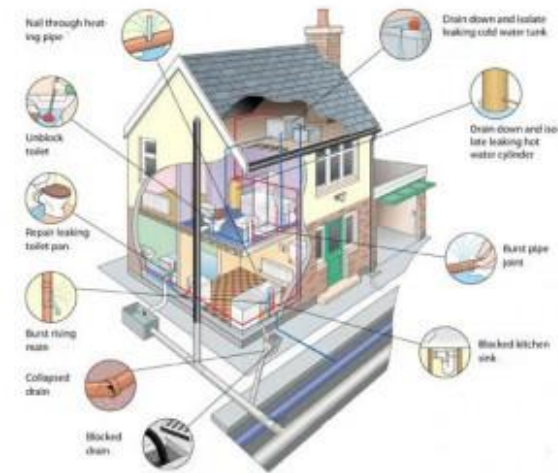


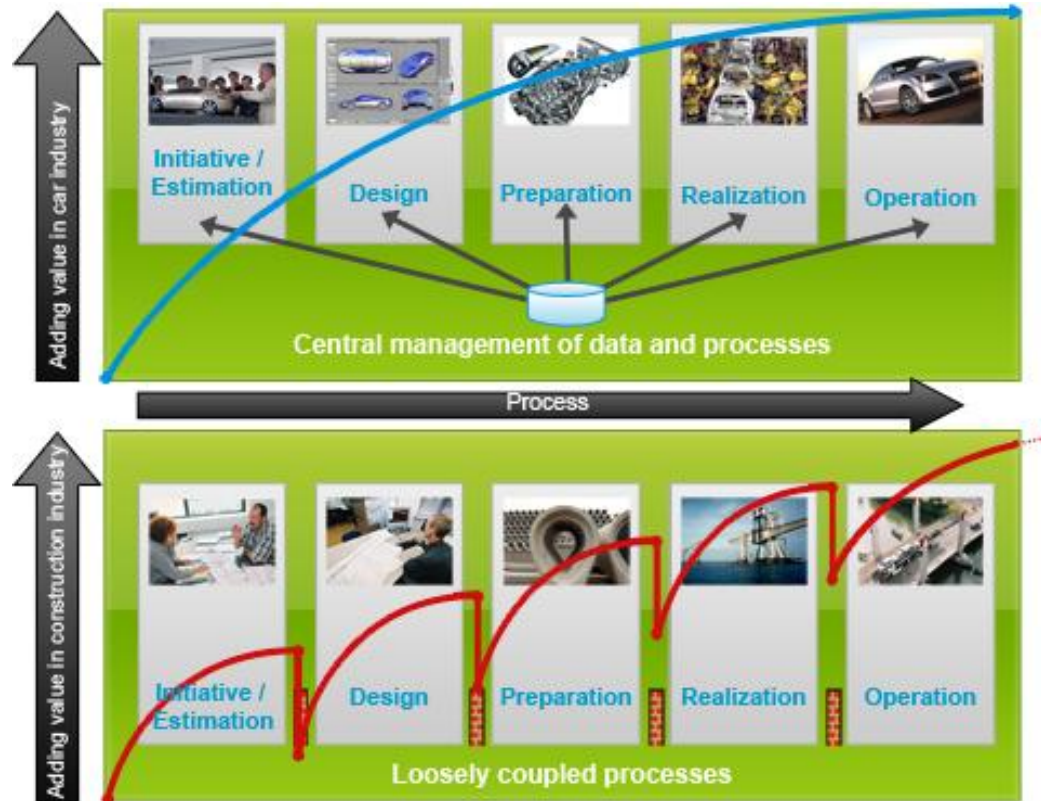
Challenges for interoperability in openINFRA

Jotne EPM Technology AS, Oslo, Norway
Jorulv Rangnes: jorulv.rangnes@jotne.com

- My FATHER is stronger than yours...
- My APPLICATION is better than yours...
- My STANDARD is better than yours
- NO Change

- Interoperability BETWEEN interoperability standards
- Interoperability USED in portals
- Interoperability FINANCED LONGTERM by jurisdictions
Example: Norwegian Altinn (all-in) owned and financed by the finance department





Central management of data and processes

Overview

The Key Business Problem



How to keep the information needed to operate and maintain a product aligned with the changing product over its life cycle?

***Product Definition
Information***

***Maintenance
Schedules***

Tools

***Test
Equipment***

***Support
Facilities***

***Product
in Focus***



Transportation

Consumables

Software

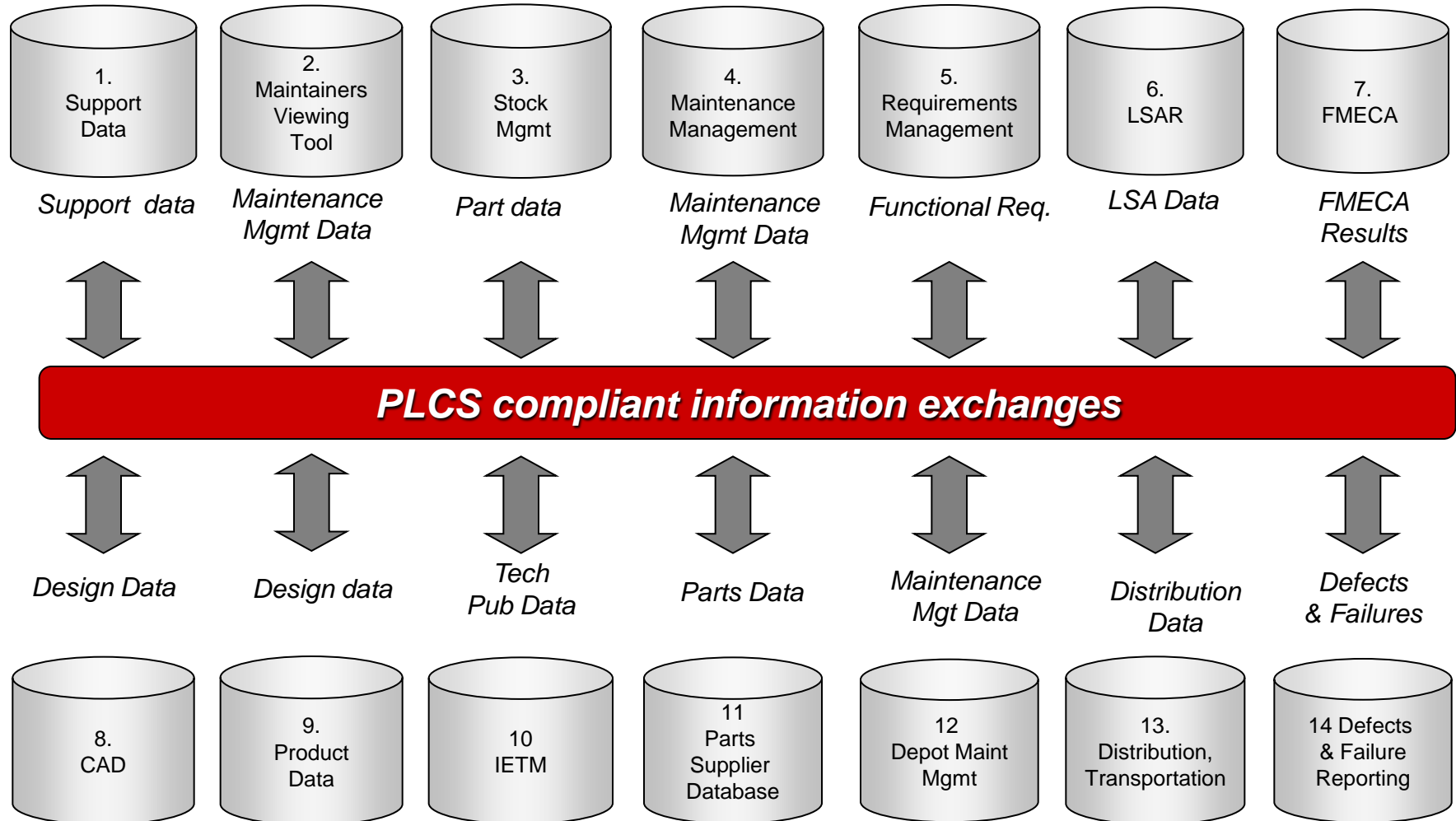
Spares

Training

***Storage
Requirements***

Product Life Cycle Support (PLCS)

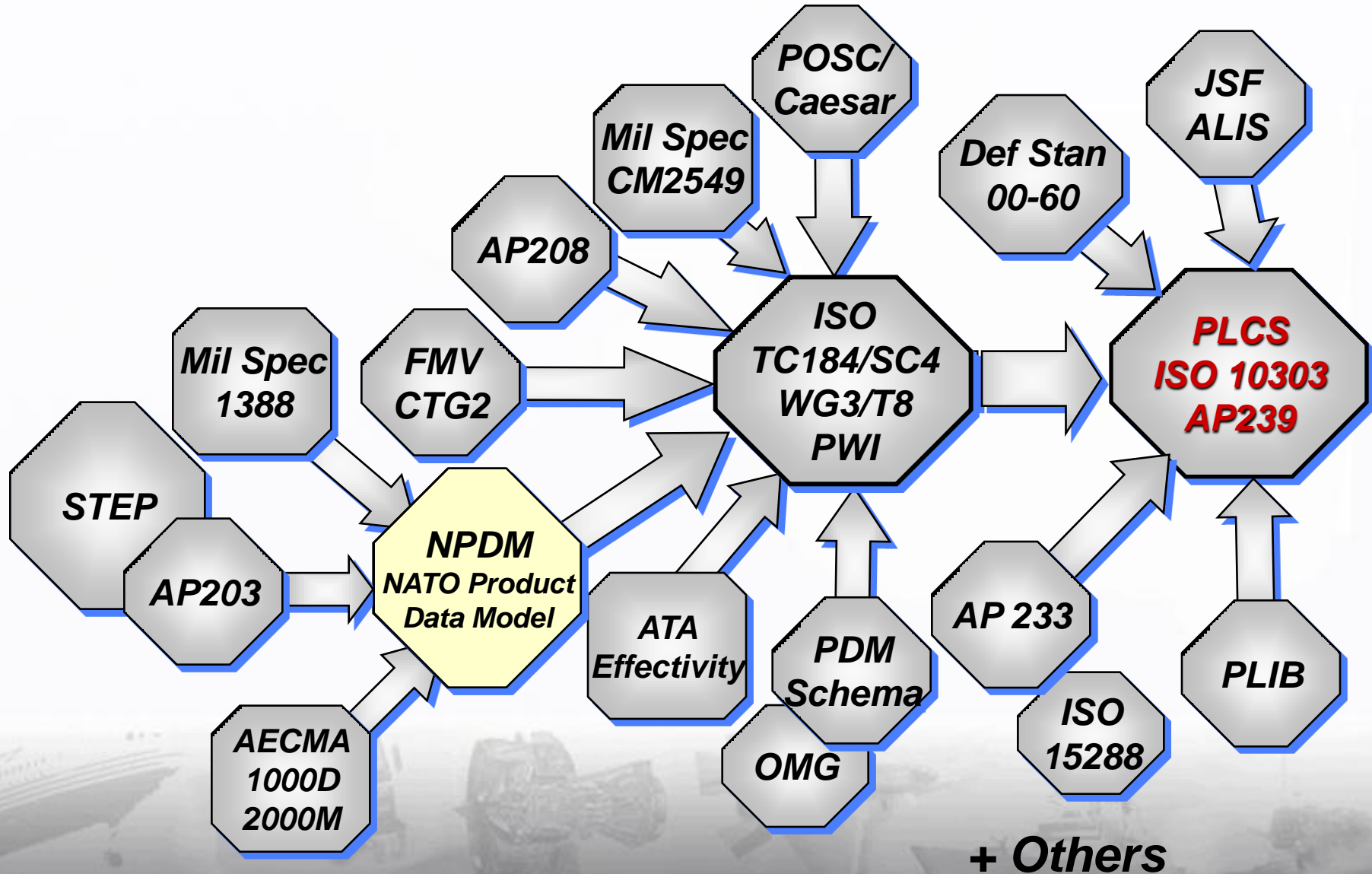
PLCS will enable cost effective information exchanges



Support system integration will be easier to implement

Product Life Cycle Support (PLCS)

Inputs to the Initiative

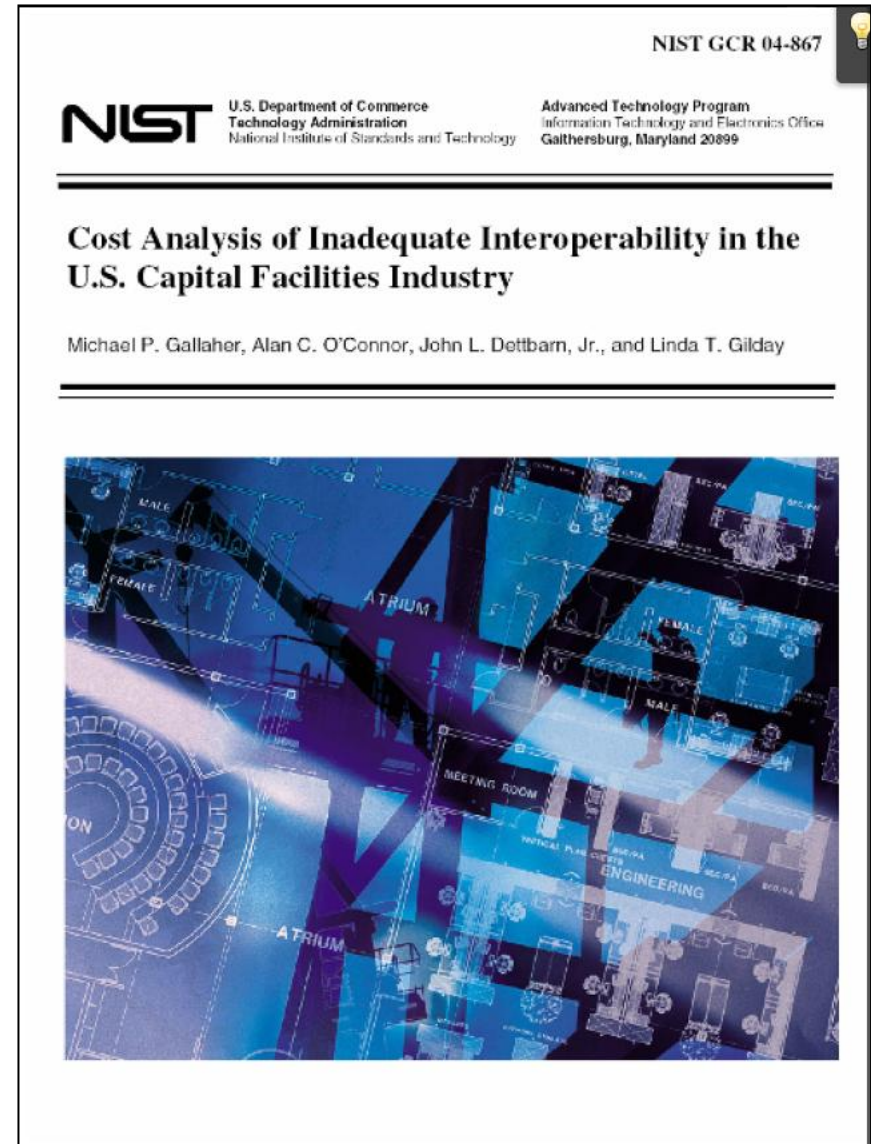


Everybody will benefit from interoperability, but...

The Cost of Inadequate Interoperability in the US Capital Facilities Industry : \$15.8 billion per year

Why is it so difficult for industry to invest a way out of it...?

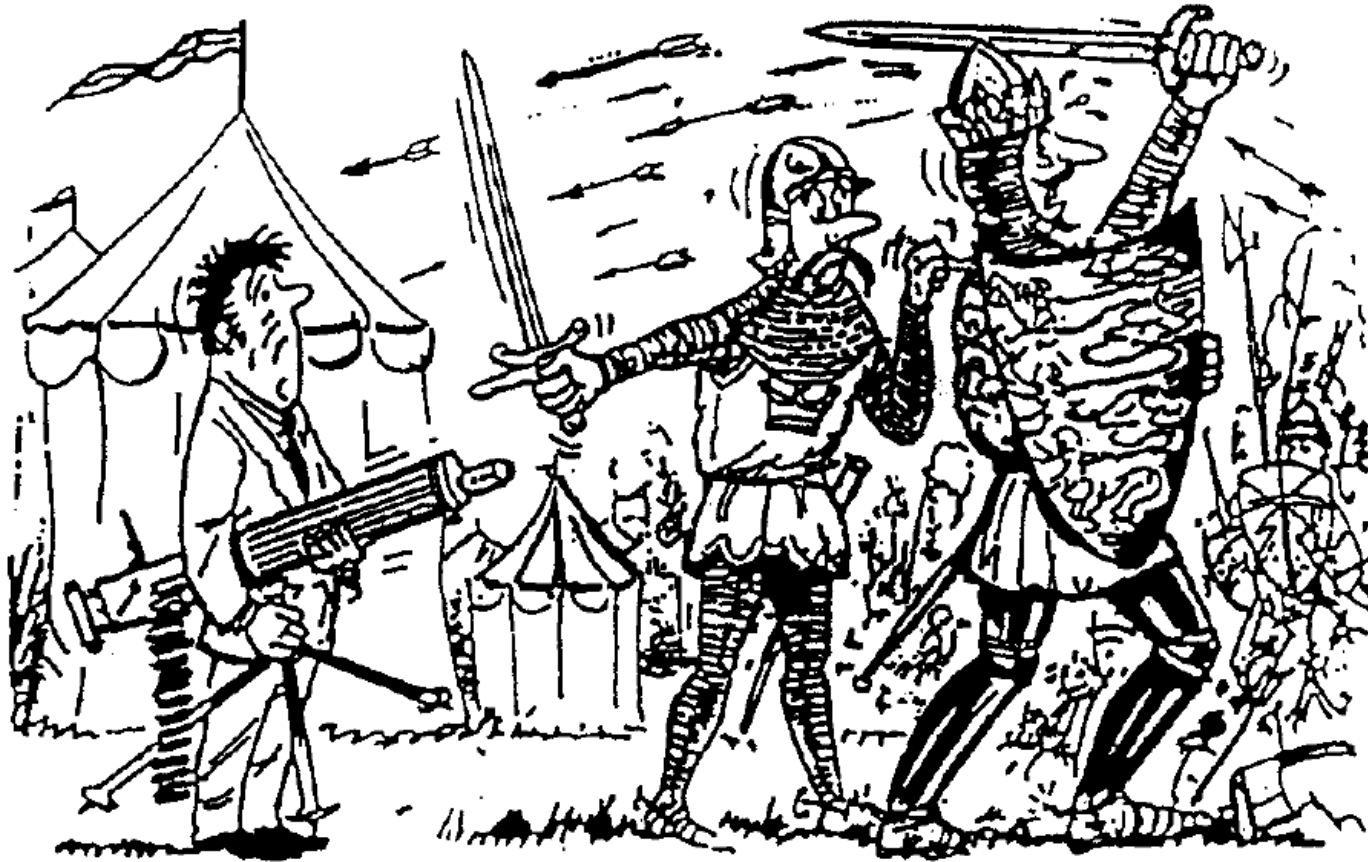
If Government care about quality, costs, sustainability, carbon footprint, why do they not pick up from the street...?



Everybody will benefit from interoperability, but...



Everybody will benefit from interoperability, but...



I don't want to see any crazy salesman –
can't you see I've got a battle to fight.

Everybody will benefit from interoperability, but...



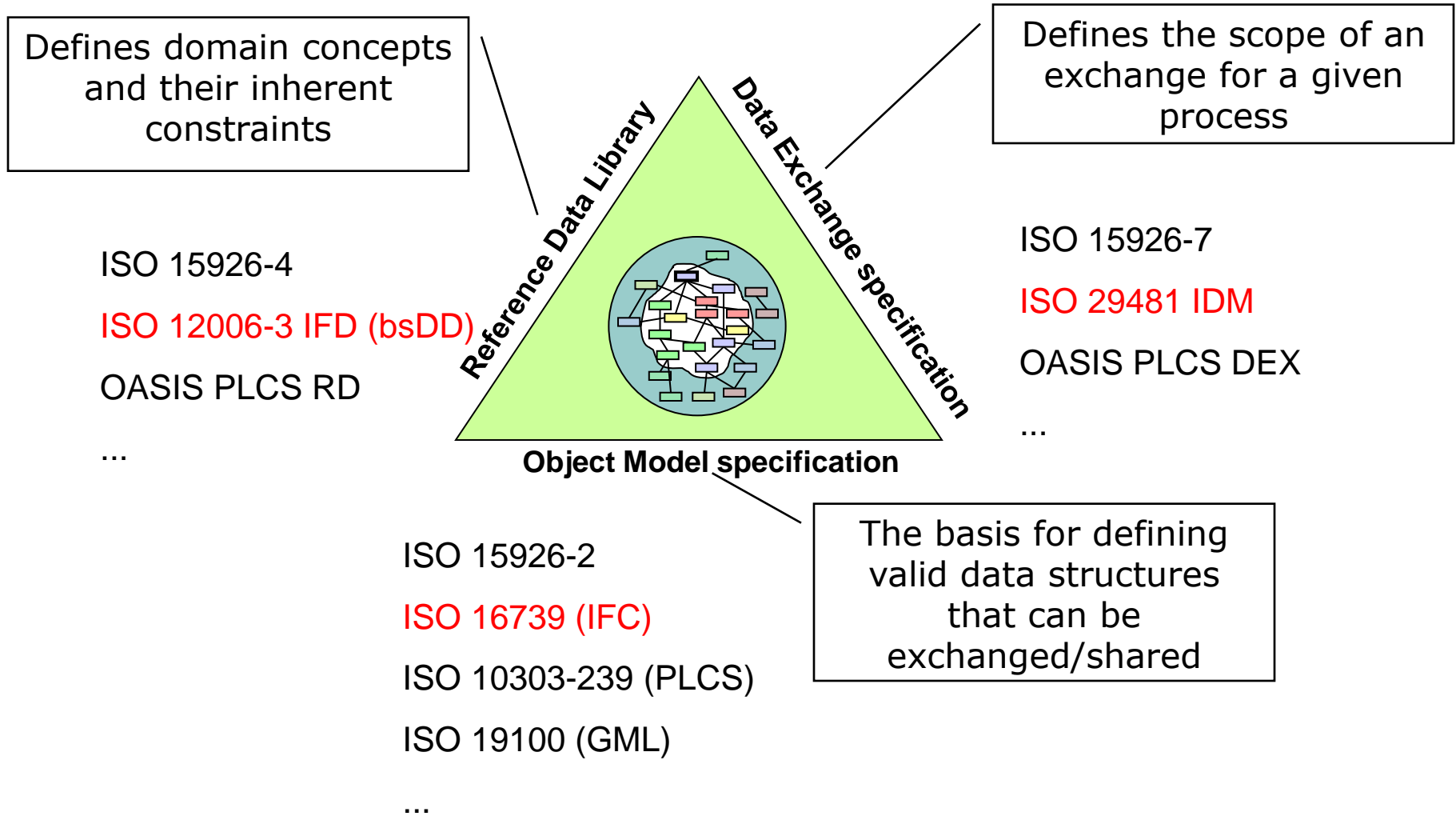
Fakta

Offentlige innkjøp

- ▶ Staten kjøpte i 2010 inn varer og tjenester for 159 milliarder kroner, ekskludert offentlig forretningsdrift og oljesektoren. Kommunene kjøpte inn for 145 milliarder.
- ▶ Dette er alt fra private helsetjenester, bygging av rådhus, biler og maskiner til forsvarsmateriell og skolepult.
- ▶ Alle innkjøp for over 500 000 kroner må ut på nasjonalt anbud.
- ▶ Statlige innkjøp av varer og tjenester for over 1 million (1,6 mill. for kommuner) skal ut på anbud i EØS-området.
- ▶ For bygg- og anleggskontrakter er EØS-grensen på 40,5 millioner kroner.

Digitalisering, automatisert kontroll mellom krav og løsning ?

Pillars of data interoperability

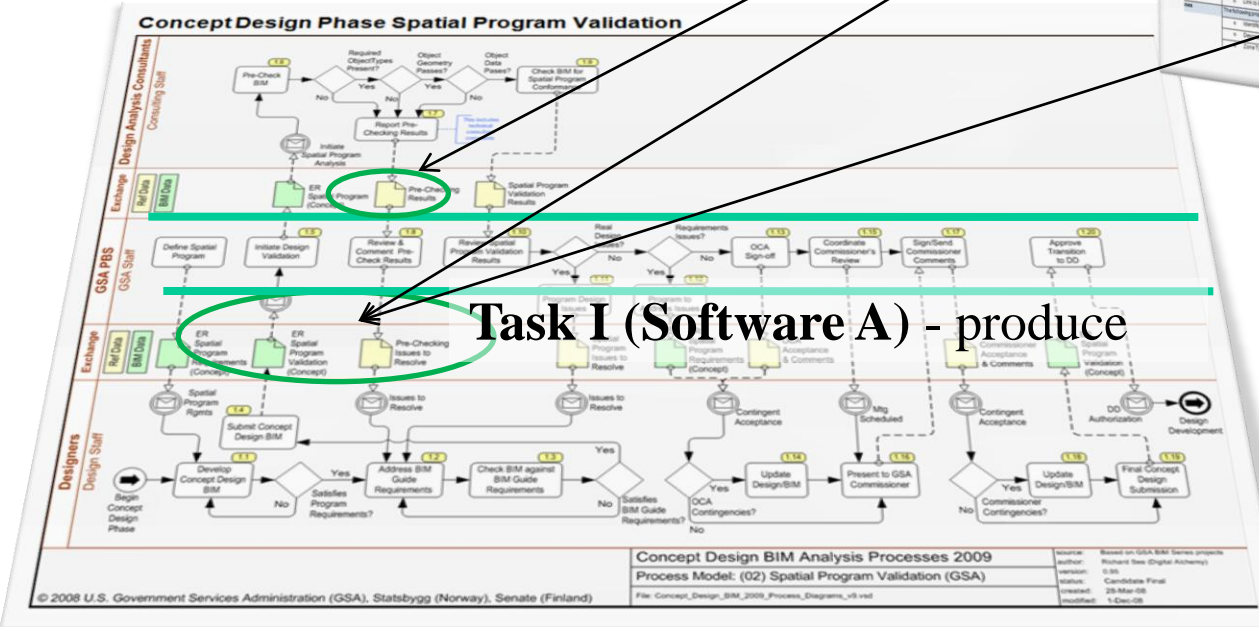


Processes, data and constraints

Exchange Requirements(ER)

Process Map (PM)

ID	Name	Description	...
1	Initiation	...	X
2	Decision	...	Y
3	Classification	...	N/A
4	Historical Database	...	X
5	Open Decision Type	...	X
6	Open Decision Type	...	X
7	Open Decision Type	...	X
8	Open Decision Type	...	X
9	Open Decision Type	...	X
10	Open Decision Type	...	X



Why establish an openBIM strategy?

- Give clear direction to the organization.
- Ensure proper focus from top-level management - throughout the organization.
- Focus on "business objectives" rather than technicalities.
- Give clear signals to the building industry, in relation to where South-Eastern Norway Regional Health Authority is moving.

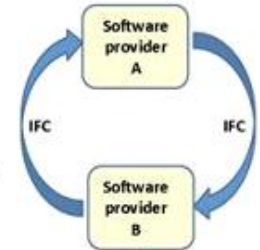


openBIM Strategy:

Requirements to the models and storage formats

- All information in projects to be stored on open international formats (IFC – latest available version)
- Provide full isometrics, in order use the model directly in the industrialization process.
- The following text shall be included in our new BIM-contracts:

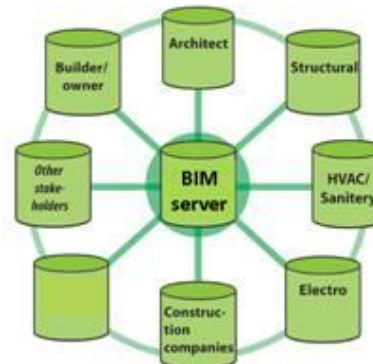
From 01.01.2014 the complete information produced by architects, consultants, contractors, etc., in their software applications, should be exported to openBIM (IFC). All information shall be stored on the latest publicly available version of the openBIM IFC format. Similarly, software applications should be able to import all the data stored in openBIM (IFC).



Complete Round-trip

openBIM Strategy: Implementation of BIM-server

- BIM-server for both building projects and Facility Management



- **Buzzword, e.g. BIMwash** (www.bimthinkspace.com)

BIM Wash is a term describing the inflated – and sometimes deceptive – claim of using or delivering Building Information Modeling products or services.

CONFUSION



1. BIMwash Level 1, confusing X with Y

INEXPERIENCE



Fig. 2. BIMwash Level 2, seeing SOME and missing MANY

EXAGGERATION



BIMwash Level 3, blowing things out of proportion

ILLUSION



BIMwash Level 4, promoting what does not exist!

FIATECH ...

- ... is an industry-led consortium that provides global leadership in identifying and accelerating the development, demonstration and deployment of fully integrated and automated technologies to deliver highest business value throughout the life cycle of all types of capital projects.
- ...has developed a “Roadmap for Capital Projects” to ensure right technologies are developed in the order that delivers highest business value across all phases and processes of the capital project life cycle.

Where Are We Now?

Islands of Automation in Construction

After the ice period 10.000 years ago the land is still slowly rising and exposing new terrain never before stepped on by man.

The challenge is to build bridges between the islands while new islands are constantly appearing.



1 Nov 1998 © Matt J Hannus
<http://www.vt1.fi/cio/hannus/islands.html>

Where Do We Want To Be?



Current Standards Landscape

Roadmap Element

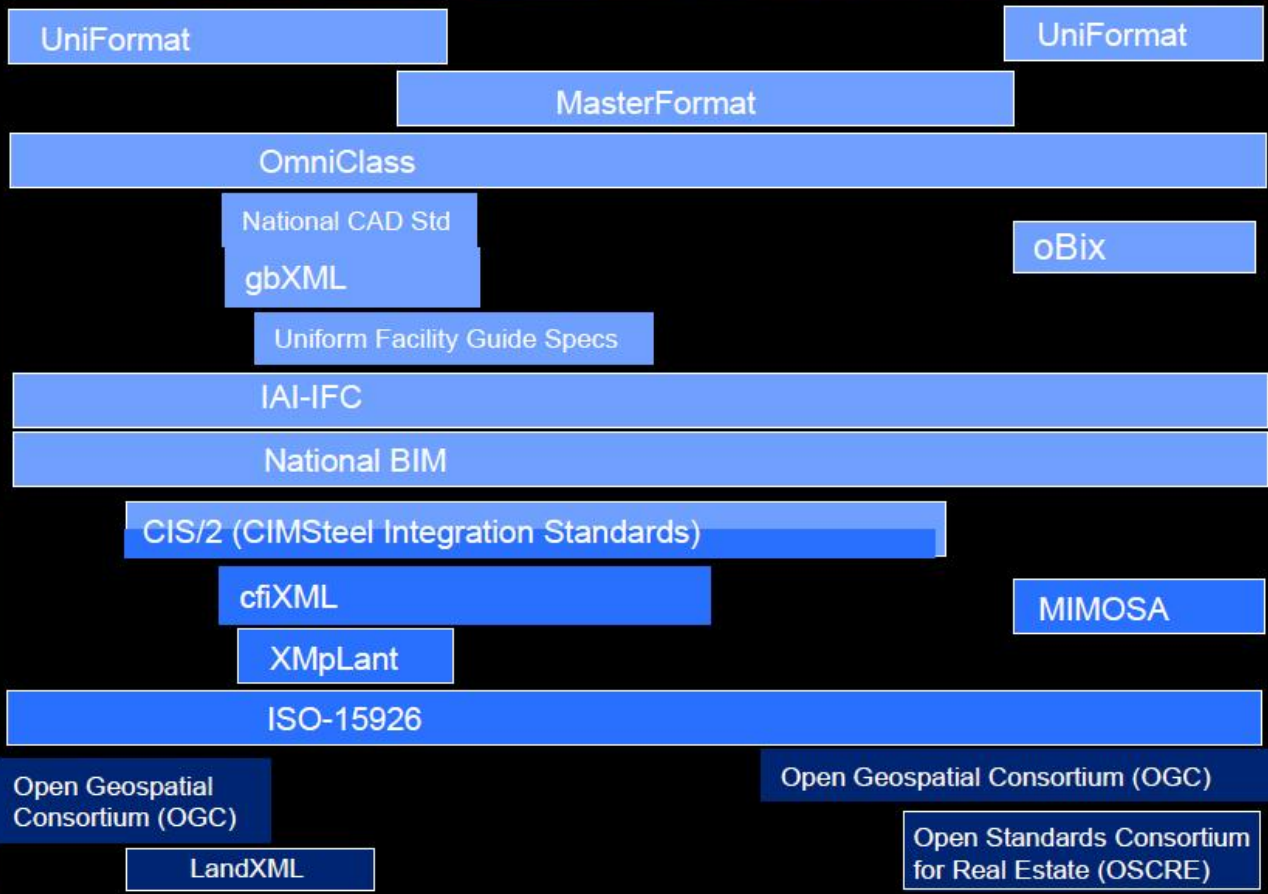


Information Standards

Commercial & Institutional Buildings

Industrial Process Facilities

Geospatial and Infrastructure

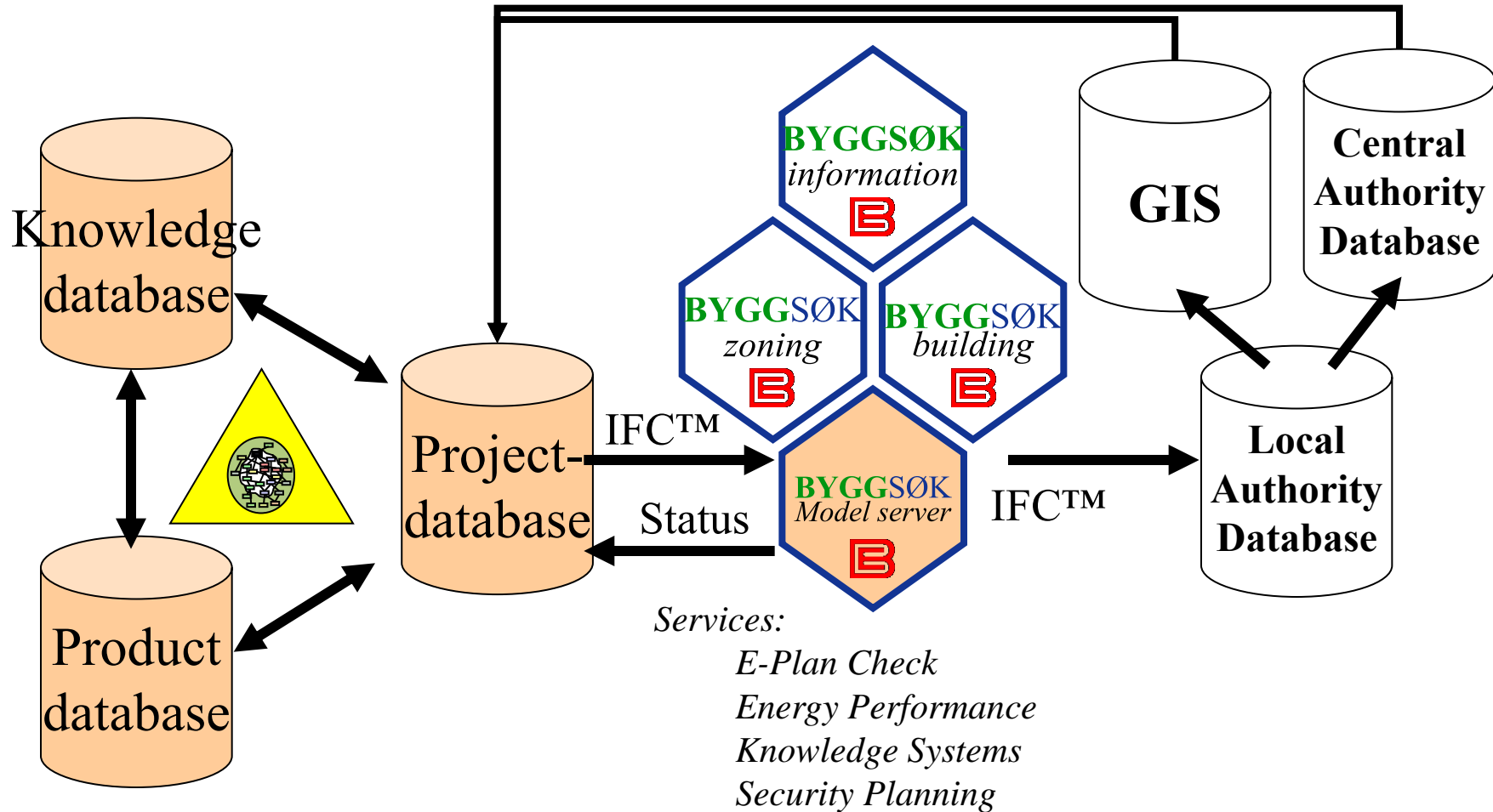


Top Ten Reasons for Not Changing

1. "Lawyers."
2. "Lawyers."
3. "Introducing technology introduces liability."
4. "I don't have time to try something new."
5. "I don't understand it, so I don't want to try it."
6. "I'm not comfortable with new technology."
7. "Most of this stuff doesn't work."
8. "I tried that once, and got burned."
9. "Technology costs: people, time, money."
10. "Change is risky."



Government solutions in Singapore, Norway, US & Australia





The screenshot shows the ByggSøk web portal interface. At the top left is the ByggSøk logo. Below it, the text reads "Velkommen til ByggSøk-byggesak 2010". The main content area includes a "Brukerledning" (User Guide) section with links for "Ny bruker" (New user), "Spørsmål/kommentarer" (Questions/Comments), and "Logg inn" (Log in). The "Logg inn" section contains input fields for "Brukernavn:" (Username) and "Passord:" (Password), along with buttons for "Logg inn", "Glemt passord?", "Endre passord", "Ny bruker søke", and "Ny bruker signere". At the bottom, there are four columns of contact information: "Kontakt oss", "Postadresse", "Besøksadresse", and "Fakturaadresse".

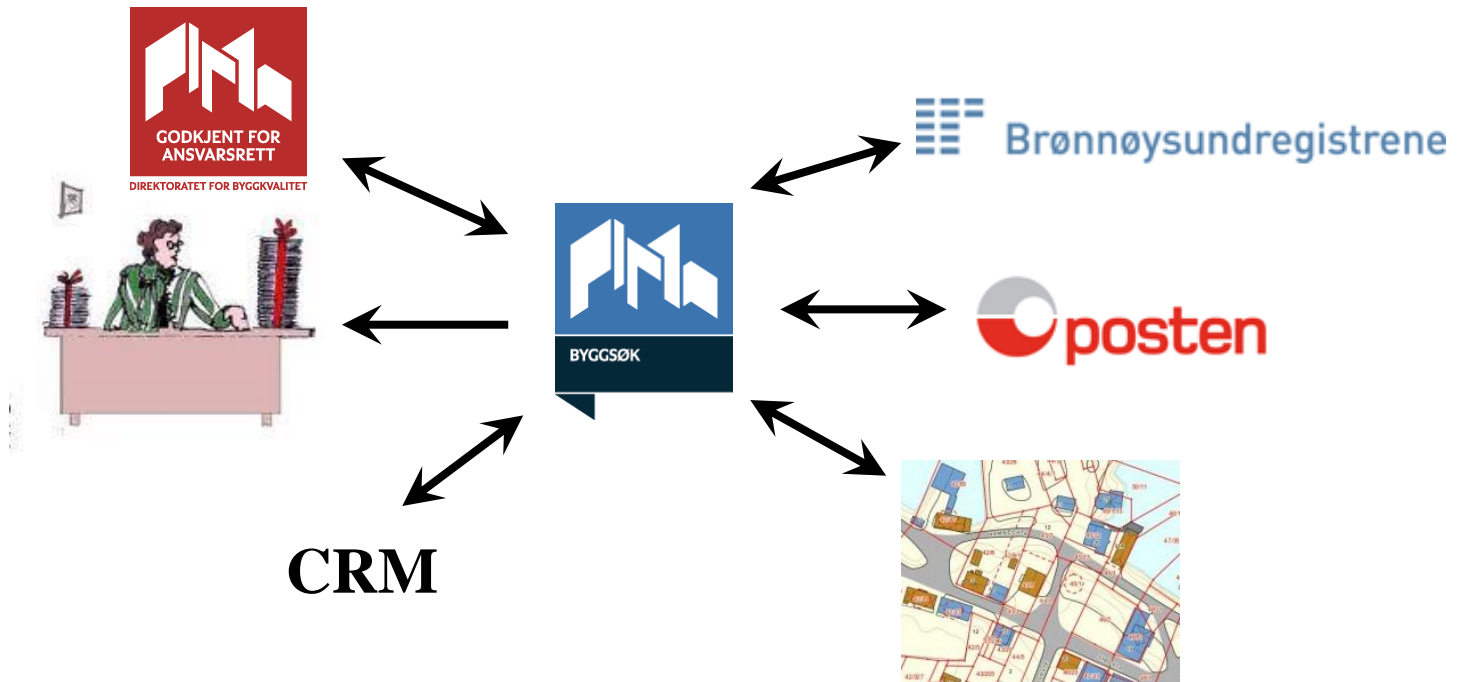
Today's ByggSøk byggesak:

- Portal for preparing and sending applications for building permits
- Submission to local authorities (XML, forms with user-attachments)
- Uses ByggSøks own XML formats

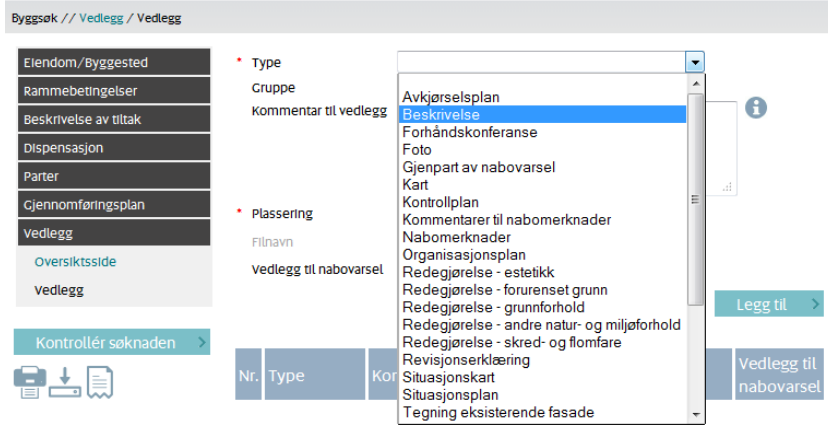


ByggSøk is not based on open international standards

- DiBK Central Approvals (roles and responsibilities in projects)
- Brønnøysund Register Centre (business enterprises registers)
- Posten (postal services)
- Municipality map systems / geo integration
- Municipality case processing/archiving systems
- CRM system



BYGGSØK future (3D Byggsøk)?

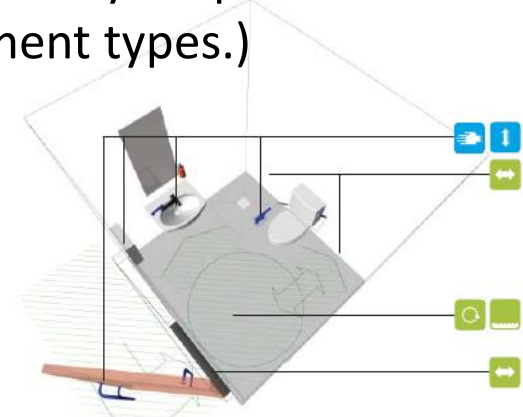
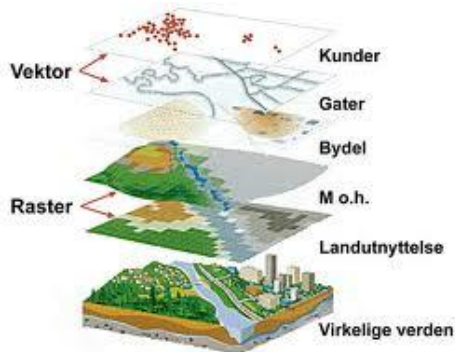


Today:

Static attachments in applications are uploaded, without any checking of their contents.

(Checking is done only for presence of required attachment types.)

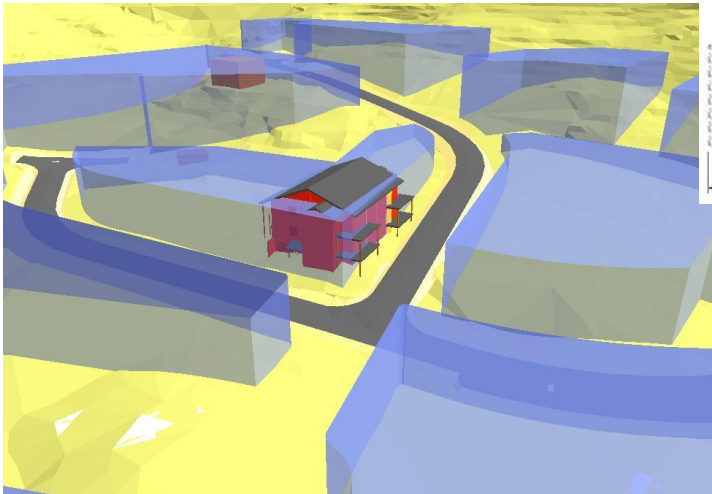
There is an urgent need for more integrations and more intelligent solutions :



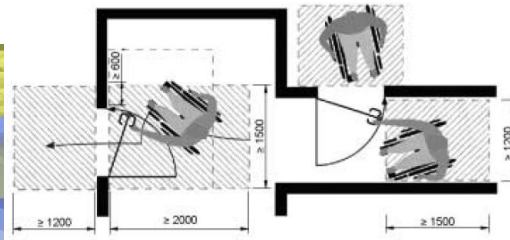
Use of open standards in a ModelServer to perform automatic rule checking prior to submittals to local authorities, demonstrating:

- Building code and Zoning requirements are accepted
- Better quality of Applications before submission and the approval process starts.
- Better availability to intelligent data between industry and Government.
(Industry uses models, why should Government only get PDF documents?)

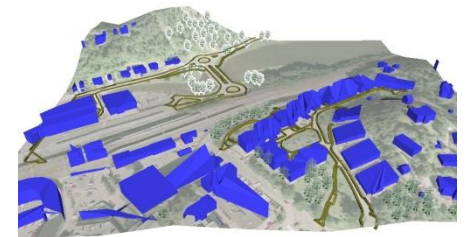
Check against Zoning



Check of Universal Design



Visualisation, GML + IFC



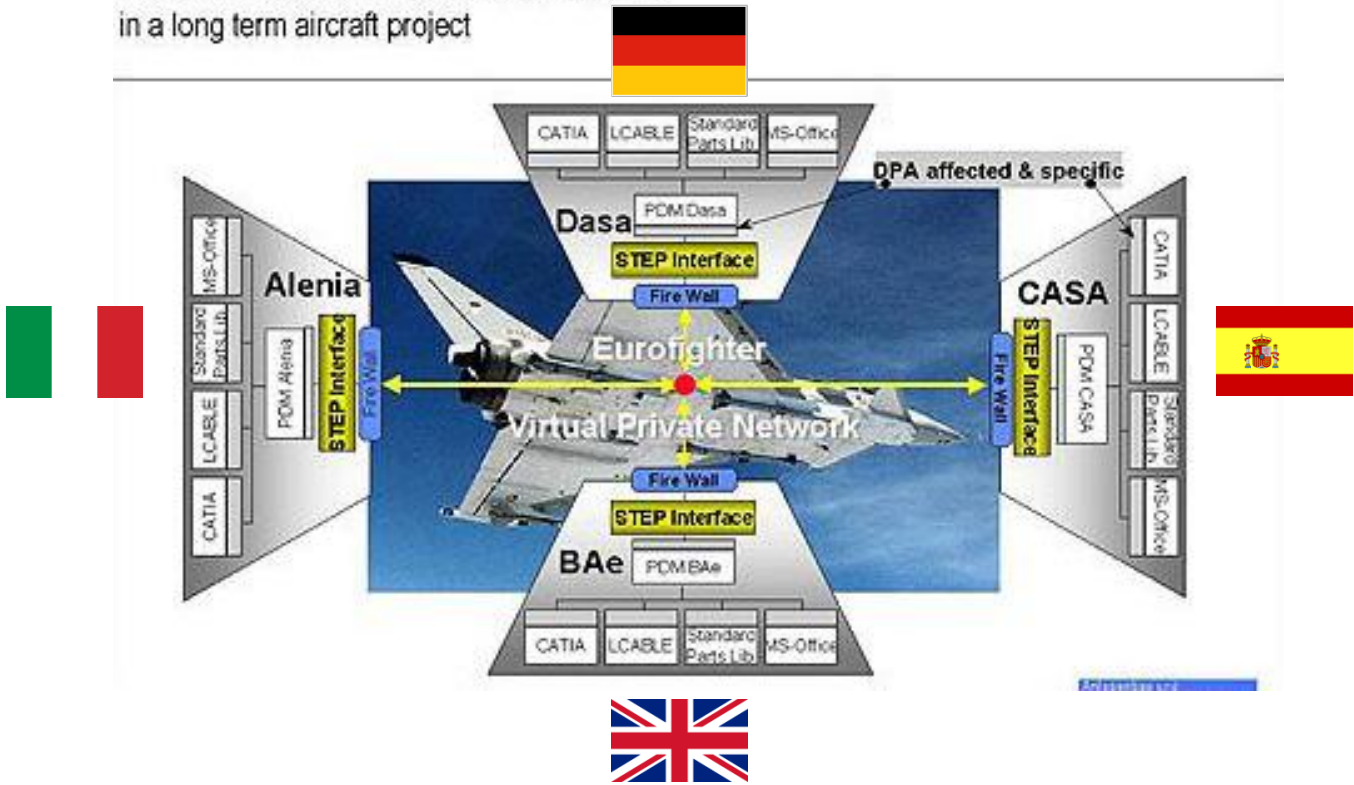
Check of Energy Classification

- Already owned and operated by Norwegian Building Authority (DIBK).
(Other jurisdictions should have no problems in collaboration?)
- Already financed by Norwegian State
- It is free – no toll charges to deliver (or get information)
- Proposed long term, state financed through BYGGENET

Product Data Portals: Collaboration

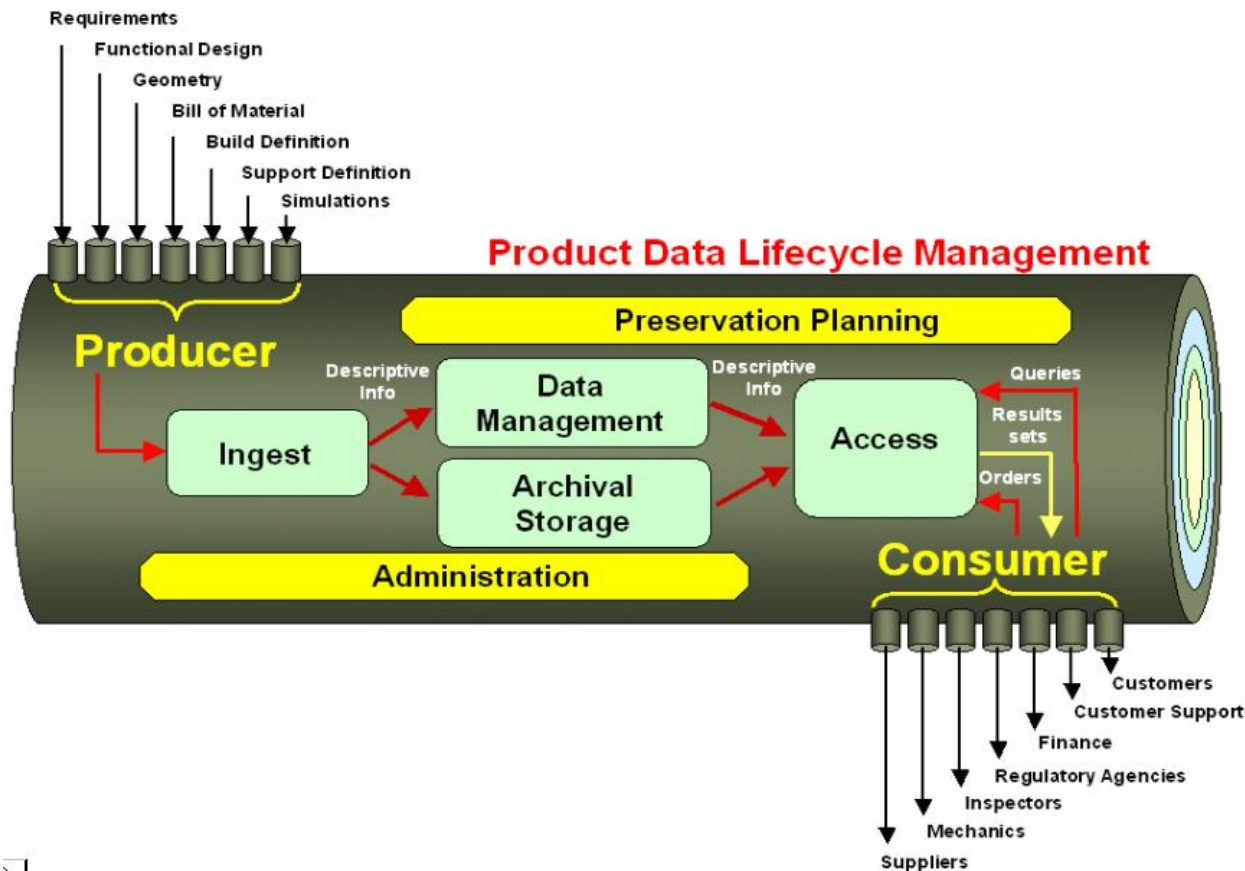


Efficient Data processing architecture (DPA)
in a long term aircraft project

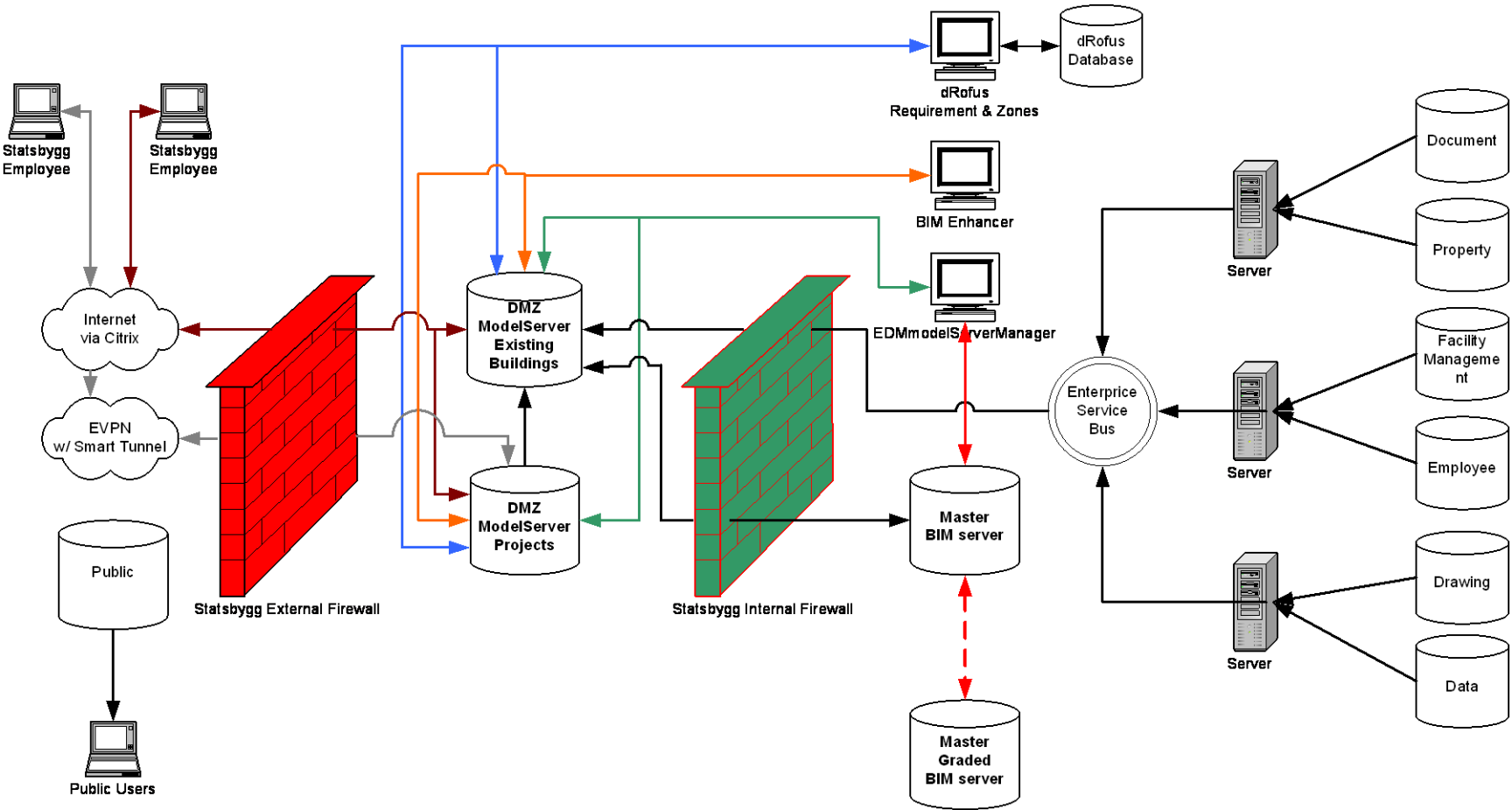


➤ Process Standard for the Storage and Retrieval of Data”

- ➔ Open Archival Information System (OAIS) conceptual framework for an archive system to preserving and maintaining access to digital information over the long term

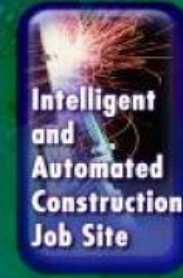


VDC information must be secured !



Current Standards Landscape

Roadmap Element

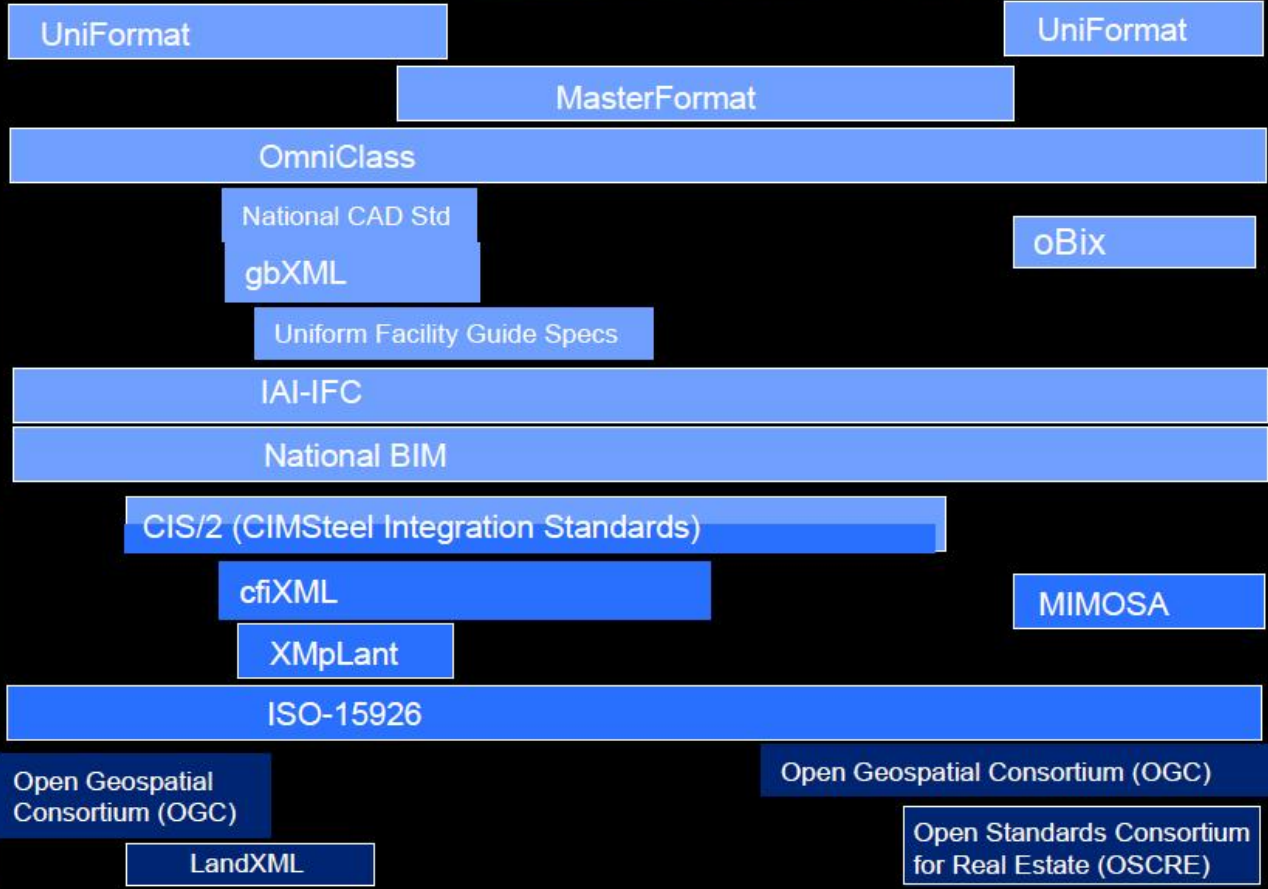


Information Standards

Commercial & Institutional Buildings

Industrial Process Facilities

Geospatial and Infrastructure



- landXML is not really a model – but a format supporting some semantics !
- landXML is not sustained – last revision/update in 2008 !
- buildingSMART should take ownership of landXML and ensure the interoperability with IFC and compatibility with landXML.

An improved concept of what was done with CIS/2
(steel design and production)

Much better than the aecXML story whereas new stakeholders tried repeatedly to develop their own standard.