

# Global Collaboration

## Defining a baseline for data exchange processes and standards

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# About Me

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Collaboration Specialist at Pratt & Whitney Canada.

Joined the Collaboration and Data Transfer team in 2006..

Member of the Global Collaboration Working Group in the CIMdata managed Aerospace & Defense PLM Action Group.

Has a Bachelor of Engineering from Ryerson University, as well as a Certificate in Baking Arts from George Brown College.



# Agenda

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- Aerospace & Defense PLM Action Group
- Collaboration Project Status
- Collaboration Project Background
- Keys to Improved Collaboration
- Standardizing Terminology
- Improving Collaboration
- Collaboration Standards
- Technologies
- Collaboration Project Future Goals



# Aerospace & Defense PLM action group

Founded in 2014, the Aerospace & Defense PLM Action Group is an association of aerospace & defense companies within CIMdata's globally recognized PLM Community Program, which functions as a PLM advocacy group.

Workgroups:

Multi View BOM

Standards

MBSE

MBD

Global Collaboration

## Team Members

*Current Resource Matrix*



## Aerospace & Defense PLM Action Group

### *Mission*

An association of aerospace & defense companies within CIMdata's globally recognized PLM Community Program, which functions as a **PLM advocacy group** to:

- Set the direction for the aerospace & defense industry on PLM-related topics that matter to members
- Promote common industry PLM processes and practices
- Define requirements for common interest PLM-related capabilities
- Communicate with a unified voice to PLM solution providers
- Sponsor collaborative PLM research on member-prioritized industry and technology topics

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AEROSPACE & DEFENSE  
PLM ACTION GROUP

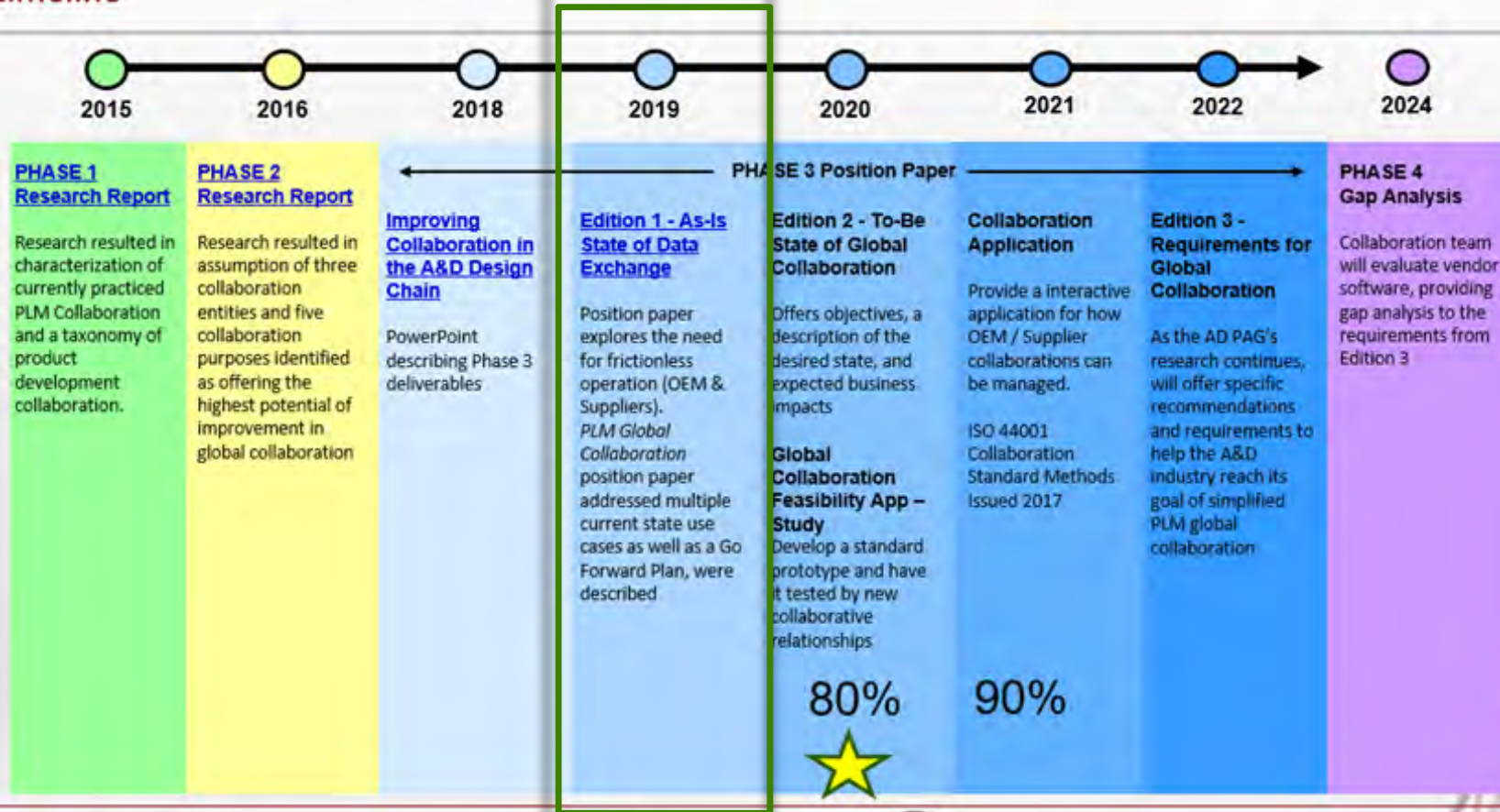
<http://www.ad-pag.com/>



# Collaboration Project Status

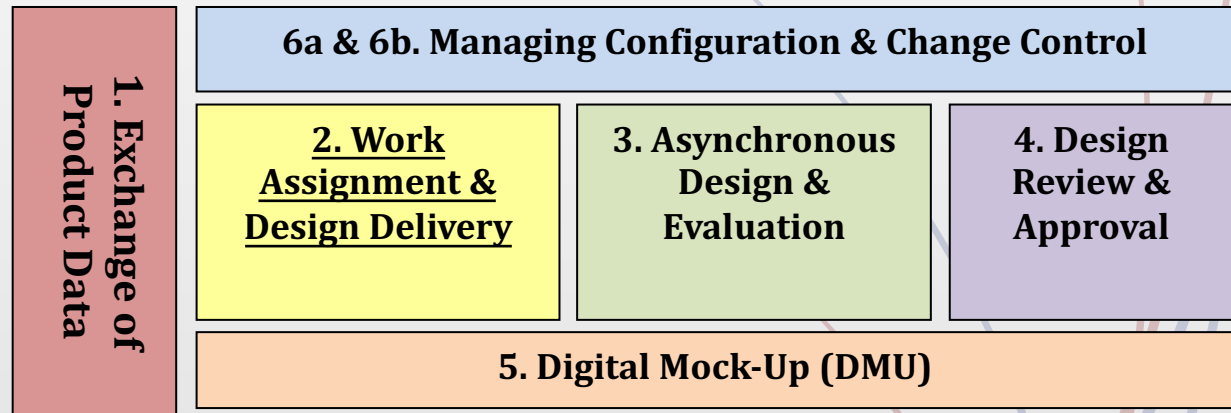
## Global Collaboration Project Status

*Project timeline*



# A&D PLM – Collaboration Project Background

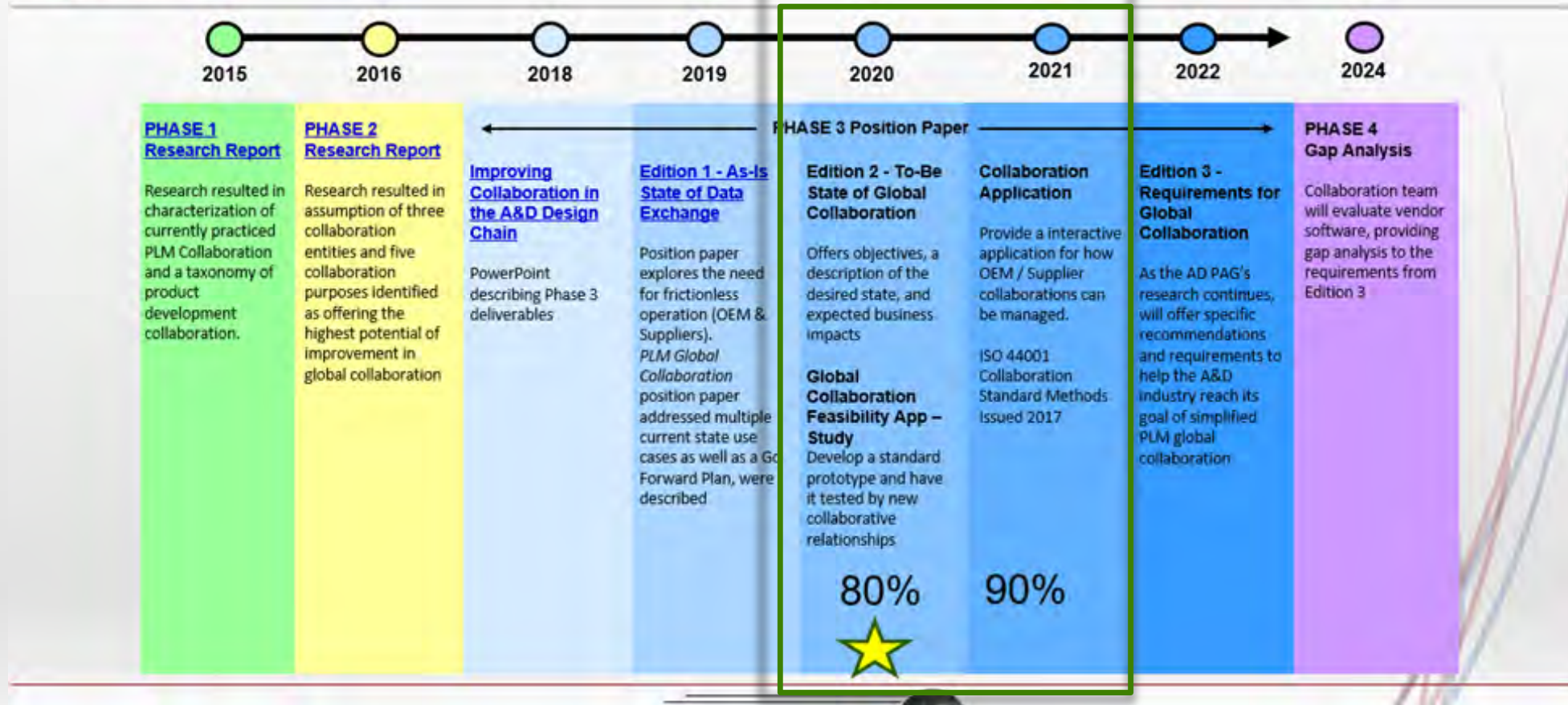
- **ELECTRONIC DEFINITION** of product disrupted decades of industry standard practice with data transfer (paper and scan/fax)
- **CONNECTIVITY TECHNOLOGY, DATA FORMAT,** intellectual property, and level of detail quickly rose as inhibitors to electronic data definition and transfer
- **SUPPLIER AGREEMENTS** still refer to paper processes instead of aligning with 3DMBD and advanced technology methods
- **COLLABORATION IS NEEDED** during all phases of program lifecycle. Levels of frequency and volumes will vary at each phase, which will determine the level of interconnectivity and interoperability.



# Collaboration Project Status

## Global Collaboration Project Status

*Project timeline*



# KEYS TO IMPROVED COLLABORATION

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1. Standardize terminology
2. Recent and/or emerging technologies
3. Adoption of technologies and standards





# Standardize Terminology

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## Collaboration

A work methodology which allows for the management, sharing, and processing of files, documents, and other types of data, among several users and systems, anytime and anywhere in real time. Including the exchange of ideas/knowledge and interaction among users for product development where design engineering, manufacturing engineering, and other functions are integrated to reduce the time required to bring a new product to market

## Interoperability

The ability of companies, organizations and PLM participants to exchange and use information between multiple systems or components in the original data format, not translated or copied data ensuring both horizontal and vertical operability across the PLM lifecycle



# Standardize Terminology

## Technical Data Package

Any collection of information as defined by the recipient requirement obligations. The collected technical data is gathered at a specific lifecycle stage. The technical data package will describe the contents in an organized way. This information may include but is not limited to (Engineering data, purchasing data, manufacturing data, Certification data, Test data, Service data, etc.). Some examples of these types of data are design definition, test reports, administrative agreement, installation instruction, component maintenance manual, etc..

## AD PAG Glossary

<https://www.cimdata.com/en/adpagglossary22290>



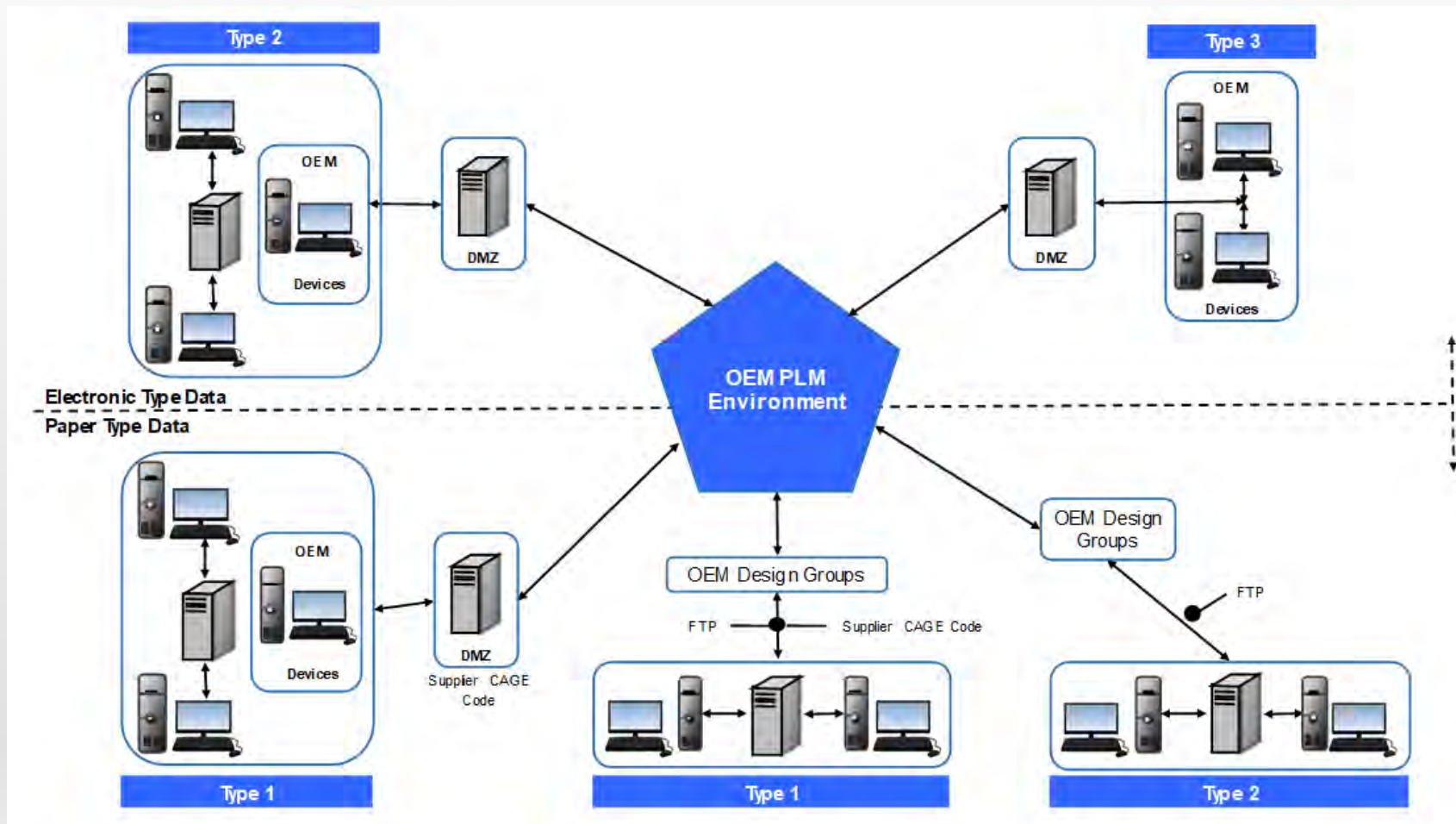
# Improving collaboration

## Reviewing and classifying collaboration types

| Collaboration Type                | Type 1  | Type 2  | Type 3  |
|-----------------------------------|---|---|---|
| Type of data exchanged (examples) | <ul style="list-style-type: none"> <li>- 3D/2D Geometry with tolerancing data</li> <li>- Documents</li> <li>- Metadata</li> </ul> | <ul style="list-style-type: none"> <li>- Requirements</li> <li>- Functional diagrams (e.g. fluidic or electric)</li> <li>- 3D/2D Geometry with tolerancing data and/or assembly requirements (torque, gap...)</li> <li>- Documents</li> <li>- Metadata</li> <li>- DMU : selected volume</li> <li>- BOM</li> </ul> | <ul style="list-style-type: none"> <li>- Requirements</li> <li>- Functional diagrams (e.g. fluidic or electric)</li> <li>- 3D/2D Geometry with tolerancing data and/or assembly requirements (torque, gap...)</li> <li>- Documents</li> <li>- Metadata</li> <li>- DMU: selected volume</li> <li>- BOM</li> <li>- Assembly</li> <li>- Change/Modification documents</li> </ul> |
| Data exchange level               | L1  | L2  | L3  |

# Improving collaboration

Reviewing and classifying collaboration types – connection setup



# Standards

- Interoperability standards
  - ISO 10303 - STEP
  - ISO14306 - JT
  - ISO32000/14739 (PRC for 3D PDF)
  - MIL31000 Technical Data Packages
- EN/NAS 9300-xxx LOTAR standards
- ISO 44001 - Collaborative business relationship management systems — Requirements and framework
- PDES & Implementor Forums

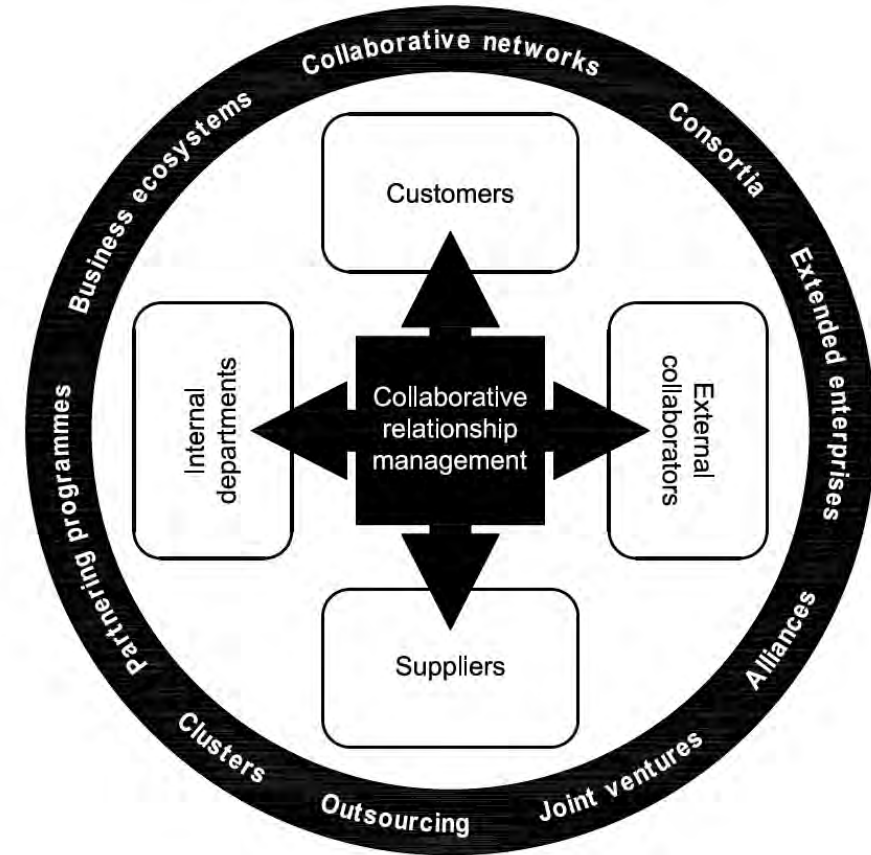


Figure 1 — Multidimensional relationships

Reference figure from ISO 44001 - Collaborative business relationship management systems — Requirements and framework



# Collaboration team Interoperability workflow

## INTEROPERABILITY WORKFLOW

1a. Prepare Recommended Collaboration for the Data Exchange Process

1b Assess Supplier Capabilities

2. Commercial, Contractual and Legal Relationship

3. Set up Governance

4. Project management

5. Set up Interfaces & organization

6. Setup Collaboration Environment for Program Life

7. Program Review Process

8. End State (LoTAR)

*Done in parallel and can be done multiple times*

## ISO44001 – COLLABORATIVE BUSINESS RELATIONSHIP FRAMEWORK

### 2. Knowledge

Specific strategy, outcomes, business case and implementation plan

### 4. Partner Selection

Capability, roles and responsibilities

### 5. Working Together

Governance, management systems and processes

### 1. Operational Awareness

Vision, Values, leadership & Objectives

### 3. Internal Assessment

Policies, people, skills and collaborative maturity

### 6. Value Creation

Continual improvement processes

### 7. Staying Together

Team management, monitoring, measurement and behavior

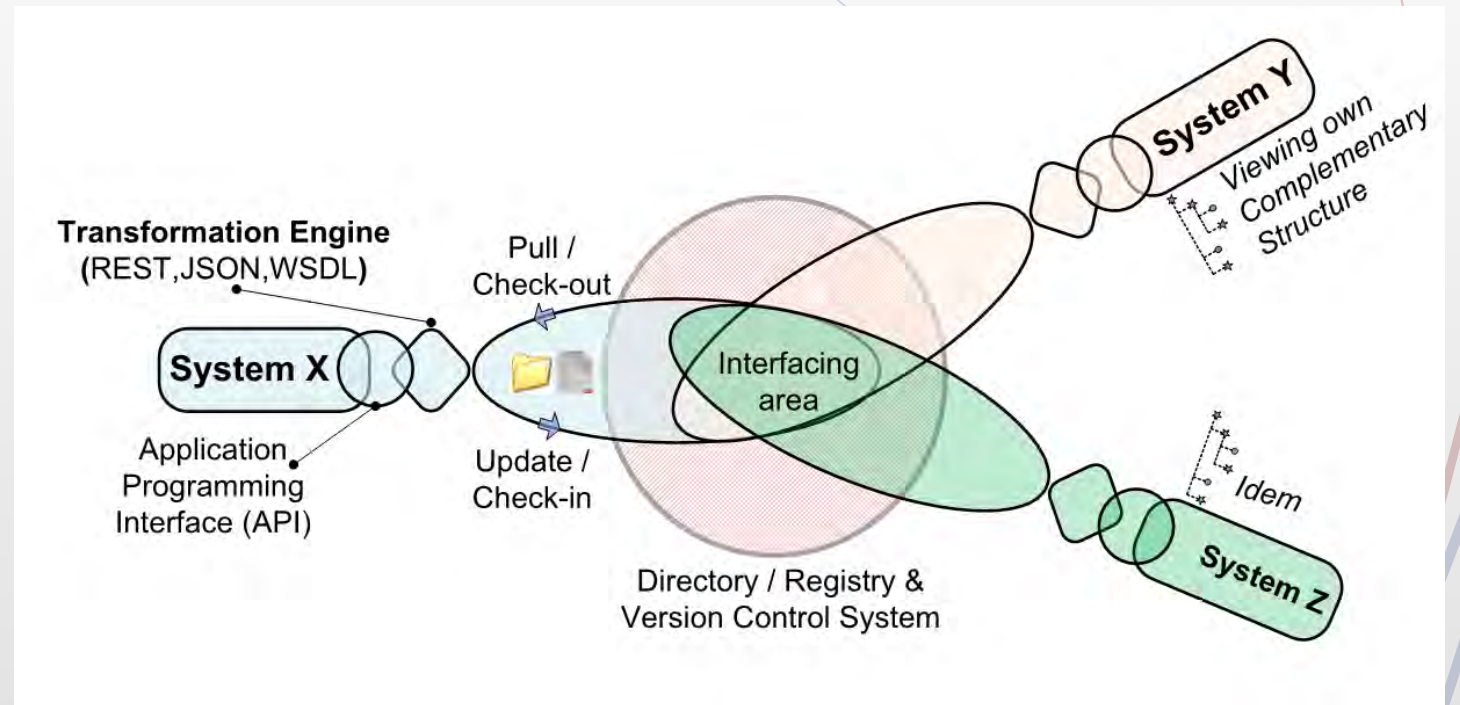
### 8. Exit Strategy Activation

Disengagement, triggers and process



# Technologies

- End-2-End PLM
- Digital Thread
- Open Exchange Nest
- Artificial Intelligence
- Blockchain
- Additive Manufacturing
- CAD Converters/Validation Tools
- Video conferencing tools



Open Exchange Nest



# A&D PLM Action Group – Collaboration Project

## Conclusion and outlook

### Global Collaboration Project Status

#### Project timeline

