

The 3rd RRI Industrial IoT International Symposium for Connected Industries (part II)

Clarifying and Assisting Smart Manufacturing Standardization with URM-MM

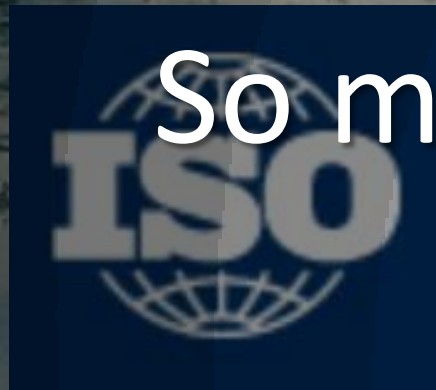
Thursday, November 30, 2017

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By the way,

How to make Smart Manufacturing ?



So many methods, Initiatives....
We're CONFUSING !





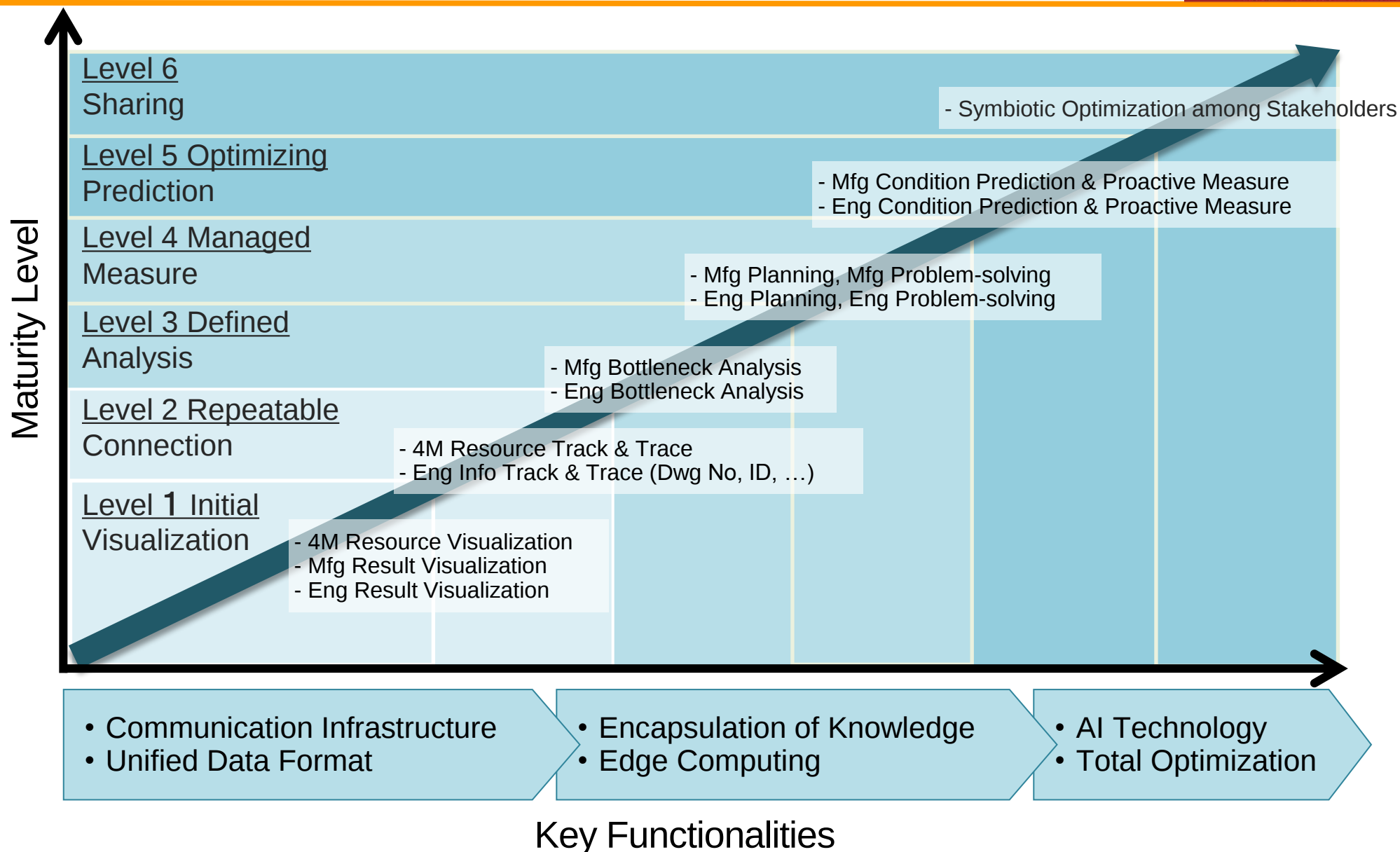
We need GUIDE
for Smart Manufacturing
system construction with standards
as open eco-system !

- *URM-MM illustrate a procedural guide that enables users to identify specific use cases that then link the relevant international standards to existing models.*
The process appears to be the basis of a required navigation tool for the smart manufacturing system.
- URM-MM contains properties such as:
 - ✓ *the development process defined for each use-case* at appropriate scales and granularity,
 - ✓ *user assistance for selection of an appropriate model from pre-categorized models for each development process* to fulfill their aim,
 - ✓ *list of relevant international standards for the selected model* which come from existing reference models/architectures such as RAMI4.0.

SDO: Standards Development Organization

Unified Reference Model - Map and Methodology Model/Organization	Canvas	Use-case	Function	Data
RAMI4.0 / Platform Industrie 4.0	↔			
IIRA / Industrial Internet Consortium	↔			
IMSA / Made in China2025	↔			
Smart Manufacturing Ecosystem / NIST	↔			
IoT Reference Architecture / JTC1/WG10			↔	
Architectural Framework for IoT/IEEE P2413			↔	
Architecture Reference Model / oneM2M			↔	↔
IoT Reference Model / ITU-T SG20	↔			
Big Picture 3D Diagram / ISO TC184	↔			
Framework for the smart manufacturing standards landscape / AIF	↔	Clarification & Mapping Method		
IVRA / IVI	↔			
Demachi Proposal/ TC65 ahG3	↔	Clarification & Mapping Method		
UML / OMG		↔	↔	↔

BUT,
our factory is still in Industrie3.0 !



END

**URM-MM: a method from Japan
that arranges international standards mapping
and smart manufacturing system development
methodology**

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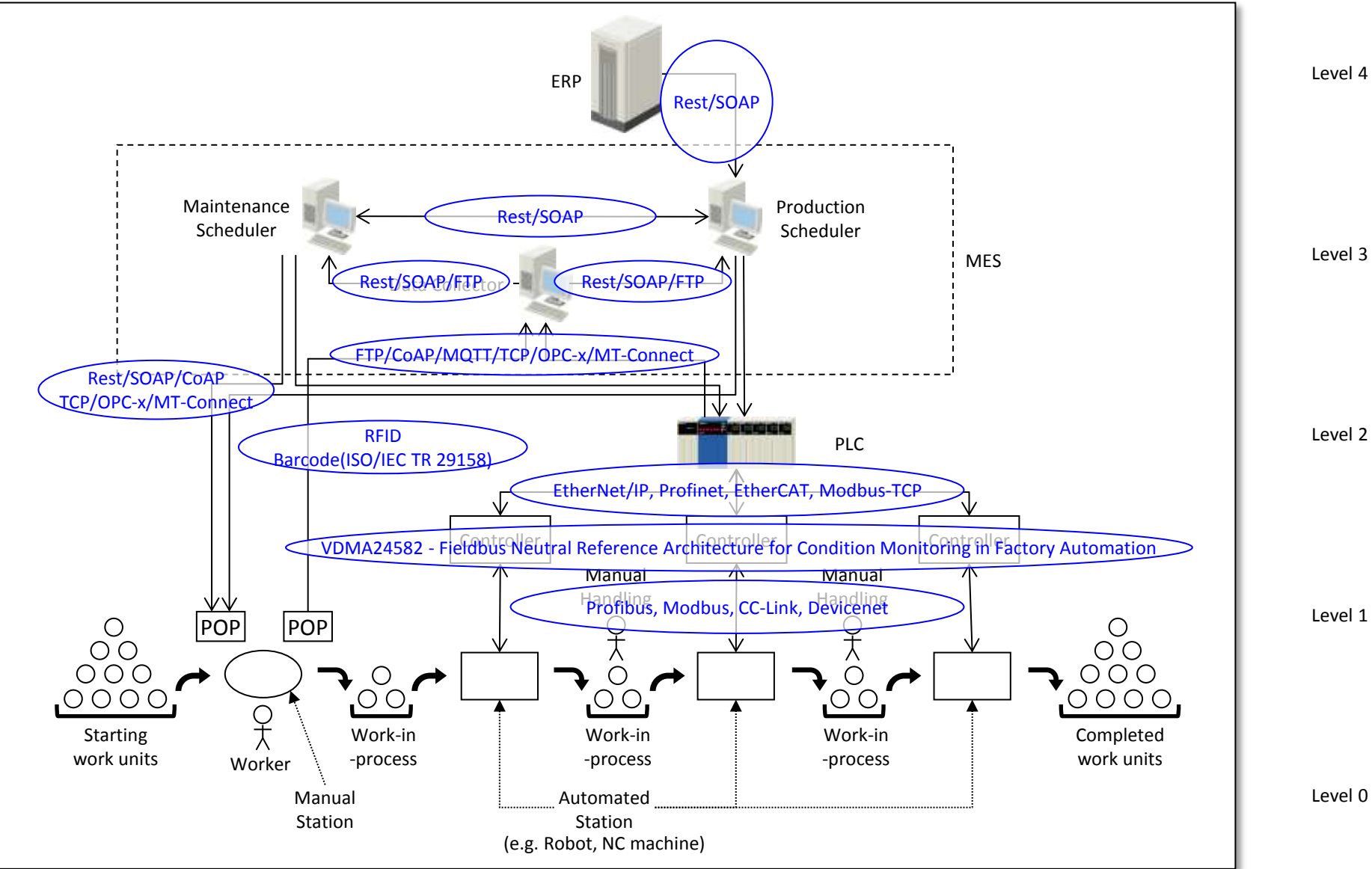
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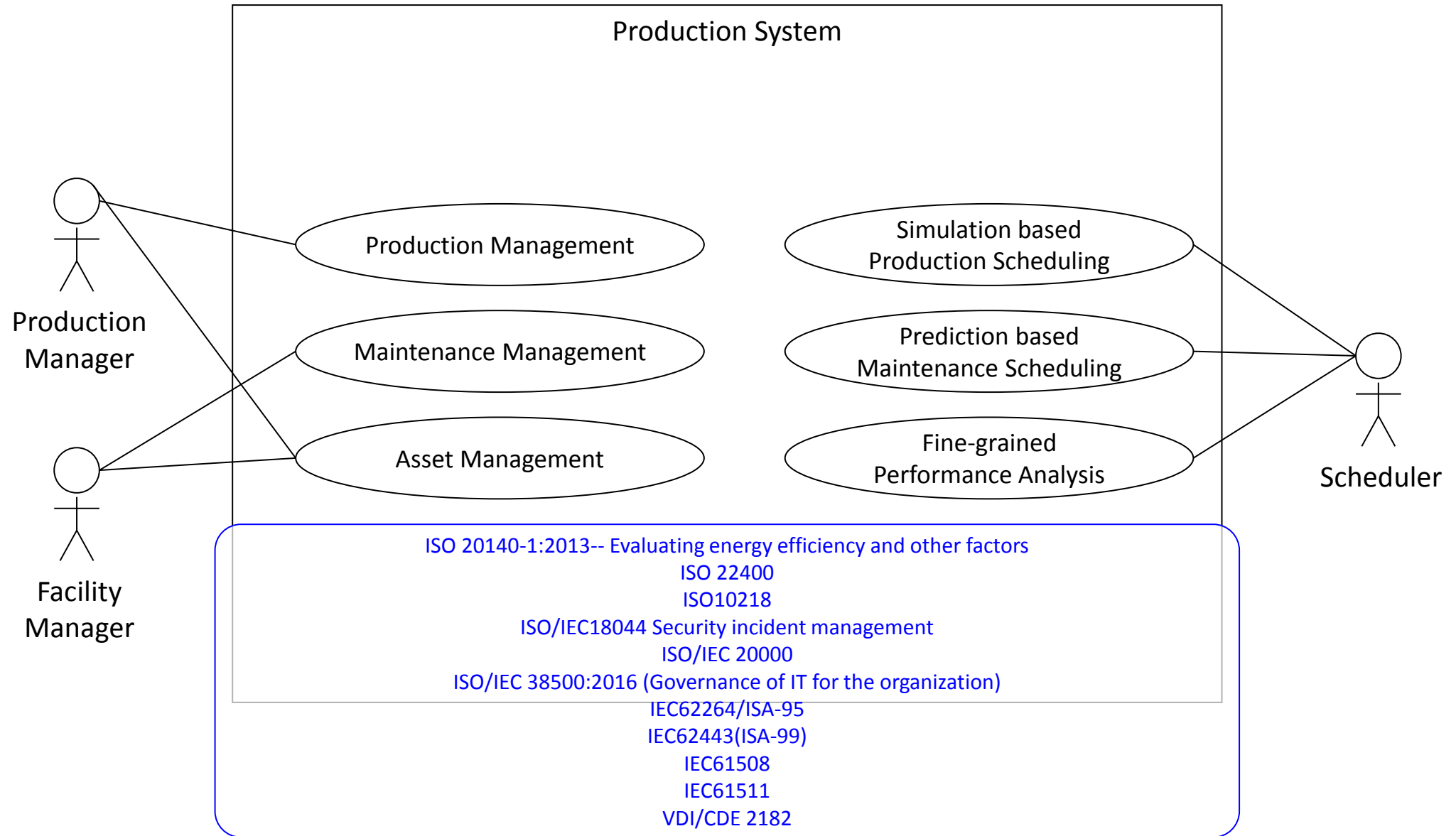
The common strategy on international standardization in field of the Internet of Things/Industrie 4.0

PLATFORM INDUSTRIE 4.0 | ROBOT REVOLUTION INITIATIVE | STANDARDIZATION
COUNCIL INDUSTRIE 4.0

<https://www.plattform-i40.de/I40/Redaktion/EN/Downloads/Publikation/common-strategy-international-standardization.html>



ERP: Enterprise Resource Planning, MES: Manufacturing Execution System, PLC: Programmable Logic Controller, POP: Point Of Production



[Cloud Management] OpenStack, CloudStack

[Virtualization] KVM, docker

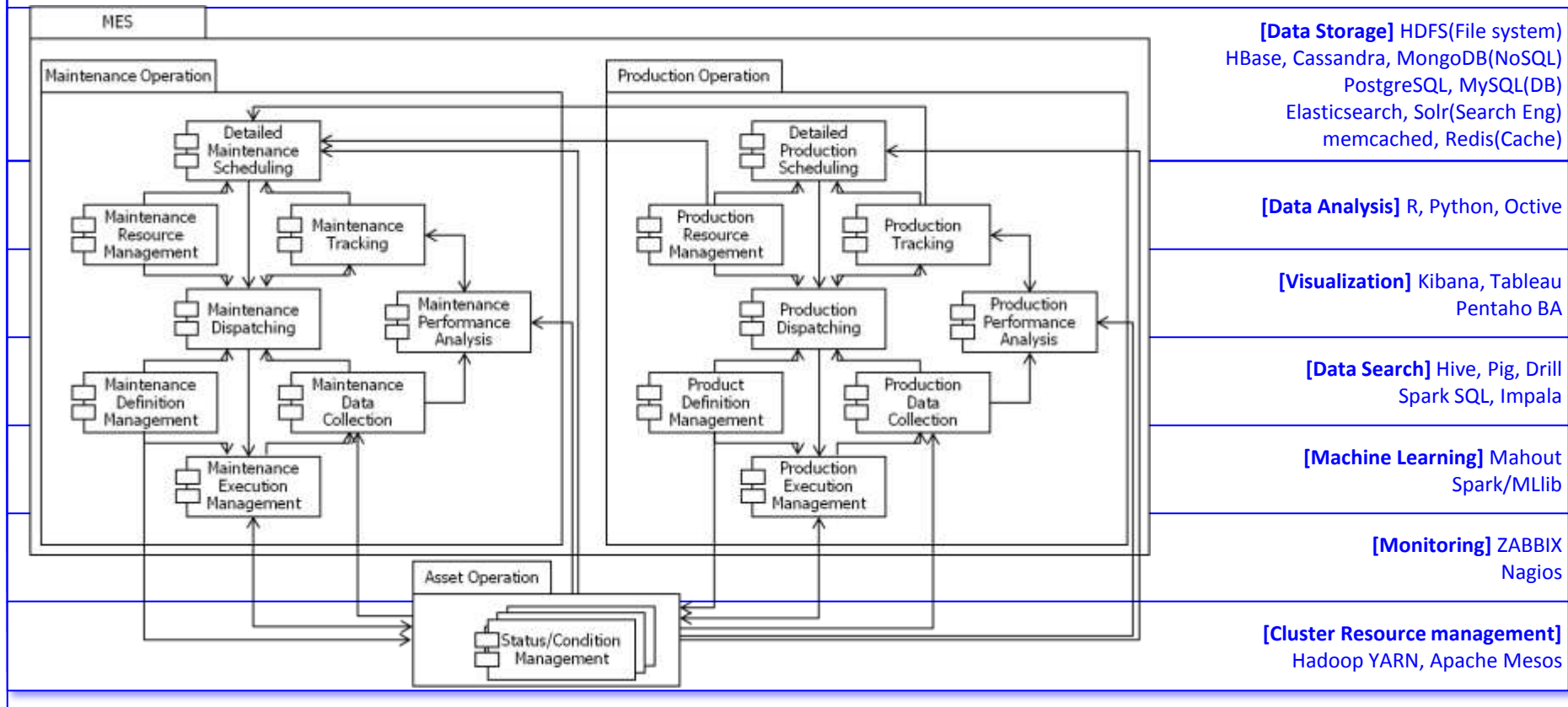
[ETL(Extraction/Transformation/Loading)] Sqoop, Talend, Informatica, Pentaho DI

[Data Collection] Fluentd, Flume-NG

[Message Queue] Kafka, ActiveMQ, RabbitMQ

[Distributed Framework] Spark(In-memory batch processing), MapReduce, Tez(Batch processing), Spark Streaming, Storm(Stream data Processing)

[Scientific Computation] MPICH, OpenMP, OpenCL, OpenACC



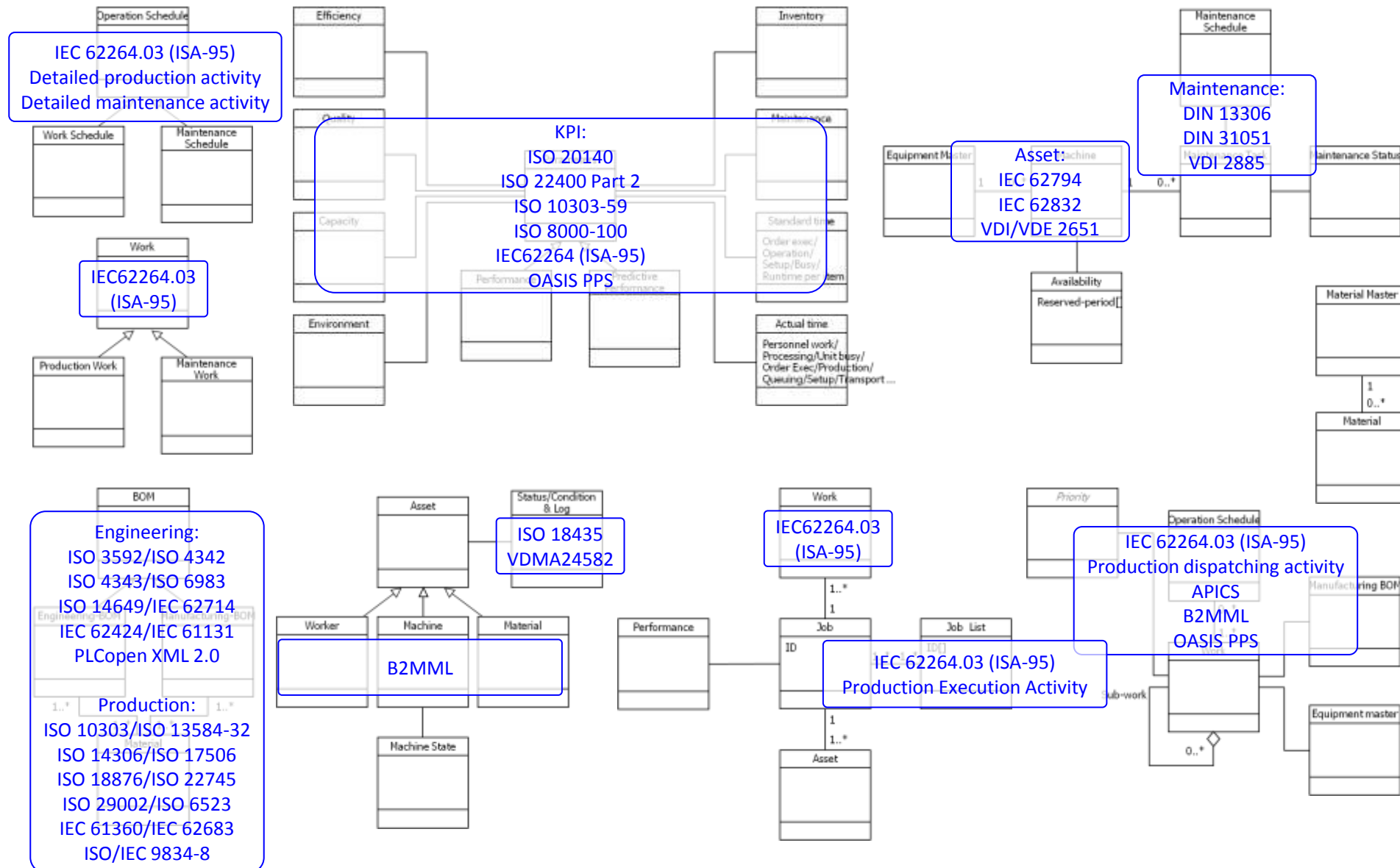
URM-MM: Description in Data phase

Unified Reference Model – Map and Methodology

Toward Human-centric Industries

“Connected Industries”

New vision for the future of Japanese industries



Benefit

- URM-MM illustrate a procedural guide that enables users to identify specific use cases that then link the relevant international standards to existing models. *The process appears to be the basis of a required navigation tool for the smart manufacturing system*

Current Status and Next Action

- URM-MM are going to be promoted to many organizations such as IEC-SEG7, IEC-TC65, ISO/IEC-JWG21, ISO-TC184 and so on.
- Japan members have been describing some use-cases by URM-MM for the verification of URM-MM’s usefulness as a RRI initiative.
- Also, IEC-SEG7 conveners requested that URM-MM should be systemized in IEC-SRG, so Japan members are discussing with related international experts how to communicate with IEC-SRG for the realization.

SRG: System Resource Group