



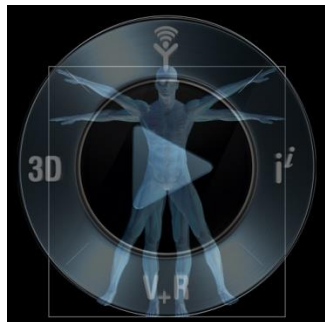
3DEXPERIENCE

Do Offshore Assets have a Lifecycle? Let us explore how PLM technology can be used to manage the data

Stavanger 30.10.2013

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Dassault Systèmes



a **Scientific**
company

Combining **Science,**
Technology and **Art**
for a sustainable society

Forbes[®]

31# (total) 3# (software)



11,000
passionate people

- 106 nationalities
- One global R&D/36labs
- Game changing 3DEXPERIENCE solutions



170,000
enterprise customers

- 12 industries in 140 countries
- >10 million on premise users
- >100 million online users



3,500
partners

- Research & Education
- Software & Technology
- Sales & Services



Long-term
driven

- Majority shareholder control
- **Revenue: \$ 2.6 Bn***
- Operating margin: 31.6%*



Our 3DEXPERIENCE Platform

Our 3DEXPERIENCE
PLATFORM

World leading solutions



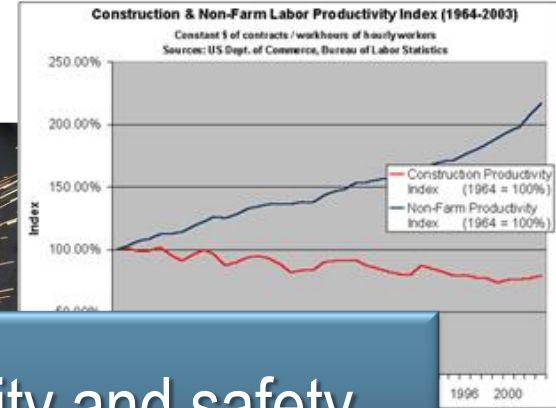
We need to be more cost effective



Konsernsjef Ståle Kyllingstad i IKM Gruppen går i rette med Statoils bruk av utenlandske leverandører, her med sveiser Shehzad Mehmood og avdelingsleder Sigve Norberg i IKM Gruppen. Foto: Tomas Alf Larsen



Foto: Grethe Nygaard

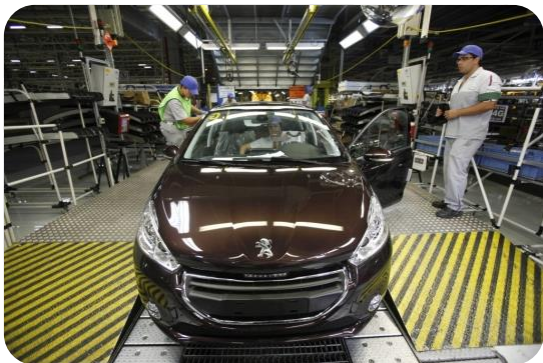


..while accepting no compromise on quality and safety

Kyllingstad raser mot Statoil

Norsk industri har mistet 5 av 5 prestisjeprosjekter

Serial Production
Standardization
Large Volumes



Project Execution
Uniqueness
One-Offs



Complex product
Regulations

Globalization
Partners/Suppliers

Cost Pressure
Labour cost

PLM for
Automotive

PLM for
Oil&Gas

Product Lifecycle Management (Wikipedia)

In industry, **product lifecycle management (PLM)** is the process of managing the entire lifecycle of a product from its conception, through design and manufacture, to service and disposal. PLM integrates people, data, processes and business systems and provides a product information backbone for companies and their extended enterprise.



What does a Product Lifecycle Platform provide today ?

- ▶ An environment where all disciplines share data around a product or project
A single point of access to the right information – accessible all around the world based on optimized web technology
- ▶ Global standardization of processes
- ▶ On-line, direct available data
- ▶ Integrations and connection to authoring tools
- ▶ Openness and connectivity to other enterprise systems

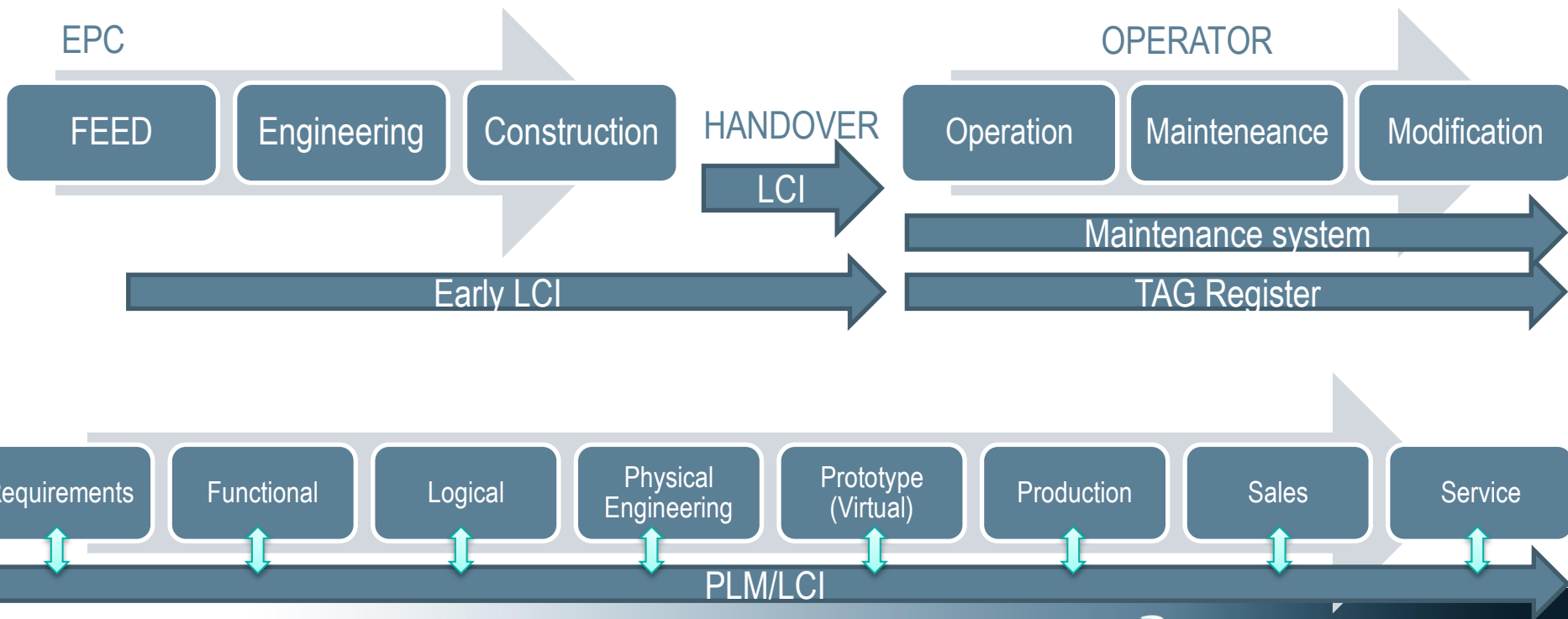


NOKIA
CONNECTING PEOPLE

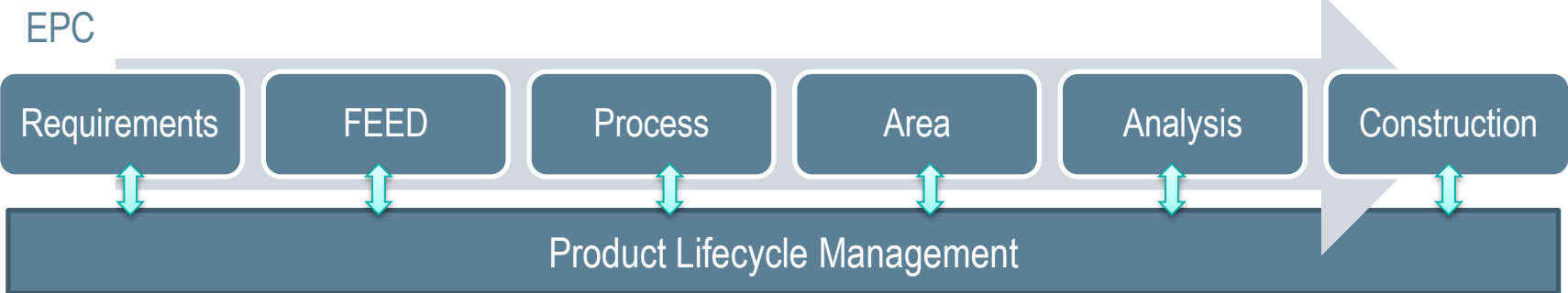
SKANSKA



A honest attempt to compare LCI (as defined within Oil and gas) to PLM (as defined by other industries)



Product Lifecycle Management (Oil and Gas)



HANDOVER



Owner operator



Asset Lifecycle Management

Requirements

Analysis

TAG management

Project Execution

Documents

Maintenance

Drawings/models

Process data

One source of LCI information

GENERAL NSSS DATA

| | |
|-------------|------|
| Output, MWt | 2825 |
| Output, MWe | 2825 |

VESSEL

| | |
|--|---------------|
| Thermal Power, MWt | 2815 |
| Pressure, psia (kg/cm ²) | 2500 (176.8) |
| Pressure at Core Inlet, psia (kg/cm ²) | 2300 (163.8) |
| Temperature, °F (°C) | 624 (302.3) |
| Temperature, °F (°C) | 564 (296.3) |
| Flow, lb/hr (kg/hr) | 121.5 (107.1) |

GENERATOR

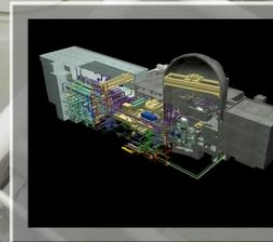
| | |
|---------------------------------|---------------|
| Units | 2 |
| Rate, per Steam Generator | 4824 (109134) |
| with 0.25 Section, Bush/each/hr | 8214 |

REACTOR COOLANT PUMPS

| | |
|---|--------------|
| Origin | USA/Germany |
| Manufacturer | ABB-CE/KS |
| Model | 4 |
| Impeller Diameter, mm (in) | 11,150 (439) |
| Design Temperature, °F (°C) | 564.5 (296) |
| Design Pressure, psia (kg/cm ²) | 2220 (158) |
| Flow at Design Flow, ft ³ /min | 175 (52.3) |
| Mechanical Face Seats | 1380 |
| Shaft Speed, rpm | 86 |
| Efficiency, (%) | 4963 |
| Motor Power (kW) | 13,200 |
| Motor Voltage (kV) | 60 |
| Motor Current (A) | 2210 (max) |

PRESSURIZER

| | |
|--|-------------|
| Design Pressure, psia (kg/cm ²) | 2500 (176) |
| Design Temperature, °F (°C) | 700 (371) |
| Volume, ft ³ (m ³) | 1800 (51.0) |
| Operating Pressure, psia (kg/cm ²) | 900 (25.5) |
| Operating Temperature, °F (°C) | 900 (25.5) |
| Capacity, kW | 1800 |



3D

V+R

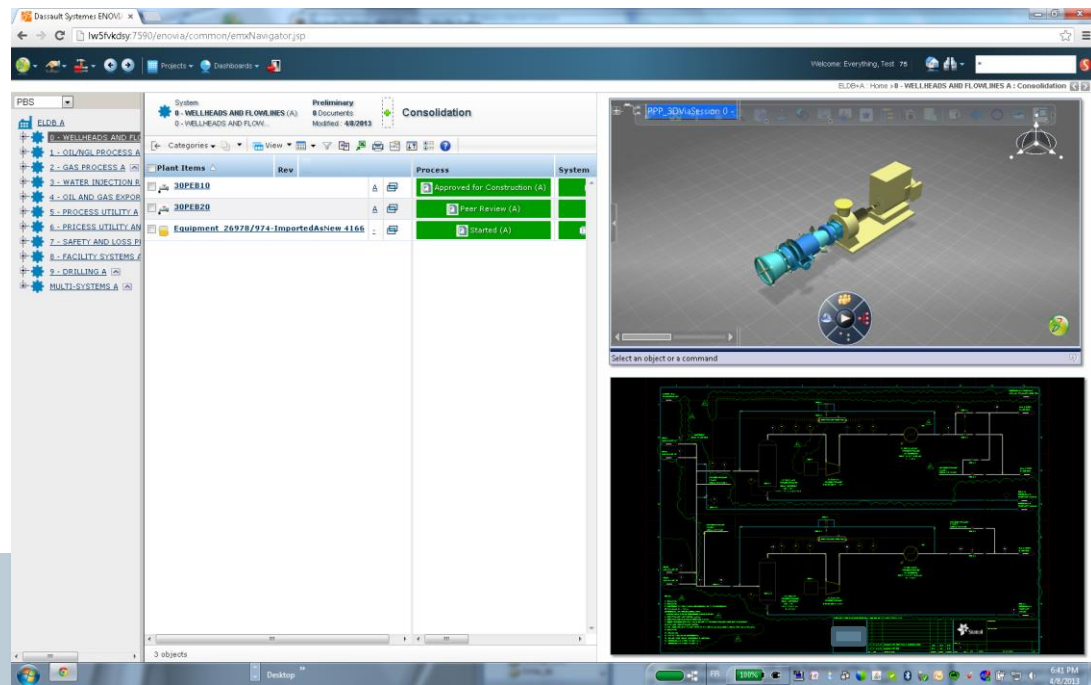
Benefits of the PLM approach

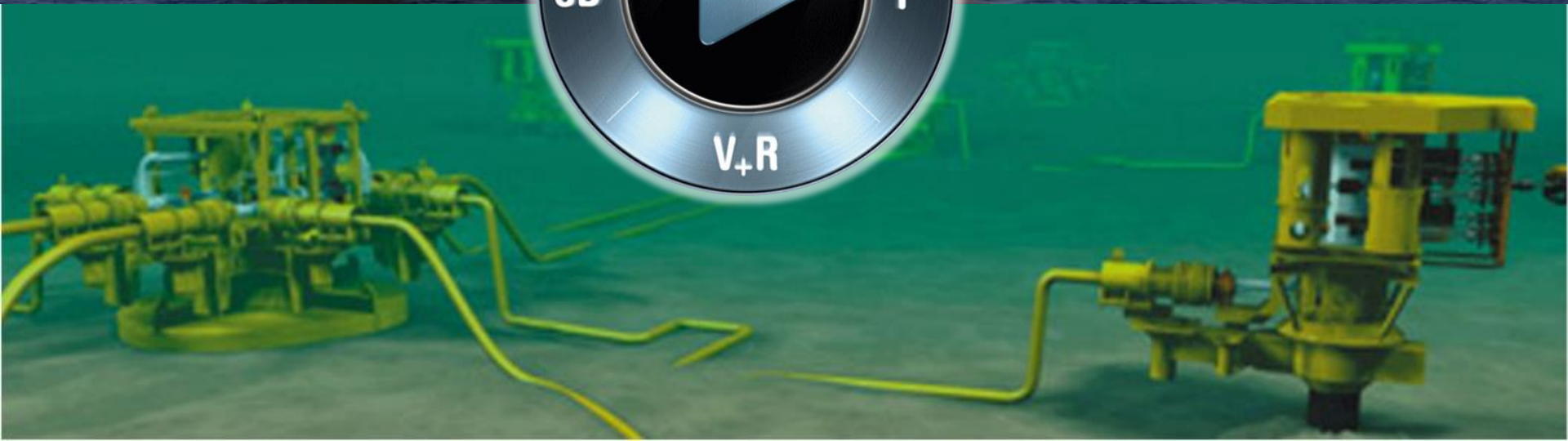
- ▶ One source of truth
- ▶ Full tracability of changes and desitions
- ▶ Ability to gather data from other systems (ERP/project/CAD)
- ▶ Independent of the authoring tool – Data/information is the important part
- ▶ Integrated cross disipline Change Managment
- ▶ LCI becomes a ongoing process, not a activity during handover

- ▶ Global colaboration (ENOVIA) – Multi site Engineering/Construction

Advanced viewing of TAGs and documents

- ▶ Support for multiple 2D and 3D formats
- ▶ Cross referencing of data: P&ID, 3D, documents
- ▶ Multiple structures
 - ▷ PBS
 - ▷ WBS
 - ▷ Line Lists
- ▶ Document centric views



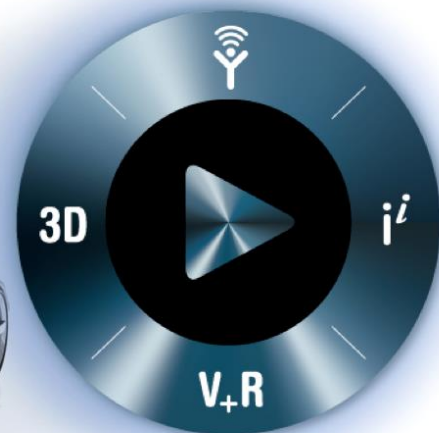




3D
Design

3D DMU
Digital Mock-up

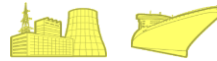
3D PLM
Product Lifecycle
Management



3DEXPERIENCE



Plant/Platform Design
Global Project Excellence



Multiple Views / Discipline dependent data: Shipbuilding / Energy



Regulatory compliance: Life Sciences, Pharma
Global standards and local markets



PLM

Globalization and Extended Lifecycle:
Auto / Aero / High Tech



CPDM

Globalization : Auto / Aero / High Tech
introduction to multi-discipline / xCAD

PDM

3D required revision / version control: Auto / Aero

Standardization on CATIA for 3D information: Auto / Aero

3D

1980

1985

1995

2000

2005

2010



Our approach

- ▶ Based on 30 years of experience in other industries, we provide a software platform that can provide “the single version of the truth” for all assets and its related information.
- ▶ The software platform, the 3DExperience platform, provides a collection of technologies to provide global access and collaboration, using structured data and unstructured data combined in a single environment.
- ▶ Since 2008, we have started providing this environment to owners/operators in an Asset centric approach for the Energy related industries.

