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ENGINEERING CONSULT

DIGITAL MODEL
Product Data
+
DIGITAL THREAD
Traceability
+
DIGITAL TWIN
Configuration
=

How can we achieve our vision of PLM - The Single Source of Truth?

Prof. Dr.-Ing. Martin Eigner
EIGNER ENGINEERING CONSULT
Baden-Baden

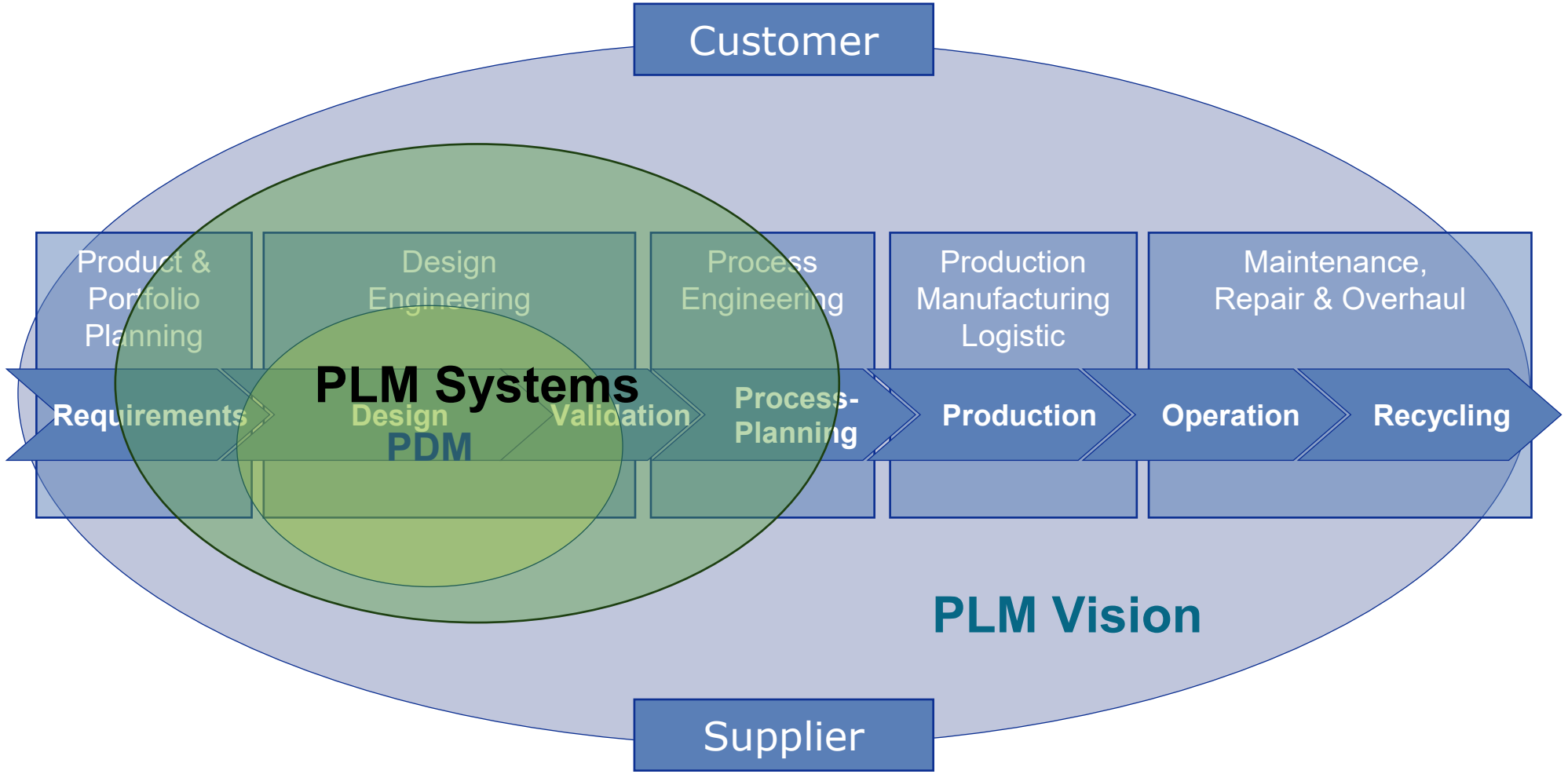
PLM Vision Late 90ties (Academia, Analysts and Consultants

Product Lifecycle Management (PLM) is the company-wide concept for information management of product and process-related data along the Product Lifecycle. It incorporates requirements, concept, design, planning, manufacturing, operation and recycling and is required for the holistic management of all data, documents, resources, and processes throughout the entire product lifecycle (→ Single Source of Truth SSoT).

All people who must solve certain tasks together independently of their location and organizational association work together (→ Engineering Collaboration).

PDM, PLM-Vision and PLM-Systems

Product Lifecycle Management (PLM) vs. Product Data Management (PDM)

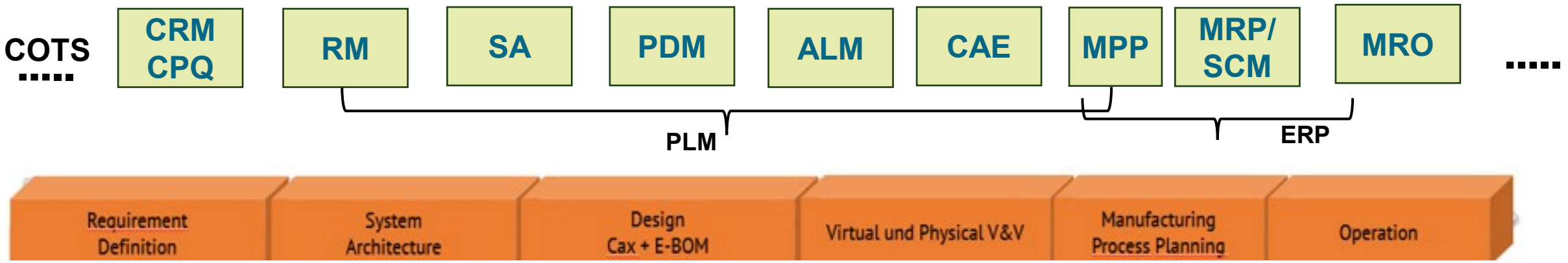


The Current Landscape

- Fragmentation and many legacy systems along the Product Lifecycle
- No common engineering processes above the Legacy Systems
- Mostly Based on Old SW Technology (Monolithically SW-structure)
- Very high first-time and permanent (upgrade) effort for customization
- What is the Scope of PLM?
- Who owns PLM?

Many Fragmented Legacy Systems along the PLC

No cross PLC-processes:
- **Release and Change Management (ECR(ECM)**
- **Configuration management (CM)**
- **Quality Management (QMS)**



Product Lifecycle

CRM = Customer Relations Mgmt. RM = Requirement Management SA = System Architecture PDM = Product Data Mgmt.
ALM = Application Lifecycle Mgmt. CAE = Computer Aided Engineering CPQ = Configure, Price, Quote
MPP = Manufacturing Process Planning MRP = Material Resource Planning
SCM = Supply Chain Mgmt. MRO = Maintenance, Repair and Overhaul
COTS = Commercial off the Shelf (The traditional Legacy Systems along the Product Lifecycle)

Do we really need PLM?

f.E.. Onshape

f.E. Propel

f.E. SAP, Dynamics 365

Typical CAD/TDM/PDM/PLM/ERP Alternatives

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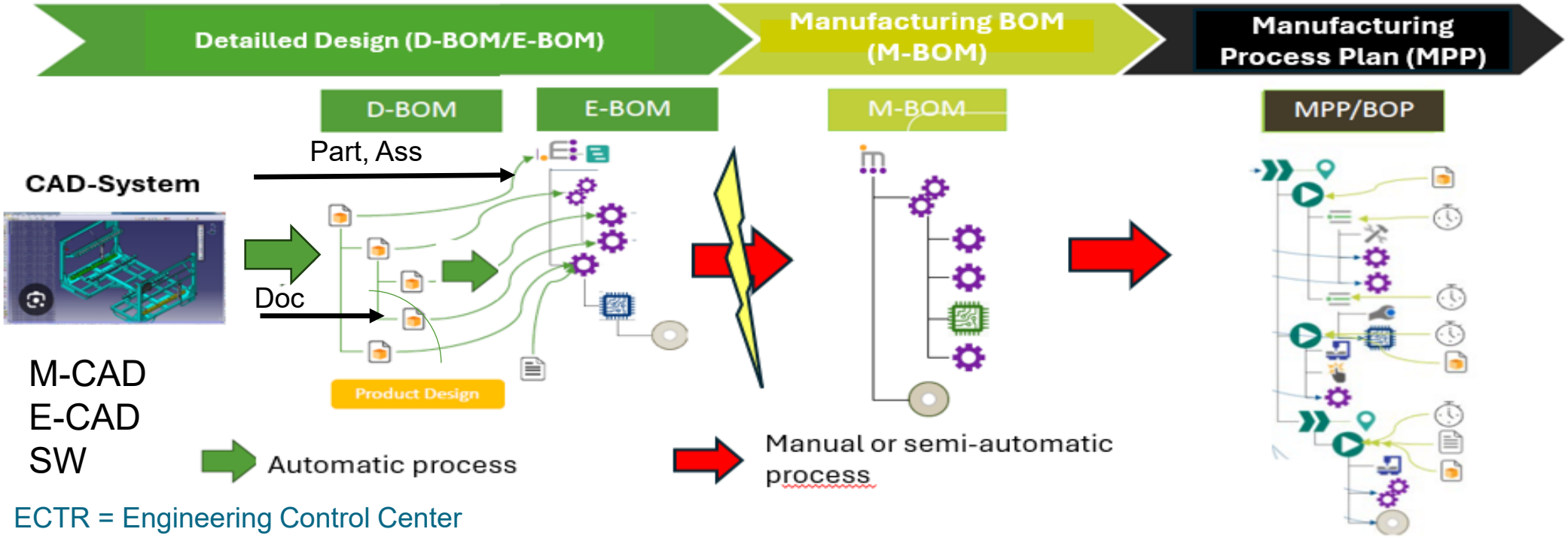
3 d) PLM → MRP/ERP

1 c) PDM → MRP/ERP

b2) Direct (IPD) / ECTR → MRP/ERP PLM (SAP IPD (Public Cloud) / ILC4PEP (Premise oder Privat Cloud))

2 b1) ECTR → MRP/ERP z.B. SAP PLM (On Premise or Private Cloud)

a) CAD f.e.. Onshape → MRP/ERP (f.e.. SAP IPD oder Direct Integration (CIDEON)

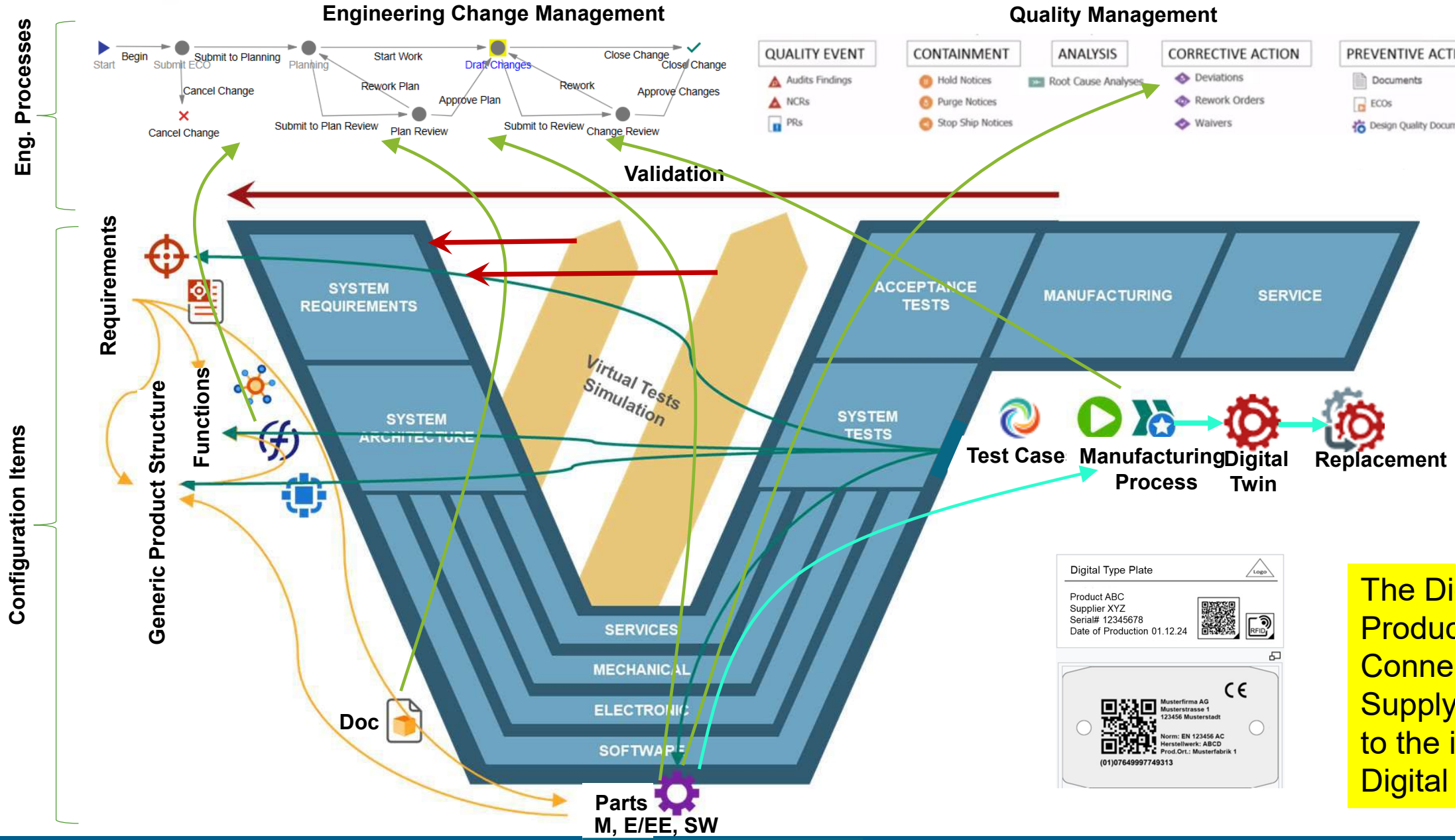


ECTR = Engineering Control Center

How Can We Get Closer to our PLM Vision From the 90s?

- Mindshift in integrated and interdisciplinaryThinking (System Thinking)
- Model Based Design /Model Based System Engineering
- Change and Acceptance Management
- New Methodologies (Methods, Processes and Tools)
- New Software Technology
- Extended Digital Thread and Digital Twin

Digital Thread in an Extended View: Cis+ and Processes



The Digital Product Pass Connects the Supply Chain to the internal Digital Thread

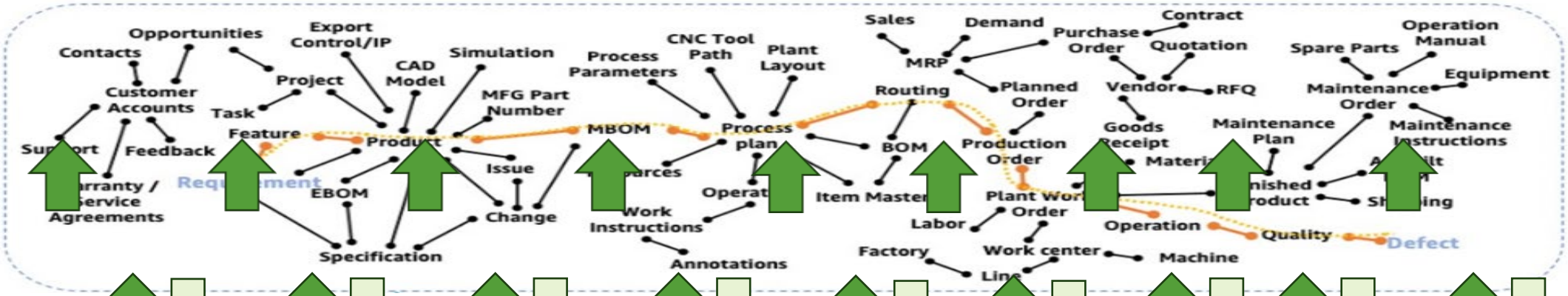
The Concept of an Extended Digital Thread (EDT)

The implementation is done using a Graph DB.

Processes

Change Management | QMS/FMEA | Impact Analysis | AI / LLM

Data Model EDT



COTS

CRM CPQ | RM | SA | PDM | ALM | CAE | MPP | MRP/ SCM | MRO

Requirement Definition | System Architecture | Design Cax + E-BOM | Virtual und Physical V&V | Manufacturing Process Planning | Operation

Product Lifecycle

Node Filter

Node Label:

All

Edge Filter

Relationship Type:

All

Node Property Filter

Property:

All

Value:

Enter property value

Edge Property Filter

Property:

All

Value:

Enter property value

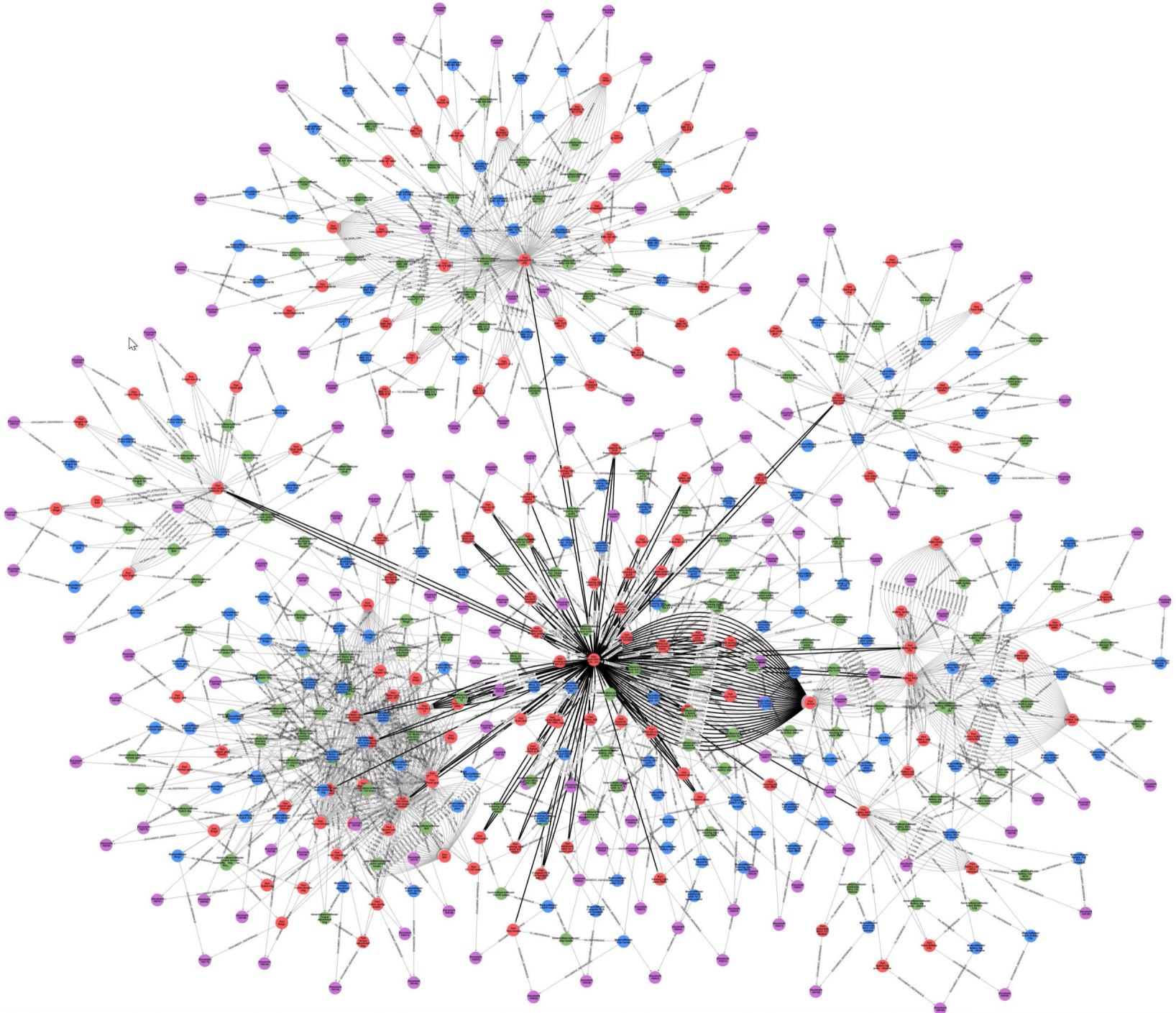
Add Filter

Filter Type:

Node Label

Add Filter

Center Graph | Rearrange



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status	Released
validfrom	2024-12-01T23:00:00.000000000+00:00
validuntil	9999-12-31T23:59:59.000000000+00:00
version	C

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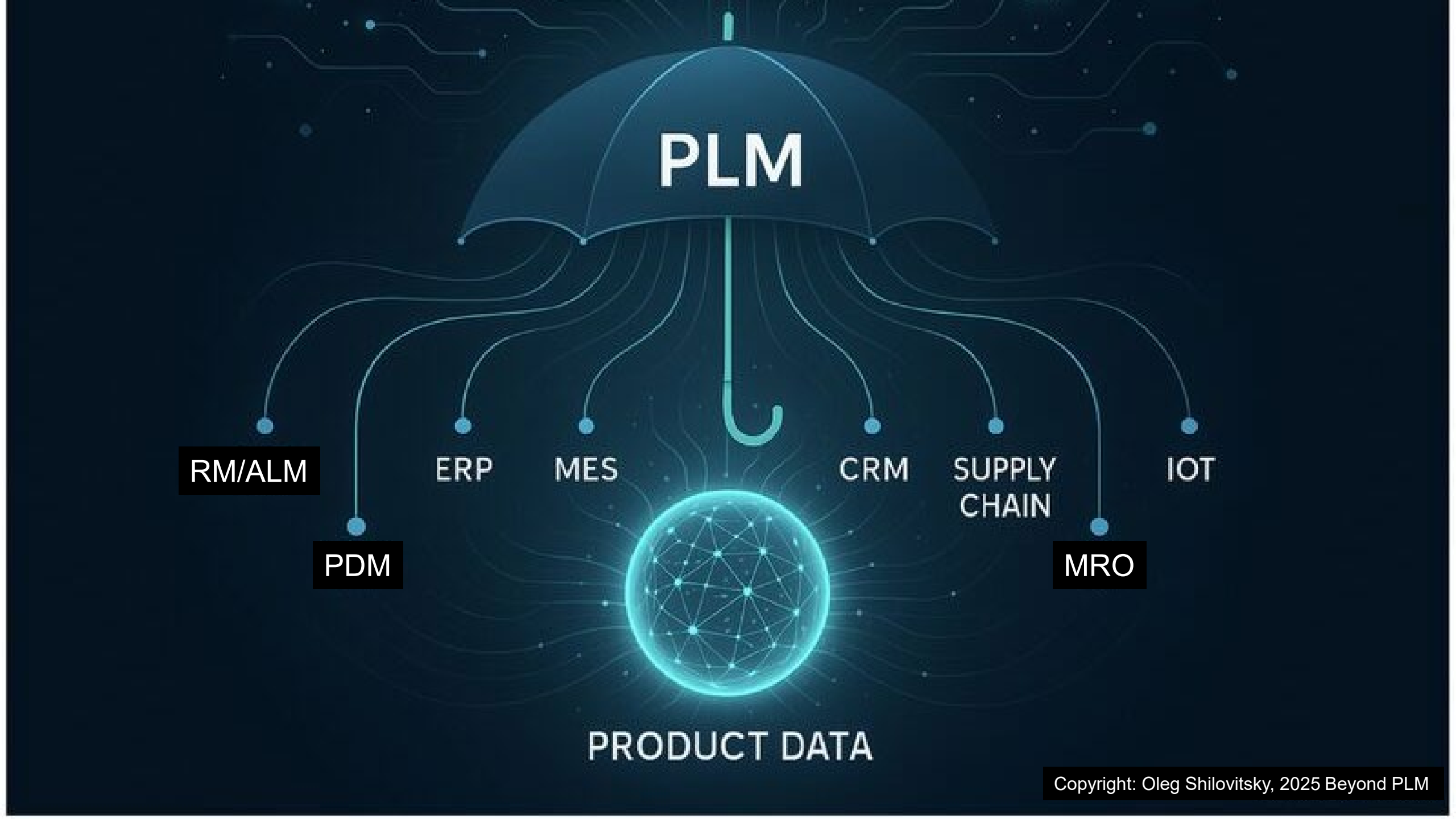
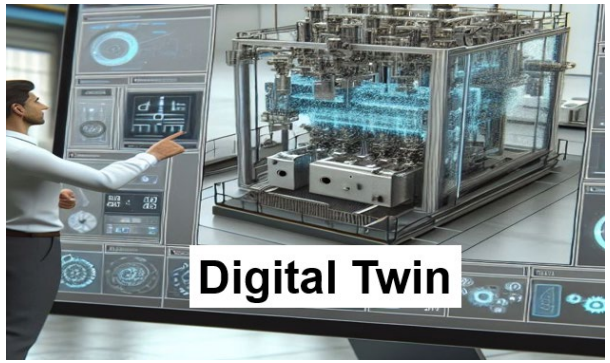
Teamcenter



Yes, We Can Realize Our PLM Vision



PLM Vision