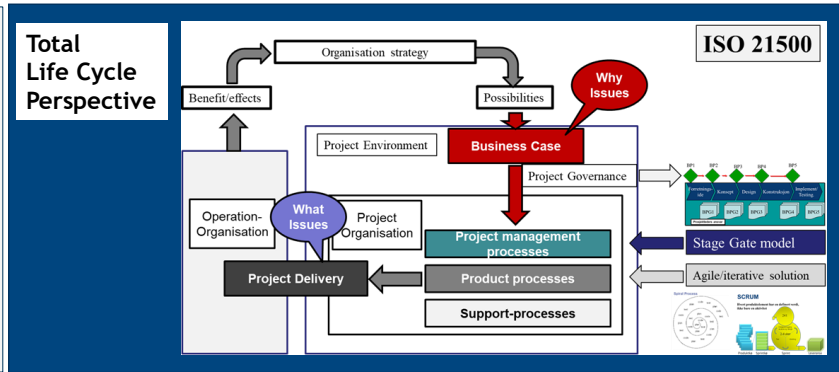


The Prosjekt Norge R&D Projects for the energy Industry oil gas and renewables

Prosjekt Norge is running the following applied research projects:

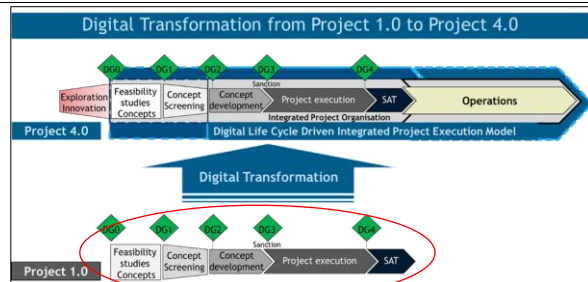
1. Integrated Business and Value creation models in a life cycle perspective
2. Impact of digitalisation on leadership & leader processes and decision making in project execution



Project No 1. Findings cont.: Expectations on Future Project Execution Models

Key Findings:

- Potential for expanding the PEM (including exploration and operations?)
- Real time project control
- Evidence based facts and figures
- Enhanced preciseness and reliability on facts
- Reduction in uncertainty level
- Faster optimization
- Life cycle perspective likely integrated



Key Issues

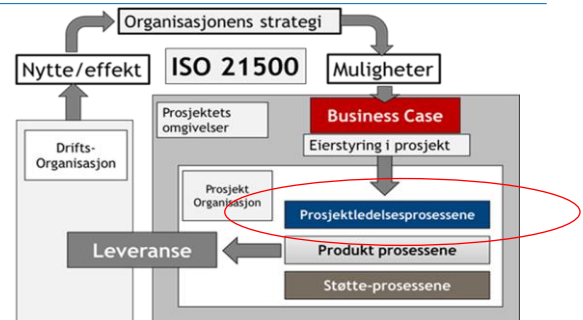
- How to cater for governance during project execution in seamless Project Execution Models?
- How does digitalization impacts project-organizing?
- Roles and responsibility
- Desired competence profiles
 - Data analytics added and integrated

R&D Project No. 2

Some Findings: **AS-IS** Highlights from Survey of Digitalisation & Decisions

Key Findings:

- Full range
 - From marginally, to
 - Fully utilised
- Current decision making not largely affected by digitalization
- For conceptual screening; digital tools applied to some extent
- Product life cycle considered to some extent
- Digital systems are somehow used, but not fully. **The potential of ML, AI and AR: a step change**



Likely Impacts on Decision making:

- Legacy thinking, laziness and short termism is still a major barrier standing in the way of significant progress in this respect. Intrinsic value of digital tools still not yet well understood and therefore efforts to progress are stifled.
- Whilst some progress is being made there is still a long way to go in terms of planned investment.

3

R&D Project No. 2

Some Findings: **Expectations** from Survey of Digitalisation & Decisions

Key Findings:

The periodic and repetitive decisions are in:

- Planning process
- Main work in the value chain
- Logistic and supply

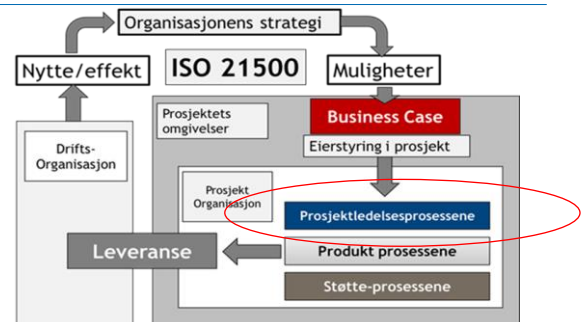
Planning can be optimized by a numeric tool.

Automation is an insurance for repetability and quality in execution. « Single source of truth »

Any routine and repetitive activity is an excellent candidate for digitalization and bearing them on digital tools, provided within acceptance limits.

Strategic decisions must be at the charge of someone and not a digital tool.

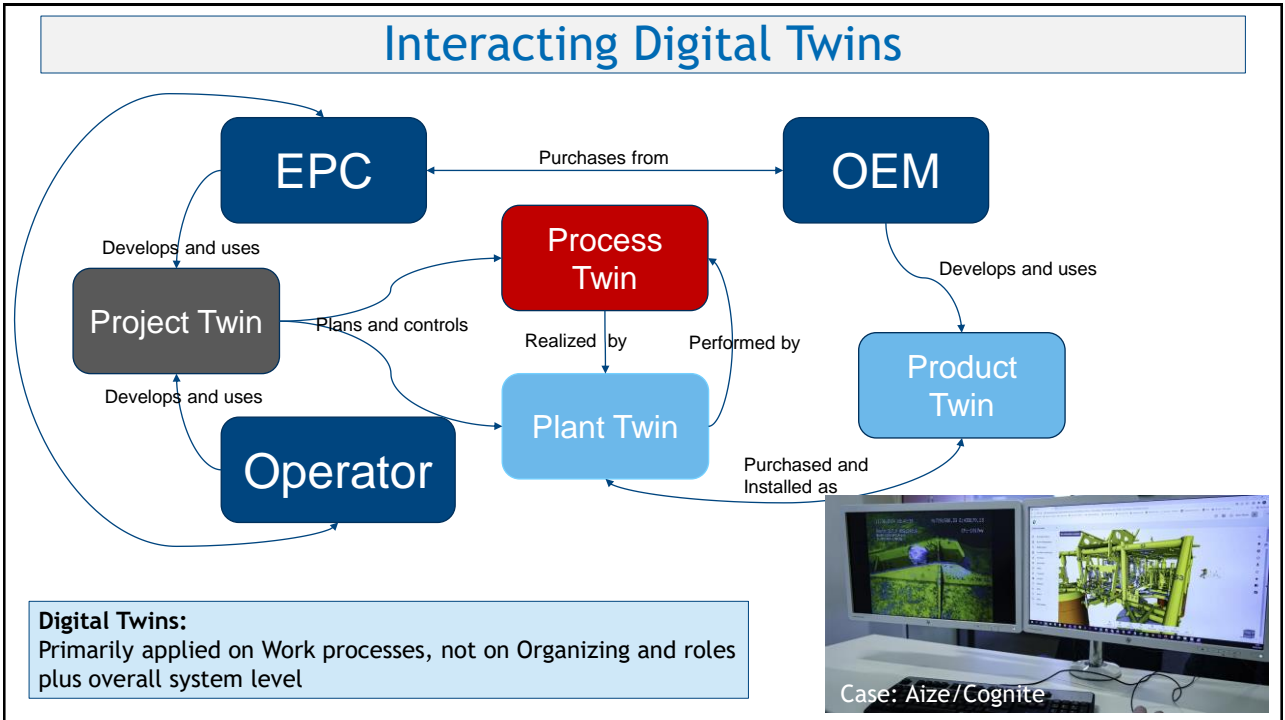
Digital systems reduce communication pain



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

4



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Decision making in projects

<p>Operational decisions</p> <p><u>Project management processes</u></p> <ul style="list-style-type: none"> Planning Management & execution, control & forecasts Resource management Interface management <p><u>Work processes</u></p> <ul style="list-style-type: none"> Product development Non conformance & deviations 	<p>Strategic «one off» decision making</p> <p><u>Project management processes</u></p> <ul style="list-style-type: none"> Prioritisation and selection of projects in a portfolio Concept selection DG Approval & sanction Project kick off Project-termination <p><u>Work processes</u></p> <ul style="list-style-type: none"> «Fit for purpose» at gross deviations
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Autonomous decisions possible?

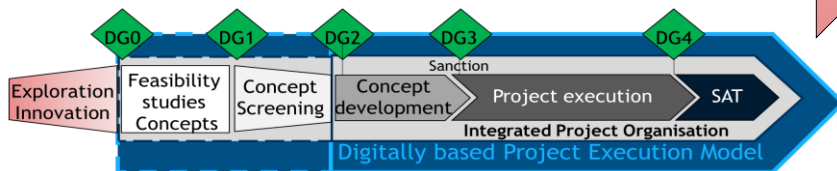
Autonomous decisions at all possible, or at best being better decision support facts?

6

Automation themes

- Automated reporting - likely?
- Automated decision making - differentiate

Interesting for US



BI

30

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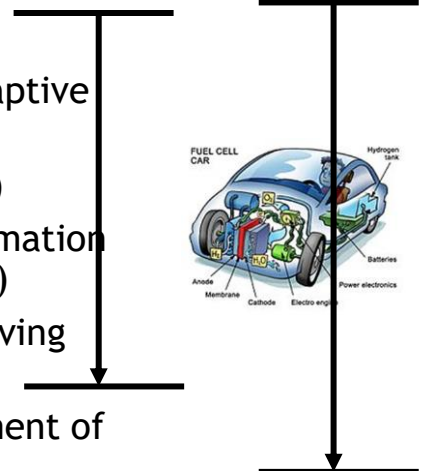
7

Automation themes (automobile ind.)

- Level 0: No Automation (e.g. cruise control)
- Level 1: Assisted Driving Automation (e.g. adaptive capabilities)
- Level 2: Partial Automation (e.g. self parking)
- Level 3: Conditional Automation limited automation driving functionality under certain conditions)
- Level 4: High Automation (full automation driving technology functionality in most conditions)
- Level 5: Full Automation (require no involvement of humans)

Driver must intervene when needed

Driver accountable



BI

8



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