



AVEVAWORLD

ACCELERATE INDUSTRIAL INTELLIGENCE

Saab Naval Surface ship

Digital Transformation in Naval Architecture
Leveraging AVEVA Marine for Global Excellence

Magnus Olsson Head of Design Surface Ship
Torbjörn Pettersson IT Manager

Agenda

- Who we are - Mission & Heritage
- Information Management & Integrated Design
- Q&A

By applying a standardized and systematic information management, the necessary prerequisites for efficient design, production, and Through-Life Support are established.

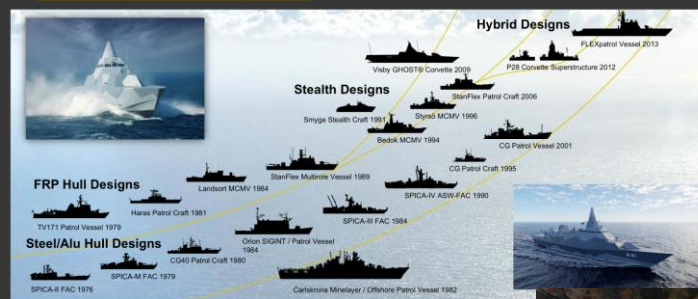
Using this structured information as input parameters for AVEVA Engineering, Diagrams and E3D, a resilient data structure is created that allows for measurable performance across all product lifecycle phases.

Who we are - Mission & Heritage

A 400-year legacy of defence and security



Surface ships evolution



Our strategic markets



Saab Naval Systems



Submarines



**Underwater
Systems**



Surface ships



**Naval Combat
Systems**



**Patrol Crafts and
Combat Boats**



**Technology
Unmanned
systems**



**Through Life
Support**



BU Surface ships products



Digital chain from Design to Through-Life-Support with Aveva Marine solution



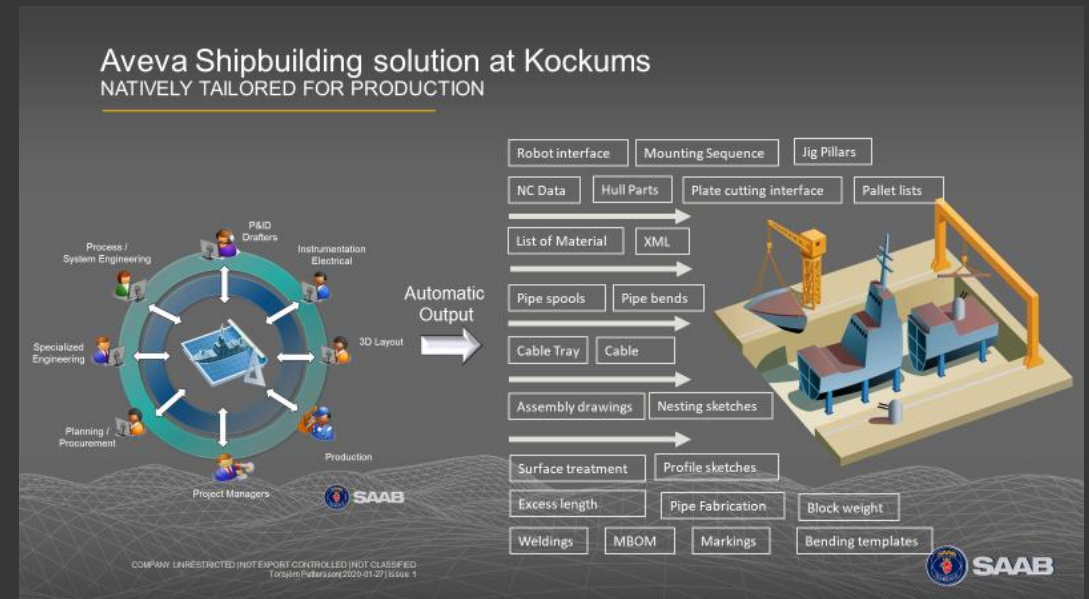
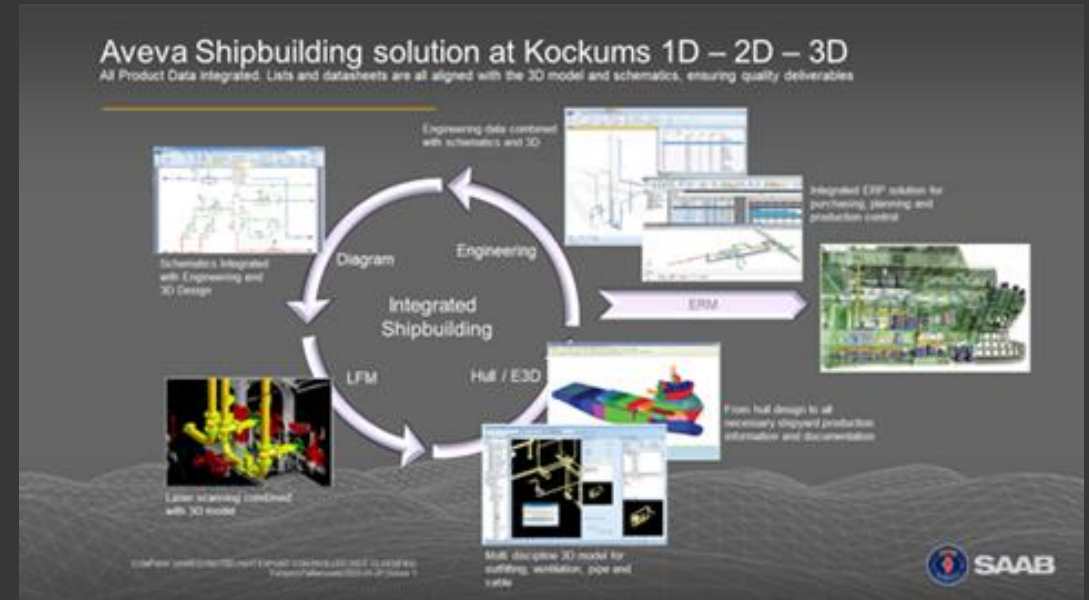
Challenges and Objectives

Challengers:

- Full turn key supplier in all steps (Design-Mission System Integration – Production – Verification)
- Strengthen work with international partners (from Design phases and to Through-Life-Support)
- Reduce lead time and cost.

Objectives:

- Solid Information Management Platform
- Integrated Process – Methods – Tools as common solution.
- Digital Maturity level measurement in all steps



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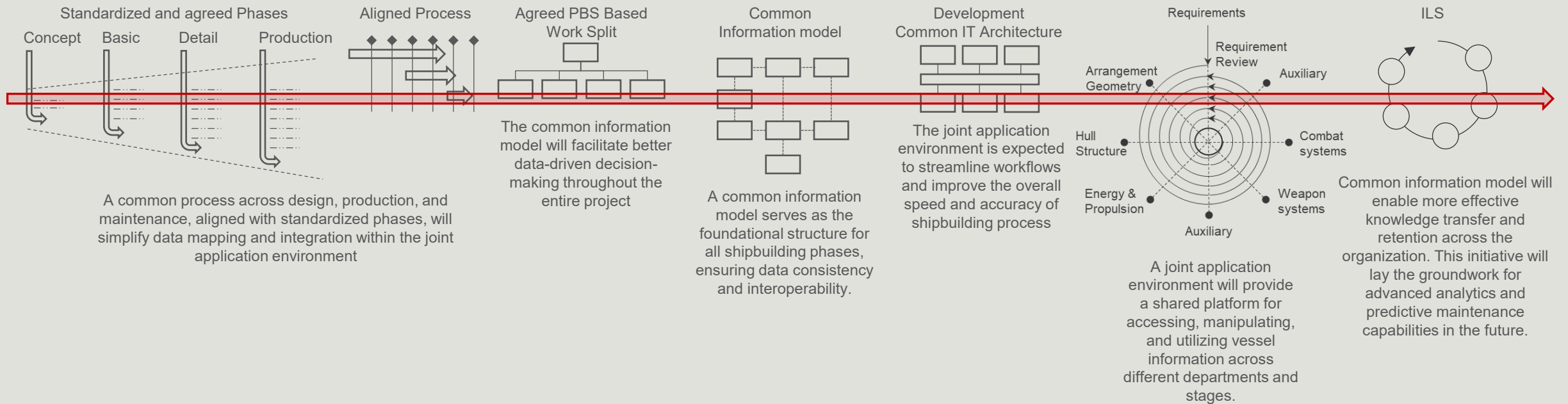
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Information Management

Supporting collaboration and efficient project execution

We are establishing an information thread from early shipbuilding phases through design, production and maintenance, all built upon a common information model and joint application environment. Establishing this information thread will lead to increased efficiency in information retrieval and utilization for all stakeholders



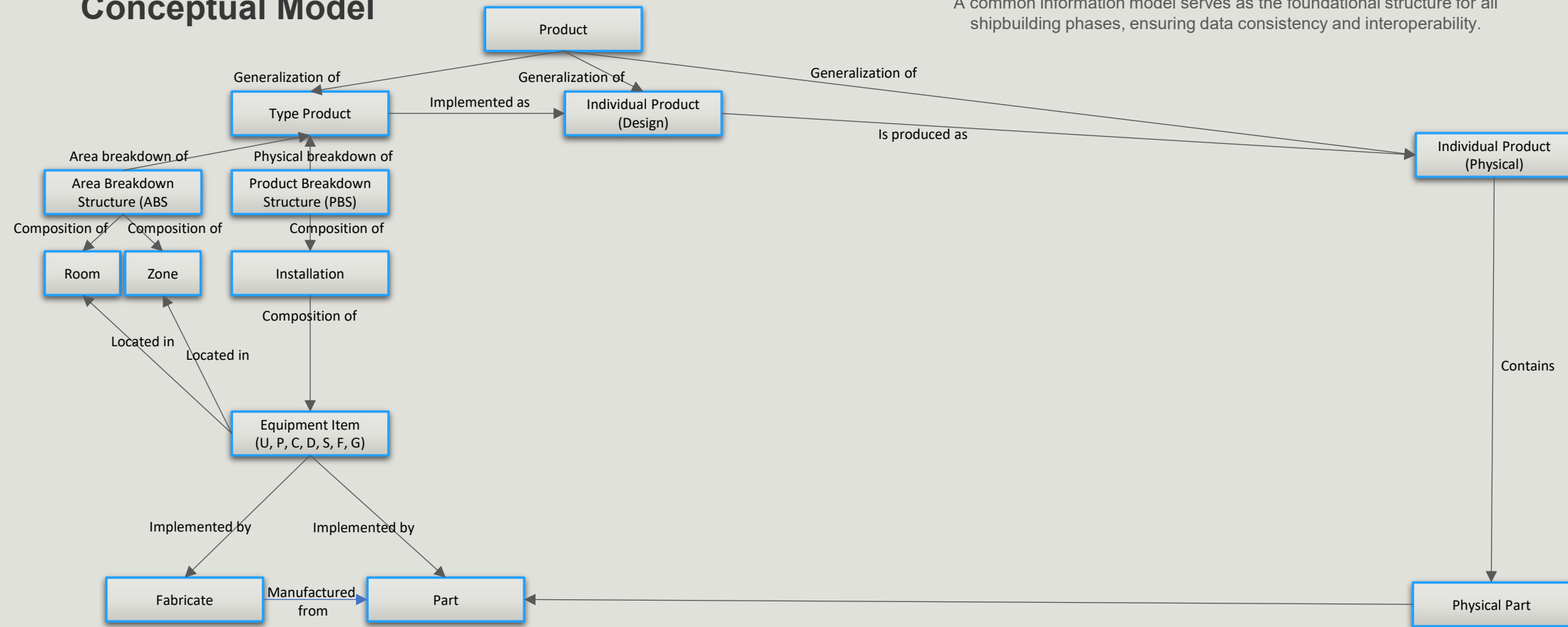
Information Management

Conceptual Model

The common information model will facilitate better data-driven decision-making throughout the entire project



A common information model serves as the foundational structure for all shipbuilding phases, ensuring data consistency and interoperability.



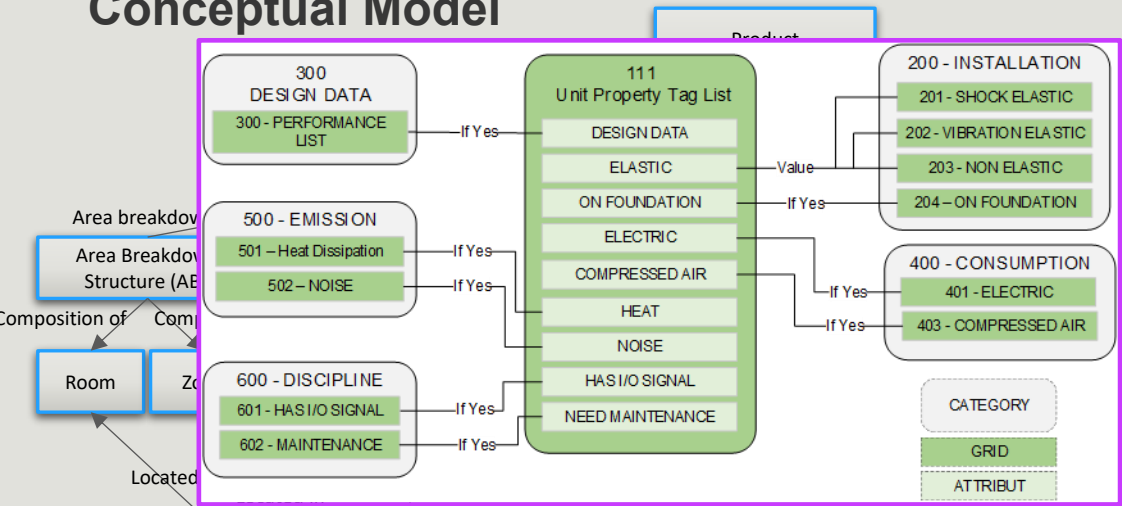
Information Management

Conceptual Model

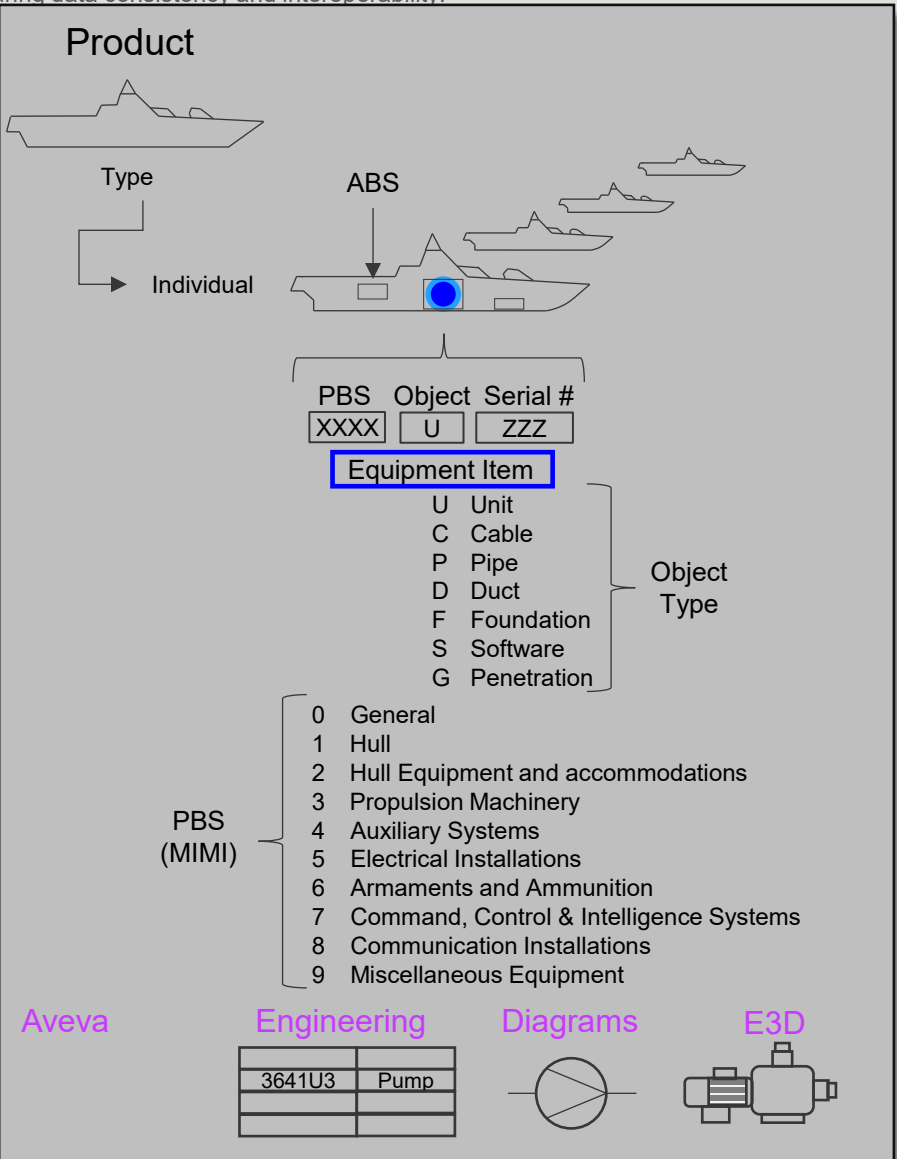
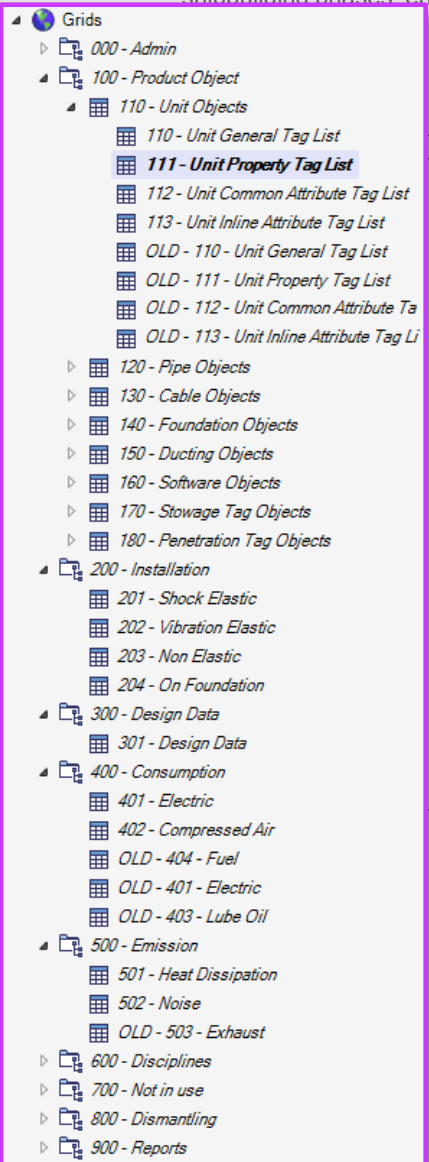


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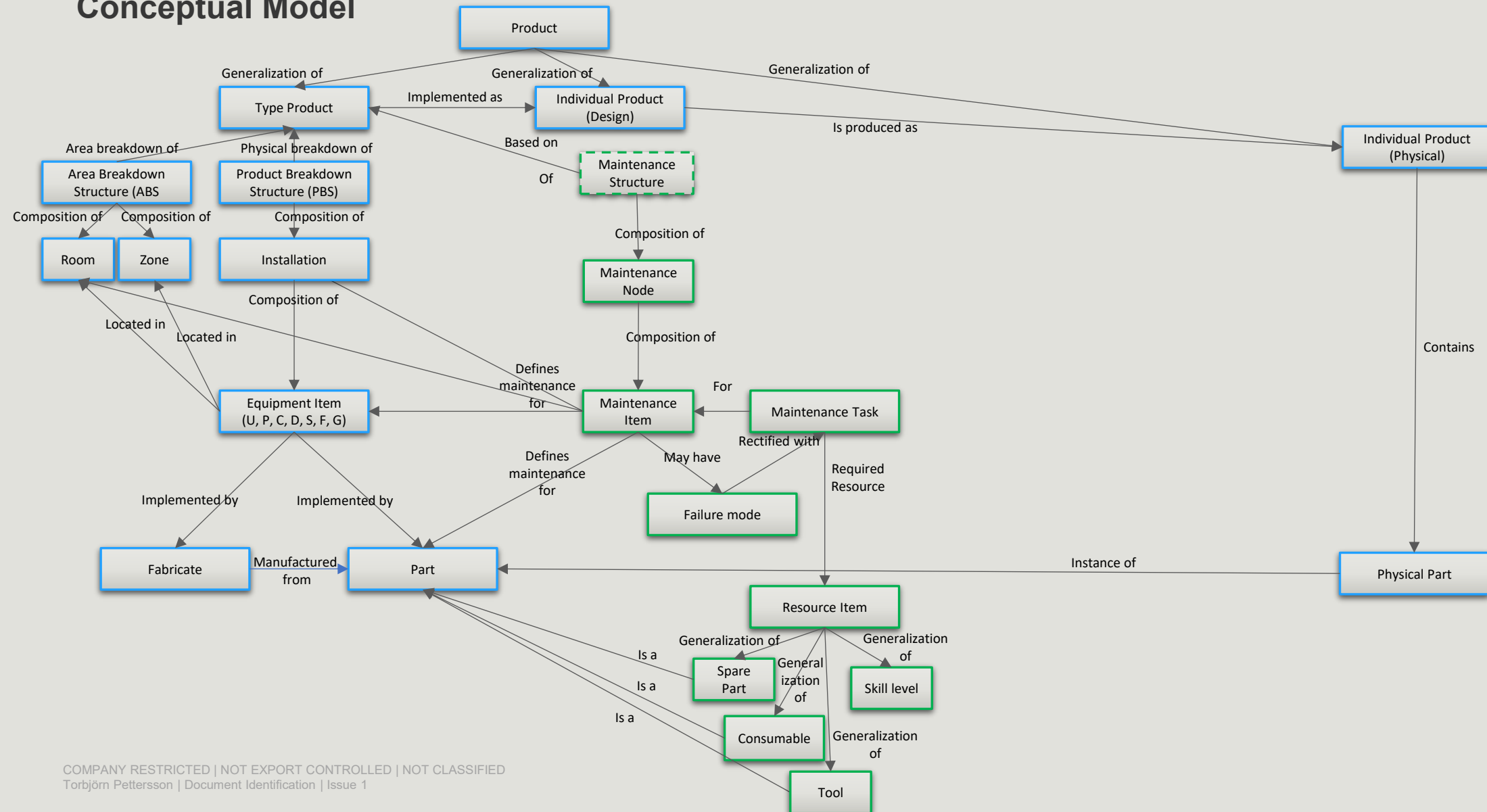


Unit Identity	Description	Contained in	Room Reference	Room Name
2351				
2351U1	Medium Speed Diesel Generator Engine 1...		ROOM/50D01	Aft engine room
2351U2	Medium Speed Diesel Generator Engine 2...		ROOM/50G01	Forward engine r...
2351U3	Medium Alternator 1 (MSALT1)		ROOM/50C01	Aft alternator roo...
2351U4	Medium Alternator 2 (MSALT2)		ROOM/50H01	Forward alternat...
2351U5	High Speed Diesel Generator Set 1 (HS...		ROOM/50D01	Aft engine room
2351U6	High Speed Diesel Generator Set 2 (HSD...		ROOM/50D01	Aft engine room
2351U7	High Speed Diesel Generator Set 3 (HSD...		ROOM/50G01	Forward engine r...
2351U8	High Speed Diesel Generator Set 4 (HSD...		ROOM/50G01	Forward engine r...
2351U9	High Speed Diesel Generator Engine 1 (H...	2351U5	ROOM/50D01	Aft engine room
2351U10	High Speed Diesel Generator Engine 2 (H...	2351U6	ROOM/50D01	Aft engine room
2351U11	High Speed Diesel Generator Engine 3 (H...	2351U7	ROOM/50G01	Forward engine r...
2351U12	High Speed Diesel Generator Engine 4 (H...	2351U8	ROOM/50G01	Forward engine r...
2351U13	High Speed Generator 1 (HSDG1)	2351U5	ROOM/50D01	Aft engine room
2351U14	High Speed Generator 2 (HSDG2)	2351U6	ROOM/50D01	Aft engine room
2351U15	High Speed Generator 3 (HSDG3)	2351U7	ROOM/50G01	Forward engine r...
2351U16	High Speed Generator 4 (HSDG4)	2351U8	ROOM/50G01	Forward engine r...



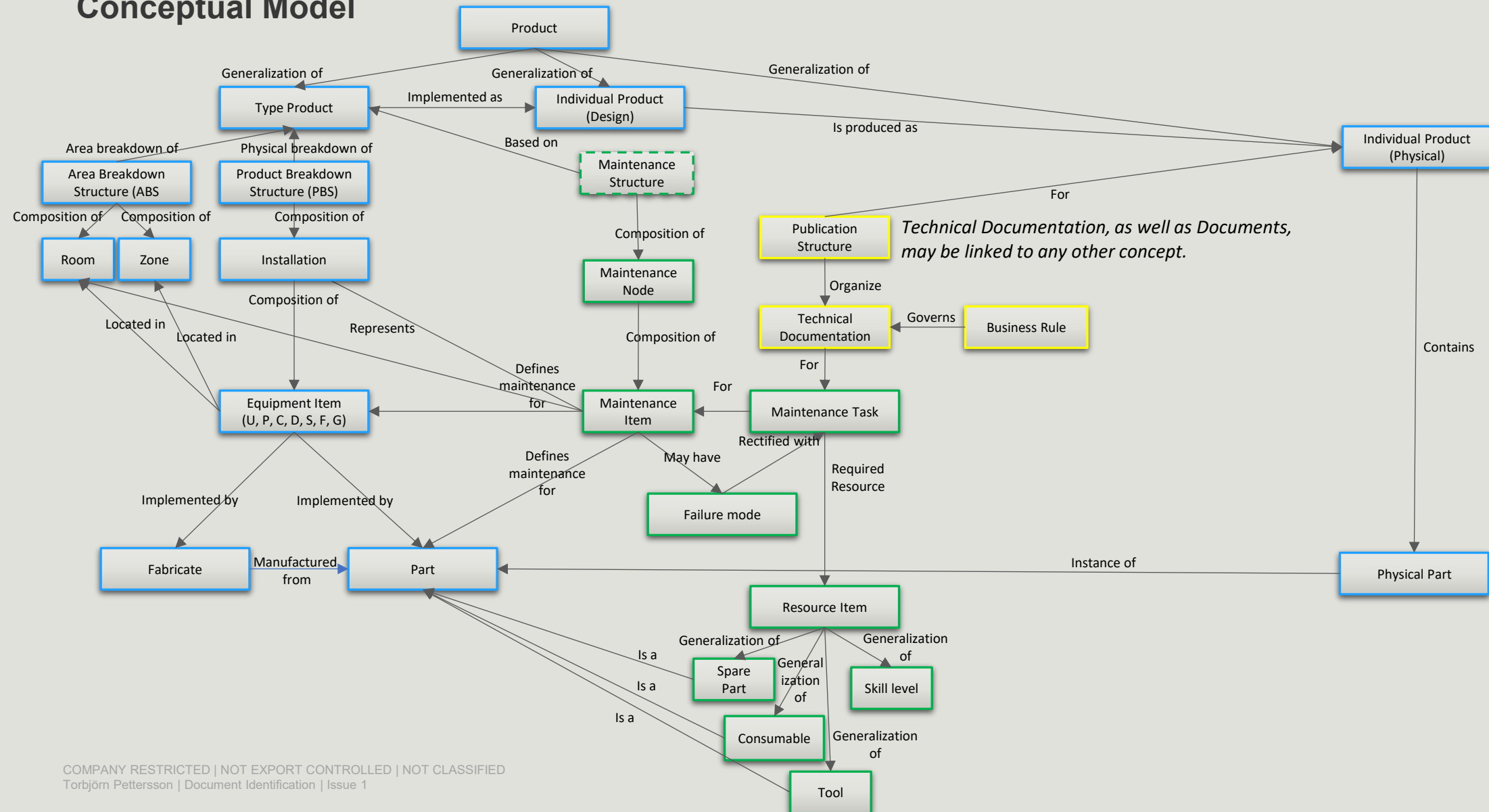
Information Management

Conceptual Model



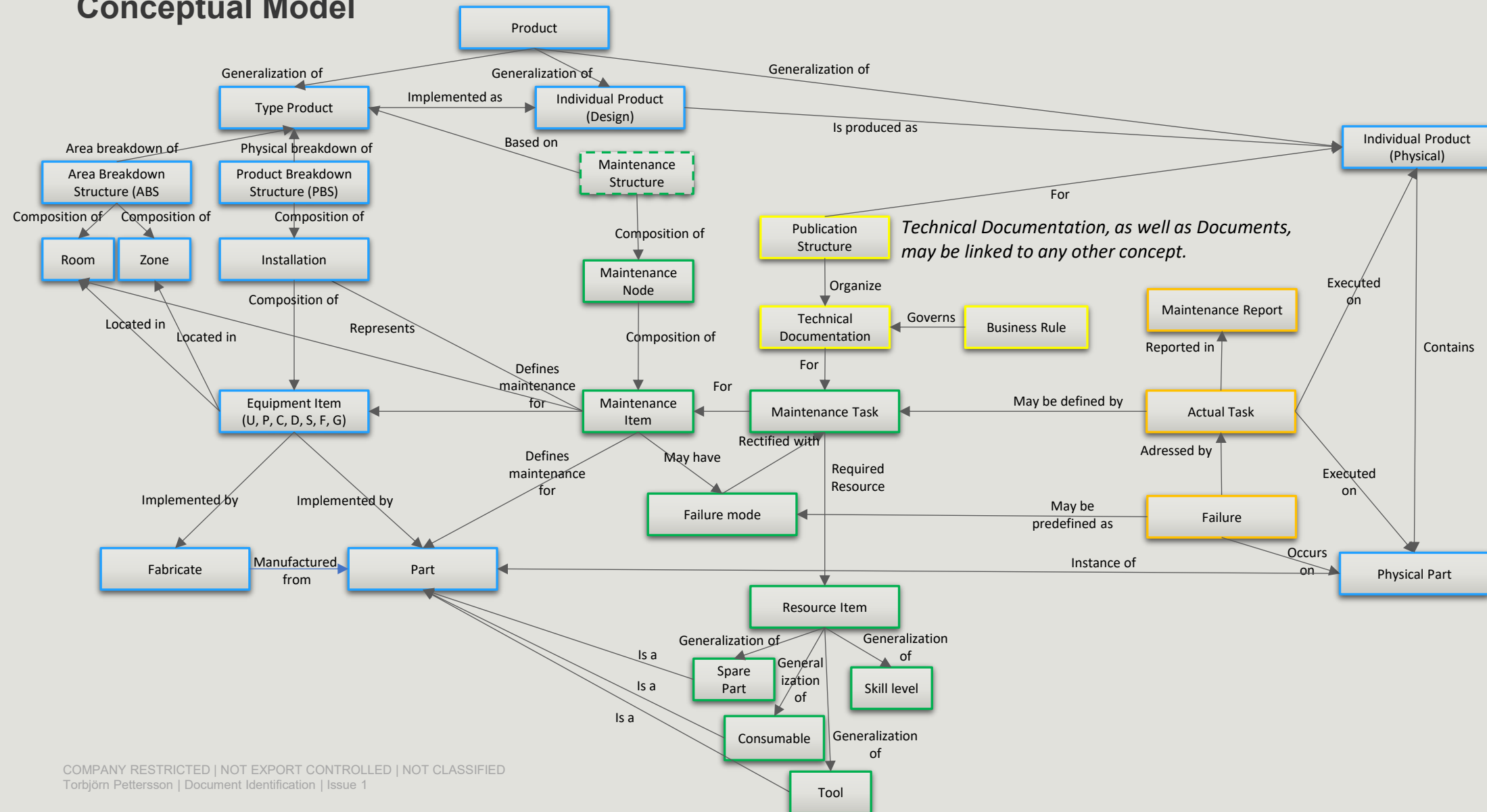
Information Management

Conceptual Model



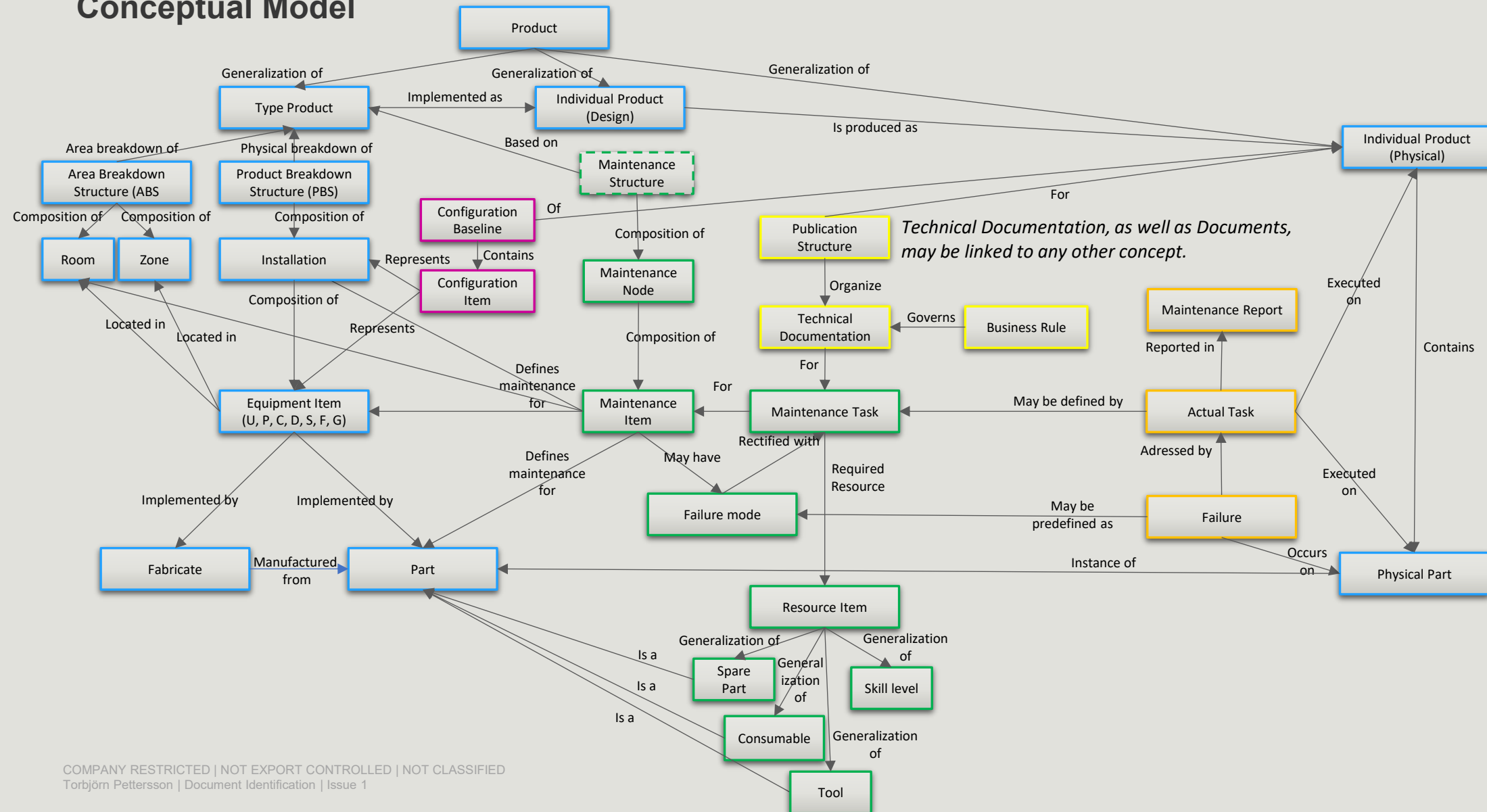
Information Management

Conceptual Model



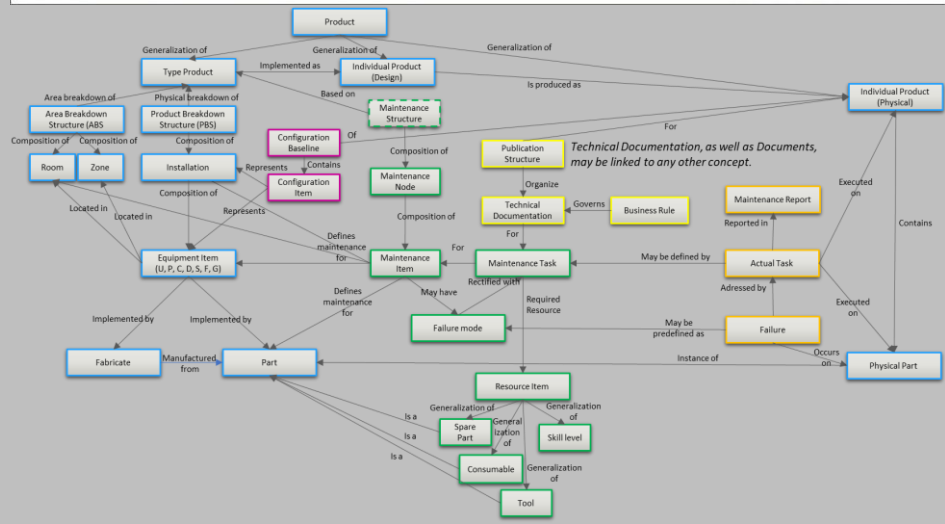
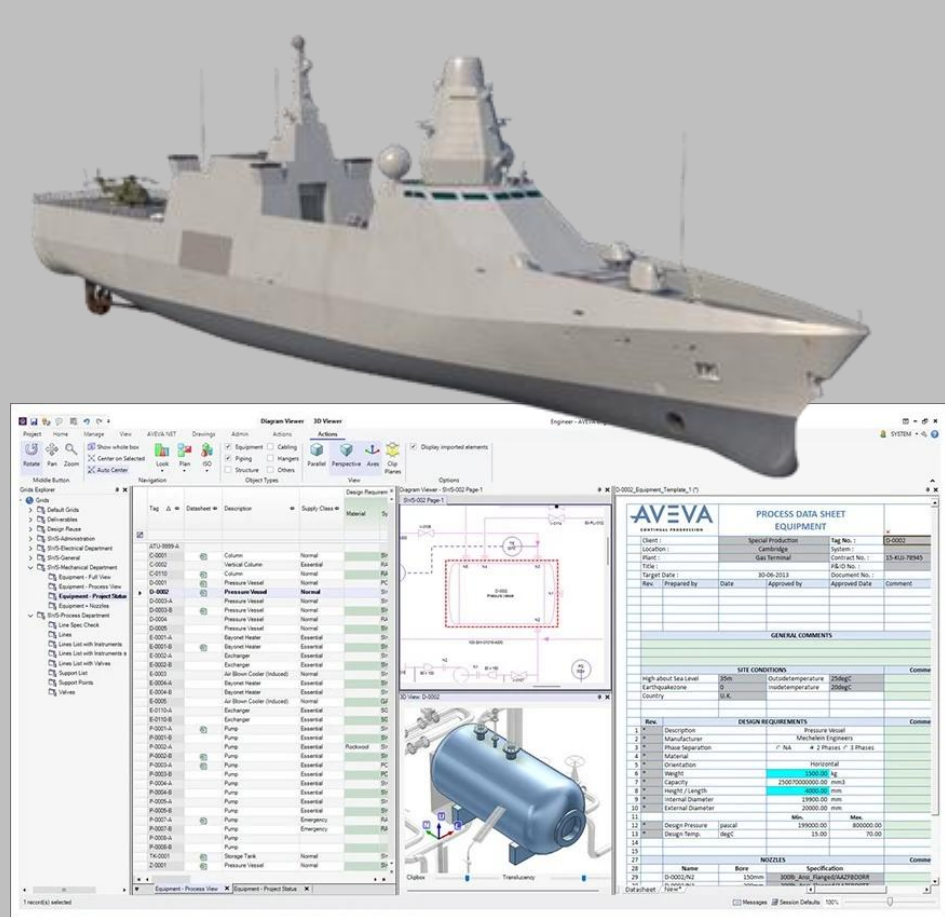
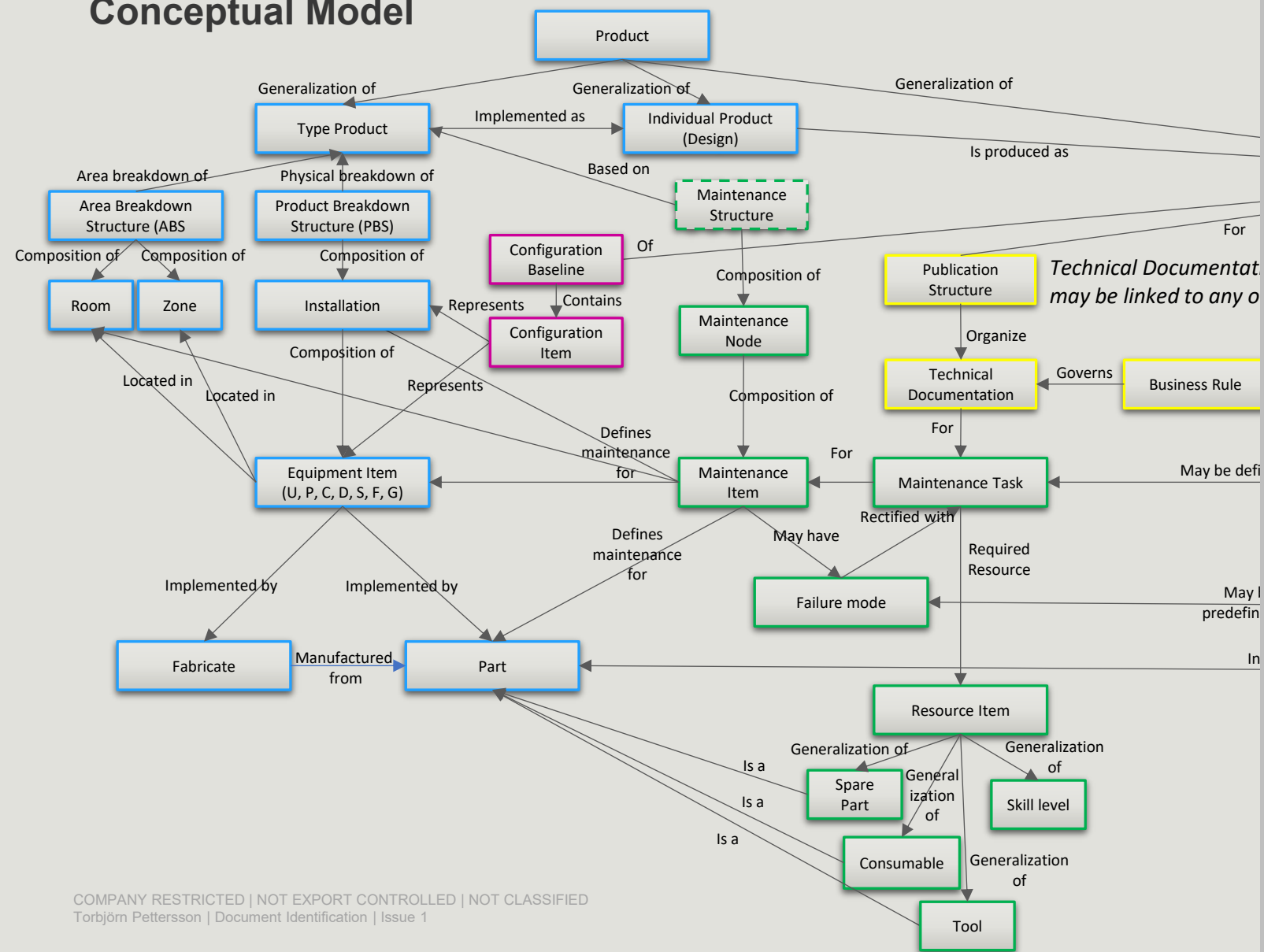
Information Management

Conceptual Model



Information Management

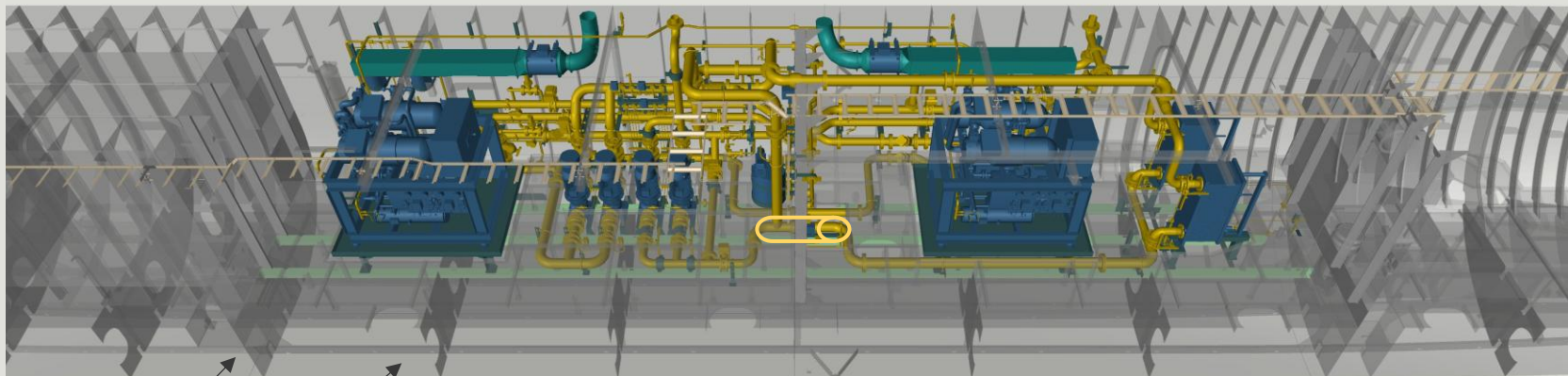
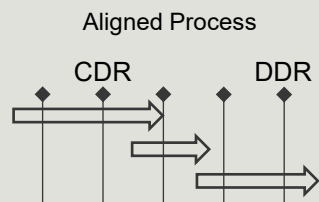
Conceptual Model



Information Management

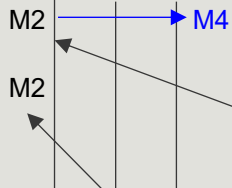
Maturity Matrix supporting Progress Measurement

ABS = Area Breakdown Structure
 PBS = Product Breakdown Structure
 MEZ = Major Engineering Zone



B (Spatial Maturity) 20 40 80 100

Structure
 Outfit
 Routed Sys
 Cable
 Software



Equipment Item Maturity

Primary Seats (CAT A) **M2**
 Secondary Seats requested for class approval (CAT B) **M2**

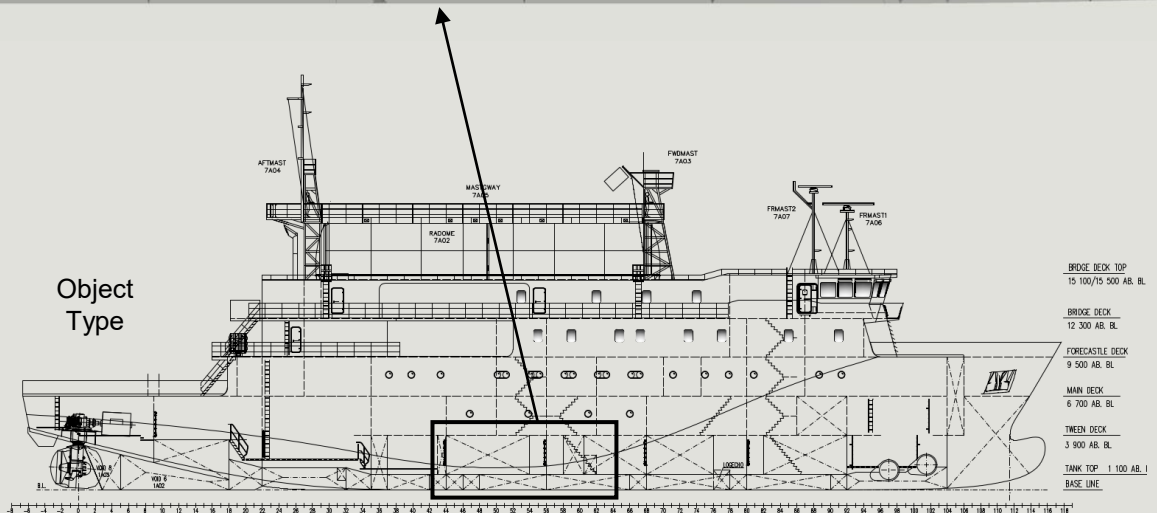
Pipes and ducts with large impact on structural design and general arrangement (e.g. engine exhausts, seawater intake manifolds) modelled at **M2**.

PBS Object Serial #
 XXXX U ZZZ

Equipment Item

- U Unit
- C Cable
- P Pipe
- D Duct
- F Foundation
- S Software
- G Penetration

Object Type



PBS
 (MIMI)

- 0 General
- 1 Hull
- 2 Hull Equipment and accommodations
- 3 Propulsion Machinery
- 4 Auxiliary Systems
- 5 Electrical Installations
- 6 Armaments and Ammunition
- 7 Command, Control & Intelligence Systems
- 8 Communication Installations
- 9 Miscellaneous Equipment

Aveva

Engineering

Diagrams

E3D

3641U3	Pump



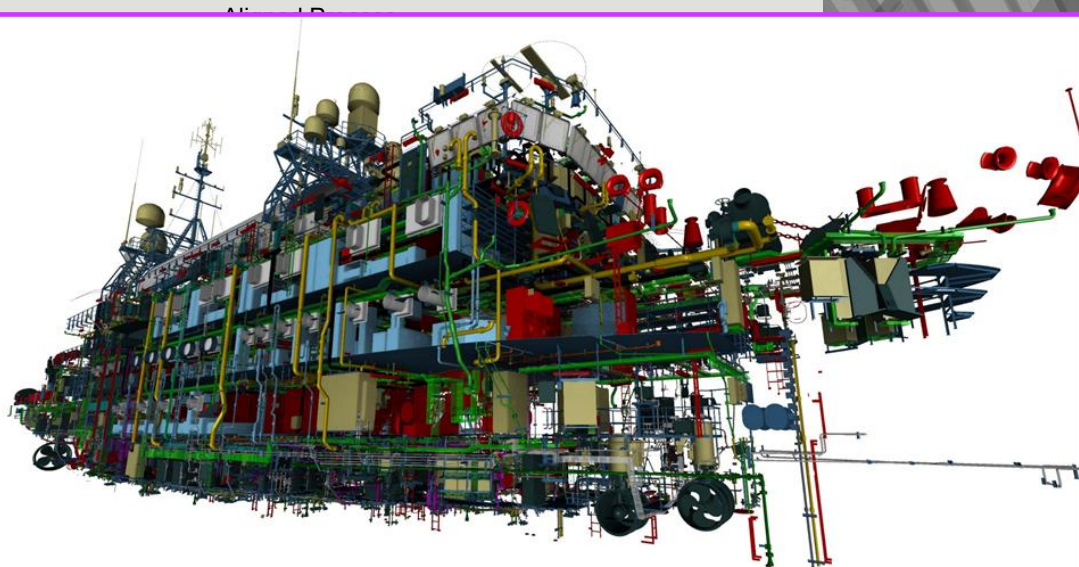
SAAB

Information Management

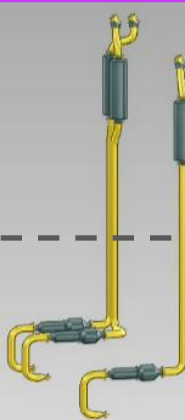
Maturity Matrix supporting Progress Measure

ABS = Area Breakdown Structure

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Object Serial #
X U ZZZ
Equipment Item
U Unit
C Cable



Aveva

Engineering

3641U3	Pump

MEZ	PBS	TYPE	ID	Design Status	ABS
MEZ_1	3461 - Ureadosering och hantering	UNIT			
	3451 - Rökupptag och avgasrör	PIPE	3451_MDE3	M0	ROOM/01E03
			3451_MDE4	M0	ROOM/01E03
			3451_Silencer_MDE1	M0	ROOM/00R02
			3451_Silencer_MDE2	M0	ROOM/00R02
			3451_DGS1	M1	ROOM/00R02
			3451_DGS2	M1	ROOM/00R02
			3451_DGS3	M1	ROOM/00R02
			3451_DGS4	M1	ROOM/03D01
			3451_DGS5	M1	ROOM/03D05
			3451_DGS6	M1	ROOM/03D01
			3451_OLJEPANNA	M1	ROOM/05E05
			3451_OLJEPANNA	M1	ROOM/00R02
MEZ_2	3121 - Framdrivningsmaskineri, dieslar	UNIT			
	3151 - Axlar och kopplingar mellan motorer och huvudväxlar				
	3461 - Ureadosering och hantering				
	3451 - Rökupptag och avgasrör	PIPE	3451_MDE1	M2	ROOM/01G03
			3451_MDE2	M0	ROOM/01G03
			3451_SCR_MDE1	M0	ROOM/01G03
			3451_SCR_MDE2	M0	ROOM/01G03
			3451_DGS1	M2	ROOM/01G03
			3451_DGS2	M2	ROOM/01G03
			3451_DGS3	M2	ROOM/01G03
			3451_OLJEPANNA	M0	ROOM/01G03

PBS
(MIMI)

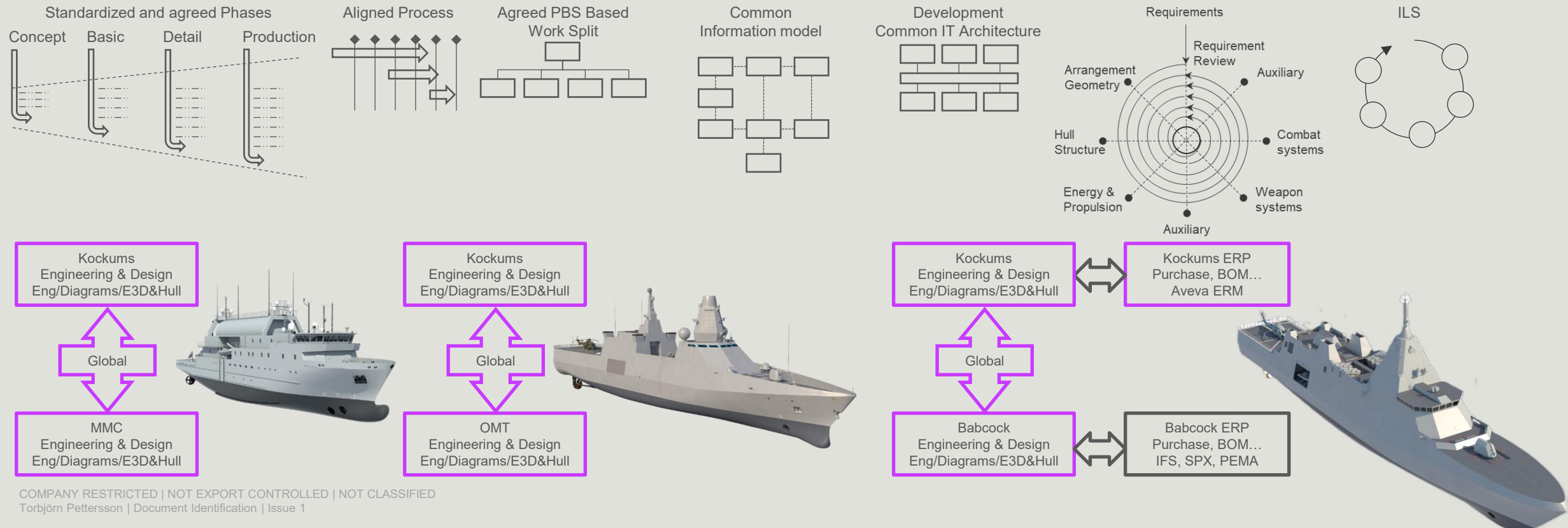
- 0 General
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AVEVA Solutions

Supporting collaboration and efficient project execution



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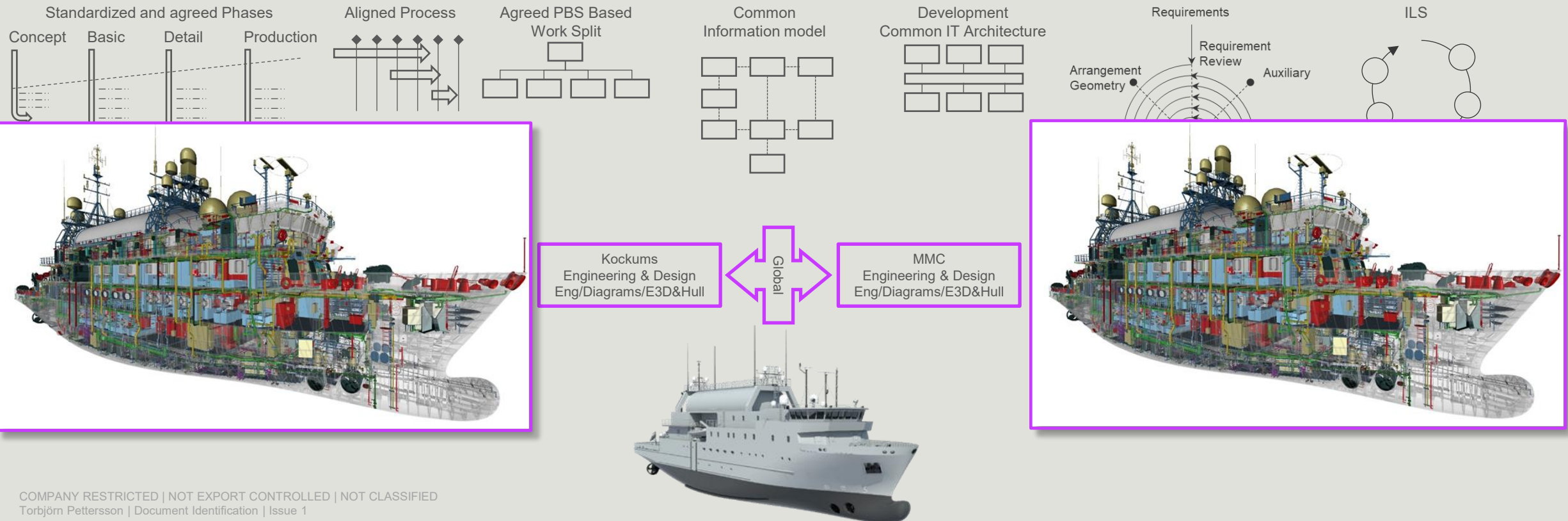
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Measure Progress
Increase Data Quality
Single source of data
All teams on the same data



Saab Naval Surface ships reduce lead time in Composite flow production with 20%.

Challenge

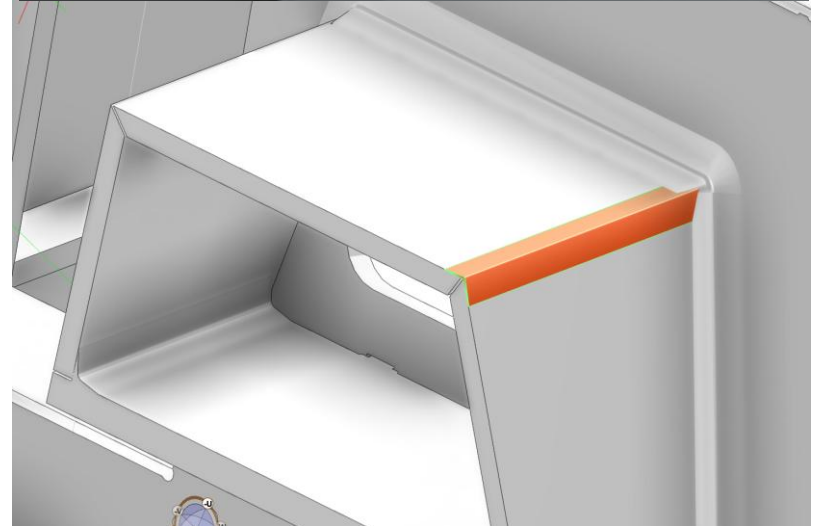
- Many manual operations in production
- Data from 3D model and design to be implemented into production line
- Archive more automatic generated production and material data

Solution

- Deploy and implement AVEVA Hull and E3D for Composite Mast structures to reduce lead time in Production and Material Handling

Results

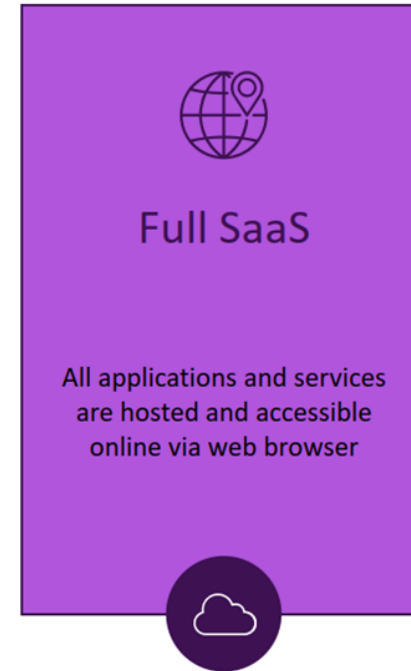
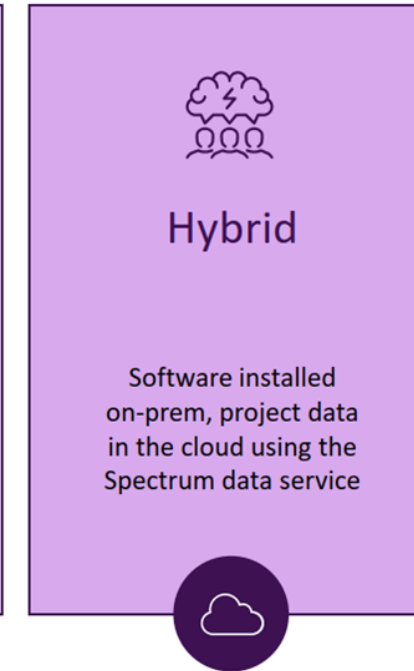
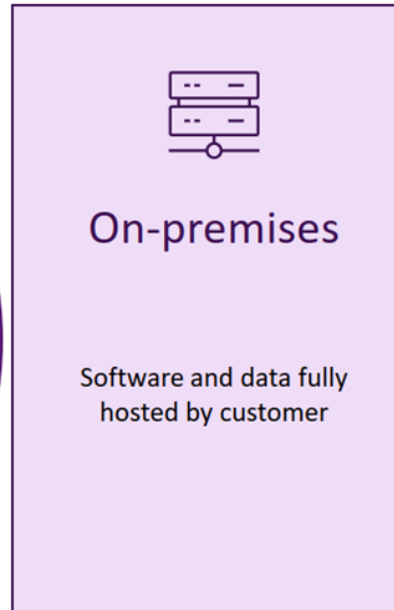
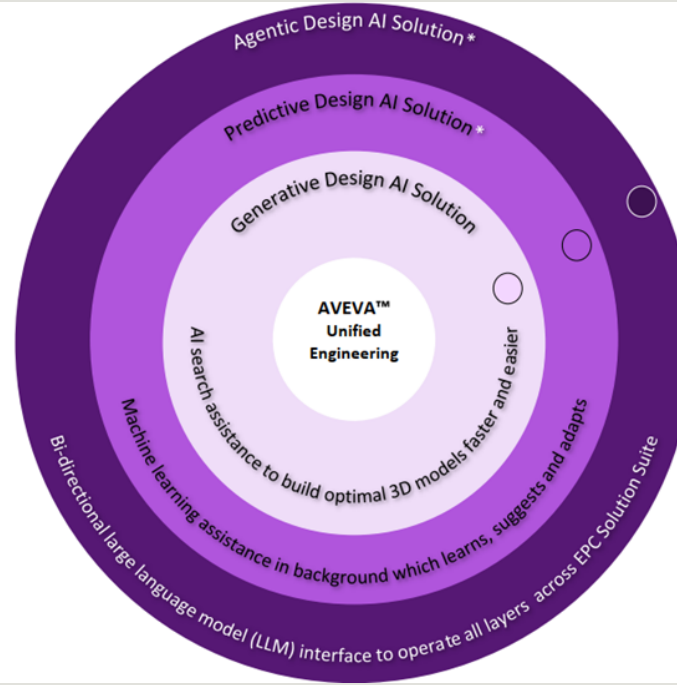
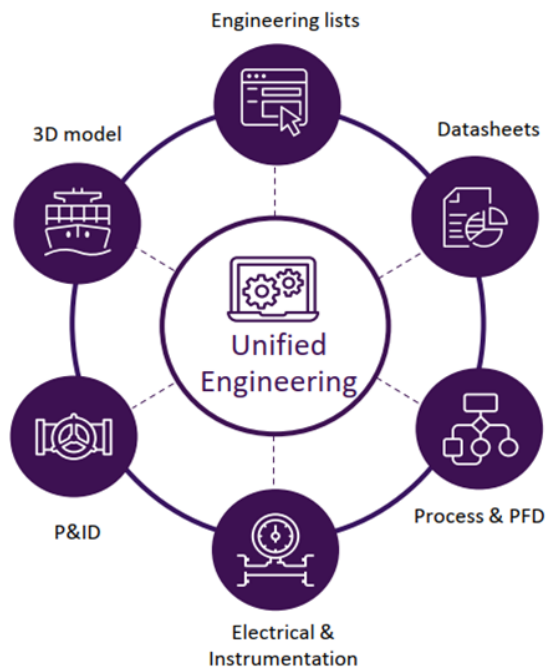
- **Develop a workflow where more data generated from 3D model to be imported into Production line and Material handling.**
- **By implementing systematical input from Design to Production, reduction of spill material, increased Flat Composite panel manufacturing and an overall Production lead time reduction of 20%.**



Way forward!



We are setting up an AVEVA Lab with the objective to learn what's possible and to develop our future solutions



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