THE ULTIMATE BIM SUMMIT

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Media Partners
BIM Level 4 in Norway

How customer benefits were achieved

Information Ownership through Open Industry Standards

Jorulv Rangnes
CEO Jotne EPM Technology AS
President Jotne BIM Solutions, Inc.
jorulv.rangnes@jotne.com
NIST documented in 2004 that US Capital facility alone have an annual cost of $15.8B from lack of interoperability. This cost is basically paid by owners and operators, and that do not have a system for managing their asset data coming from their multi $B projects.
The Vision

Intelligent Model for Construction
- Quantities
- Procurement
- Scheduling
- Estimating
- Resources
- Field Management

The Problem

Autodesk
- Quantities
- Procurement (SAP)
- Scheduling (P6)
- Estimating (HD)
- Resources (SAP)
- Field Management

Bentley
- VDC Warehouse
  (IFC Based Object Oriented Database)

Intergraph

Trimble

The Solution

- Autodesk
- Bentley
- Intergraph
- Trimble

- Quantities
- Procurement (SAP)
- Scheduling (P6)
- Estimating (HD)
- Resources (SAP)
- Field Management

BIM SUMMIT
Model-based & Standardized

- Jotne’s model-driven platform support any future scope extension as proposed by buildingSMART Infrastructure
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JOTNE AS

"Quest To Growth"

JOTNE EIENDOM AS

JOTNE INDUSTRIER AS

JOTNE INFORMATION TECHNOLOGY AS

THE ULTIMATE BIM SUMMIT

STEP/PLCS/IFC AND MORE ISO STANDARDS; ASD/AIA S-SERIES (S3000L ETC) AND GEF-0007
Open Data clients for + 20 years
Owners require Information Ownership

**Quotation:**

We consider predictability as a major value in our business development plan, and we want to give the building industry a clear understanding of our intentions.

Within 1st of July 2016 we will demand that all software used in our projects in order to create, edit, store or process data from the Building Information Model, shall support complete interoperability, by communicating and sharing building information based on openBIM. The software used in our projects shall be certified to export, link and import all information in the latest official version of open international format like IFC (ISO 16739) and BuildingSMART International official IDMs and Model View Definitions.

**Intent:**

We consider predictability as a major value in our business development plan, and we want to give the building industry a clear understanding of our intentions.

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**Background:**

Our organizations have already implemented open international buildingSMART standards in our new building projects. We consider this to be the most future oriented solution for the building industry. Open standards, based on user-driven development of technology, gives the possibility to achieve seamless data exchange between all domains through the whole project/building life cycle. Based on this, our organizations have chosen buildingSMART’s openBIM standards as the foundation for exchange (export, import), storage and process of the Building Information Model. We consider the adaptation of open international standards as crucial in order to achieve the goals we have set for our organizations.

**Open Signatory Process:**

Our intention is to add new signatories to this public statement. Signatories are intended to be other construction clients and building owners in Norway. New signatories must approve this public statement and must be accepted by all the existing signatories.

**Annual Review:**

We expect the signatories to conduct an annual review of this Public Statement and revise it - based on consensus - according to new developments, as openBIM is rapidly evolving.

The following signatories agree with the intentions of this Public Statement.

**Date:**

__________________

_________

Name...

Chief Executive Officer (CEO)

Organization..
Information shall be Shared – Not flow!

Figure 1: Central management of data and processes

Figure 2 Integration using a BIM Server

(courtesy of ENCORD: www.5d-initiative.com)
Enterprise BIM in hospitals: Stakeholders

Owner
Enterprise
Authorities
Patients

EBIM

SENSORS
Real buildings

Building owner
Facility management
Project management and building project
Other systems, EBIM – IT
BIM Levels

INFORMATION FLOW

INFORMATION SHARING

Source: Mark Bew and Mervyn Richards
Industrial Data Standards

- Defines detailed domain concepts and their inherent constraints
- Defines the scope of an exchange for a given process
- ISO 15926-4
  ISO 12006-3 IFD (bsDD)
- OASIS PLCS RD
- IFD for Roads
- ISO 15926-2
- ISO 16739 (IFC)
- IFC for Roads
- ISO 10303-214
- ISO 10303-233 (SE)
- ISO 10303-239 (PLCS)
- ISO 19100 (GML)
- CityGML

The basis for defining valid data structures that can be exchanged/shared

LONG TERM ARCHIVING
ISO 14721 (OAIS)
Enterprise BIM (Level 4)

INFORMATION FLOW
BIM LEVEL 2

INFORMATION SHARING
BIM LEVEL 3 & 4
Model Management

AUTOMATED - ON DEMAND SERVICE: +100 MODELS, +50 GB (growing)

PARTIAL MODEL SUPPORT FOR APPLICATIONS INCLUDING MERGE, CUT & SPLIT

OSLO AIRPORT TERMINAL EXTENSION MERGED AND MANAGED AS ONE INTEGRATED MODEL
140,000 sqm/£1.7 bn

https://www.linkedin.com/pulse/practical-use-open-bim-sample-1-bj%C3%B8rnar-markussen
BIM Level 4 Infrastructure

External Systems
- ERP Systems
- Scheduling Systems
- Estimating Systems
- Document Systems

Extension Plugin

Model Server Manager Client
- 3D visualization
- Project Control
- Reporting
- Validation
- Scheduling
- Q-Take Off
- Model Comparison
- Check-in/out
- Model Merge
- Plugin Extension Framework
- Document Linking
- Administration

Web Client
- 3D Visualization
- Reporting
- Model Inspection

Business/Service Layer
- Project Management
- Facility Management
- Schedule Management
- Access Control
- Model Management
- Rule Management
- Workflow
- User Management
- Validation Engine
- Report Management
- EDMviewer™
- EDMinterface™
- EDMdatabase™ Consolidated Repository

CAD Vendors
- Autodesk
- Bentley
- Trimble
- Intergraph
SUCCESS FACTORS

• Focus on and support from (public) owners and Information Ownership (40/40/40)
  – Open Data more important than Open Source
  – Data sharing more important than data flow
• Contract changes (collaboration, target price...)
• Avoid ”Silos of Excellence”
• Open Data = Industrial data standards
  – ISO 10303 (STEP) is providing well-proven data modeling and implementation methods and information resources
  – ISO 16739 (Ifc2x3) is the open BIM standard
  – IFC4 are massive improvements to include all construction including infrastructure
• *EXPRESS Data Manager™* that is a data-driven platform for the above.
For customer use cases => Study BIM Level 4 presentation from St. Olav Hospital in Masters Session