Barriers to Data Interoperability Adoption Among Small- to Medium-sized Manufacturers

Chris Peters
CEO
The Lucrum Group
410-647-3200
cpeters@thelucrumgroup.com
Adoption Basics

Adoption Stages

Knowledge ➔ Persuasion ➔ Decision ➔ Implementation ➔ Confirmation

Motivation > Barriers = Adoption
Research Conducted

• Met with 200+ manufacturers
• Surveyed hundreds more
• Extensive secondary research
• Various DoD-funded projects
• Emphasis on low-volume/high-mix
“Buyer” Data Exchange Methods

Illinois Defense Network

Email
Portal
Fax
EDI

Status/Logistics
OE/Acctg
Design/CAD

North Carolina DIDI

Email
Portal
Fax
EDI

Status/Logistics
OE/Acctg
Design/CAD

© The Lucrum Group 2019
Adoption Stages

Knowledge → Persuasion → Decision → Implementation → Confirmation

Assumed Industry Majority
Findings

- Tech data issues
  - Received by portal, email, fax and paper
  - Most translate CAD/STEP files to their own preferred format
    - By CAD, third-party software or recreation from scratch
  - Translations typically aren’t validated
  - Conflicts between drawings and models
  - Little collaboration during design phase
  - Additional data/clarification often needed

- Very limited exchange of production data

- Findings validated by secondary research
  - ITIF Report
  - WVU Paper
  - European study
  - Australian article

Presented by: Christopher Peters

This Photo by Unknown Author is licensed under CC BY-SA NC
Current state of digital manufacturing may not be what we have believed it to be.

Adoption Stages

Knowledge → Persuasion → Decision → Implementation → Confirmation

Presented by: Christopher Peters

This work was performed with support in part by the Department of the Army through MxD under project 17-01-01
Supply Chain Data Loss?

Translation:
- CAD
- 3rd Party
- Manual
Supply Chain Data Loss?

Translation:
- CAD
- 3rd Party
- Manual

Validation:
- Software
- Manual
- None
Supply Chain Data Loss?

Translation:
- CAD
- 3rd Party
- Manual

Validation:
- Software
- Manual
- None

Risks:
- Quality
- Delays
- Costs
Barriers

• Inefficient communications methods
  – Email is unstructured and siloed
  – Inability to easily collaborate
Barriers

- Incompatibilities
  - Missing functions/features
  - Changing part names/numbers
Barriers

• Cost
  – Buying licenses
  – Training
Barriers

• Lack of trust in data
  – Differences in 2D and 3D data
  – Inconsistencies between and within buyers
Barriers

• Inertia
  – “Always done this way.”
  – “It works for us.”
  – “Why change?”
"Investigating the Impact of Standards-Based Interoperability for Design to Manufacturing and Quality in the Supply Chain."

Barriers:

✓ The 2D drawing is still considered the master versus the 3D model by many in the industry.

✓ There is a significant learning curve to effectively embed PMI into a 3D CAD model.

✓ Major product lifecycle management (PLM) tool providers are concerned with losing market share due to easy data exchange through standards-based implementations.
What To Do?

• Quantitatively assess current state
  – Including motivators and barriers
• Define future state
• Develop a roadmap
  – Education
  – Technology
  – Standards
  – Policies
Thank you

Chris Peters
CEO
The Lucrum Group
410-647-3200
cpeters@thelucrumgroup.com