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KIM, ERIM and the Silo of Doom

Lessons from two long-lived data projects

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16th July 2010
Who are we?

▶ UK-based centre of expertise in digital curation.
▶ Partnership between Universities of Bath, Edinburgh and Glasgow.
▶ Primary (but not exclusive) focus on research data.

What do we do?

▶ Develop curation tools, resources and learning materials.
▶ Provide training and other events.
▶ Build communities of data curators and foster good practice.
▶ Collaborate in projects demanding digital curation expertise.
KIM Project

- £5.5 million Grand Challenge project.
- Funded by EPSRC and ESRC.
- 80 industrial collaborators.
- 13 partners across 11 universities.
- Strategies and tools for the emerging product service paradigm:
  - Advanced product representation.
  - Learning throughout the lifecycle.
  - Managing the lifecycle.
  - Environment, Groups, Individuals, Practices, Tools.
Engineering information flows
Engineering information flows

Pre-existing information & experience → Design team → Design team → In service → Production → Upgrade → Disposal

Partners → Design team

Regulators → Design team

Customers → Design team

In service → Upgrade

Production → Disposal
Engineering information flows

- Pre-existing information & experience
- Design team
- Design team
- Partners
- Regulators
- Customers
- In service
- Upgrade
- Production
- Disposal
- Design
- Product 1
- Product 2
- In service
- Upgrade
- Production
- Disposal

DPC: Computer-Aided Design
16th July 2010
Engineering information flows

Pre-existing information & experience

Partners

Design

Design team

Design

Design team

Production

In service

Upgrade

Disposal

Customers

Regulators

Product 1

In service

Upgrade

Disposal

Production

Product 2

Design

In service

Upgrade

Disposal

Production
No, not *this* kind of Silo of Doom
Information silos

- CAD models
- CNC models
- Service records
- Performance data
- FEA models
- Process models
- Rationale reports
- ...
Integrating silos

Curation problems:

- Integrating product information with current lifecycle systems.
  - Computer-aided manufacture
  - Computer-aided engineering
  - Product lifecycle management (PLM) systems
Integrating silos

Curation problems:

▶ Integrating product information with current lifecycle systems.
  ▶ Computer-aided manufacture
  ▶ Computer-aided engineering
  ▶ Product lifecycle management (PLM) systems
▶ Integrating product information with future lifecycle systems.
  ▶ STEP (ISO 10303)
  ▶ ???
Limitations of CAD models

- No direct feedback
- Locked into proprietary software
- Format quickly obsolete
- Multiple viewpoints
- Big file sizes
- Commercial secrets
Lightweight Models with Multilayer Annotations

Different annotation layers for different viewpoints (design, manufacture, service) and for different security levels (internal, public)

Geometry layer
Registry/Repository of Representation Information for Engineering

DPC: Computer-Aided Design 16th July 2010
ERIM Project

- Funded by JISC.
- University of Bath: IdMRC and UKOLN/DCC.
- Managing data produced by
  - KIM Project;
  - other IdMRC research.
Silo of Doom strikes again
Silo of Doom strikes again

Storage
Confidentiality
Silo of Doom strikes again

Storage

Confidentiality

Context
Data processing flows
Conclusions

▶ STEP where possible.
▶ Simple solutions elsewhere.
  ▶ Identify the information needed.
  ▶ Identify a simple way of storing that information.
  ▶ Find a way of getting information there that arises from a natural workflow.
▶ Avoid creating new silos.
▶ Manage the silos you have carefully.
Further information


Other work

FACADE (Future-proofing Architectural Computer-Aided Design)
- Archiving architectural CAD models in DSpace.
- http://facade.mit.edu/
  http://ijdc.net/ijdc/article/view/105

SHAMAN (Sustaining Heritage Access through Multivalent Archiving)
- Enabling preservation in PLM systems
- http://shaman-ip.eu/shaman/
  http://ijdc.net/ijdc/article/view/131
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Thank you for your attention

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