



Welcome!

Innovation Management & Simulations
Early innovative product exploration with modern working methods and technical simulations

BY EBBA BLOMBERG CEDERGREN & LINNÉA HÄRDER

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ENGINEERING

SCANIA



Suggested Activities of Change

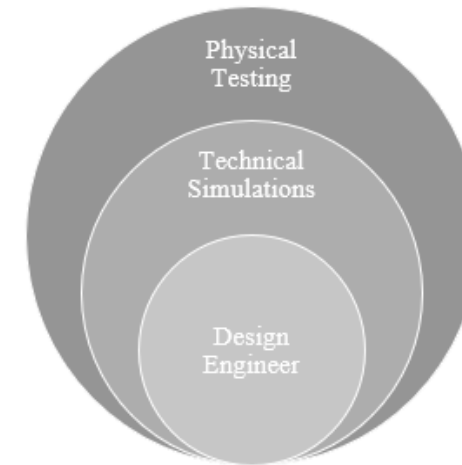
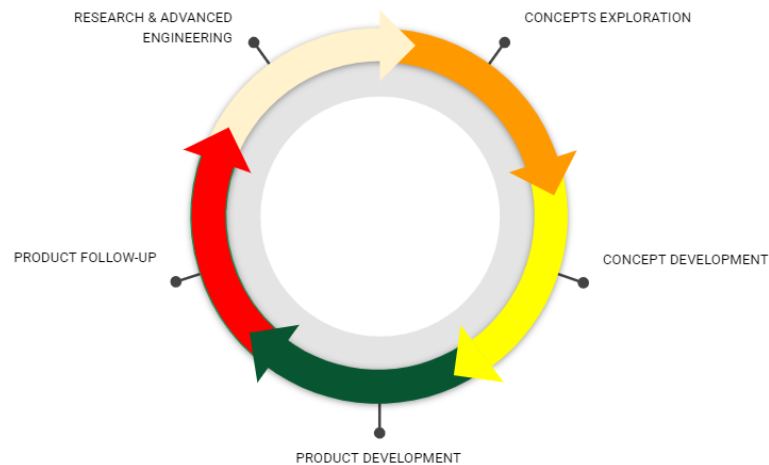
PROCESS

Implementing an orange arrow prior to the yellow

Use digital demonstrators as concepts

ORGANISATION

Split the role of the design engineer
Create a layer structure between design, simulation and test engineer





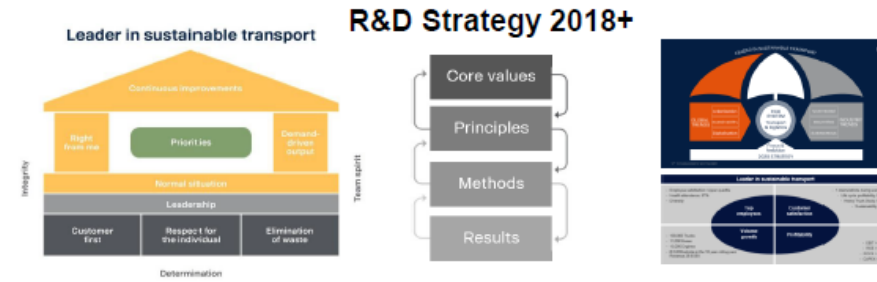
Today's Agenda

- Background
- Aim
- Research Questions
- Delimitations & Methodology
- Results from Literature Review
- Results from Multiple Case Study
- Activities of Change – Extended
- Conclusion
- Questions



Background

- Globalization
- Shortening of product development lead time
 - Implementation of modern working methods
- Digitalisation
 - Increased use of digital tools



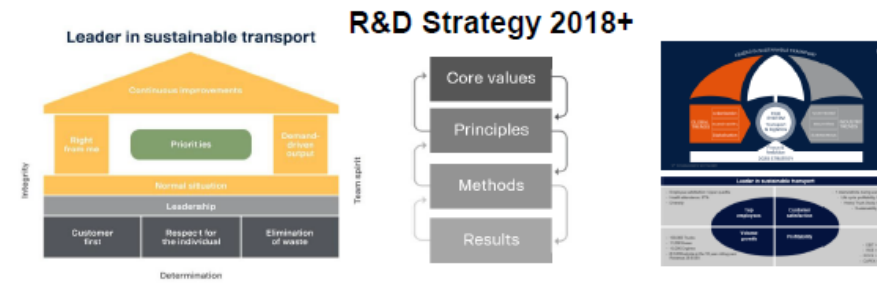
	Health Creativity Competence	Quality	Delivery	Cost	Leadership
<i>Desired state</i>					
<i>Strategies</i>	<ul style="list-style-type: none"> • Process efficiency through cross functional work and digitalization 				
<i>Focus areas 2018</i>	<ul style="list-style-type: none"> • Shorter lead times by more simulation, advanced analytics and validation 				
<i>KPI for Focus areas 2018 (R&D + sector level, efficient metrics on all levels expected)</i>					





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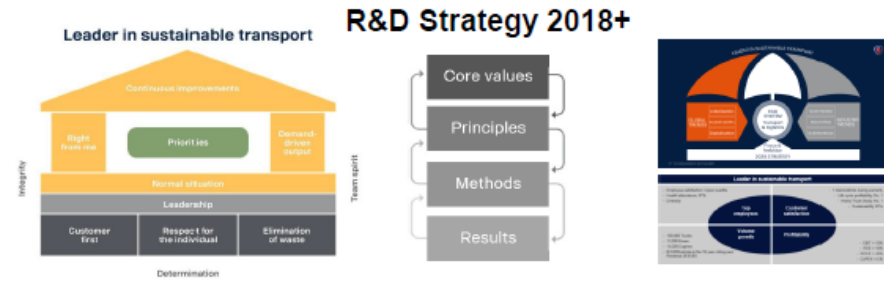
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Aim

Create methodology prerequisites and encouragement for modern working methods supported by technical simulations, to potentially improve exploration



Research Questions

- R1: How can a symbiosis between technical simulations and a modern way of working be implemented in explorative product concept development?
- R2: How are technical simulations utilised in concept development and what incentives effects the usage of technical simulations in early phases of modern product concept development?
- R3: What activities of change must be implemented to encourage modern explorative product concept development and simplify the use of technical simulations?



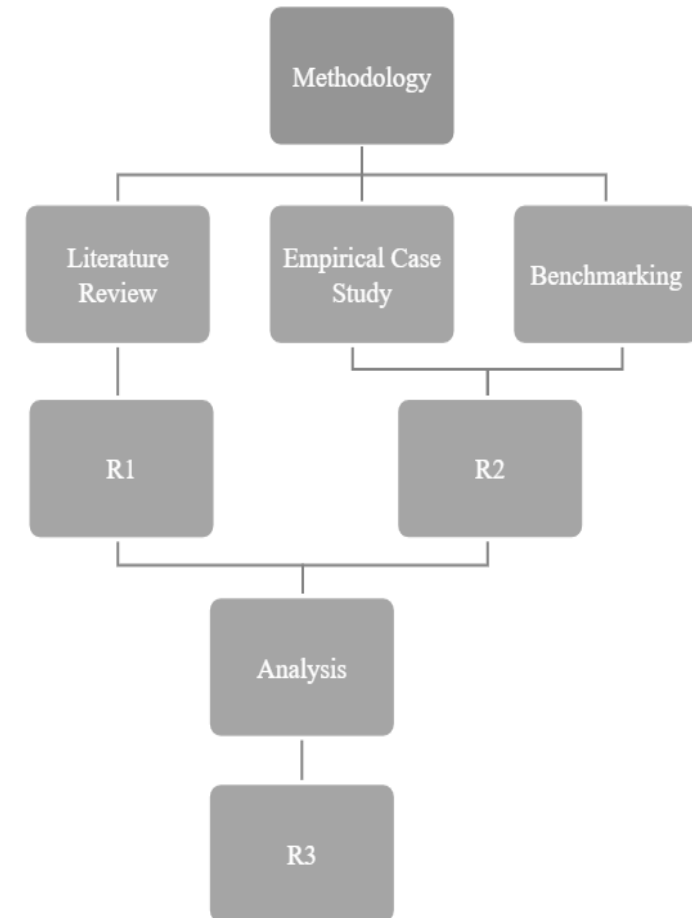
Delimitations & Methodology

Delimitations:

- RT, Scania
- Innovation Management: modern working methods within product concept development
- Technical Simulations: serve as a resource tool

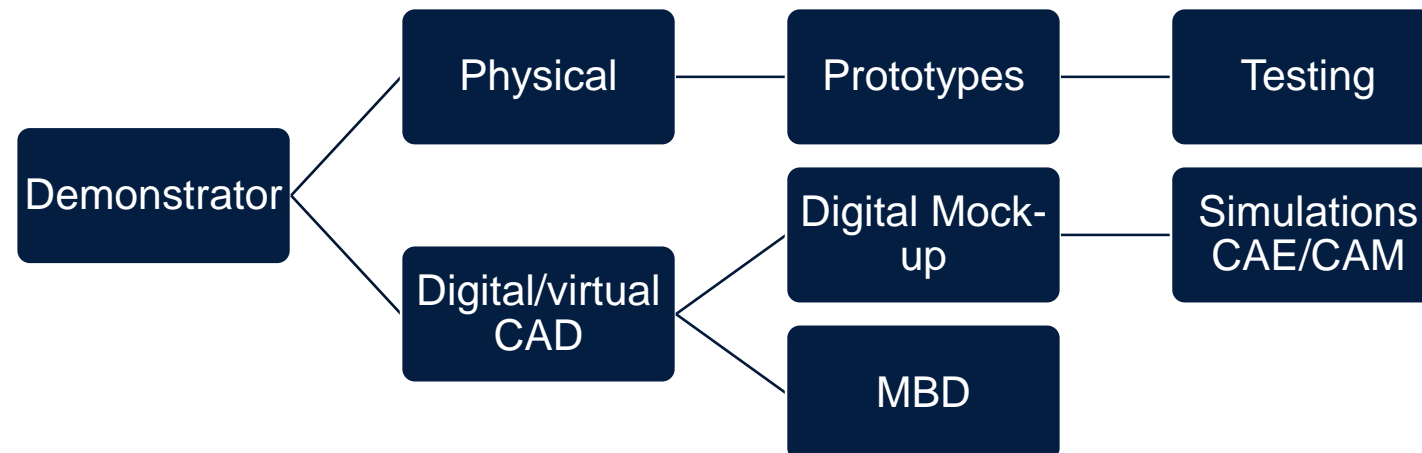
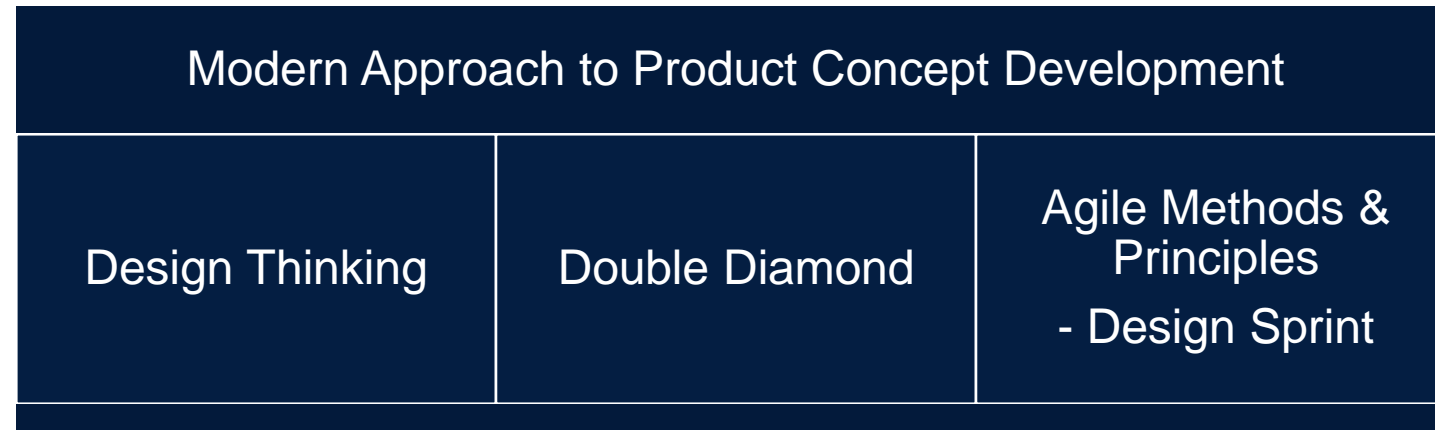
Methodology

- Literature review, Multiple case study, Benchmarking
- Qualitative and generalizable



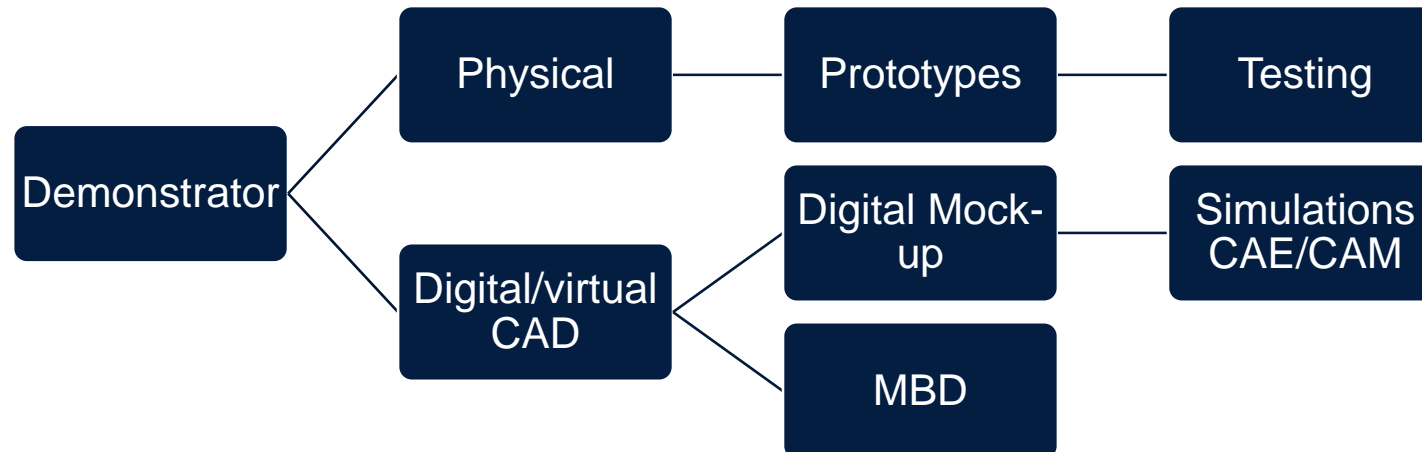
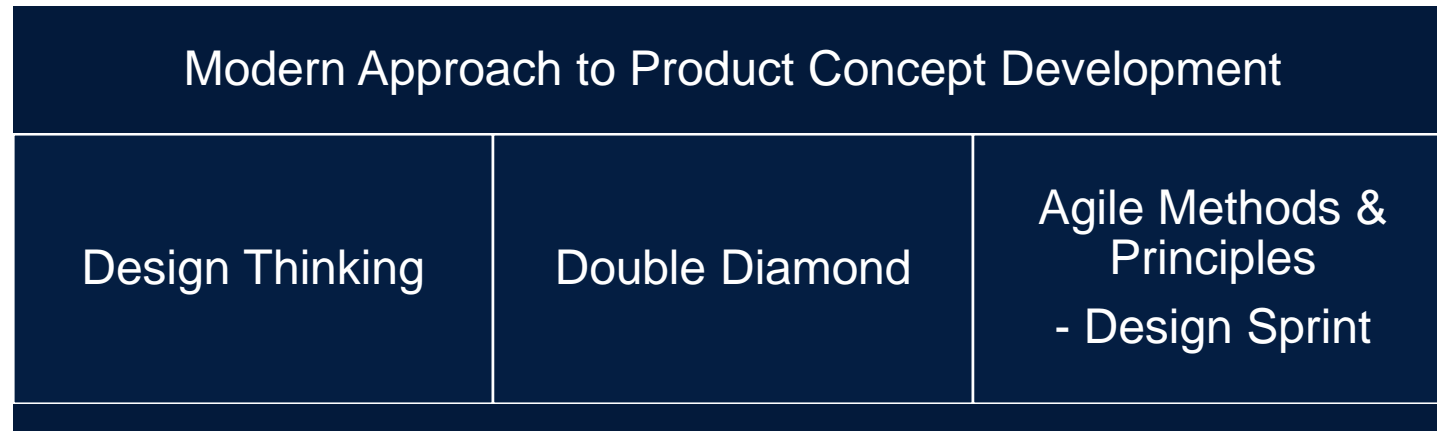


Results from Literature Review



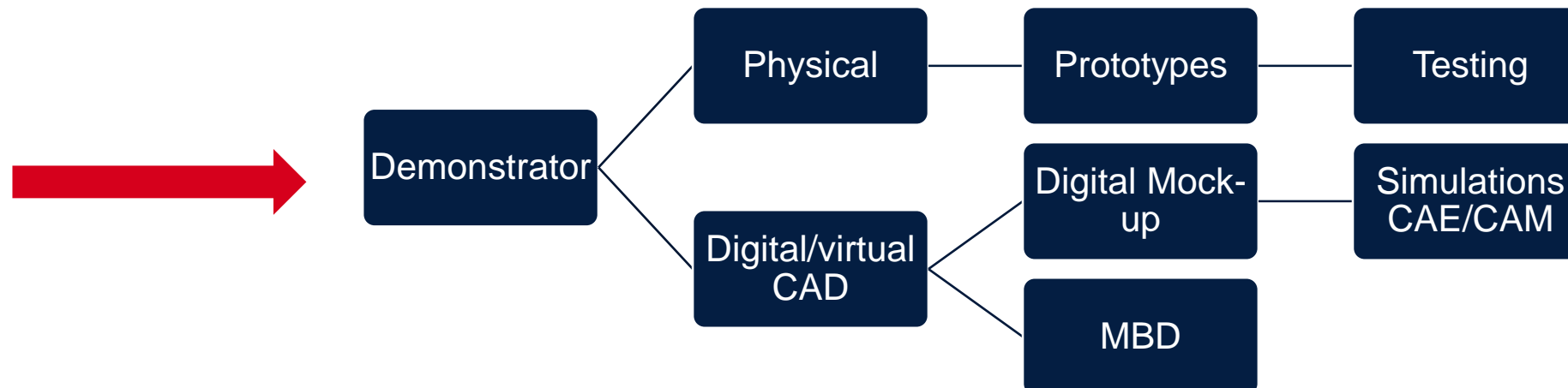
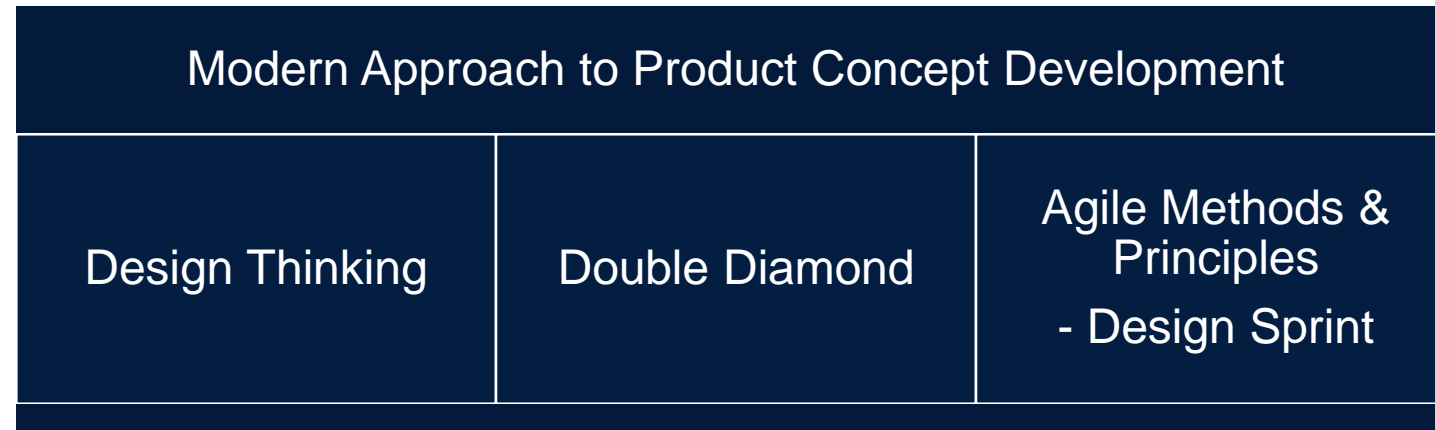


Results from Literature Review





Results from Literature Review





Results from Literature Review

Advantages of Technical Simulations

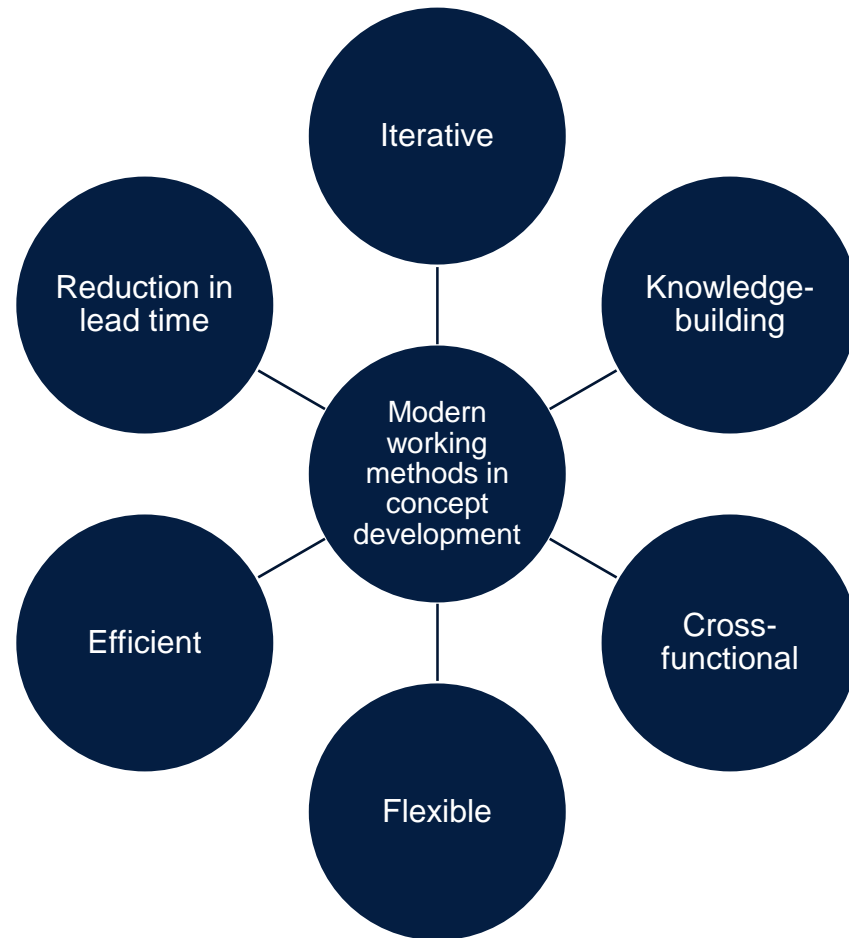
Quality	Cost	Reduced lead time	Sustainability	Knowledge awareness	Advancement in AM
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Difficulties of Technical Simulations

Knowledge of employees	Change of organizational structure	Scepticism from users	Early use of technical simulations	Mimic the reality	Integration between software	Restrictions in process power and supplier availability
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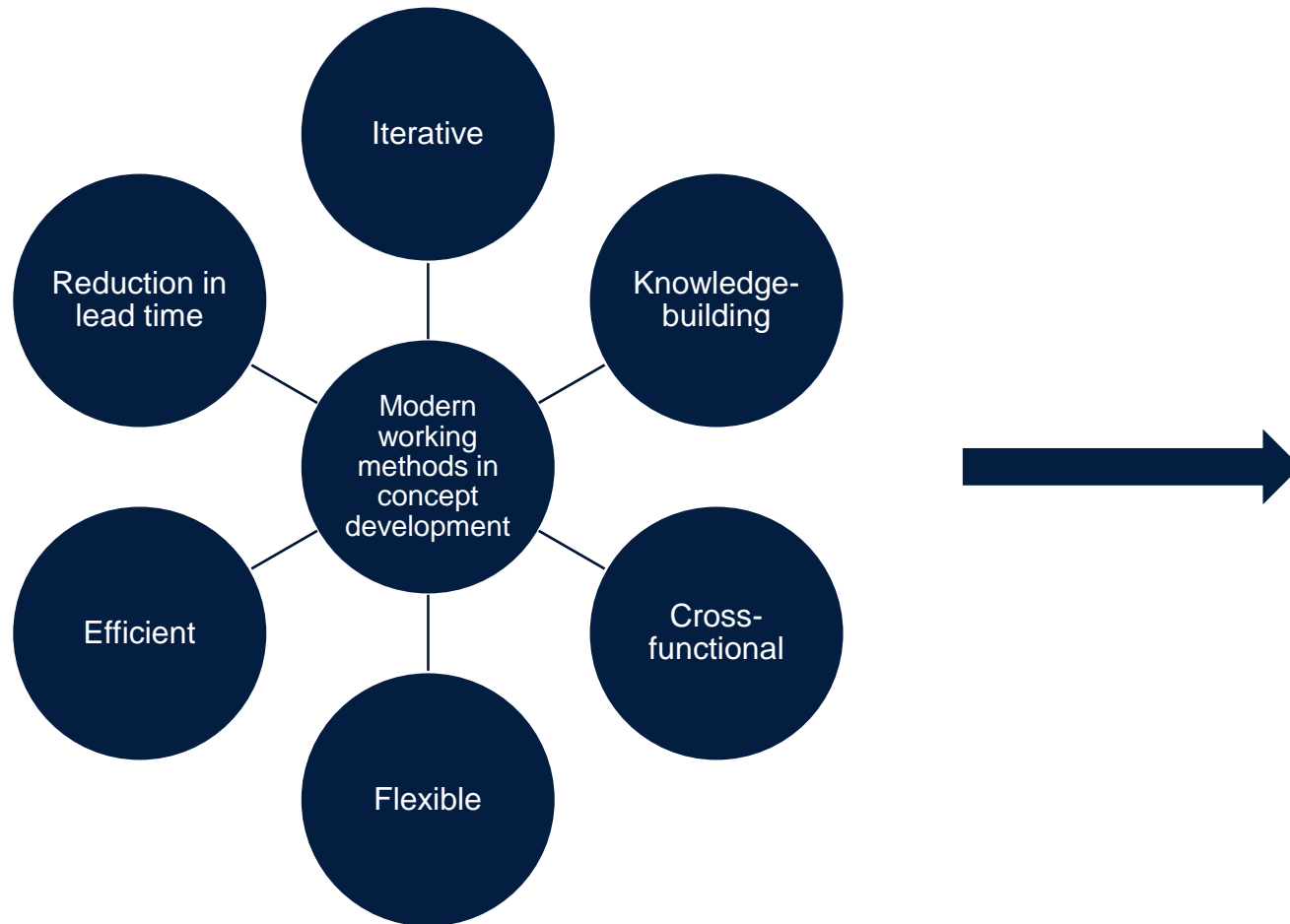


Results From Literature Review



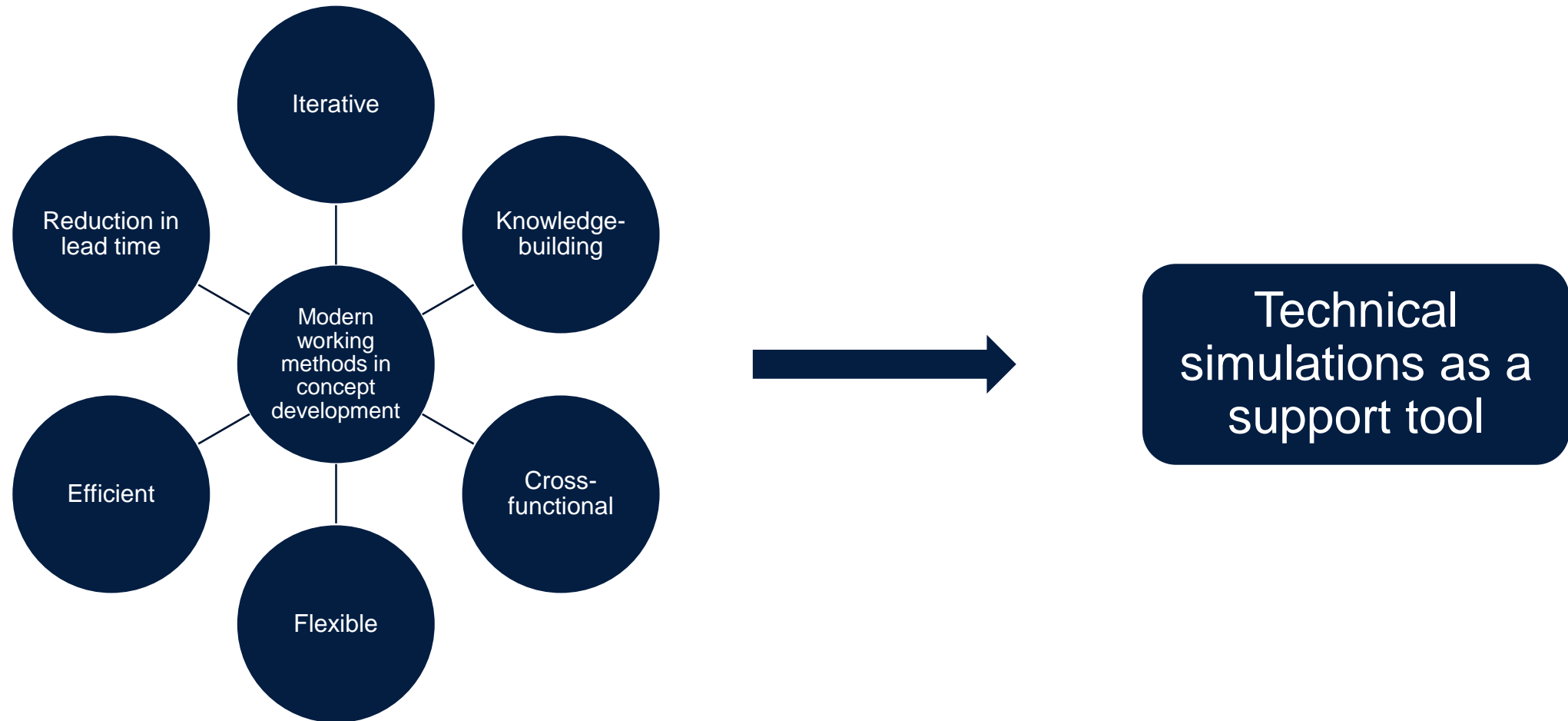


Results From Literature Review





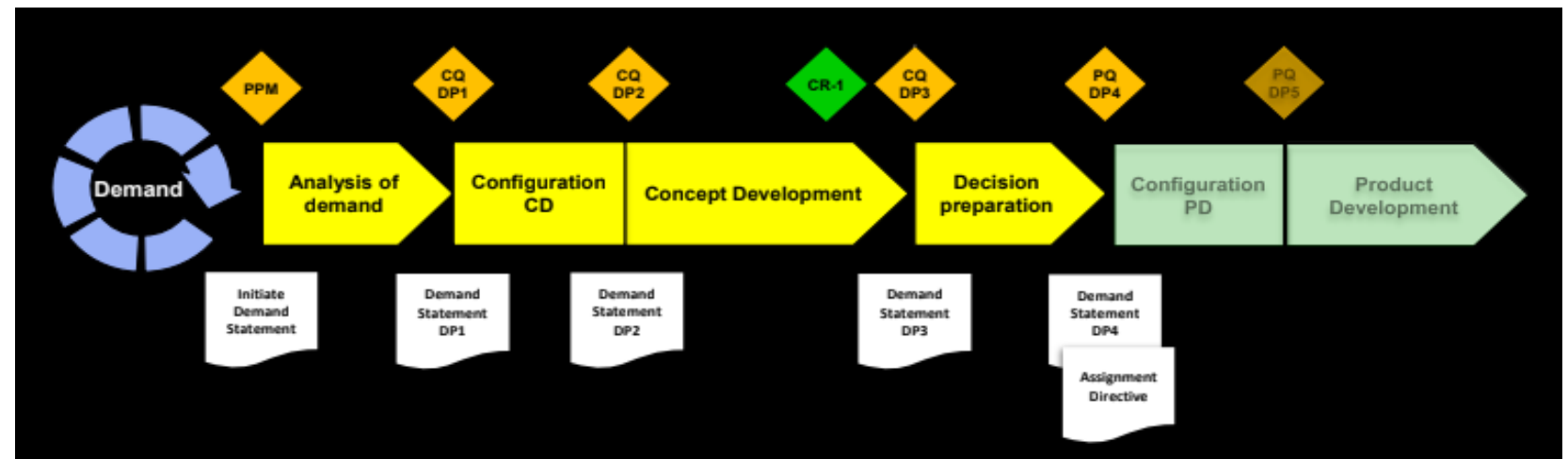
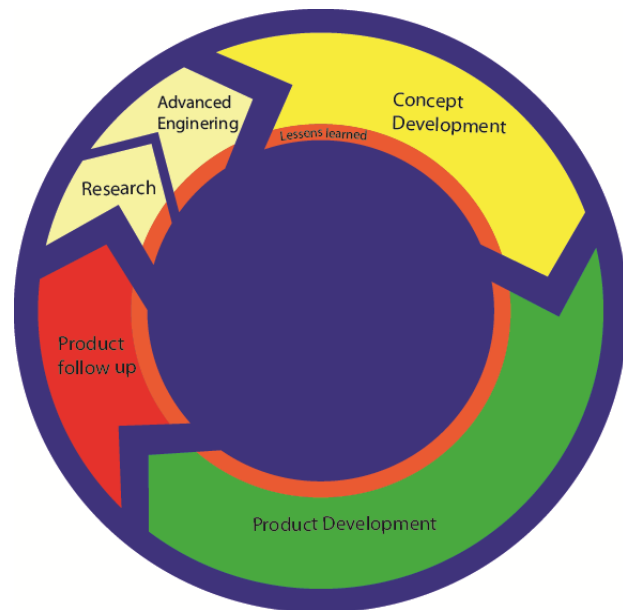
Results From Literature Review





Results from Multiple Case Study

Document Study to gain understanding of the process





Results from Multiple Case Study

Difficulties and challenges of implementing modern working methods and the use of technical simulations

Process

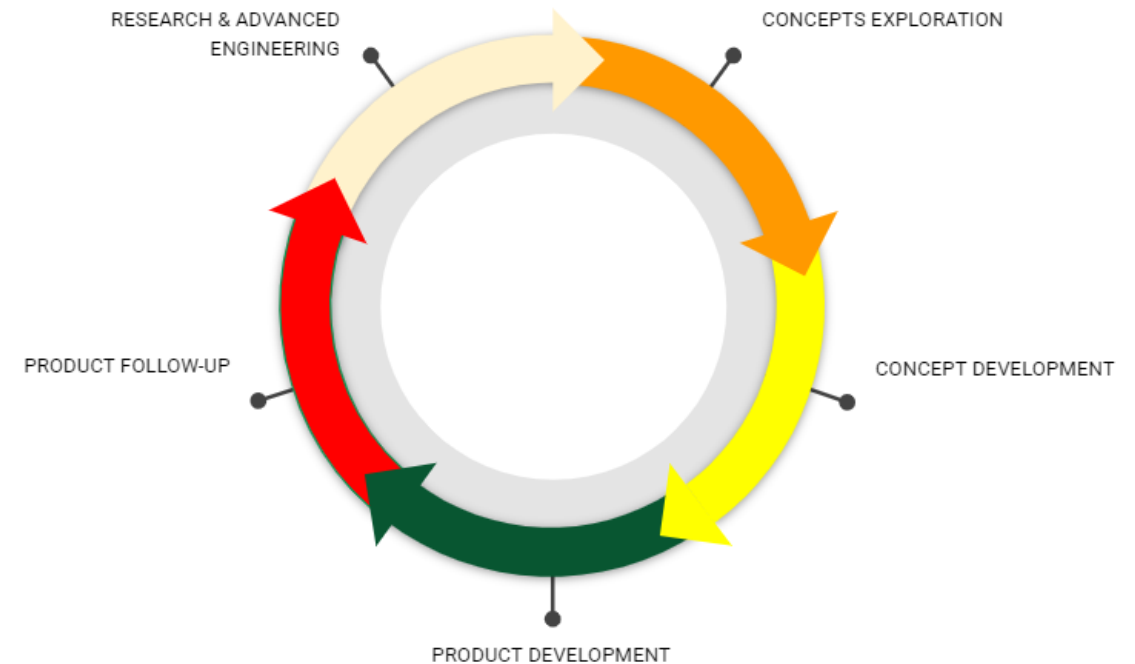
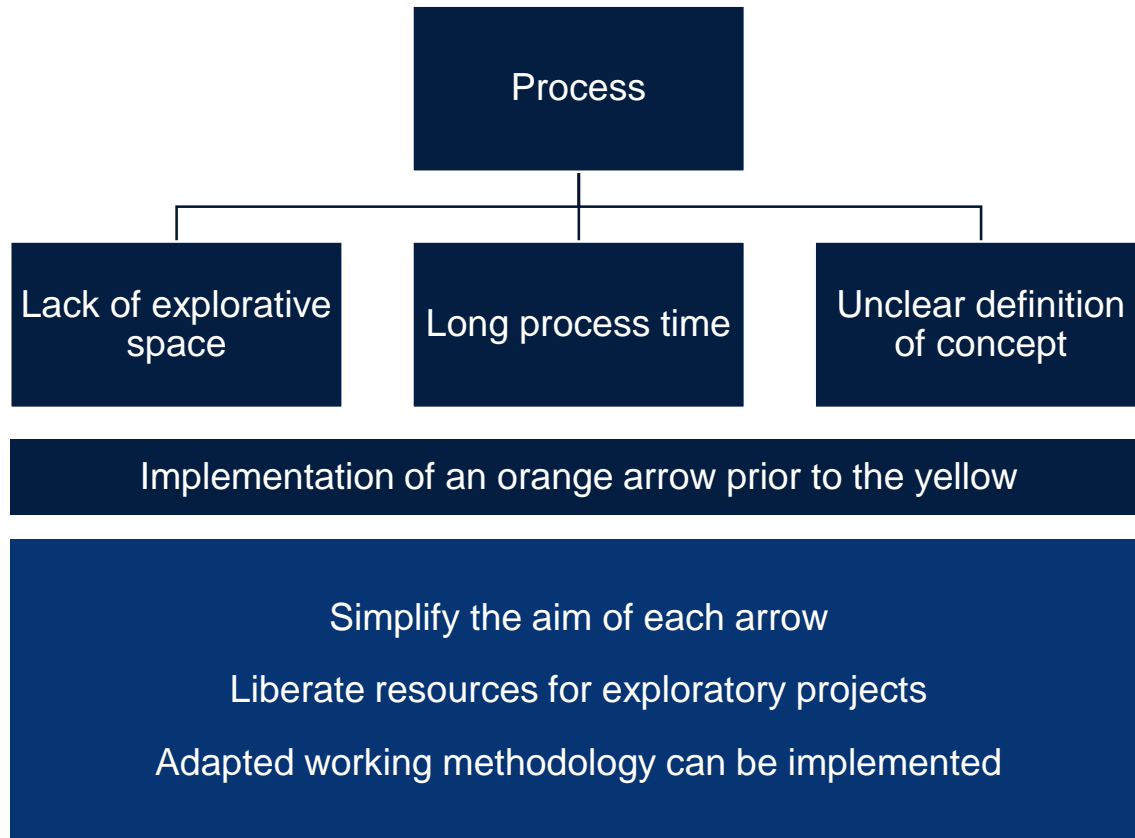
- Capacity for innovative solutions
- Unclear definition of a concept
 - Need of increased speed

Organisation

- The role of the design engineer
- The collaboration between simulation and physical testing

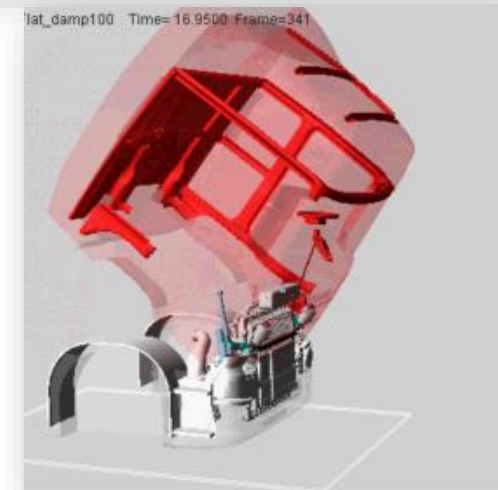
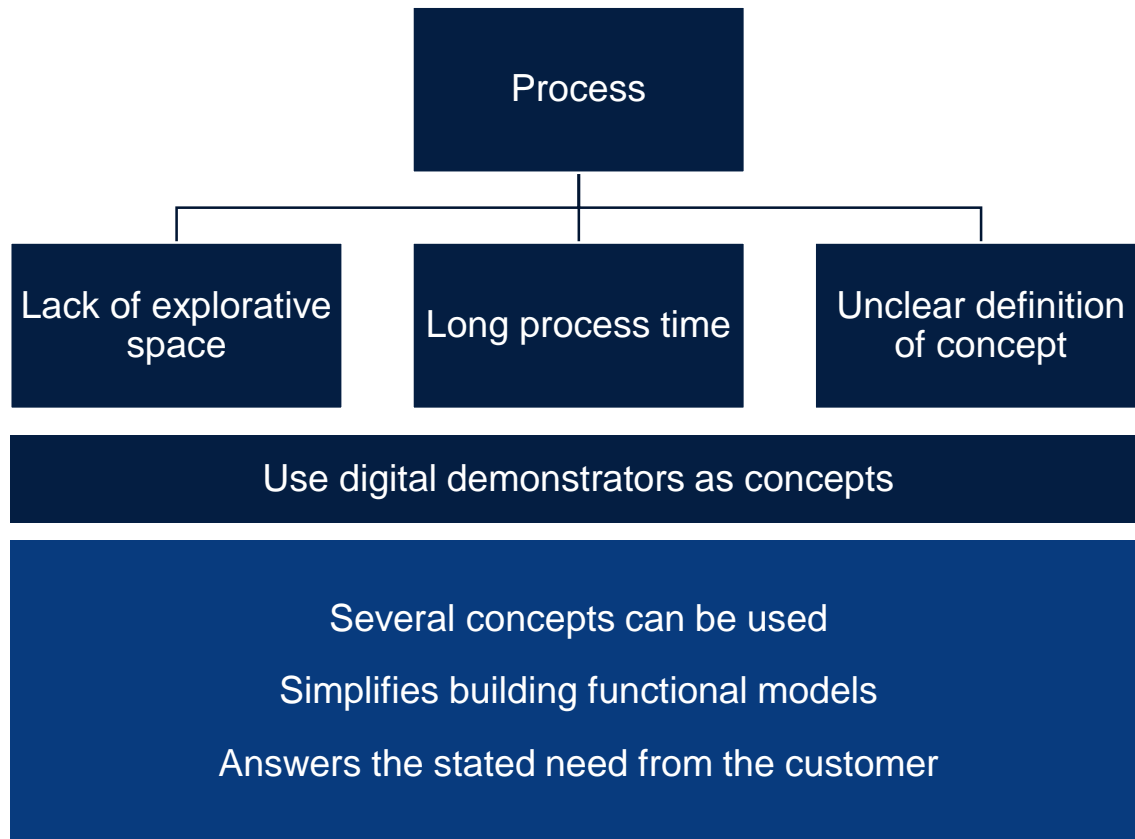


Process Changes – Implementing Orange Arrow



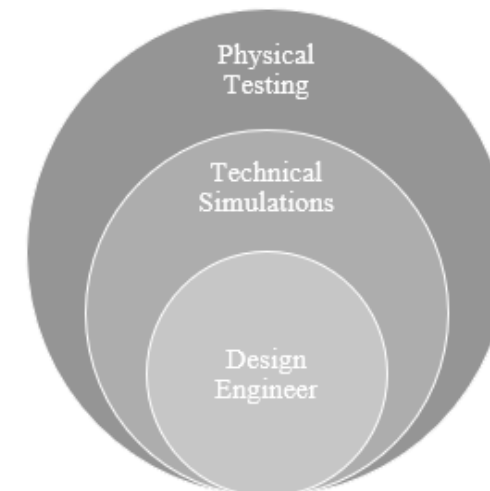
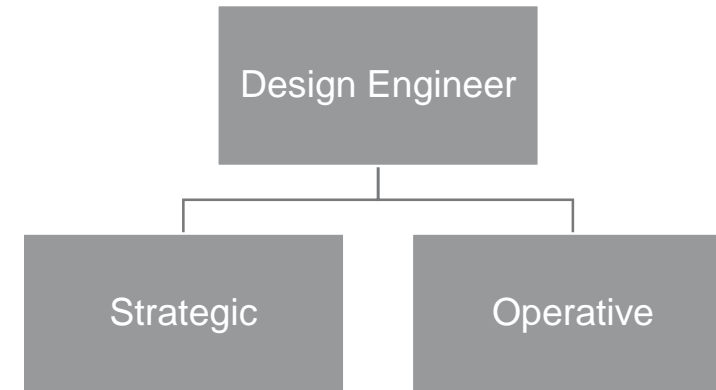
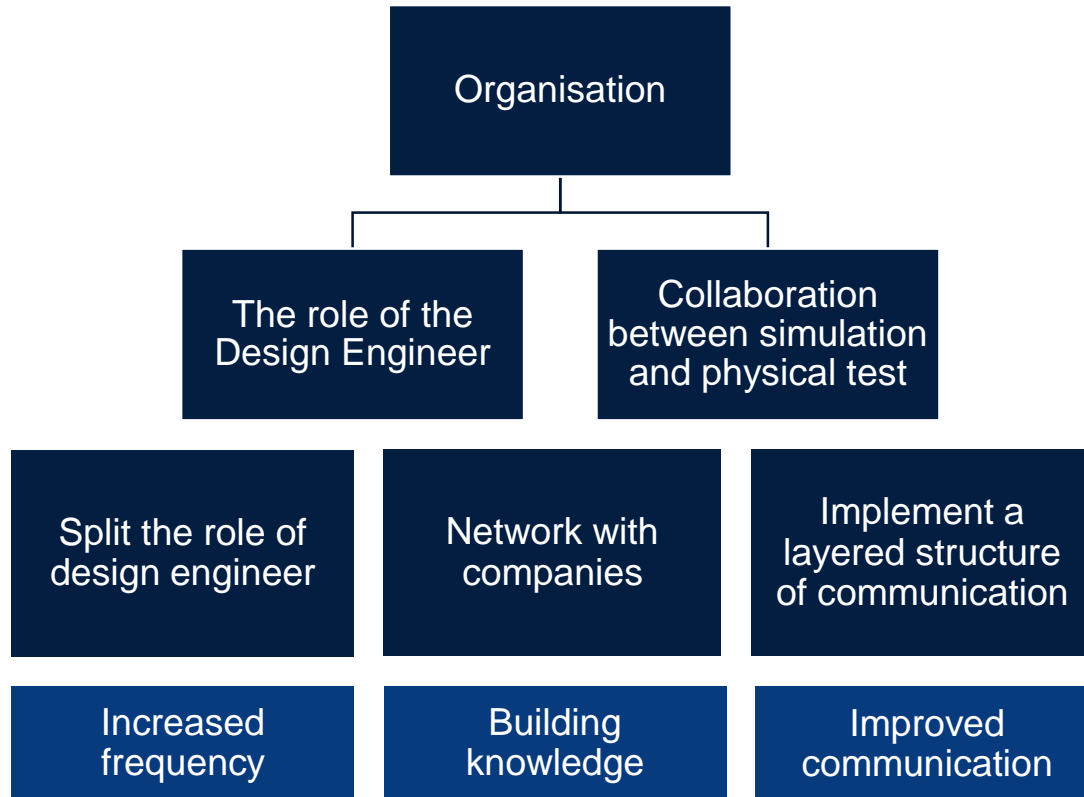


Process Changes – Using Digital Demonstrators





Organisational Changes





Ongoing Activity of Change - Automation

→ Supports the previous suggested activities of change

- Easy to use in simulation sprints
- Less demand on each individual
- Lower knowledge barrier
- Knowledge building

Activities of change in order to fulfil automated processes

Time and resources to develop processes

Centralised organisation for technical simulations



Conclusion

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FULFILLED



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