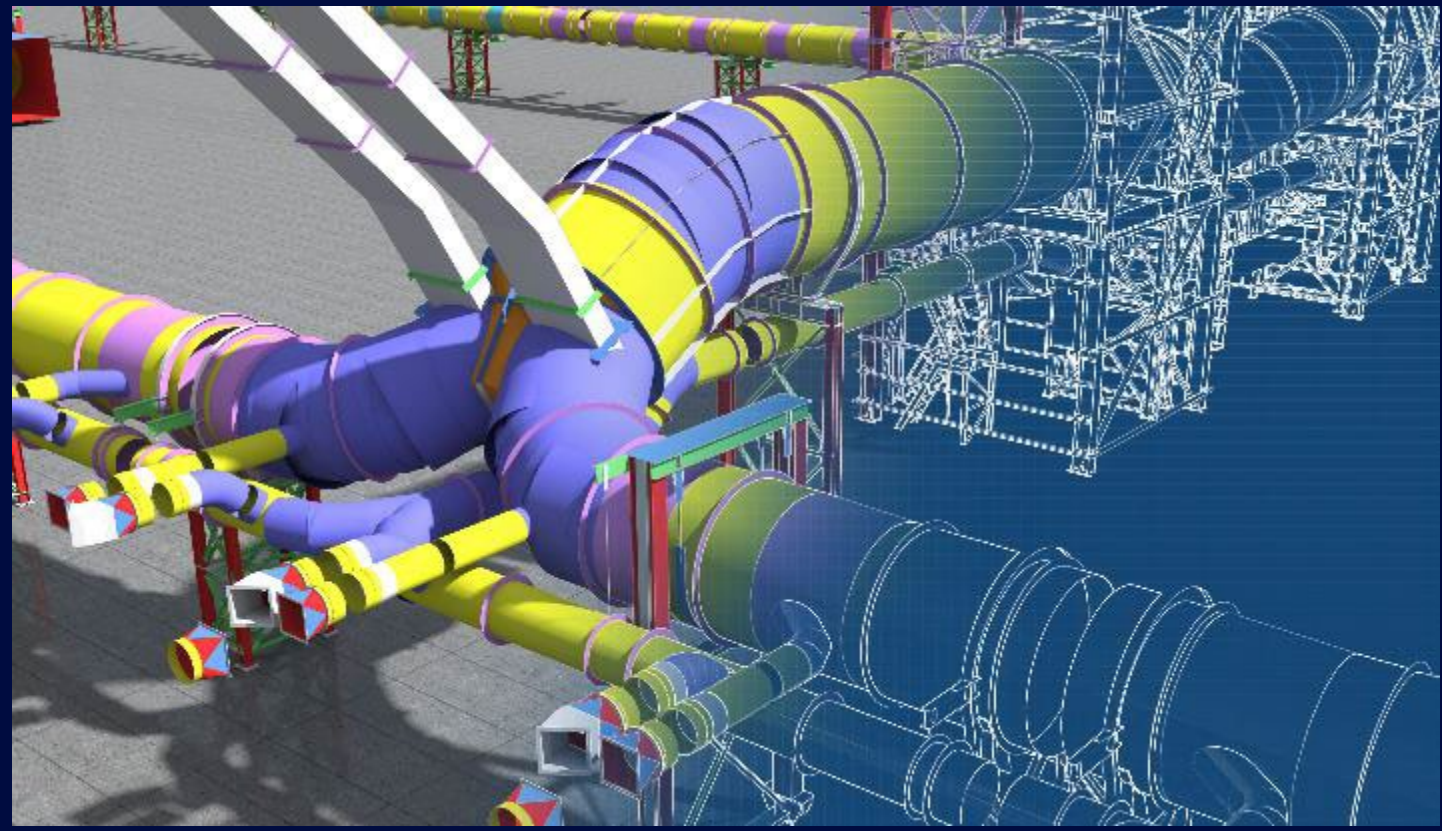
Fint om du slår av
- kamera
- lyd

Vi starter kl. 0830

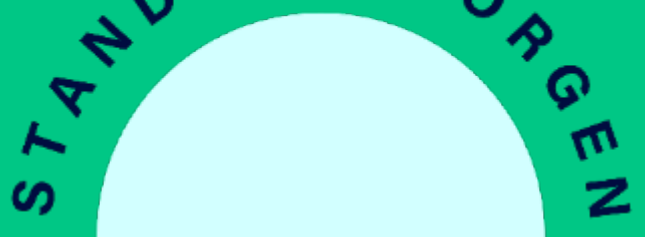
STANDARD MORGEN

Godkjenning av ny NORSOK WA-Z-020 3D CAD



Standard Norge

Fint om du slår av
- kamera
- lyd



Godkjenning av ny NORSOK WA-Z-020 3D CAD

1. **Oppstart og praktisk info**
   Einar Morten Lassesen, Standard Norge (møteleder)
2. **Introduksjon til NORSOK WA-Z-020**
   Inghild Kaarstad, Standard Norge
3. **Dokumentets innhold og hensikt**
   Terje Maanum, revisjonsleder
4. **NORSOK WA-Z-020 i en større sammenheng**
   Bjørn Berli, leder av ekspertgruppen
5. **Spørsmål og kommentarer**
6. **Godkjenning av NORSOK WA-Z-020**
   Inghild Kaarstad, Standard Norge

Standard Norge

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Introduction to NORSOK WA-Z-020

Inghild Kaarstad, SN

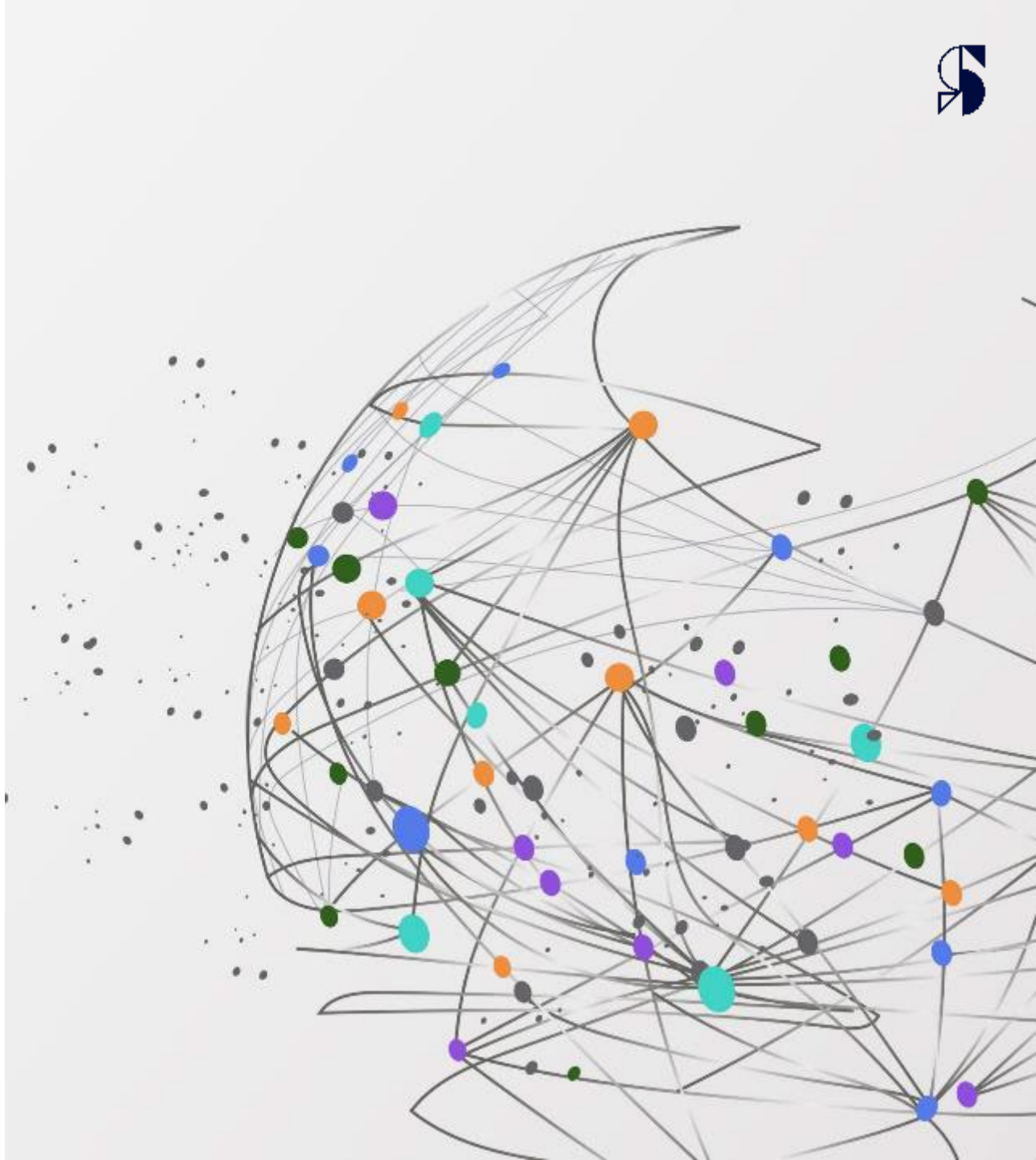
Photo: Pixbay

NORSOK and Standards Norway

- The NORSOK standards are owned by Offshore Norge, the Federation of Norwegian Industries and the Norwegian Shipowners' Association. They are managed and published by Standards Norway.
- Team Energy and Petroleum provides support to NORSOK expert groups.

Introduction to NORSOK WA-Z-020 3D model requirement

- NORSOK EG Z-Ti is responsible for standards within Technical information.
  - When NORSOK was established, paper documentation was most common.
  - Computer based information sharing is now dominating.
- The mandate for WA-Z-020 was established by Z-Ti and approved by the sector board in June 2020.



Introduction to NORSOK WA-Z-020 3D model requirement

- 3D specifications has until now been Company specific with:
  - functional requirements
  - specific software/solutions (PDMS/E3D, etc.) requirements
  - «3D surface» requirements
  - while “3D subsea» requirements are not covered
- There were no common specifications for laser scanning and photogrammetry.
- The USPI initiative indicates the first step of an topside 3D specification that is be based on non-proprietary formats.
- EG Z-TI is responsible for a suite of standards (se next page).

NORSOK technical information documents


Photo: ScanStock

Z-001	Documentation for operation DFO (Rev. 4, March 1998)
Z-CR-002	Component identification system (Rev. 1, May 1996)
Z-DP-002	Coding system (Rev. 3, Oct. 1996)
Z-003	Technical Information Flow Requirements (Rev. 2, May 1998)
Z-004	CAD symbol libraries (Rev. 1, July 1998)
Z-005	2D-CAD drawing standard (2021)
Z-018	Supplier's documentation of equipment (2019)

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The history, content and purpose of the document

Terje Maanum, Aker Solutions,
Project leader

Standards Norway

NORSOK WA-Z-020 3D specification

1. Background
2. USPI – FL3DMS
3. “Nature of the Game” and the Vision
4. NORSOK working group - Participants
5. 3D specification background, history and usage
6. Walk-through WA-Z-020
7. Going forwards

Terje Martin Maanum

B.Eng. with/honours – Mechanical engineering
Telemark Collage of Engineering, Porsgrunn, 1989
Heriot-Watt University, Scotland, 1991

1992-2009:	Kvaerner Engineering → Aker Solutions	Piping & Layout, 3D advisory and project support
2009-2022:	Statoil/Equinor	LCI Specialist and 3D model portfolio, requirement and solutions responsible
2022→	Aker Solutions	Digital Implementation Lead + E3D Method & Tools specialist

USPI – FL3DMS

USPI-NL
Uitgebreid Samenwerkingsverband Procesindustrie-Nederland

FL3DMS Participants

FL3DMS Members
AVEVA
Baker Hughes
bp
Bentley
Digital Construction Works
Equinor
ExxonMobil
Hexagon PPM
McDermott
Shell
Talent Swarm
Technip Energies
TotalEnergies

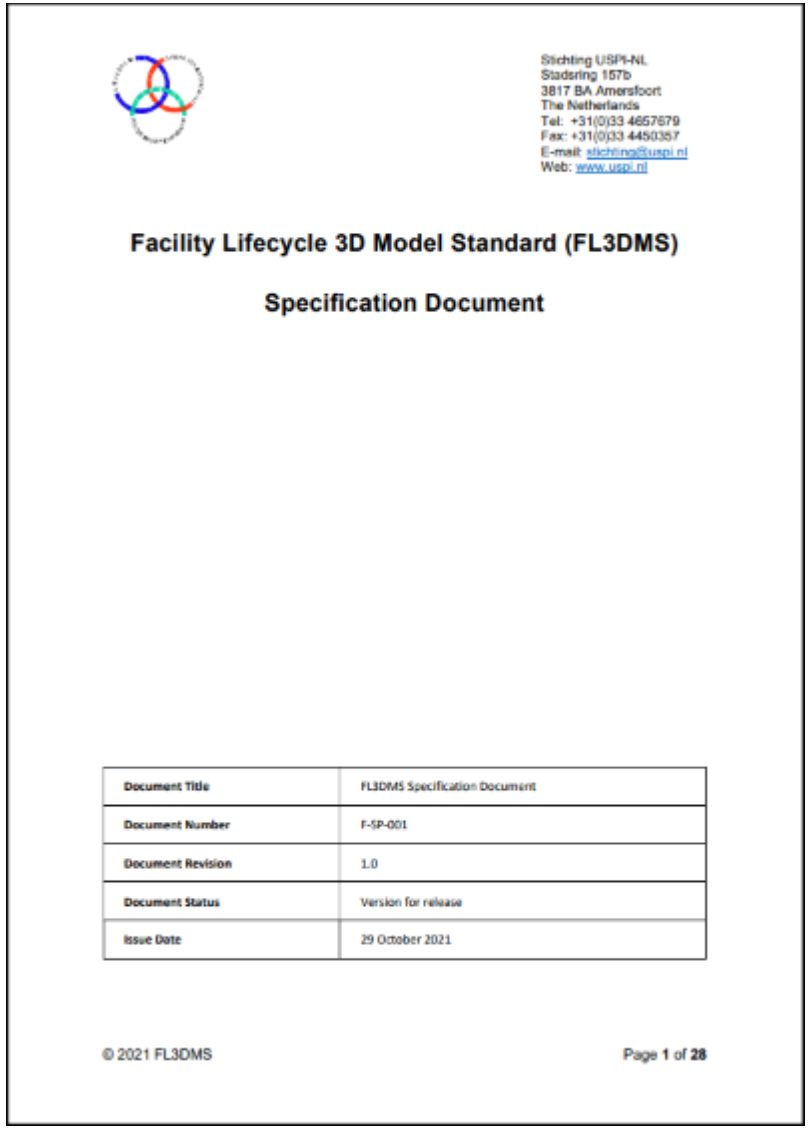
USPI Partners
DEXPI
IOGP-CFIHOS

Facility Lifecycle 3D Model Standard (FL3DMS)
Content:

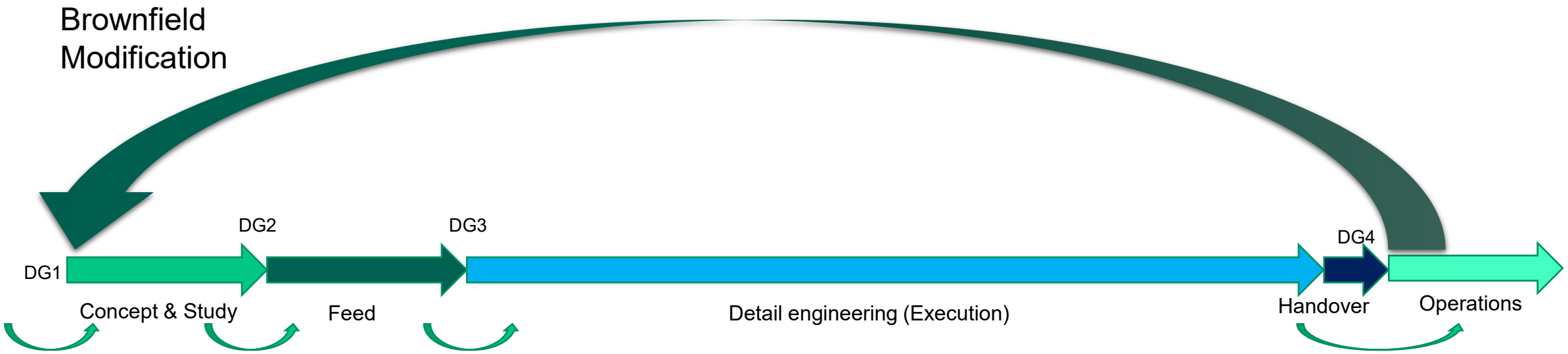
1. 3D Model Configuration (Object name and structure)
2. 3D Model Content (What to be model)
3. 3D Model Deliverables & Handover

What is FL3DMS:

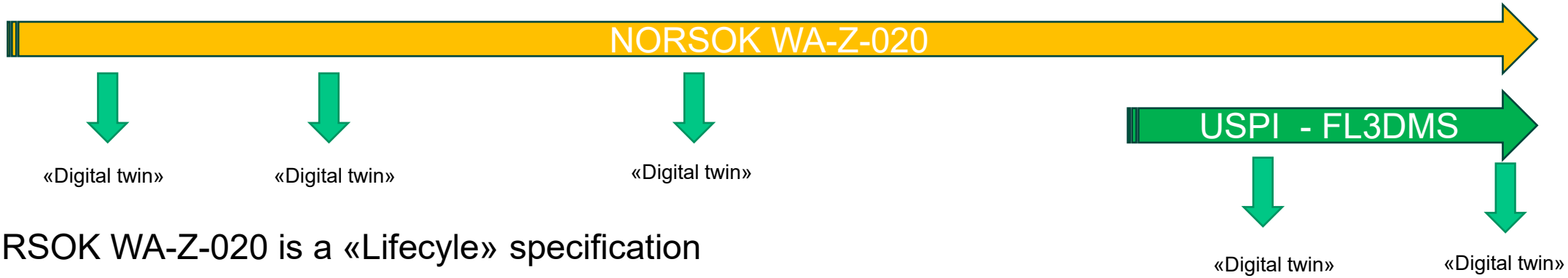
- Application independent 3D Specification
- 3D handover specification
- "Onboarding" specification
  - High degree and immaturity among participates
  - Operators v/s Contractors



The Nature of the Game - Project and requirements phase

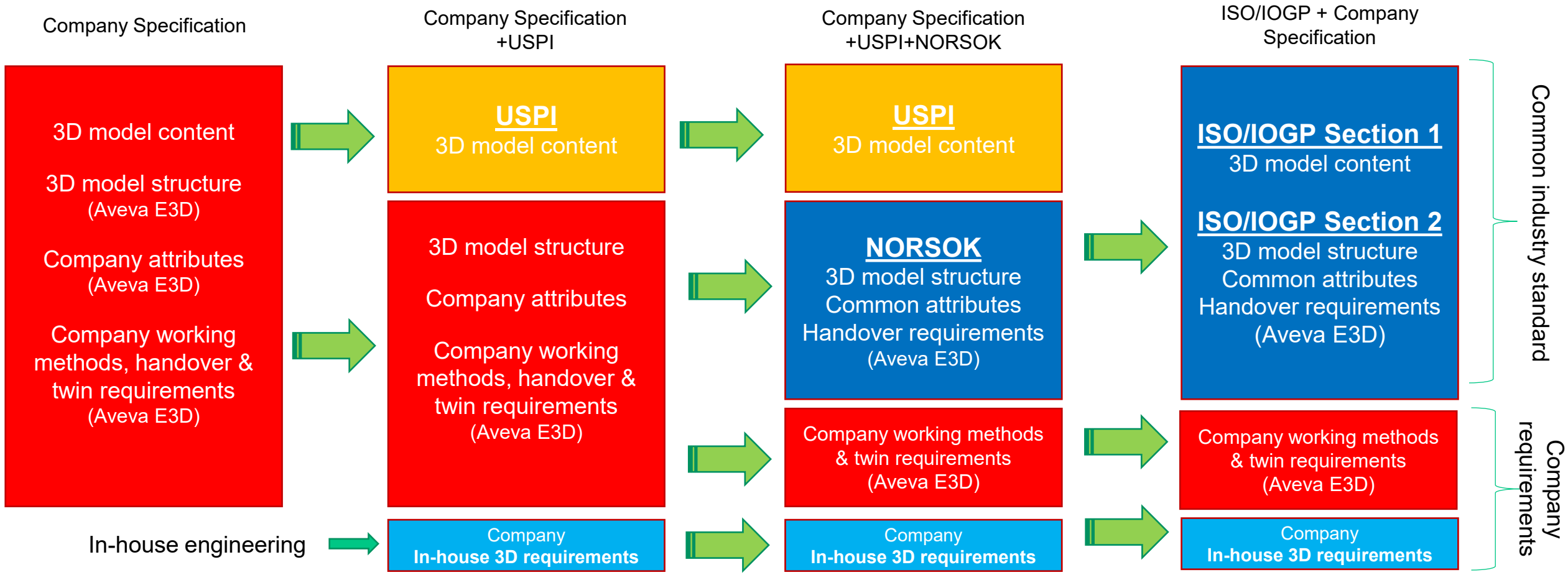


Greenfield Development



NORSOK WA-Z-020 is a «Lifecyle» specification

3D model standardization Vision



USPI = Dutch standardization organization

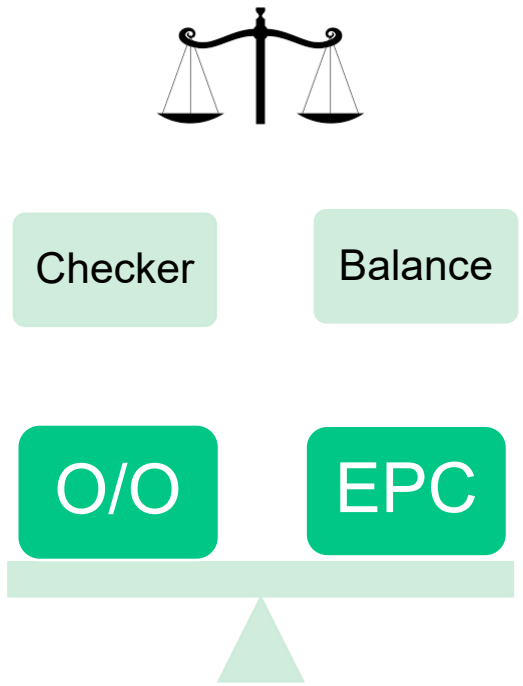
Participants:

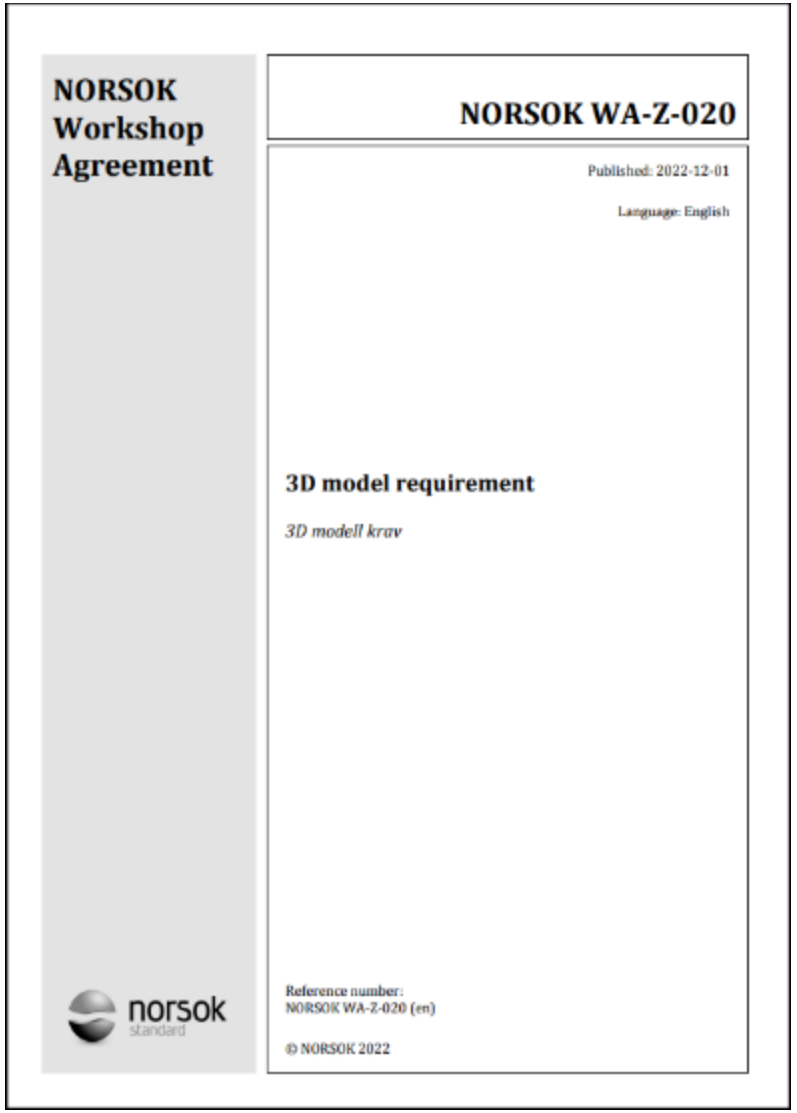
Operators (O/O's):

- ConocoPhillips
- Equinor
- AkerBP
- Lundin
- Vår Energy
- Wintershall DEA
- Repsol

Contractors (EPC's):

- Aker Solutions
- Aibel
- Worley
- Apply (For Lundin)




NORSOK Workshop Agreement

NORSOK WA-Z-020

Published: 2022-12-01

Language: English

3D model requirement

3D modell krav

norsok standard

Reference number:
NORSOK WA-Z-020 (en)

© NORSOK 2022

Kick-off: Workshop 8-10 Mars 2022 – Equinor Stavanger
Weekly / bi-weekly meetings until end November 2022

Target: NORSOK WA-Z-020: Least common multiple among o/o requirements

History of 3D: (1)

Many Contractors started with CADCENTRE (Aveva) and PDMS early / mid 1990's

Since mid 1990 PDMS/E3D have been the main 3D modelling tool in Norway with a very few exceptions using PDS/S3D (Intergraph/Hexagon and others).

Operators came onboard with requirements of running a global environment of PDMS/E3D from the mid 2000.

Equinor's onshore PDS models were converted to PDMS during «LCI Solutions» 2010-2013.

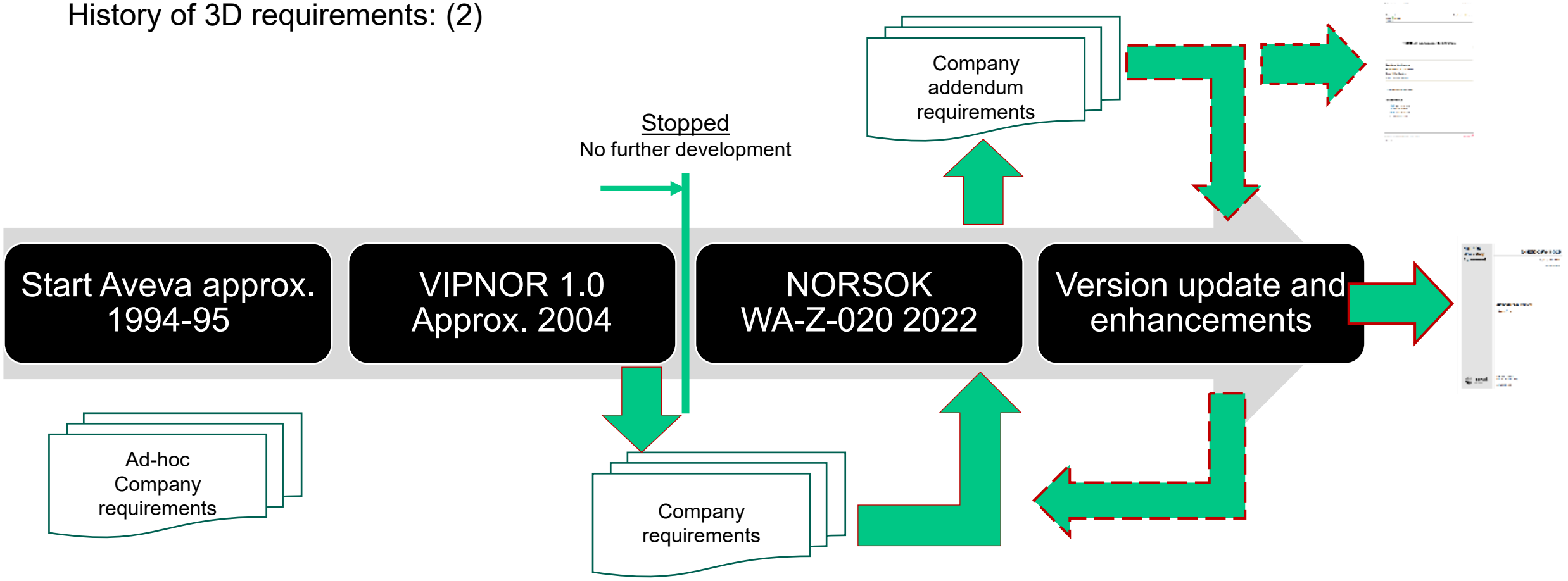
Per today almost 100% of models/assets on the NCS are maintained in PDMS/E3D with the global solution with daily update across the global hierarchy.

All Norwegian operators (with a 3D strategy) have a requirement that contractors shall use of E3D on all Brownfield modification and Greenfield project.

HENCE: NORSOK WA-Z-020 is a application dependent requirement document

Based upon and usage of Aveva E3D Design and Administration

History of 3D requirements: (2)



VIPNOR:

First attempt to create a standard within 3D modelling.

The specification was not maintain and each EPC/Operator created their own inhouse requirement, based upon VIPNOR but further developed independently in each company.

Way forward and usage

Structure

NORSOK WA-Z-020

Content

USPI Content requirements

Specific company requirements

Deviation from NORSOK

Deviation from USPI

Company addendum requirements

In-house Company working method and twin requirements

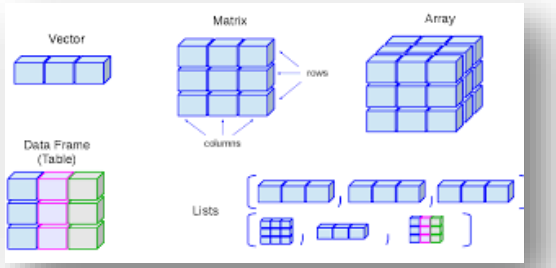
Operator merged project requirements

One Size <u>do not</u> always fit all!

Requirement build-up

A Project 3D specification consents of mainly 2 parts

Data Content (USPI FL3DMS)



Data Structure (NORSOK WA-Z-020)

Digital twin Foundation

Modification foundation

NORSOK WA-Z-020

Standard sections:

1. Scope
2. Normative reference
3. Definitions
4. Abbreviations

Specification content:

1. General principles and requirements
2. Requirements to database schedule
3. Requirements to project deliverables
4. Requirements to project hierarchy
5. Requirements to as-built hierarchy
6. Requirements to catalogue and specifications
7. Requirements to level and obstruction volumes
8. Scanning

Aveva E3D user, teams database structure & model procedure and documentations

Aveva E3D model build up and structure

E3D model project deliverables

E3D model project structure and object naming rule

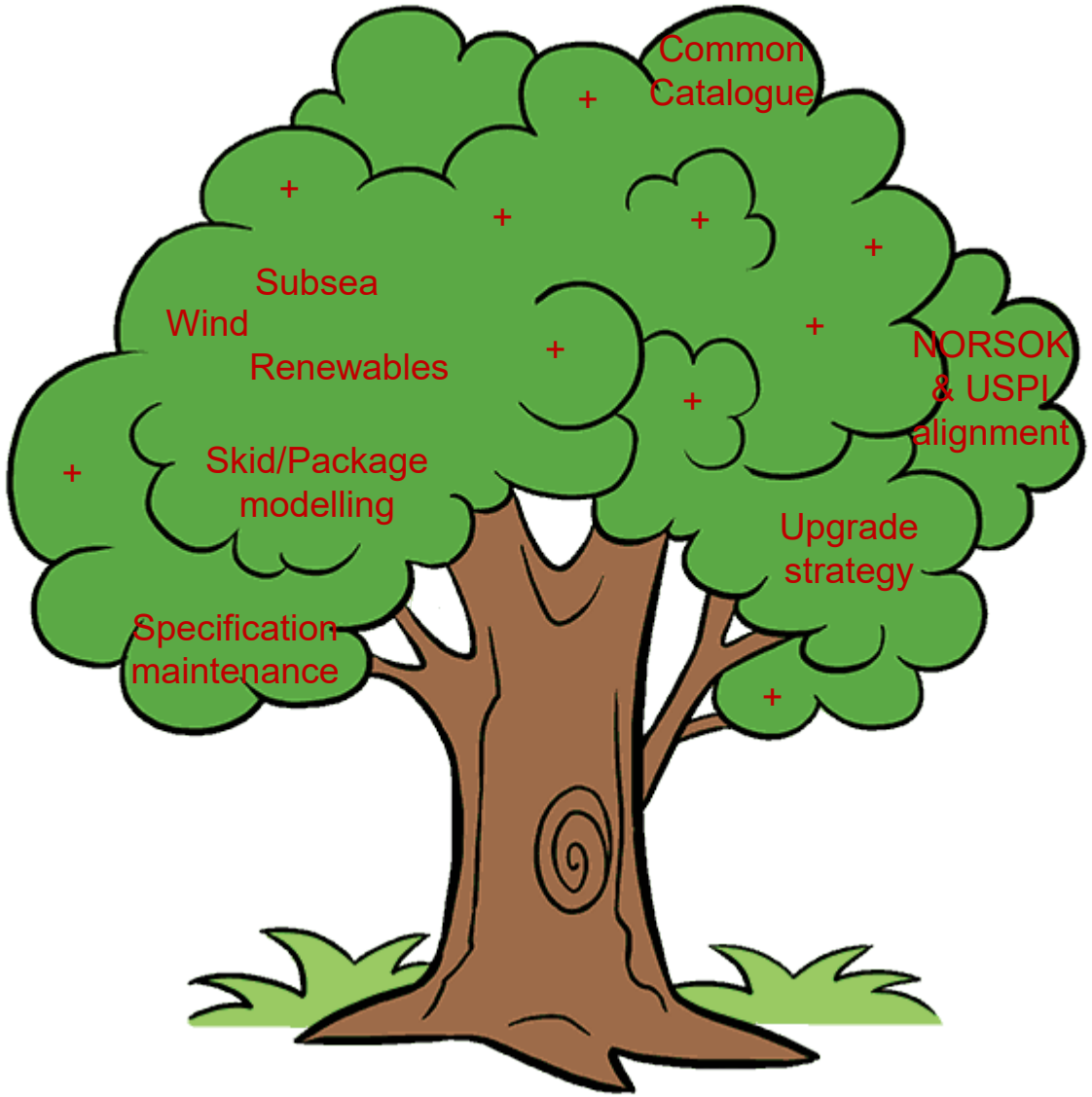
E3D model as-built requirements

E3D model Catalogue and Specification requirements

E3D model Level & Obstruction and reserved volumes

Scanning requirements

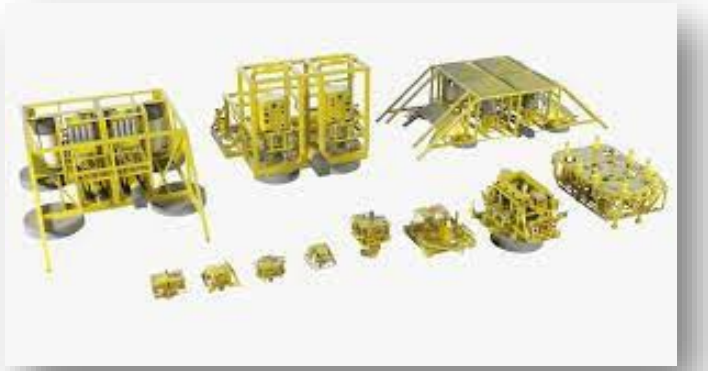
Tree of the Future, 2023 and onwards



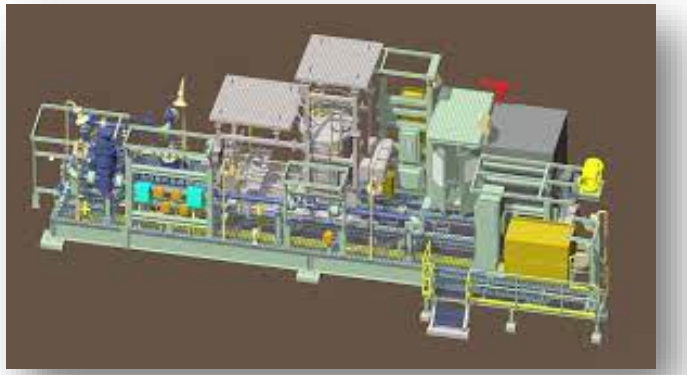
NORSOK WA-Z-020 Next version.

3D models from other application vendors such as:

Wind



Subsea



Skid/Package

<u>Requirements:</u>

- Model content & structure requirements
- Single model (Several model files that in combination represent the complete model)
- Format (STEP/IFC/Parasolid etc. or original format)
- “Clean and tide” (as-built model) - temporary design or any design not part of the as-built model shall be removed
- Tag (Functional location) identification and naming
- Final and/or intermediate model handover

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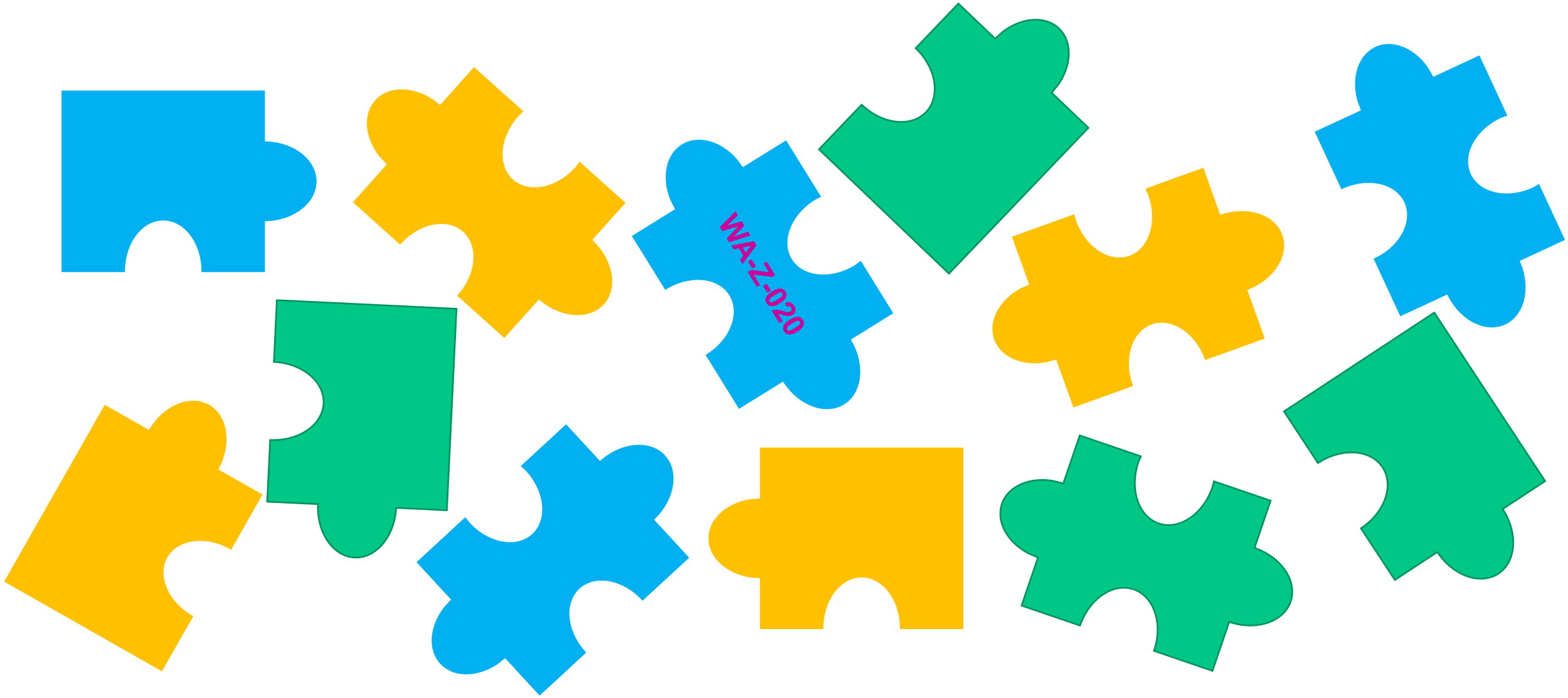
NORSOK WA-Z-020 in a wider context

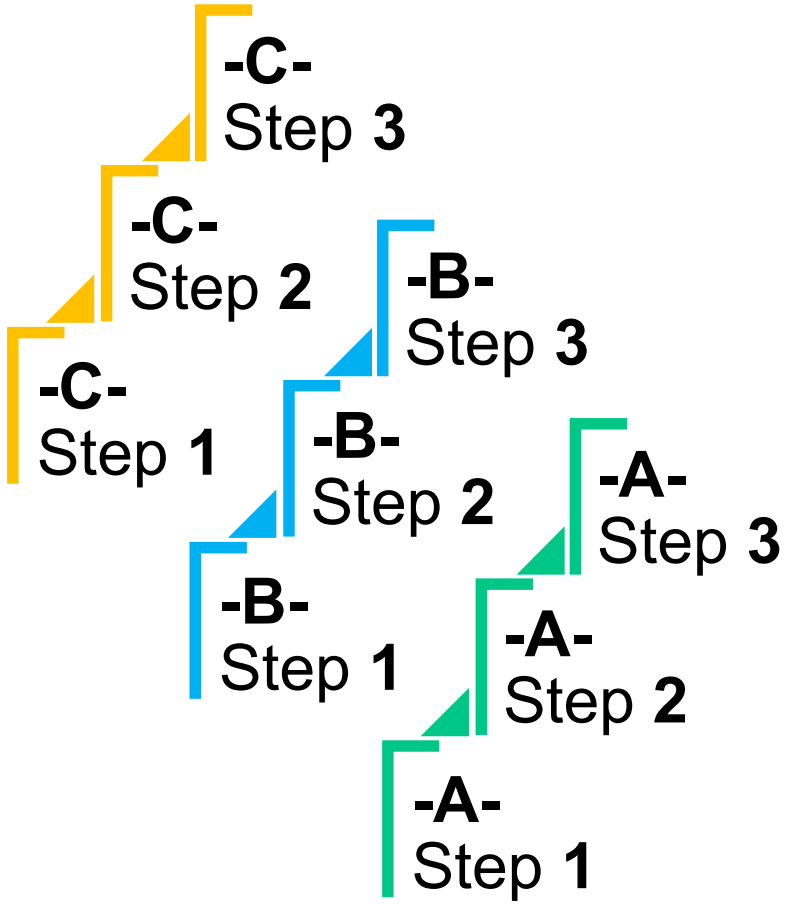
Bjørn Berli, Seacons

Chair, EG Z-Ti

NORSOK WA-Z-020 in a wider context



Standards and Standardization supporting Digitalization



National Strat. LCI Digitalization

Road Mapping

MOU's

3D Exchange

Z-003

TagDoc Transfer

WA-Z-020 FL3DMS

61987 RDS-O&G 81346 61355 81355 DEXPI AAS 61360

2D Eng.Db 3D Drawings Documents ERP RealTime

15926-14 14224 19008 10303

Information Modelling Framework

Data Model

Z-018 Z-001

RDL PCA CFIHOS 15926-4

OWL2 ONTOLOGY SEMANTICS SCD W3C

These are examples only, not a comprehensive list

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Spørsmål og kommentarer

Photo: Pixabay

Questions received upfront and in the meeting

No	Question	Name
1	None sent in	
2	Questions and comments raised in the meeting will be further discussed in the revision group	
3		
4		

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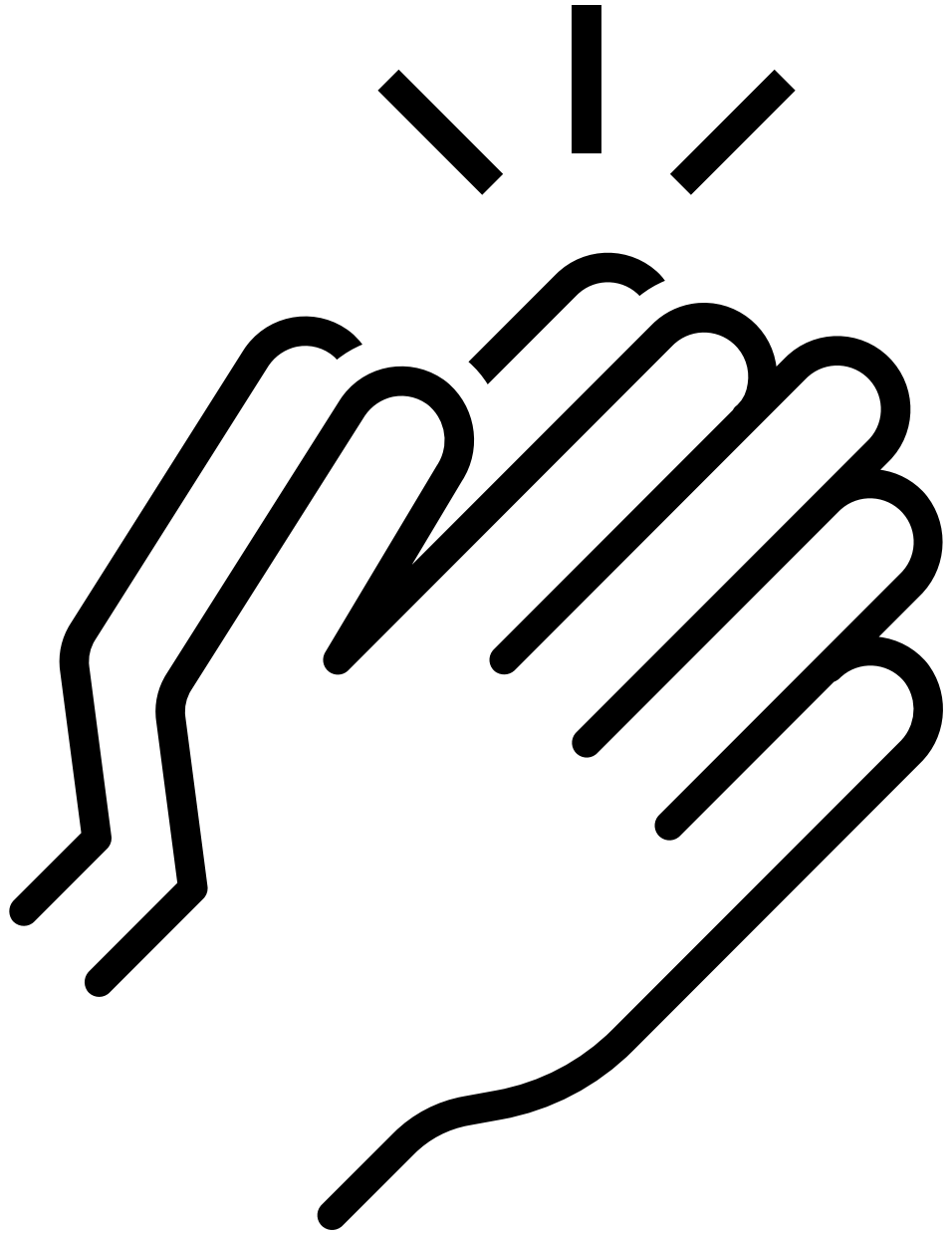
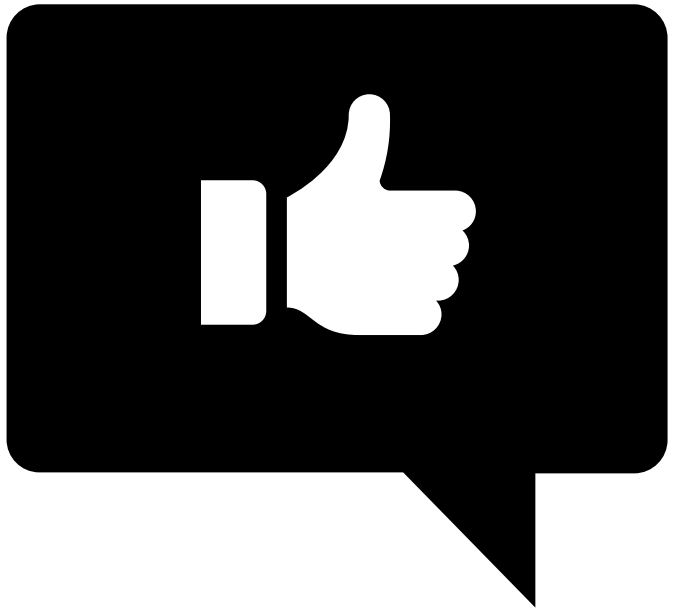
Approval of NORSOK WA-Z-020

How to approve?

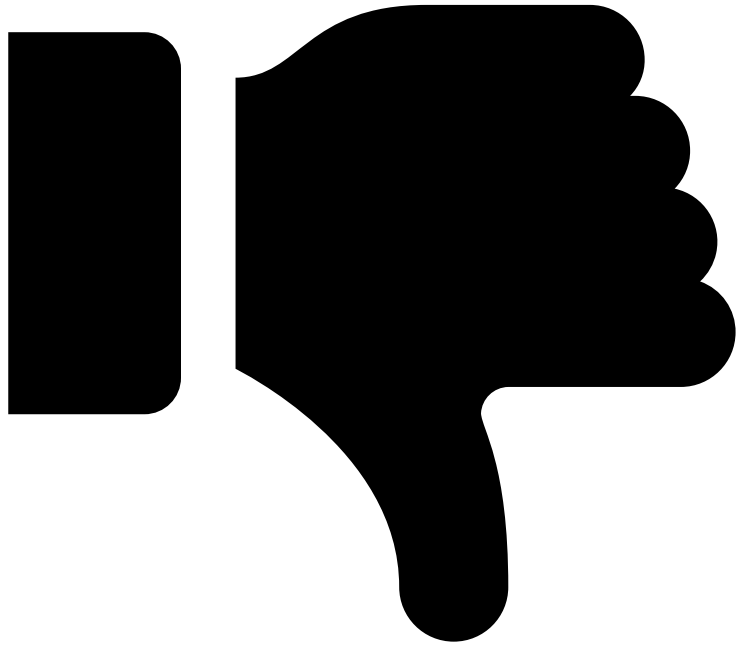
- Process if in need of formal vote:
  - One Company – one vote.
  - Negative votes will be counted and evaluated provided that Company adds a reasoning to the vote in the chat.
  - A roll call of Company votes is based on an alphabetic order.



Result voting



Number of yes: All companies



0 – negative votes

Standard Norge

Foredragsholder:
Inghild, Terje and Bjørn

https://www.standard.no/en/sectors/energi-og-klima/petroleum/

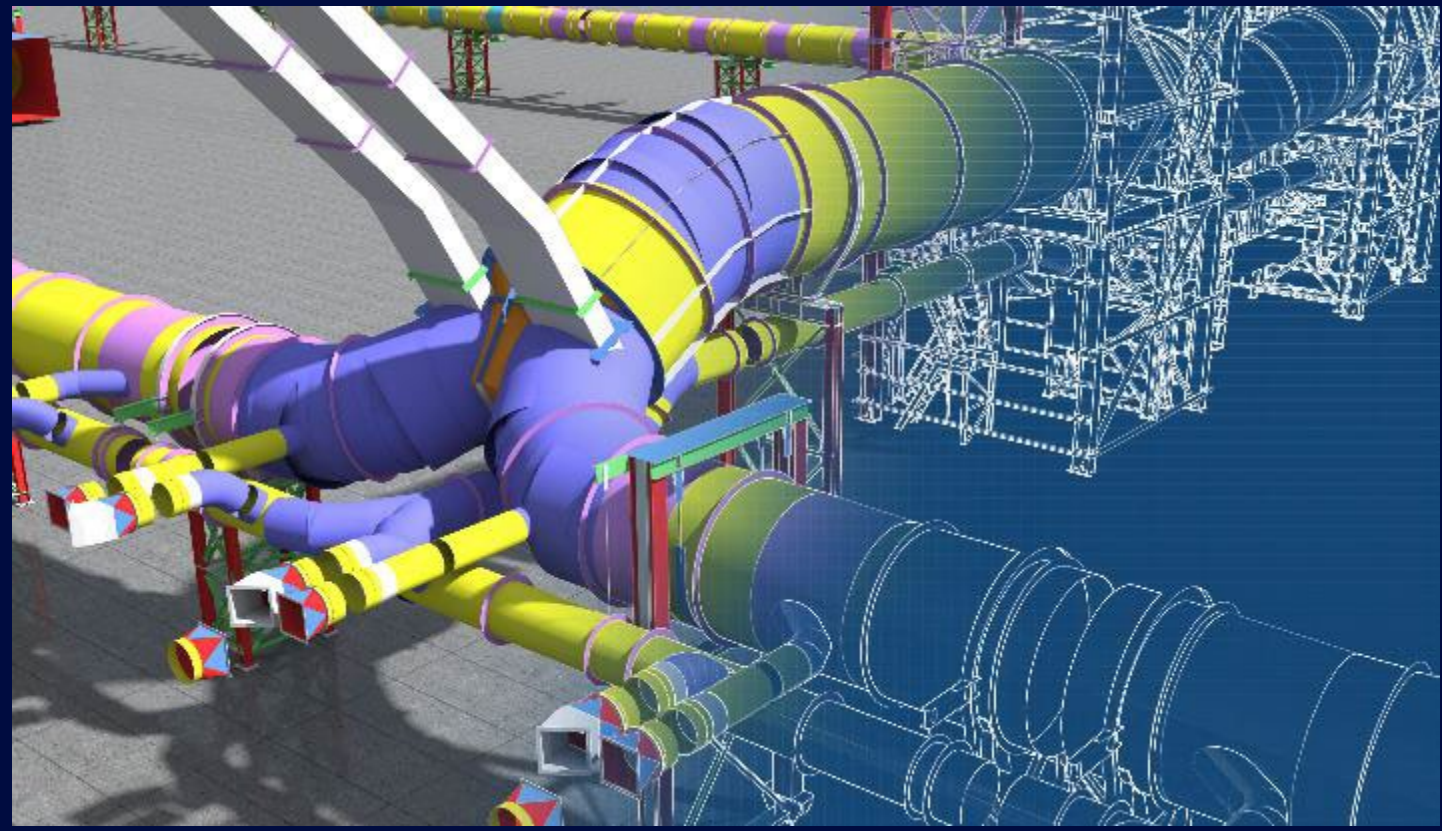
67 83 86 00
petroleum@standard.no
www.standard.no

Følg oss på

Takk for at du
har deltatt
på frokostmøtet!

STANDARD MORGEN

Godkjenning av ny NORSOK WA-Z-020 3D CAD



Standard Norge