Fifth, Barnes and Wearne (1993) argue that empowered and dedicated project leadership committed to project success is a critical enabler of acceleration (AI #21). Sixth, Assaf and Al-Hejji (2006) and Barnes and Wearne (1993) highlight that investing in fast staff recruitment and retention of experienced project professionals builds the commitment and knowledge required for effective delivery (AI #22). Seventh, Denicol et al. (2020) and Klakegg et al. (2016) emphasise that developing organisational capabilities and team learning at individual, team and organisational level is conditional to sustained acceleration (AI #23).

3.4 Synthesis of the acceleration interventions (answer to RQ3)

The previous paragraphs have identified various interventions at the institutional, governance and process levels related to the bottlenecks. Table 3.4 summarises these by identifying the specific acceleration interventions. However, a critical gap remains: the literature offers limited guidance on designing these interventions into a coherent context specific strategy that holistically addresses the bottlenecks in the defence real estate domain. Furthermore, it is unclear whether there are additional acceleration insights from practice that have not been identified in the literature. This gap forms the conceptual basis for the methodological approach of this thesis.

CHAPTER 1 → CHAPTER 2 →		CHAPTER 3				
BN Nr.	Assessment Metrics	Level	AI Nr.	Acceleration intervention (AI)	Sources	
#3, #13	Support operational readiness & function within the broader defence organisation structure (Van den Eijkel, 2025)	Institutional	#1	Regulatory streamlining to reduce complexity and schedule overruns.	Locatelli et al. (2017)	
#13			#2	Targeted exceptions to standard procedures for specific projects	Hartley & Belin (2019)	
#13			#3	Minimising the impact of political influence	Mahalingam and Levitt, (2007)	
#13			#4	Explicit legislative authorisation and public legitimacy for acceleration measures	Flyvbjerg (2014)	
#13			#5	Alignment of interventions with regulatory, normative and cultural-cognitive institutional pillars	Scott (2001)	
#4, #6		Governance	#6	Early integration of real estate into broader military planning for increased predictability	Van Den Eijkel (2025) Lynch et al. (2021)	
#2, #9			#7	A system-based governance structure encompassing the entire project delivery chain	Locatelli et al. (2014)	
#9			#8	Supplementing the formal governance structures with informal mechanisms	Klakegg et al. (2016)	
#5, #7			#9	Decentralised decision-making through physical co-location and collaborative depth	Eriksson et al. (2019)	
#4			#10	Adopting integrated project teams to deliver projects (Shift to parallel collaboration between RVB and Defence (not linear))	Almohsen and Ruwanpura, (2016)	
#12			#11	Collaborative governance with long-term investment in dialogue and transparency	Ansell & Gash (2008)	
#9			#12	Shared responsibility between public and private actors	Emerson et al. (2012)	
#4, #9			#13	Cooperation and standardisation through the procurement tool (Prioritize productivity over flexibility (buy existing assets, standardize new builds)	Mosey (2021)	
#4			#14	Balancing internal capacity and external expectations through process and building standardisation	Andrews et al. (2011)	
#9			#15	Long-term contracts for life cycle optimisation and innovation incentives	Eriksson et al. (2019)	
#5			#16	Reduction of fragmented decision-making through enhanced coordination between institutions. Use uniform KPIs across the chain	Zelli (2013)	
#1, #3			Process	#17	Transparent and accessible information to prevent strategic delay and cost overrun (Improve end-user communication)	Tang & Wang (2017)
#11				#18	Digital transformation (AI, AR/VR, digital twins) based on organisational readiness	Al-haimi (2025); Wuni (2025)
#9		#19		Platform-based approach to overcoming public sector constraints (progress, asset condition)	Cao et al. (2023)	
#1		#20		Parallel information gathering and early start to the design phase prior to granting a permit	Eriksson et al. (2019)	
#10		#21		Empowered and dedicated project leadership committed to project success is a critical enabler of acceleration	Barnes and Wearne (1993)	
#10		#22		Investing in fast staff recruitment and retention of experienced project (Establish departments for recruitment, training, and staff development)	Assaf and Al-Hejji (2006)	
#1, #10		#23		Developing organisational capabilities and team learning at individual, team and organisational level (Establish departments for information management, communication, research)	Denicol et al. (2020) Klakegg et al. (2016)	

Table 3.4: Overview of acceleration interventions from the literature (BN = Bottleneck; AI = Acceleration Intervention).

3.5 Conceptual intervention design

The preceding paragraphs describe the design process as a structured sequence. Together, these chapters show that the design process is not a linear exercise, but a stepwise development in which each chapters builds on the previous one and contributes to a well-founded and coherent design solution.

The first, problem definition, focuses on clarifying the problem and translating it into a program of requirements for the design. This involves refining the problem statement (1.1), identifying constraints based on bottlenecks (1.1.6), and defining objectives (1.2). In addition, the principal functions of the design are established (2.1–2.2). Together, these elements form a coherent set of requirements and starting points that guide the further development of the design.

In the conceptual design step, these requirements are translated into possible solution directions. Assessment metrics are defined (2.3) to ensure that design options contribute to operational readiness and fit within the existing Defence organisation. Based on insights from theory (chapter 3), interventions are identified, combined, and developed into design alternatives (3.5). By systematically analysing and evaluating these alternatives, a preferred conceptual design is made and shown in figure 3.5.

Although these chapters represent distinct steps, their strength lies in their interconnection: the problem definition sets the direction, the conceptual phase explores the solution space, and together they provide the foundation for further development and validation in the subsequent stages of the design process.

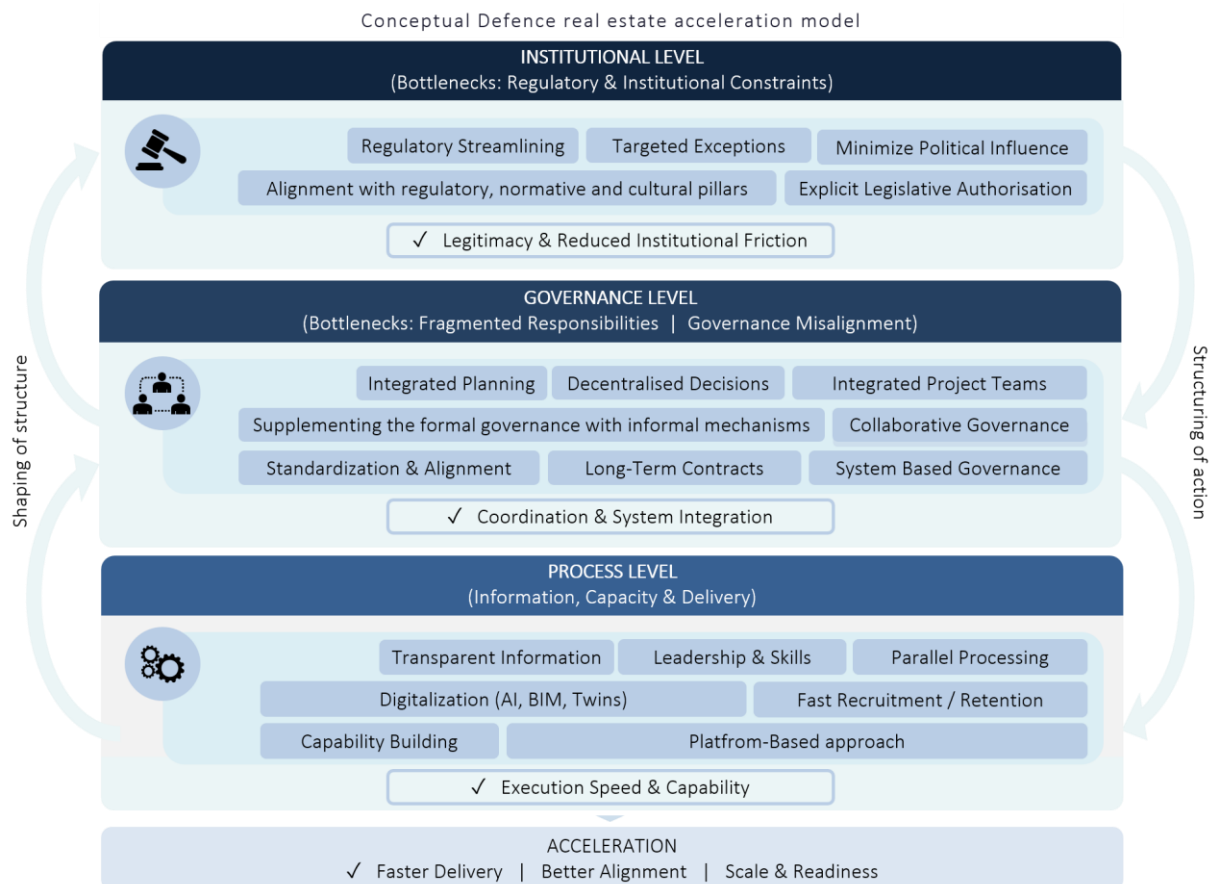


Figure 3.5: Conceptual intervention design based on chapter 3 and Winch (2010).

4. MIXED METHOD RESEARCH DESIGN

This chapter justifies the mixed-method research design and methodological choices used in the thesis. The central research question demands an approach that is both explanatory (analysing what is) and design-oriented (creating what should be). Therefore, this chapter is pivotal, detailing how theory (chapter 3), empirical analysis (chapter 5, 6 and 7), and practical design (chapter 7) are interconnected to deliver a complete answer (chapter 8 and 9).

4.1 Research type

The goal of this research is to develop specific acceleration interventions for modernising and expanding the Defence real estate portfolio. This makes the research design-oriented, as it involves the development of interventions designed to address a practical management problem (Aken et al., 2009). This contrasts to purely empirical research, which primarily seeks to generate knowledge and formulate explanations (Verschuren & Doorewaard 2010). By designing these interventions, this study directly addresses the challenge of improving the pace of portfolio modernisation and expansion. The methodology supports this by combining document analysis with quantitative and qualitative data collection (interviews and Delphi method expert validation). This process translates insights into an analytical framework, allowing scientific theory to be applicable in practice.

The design research approach requires a structured multi-phase process (Verschuren & Doorewaard, 2010). The study follows a sequence adapted from the research framework of Russell et al. (1968) and elaborated by Dym and Little (2013). The initial phase, program of requirements involves determining the organisational mandates, current structure, and inherent structural bottlenecks that underpin the need for designing interventions. This is followed by solution exploration and conceptual design alternatives, during which relevant theoretical concepts are identified and comparable acceleration strategies derived from theory. Finally, the empirical study, design refinement and validation phase involves the detailed design based on best practice and prioritisation of the most suitable interventions into a cohesive design. Followed by the validation and design communication, a critical stage that examines the applicability and feasibility of the designed interventions in the Dutch context of Defence.

4.2 Research design

This research has interconnected iterative design cycles to answer the main research question. The approach of this research aligns with Dym and Little (2013) engineering design process, as shown in figure 4.2, in which the darker boxes show the design tasks to be performed, and the lighter boxes show the output. The design process is depicted as spiral for several reasons. Design processes are often described as a linear sequence that seems to imply; do task 1, then do task 2, then do task 3. In practice, completed phases and tasks are kept in mind as the design unfolds, and we refer back to them regularly. There are two other elements that the spiral depiction will help reinforce; feedback and iteration.

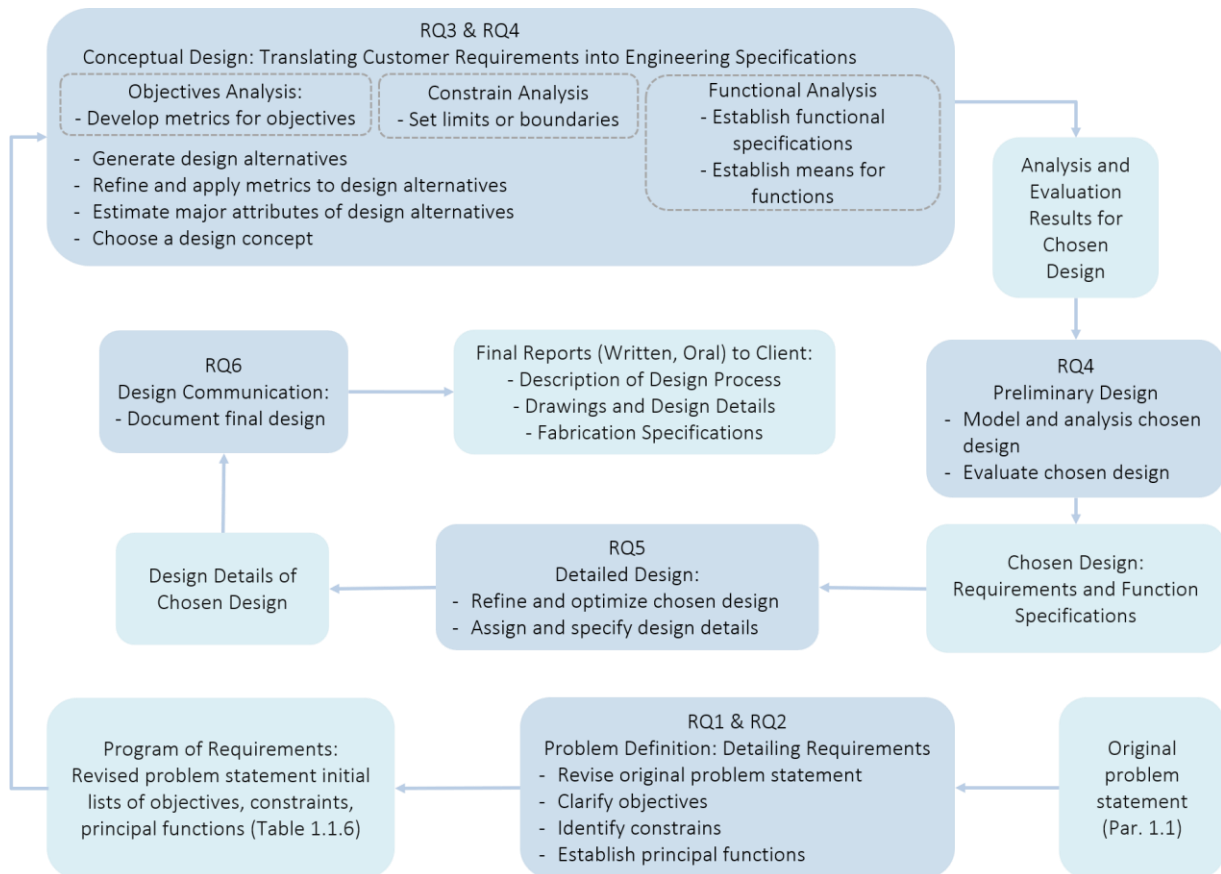


Figure 4.2: The design steps from Dym and Little (2013) in which darker boxes show the design tasks to be performed.

4.3 Data collection

To make the design-oriented trajectory explicit, the data collection consists of multiple methods across the design process, shown in figure 4.3: document analysis, multiple rounds with expert panel sessions and semi-structured interviews. This combination is chosen in order to systematically link theory, policy and practice and to ensure both breadth (through document analysis and diversity of respondents) and depth (through interviews and validation) in the empirical study. To enhance

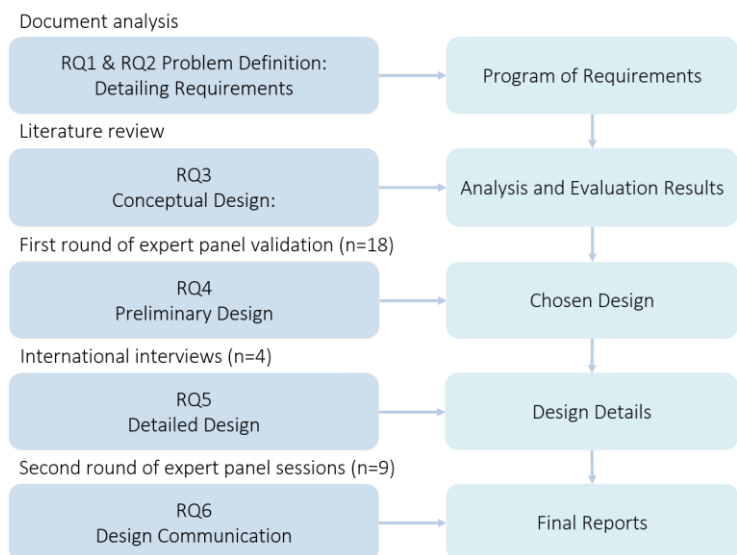


Figure 4.3: Data collection methods

the reliability and richness of the findings, methodological triangulation is employed (Yin, 2018). This entails the systematic comparison of different data sources and methods, allowing findings to complement and verify one another and reducing the risk of interpretative bias.

4.3.1 Document analysis

The problem/ context analysis (chapters 1 and 2), and the theoretical basis (chapter 3) are developed on the basis of a systematic literature review, supplemented by policy documents and evaluation reports. The international bottleneck and intervention analysis (chapter 6) is also partly derived from policy documents and reports. This involves searching scientific databases and policy portals. Keywords include: Defence real estate, public governance, institutional theory, project acceleration, and information management. International reports are collected in a targeted manner via the official websites of organisations and selected on the basis of their topicality and authoritative nature. Three inclusion criteria apply to the selection: (i) peer-reviewed, direct relevance, and an explicit conceptual or normative contribution. Findings from the selected publications and documents are brought together in the conceptual design, which will be presented in paragraph 3.5 (figure 3.5) and the final design paragraph 7.2.1. In this way, theory not only forms a theoretical basis, but also serves as bases for the conceptual design and preparation for empirical data collection.

4.3.2 Expert panel – Delphi method

Based on the findings of the literature review, an initial conceptual design of the interventions will be developed. In order to prioritise and validate these interventions, a structured expert consultation process following the Delphi method (Dalkey, 1967) will be employed. The Delphi method is particularly suited for this study as it enables systematic, iterative consensus-building among experts while reducing the influence of dominant voices and group conformity that can arise in unstructured panel discussions (Hasson et al., 2000).

The interventions will be presented to three expert panels consisting of representatives from Defence's real estate chain and first-order chain partners, shown in appendix II. The selection of the expert panellist is based on two main criteria: relevance (key role in the organisation) and diversity (institutional, governance, and process level).

The consultation process is structured in two stages per session. Prior to each panel session, individual feedback is solicited from each expert separately. Experts are asked to assess the proposed interventions independently, without exposure to the views of their peers, in terms of recognisability, practical applicability, and administrative feasibility. This individual pre-consultation ensures that initial responses reflect each expert's autonomous judgment and provides the researcher with a structured quantitative overview of convergences and divergences across the panel before collective discussion takes place.

In the subsequent group sessions, the aggregated and anonymised individual responses are fed back to the panel, forming the basis for structured deliberation. This iterative feedback loop, characteristic of the Delphi approach, allows experts to reconsider and refine their assessments in light of the group's collective input. The expert panel is involved at multiple phases of the design process, thereby explicitly safeguarding the link between theory and empirical analysis to the context. These sessions serve as validating the theory and gaining further insights and are therefore a hybrid form that is both deductive and inductive in nature (Blaikie & Priest, 2019, p. 132).

4.3.2 Semi-structured interviews

In addition to the expert panel, the design is further refined through semi-structured interviews with purposefully selected respondents from comparable international Defence real estate organisations (purposeful sampling, Blaikie & Priest, 2019, p. 172), listed in appendix VI. The interviews are conducted

as part of a comparative international bottleneck and intervention analysis (chapter 6) and are guided by RQ5: *What acceleration strategies are employed by comparable international organisations, and what lessons can be derived from these for the Dutch MoD?*

The selection of respondents is based on three criteria: relevance (key role in the defence real estate organisation), diversity (across governance models and implementation approaches), and thematic saturation (Guest et al., 2006). The target organisations are drawn from six countries: Norway (Forsvarsbygg), the United Kingdom (Defence Infrastructure Organisation), Germany (Bundeswehr/ BImA/ BMVg), Finland (Defence Properties Finland / Senate Properties), Sweden (Fortifikationsverket), and Denmark (Forsvarsministeriets Ejendomsstyrelse). Selected on the basis of a comparable NATO security context and diversity in governance models. This selection brings together perspectives from different layers of policy (institutional level), management (governance level), and implementation (process level).

Each interview follows a two-part structure of approximately 60 minutes. The first part focuses on problem recognition, exploring to what extent respondents' organisations face bottlenecks similar to those identified at the Dutch MoD. The second part focuses on strategies and interventions, identifying acceleration mechanisms across the three levels of the research framework. The analysis is structured both deductively, drawing on the theoretical acceleration interventions (AI #1–#23) from Table 3.4, and inductively, capturing additional/specification strategies not yet present in the literature. This dual approach supplements the abstract theoretical framework with contextually grounded insights from international practice, thereby increasing the empirical richness and practical relevance of the final intervention design. To ensure accuracy, transcripts are returned to respondents for member checks within two weeks of each interview.

All interviews will be recorded, fully transcribed and analysed according to the steps of reflexive thematic analysis (Braun & Clarke, 2022). The codes will be systematically organised in ALTALS.ti, with a research log ensuring traceability (appendix: IX).

5. EMPIRICAL ANALYSIS TO ACCELERATE DEFENCE REAL ESTATE MODERNISATION

This chapter analyses the extent to which the MoD’s real estate organisation aligns with the acceleration interventions identified in chapter 3. In this chapter, the bottlenecks from chapter 1 and assessment metrics from chapter 2 are applied to serve as a lens through which the interventions are assessed. Before the expert panel sessions each panel member is asked to assess the interventions with a 1 to 5 scale score on recognisability, applicability and feasibility, followed up by a priority score of low, middle or high. The input was refined during the session. The analysis follows the three pillar structure from Winch (2010): (5.1) the acceleration interventions at institutional level, (5.2) the acceleration interventions at governance level, and (5.3) the acceleration interventions at process level. Together, they provide a comprehensive picture of the current state of affairs and the match/mismatch between the identified interventions and whether or not they have already been implemented. And, if not or only minimally, whether they could be applied to accelerate the real estate modernisation and expansion.

5.1 Acceleration interventions at the institutional level

The institutional-level expert panel assessed five acceleration interventions (AI #1–#5) and identified four specifications emerging from practice. Prior to the session, participants (n=3) evaluated each intervention by rating recognisability, applicability, and feasibility on a 1–5 scale, and by assigning a priority level (low, medium, or high) on the scorecard. The overall average scores were obtained by summing the ratings, dividing by the number of participants, and rounding to the nearest whole number. The quantitative result scores before the session for interventions #1–#5 are summarised in table 5.1.

Acceleration Intervention	Recognisability 1 = low 5 = high	Applicability 1 = low 5 = high	Feasibility 1 = low 5 = high	Priority: High/Middel/Low
AI #1	5	5	4	H
AI #2	5	4	3	H
AI #3	2	4	5	L
AI #4	5	4	3	M
AI #5	4	3	3	M

Table 5.1: Quantitative AI scores by the institutional level expert panel (AI = Acceleration Intervention).

5.1.1 AI #1 — Structural simplification of the regulatory framework

AI #1 scores high on recognisability, applicability, and priority, but only moderate on feasibility. The panel distinguishes between principled feasibility (rules can be simplified) and practical feasibility (dependent on political decision-making). Recognisability is strong and twofold. As one panellist notes: *“I recognise this very strongly. We create our own laws, regulations and bureaucracy, and with nitrogen we have so much bureaucracy that, if you let experts look at it, we all interpret the same rules differently”* (Transcript 5.1, speaker 2, 00:11:44). This highlights that regulatory pressure is both external and internally generated. Applicability is high due to internal ownership and political momentum: *“We own a large part of these regulations and administrative processes ourselves”* (Transcript 5.1, speaker 2, 00:11:44). A practitioner perspective reinforces this internal focus, emphasising that while external reform efforts are already underway through the Ministry of Housing and Spatial Planning (VRO) and the Wet op de Defensie Gereedheid (WODG), the greatest short-term gains lie within the organisation itself: *“I see this as a matter of internal streamlining, as a number of initiatives are already underway externally, I believe there is still significant scope for improvement in clarifying the laws and regulations we must comply with, identifying instances of internal over-regulation, eliminating them, communicating and streamlining the minimum requirements throughout the real estate chain”* (Transcript 5.1, speaker 2,

00:07:42). Applicability is thus framed as a question of will rather than capacity. Feasibility remains conditional. As one panellist explains: *“Feasibility has increased given the current political constellation... but everything depends on how you manage to get this done politically”* (Transcript 5.1, speaker 3, 00:06:24). At the same time, complexity limits implementation: *“It is quite a bureaucracy where laws, internal rules and structures are deeply intertwined.”* (Transcript 5.1, speaker 2, 00:09:07). A key empirical addition is the *“grey area”* in regulatory interpretation: *“We have a large grey area... which means there is room for manoeuvre... you can make a conscious decision to take more risk.”* (Transcript 5.1, speaker 2, 00:11:44). This introduces a short-term acceleration mechanism within existing rules, complementing the longer-term reform. Priority is high due to systemic constraints: *“At all locations, grid congestion and nitrogen are the problem... if you don’t solve that, you can’t move forward”* (Transcript 5.1, speaker 3, 00:10:54). This is coupled with an active organisational role: *“Politics will have to act, but it is up to us to push this forward”* (Transcript 5.1, speaker 3, 00:10:54). The way this is done matters: *“It also depends on how you present your case”* (Transcript 5.1, speaker 3, 00:10:54).

5.1.2 AI #2 — Targeted regulatory exceptions

AI #2 shows high recognisability and high priority. The concept is understood, but lacks precedent in the Dutch context. One panellist argues: *“Focus on nitrogen and grid congestion... if you target the themes where you can really make a difference, you have a greater chance of success”* (Transcript 5.1, speaker 2, 00:14:19). This reflects political feasibility: *“Legislation usually doesn’t refer to specific locations, because that is very difficult to justify”* (Transcript 5.1, speaker 2, 00:16:15). Another perspective stresses location-specific urgency: *“I would want a very targeted exception for specific locations”* (Transcript 5.1, speaker 3, 00:15:21). The panel converges on a synthesis: thematic framing as political strategy, with local impact in practice: *“A theme like nitrogen... a location creates much more discussion”* (Transcript 5.1, speaker 2, 00:16:56). Feasibility depends on legitimacy: *“Exceptions must be legitimate in a democratic system; that is a political matter”* (Transcript 5.1, speaker 1, 00:17:41). Despite this, priority remains high: *“Feasibility is difficult, but I would still give it higher priority”* (Transcript 5.1, speaker 3, 00:19:07). AI #2 functions as a short-term bridging intervention, complementing the long-term structural reform of AI #1. A practitioner adds that this approach is already being pursued in practice, and that the exploration of exceptions frequently reveals that the bottlenecks are internally generated rather than externally imposed: *“It also regularly turns out that the obstacle is actually our own, or that we are not making sufficient use of the opportunities available to us”* (Scorecard, speaker 4). This finding underscores a recurrent theme: existing legal instruments often provide more room for manoeuvre than is currently utilised, pointing again to an internal capacity and awareness gap as much as an external regulatory constraint.

5.1.3 AI #3 — Limiting political interference in project execution

AI #3 receives low scores, as one panellist stated: *“Recognisability... we would probably score that as 1 out of 5”* (Transcript 5.1, speaker 3, 00:18:57). This reflects a positive assessment of the current context. Political involvement is seen as supportive rather than obstructive. As one panellist notes: *“We don’t really experience political interference in the wrong direction”* (Transcript 5.1, speaker 2, 00:20:23). Another adds: *“There is political influence, but not in the sense that people say what we are doing is wrong”* (Transcript 5.1, speaker 2, 00:21:23). Negative cases are considered incidental: *“That is one of the few incidents.”* (Transcript 5.1, speaker 1, 00:21:03). Moreover, earlier tensions appeared resolved: *“Those discussions existed, but they have now been aligned”* (Transcript 5.1, speaker 2, 00:21:59). Priority is therefore low: *“Political influence helps us more than it hinders us”* (Transcript 5.1, speaker 1,

00:23:23). However, this is explicitly time-dependent: *“Previously we had a minister who was not very interested in Defence... that situation has changed”* (Transcript 5.1, speaker 2, 00:23:04). This finding nuances existing literature (e.g. Mahalingam & Levitt; Patanakul et al.) by showing that political involvement can accelerate projects under favourable conditions. In addition; *“I understand from VRO that they are investigating where requirements are piling up because provinces and local municipalities have introduced an additional layer on top of national legislation and regulations”* (scorecard, speaker 4). AI #3 should therefore be treated as a contingent risk rather than a current priority.

5.1.4 AI #4 and AI #5 — Institutional legitimacy and societal alignment

AI #4 and AI #5 are treated as one intervention cluster. Recognisability is high but reveals a weakness. As one panellist explains: *“Public legitimacy exists in terms of security, but the broader story about value creation is weak”* (Transcript 5.1, speaker 3, 00:24:40). Another adds: *“Security is only a thin layer; beneath that, there is little to fall back on”* (Transcript 5.1, speaker 3, 00:24:40). Applicability lies in reframing legitimacy as a design issue: *“The essence is to negotiate with your environment and look for opportunities to link interests”* (Transcript 5.1, speaker 3, 00:24:40). This includes multifunctional use and innovation: *“We have significant market power to shape how the construction sector operates”* (Transcript 5.1, speaker 3, 00:31:09). Feasibility is limited by overreliance on the WODG: *“Many people think this law will solve the nitrogen issue, but that is only partly true”* (Transcript 5.1, speaker 2, 00:28:14). In practice: *“We may solve some permit issues, but not the underlying problem”* (Transcript 5.1, speaker 3, 00:28:415). Priority is driven by underutilised narrative potential: *“We should communicate much more clearly the public value we create, which we have traditionally done poorly”* (Transcript 5.1, speaker 3, 00:29:41). This aligns with the normative and cultural-cognitive pillars of Scott (2001).

5.1.5 Specifications/additions to the interventions and cross-cutting patterns

Four specifications/additions emerge. First, dual-use development: *“A barracks building can also function as student housing”* (Transcript 5.1, speaker 2, 00:33:24). Second, critical reflection on consultation practices: *“We are very good at consensus-building, but sometimes you have to ask whether all parties really need to be involved”* (Transcript 5.1, speaker 2, 00:37:22). Third, strengthening the status of the military: *“In other countries, the military has higher social status, which we could aspire to”* (Transcript 5.1, speaker 3, 00:42:55). Fourth, linking this to resilience: *“This could be connected to a broader narrative of societal resilience”* (Transcript 5.1, speaker 2, 00:44:47).

5.1.6 Sub-conclusion from the institutional level expert panel;

Across the five interventions and empirical additions/specifications, three overarching clusters structure the sub-conclusion. First, the organisation, particularly Defence and the real estate organisation, acts as an active institutional player rather than a passive rule-taker, shaping the conditions within which change occurs (AI #1, AI#2). Second, the current political climate provides a favourable but probably time-bound window of opportunity (AI #3). Third, acceleration depends on securing legitimacy across regulative, normative, and cultural-cognitive dimensions (AI#4, AI#5). In addition, the analysis highlights a clear link to governance: effective institutional action requires consolidated insight into systemic bottlenecks such as nitrogen constraints and grid congestion, as identified under AI #16.

The sub-conclusion presented as visual design based on the qualitative and quantitative expert panel data at institutional level is illustrated in figure 5.1.6 below.



Figure 5.1.6: Visualisation of the institutional level expert panel sub-conclusion (AI = Acceleration Intervention).

5.2 Acceleration interventions at the governance level

The governance-level expert panel assessed ten acceleration interventions (AI #6–#16). Prior to the session, participants (n=9) evaluated each intervention by rating recognisability, applicability, and feasibility on a 1–5 scale, and by assigning a priority level (low, medium, or high) on a scorecard. The overall average scores were obtained by summing the ratings, dividing by the number of participants, and rounding to the nearest whole number. The quantitative result scores before the session for interventions #6–#16 are summarised in table 5.2 below.

Acceleration Intervention	Recognisability 1 = low 5 = high	Applicability 1 = low 5 = high	Feasibility 1 = low 5 = high	Priority: High/Middel/Low
AI #6	4	3	4	H
AI #7	3	3	3	H
AI #8	4	3	5	L
AI #9	4	4	4	H
AI #10	4	4	4	H
AI #11	3	3	3	M
AI #12	3	2	3	M
AI #13	5	4	4	M
AI #14	4	4	4	H
AI #15	4	3	4	M
AI #16	3	4	3	M

Table 5.2: Acceleration intervention scores by the governance level expert panel (AI = Acceleration Intervention).

5.2.1 AI #6 — Early integration of real estate into broader military planning

AI #6 scores high on recognisability and feasibility, but lower on applicability. The intervention is not unknown to the organisation. *"this is something we already do,"* (Transcript 5.2, speaker 3, 00:05:29). one panellist notes, pointing to the role of real estate within the military planning department, but the translation into sustained practice fails structurally. The central explanation is repeated reprioritisation: *"we keep reprioritising while we do start well at the front end of the process."* (Transcript 5.2, speaker 3, 00:05:29). This generates portfolio disturbance, which is precisely why the intervention receives a high priority score despite its moderate applicability: *"this causes disruption in the portfolio."* (Transcript 5.2, speaker 3, 00:06:07). The panel thus confirms the theoretical claim of Lynch et al. (2021) and Van den Eijkel (2025) that early integration increases predictability and feasibility, but adds an empirical condition the literature insufficiently addresses: early integration requires stable prioritisation after the moment of integration. Without that stability, the early involvement of real estate is repeatedly undone.

A further conditioning factor is introduced by a another panellist, who observes that early involvement is only productive when a minimum level of demand maturity exists: *"I sometimes see that we are either completely bypassed, or involved very early with the message: 'we need all sorts of things, but we don't really know what'"* (Transcript 5.2, speaker 5, 00:07:09). This timing condition, a threshold of demand articulation before early involvement becomes meaningful, is an empirical addition to the literature relevant for the intervention design. Another panellist complicates the applicability score from a different angle, raising the question of whether real estate should be reactive to demand or proactively co-determinative of it: *"is the demand leading, or can real estate also help shape the demand?"* (Transcript 5.2, speaker 6, 00:08:50). This fundamentally reframes the intervention from a planning coordination tool into a strategic advisory role, with implications for the governance position of the real estate organisation within the broader military planning cycle.

5.2.2 AI #7 — Systematic, chain-wide governance structure with clear roles

AI #7 is described as *"disturbingly recognisable"* (Transcript 5.2, speaker 7, 00:10:31). By one panellist, a formulation that captures the loaded quality of the high priority score. The problem is not only known but experienced as a persistent source of friction. Multiple panellists independently identify the same central tension: the governance structure exists on paper but is not consistently applied in practice. *"The structure on paper is correct, but it is open to multiple interpretations, or people simply do not adhere to it"* (Transcript 5.2, speaker 4, 00:11:42). This pattern, structurally present, behaviourally absent, runs through the entire AI #7 discussion and constitutes its central empirical finding.

Two specific failure mechanisms are identified. The first is role drift: *"you see that it dilutes because people also try to put problems on the agenda at other tables"* (Transcript 5.2, speaker 3, 00:13:54). Even when formal governance structures clearly delineate which topics belong to which forum, informal agenda-setting behaviour undermines those boundaries in practice. The second is governance asymmetry: *"I still see too often that the governance structure is primarily focused on the Defence structure, and that the RVB structure is barely incorporated"* (Transcript 5.2, speaker 8, 00:12:18). This finding by an RVB panellist points to an imbalance: a chain-wide governance structure is only effective when chain partners are structurally represented, not when it is designed from a single organisational perspective. A third panellist reinforces this from a decision-efficiency angle: *"there is a lot of wasted effort. If it is not entirely clear where you need to be, a question ends up on yet another table"* (Transcript 5.2, speaker 3, 00:13:54). This wasted effort is a direct translation of bottleneck 9, an overly complex and insufficiently streamlined governance structure, into measurable speed loss.

Internal Defence panellists score priority lower than panellists from RVB. This difference in urgency perception is itself a symptom of the problem AI #7 seeks to solve. Without shared governance ownership, no shared urgency for governance improvement emerges. Practically, the intervention is not merely a documentation exercise: *"I have not read this intervention exclusively as 'we write it down', but also as 'we are actually going to do it'. And if you say the crux lies in not doing it, then that is still a high priority for me, because then we need to do it"* (Transcript 5.2, speaker 3, 00:16:03). The panel thus shifts AI #7 from a structural intervention to a behavioural and cultural one, which complicates applicability without reducing priority.

5.2.3 AI #8 — Supplementing formal governance with informal mechanisms

AI #8 generates the sharpest internal disagreement of all governance interventions, and the low average priority score of low marks a fundamental debate rather than a consensus. Two distinct models are

identifiable in the panel. The first, the bypass model, treats informal routes as an alternative to formal decision-making and judges them as counterproductive: *"if you start introducing all kinds of informal routes and create all kinds of detours to cut corners, we keep each other very busy. And I don't think it will go faster, because you ultimately still need the designated moments to get approval"* (Transcript 5.2, speaker 4, 00:20:19). In a portfolio of 800 projects, this logic scales into an unmanageable volume of parallel informal communications: *"you can't call 800 times for 800 projects, that makes no sense"* (Transcript 5.2, speaker 3, 00:21:38).

The second model, the preparation model, treats informal routes as a precondition for effective formal decision-making rather than a substitute for it: *"I see informal contacts as the lubricant of your organisation. It is also ineffective for formal consultations when you raise a decision you want to table for the first time in that meeting"* (Transcript 5.2, speaker 4, 00:20:19). In this model, a brief informal pre-alignment call is not a bypass but a preparation that makes the formal moment more decisive and efficient. A concrete example illustrates the speed differential: *"if I have a small deviation report, I would formally have to fill in the form, send it via Finance and Controle to The Hague, and then I'm weeks further. What I can do is call and informally align: 'this is coming, are you okay with me proceeding?' If I do that now, it is arranged tomorrow"* (Transcript 5.2, speaker 6, 00:23:56).

A panellist reconciles both positions without dismissing either: the informal approach is legitimate under the condition that it addresses an exceptional bottleneck, but becomes structurally problematic when it compensates for a chronic failure in formal governance: *"what you should actually do is remove that bottleneck. As long as that is not the case, it is understandable that you try to find a solution through informal contacts, but if you do that structurally, you are not solving the problem"* (Transcript 5.2, speaker 6, 00:17:52). This finding introduces the most important empirical contribution of the AI #8 discussion: the conditionality relation between AI #7 and AI #8. As one panellist formulates it directly: *"if the basic process does not function, intervention 8 does not work without intervention 7"* (Transcript 5.2, speaker 4, 00:20:19). This suggests an implementation sequence, first strengthen the formal governance structure (AI #7), then deploy informal mechanisms consciously as a complement (AI #8), not as a replacement. Klakegg et al. (2016) confirm that informal mechanisms supplement formal governance and improve performance, but the panel adds a scale condition the literature does not really specify: the effectiveness of informal mechanisms is inversely proportional to the scale of the task, and directly dependent on the quality of the underlying formal structure.

5.2.4 AI #9 — Decentralised decision-making combined with physical co-location

AI #9 scores relatively high on all criteria despite concrete doubts about organisational readiness expressed by multiple panellists. The explanation lies in how panellists interpreted the feasibility criterion: as a matter of principled possibility, *"it can be done"*, (Transcript 5.2, speaker 5, 00:27:22). rather than current readiness, *"we are prepared for it."* (Transcript 5.2, speaker 8, 00:31:26). This distinction is analytically important. *"I don't yet know whether both our organisations are capable of doing this,"* (Transcript 5.2, speaker 8, 00:31:26). one panellist observes, while another notes that the potential is there but *"that also requires something from us"* (Transcript 5.2, speaker 4, 00:28:42).

The panel identifies two distinct levels at which decentralisation could operate. At the financial-administrative level, the discussion centres on programme budgets and the tension between mandate freedom and political accountability: *"do you give the entire budget for all projects at one area, and say 'you manage your barracks'? Or do you say: separate decision-making for each project?"* (Transcript 5.2,

speaker 6, 00:25:58). The consensus that emerges is a pragmatic middle position: not full budgetary autonomy, *"Den Helder in one big bag of money for five to ten years is not going to happen"* (Transcript 5.2, speaker 7, 00:28:46). but meaningful freedom to shift within clearly defined frameworks: *"being able to shift within the frameworks"* (Transcript 5.2, speaker 2, 00:29:01). At the operational-executive level, a broader application is proposed by another panellist: *"the question is also: can you decentralise locally allocated mandates for a decision about parking at a location, or making an agreement with a municipality about a green zone?"* (Transcript 5.2, speaker 3, 00:30:11). This operational level carries lower political risk and offers direct speed gains, but is currently not systematically organised.

The panel confirms that decentralised decision-making, supported by physical co-location and intensive collaboration, resolves smaller problems at lower hierarchical levels but adds three empirical conditions the literature does not specify: frameworks must be explicitly and pre-emptively defined, reporting structures must safeguard central oversight on direction and progress, and the executing organisation must have the capacity to responsibly exercise decentralised mandates, with bottleneck 10 as the limiting factor here. The accountability dilemma that a panellist introduces, integral programme budgets maximise execution freedom but complicate political accountability, is a public-law condition that Eriksson et al. (2019) does not address and that is determinative for how far decentralisation can realistically be implemented in the Defence context. The intervention's relationship with AI #10 is implicitly present throughout the discussion: decentralised mandates work best when the people holding them also physically work together and jointly develop content, a governance configuration that is further elaborated under AI #10.

5.2.5 AI #10 — Integrated project teams

AI #10 is the only governance intervention to receive unanimously high scores across all four criteria. The absence of debate about the scores shifts the analytical task: not explaining divergence but articulating what drives the consensus, and identifying the empirical dimensions the literature does not fully capture.

Three mechanisms are identified. The relational mechanism centres on continuity of collaboration: *"if people work together more often, they recognise each other and build a relationship. That gives continuity"* (Transcript 5.2, speaker 3, 00:33:02). Repeated collaboration generates mutual trust, shared language, and institutional memory, soft factors with hard speed effects, as confirmed by the finding that this applies not only to internal actors but also to market parties: *"it's not just about recognising each other, but also about starting to speak the same language"* (Transcript 5.2, speaker 4, 00:35:11). The structural mechanism is articulated most sharply in terms of handover elimination: *"how many times do you hand the baton to a team that starts over, that was not involved from the beginning, and you get a reconsideration with new information and a kind of feedback loop?"* (Transcript 5.2, speaker 4, 00:33:11). Each handover is a potential loss of context and decision quality; new teams reconsider what previous teams had already settled, structurally extending lead times. This is a direct translation of bottleneck 6, lack of effective chain integration, into a mechanistic argument for team continuity. Alongside this, one panellist emphasises that integration is most valuable not for execution but for joint content development at the front end: *"I find it even more important than parallel decision-making that you make the content parallel and together. Ensure consistency between the project proposal, the DVM assignment, and our PID (Project Initiation Document)"* (Transcript 5.2, speaker 4, 00:33:11).

The geographical mechanism reframes the unit of analysis from the individual project to the area: *"what matters most to me is the integrity at the location level. There are quite a lot of projects being executed by different project managers at the same location. But there must be a team that safeguards that integrity"* (Transcript 5.2, speaker 6, 00:33:51). This finding motivates a terminological proposal supported by multiple panellists: *"I would also like to call it 'integrated area teams'. Because it is mainly about the integrity at the location and what you have to do together there, and that people also remain there, so that over time they acquire knowledge about that location. Then you really go faster"* (Transcript 5.2, speaker 3, 00:34:26). This reformulation is not cosmetic but substantive: it shifts the intervention from project management to portfolio management at area level and has direct implications for the intervention design.

A further differentiating insight is introduced: two complementary team forms are already identifiable in current practice, *"You have location-oriented integration and function-oriented integration. Those are not the same things"* (Transcript 5.2, speaker 4, 00:35:11). This implies that integrated teams are not a single measure but a dual-track policy, each track addressing different bottlenecks. Almohsen & Ruwanpura (2016) and Locatelli et al. (2014) underpin integrated teams as an acceleration mechanism, but the panel adds two conditions the literature does not specify: team continuity across projects is effective than team integration within a single project, and market parties as structural team members, not as external contractors, strengthens the effect through shared language and mutual understanding.

5.2.6 AI #11 — Continuous dialogue with market parties

AI #11 scores lower on priority, but the panel explicitly distinguishes this from a rejection of the intervention. *"I see this almost as basic hygiene, something you must continuously do as a basis. But the acceleration does not lie there. If I have to make choices: I do think you need to have this basis in order to operate as a professional client towards the market"* (Transcript 5.2, speaker 3, 00:37:57). This framing fundamentally differs from the lower scores observed at other interventions that are rejected on grounds of applicability or feasibility.

The panel identifies two distinct types of market dialogue. Project-oriented dialogue focuses on upcoming projects, capacity planning, and predictable deal flow, directly addressing bottleneck 12 and subject to a critical condition introduced by one panellist: *"this only makes sense when you can formulate a predictable demand. Otherwise it works against you: if you keep sitting at the table and keep saying something different, it is better not to talk"* (Transcript 5.2, speaker 4, 00:36:41). Relationship-oriented dialogue serves a broader purpose of mutual understanding and shared language, independent of specific projects: *"you can also sit together just to get to know each other and learn each other's language"* (Transcript 5.2, speaker 7, 00:37:19). This second type has an indirect acceleration effect via reduced friction in concrete collaborations, and its value is confirmed by the finding under AI #10 that shared language between Defensie, RVB and the market is a precondition for effective integrated teams. The panel confirms internal demand articulation and planning predictability must be in order before market dialogue can render optimally. This introduces an implementation sequence that connects AI #11 sequentially to AI #13.

5.2.7 AI #12 – Shared public-private responsibility

AI #12 shows moderate recognisability and feasibility, with a consensus around medium priority. The intervention is limited discussed by the panel thanks to the harmony in the score. Multiple panellists reject the framing of *"shared responsibility"* (Transcript 5.2, speaker 4, 00:39:09) as analytically

imprecise: *"Shared responsibility is the wrong term. It is about risk allocation: who can influence and bear the risk"* (Transcript 5.2, speaker 4, 00:39:09). Applicability is correspondingly constrained: the lowest scores reflect not unfamiliarity with the concept but recognition that the institutional conditions that make shared responsibility meaningful are only partially present. Together with AI #11 and AI #13, AI #12 forms part of the broader market-strategic cluster, but its practical scope is limited to those domains where genuinely private parties carry project risk, rather than the interorganisational Defence-RVB relationship, which requires a different governance logic.

5.2.8 AI #13 — *Standardisation and collaboration via the procurement instrument*

AI #13 scores high on recognisability but moderate on priority, and the panel discussion is notably brief. After a single exchange, the chair concluded: *"no comments, no additions, the score is correct"* (Transcript 5.2, speaker 1, 00:40:35), making this one of the least contested interventions in the governance panel.

A finding concerns the governance positioning of AI #13. One panellist questions why a procurement instrument appears under governance, revealing that the connection between procurement design and governance structure is not intuitive in practice, it is experienced primarily as a procurement tool. Together with AI #11, AI #12 and AI #15, AI #13 forms a coherent market-strategic cluster: AI #11 lays the information base through continuous dialogue, AI #15 secures market continuity through contract duration, and AI #13 addresses the structure of commissioning itself.

5.2.9 AI #14 — *Balance between internal capacity and external expectations*

AI #14 presents the sharpest gap of all governance interventions: high recognisability and high priority. The collective message is: this is necessary and it will take a long time.

Three capacity dimensions are distinguished. The technical-executive dimension concerns the volume of project management, engineering and supervision required for the scaled-up portfolio *"I think we don't have some of those capabilities yet, and you would need to add them. Plus there is also a large group about whom the question is whether you can make the switch with them. That costs money, for recruitment and guidance, and also time"* (Transcript 5.2, speaker 3, 00:42:13). The administrative-communicative dimension concerns the competence to deliver difficult messages to municipalities, the environment and political stakeholders. The cultural-behavioural dimension, introduced through the finding that *"it also has to do with trust and daring to let go,"* (Transcript 5.2, speaker 4, 00:43:17). concerns the ability to release control and extend trust to chain partners and market, a behavioural deficit not resolved by recruitment or training alone, but requiring organisational culture change. *"if we choose an integrated contract or a PPS contract with system-based contract management, do I dare trust that, or do I build all kinds of control mechanisms again?"* (Transcript 5.2, speaker 4, 00:43:17). The implicit confirmation, *"what you see in practice"* (Transcript 5.2, speaker 4, 00:44:23). signals that this is a structural pattern, not an incident.

Andrews et al. (2011) establishes that public organisations only operate effectively when internal capacities and external expectations are in balance. The panel confirms this tension but adds a precision the literature does not provide: the capacity gap at Defence is not singular but threefold, and each dimension has its own time horizon and intervention logic. Furthermore, not all external expectations are adjustable: political scaling expectations, *"Defence must scale up"* (Transcript 5.2, speaker 4, 00:44:43). are determined externally and are not negotiable, which fundamentally limits what capacity building and expectation management can achieve. The connection drawn by one panellist between role

clarity (AI #7), chain integration (AI #10) and capacity efficiency (AI #14) is analytically strong: capacity shortage is partly an allocation problem solvable without additional recruitment, by eliminating duplication and role ambiguity. This makes AI #14 dependent on AI #7 and AI #10 as prerequisite interventions. On the vertical axis, AI #14 at governance level has a direct pendant at process level in AI #22 (rapid recruitment and retention of experienced project professionals) and AI #23 (organisational capability development and team learning), the governance intervention defines the strategic challenge, while the process interventions describe its operational execution. The combination of high priority and high feasibility implies that AI #14 must be started early in the implementation planning but will yield results only late.

5.2.10 AI #15 — Integrated contracts

AI #15 receives high/moderate scores across recognisability, applicability, and feasibility, with a consensus around medium priority. The intervention is limited discussed by the panel thanks to the harmony in the score. The most significant empirical condition introduced by the panel is a portfolio stability requirement: *"It only works when your real estate demand is stable over a long period, so for a bounded part of the portfolio"* (Scorecard, speaker 2) This directly constrains the applicability of integrated contracts in a Defence context characterised by reprioritisation and operational uncertainty. Long-term contracts lock in commitments and transfer lifecycle responsibility to market parties, but only deliver the intended benefits of quality, innovation, and lifecycle optimisation when the commissioning organisation can sustain a stable and predictable demand base. AI #15 functions most effectively in combination with AI #11, which creates the market relationship preconditions, and AI #13, which addresses the standardisation of commissioning itself, forming a coherent market-strategic sequence rather than a standalone measure.

5.2.11 AI #16 — Addressing fragmented decision-making across institutional boundaries

AI #16: the average score of mainly threes/ medium priority reflects partly a communication problem with the intervention description, *"I just didn't understand this one"*, (Transcript 5.2, speaker 3, 00:46:29) partly a nuanced institutional assessment, and partly the fact that the real acceleration potential lies at themes the current formulation does not fully capture.

One panellist interprets the intervention through the lens of external interfaces: *"if I look externally, I see for example the Directorate of Planning and the maritime operations department. Through their decisions, they can bring about or obstruct acceleration"* (Transcript 5.2, speaker 6, 00:47:29). This identifies the core mechanism: the real estate organisation is dependent on decision-makers outside its sphere of influence whose choices determine project speed. The finding that *"we would want to apply it, but the question is whether real estate is leading or whether in this case land operations is leading"* (Transcript 5.2, speaker 6, 00:48:59) explains why applicability scores at three, the intervention is desirable but the institutional authority to realise it rests partly elsewhere. At the same time, one panellist identifies significant opportunities specifically in area development and project development: *"there you deal with many actors and there we can extract speed."* (Transcript 5.2, speaker 3, 00:49:31). The qualification immediately follows: *"but if we talk about this, there are still coordination problems: if you talk in the environment about what this means, you should score feasibility lower."* (Transcript 5.2, speaker 3, 00:49:31). The integration argument is formulated most concisely by another participant: *"if you do the area plan and the projects separately, you have project interest vs. environmental interest. If you don't coordinate that well, you have exactly AI #16: a possible delay. If you integrate it, you can make better decisions"* (Transcript 5.2, speaker 3, 00:52:06).

5.2.12 Additional bottlenecks and interventions

The panel generates four empirical specifications/additions that extend beyond the original interventions. The first is the need for thematic coordination roles: new organisational functions that act as national thread-holders for systemic constraints such as nitrogen, grid congestion, archaeology and PFAS, currently absent but structurally necessary. *"I see too often that this is picked up at project level instead of centrally. And then you also need management information: how many projects are running into nitrogen issues?"* (Transcript 5.2, speaker 3, 00:57:42). The second is a governance system analysis: a diagnostic intervention that inventories whether all tasks the real estate modernisation and expansion requires are actually assigned, a meta-intervention that precedes all others. *"You need to do a system analysis of your governance, whether all the tasks you foresee to make your assignment possible are assigned"* (Transcript 5.2, speaker 4, 00:58:30). The third is a bundling function between project level and political level: a role that aggregates local project knowledge about systemic obstacles into a national argument for political escalation, addressing the gap between 800 project managers and the State Secretary. *"There is a gap between those loose projects, the local knowledge, and the State Secretary. Someone must connect that, bundle the information and build a solid argument, so that a State Secretary can also act"* (Transcript 5.2, speaker 4, 00:58:30). The fourth is the political escalation route as a closing mechanism: *"at some point you have to dare to make it political: 'now is the time, now I need to sit at the table with a State Secretary or Minister, because we can no longer get through this way'"* (Transcript 5.2, speaker 3, 00:59:26). This escalation requires, however, an informational foundation that currently does not exist, the precondition for effective political action is that the systemic problem is comprehensively mapped and argued, which is precisely the task of the bundling function.

Zelli (2013) establishes that decision-making authority dispersed across multiple weakly coordinated institutions could lead to coordination breakdowns, inconsistent policies, and implementation failures. The panel confirms this but concretises it at a specificity level the literature does not provide: the coordination problems at Defence are not generic but theme-specific and are identifiable boundaries where fragmentation is sharpest and acceleration potential is greatest.

5.2.13 Sub-conclusion from the governance level expert panel

Across the ten interventions and empirical additions/specifications, four overarching clusters structure the sub-conclusion. First, chain governance reveals a gap between prescribed and implemented governance (AI #7, AI #16). Second, integration and area-teams help overcome fragmented governance (AI #10, AI #6, AI #9, AI #8). Third, a market strategy centred on standardised procurement emerges (AI #13, AI #15, AI #12, AI #11). Fourth, capacity and escalation are identified as key themes (AI #14, AI #3). In addition, the analysis highlights a clear connection to institutional preconditions: effective governance depends on predictable deal flow, as does market strategy. Furthermore, within the governance level, conditional relationships between interventions and the empirical additions to the literature are identified.

The sub-conclusion, presented as a visual design based on the qualitative and quantitative expert panel data at the governance level, is illustrated in figure 5.2.13 below.

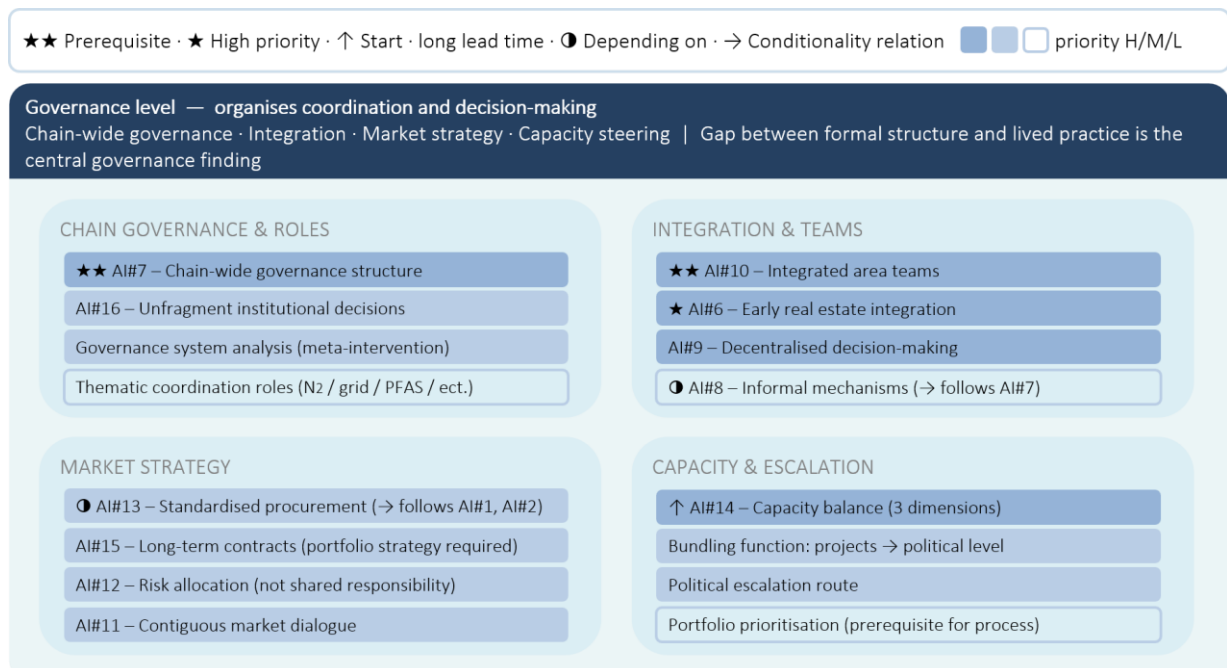


Figure 5.2.13: Visualisation of the governance level expert panel sub-conclusion (AI = Acceleration Intervention).

5.3 Acceleration interventions at process level

The process-level expert panel assessed seven acceleration interventions (AI #17–#23) and identified two specification/additional interventions emerging from practice. Prior to the session, participants (n=6) evaluated each intervention by rating recognisability, applicability, and feasibility on a 1–5 scale, and by assigning a priority level (low, medium, or high). The overall average scores were obtained by summing the ratings, dividing by the number of participants, and rounding to the nearest whole number. The quantitative result scores before the session for interventions #17–#23 are summarised in Table 5.3 below.

Acceleration Intervention	Recognizability 1 = low 5 = high	Applicability 1 = low 5 = high	Feasibility 1 = low 5 = high	Priority: High/Middel/Low
AI #17	4	5	4	H
AI #18	4	4	3	M
AI #19	3	5	4	H
AI #20	4	4	3	M
AI #21	4	4	4	M
AI #22	3	4	3	M
AI #23	4	4	4	H

Table 5.3: Acceleration intervention scores by the process level expert panel (AI = Acceleration Intervention).

5.3.1 AI #17 — Transparent and accessible project information

AI #17 is the most consensual intervention of the process-level panel, scoring high across all criteria without meaningful divergence. The analytical contribution lies not in explaining score differences but in a reframing of the intervention's purpose. One panellist questions the original formulation: "I would leave out the last part about preventing strategic delay and focus on transparent access to project information" (Transcript 5.3, speaker 2, 00:06:38). This is not a minor edit. The original framing implies a presumption of intentional delay that the panel considers unestablished. The reframing shifts the intervention from a control measure to a management instrument, confirmed by another panellist: "especially to enable good steering on projects and the portfolio, and to prevent duplication in the chain"

(Transcript 5.3, speaker 4, 00:07:45). Applicability is high, supported by existing initiatives. *"There are already a number of initiatives running: access to project information via FCC initiatives, a discussion with the resource unit, that has made a start"* (Transcript 5.3, speaker 2, 00:08:33). This makes AI #17 an intervention already in motion rather than one in design, which lowers the implementation threshold and elevates it as a near-term quick win.

5.3.2 AI #18 — Digital transformation: AI, AR, digital twins, BIM and FCC

AI #18 presents a equal, above average score, with medium priority. The panel's central finding is formulated concisely by one panellist: *"The applicability should be scored at 5, because it is technically all possible. It is an organisational question that causes the low score."* (Transcript 5.3, speaker 6, 00:10:29). Three distinct feasibility dimensions are identified, each requiring separate treatment. The first is technical infrastructure. *"We cannot just run these tools; we do not yet have a Defence cloud to work in. So the question is also: where does our data go?"* (Transcript 5.3, speaker 4, 00:11:32). The absence of a Defence cloud is a hard infrastructural prerequisite that precedes all other considerations. The second is information security policy. *"The defence security policy is still very limited in its application to real estate. If you want to work with these systems, where you bring more information together, you need to have the basic framework in order"* (Transcript 5.3, speaker 2, 00:12:48). The panel identifies a specific aggregation paradox: *"The more you bring together, the more the classification threshold comes into play. Even at building level it is not clear what should or should not be classified"* (Transcript 5.3, speaker 2, 00:12:48). The third dimension is organisational culture. *"We are really used to working in a certain way. If we start working like this, we have to adapt our working methods, and that will take time"* (Transcript 5.3, speaker 4, 00:11:32). A further conditioning finding connects AI #18 to governance-level prerequisites: *"If you want to apply digital tools, there must be an organisational objective that requires this. Do we want to be more in control and let RVB be more the executing organisation? That determines how we use BIM for portfolio management"* (Transcript 5.3, speaker 6, 00:16:56). This introduces an implementation sequence that runs across the three levels of Winch (2010): first, institutional role clarity (AI #7), then digital implementation strategy (AI #18), then capacity building for use (AI #23). Al-haimi (2025) and Wuni (2025) confirm digital transformation as a crucial lever for efficiency and scalability, with success dependent on organisational readiness, technological maturity and data quality. The panel adds a Defence-specific condition the literature does not specify: classification policy for real estate information is an institutional prerequisite without which the scalability of digital instruments remains structurally blocked.

5.3.3 AI #19 — Parallel information acquisition for front-end acceleration

AI #19 scores high across applicability and feasibility, but the panel discussion reveals that unanimous support for the principle conceals a fundamental debate about the conditions under which parallel acquisition is effective. Supported by the recognisability score of three. One panellist scores significantly lower and explains: *"This means burning a lot of hours and money on design and engineering while you are not yet certain of the permits. It can accelerate, but it makes the risk of things becoming much more expensive significantly greater"* (Transcript 5.3, speaker 2, 00:29:37). The capacity implication is equally direct: *"It means people deploy their capacity on something that later turns out not to be feasible, while the capacity could have been better deployed on a project with higher feasibility"* (Transcript 5.3, speaker 2, 00:30:31). The panel converges on a conditional position rather than a binary judgement. One panellist articulates it as a near-certainty for specific cases: *"I found it almost a no-brainer, provided the assumption is that you do this for projects where we estimate that permits will actually be granted"*

(Transcript 5.3, speaker 4, 00:31:31). Another formulates the synthesis concisely: *"No scatter shot, but more targeted deployment. And if you deploy more targeted, you gain speed"* (Transcript 5.3, speaker 3, 00:32:09). A second panellist introduces a critical qualification that the panel does not resolve but recognises as important: *"You must also ensure that the projects align with Defence's strategic goals. You could end up selecting many lower-priority projects while the urgent ones remain untouched because they score lower on feasibility"* (Transcript 5.3, speaker 2, 00:34:52). This introduces a dual selection criterion, permit certainty and strategic priority, that must both function as thresholds for deployment. Neither criterion alone is sufficient. Eriksson et al. (2019) identifies parallel information acquisition as a front-end acceleration mechanism; the panel adds two conditions the literature does not specify: the financial guarantee for capacity consumption must be institutionally arranged in advance, and project selection requires both feasibility and strategic priority as threshold criteria. The discussion about parallel acquisition flows directly into the closing discussion on portfolio oversight, selective deployment of AI #19 is only possible when portfolio prioritisation is in order, making the intervention dependent on overarching portfolio management as a governance prerequisite.

5.3.4 AI #20 — Platform-based approach for chain integration

AI #20 receives moderate scores on recognisability and priority but lower scores on feasibility, and the gap between them is the sharpest of the digital interventions. One panellist argues immediately: *"I disagree with the feasibility score. If you want to organise something that crosses a ministerial boundary, it becomes much more difficult. Different ministries have their own policies and responsibilities, including on security and data"* (Transcript 5.3, speaker 2, 00:20:53). The information ownership question is identified as structurally determinative: *"Who owns the information? If you have a platform where you bring information together, you get two owners with their own regulations"* (Transcript 5.3, speaker 2, 00:21:45). The feasibility landscape is, however, scope-dependent. One panellist draws a clear internal distinction: *"I read this intervention as collaboration between Defence and RVB, and I do see that becoming realisable. We are already working on it."* (Transcript 5.3, speaker 4, 00:24:55). This positions a shared RVB–Defence platform as a medium-term feasibility with existing momentum, while market integration is a structurally more complex second step: *"What I find considerably more complicated is if you also want to connect the market. I think that is a follow-up step. The RVB feels already much closer and safer than the market"* (Transcript 5.3, speaker 4, 00:24:55). Market integration specifically is conditioned on security certification: *"Only once we are able to truly require certification from companies would you be able to share information on a closed platform. Until then, it is not feasible"* (Transcript 5.3, speaker 9, 00:27:03). One panellist frames the recognisability dimension with analytical precision: *"The recognisability should be scored at 5, because it is proven that a single platform from which you draw data works well. The feasibility is nonetheless low, especially when collaboration is required"* (Transcript 5.3, speaker 6, 00:23:35). Cao et al. (2023) confirms the platform-based approach as the optimal mechanism for overcoming public sector constraints. The panel adds a Defence-specific condition: information security and ministerial ownership are institutional barriers requiring a phased implementation rather than an integral platform from the outset. This structures AI #20 as a three-stage implementation trajectory: first a shared RVB–Defence environment, then certified one-directional market connectivity, then full two-way integration contingent on a fundamentally revised security architecture. AI #20 functions as the overarching architectural concept within the digital transformation cluster: AI #17 defines the information content, AI #18 provides the instruments, and AI #20 provides the platform structure that allows both to function optimally.

5.3.5 AI #21 — Mandated and dedicated project leadership

AI #21 scores high on three criteria but middle on priority. The explanation lies in perspective-dependence: from a portfolio management perspective, other interventions appear more urgent; from a project execution perspective, dedicated leadership is critical. One panellist captures the ideal-type tension: *"In the ideal world you have someone familiar with all phases. But different profiles and competencies are needed, some prefer the creative process over the execution process"* (Transcript 5.3, speaker 6, 00:37:25). This competency diversity across project phases is the primary feasibility boundary. A second panellist reframes the intervention in a way that shifts its analytical scope: *"I approached it more from the idea of a project manager who continuously pushes their own project forward. But you also need a degree of escalation: at some point you hand the baton to someone better positioned to deal with specific bottlenecks"* (Transcript 5.3, speaker 2, 00:38:01). This introduces an important distinction, project continuity and escalation capacity are complementary mechanisms, not alternatives. A dedicated project leader without an escalation structure wastes effort on problems that require higher-level resolution.

The panel's most operationally specific contribution concerns scope discipline. One panellist articulates a mutual obligation: *"I would focus on scope stability, don't keep applying scope changes, because those are the elements that are most delaying. So make sure you are scope-stable in your commissioning. That will help the project leader enormously"* (Transcript 5.3, speaker 3, 00:39:39). From the RVB side, this is confirmed and extended: *"Every question we have to ask back, every approval we have to obtain from DVM, simply costs time. Perhaps we should try to arrange that we send a notification towards Defence, but in principle continue, without waiting for authorisation"* (Transcript 5.3, speaker 9, 00:41:28). This reveals a mandate gap that conditions the feasibility of dedicated project leadership. One panellist is direct: *"As DVM we would also need a mandate to organise it that way, and we currently do not have that"* (Transcript 5.3, speaker 9, 00:41:28). Barnes & Wearne (1993) argue that empowered and dedicated project leadership is a critical enabler of acceleration. The panel confirms this but adds two conditions the literature does not specify: scope stability from the commissioning party is a mutual obligation without which the project leader cannot sustain their continuity role, and mandate delegation for regulation-driven scope changes is a governance prerequisite for effective dedicated leadership. This makes AI #21 the process-level operationalisation of the decentralised decision-making discussed under AI #9.

5.3.6 AI #22 — Rapid recruitment and retention of experienced professionals

AI #22 scores middle on priority but only moderate on feasibility, explained by four mutually reinforcing constraints. The first is institutional uncertainty about work expectations. The RVB perspective is articulated clearly: *"What would help is that Defence explicitly indicates at a high level: 'this work is actually coming your way.' Then the RVB can prepare, the expansion of the formation can take place"* (Transcript 5.3, speaker 9, 00:47:30). Without that signal, the organisational justification for formation expansion is absent: *"The last thing we want is to hire people we then have to bench."* (Transcript 5.3, speaker 9, 00:52:55). The panel identifies this as a circular dependency: RVB waits for Defence's hard work expectation to recruit; Defence cannot give hard expectations because portfolio prioritisation and financing remain uncertain. This circular institutional dependency is the most structurally relevant finding for the integrated advice, connecting the process intervention directly to governance-level conditions created by AI #6, AI #9 and AI #14. The second constraint is the time horizon of capacity building: *"If Defence today decides to place one billion € in work with RVB, by the time information is*

elaborated, consent obtained, recruitment completed, new people onboarded, and projects started, you are already three-plus years away from the first realisation" (Transcript 5.3, speaker 9, 00:49:05). The third is labour market scarcity: *"With specialist knowledge in electrical engineering or mechanical engineering, scarcity is considerably greater than a few years ago"* The fourth is security screening duration: *"We also have to deal with screening procedures of several months, or more. So we have exactly the same problem."* (Transcript 5.3, speaker 3, 00:50:44). These four constraints are not individually solvable on short timelines; together they make AI #22 an intervention requiring early initiation with late results. A fifth finding connects AI #22 to standardisation: *"You should standardise how you run projects, so that knowledge and working methods are also easily transferable"* (Transcript 5.3, speaker 2, 00:56:33). This is confirmed and extended. Standardisation thus serves a dual function, a market-strategic instrument under AI #13 and a knowledge transfer facilitator under AI #22. Assaf & Al-Hejji (2006) and Barnes & Wearne (1993) establish rapid recruitment and retention as a conditional enabler of effective project delivery. The panel adds four contextual conditions the literature does not specify: the institutional work expectation as the formal basis for formation expansion, labour market scarcity for specialists, security screening duration as a Defence-specific delay, and standardisation as a knowledge resilience strategy when turnover is inevitable.

5.3.7 AI #23 — Training, learning and organisational development

AI #23 scores higher with a high priority, the panel discussion reveals that this reflects a framing problem rather than a broad assessment of relevance. One panellist scores lower explicitly: *"Not because I don't find it important, but because I see less added value compared to the other interventions. Whether this will really make a difference for acceleration, I doubt it"* (Transcript 5.3, speaker 4, 01:00:39). This positions AI #23 as a hygiene factor: organisations cannot be against it, but as a generic intervention it does not differentiate. A second panellist contests this framing directly: *"I partly agree, it is something you should always do as a hygiene factor. But the distinction I see is: the knowledge of the Environment and Planning Act, area-based processes, how you take something from a project proposal to a functional brief, that knowledge needs to grow substantially just to achieve speed"* (Transcript 5.3, speaker 6, 01:01:31). This shifts the intervention from generic learning to change-driven knowledge development, a fundamentally different proposition. Concrete gaps are identified: the Environment and Planning Act, area-based processes, functional programming, performance-based maintenance contracts, and system-based contract management. For the last: *"If you add that knowledge, the questions about how such a contract works will reduce, and you could apply the performance contract instrument more effectively"* (Transcript 5.3, speaker 6, 01:01:31). Two further panellists confirm higher scores: *"I also scored it considerably higher, and placed the priority higher as well"* (Transcript 5.3, speaker 2, 01:03:18). The low average score is therefore driven by the generic frame of the original intervention description rather than a broadly shared assessment of low urgency. Denicol et al. (2020) and Klakegg et al. (2016) establish that developing organisational capabilities and team learning at individual, team and organisational level is conditional for sustained acceleration. The panel confirms this but adds a precision the literature does not provide: the relevant knowledge development is not generic but change-driven, which new assignment requires which new competencies currently absent? This makes AI #23 not a training programme but a targeted capability gap analysis followed by structured knowledge investment, with process knowledge and contract knowledge as the two most clearly identifiable current gaps.

5.3.8 Additional interventions and cross-cutting patterns

Two additional interventions emerge from the open discussion. The first is a renewed, KPI-driven Strategic Real Estate Plan. One panellist argues: *"The current Strategic Real Estate Plan is fairly generic. I would advocate thinking much more carefully about how we organise portfolio management and with which KPIs we will steer it, so that the information flow we discussed is also better organised. That is an essential intervention at institutional level right now. It aligns all the other things we have just discussed"* (Transcript 5.3, speaker 6, 01:04:46). This functions as a meta-intervention: a clear oversight framework for the portfolio is the institutional prerequisite for virtually all other process interventions. Without it, transparent project information (AI #17), selective parallel acquisition (AI #19), and portfolio prioritisation remain suboptimal. The second is portfolio rationalisation. One panellist advocates explicitly: *"You should also make choices and withdraw certain projects, 'these projects are less aligned with the Defence vision, we simply do not execute them for now.' Instead of letting everything continue running."* The clarification follows: *"You mean strengthening portfolio steering rather than continuing to stack projects?"* (Transcript 5.3, speaker 2, 01:05:29). *"Yes, exactly"* (Transcript 5.3, speaker 3, 01:06:25). Portfolio rationalisation concentrates scarce capacity on strategically prioritised and feasible projects by consciously stopping less urgent ones, the operational counterpart of the dual selection criterion identified under AI #19.

5.3.9 Sub-conclusion from the process level expert panel

Across the seven interventions and empirical additions/specifications, three overarching clusters structure the sub-conclusion. First, portfolio and information, particularly Defence and the real estate organisation, act as an enabling condition within which acceleration occurs (AI #17, AI#19). Second, digital transformation to provide effective information exchange (AI #20, AI #18). Third, scaling acceleration capacity (AI #21, AI #22, AI #23). In addition, the analysis highlights a clear link to governance and institutional conditions: effective processes require enabling institution conditions and an efficient governance structure.

The sub-conclusion drawn from the qualitative and quantitative expert panel data at process level is illustrated in Figure 5.3.9.

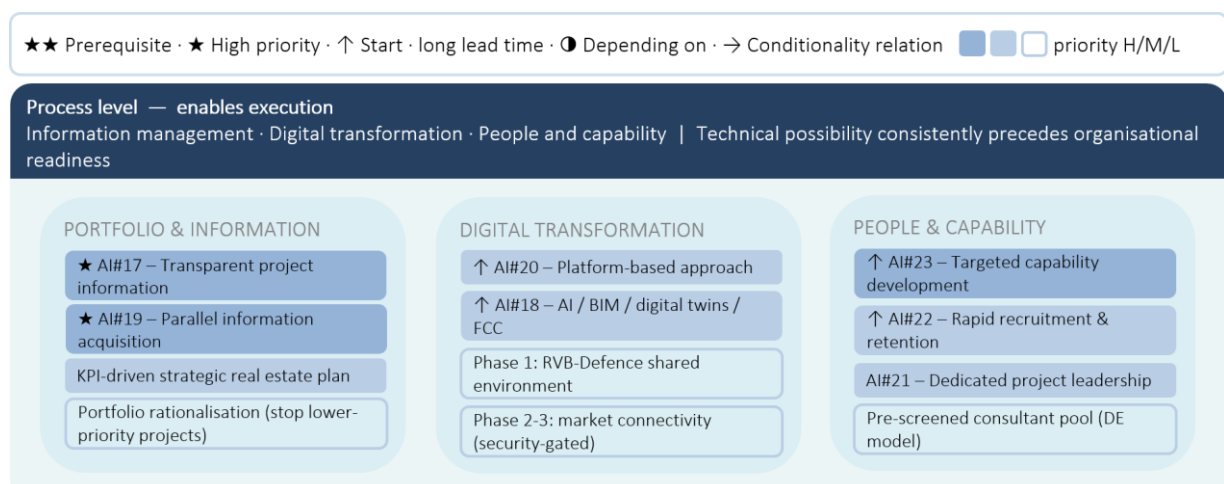


Figure 5.3.9: Visualisation of the process level expert panel sub-conclusion (AI = Acceleration Intervention).

5.4 Synergy (answer to RQ4)

RQ4 asks which of the interventions identified in chapter 3 (answer to RQ3) are most relevant for accelerating the modernisation and expansion of the Defence real estate portfolio. The empirical expert panel analysis does not yield a flat ranking of independent measures. Instead, it reveals a structured hierarchy in which certain interventions function as preconditions for others to be effective, and in which relevance is conditioned by implementation sequence rather than intrinsic merit alone. The outcome of the analysis is a score for each intervention (quantitative data) and a clustering of coherent and interrelated interventions into clusters (qualitative data).

Table 5.4 below summarises the key findings from the empirical expert panel sessions as specification in addition to the theoretical lens from chapters 1, 2 and 3. The most relevant interventions for acceleration are not the most technically sophisticated but the ones that unblock and overcome the bottlenecks that block modernisation and expansion of the whole portfolio and are essential for the other interventions to be effective: AI #1 and AI #2 at institutional level, AI #7 and AI #10 at governance level, and AI #17 and AI #22 at process level.

The highest-priority interventions are those that resolve systemic constraints blocking the entire portfolio modernisation and expansion. At institutional level, AI #1 and AI #2 are identified as the most urgent interventions because nitrogen and grid congestion are bottlenecks that stop projects before governance or process improvements can take significant effect. Without progress here, no downstream intervention yields its potential. AI #4 and AI #5 are necessary complements: the political window is in favour but might be temporary, and the organisation must actively use it rather than wait for it.

At governance level, AI #7 and AI #10 are the foundational interventions. AI #7, a chain-wide governance structure with clearly defined roles, is explicitly identified as a prerequisite for AI #8, AI #9 and the capacity gains anticipated under AI #14 to be effective. AI #10, integrated area teams, is the only intervention to receive unanimous high scores and directly resolves the linear handover losses and context fragmentation that generate structural delay across the project portfolio. AI #14 is at the top of the priority list, despite its low feasibility score, because the capacity gap it addresses is not incidental but crucial: without sufficient internal capacity, no accelerated programme can be sustained. Its implementation must, in fact, begin early, as the results will only become apparent at a later stage.

At process level, AI #17 and AI #19 are the most immediately deployable interventions with the highest short-term acceleration potential according to the panel, provided the governance conditions for portfolio prioritisation are in place. AI #22 and AI #23 carry lower strategic priority but require early initiation given their long lead times to yield significant effect.

Three cross-cutting findings qualify this ranking. First, a set of conditionality relations runs through all three levels: AI #7 must precede AI #8; AI #11 must precede AI #13; AI #19 and AI #21 are effective when AI #6 and AI #9 have created stable portfolio prioritisation and decentralised mandates. Deploying high-priority interventions without their prerequisites produces limited effect. Second, a recurring gap between formal structures and practice, identified independently at AI #6, AI #7, AI #8 and AI #14, means that several interventions are not absent from the organisation but absent in behaviour. For these, implementation is not design but enforcement and cultural change. Third, the two additional interventions identified at process level, a KPI-driven Strategic Real Estate Plan and explicit portfolio rationalisation, function as meta-interventions that determine whether the technical process improvements can be steered and concentrated effectively.

CHAPTER 1 →	CHAPTER 2 →	CHAPTER 3 →	CHAPTER 5									
BN Nr.	Assessment Metrics	Level	AI Nr.	R	A	F	Priority H/M/L	Cluster	Explanatory notes	Source		
#3, #13	Support operational readiness & function within the broader defence organisation structure (Van den Eijkel, 2025)	Institutional	#1	5	5	4	H	I	AI #1 and AI #2 are most urgent, as nitrogen and grid congestion block projects before governance or process improvements can take effect	Transcript 5.1		
#13			#2	5	4	3	H					
#13			#3	2	4	5	L	II			Political involvement is seen as supportive rather than obstructive	
#13			#4	5	4	3	M	III			AI #4 and AI #5 are necessary complements: the political window is in favour but temporary, and the organisation must use it rather than wait	
#13			#5	4	3	3	M					
#2, #9		Governance	IV	#7	3	3	3	H	AI #7, a chain-wide governance structure with clearly assigned roles, is explicitly identified as a prerequisite for AI #8, AI #9 and the capacity gains anticipated under AI #14	Transcript 5.2		
#5				#16	3	4	3	M				
#4				#10	4	4	4	H				
#4, #6			V	#6	4	3	4	H	AI #10, integrated area teams, is the only intervention to receive unanimous high scores and directly resolves the handover losses and context fragmentation that generate structural delay across the portfolio			
#9				#8	4	3	5	L				
#5, #7				#9	4	4	4	H				
#12				#11	3	3	3	M			VI	AI #11 must precede AI #13; AI #19 and AI #21 are effective when AI #6 and AI #9 have created stable portfolio prioritisation and decentralised mandates.
#4, #9				#13	5	4	4	M				
#9			#12	3	2	3	M					
#9			#15	4	3	4	M	VII	AI #14 is at the top of the priority list, despite its low feasibility score, because the capacity gap it addresses is not incidental but crucial			
#4			#14	4	4	4	H					
#1, #3			VIII	#17	4	5	4	H	AI #17 and AI #19 are the most immediately deployable interventions with the highest short-term acceleration potential, provided the governance conditions for portfolio prioritisation are in place.		Transcript 5.3	
#9				#19	3	5	4	H				
#11				IX	#18	4	4	3				M
#1			#20		4	4	3	M				
#10		X	#22	3	4	3	M	AI #22 and AI #23 carry lower strategic priority but require early initiation given their long lead times.				
#10			#21	4	4	4	M					
#1, #10			#23	4	4	4	H					

Table 5.4: Overview of the findings and synergy of the expert panel sessions

(BN = bottleneck; AI = Acceleration intervention; R = Recognisability; A = Applicability; F = Feasibility) – (1 = low 5 = high).

6. COMPARATIVE INTERNATIONAL ANALYSIS

This comparative international analysis examines whether foreign defence organisations face similar threat level changes and acceleration bottlenecks. It also explores how these organisations are modernising and expanding their real estate portfolios, and which transferable learning points (LP) the Dutch MoD can apply to accelerate its own development. The analysis builds further on the theoretical framework from the chapters 1, 2, 3 and 5 and compares principles at the institutional, governance and process level. The structure is as follows: 6.1 discusses selection and characteristics of six NATO countries with varying scales, governance models and policy frameworks; 6.2 is an in depth bottleneck and acceleration intervention analysis, 6.3 concludes with a synthesis and answers RQ5 with bringing together the key findings and learning points for the Dutch context.

6.1 International defence real estate modernisation analysis

In general, international NATO defence organisations face similar real estate challenges to those in the Netherlands, such as outdated infrastructure, capacity constraints and the need for greater speed to cope with Defence growth. However, the challenges are not uniform; they vary according to the context, scale and historical policy development. To generate transferable insights through the lens from chapter 1, 2, 3 and 5, six NATO member states have been selected on the basis of three main selection criteria: (i) a comparable increased threat level context and increased NATO obligations; (ii) the existence of a professional defence real estate organisation; and (iii) diversity in governance models and implementation approaches. The selected countries (Norway, United Kingdom, Germany, Finland, Sweden and Denmark) collectively provide insight for this empirical analysis. Table 6.1 provides an overview of the selected countries and their main characteristics.

Country	Real estate agency	Position within the wider organisation	Primary acceleration strategy	Scale	Sources
Norway (NO)	Forsvarsbygg (FB)	Independent agency under the MoD	Integrated owner-operator; PRINSIX model; regional framework contracts; Outlook 2026–2033	~6 million m ² ; 1,300 FTE; €1,45 billion in 2025	(Forsvarsbygg, 2025)
United Kingdom (UK)	Defence Infrastructure Organisation (DIO)	MoD; Implementation Branch	Segmented procurement (three lanes); One Defence; Procurement Act 2023	~115,000 buildings; 4.700 FTE; €6,0 billion in 2023-2024	(UK Ministry of Defence, 2025c)
Germany (DE)	BMVg + BImA + Bundeswehr	Federal/ State real estate management; Bundeswehr user	Special reserve of €100 billion; constitutional amendment to the debt brake; simplification of the BwPBBG in 2026; EU-level defence exceptions	~38 miljoen m ² ; 7.000–8.000 FTE €83 billion defence budget for 2026; +32% compared to 2025	Least clear because several bodies give different figures.
Finland (FI)	Defence Properties Finland (DPF) / Senate Group	Subsidiary Senate Properties (MinFin)	Integrated manager; comprehensive security narrative; Nordic collaboration	~2 miljoen m ² ; 700 FTE (DPF); €650 million in 2024	(Senate Properties, 2024a).
Sweden (SE)	Fortifikationsverket (FortV)	MinFin Independent Agency; landlord	Internal rental scheme; NORDEFECO partnership	~8,000 buildings; 3.3 million m ² ; >1.500 FTE; €870 million in 2024	Transcript 6.2.5
Denmark (DK)	Forsvarsministeriets Ejendomsstyrelse (FES)	Level I authority reporting directly to the MoD	Acceleration Fund of DKK 50 billion; Article 346 TFEU; portfolio prioritisation based on operational urgency	>3% of GDP; 700 rental properties	(Danish Ministry of Defence, 2024a).

Table 6.1: Overview of selected countries and key characteristics of defence real estate organisations.

6.2 In-depth international bottleneck and acceleration strategy analysis

The international analysis observes how other Defence organisations have structured their real estate initiatives. The key methods are described (*sub-conclusions from the analysis*), followed by a reflection

on how international practices could contribute to guiding lessons (*learning points*); the effects remain context-dependent. The threat level/ bottleneck comparison and the intervention analysis is structured according to Winch's (2010) Tectonic Approach: institutional, governance, and process level.

6.2.1 Norway

Institutional findings

Forsvarsbygg (FB) is an independent government agency reporting to the MoD. It is not part of the military command structure (Forsvarsbygg, 2024). Ownership of real estate rests with the MoD; FB is responsible for the development, construction, operation and disposal of real estate for the defence sector. An internal rental system, endorsed by the Norwegian Parliament, makes costs transparent and places the economic incentive on the armed forces, as tenants, to make efficient use of real estate. Costs that were previously socialised across the defence budget are now charged to the end-user, thereby highlighting inefficient use and making the voluntary disposal of surplus real estate economically rational (Evers et al., 2002) In its 2021 report (Forsvarsdepartementet, 2021), the Norwegian Defence Commission established the urgency of accelerated modernisation as a national security priority, thereby legally strengthening the institutional mandate for FB.

Learning point (institutional level)

Enshrining the rental system and the urgency of modernisation in law via a parliamentary resolution eliminates the need for project-specific political approval and provides the Ministry with the institutional authority to steer multi-year programmes without the need for annual re-confirmation (LP #7, #8) (Flyvbjerg, 2014).

Governance findings

FB uses the PRINSIX model, the Norwegian government-wide standard model, which establishes uniform phases, decision points, roles and responsibilities for all investment projects (Forsvarsdepartementet, 2023). By making PRINSIX mandatory for all defence real estate projects, the following acceleration effects are achieved: (1) less redesign of project structures; (2) accelerated scaling up of personnel because roles and competence profiles are standardised; and (3) accelerated assessment by the client and supervisor due to the recognisability of the documentation structure. Essential and exceptional in a European context is the application of multiple framework agreements per geographical sub-region: for each area, suppliers are contracted, after which procurement can take place directly via ranking or mini-tendering, without a repeated tendering procedure (Norconsult, 2024). A Long-Term Procurement Plan provides market participants with an eight-year investment horizon, which is essential for building up specialist personnel reserves and justifying capital investments in specialist construction equipment (Regjeringen, 2026a; Regjeringen, 2026b)

Learning point (Governance level)

(LP #14) A standardised project model eliminates repeated discussions and accelerates project start-up. (LP #24) Multiple regional framework contracts eliminate the repeated tendering cycle (Eriksson et al., 2019). Direct procurement from pre-qualified suppliers reduces lead times per tender. (LP #11, #23, #25, #26) The FAF plan creates the 'continuous flow of deals' that market players need to invest in specialist labour and equipment (Rijksvastgoedbedrijf, 2025).

Process findings

FB employs parallel processing as a systematic mechanism: on the construction project at Jan Mayen, the contractor already under contract simultaneously built the civil cable landing facility for Space Norway, utilising supply chain capacity that was already in place on site (Space Norway, 2025). FB has made structural investments in capacity building by expanding its workforce in parallel with the budget increase. Portfolio optimisation through voluntary divestment has generated capital which is being reinvested in the core portfolio: a self-financing mechanism that reduces external financing pressure. Collaboration through Nordic Defence Cooperation (NORDEFECO) provides additional technical knowledge exchange at the process level (Norconsult, 2024).

Learning point (process level)

(LP #35) Parallel processing via contracted supply chain capacity accelerates project start-up; (LP #30) expansion of the implementing organisation for higher volumes (Denicol et al., 2020); (3) portfolio optimisation (divestment → reinvestment) generates internal capital for acceleration.

6.2.2 United Kingdom

Institutional findings

In 2025, the UK established a fundamentally new legal framework through the Strategic Defence Review (SDR) and the Defence Industrial Strategy (DIS25) to accelerate defence procurement (UK Ministry of Defence, 2025b). The Procurement Act 2023 introduces the Competitive Flexibility Procedure, which enables iterative contracting and early consultation with the market without the need for a fully detailed requirements (UK Ministry of Defence, 2026). This means that the traditional waterfall sequence, first fully specifying, then tendering, is broken in favour of an iterative approach in which specifications and contracts are developed in parallel. Defence is thus legally recognised as a national economic and security strategic priority.

Learning point (institutional level)

(LP #2) The Procurement Act 2023 provides a legal basis for flexible procedures. (LP #2) The Competitive Flexibility Procedure allows for targeted exceptions to standard sequential tendering logic. (LP #8) The SDR/DIS25 enshrines defence urgency as a national priority, which provides political legitimacy for acceleration.

Governance findings

A governance innovation is the segmented procurement model with three lanes (Britishprogress, 2023). (1) Major platforms (buildings, installations): contracting within 24 months via long-term partnerships with a select number of preferred suppliers who are involved at an early stage of the development process; (2) Modular upgrades (renovation, equipment replacement): contracting within 12 months via standardised design and execution modules that can be implemented on a plug-and-play basis; (3) Rapid commercial deployment (software, sensors): contracting within 3 months via challenge procedures with start-ups and scale-ups. This model compresses traditional lead times for critical capabilities (Britishprogress, 2023). The 'One Defence' principle breaks down institutional barriers between services, delivery organisations and suppliers through an integrated collaborative structure (UK Ministry of Defence, 2025b). The National Armaments Director (NAD) consolidates all investment, upgrade and infrastructure decisions into a single accountable role, thereby addressing the fragmented decision-

making that has characterised the British armed forces. Industrial cooperation obligations are used to ensure national capacity building: foreign suppliers above a certain contract threshold are required to invest in the UK industrial base (UK Ministry of Defence, 2025b).

Learning point (governance level)

(LP #2) The segmented procurement model adapts the rigour of the tendering process to the complexity of the project: simpler procedures apply to standard real estate than to complex platforms, thereby eliminating unnecessary bureaucracy in simpler projects. (LP #21) The NAD structure prevents decision-making fragmentation by consolidating all investment decisions. (LP #16) Early contractor involvement (ECI) via the preferred supplier arrangement integrates market expertise early in the project design and prevents feasibility issues from arising later on.

Process findings

DIO is focusing on digital transformation through the optimisation of the Infrastructure Management System (IMS), which automates data exchange with industry partners and reduces the information asymmetry between client and contractor (UK Ministry of Defence, 2021). The Defence Housing Strategy (£9 billion over ten years) illustrates the power of standardised renovation typologies: by cataloguing housing types and prescribing a standard method of execution for each type, the DIO was able to achieve a commitment of 1,000 housing renovations by the end of 2025 through work packages launched in parallel (UK Ministry of Defence, 2025c). DIO is investing heavily in dedicated programme management capacity: specialist project leaders are appointed for complex mega-projects that receive full managerial attention (Barnes & Wearne, 1993).

Learning point (process level)

(LP #28) Automated data exchange reduces information gaps. Digital twin and IMS integration create a platform-based approach that transcends public sector constraints. (LP #27) Parallel processing of engineering and permitting saves time in the project preparation phase. (LP #33) Dedicated, empowered project leaders for megaprojects are a critical success factor.

6.2.3 Germany

Institutional findings

Germany's defence real estate organisation is the most structurally layered of all six countries analysed. The Bundesministerium der Verteidigung (BMVg) functions as the normative and policy-setting authority, while procurement, tendering and contract management are handled by a dedicated sub-organisation: *"We communicate with Bundesanstalt für Immobilienaufgaben (BImA) through our sub-organised structure. It's called Bundesamt für Infrastruktur, Umweltschutz und Dienstleistungen der Bundeswehr (BAIUDBw), a very big department, roughly 5,000 people. They do tendering, communication, contracting, and management, all of these as subtasks for us."* (Transcript 6.2.3, 00:02:57). Real estate ownership and facility management are vested in a third, entirely separate institution: *"We don't own the real estate. The owner is BImA. BImA is like a holding company."* (Transcript 6.2.3, 00:02:57). This three-tier structure, BMVg as norm-setter, BAIUDBw as executing intermediary, and BImA as owner, generates structural coordination costs at each institutional boundary, and contrasts sharply with the vertically integrated models observed in Scandinavian countries.

In 2022, Germany implemented a paradigm shift known as the *Zeitenwende*. A €100 billion special fund was enshrined in the constitution, exempting it from the standard debt brake. In 2025, this was made structural: defence expenditure exceeding 1% of GDP is permanently exempt from the debt brake, supplemented by a €500 billion infrastructure fund. The 2026 Bundeswehr budget amounts to €83 billion, an increase of 32% compared to 2025 (Bundesbank, 2025). This creates unprecedented long-term institutional budgetary certainty. However, financial resources alone do not resolve the delivery challenge: *"The money does not help alone. You have to get things built. And if you have no personnel and other things aren't in place, it does not help."* (Transcript 6.2.3, 00:18:40). This formulation is the sharpest articulation of execution capacity as a binding constraint in the entire research sample.

The regulatory environment is shaped primarily by EU-derived legislation, particularly in the domain of nature and environmental protection: *"There are very different laws which sometimes, not always, hamper military infrastructure development. And it's not always German law. Most of them derive from EU directives."* (Transcript 6.2.3, 00:13:45). Germany has pursued EU-level lobbying as an institutional strategy, but with limited short-term results: *"We try to push things a bit back at the EU, but the content is very well established and on the health side it is not easy, it is too complex to address quickly."* (Transcript 6.2.3, 00:13:45). Partial fast-track procedures exist for certain defence projects, but their application is fragmentary: *"We have exemptions from certain military laws. We have a 'fast-track' procedure, partly."* (Transcript 6.2.3, 00:20:49). Unlike other countries, Germany has not systematically deployed Article 346 TFEU as a procurement instrument: *"No, we didn't do that."* (Transcript 6.2.3, 00:50:33). Parliamentary approval is required for projects exceeding €25 million, though the current geopolitical context has created a temporary political tailwind: *"At the moment, because of the general security critical situation, our parliament surprisingly is forward-leaning in giving us approval."* (Transcript 6.2.3, 00:16:20). This contingent acceleration effect mirrors the pattern observed in other countries: geopolitical urgency creates a time-limited institutional window that should be used to drive structural reform before it closes.

Learning points (institutional level)

(LP #12) A three-tier governance structure with separate norm-setting, execution and ownership functions generates structural coordination costs; consolidating accountability across these layers is a precondition for acceleration. (LP #7) Constitutional entrenchment of multi-year defence funding eliminates financial uncertainty as a delaying factor and enables long-term market commitments, but does not substitute for execution capacity. (LP #2, #3) EU-level lobbying for defence-specific exemptions is a necessary but slow instrument; national fast-track procedures should not wait for EU-level resolution. (LP #5) Partial, ad hoc fast-track procedures produce limited effect without a systematic legislative foundation. (LP #9) Parliamentary approval thresholds create governance friction; the current political readiness to approve is a conjunctural advantage, not a structural solution.

Governance findings

The demand articulation process follows a sequential bottom-up escalation chain: *"When we have some unit, the commander says: 'We have a requirement.' This commander writes a paper through a very familiar procedure... it is sent up to the management level... and then slowly the request goes to the BAIUDBw department... and then it goes to the Ministry of Defence."* (Transcript 6.2.3, 00:26:53). This round-trip decision cycle, a complete traversal of the hierarchy before any response reaches the originating unit, generates both delay and information loss at each transfer point. The interviewee

identifies communication acceleration as the primary process improvement objective: *"The prime goal of our process improvement here is the communication, bottom-up to the top."* (Transcript 6.2.3, 01:14:07).

A further governance bottleneck is the separation between the building organisation and the owning organisation. The entity that designs and executes construction has no ownership stake in the outcome: *"Although we are the ones who have the buildings built, we don't own them."* (Transcript 6.2.3, 00:35:58). This creates an incentive misalignment: the building organisation bears no accountability for the long-term consequences of its design decisions for the organisation that will manage the asset.

Against this backdrop of complexity, Germany has introduced the most concrete and empirically validated governance intervention in the research sample: the integrated on-site project office. *"We have dedicated construction offices on the site, on the spot there where the projects are, where all institutions which are involved with the execution and management of these large-scale projects have one group representative on the spot. The funding side, the engineering, the facility management, and a product/project owner. And maybe also the future operator BlmA. They can talk to each other on-site. They can do this immediately. This enables them to make very quick decisions on daily issues, without having to go through the full hierarchy. We have been very successful with this approach."* (Transcript 6.2.3, 01:31:17). This mechanism directly addresses both the round-trip decision problem and the ownership-execution separation by co-locating key actors at the point of production. The ambition to replicate this model across other projects confirms its transferability as a governance intervention to accelerate.

Recurrent scope changes by operational units constitute a significant process bottleneck: *"Sometimes there were challenges when users change the requirements. The commander says: 'Oh no, I need something different from what was in the original plan.'"* (Transcript 6.2.3, 01:32:53). The underlying cause is structural: force development and organisational change continuously produce new information that renders existing real estate plans obsolete before execution is complete. As a design-level response, Germany applies a deliberate capacity reserve strategy: *"Don't specify them too tight. Just plan a little margin. Try a little bit bigger, not to run into risk."* (Transcript 6.2.3, 01:34:29). By dimensioning buildings slightly beyond immediate demand, future reinvestment triggered by scope changes is pre-empted at modest upfront cost.

On the contracting side, Germany combines several approaches: framework contracts bundling small projects into larger packages, EPC contracts in which a single party is responsible for engineering, procurement, construction and maintenance, and a standardised building type catalogue: *"We have about 30 or 40 standard building types. Each one is described in a script, a detailed specification document, describing the whole building specification in detail. And then everyone on state level can put a copy of this paper into the specification for contractors. It's almost a standing specification."* (Transcript 6.2.3, 01:08:12). This catalogue, the most extensive in the research sample, is operationally deployed as a direct copy-paste contracting basis. Serial construction is additionally applied to renovation: *"We need to copy a certain model. Get standardised card elements and put them on the road and on the roof of the building."* (Transcript 6.2.3, 01:07:05). Market engagement is framed explicitly as a dialogue on capacity development rather than merely transactional procurement: *"The market tries to upgrade its capacity, but we always ask them: 'What are your KPIs? Can you do more?'"* (Transcript 6.2.3, 01:03:30). Standardisation and construction automation are simultaneously promoted through the interview dialogue.

Learning points (governance level)

(LP #15) An integrated on-site project office, combining representatives of all institutions at the construction location, eliminates the round-trip decision cycle for daily operational issues and is empirically validated as highly effective; it constitutes the most directly transferable governance intervention identified in the research sample. (LP #12) Separation of construction and ownership responsibility creates incentive misalignment; governance design should embed ownership accountability throughout the project lifecycle rather than only at handover. (LP #23) A script-based building type catalogue of 30–40 standardised types, deployable as direct contract specifications, compresses design, permitting and tendering timelines simultaneously. (LP #18, #34) Capacity reservation as a strategy beyond immediate demand, is a low-cost intervention that reduces reinvestment losses from scope changes over the asset lifecycle. (LP #18) Bundling small contracts into larger framework packages reduces tendering overhead and stabilises market expectations, with contract durations of up to five years.

Process findings

The capacity constraint is the defining process characteristic of the German context. The interviewee's assessment is unambiguous: *"Sufficient internal capacity? No, we don't have it. We need 10 times more personnel. For all of us, we are overworked."* (Transcript 6.2.3, 00:47:21). This tenfold personnel requirement, framed as a minimum estimate, is the most direct capacity statement in the research sample. Recruitment does not offer a structural remedy: *"The recruitment is hopeless. Because, new people coming in, it is just not happening. Seriously. There are simply not many there."* (Transcript 6.2.3, 01:20:50). Two compound factors further restrict the available labour pool: security screening requirements and the social willingness to work within a military organisation: *"There are security issues for people wanting to work with the military. And then they also need to be asked if they want to work with the military. Quite a few people don't."* (Transcript 6.2.3, 01:20:50). This latter factor contrasts directly with the Danish context, where a cultural shift toward national purpose has functioned as a structural recruitment accelerator.

A pre-screened consultant pool has been developed as a partial mitigation: *"We try to compensate ourselves with digital methods, with modern methods. We have a whole approval list of companies for which we know we can pick up personnel for the time being, consultants, already security-checked."* (Transcript 6.2.3, 01:21:53). This mechanism circumvents the security screening bottleneck for flexible capacity expansion, without resolving the structural personnel deficit.

Cost escalation constitutes an additional process constraint: *"We experienced a cost rise of about 80% over the last five years."* (Transcript 6.2.3, 00:43:58). The primary driver is energy cost inflation affecting construction materials, particularly concrete. This macro-economic dynamic undermines the purchasing power of fixed budget allocations: planned volumes are no longer executable at established prices without supplementary financing. Compounding this, the duration of tendering and contracting procedures generates autonomous cost overruns independent of initial estimation errors: *"The process is too long. We have to re-finance."* (Transcript 6.2.3, 00:45:02). The time elapsed between tender publication and contract signing is itself sufficient for inflationary developments to render the original cost estimate obsolete.

Digitisation is progressing as a multi-year trajectory rather than a completed transformation: *"We are trying to digitalize the whole building process, from the very bottom to the very top. But we are not*

finished yet." (Transcript 6.2.3, 01:20:25). BIM is applied in contracting, and SAP underpins financial management, but implementation barriers extend beyond the internal organisation to external parties who must operate the same systems: *"Not just our internal staff, but also external parties. And then some external people also need to operate it. It takes time."* (Transcript 6.2.3, 01:16:11). The decision to develop proprietary, defence-tailored platforms rather than commercial-off-the-shelf solutions introduces a structural make-or-buy tension: systems better calibrated to defence workflows carry higher implementation thresholds for new users and market partners. Parallel processing of planning and tendering is emerging as an accepted practice: *"The goal is to have all the planning finished, even if it's not yet finished, by the time the tender process is about to start... It's a bit risky sometimes. But we have some culture of doing it. More and more."* (Transcript 6.2.3, 01:18:34).

Learning points (process level)

(LP #34) A pre-screened consultant pool, approved companies with security clearances ready for rapid deployment, is a practical intermediate instrument that partially circumvents the security screening bottleneck without requiring systemic legislative reform. (LP #32) Social willingness to work within a military organisation is a recruitment condition that cannot be addressed through compensation alone; where this willingness is low, workforce capacity constraints are structurally more severe than labour market conditions alone would predict. (LP #6) Construction cost inflation of 80% over five years demonstrates that fixed budget allocations are systematically eroded by macro-economic dynamics; budget planning frameworks must incorporate inflation adjustment mechanisms to preserve real purchasing power. (LP #30) Procurement process duration independently generates cost overruns through inflationary exposure; reducing tendering-to-contracting timelines has a direct financial effect beyond its acceleration value. (LP #28) Digitisation of the full project chain is a multi-year transformation requiring both internal and external adoption capacity; own system development may improve workflow, but increases implementation friction for market partners, a trade-off that benefits explicit evaluation in platform architecture decisions.

6.2.4 Finland

Institutional findings

Finland applies the principle of comprehensive security, a holistic security model in which the government, the business sector, civil society organisations and citizens share responsibility for vital societal functions, including defence (Fella, 2026). Defence investments are framed not primarily as a cost item but as a contribution to national resilience, resulting in structurally lower political and public resistance to large-scale real estate investments. Public acceptance reduces the cycle of objections and appeals. Furthermore, since NATO accession in April 2023 and the announcement in 2025 to increase defence spending to at least 3% of GDP by 2029, the Finnish real estate programme has enjoyed unprecedented political legitimacy, which is accelerating its implementation (Senate Properties, 2024a).

The institutional analysis of the Finnish context reveals a fundamentally different baseline than the Netherlands, primarily driven by Defence Properties Finland (DPF) unique organisational design. DPF operates as a hybrid between a state agency and a private company. As the DPF CEO notes: *"My position is comparable to a CEO of a private company. So we have a board of directors and I have a contract with them... I'm not a civil servant."* (Transcript 6.2.4, 00:02:30). This structure introduces commercial governance, enabling faster decision-making than a traditional departmental hierarchy. Furthermore,

DPF operates an internal, cost-covering rental system and falls under the Ministry of Finance, structurally ensuring independence from the Ministry of Defence (Senate Properties, 2026).

Unlike the Dutch context where AI #2 was viewed as a theoretical, project-specific exception, Finland demonstrates the most far-reaching operationalisation of this intervention. Finnish legislation structurally exempts defence real estate from acquiring municipal construction permits for non-public information projects: *“In the Finnish legislation, we are mostly exempt from acquiring construction permits... all of the acceleration that we have done in the defence construction has mainly been done without any planning procedures taking place.”* (Transcript 6.2.4, 00:04:50). This structural exemption serves as an acceleration mechanism. Furthermore, systemic bottlenecks prevalent in the Netherlands are absent in Finland: *“We don't have this sort of nitrogen legislation,”* (Transcript 6.2.4, 00:09:51). and grid congestion is only a minor issue for large data centres. However, residual permits (water, environmental, protected species) remain, though they do not form the systemic gridlock seen in the Dutch Natura 2000 context.

While regulatory bottlenecks are minimal, new institutional bottlenecks emerge during rapid upscaling. Despite strong political will, the state's financial limits restrict capacity: *“The only exception [to budget cuts] is defense. But now the level of construction has come on such a high level that we would require new mandates from the government to loan money.”* This creates a *“debt ratio paradox”* (Transcript 6.2.4, 00:25:26). within their rental model: rapid investment growth is financed through loans that burden future rental income without a proportional increase in base funding (*“In 2032... 72% will be loaned from the market... but we don't get more money”*). (Transcript 6.2.4, 00:25:26). Additionally, DPF's position under the Ministry of Finance creates a governance tension; political prioritisation of defence spending does not automatically translate into investment capacity for an entity under a different ministry.

In sharp contrast to the Dutch need to actively cultivate a *“corporate story”* for public value, Finland possesses inherent cultural-cognitive legitimacy (Scott, 2001). The geopolitical reality of a 1,300-kilometre border with Russia ensures robust societal alignment: *“The society understands very well that defence is something that we have to spend money on. There's not a problem with the public opinion.”* (Transcript 6.2.4, 00:28:28). Therefore, AI #4 and AI #5 require virtually no active intervention in the Finnish context.

Learning points (institutional level)

(LP #5) The comprehensive security model in Finland embeds defence across society, reducing resistance and shortening planning and approval timelines. (LP #9) Framing defence real estate as national resilience (not cost) creates strong cultural legitimacy and accelerates decision-making. (LP #11) Hybrid governance structures increase autonomy and speed, but can create tensions between political priorities and financial capacity. (LP #2) Structural exemptions from planning and permitting procedures can significantly accelerate project delivery, though some sectoral permits remain. (LP #11) Removing regulatory bottlenecks shifts constraints to financial capacity, especially under debt-financed, cost-recovery models. (LP #9) Where cultural legitimacy is strong, active public support strategies are largely unnecessary, unlike in low-legitimacy contexts.

Governance findings

The Defence Forces act as the user/tenant. The distinguishing feature is that DPF structurally utilises the shared services and processes of the Senate Group: construction process management, information management, HR, procurement and real estate development are shared, thereby leveraging economies of scale without the need to build up a cumbersome parallel bureaucracy (Senate Properties, 2024a). Despite its advanced institutional setup, DPF struggles with similar governance bottlenecks identified in Chapter 5: the late involvement of real estate expertise and reactive demand articulation. Operational units prioritise immediate needs over strategic portfolio management: *“The prioritizing is mostly not very strategic, it's mostly prioritizing based on current needs.”* (Transcript 6.2.4, 00:10:15). This fragmented demand leads to suboptimal, costly building practices rather than integrated area development: *“All of these organisations come to us with a set of requirements and then we build a specific building for them.”* (Transcript 6.2.4, 00:47:06). Furthermore, decision-making paralysis remains a structural delayer when market bids exceed estimates. It is noted that papers often *“sit on somebody's tabletop for two months and nothing happens,”* (Transcript 6.2.4, 00:47:06) highlighting a universal accountability dilemma when operational urgency clashes with financial mandates (Defence Properties Finland, 2026).

DPF actively operationalises continuous market dialogue, addressing security constraints by sharing aggregated investment volumes and geographical spreads rather than classified project data. To reach local contractors in dispersed regions, they utilise targeted regional theme nights. Regarding procurement, DPF strategically leverages Article 346 of the TFEU to simplify tendering: *“We always have to do a tendering process, but we won't necessarily put an announcement on public platforms, but we contact the companies directly.”* (Transcript 6.2.4, 00:34:32). They also employ a differentiated contract strategy, using frame agreements for small-scale alterations while maintaining full bidding for new builds. Shifting the organisation towards design-and-build contracts, however, required significant cultural change, taking *“like three years to make the organisation understand that we need to take these sort of new approaches into use.”* (Transcript 6.2.4, 00:34:32).

A severe, parallel bottleneck to the Dutch context is security screening capacity. As construction volume grows, the defence forces' capacity to clear civilian workers becomes a hard limit: *“Because the building masses have grown so much, they have not been able to provide the security clearances in a justified amount of time.”* (Transcript 6.2.4, 00:50:43). This demonstrates how a lack of capacity at the granting authority can entirely block the executing organisation.

Learning points (governance level)

(1) Early integration of real estate expertise, supported by tiered account management (national/regional/local), is essential to shift from reactive, fragmented demand to strategic portfolio planning. (2) Leveraging shared service structures enables efficiency gains, avoiding duplication of specialised capabilities. (3) Informal and continuous collaboration between real estate and operational units is critical to complement formal governance and improve demand articulation. (4) Proactive market engagement and flexible procurement strategies (e.g. use of Article 346, direct market dialogue, differentiated contracts) improve delivery speed but require organisational learning and cultural change. (5) Governance bottlenecks persist in decision-making and accountability, particularly when financial constraints conflict with operational urgency, leading to delays. (6) Capacity constraints at critical control

points (e.g. security screening by defence authorities) can become system-wide bottlenecks, regardless of efficiency in other parts of the governance structure.

Process findings

Inaccurate initial cost estimates form a process bottleneck, disrupting the entire budget allocation system. To mitigate this, DPF has implemented a highly specific operationalisation of early integration: *"We have put a lot of effort into making sure that our experts are part of the initial evaluation team that make the first estimate."* (Transcript 6.2.4, 00:19:48). Similarly to the Danish and Dutch contexts, data maturity is historically low. However, DPF demonstrates that data quality is a cumulative, long-term investment. Having initiated data renewal programs in 2003, it is stated: *"Overall we have quite a reliable picture on where the needs are and what should be done,"* (Transcript 6.2.4, 00:21:57) providing a realistic 20-year implementation perspective for transparent project information. Second, systematic capacity building: DPF has expanded its workforce through a targeted recruitment and training programme for project and programme management, ensuring that internal assessment and supervision capacity keeps pace with the growing project volume (Defence Properties Finland, 2026)

Learning points (process level)

(LP #16) Early integration of technical and real estate expertise in initial project scoping improves cost accuracy and enables parallel development of requirements and infrastructure. (LP #28) Reliable project data is the result of long-term, cumulative investment; high data maturity significantly improves strategic planning and transparency but requires sustained effort over decades. (LP #30) Dedicated programme and project management capacity, supported by targeted recruitment and training, is essential to scale delivery and maintain control over increasing project volumes. (LP #24) Regional framework contracts and long-term market relationships reduce transaction costs, ensure continuity, and minimise start-up delays in project execution.

6.2.5 Sweden

Institutional findings

Fortifikationsverket (FortV) was established in 1994 as an independent government agency under the Ministry of Finance and acts as the landlord for the Swedish Armed Forces (Försvarsmakten). The internal rental system emulates market conditions: the Armed Forces pay rent for all properties managed by FortV, thereby making the economic incentive for efficient use explicitly visible. The agency currently manages approximately four million square metres of buildings and owns roughly 1.2 to 1.3 per cent of the Swedish land surface, including offices, barracks, underground facilities, radar installations and exercise areas. The financial scale of the construction programme has increased tenfold over the past five years: from approximately one hundred million euros in 2021 to 1.1 to 1.2 billion euros in 2025, with an ambition to reach at least two billion euros per year from 2028 onwards.

This acceleration takes place within a persistent regulatory tension. Sweden applies a concept of *"national interest"*, (Transcript 6.2.5, 00:10:59) whereby areas can simultaneously be designated for defence and for nature conservation or cultural purposes, such as the reindeer-herding grounds of Sámi communities in northern Sweden. These overlapping designations generate substantial permitting pressure: *"I would say we are in some ways more affected than private civilian parties trying to build."* (Transcript 6.2.5, 00:10:59). A compounding phenomenon reinforces this: military training areas closed down in the 1980s and 1990s, but retained as exercise grounds, have provided habitat for rare plant and

animal species during the intervening period of low activity. Upon reactivation, these sites encounter protection regimes that were largely absent two decades ago: *"When we start to try to reuse those areas, there are a lot of problems with that kind of thing."* (Transcript 6.2.5, 00:10:59). The permitting challenge is further layered by municipal-level authorisations, each municipality holds its own permits for construction activities and for redirecting natural water flows, creating a multi-tiered regulatory structure without a single point of resolution. Obtaining all necessary permits for a new live-fire exercise area at a previously closed site is estimated to take up to ten years. Grid congestion is recognised but does not constitute a systemic constraint, primarily because current construction activity is concentrated in the electricity-abundant north of Sweden. Nitrogen legislation is not applicable.

To date, no structural legislative exemptions for defence have been introduced, comparable to the Finnish or Danish instruments. Improvements have been confined to process adjustments, faster administrative throughput, without modification of the underlying substantive norms: *"It's the same rules, but efforts have been made so that we can get a 'yes' or a 'no' a bit quicker. But the underlying rules and material, that hasn't changed."* (Transcript 6.2.5, 00:10:59). FortV is simultaneously executing a formal government commission to compile a list of ten to fifteen laws requiring amendment in order to accelerate construction, with a full response due in September 2025. The Swedish constitutional model, in which the minister holds no individual decision-making authority and all cabinet decisions are taken collectively every Thursday morning, renders a legislative instrument comparable to the Danish Defence Act constitutionally unworkable: *"That's a quite interesting approach, but it's not a model that would work with the Swedish constitution."* (Transcript 6.2.5, 00:32:16).

A structural ownership constraint forms a further institutional bottleneck. As one of only four agencies in Sweden that receive no independent budget allocation, FortV finances all activities entirely from rental income: *"All of our money comes from the rents we charge for the buildings. That's our money, so we have no discretionary money."* (Transcript 6.2.5, 00:50:20). This precludes strategic land acquisition beyond the immediate demand-driven cycle. Reactive land acquisition is possible for smaller parcels, but proactive portfolio positioning is not: *"We have no money to make strategic land investments."* (Transcript 6.2.5, 00:50:20). The interviewee notes that approval for a dedicated strategic land acquisition budget of approximately fifty million euros per year was nearly secured, and makes the case that such investment carries limited financial risk given the resale value of forest land in Sweden.

A further structural tension, not directly related to permitting, concerns the synchronisation of personnel, materiel and infrastructure planning cycles. The interviewee illustrates this concretely: the Patriot air defence system has been operational for nine years, yet the primary training and maintenance facility was still not ready at the time of interview. An analogous gap is anticipated for planned frigate acquisitions, where harbour capacity has not yet been determined. *"You can't buy new aircraft without deciding where they should be based and where the hangars should be built."* (Transcript 6.2.5, 00:47:56). A government-mandated coordination task, involving FortV, the Armed Forces and the Materiel Administration, was initiated to address this structural misalignment.

Learning points (institutional level)

(LP #6) Reactivating dormant defence sites generates cumulative ecological protection pressure arising from years of low defence activity; systematic ecological pre-screening should be embedded as a standard step in programme planning, prior to site selection. (LP #2) Process acceleration without change of regulatory norms produces limited and temporary effects; structural permitting bottlenecks

require legislative intervention, not merely procedural simplification. (LP #11) Full dependence on rental income as the sole funding precludes proactive acquisition; a modest discretionary investment budget would substantially increase anticipatory capacity and carries limited financial risk given stable resale values. (LP #17) The absence of synchronised planning cycles across personnel, materiel and infrastructure domains produces capability gaps in which systems are operationally deployed before supporting facilities are ready; early integration of real estate input into materiel acquisition is a necessary precondition for resolving this pattern. Constitutional architecture determines the available range of acceleration instruments; successful models from comparable countries are not directly transferable where the constitutional framework differs.

Governance findings

The most significant governance instrument is the threshold for autonomous decision-making by the Director General. Until approximately eighteen months prior to the interview, this threshold stood at roughly seven million euros; it has since been raised to approximately eighteen million euros. Above this amount, a cabinet decision is required, taken by the government as a collective body, meeting every Thursday. The processing time for such decisions ranges from two weeks in urgent cases to six to twenty-four months in standard trajectories, and is further affected by the political calendar: *"This year we have a big election in September, so from May to September they are not that actively involved in taking decisions."* (Transcript 6.2.5, 00:16:44). The practical impact of the threshold increase has been substantial: *"Going from around seven to 18 actually made quite a big difference, around two-thirds of all projects can now be handled within the agency."* (Transcript 6.2.5, 00:33:45). Voices within the Armed Forces advocate a further increase to approximately ninety million euros, which would extend autonomous decision-making capacity considerably further.

From the 1st of January 2025, a significant restructuring of demand formulation has taken place: the real estate mandate and associated budgets have been decentralised from a central infrastructure branch within Defence HQ to the individual service commands, Army, Air Force, Navy and Logistic Command. The rationale is direct accountability for deliverability: by giving service commanders ownership over personnel, materiel and infrastructure simultaneously, the Supreme Commander can hold them accountable for operational output rather than allowing cascading explanations of interdepartmental non-delivery. A central coordination gateway is nonetheless retained: *"The mandate and the money sit with the Army, but requests have to pass through one specific gateway just to maintain the picture of what's going on."* (Transcript 6.2.5, 00:35:33). From the 1st of January 2027, the command chain is to be further shortened, with service chiefs placed directly under the Supreme Commander.

The initial implementation of decentralisation revealed significant start-up difficulties. The transferring organisations were unprepared for the full scope of their new responsibilities, particularly the maintenance obligation on the existing building stock: *"If you have received 100% of the money, you have to take around 50% of it to just maintain the existing buildings, not to acquire anymore."* (Transcript 6.2.5, 00:35:33). This illustrates a recurrent pattern: a structural change designed to foster operational ownership and accountability generates transitional losses when receiving organisations have not been prepared for the full breadth of the responsibilities being transferred.

Public-private partnership has no established tradition in Sweden. With the exception of a single historical precedent, all construction activities are fully contracted out to the market: *"We have no internal capacity to build things, so everything goes to the market, we ask them to build for us."*

(Transcript 6.2.5, 00:18:52). Market engagement is therefore entirely project-driven and transactional in character, without the multi-year strategic supplier relationships developed in Denmark and Finland.

Learning points (governance level)

(LP #20) Raising the autonomous decision-making threshold substantially reduces the volume of political escalations and is an effective, relatively low-complexity governance intervention; further increases to this threshold merit serious consideration as a near-term acceleration measure. (LP #19) Decentralising the real estate mandate to operational commands fosters accountability and operational prioritisation, but requires deliberate capacity preparation at the receiving organisations, which absorbs a structurally significant share of available resources. (LP #13) Retaining a central portfolio coordination gateway alongside decentralised mandates prevents fragmentation of the overall picture without sacrificing the benefits of operational ownership. (LP #25) The absence of multi-year strategic supplier relationships increases transaction costs and mobilisation losses across successive projects; developing framework agreements or sustained partnerships with core market parties would improve delivery certainty, particularly under conditions of rapid volume growth.

Process findings

FortV has undergone a substantial workforce expansion over the past three years: from approximately 1,100 to 1,500 employees, with an estimated 750 new staff onboarded during that period. Roughly half of all personnel are engaged in operating and maintaining the existing building stock; the other half in project management and financial administration. This growth has generated its own accommodation constraints, office capacity within the agency is already insufficient, and raises a structural geographical distribution challenge: financial management functions can be performed remotely, project leaders must be physically present near their construction sites. *"If you are a project leader for a building site in the northern part of Sweden, then you can't be stationed in the southern part, it's quite hard to have the right kind of competence in the right part of the country."* (Transcript 6.2.5, 00:21:53). It is important to note that the actual construction capacity resides entirely within the market; the internal growth concerns solely the client-side and supervisory functions. New and more effective onboarding approaches have become necessary to integrate the volume of incoming staff.

A favourable labour market dynamic has temporarily eased recruitment. The contraction of private residential construction across much of Europe has generated an available pool of qualified professionals: *"There were quite a lot of people available on the market when we needed them."* (Transcript 6.2.5, 00:21:53). This is, however, a conjunctural advantage without structural durability.

Security clearance procedures constitute a systemic bottleneck of increasing severity, with two distinct dimensions. The first is the per-location, per-individual character of the screening obligation: a construction company operating across twenty sites must, under strict application of existing law, undergo a separate clearance process for each site and each relevant individual. *"We may find a construction company building at 20 locations, and we would have to go through the same process every single time."* (Transcript 6.2.5, 00:24:54). The second dimension concerns NATO accession: Sweden's membership has introduced new requirements for accessing alliance information systems. The physical terminals for NATO systems are located exclusively at Armed Forces HQ, are available only in very limited numbers, and must be booked in advance, creating a tangible access bottleneck for an agency formally positioned under the Ministry of Finance rather than the Ministry of Defence. *"There is a lot of work for*

the whole Swedish defence sector just to access and exchange information in NATO systems." (Transcript 6.2.5, 00:40:40).

Information management for the domestic portfolio is characterised as functioning adequately for the approximately ninety per cent of projects that do not involve classified buildings. For the remaining portion, where security classifications apply to the buildings themselves, electronic information sharing is not possible, necessitating paper-based document handling and physical courier transport across a country ten times the size of the Netherlands.

Nordic-Baltic cooperation delivers a qualitatively different form of value than national knowledge development alone. The Nordic-Baltic Defence Real Estate Cooperation framework convenes Director Generals at least twice yearly, complemented by regular working-level visits from Norwegian and Finnish counterparts. Norway has played a particularly active role in supporting Sweden's integration into NATO infrastructure processes and Host Nation Support arrangements: *"When it comes to actually delivering the buildings themselves, we are quite capable, but when it comes to Host Nation Support, things like 20,000 troops coming with equipment and so on, we have a lot of work ahead to build that capacity."* (Transcript 6.2.5, 00:43:05). The cooperation with Germany and France operates on a different basis, focused on joint product development, for example, blast-proof doors for underground facilities, rather than on process or systems knowledge. *"The cooperation within the Nordic and the Baltic framework is more about how we build things, how the systems work, and what we can do together."* (Transcript 6.2.5, 00:45:14).

Learning points (process level)

(LP #30) Geographical distribution of project management capacity across a large country requires an explicit personnel dispersal strategy; centralised staffing is incompatible with the local presence requirements of construction project supervision. (LP #31) Security clearance procedures that are not calibrated to the volume and multi-site character of simultaneous contracts constitute a system-wide bottleneck; resolution requires legal and procedural reform, not solely capacity expansion at the granting authority. (LP #33) NATO accession introduces information system access requirements that create new procedural bottlenecks for agencies not embedded within the military command structure; addressing this requires both technical infrastructure investment and procedural adaptation to the multi-agency character of the national defence organisation. (LP #17) Synchronisation of infrastructure planning with materiel and personnel acquisition cycles prevents the pattern in which systems become operationally deployed before supporting facilities are ready; early integration of real estate input into materiel procurement trajectories is a necessary structural precondition. (LP #28) Multilateral knowledge exchange within a regional framework delivers process and systems knowledge that is more efficiently acquired through alliance cooperation than through internal reinvention, particularly for newly emerging responsibilities. (LP #35) A conjuncturally favourable labour market masks recruitment vulnerabilities; when demand recovers in private construction markets, the availability of qualified personnel will contract, making proactive talent pipeline development and retention strategies a necessary near-term investment.

6.2.6 Denmark

Institutional findings

Denmark has undergone the most far-reaching institutional restructuring of all six countries analysed. Approximately eighteen months prior to the data collection, a deliberate political decision was taken to dissolve the independent agency model and incorporate the Danish Defence Estate Command (DDEC) directly into the military command structure. *"One of the things that Denmark did, which was a political decision, was to take the state agency responsible for the real estate area and place it directly under the Chief of Defence, as one of the main decisions in terms of creating more pace in the build-up of the Danish defence."* (Transcript 6.2.6, 00:05:31). This structural repositioning eliminates the institutional separation between policy, demand articulation and execution that characterises the Dutch context.

DDEC simultaneously functions as a fully integrated service provider: *"We cover the real estate area as a client, construction, all maintenance, all facility management, all housing and canteens, and all the outdoor areas such as fire ranges and the lands we manage."* (Transcript 6.2.6, 00:07:29). This vertical consolidation within a single organisation contrasts sharply with contexts where these functions are distributed across separate institutional actors. The principal legislative instrument enabling acceleration is the Defence Act, through which exemptions from standard national regulations can be granted for projects deemed crucial to Danish combat power. Crucially, these exemptions are not blanket authorisations: *"Every time we use the Defence Act in an infrastructure project, it has to be approved by the Defence Minister."* (Transcript 6.2.6, 00:09:04). The instrument is deliberately calibrated, projectspecific, ministerially authorised, and consciously applied sparingly to preserve political and public acceptance. Its scope is bounded at the national level: *"It doesn't cover the EU framework. So for EU-level obligations in terms of tendering or environmental regulations, we still need to seek some exemptions. But there are certain articles within EU law that we can use for that in military projects."* (Transcript 6.2.6, 00:11:28). This creates a two-layered exemption structure operating simultaneously at national and supranational level.

The political legitimacy underpinning this framework is framed explicitly as a collective obligation: *"We have publicly stated that this is a whole-of-government, whole-of-society priority to build up the Danish defense, because the threat is real."* (Transcript 6.2.6, 00:32:33). This macro-level legitimacy does not, however, automatically translate to acceptance at project level. As the interviewee notes: *"Broadly speaking, there's a wide understanding in society that we need to build up the defense when looking at what happens in Ukraine and the Middle East. But obviously, when we go down to the level of specific projects, where normal democratic process is taken out of play, those directly affected feel that they have lost their public voice."* (Transcript 6.2.6, 00:36:57). This tension between macro-legitimacy and project-level accountability confirms the theoretical argument that acceleration shifts democratic legitimacy from procedural to outcome level rather than eliminating it.

An unanticipated institutional effect has emerged alongside this tension. Rather than resisting the Defence Act, municipalities have embraced it as political cover: *"Interestingly, the municipalities responsible for local regulations also see it as a 'get out of jail free card', if they need to change something potentially controversial, they can say, 'But that's a defence requirement, so it's not our fault.'"* (Transcript 6.2.6, 00:36:57). This coalition mechanism, not described in the literature, has functioned as an unintended but effective means of broadening institutional support.

Alongside classical regulatory bottlenecks, including Natura 2000 constraints addressed through EU exemption articles, two emergent bottlenecks have become structurally significant. Grid congestion has been recognised only recently: *"Over the last few months, the politicians in Denmark have realized that there's a huge legacy in that area as well. Now for other industrial projects, there's a queue that is years long."* (Transcript 6.2.6, 00:12:47). In response, DDEC is developing an approach that reduces dependence rather than resolving the network problem itself: *"We are now also trying to focus on how we can provide our own energy production and create closed, small microgrids in and around our bases. Basically, in peacetime, we could supply the wider grid, but in crisis and wartime, we could cut off from the outside power supply."* (Transcript 6.2.6, 00:12:47). Security screening has simultaneously emerged as a hard capacity ceiling: *"The security clearance process, normally it took three to six months, but now it's close to a year. So from when a person or a company applies for a security clearance, it can take up to a year before they can actually access our facilities. And that is now becoming one of the largest bottlenecks."* (Transcript 6.2.6, 00:26:44). This demonstrates that legislative instruments which resolve institutional barriers create conditions in which previously latent bottlenecks become binding constraints. (Tothova & Clapp, 2026).

Learning points (institutional level)

(LP #1) Energy autonomy via microgrids reduces operational dependence on grid rather than resolving the network problem. (LP #10) Incorporating the estate organisation directly into the military command structure eliminates intermediary coordination layers and embeds real estate decisions in operational priorities, a structural intervention more radical than role clarification alone. (LP #3, #4) A two-layered exemption instrument, national Defence Act supplemented by EU Article 346 TFEU, provides complementary coverage across regulatory levels, addressing a gap in national frameworks. (LP #2) Project-specific ministerial authorisation for each exemption preserves political accountability while enabling genuine acceleration; blanket derogations are neither necessary nor desirable for maintaining legitimacy. (LP #9) Broad societal support for defence investment does not guarantee local acceptance of specific project effects; managing this tension requires active accountability mechanisms at project level. (LP #8) Security screening capacity is a system-level constraint that becomes binding precisely when other bottlenecks have been resolved; it cannot be addressed through procurement or planning legislation. (LP #31) Energy autonomy via microgrids addresses grid congestion not by resolving the network problem but by reducing operational dependence on it, combining acceleration objectives with operational resilience.

Governance findings

When operational units identify a need, DDEC is involved before any project is formally defined: *"Whenever there's a need across the ministry, they come to us and say, 'We have a need for an estate or infrastructure project.' Then we help them conceptualize the need into a project, estimate the budget, and set timelines."* (Transcript 6.2.6, 00:18:00). This front-loaded integration of real estate expertise directly counters the reactive demand pattern in which estate organisations are engaged only after requirements have already been specified by the user. Portfolio management is explicitly anchored in organisational capacity: *"We try to balance the project portfolio with our production capacity, the resources we have to run the projects."* (Transcript 6.2.6, 00:20:07). This prevents a common failure mode in which political ambitions generate commitments that outpace delivery capability.

On the contracting side, DDEC has deliberately repositioned itself away from fully specified tender documentation: *"Historically, we tended to design projects all the way to nuts and bolts and then go out to tender. But now we see that this construction management role is maybe not the right position to be in. So we have moved more towards turnkey projects, and now we're also trying to engage contractors in an early stage, to bring their competences into play earlier."* (Transcript 6.2.6, 00:39:39). This shift is framed not as a procurement preference but as a strategic repositioning of organisational role. At the furthest end of the procurement spectrum, public-private partnership represents the maximal form of risk transfer: *"At the far end of the spectrum, it's the PPP, where we basically hand over the client role to a private partner and take on the user role."* (Transcript 6.2.6, 00:40:48). This defines a contractual spectrum running from traditional tendering through early contractor involvement and turnkey to full PPP, with risk allocation increasing progressively along its length.

Complementing the contracting shift, DDEC has developed a standardised building type catalogue: *"We have developed a garage project concept which has been refined over some ten years. We have a concept that functions as a standard garage, basically we have the drawings ready to overlay on the project site. And we are doing the same with housing for conscripts and guard facilities. We are expanding that catalog because we can see there are some huge time savings in that approach."* (Transcript 6.2.6, 00:41:40). This modular principle compresses design, permitting and execution timelines simultaneously, and the ten-year refinement cycle illustrates that standardisation is a long-term investment with cumulative returns, relevant to the sequencing of interventions in any integrated advisory framework.

Structured market engagement is formalised through an annual Industry Day: *"We have put more resources into industry meetings and seminars, and we have decided to host our own 'Industry Day' basically a full day where we present our organization, how our processes work, how to become a supplier, and what kind of projects and services we are planning to tender."* (Transcript 6.2.6, 00:32:33). This consolidates both types of market dialogue, pipeline transparency and relationship development, into a single institutional format, giving the dialogue institutional weight without requiring the informality of bilateral conversations to be systematically managed. Strategic supplier relationships are progressively formalised: *"We are engaging in more and more strategic collaborations, in contracts spanning two to four years, so that we don't have to start from scratch in each project."* (Transcript 6.2.6, 00:32:33). The two-to-four-year contract duration provides a concrete empirical range that gives operational specificity to what the literature describes in more abstract terms.

Portfolio prioritisation is explicit and operationally driven: air defence and missile systems, logistics and supply, C4ISR and sensors, and Arctic infrastructure are prioritised in line with NATO delivery schedules (Danish Ministry of Defence, 2024a). This means that not all projects are treated equally: the most operationally urgent projects are accelerated at the expense of less urgent ones, thereby ensuring that scarce implementation capacity is utilised optimally (Danish Ministry of Defence, 2024b).

Learning points (governance level)

(LP #15) Vertical integration of the full estate chain within a single organisation eliminates structural coordination loss between client, execution and management functions. (LP #16) Early involvement of estate expertise in demand conceptualisation, before project scope is fixed, prevents the reactive pattern in which requirements are handed over as a *fait accompli*. (LP #18) Explicit portfolio balancing against organisational capacity prevents commitment overload and focuses scarce resources. (LP #16)

Early contractor involvement and turnkey contracts shift value creation upstream, enabling contractor expertise to shape rather than merely execute the design. (LP #23) A standardised building type catalogue, developed iteratively over years, delivers simultaneous time savings across design, permitting and construction, with cumulative returns that increase over time; this is a long-term investment, not a quick fix. (LP #22) An annual Industry Day integrates pipeline transparency and market relationship development into a single institutional structure, giving market dialogue institutional weight. (LP #25) Strategic multi-year supplier contracts provide concrete continuity that reduces transaction costs and mobilisation delays across projects.

Process findings

Data maturity at DDEC is explicitly characterised as very low: *"Our data level is very, very low. We have around 500 different establishments, ranging from the 16th century to modern F-35 facilities. The level of data available when starting a new project varies a lot. Currently, when we start up a new project, we have to go out and physically inspect the sites or existing buildings."* (Transcript 6.2.6, 00:22:03). Rather than treating this as a problem awaiting a systemic solution, DDEC has standardised the information gap into the project schedule: *"We build in a time slot in our projects to conduct a site survey and take all necessary measurements, because if we don't do that and then start up contracts, this lack of information will hit us harder later on in the project."* (Transcript 6.2.6, 00:22:03). This converts an unpredictable information deficit into a controlled, planned activity, preventing larger disruptions downstream.

A structural competency transition is simultaneously underway: *"Historically, many of our local employees at our establishments were craftsmen, because that matched the competences required earlier. But now we see that the modern age, with high digitalization and the need to register data and information in our IT systems, requires some new skills."* (Transcript 6.2.6, 00:24:08). This shift from craft-based to information-based profiles constitutes an organisation-wide transformation that cannot be resolved through recruitment alone. Capacity building is structured as a two-stage model: *"We try to hire people with a certain level of basic skills relevant to the position. But we also have internal educational programs in terms of project management, construction management, and legal advisory skills."* (Transcript 6.2.6, 00:45:39). This integrates recruitment and training as a single coherent policy rather than separate initiatives.

A reinforcing dynamic has emerged on the recruitment side from a broader cultural shift: *"In Denmark, there has been a growing sense of protecting the society and the country, a national feeling of contributing that is actually quite high. Going five years back, nobody would work for the defense, but now I think many feel that they are part of something bigger."* (Transcript 6.2.6, 00:45:39). This social legitimacy effect functions as a structural recruitment accelerator, improving the quality and volume of applicants independently of compensation or conditions. Retention of experienced staff is treated as equally strategic: *"A significant focus of the organization is on retaining the experienced people we already have alongside employing new ones."* (Transcript 6.2.6, 00:45:39). Rapid organisational growth generates workload pressures that increase attrition risk precisely when institutional knowledge is most needed, making retention an active intervention rather than a residual HR concern.

An overarching tension running across all three levels deserves explicit treatment. In an organisation driven by short-term political urgency, the risk of optimising for immediate output at the expense of long-term quality is actively acknowledged by the interviewee: *"We may tend to be acting too fast because of the threat or situation. So sometimes we may be moving so fast that we don't really stop to*

ask: is this the right solution? Maybe it yields the fastest short-term gain, but is it the right one for the long-term?" (Transcript 6.2.6, 00:48:19). The structural source of this tension is identified precisely: *"The politicians, at least in Denmark, are in office for only four years, so I think their time perspective reflects that. We, however, look at the total cost of ownership in terms of infrastructure."* (Transcript 6.2.6, 00:48:19). Decisions optimised for political visibility within a four-year cycle may generate significant reinvestment costs at the lifecycle level, a dimension of the acceleration agenda that warrants treatment as an overarching pattern rather than country-specific. (Tothova & Clapp, 2026).

Learning points (process level)

(LP #15) Embedding a mandatory site survey phase into the standard project schedule converts an unpredictable information deficit into a controlled, planned activity, a low-cost process intervention that prevents larger disruptions downstream without requiring prior investment in data infrastructure. (LP #35, #36) The competency transition from craft-based to information-based profiles is an organisation-wide transformation requiring both targeted recruitment and sustained internal education. (LP #32) Social legitimacy of defence employment functions as a structural recruitment accelerator; where cultural perception shifts toward purpose and national relevance, the talent pipeline improves without requiring compensation interventions, and this shift is observable within a five-year horizon. (LP #33) Retention of experienced personnel during rapid organisational growth is an active strategic priority: workforce expansion at pace creates internal pressures that increase attrition risk precisely when institutional knowledge is most needed. (LP #6) Acceleration strategies that optimise for political timelines without incorporating total-cost-of-ownership safeguards shift costs forward in time rather than eliminating them; speed governance must include quality controls that operate independently of political urgency.

6.3 Synergy: International learning points (answer to RQ5)

RQ5 asks: *What acceleration strategies are employed by comparable international organisations, and what lessons can be derived from these?*

It is demonstrated that acceleration is not the product of a single intervention but of sustained alignment across the three levels simultaneously. The sequencing logic is as important as the content: institutional instruments create the enabling conditions within which governance integration and market restructuring can function, which in turn create the stable environment within which capacity investments yield results. Deploying process interventions without institutional and governance prerequisites produces the limited, temporary effects that Germany's partial fast-track procedures illustrate.

6.3.1 Integral governance as the foundation for acceleration

Various countries resolve institutional architecture before investing in process improvements. Denmark integrated DDEC directly into the military command structure; Finland consolidated functions through DPF's hybrid model within shared Senate Group services; Norway's vertically integrated agency avoids separation-induced costs. Germany's three-level separation (norm-setter / executor / owner) is the negative validation which hinders speed: it generates round-trip decision cycles that can only be partially mitigated at project level through on-site offices. The Dutch structure; policy, demand, commissioning, and execution across four separate hierarchical lines, replicates Germany's structural features and their associated coordination costs.

6.3.2 Market continuity as a strategic instrument

Countries with sustained delivery throughput have replaced transactional project-by-project commissioning with relational, programme-based market engagement. Norway's eight-year Long-Term Procurement Plan combined with regional framework contracts minimises repeated tendering. Denmark's annual Industry Day institutionalises pipeline transparency and supplier relationship development in a single structure. Sweden, which maintains no multi-year supplier relationships, demonstrates the cost: purely transactional engagement maximises mobilisation losses precisely when volume growth accelerates. The Dutch context reproduces this transactional pattern (BN 12).

6.3.3 Institutional legitimacy as an acceleration licence

The ceiling on achievable acceleration is determined by institutional legitimacy across Scott's (2001) three pillars. Regulative: Denmark's Defence Act, Finland's permit exemption, Norway's parliamentary mandate, and the UK's Procurement Act 2023 all change the rules of the game rather than the speed of play; Germany demonstrates that constitutional financial legitimacy without regulatory execution legitimacy is insufficient. Normative: framing investment as national resilience consistently reduces planning resistance. Cultural-cognitive: Denmark demonstrates that a social shift toward national purpose functions as a structural recruitment accelerator within five years; Germany demonstrates the structural severity of the reverse condition. The current Dutch political climate constitutes a real but time-limited window to secure legislative instruments, most urgently for nitrogen and grid-congestion constraints, before conditions recede.

6.3.4 Knowledge and capacity as prerequisite investments

The binding constraint in virtually every country case is organisational, not financial or regulatory. Germany's interviewee states a minimum tenfold personnel deficit: *"the money does not help alone; you have to get things built."* Sweden expanded forty per cent over three years and is already encountering accommodation constraints. Denmark is managing a simultaneous competency transition from craft-based to information-based profiles. Finland built its current data maturity over twenty years. The convergent conclusion is structurally uncomfortable: capacity building cannot be treated as a lagging activity that follows budget growth, it must lead it. Security clearance processing is the single most consistently reported emergent bottleneck, appearing in four countries, and the pattern is invariant: it becomes binding precisely after other bottlenecks are resolved.

6.3.5 Overview of international acceleration lessons

This comparative international analysis identified 36 key learning points (LP) for the real estate acceleration and modernisation. In the table 6.3.5 below, the learning points build further on the theoretical framework from chapters 2, 3 and 5 and add/specify principles at the institutional, governance and process level.

CHAPTER 1 →	CHAPTER 2 →	CHAPTER 3 →	CHAPTER 5 →		CHAPTER 6			
BN Nr.	Metrics	Level	AI #	P	Cluster	LP #	Learning Point (LP)	Country
#3, #13			#1	H	I	#1	Energy autonomy via microgrids reduces operational dependence on grid rather than resolving the network problem	DK
#13			#2	H		#2	Project-specific exemption instruments accelerate delivery while preserving democratic accountability	FI, DK, UK, DE, SE
#13			#2	H		#3	Article 346 TFEU provides EU-level coverage no national instrument can achieve alone	DE, DK, FI
#13			#2	H		#4	Article 346 TFEU enables direct market contact bypassing public notice obligations	FI, DK
#5, #13			#3	L	II	#5	Geopolitical threat creates a reform window; structural action must precede its closure	DE, DK, FI
#5, #7			#4	M	III	#6	Acceleration optimised for political timelines without lifecycle, site selection, ecological pre-screening, safeguards shifts costs forward rather than eliminating them	DK, DE, SE
#10, #12			#4	M		#7	Financial legitimacy is necessary but insufficient without regulatory execution legitimacy	NO, DE
#5, #13			#4	M		#8	Legislative mandate eliminates project-specific political approval and provides multi-year institutional authority	NO, DE, DK, UK
#5, #13			#5	M		#9	Framing defence real estate as resilience accelerates decision-making; active cultivation required in low-legitimacy contexts	FI, DK
#2, #9			#7	M	IV	#10	Direct integration into military command eliminates intermediary coordination layers	DK
#2, #9			#7	M		#11	Hybrid agency models increase speed but can create financial-political tensions	FI, NO, SE
#2, #9			#7	M		#12	Three-tier separation generates structural coordination costs at each boundary (<i>negative</i>)	DE
#9			#7	M		#13	Central coordination alongside decentralised mandates prevents portfolio fragmentation	SE
#2, #9			#7	M		#14	Mandatory government-wide project standard eliminates repeated structural redesign	NO, DE
#5			#16	L				
#4			#10	H	V	#15	Integrated on-site project office eliminates round-trip decision cycle; empirically validated as effective governance instrument	DK, DE
#4, #8			#10	H		#16	Early contractor involvement integrates market expertise before requirements are fixed	UK, DK, FI
#4, #6			#6	M		#17	Synchronising infrastructure planning with materiel acquisition prevents capability gaps	SE, DK
#9, #10			#8	H		#18	Explicit portfolio balancing against production capacity prevents commitment overload	DK, DE
#10			#9	H		#19	Decentralising mandates requires capacity preparation at receiving organisations	SE
#5, #9			#9	H		#20	Raising autonomous decision threshold resolves two-thirds of projects within the agency	SE
#2, #5, #7			#9	H		#21	Consolidating investment decisions in a single accountable role prevents fragmentation	UK, DK
#12			#11	L	VI	#22	Annual Industry Day consolidates pipeline transparency and relationship development	DK
#12			#11	L		#23	Market dialogue, and standardised buildings framed as capacity development (not price) enables specialist investment	DE, DK, NO
#4, #9			#13	H		#24	Regional framework contracts with pre-qualified suppliers eliminate repeated tendering	NO, DK, FI
#9			#12	L				
#12			#15	M		#25	Strategic multi-year contracts (2–5 years) reduce transaction costs and mobilisation delays	NO, DK, FI
#9, #12			#15	M		#26	Long-term procurement plan (5–8 years) enables market investment in specialist capacity	NO, DK
#4			#14	H	VII			
#1, #3			#17	H	VIII	#27	Mandatory site survey phase converts unpredictable information deficits into controlled activities at minimal cost	DK, UK
#9			#19	H				
#11			#18	M	IX	#28	Reliable (inter)national data requires decades of cumulative investment; data maturity is a long-term prerequisite that reduces information gaps	FI, UK, SE
#1			#20	H		#29	Synchronising infrastructure planning with materiel acquisition prevents capability gaps	SE, DK
#10			#22	M	X	#30	Workforce expansion must lead budgetary growth; capacity lags produce backlogs regardless of legislative or financial progress	NO, SE, FI, DK, DE
#10, #12			#22	M		#31	Security clearance processing becomes a bottleneck once others are resolved; dedicated procedural reform is required	FI, SE, DK, DE
#10			#22	M		#32	Social legitimacy of defence employment accelerates recruitment structurally within a five-year horizon	DK, DE
#10			#22	M		#33	Retention of experienced personnel during rapid growth is an active strategic priority, not a residual HR concern	DK, UK
#10			#22	M		#34	Pre-screened consultant pool with approved clearances is a practical intermediate instrument	DE
#10			#21	L				
#10			#23	L		#35	Regional knowledge exchange frameworks deliver process knowledge more efficiently than internal reinvention	NO, SE
#1, #10			#23	L		#36	Competency transition to information profiles requires both targeted recruitment and sustained internal education	DK

Support operational readiness & function within the broader defence organisation structure (Van den Eijkel, 2025)

Table 6.3.5: Overview of the learning points (LP) from the international analysis.

7. DESIGN AND VALIDATION OF THE DEFENCE REAL ESTATE ACCELERATION MODEL

7.1 Introduction

This chapter brings the theory and empirical study together into an integrated acceleration model. Whereas the preceding chapters individually identified, validated and specified the potential interventions to accelerate Defence real estate modernisation and expansion, this chapter focuses on synthesis and practical application by engineering these findings into a coherent design that answers RQ6: *How can the selected interventions be clustered, designed and validated into an integrated approach to accelerate modernisation and expansion?*

The chapter is structured in two stages. Section 7.2.1 elaborates the 'Defence Real Estate Acceleration Model' itself based on the cross-level expert panel validation, linking the identified bottlenecks from the program of requirements to their corresponding acceleration interventions and specifying the conditionality relations that govern implementation sequence across all three levels. Section 7.2.2 translates the model into concrete management recommendations, structured by priority and precondition, enabling the MoD to move from insight to action.

7.2 Towards a final design (answer to RQ6)

7.2.1 The Defence Real Estate Acceleration Model: bottlenecks, interventions and design

The 'Defence Real Estate Acceleration Model', shown on the next page, translates the program of requirements from chapter 1 and 2 into an integrated intervention model that is shaped by the theoretical framework, expert panel findings and international lessons explicitly linking bottlenecks to corresponding acceleration interventions and the conditional relations governing their implementation. Based on the program of requirements, the model must do three things simultaneously: unblock the institutional constraints that halt projects before governance improvements can take significant effect; restructure the governance architecture to close the gap between formal prescribed structure and actual practice; and build the information and capacity infrastructure that makes both sustainable. The 'Defence Real Estate Acceleration Model' presented below, is designed to fulfil all three requirements within the constraints of the Dutch Defence organisational context (assessment metric one) and contributes to the readiness of the armed forces (assessment metric two). The model is structured according to the three levels from Winch (2010), institutional, governance and process, with cross-cutting conditionality relations that define the interactive multi-track implementation logic.

DEFENCE REAL ESTATE ACCELERATION MODEL

Tectonic Approach (Winch, 2010) · AI #1–23 + 6 additions · 6-country NATO benchmark n=4 (LP#1–36) · Expert panels n=18

★★ Prerequisite · ★ High priority · ↑ Start · long lead time · ● Depending on · → Conditionality relation priority H/M/L

Institutional level — creates enabling conditions
Regulative, normative and cultural-cognitive pillars (Scott, 2001) · Current political window: supportive but possibly time-limited

REGULATORY REFORM

- ★★ AI#1 – Framework simplification
- ★★ AI#2 – Targeted exceptions
- Thematic framing: N2 + grid congestion strategies
- Internal overregulation review
- LP#1-4 · DK FI UK DE · Article 346 TFEU; project-specific exemptions; energy microgrids

INSTITUTIONAL LEGITIMACY

- ★ AI#4 – Legislative mandate
- ★ AI#5 – Societal alignment
- Underutilised public value narrative
- Dual-use/ societal resilience
- LP#6-9 · NO DE DK UK FI · Parliamentary mandate (NO); lifecycle safeguard (DK); resilience framing (FI/DK)

SPATIAL & POLITICAL

- AI#3 – Limit political friction
- Time-bound political window
- WODG + VRO coordination
- Decentralised permit friction
- LP#5 · DE DK FI · Geopolitical urgency; structural action must precede closure of window

↓ Institutional conditions enable governance coordination

Governance level — organises coordination and decision-making
Chain-wide governance · Integration · Market strategy · Capacity steering | Gap between formal structure and lived practice is the central governance finding

CHAIN GOVERNANCE & ROLES

- ★★ AI#7 – Chain-wide governance structure
- AI#16 – Unfragment institutional decisions
- Governance system analysis (meta-intervention)
- Thematic coordination roles (N2 / grid / PFAS / ect.)
- LP#10-14 · DK DE NO SE FI · Direct command DK (LP#10); three-tier failure DE (LP#12x); PRINSIX NO (LP#14)

INTEGRATION & TEAMS

- ★★ AI#10 – Integrated area teams
- ★ AI#6 – Early real estate integration
- AI#9 – Decentralised decision-making
- AI#8 – Informal mechanisms (→ follows AI#7)
- LP#15-19 · DE UK DK FI SE · On-site office DE (LP#15); ECI UK/DK/FI (LP#16); decentralised mandate SE (LP#19-20)

MARKET STRATEGY

- AI#13 – Standardised procurement (→ follows AI#1, AI#2)
- AI#15 – Long-term contracts (portfolio strategy required)
- AI#12 – Risk allocation (not shared responsibility)
- AI#11 – Contiguous market dialogue
- LP#22-26 · DK NO FI DE · Industry day DK (LP#22); dialogue as capacity development (LP#23); 8-year plan NO (LP#26)

CAPACITY & ESCALATION

- ↑ AI#14 – Capacity balance (3 dimensions)
- Bundling function: projects → political level
- Political escalation route
- Portfolio prioritisation (prerequisite for process)
- LP#18-21 · DK SE UK · Portfolio vs. capacity DK (LP#18); autonomous threshold SE (LP#20); single role UK/DK (LP#21)

↓ Governance coordination enables process execution

Process level — enables execution
Information management · Digital transformation · People and capability | Technical possibility consistently precedes organisational readiness

PORTFOLIO & INFORMATION

- ★ AI#17 – Transparent project information
- ★ AI#19 – Parallel information acquisition
- KPI-driven strategic real estate plan
- Portfolio rationalisation (stop lower-priority projects)
- LP#27, #29 · DK SE · Mandatory site survey phase DK (LP#27); infra-materiel sync SE/DK (LP#29)

DIGITAL TRANSFORMATION

- ↑ AI#20 – Platform-based approach
- ↑ AI#18 – AI / BIM / digital twins / FCC
- Phase 1: RVB-Defence shared environment
- Phase 2-3: market connectivity (security-gated)
- LP#28, #35 · FI NO SE · 20yr data maturity; Nordic knowledge exchange

PEOPLE & CAPABILITY

- ↑ AI#23 – Targeted capability development
- ↑ AI#22 – Rapid recruitment & retention
- AI#21 – Dedicated project leadership
- Pre-screened consultant pool (DE model)
- LP#30, #36 · ALL · Clearance binding bottleneck; social legitimacy DK

Shaping of structure

Structuring of action

Institutional level

The institutional level addresses the external constraints that determine what is legally and politically possible for Defence real estate modernisation and expansion. The expert panel confirmed that nitrogen licensing and grid congestion constitute the most urgent systemic barriers: *"at all locations, grid congestion and nitrogen are the problem... if you don't solve that, you can't move forward"* (Transcript 5.1, speaker 3, 00:10:54). These constraints halt a significant share of the project portfolio before governance or process improvements can take effect, making them the highest-priority bottlenecks in the model.

AI #1: 'Structural regulatory simplification' addresses both external regulatory complexity and internally generated over-regulation. The second expert panel round validation session introduced an important addition not present in the earlier panels: *"what you may write is: our own non-functioning over-bureaucracy. These are the words of the Secretary-General. Both RVB and Defence are present: we are deeply over-regulated in our own, non-functioning environment"* (Transcript 7.2, speaker 7, 00:29:29). AI #1 therefore carries two simultaneous recommendations: external regulatory reform through engagement with VRO and via the WODG legislation, and internal bureaucracy reduction through systematic identification and elimination of self-imposed regulatory layers throughout the real estate chain.

AI #2: 'Targeted regulatory exceptions' functions as a short-term bridging instrument complementing the longer-term structural reform of AI #1. The panel noted that the obstacle is frequently internal rather than external: *"it also regularly turns out that the obstacle is actually our own, or that we are not making sufficient use of the opportunities available to us"* (Scorecard, speaker 4). The German context offers a concrete transferable mechanism: a *lex silentio positivo* for heritage protection procedures on Defence sites, whereby the absence of objection within one month results in automatic progression. The cross-level validation session confirmed this as *"a specific procedural intervention that appears directly transferable"* (Transcript 7.2, speaker 6, 00:18:08). However, the political context limits ambition: *"is Dutch society susceptible to this? When I look at the WODG, that is more or less where we are working on this. What you see is that there is considerable resistance to exceptions for Defence relative to national legislation that applies to the rest of the Netherlands"* (Transcript 7.2, speaker 5, 00:18:59). AI #2 must therefore be framed thematically rather than location-specifically, targeting nitrogen and grid congestion as political entry points rather than site-specific exemptions.

AI #4 and AI #5: 'Institutional legitimacy and societal alignment' address the normative and cultural-cognitive dimensions of Scott's framework. The analysis shows that Dutch Defence has underutilised its narrative capacity: *"we should communicate much more clearly the public value we create, which we have traditionally done poorly"* (Transcript 5.1, speaker 3, 00:29:41). The international comparison confirms that where cultural legitimacy is strong, as in Finland, where the 1,300-kilometre border with Russia ensures organic societal alignment, active intervention is largely unnecessary. In the Dutch context, the alignment must be actively cultivated, both through the WODG and through reframing Defence real estate investment as a contribution to broader societal resilience, dual-use possibilities and societal-economic value creation.

Governance level

The governance level addresses the structural and behavioural conditions within which Defence real estate projects are initiated, decided upon and commissioned. The central finding across both the Dutch

expert panel and the international benchmarking is that the dominant source of delay is not the absence of governance structures but the gap between their formal prescription and their practical application.

AI #7: 'Chain-wide governance structure with clear roles' is the foundational intervention at governance level, functioning as a prerequisite for the effective operation of AI #8, AI #9 and the capacity gains anticipated under AI #14. The panel confirmed that the problem is not structural absence but behavioural inconsistency: *"the structure on paper is correct, but it is open to multiple interpretations, or people simply do not adhere to it"* (Transcript 5.2, speaker 4, 00:11:42). The governance asymmetry is equally significant: *"I still see too often that the governance structure is primarily focused on the Defence structure, and that the RVB structure is barely incorporated"* (Transcript 5.2, speaker 8, 00:12:18). AI #7 must therefore address both the enforcement of existing structures and the structural inclusion of RVB as a co-equal partner in governance architecture. Three empirical additions strengthen AI #7: a governance system analysis that inventories whether all tasks the modernisation programme requires are actually assigned; thematic coordination roles for systemic constraints such as nitrogen and grid congestion; and a bundling function that aggregates local project knowledge into a national argument for political escalation.

AI #9: 'Decentralised decision-making combined with physical co-location' has direct empirical validation from Sweden, where raising the autonomous decision threshold from seven to eighteen million euros immediately resolved two-thirds of projects within the real estate agency. The Dutch panel identified a pragmatic middle position: not full budgetary autonomy, but meaningful freedom to shift within clearly defined frameworks, *"being able to shift within the frameworks"* (Transcript 5.2, speaker 2, 00:29:01). The cross-level validation session nuanced the transferability: *"one: you then have your own mess to clean up, so there is nobody to complain to. And the advantage is that you can do your own prioritisation and deal with your own problems. The disadvantage is that you lose directed steering from one central point about how you want your real estate"* (Transcript 7.2, speaker 3, 00:07:18). The conditionality is clear: decentralisation without explicit frameworks, reporting safeguards and receiving-organisation capacity decentralises problems rather than resolving them.

AI #10: 'Integrated area teams' is the only governance intervention to receive unanimously high scores from all panel participants, and the international comparison validates this unanimity. The Danish and German integrated on-site project office, *"we have been very successful with this approach"* (Transcript 6.2.3, 01:31:17) is the most directly transferable governance mechanism identified in the entire research sample. The Dutch panel reformulated the intervention's unit of analysis from project to area: *"I would also like to call it 'integrated area teams'. Because it is mainly about the integrality at the location and what you have to do together there, and that people also remain there, so that over time they acquire knowledge about that location. Then you really go faster"* (Transcript 5.2, speaker 3, 00:34:26). The validation session added a critical definition of stakeholders: municipalities and provinces are not team members but sparring partners in an environmental ring around the area team. Each team requires an actor analysis that establishes this distinction clearly per area/project.

AI #14: 'Balance between internal capacity and external expectations' carries the highest strategic priority despite its lowest feasibility score, because the capacity gap it addresses is not incidental but structural and multi-dimensional. The panel identified three distinct dimensions: technical-executive capacity for scaled project management; administrative-communicative capacity to deliver difficult messages to municipalities and political stakeholders; and a cultural-behavioural dimension, *"it also has to do with trust and daring to let go"* (Transcript 5.2, speaker 4, 00:43:17) that cannot be resolved by

recruitment or training alone. AI #14 is dependent on AI #7 and AI #10 as condition: role clarity and chain integration reduce duplication, partially solving the capacity gap as an allocation problem without additional recruitment.

Market strategy cluster (AI #11, AI #12, AI #13, AI #15) forms a coherent sequence: continuous market dialogue (AI #11) creates the preconditions for standardised procurement (AI #13), which enables long-term contracts (AI #15) and progressively shifts toward shared responsibility frameworks (AI #12). The validation session confirmed that the Industry Day in Denmark has a direct Dutch equivalent in the RVB's annual market dialogue: *"an active defence-specific market afternoon in collaboration with RVB is now being organised through the new governance structure"* (Transcript 7.2, speaker 2, 00:14:10). The standardisation gap identified through Germany is analytically stark: *"I find it surprisingly large that they have almost 40 and we have only 5 to 10"* (Transcript 7.2, speaker 2, 00:11:45). The validation session supported autonomous Dutch standards development using international models as reference rather than direct copying: *"I think primarily develop ourselves, but do take the lessons from abroad. Because they also learn from us, and vice versa"* (Transcript 7.2, speaker 6, 00:11:34).

Process level

The process level addresses the information systems, digital infrastructure, leadership mandates and human capacity that determine daily pace of tasks. The cross-cutting finding is that process interventions are conditional on governance conditions being in place, not as a sequential dependency but as a continuous interactive relationship.

AI #17: 'Transparent and accessible project information' is the most consensual process intervention and is already in motion through existing FCC initiatives. The panellist from the validation session introduced a paradigm shift in its formulation: the intervention's target is not a report but a database *"we must not see the capacity report as a report anymore, but simply as a database that we can load somewhere, and that data is always available for everyone in the real estate chain"* (Transcript 7.2, speaker 7, 00:25:56). This converts static periodic reporting into a live management instrument that enables real-time portfolio oversight, eliminating the information asymmetries that drive strategic postponement and duplication.

AI #18 'Digital transformation' carries maximum technical applicability and minimum organisational feasibility, with three distinct prerequisite dimensions: a Defence cloud as hard infrastructural precondition; a classification policy for real estate information that resolves the aggregation paradox; and cultural readiness for new working methods. The panellists introduced a concrete AI application not present in earlier panels: the automated generation of project documents on the basis of historical documentation, *"if you put all PIDs from recent years into the system, you can produce a new PID quite quickly within a very short timeframe"* (Transcript 7.2, speaker 7, 00:25:09). This constitutes a near-term, high-impact application of AI #18 that does not require full cloud infrastructure and therefore carries a lower implementation threshold than the broader digital transformation agenda.

AI #19: 'Parallel information acquisition' requires both permit feasibility and strategic priority as dual threshold criteria for project selection. The panel was explicit: *"no scatter shot, but more targeted deployment. And if you deploy more targeted, you gain speed"* (Transcript 5.3, speaker 3, 00:32:09). This intervention is dependent on the portfolio rationalisation and KPI-driven Strategic Real Estate Plan identified as additional interventions in the process panel, selective deployment of AI #19 is only possible

when portfolio prioritisation is in order, making it dependent on overarching portfolio management as a governance precondition.

AI #22: 'Rapid recruitment and retention' is complicated by a circular institutional dependency: RVB waits for Defence's assignment to recruit; Defence cannot provide hard expectations while portfolio prioritisation and financing remain uncertain. Breaking this circle requires an explicit high-level work expectation signal from Defence: *"what would help is that Defence explicitly indicates at a high level: 'this work is actually coming your way.'* Then RVB can prepare, the expansion of the formation can take place" (Transcript 5.3, speaker 9, 00:47:30). The validation session refined the intervention as a three-track strategy: permanent recruitment, a flexible consultant shell *"a certified consultancy pool, where we already have a small framework contract with engineering firms"* (Transcript 7.2, speaker 2, 00:26:13) and improved flexible market contracts that reduce the absolute volume of internal capacity required. Standardisation serves a dual function here: as a market-strategic instrument and as a knowledge resilience mechanism when turnover is inevitable.

7.2.2 Management recommendations for implementation

The following recommendations translate the Defence Real Estate Acceleration Model into a prioritised implementation agenda for the MoD. Divided into two parts: high-priority preconditions that must be initiated immediately because they are prerequisites for the effectiveness of all downstream interventions, and lower-priority interventions that remain dependent on the above conditions being in place or in active progress.

High priority: acceleration preconditions

1. Secure institutional instruments for nitrogen and grid congestion

This is the highest-priority action in the entire model. Without progress on nitrogen and grid congestion, no governance or process improvement yields its potential at portfolio scale. Two simultaneous tracks are required: political engagement to advance the WODG and thematic regulatory exceptions for nitrogen and grid congestion, and internal regulatory mapping to identify and eliminate self-generated over-regulation throughout the real estate chain. The current political climate creates a real but time-limited window: *"politics will have to act, but it is up to us to push this forward"* (Transcript 5.1, speaker 3, 00:10:54). The organisation must actively use this window to secure instruments that would otherwise depend on continued political goodwill.

2. Conduct a governance system analysis and enforce chain-wide governance

Before any further governance restructuring, a diagnostic analysis must establish whether all tasks the modernisation task requires are actually assigned within the current governance architecture. This meta-intervention precedes all others at governance level. It must be followed by consistent enforcement of the existing governance structure, with particular attention to including RVB as a co-equal partner and eliminating role drift across governance forums. New organisational functions should be established: thematic coordination roles for themes such as nitrogen, grid congestion, archaeology, PFAS; a bundling function between project level and political level; and an explicit escalation protocol for situations where systemic obstacles cannot be resolved within the chain.

3. Establish integrated area teams

Area-based integrated teams, comprising Defence, RVB and market partners as structural team members should be established as the primary vehicle for project execution at Defence locations. Each team requires an actor analysis that defines team composition and the environmental ring per project context. Team continuity across projects must be explicitly safeguarded as a policy condition, not left to discretionary management decisions.

4. Send an explicit high-level work expectation signal to enable capacity building

The circular dependency between Defence project volume and RVB formation capacity must be broken by a formal, high-level commitment from Defence to RVB regarding expected work volumes over a defined horizon. Without this signal, the entire capacity building agenda is structurally paralysed. The three-track capacity strategy, permanent recruitment, certified consultancy pool with pre-cleared security screening, and improved flexible market contracts, should be initiated simultaneously and immediately, given that capacity building requires early initiation but yields results only late.

5. Develop a KPI-driven Strategic Real Estate Plan and initiate portfolio rationalisation

The current Strategic Real Estate Plan is outdated and no longer in line with the changed context to serve as an oversight instrument for the real estate assignment. A revised strategic plan built on explicit KPIs, portfolio prioritisation criteria and a dynamic database rather than a static report creates the governance precondition for virtually all process interventions: selective parallel acquisition, transparent project information and concentrated capacity deployment are all contingent on clear portfolio oversight. Portfolio rationalisation, consciously stopping less urgent projects, is the operational counterpart: *"you should also make choices and withdraw certain projects... instead of letting everything continue running"* (Transcript 5.3, speaker 3, 01:06:25).

Lower Priority — subject to the above conditions

6. Build market continuity through differentiated procurement and standardisation

Once portfolio demand is sufficiently stable and predictable, a three-track market strategy becomes viable: Defence-specific market evenings as part of the existing RVB annual market dialogue; expansion of the standardised building type catalogue from the current 5–10 types toward the German range of 30–40 types; and long-term framework contracts for stable portfolio segments that provide the deal flow continuity the market requires as a condition for capacity investment. Market continuity should be understood as a precondition for market participation, not as an acceleration goal in itself.

7. Deploy parallel information acquisition selectively

Once portfolio prioritisation is in order and the financial guarantee for capacity consumption is institutionally arranged, parallel design and engineering should be deployed for projects that meet both criteria: high permit certainty and high strategic priority. Neither criterion alone is sufficient as a selection threshold.

8. Initiate digital transformation sequentially

Digital transformation follows a three-stage implementation trajectory: first a shared RVB–Defence information environment for the non-classified portfolio; then certified one-directional market connectivity; then full integration contingent on a fundamentally revised classification and security architecture. The immediate near-term opportunity lies in AI-assisted document generation such as PID

automation on the basis of historical documentation, which carries a lower infrastructure threshold and a direct capacity-multiplier effect.

9. Invest in change-driven capability development

Training and organisational development must be reframed from a generic hygiene measure to a targeted capability gap analysis: which new assignments require which competencies currently absent? The two most clearly identifiable current gaps are knowledge of area-based development processes and knowledge of performance-based and system contract management. The shift from object-oriented to area-oriented thinking is already underway in parts of the organisation; ensuring team continuity within integrated area teams is the governance instrument that makes this learning investment durable.

Overarching Implementation Condition

The entire model rests on a single overarching implementation condition that runs across all three levels: the interventions must be initiated simultaneously across institutional, governance and process levels, not sequentially. The validation was unambiguous: *"you must run things in parallel, because they are partly interactive"* (Transcript 7.2, speaker 7, 00:45:00). Institutional unblocking creates the legal space governance restructuring requires; governance integration creates the stable portfolio base process investments depend on; and process improvements generate the information and capacity that make institutional lobbying more credible and governance decisions more precise (figure 7.2.3). A waterfall approach, waiting for institutional clarity before beginning governance reform, and waiting for governance reform before building process capacity, would itself reproduce the delays the model is designed to overcome.

Implementation sequence and conditionality relations

Arrows show prerequisite chains: a box at the tail must be in place before the box at the head can take effect. Long-lead investments are independent but must be initiated immediately.

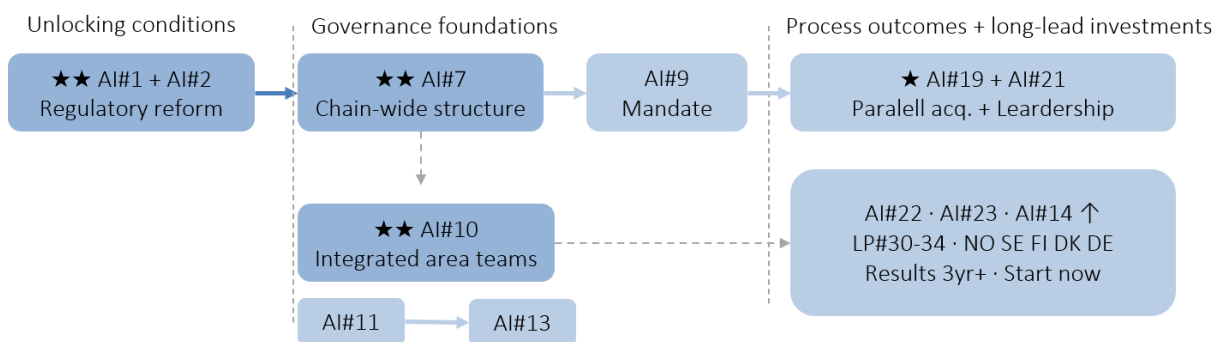


Figure 7.2.3: Overview of the implementation sequence & conditionality relations.

8. DISCUSSION

8.1 Interpretation

At the outset of this research, a review of the policy documents identified 13 bottlenecks clustered into three interrelated root-cause domains as central to the acceleration challenge: institutional regulatory constraints, governance fragmentation, and the lack of information and execution capacity. Aiming to address the fundamental disconnect between current Defence real estate practices and the urgency of military readiness requirements, this thesis tested whether a structured set of acceleration interventions, derived from theory, empirically and validated through expert panels and international benchmarking, could be integrated into a coherent model applicable to the Dutch MoD. The 'Defence Real Estate Acceleration Model' presented in chapter 7 is the highlight of that effort. Reflecting on the theoretical frameworks that shaped its design, the methodological choices that structured the application, and the empirical conditions that conditioned the findings reveals both the analytical contributions and the inherent tensions embedded in the result.

This research adopted three theoretical frameworks as its analytical scaffolding: Scott's (2001) institutional theory to understand regulatory and legitimacy constraints, Winch's (2010) Tectonic Approach to structure analysis across institutional, governance, and process levels, and a constellation of governance and project management theories, including Locatelli et al. (2014), Ansell and Gash (2008), Eriksson et al. (2019), and Andrews et al. (2011), to identify acceleration interventions at governance and process level. The empirical findings yield several observations about the explanatory and generative power of these frameworks in the defence real estate context.

Scott's (2001) institutional framework proved valuable in explaining why Defence real estate decisions cannot be reduced to a technical or economic optimisation. The three-pillar distinction, regulative, normative, and cultural-cognitive, provided a diagnostic lens that revealed the multi-layered nature of the legitimacy challenge. However, the framework's primary explanatory orientation toward conformity and stability exposed a limitation in the acceleration context: while it explains why organisations defer to institutional constraints, it offers limited guidance on how organisations can actively reshape those constraints under conditions of urgency. The empirical panels extended the framework in a direction the theory does not fully anticipate, revealing that Defence can and must act as an active institutional player rather than a passive rule-taker, using existing legal instruments more assertively and cultivating legitimacy across all three pillars simultaneously. This is a meaningful empirical specification that qualifies Scott's framework rather than contradicting it.

Winch's (2010) Tectonic Approach proved effective as a structuring mechanism. The three-level hierarchy allowed institutional, governance, and process bottlenecks to be addressed with appropriate analytical depth by different panels while preserving their interdependencies. However, the empirical analysis consistently surfaced a pattern the framework does not foreground: the conditionality relations that run between levels. Winch's model describes interactions across layers but does not specify implementation sequences or prerequisite chains. The finding that governance interventions are structurally blocked when institutional constraints remain unresolved, and that process interventions are ineffective without governance prerequisites, constitutes an empirical extension of the Tectonic Approach that has implications for how the framework might be applied in future research on complex public real estate programmes. Specifically, the model benefits from a sequencing dimension that Winch's original formulation leaves implicit.

The governance frameworks performed similarly: theoretically robust in identifying what should be done, empirically challenged by the gap between formal prescription and actual practice that runs through every governance intervention. Locatelli et al.'s (2014) systems-based governance argument, Eriksson et al.'s (2019) case for integrated teams and parallel processing, and Andrews et al.'s (2011) capacity-expectations balance were all confirmed as directionally valid. Yet the panels repeatedly introduced a precision the literature does not specify: these interventions are not all absent from the Dutch Defence organisation by design but are absent in behaviour, which transforms the implementation challenge from a structural design problem into a cultural and enforcement problem. This behavioural-structural distinction is analytically important and underexposed in the existing governance literature applied to public real estate.

This research adopted a mixed-method, design-oriented approach following Dym and Little (2013) engineering design. Several methodological observations deserve reflection. The triangulation strategy, combining systematic document analysis, Delphi-structured expert panels at three institutional levels, and semi-structured interviews with international counterparts, proved effective in generating both breadth and depth, and in enabling the systematic comparison of theory, internal practice, and international experience. The iterative design logic, in which theoretical insights from chapter 3 shaped the expert panel agendas, panel findings from chapter 5 structured the international interview protocols, and international findings from chapter 6 materially refined the intervention design in chapter 7, functioned as intended. The final model is considerably richer and more context-specific than the conceptual design formulated in section 3.5, which validates the iterative approach as more than a methodological convention.

The Delphi method's pre-session individual scoring and subsequent group deliberation structure proved valuable in revealing both quantitative convergences and the qualitative reasoning behind divergences. The iterative feedback loop between anonymised pre-scores and collective deliberation consistently surfaced empirical additions and specifications that neither the literature nor the initial conceptual design had anticipated.

The cross-level synthesis session and the subsequent validation session introduced in chapter 7 added a further design quality check that the literature on design-oriented research methodology rarely discusses explicitly. By presenting the integrated model to a cross-representational panel before finalising it, the research created an opportunity to identify both misalignments in the design logic and contextual conditions the earlier panels had not foregrounded. The validation finding that the entire model rests on a parallel rather than sequential implementation logic, *'you must run things in parallel, because they are partly interactive'* (Transcript 7.2, speaker 7, 00:45:00), is among the most consequential outputs of this methodological choice, as it directly determines how the model should be deployed in practice.

8.2 Contribution and implications

The research presented in this thesis is a step toward a structured, evidence-based approach to accelerating Defence real estate modernisation in a deteriorating security environment. In real estate programmes of this scale and complexity, decision-makers are required to navigate a portfolio of hundreds of simultaneous projects across institutional, governance, and process dimensions, where the interdependencies between bottlenecks and the sequencing of interventions are at least as consequential as the content of any individual measure. By explicitly mapping these conditionality

relations and embedding them in an integrated acceleration model, this thesis introduces an approach to that challenge that goes beyond the identification of individual best practices.

Through the empirical validation of twenty-three acceleration interventions across three analytical levels and six international contexts, the model enables decision-makers to assess which interventions address systemic constraints that block the entire portfolio before downstream improvements can take effect, and which interventions are dependent on prerequisites being in place. This sequencing logic, institutional unblocking first, governance integration second, capacity and process investment third, with all three tracks initiated simultaneously rather than serially, constitutes the central practical contribution. It functions as a framework that guards against the deployment of technically sound interventions in conditions that render them ineffective, a risk that the expert panels identified as a persistent pattern in the current organisation.

The comparative international analysis contributes an additional practical layer by situating the Dutch case within a broader landscape of defence real estate acceleration strategies. The transferability of specific instruments, the integrated on-site project office validated in Germany and Denmark, the standardised building type catalogue developed iteratively in both countries, the annual Industry Day institutionalised in Denmark, the pre-screened consultant pool operationalised in Germany, provides the MoD with concrete, empirically validated design templates rather than abstract principles. Importantly, the international analysis also functions as a filter against unproven interventions: direct replication of the Danish Defence Act or Finland's structural permit exemption is contextually constrained in the Netherlands by a combination of Natura 2000 exposure, dense spatial planning, and an institutionally separated real estate chain that none of the benchmark countries fully shares. The model therefore contributes to strategic decision-making by both identifying what can be transferred and explaining why certain instruments require adaptation or cannot be transplanted directly.

It is also essential to reflect critically on potential unintended consequences of the acceleration agenda that the model represents. The tension identified by the Danish interviewee, between political time horizons of four years and total-cost-of-ownership considerations that span the full asset lifecycle, applies with equal force to the Dutch context. Interventions that maximise short-term project throughput, such as selective parallel processing under AI #19 or standardised building types under AI #13, carry a risk of locking in suboptimal design decisions before operational requirements are fully understood, particularly given the rapid evolution of military technology and threat assessments that characterises the current period. Speed governance, as the Danish analysis terms it, must include quality controls that operate independently of political urgency (Transcript 6.2.6, speaker 2, 00:48:19), and the model's implementation recommendations should be read with this overarching tension in mind.

A further implication concerns the relationship between acceleration and democratic accountability. The institutional analysis demonstrated that meaningful acceleration requires shifts in legitimacy from procedural to outcome level: permit exemptions, decentralised mandates, and fast-track procedures all involve a deliberate trade-off between process thoroughness and delivery speed. The international evidence suggests this trade-off is manageable when three conditions are met, broad societal alignment, ministerial accountability for each departure from standard procedure, and active communication of public value creation. In the Dutch context, where the normative and cultural-cognitive dimensions of institutional legitimacy remain underdeveloped relative to the current political urgency, the communication dimension of AI #4 and AI #5 deserves treatment not as a secondary concern but as a

structural enabler of the entire acceleration agenda. Without it, politically secured instruments may encounter resistance at the project level that negates their theoretical time savings.

8.3 Limitations

Several limitations deserve acknowledgement. The scope of the expert panels was necessarily selective, drawing on representatives from the Defence and RVB real estate chain who were accessible to the researcher through their professional role. This creates a risk of confirmation bias: panellists embedded in the system being analysed may systematically underestimate the degree to which structural change is required, or overestimate the feasibility of incremental improvements. The deliberately iterative, anonymised Delphi structure partially mitigated this risk by surfacing divergences that unstructured group discussion would have suppressed, but cannot eliminate the possibility that voices critical of the current organisational model were underrepresented in the sample.

The expert panel composition also reflects a specific moment in organisational development. The research was conducted in the period immediately following the establishment of the Real Estate Command Post in September 2025 and the parliamentary adoption of the National Programme for Defence Space in December 2025. Both developments were still in early implementation phases at the time of data collection, meaning that panellists were frequently reasoning about organisational structures and governance conditions that were in transition rather than settled. Findings that were accurate at the time of the sessions may be partially superseded by developments that post-date the fieldwork, which is a structural limitation of applied research conducted within a rapidly evolving policy environment.

The international benchmarking methodology was constrained by the availability of interviewees and by language and documentation access barriers that limited the depth of the Norwegian and United Kingdom analyses. Both countries appear in chapter 6 primarily on the basis of documentary sources rather than direct interview evidence, which reduces the empirical richness of those sections relative to Germany, Sweden, Finland, and Denmark. The Norwegian case in particular, given the scale, ambition, and duration of the Forsvarsbygg acceleration architecture, warrants more in-depth investigation than was possible within the scope of this thesis. The interviews that were conducted were performed with a single representative per country, which means that organisational perspectives that differ from leadership positions may not be adequately represented, and that country-specific findings should be read as indicative rather than comprehensive.

A further limitation concerns the design scope of the model itself. The thesis focused on acceleration interventions and deliberately excluded a comprehensive financial allocation model, a detailed implementation plan, or an assessment of individual project typologies. This boundary is analytically defensible but practically consequential: the model identifies what needs to be done and in what sequence, but does not specify the resource implications, organisational mandates, or monitoring frameworks required to operationalise it within the MoD's existing accountability structures. The transition from the model presented in chapter 7 to a deployable action plan requires an additional design step that falls beyond the scope of this research. Finally, the thesis focuses exclusively on the Dutch MoD context, with international benchmarking serving as a frame of reference rather than a comparative empirical study in the strict sense. The contextual specificity of the findings, particularly the combination of Natura 2000 exposure, spatial planning density, and the four-line institutional separation

that defines the Dutch case, limits the direct transferability of the model to other national defence real estate organisations, even within the NATO context studied.

8.4 Further research

Future research should build upon the exploratory and design-oriented findings of this thesis through more targeted empirical and longitudinal investigations. A first and immediately relevant direction is an in-depth study of the implementation trajectory of the Defence Real Estate Acceleration Model itself. Given the action plan revision cycle of the Real Estate Command Post, which operates on a six-monthly revision schedule, a longitudinal evaluation research design could track which interventions are initiated, in what sequence, and what effects they produce across the three analytical levels over a two- to four-year horizon. This would allow the conditionality relations identified in this thesis to be empirically tested under real organisational conditions rather than validated through expert judgement alone.

A second direction concerns the institutional level and the regulatory constraints that the model identifies as the highest-priority bottlenecks. The nitrogen and grid congestion issues are addressed in this thesis at the level of intervention logic, but the legal and administrative complexity of resolving them in the Dutch context warrants dedicated interdisciplinary research combining environmental law, spatial planning, and defence policy perspectives. Specifically, a systematic analysis of the existing room for manoeuvre within current nitrogen legislation, building on the observation that available legal instruments are frequently underutilised, could provide the MoD with an actionable legal mapping prior to political escalation. A parallel study of the applicability of Article 346 TFEU as a procurement instrument in the Dutch context, which Finland operationalises actively but Germany has not deployed, would add a European regulatory dimension currently absent from the evidence base.

A third research direction concerns the governance level, specifically the integrated area team concept validated unanimously by the expert panel and confirmed by the German and Danish on-site project office models. This thesis identifies the concept and its enabling conditions, but does not specify the organisational design parameters required for its implementation: team size, role composition, authority mandates, reporting structures, and performance metrics. A design study focusing on the operationalisation of integrated area teams at one or two Defence locations, structured as an action research project in collaboration with the Real Estate Command Post, could generate both implementation knowledge and transferable templates applicable across the broader portfolio.

A fourth direction involves the process level and the digital transformation cluster. The classification paradox identified under AI #18, whereby aggregating real estate data increases the security classification threshold, structurally blocking the very information integration that acceleration requires, represents a research problem at the intersection of information security policy and real estate management that has no current solution in the literature. Dedicated research into classification frameworks for defence real estate information, drawing on NATO information assurance standards and the experiences of Sweden and Denmark, could contribute directly to resolving a constraint that the current model can identify but not resolve. In parallel, empirical research into the AI-assisted document generation application identified in the cross-level validation session, using historical PIDs as training data to accelerate front-end document production, could provide a near-term, high-impact proof of concept without requiring full cloud infrastructure.

A fifth and broader research direction concerns the scientific contribution of this thesis to the field of military real estate management more generally. As noted in the literature review, the domain of public

real estate management remains underexposed in the context of military urgency, and the literature on institutional theory offers limited guidance for organisations that must depart from established institutional arrangements under conditions of operational necessity. A comparative study of how NATO member states formally manage the tension between institutional compliance and military urgency, examining the legislative instruments, governance architectures, and accountability mechanisms developed across a broader sample than the six countries studied here, would constitute a meaningful theoretical contribution to both public administration and real estate management research. The Netherlands' particular combination of constraints makes it an analytically productive case for such a comparative study, precisely because the tensions it faces are more acute than in most comparable contexts.

9. CONCLUSION

9.1 Concluding remarks

The central challenge that motivated this research, the urgent need to modernise and expand an ageing Defence real estate portfolio in a deteriorating European security environment, has grown more pressing with each passing month of the research period.

Main RQ: How can Defence accelerate the modernisation and expansion of its real estate portfolio to support organisational objectives?

What this research has demonstrated is that political will, however genuine and however generously funded, is a necessary but not sufficient condition for acceleration. Without solving the nitrogen crisis, grid-congestion, governance integration, market continuity, institutional legitimacy, and proportional execution capacity, increased budgets will produce implementation backlogs rather than delivered capability.

The 'Defence Real Estate Acceleration Model' presented in chapter 7 does not offer a simple solution. The structural bottlenecks it addresses, urgency versus institutional embeddedness, governance architecture, ambition versus execution capacity, procedural versus outcome legitimacy, are deep, mutually reinforcing, and resistant to isolated interventions. What the research does offer is a structured, evidence-based, and (internationally) validated framework for navigating these bottlenecks in sequence and combination.

The Dutch MoD is not the only defence organisation to face this challenge. Norway built its acceleration architecture over two decades; Finland invested in data maturity since 2003; Denmark reorganised its entire governance model within eighteen months.

Real estate is a critical enabler of operational readiness. It is the physical foundation on which people are trained, materiel is maintained, and units are deployed. If that foundation is inadequate, no quantity of personnel or equipment can compensate for it. The modernisation and expansion of the Defence real estate portfolio is therefore not a management challenge on the margins of the security mission, it is one of its central enabling conditions. The model this research has designed is offered in that spirit: as a contribution to the capacity of the Dutch Ministry of Defence to fulfil its constitutional obligation to protect the Netherlands and its allies in a world that no longer permits delay.

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11. APPENDICES

Appendix I: Planning

Appendix II: Expert panel list

Appendix III: Expert panel protocols

Appendix IV: Expert panel transcripts

Appendix V: Expert panel scorecards

Appendix VI: Interview list

Appendix VII: Interview protocol

Appendix VIII: Interview transcripts

Appendix IX: Atlas.ti transcript coding

Appendix X: Data management plan

Appendix XI: AI tool disclosure

Appendix XII: Plagiarism check

This thesis was written in fulfilment of the requirements for the degree of:

Master of Science
in Management in the Built Environment

at the Delft University of Technology

June 2026

Emiel Wolfs

6160468

First supervisor: Monique Arkesteijn

Second supervisor: Ad Straub