



Project 4.0

The Impact of Digitalisation on Project Management

Brief reflections & findings



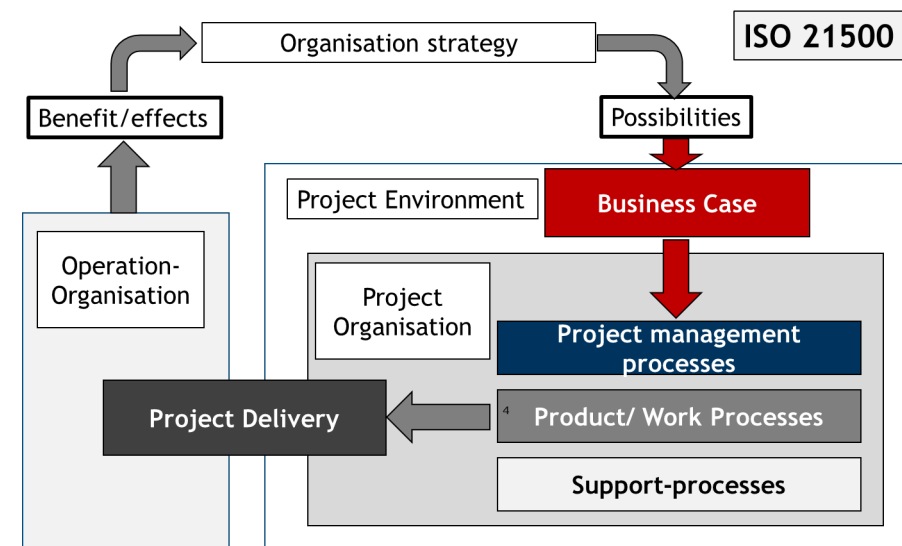
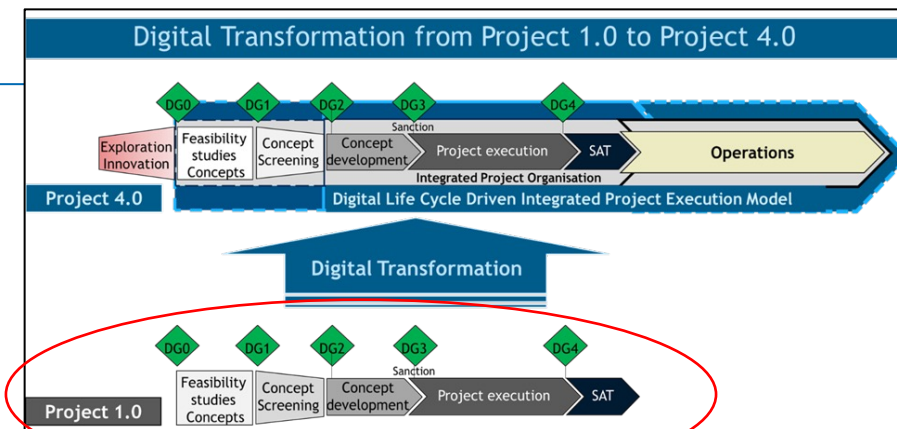
Background & Brief Introduction

Project Norway launched an R&D initiative related to the energy industry in Norway

A desire to improve the project performance, stated by Ministry of Energy

Two main topic areas were selected:

- Next Generation Project Execution Models
 - Impact of digitalization
 - Industry 4.0 features in the project context
 - Integrated Life Cycle perspectives
- Project Governance and impact of digitalization on decision making & organizing

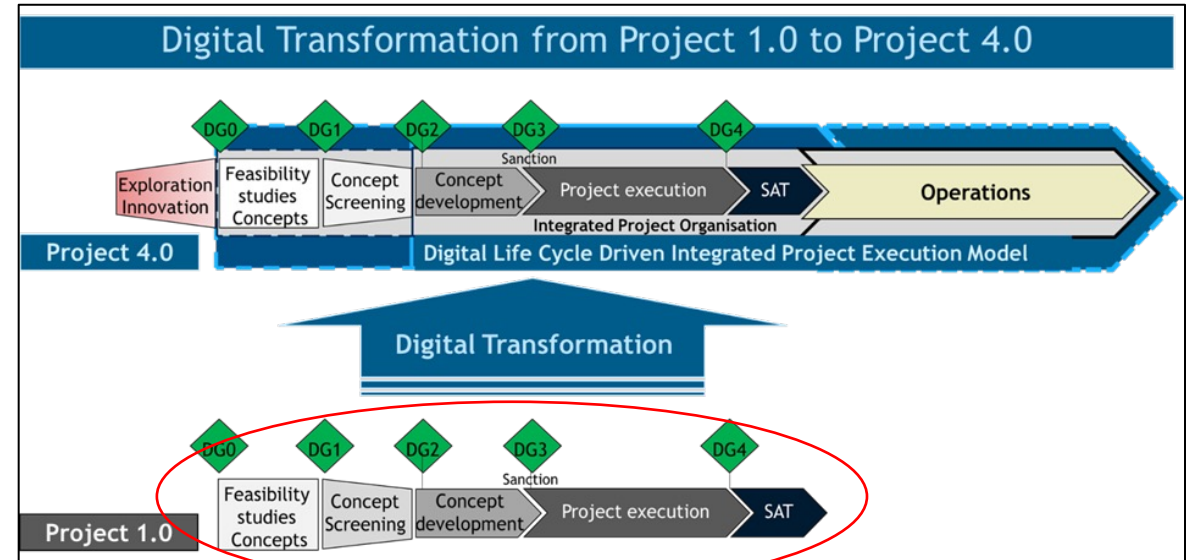


R&D Project Findings

Expectations on Future Project Execution Models => Project 4.0

Key Findings of desired features :

- Potential for expanding the PEM covering an integrated life cycle perspective
- Real time project control & real time executive status reporting
- Evidence based facts and figures
- Enhanced preciseness and reliability on facts
- Reduction in uncertainty level
- Faster optimization
- System level Digital Twins make life cycle integration possible



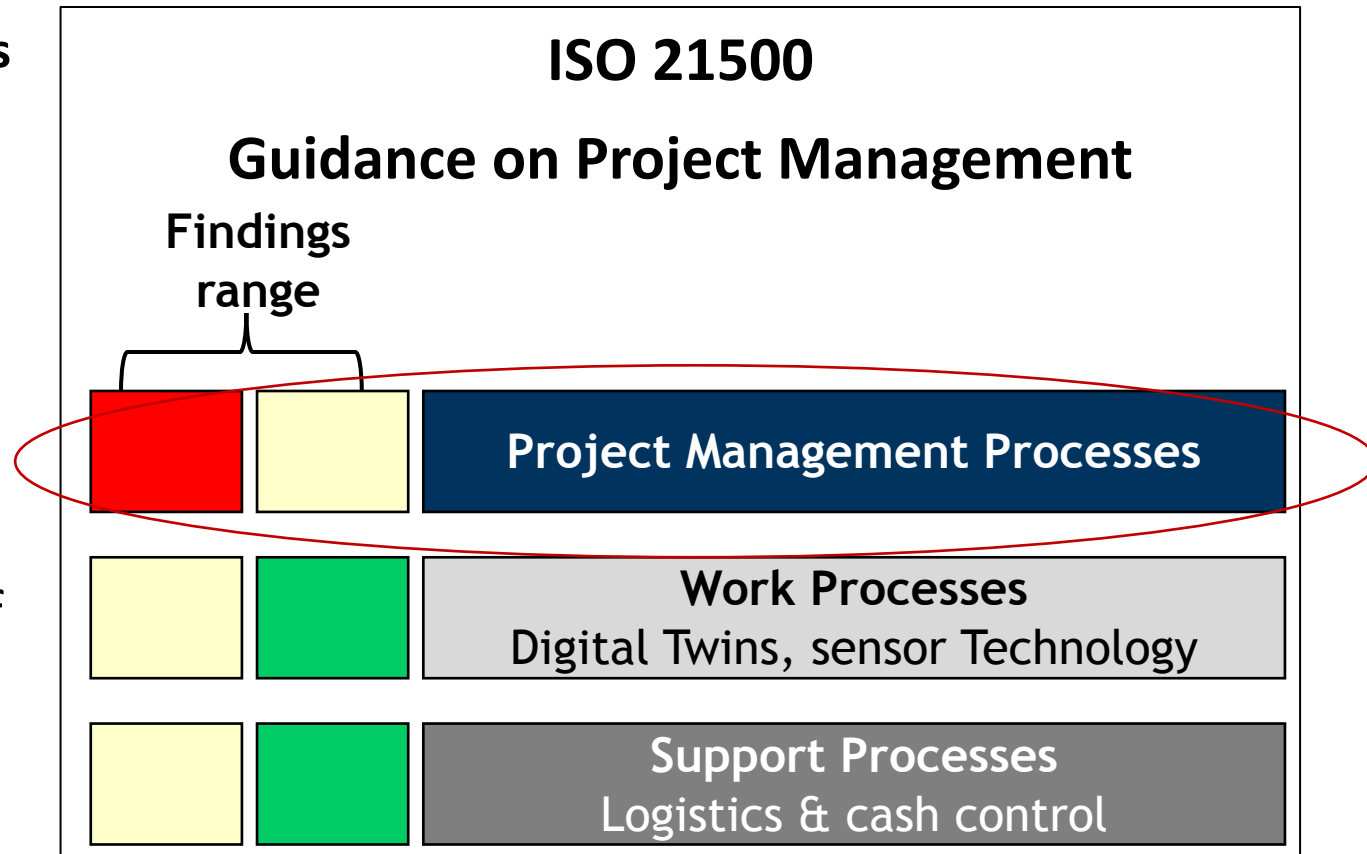
Supplementary Key Issues

- How to cater for governance during project execution in seamless Project Execution Models?
- How does digitalization impacts project-organizing?
- Roles and responsibility
- Desired competence profiles
 - Data analytics added and integrated

Survey on digitalisation in energy projects

Mapping of Digital Maturity in Energy Projects

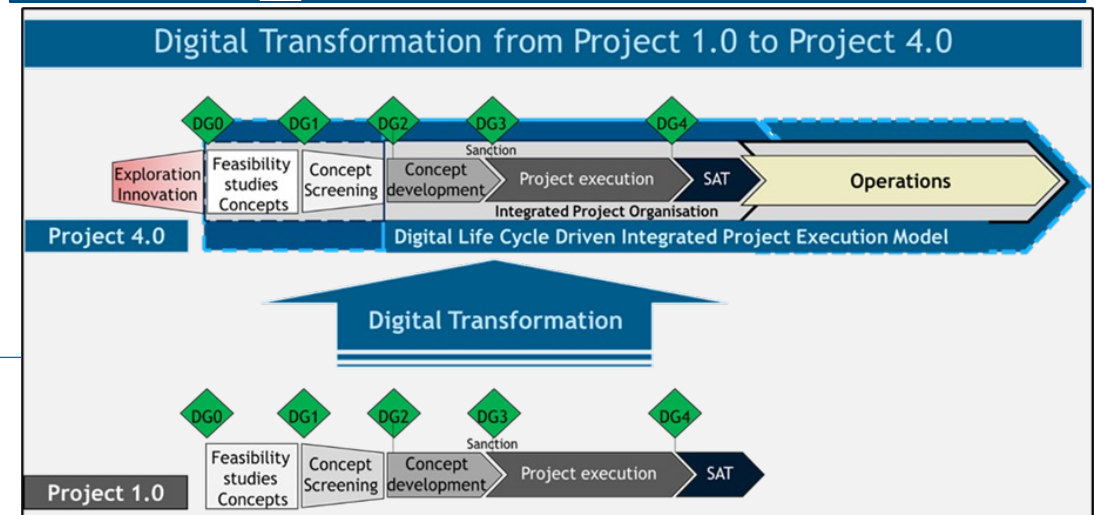
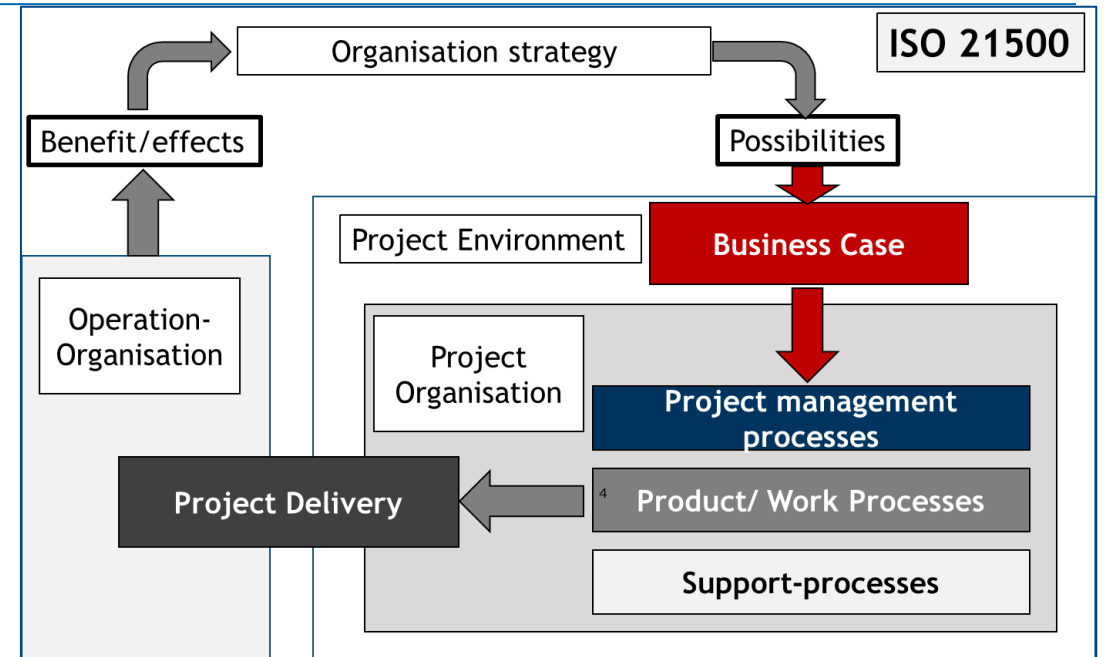
- A survey among the sponsors of the R&D initiative concerning digital maturity in upstream project development in energy by Project Norway
- A survey among Executive Master of Management students at BI. International and global



R&D Findings: Highlights from Survey of Digitalisation & Decisions

Key Findings:

- Full range
 - From marginally, to
 - Fully utilised
- Decision making varyingly affected by digitalization, but improved data driven decision support facts
- For conceptual screening; digital tools applied to a large extent
- Product life cycle considered to some extent
- Digital systems are used, but to a varying degree. **The potential of ML, AI and AR: a step change**



R&D Findings cont.: Expectations from Survey of Digitalisation & Decisions

Key Findings:

The periodic and **repetitive decisions** are in:

- Planning & control processes,
 - cost, risk & schedule
- Main work process in the value chain
- Logistics and supply

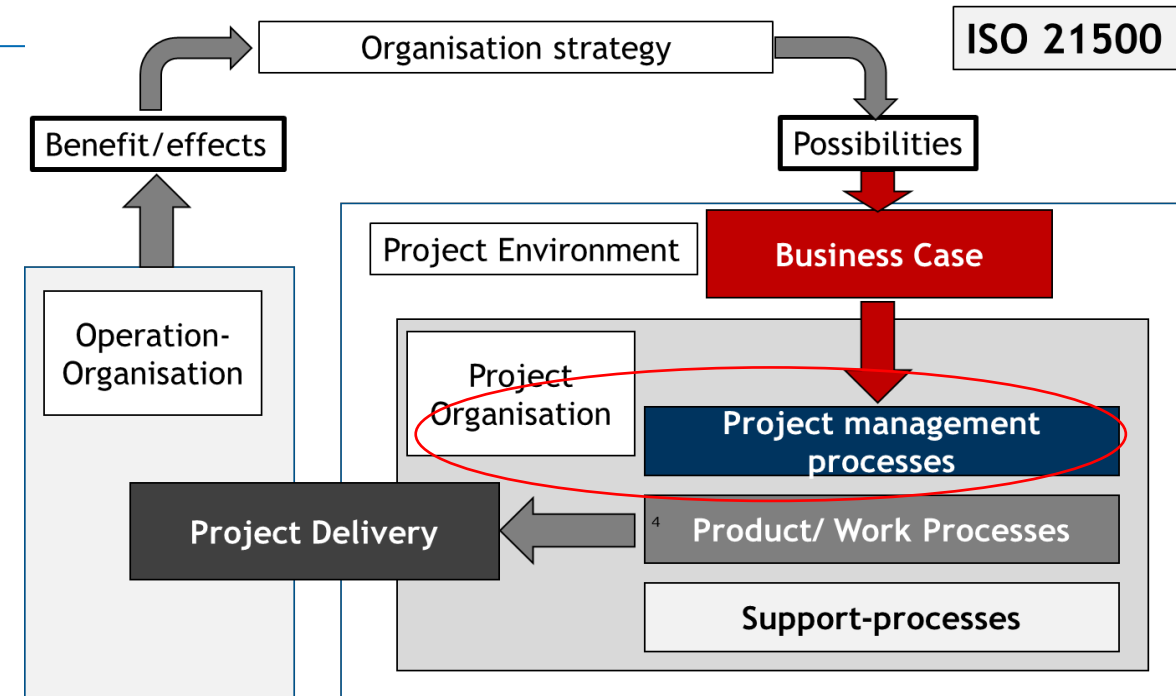
Planning & control on cost, schedule & risk can be optimized by a numeric tool.

Automation is an Insurance for repetability and quality in execution.

Any routine and repetitive activity is an excellent candidate for digitalization and bearing them on digital tools.

Strategic decisions must be at the charge of someone and not digital tools???

Digital systems reduce communication pain



Likely Impacts on Decision making:

- To a large extent a radical impact on project organization and roles
- Data analytics competence among all members, including data analytics experts
- Project Governance

Decision Making in Projects

Operational Decision Making

Project Management Processes

- Planning
- Control & Forecasting
 - Cost
 - Risk & Schedule
- Resource management

Work Processes

- Product development and execution
- Managing non-conformance

Strategic One-Off Decision Making

Project Management Processes

- Concept selection
- Portfolios management
- Project selection
- Project start up and termination

«on major deviations»

**Autonomous decisions likely and possible?
Yes to a significant degree
Hybrid AI**

**Autonomous decisions likely?
Questionable, but digitalisation
provides far better and consistent
decision support facts
Future: Application of Generative AI?**

Project 4.0 Summary Remarks

Project 4.0 The Impact of Digitalisation on Project Execution and Management

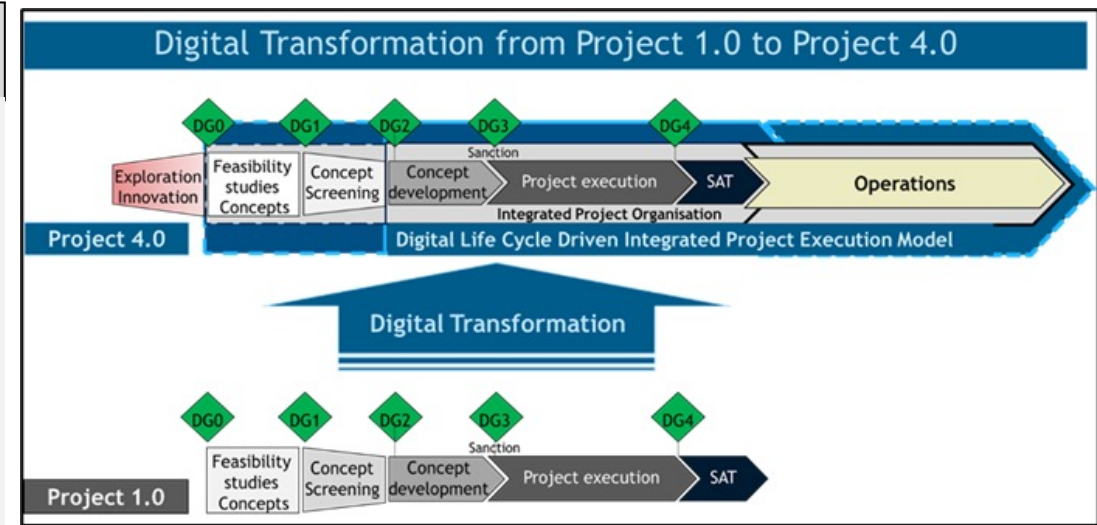
- Significant improvements may be achieved through utilisation of digitalisation during planning and execution
- **Work Processes** to a large degree utilise digital tools for continual assessments, simulations and operational execution
- Standardisation possible to align with Industry 4.0
- Expansion to a life cycle perspective possible through system level digital twins

Project Management Processes

- Planning and control processes may to a significant degree be run autonomous on cost, risk and schedule
- Culture, organising & team performance questionable

Project Governance and Decision Making

- *Operational Decision* making might be executed as autonomous decision making from data driven facts
 - *Strategic “One- Off” decisions*; digitalisation improve the decision gate support facts, not the decisions as such.
- Autonomous Strategic decisions not likely at present (Decision Gates), although current practice at Decision Gates are based on structural data driven support facts.



What's missing and next? Project 5.0 integration of culture and relations in Strategic Project Governance

