BIM Alliance Sweden – November 24th, 2016

“Interoperability & openBIM, the future of construction »

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EMEA - AEC Ecosystem Business Development Manager
Autodesk
Architect D.P.L.G.
Mission: Lead the Industry’s business process transformation to BIM
What is Interoperability?
What is Interoperability?

Working Together to exchange data...

- BETWEEN PROJECT TEAM MEMBERS
- BETWEEN PROJECT TASKS
- BETWEEN DESIGN APPLICATIONS
- DURING THE PROJECT LIFECYCLE
Workflow Solutions

Formats are created to facilitate a particular workflow, or solve a particular business problem.
Technology, standards & best practices
Each inform the other for overall improvement (and working together)

1. Software Technologies

   Building Information Modeling (BIM)
   - Supports New Business Practices
   - Expands business capabilities

2. Interoperability Standards

   IFC, XML, MVD's
   - Support best practices & performance
   - Provide formats & standards

3. Business Practices

   Integrated Project Delivery (IPD)
   - Define Requirements
   - Drive adoption & enhancement
What is openBIM® and IFC today?
What openBIM® does for you...

buildingSMART is the solution
The real concept of openBIM®

What is openBIM®?

- openBIM® is a cooperative approach to collaborative design, realization and operation and maintenance of buildings based on open standards and workflows that allow different stakeholders of a project to share their data, with any BIM compatible software.

- IFC is the technical implementation of openBIM®. Software interoperability is made possible by the implementation of the ISO-IFC standard exchanges, currently the global reference.

- This collaborative approach, defined by buildingSMART International, aims to improve the quality of buildings and infrastructures.

See also: What openBIM Does For You - buildingSMART in Four Minutes: https://www.youtube.com/watch?v=2m_IL99WOzQ
How IFC can work

Client wants to build a school

Concept design to meet client's requirements model using BIM vendor A

Building is modeled (with major systems) using BIM vendor B

Major systems tagged with attribute and operational data using BIM vendor C

All stakeholders can access, modify, and share digital information

CMS uses maintenance BIM IFC data to inform operation of school

School opens

COBie IFC Data

Designer

Contractor uses BIM to plan construction, make cost estimates, input product information

BIM to analyze quantities, energy performance, and more

School opens

Energy IFCxml File

Contractor

IFC Concept File

IFC Coordination File

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How are we committed to Interoperability?
Let’s start with a question on openBIM & Interoperability...

Question:

Do you know when Autodesk started supporting openBIM®?
Since it’s 1982 founding, Autodesk’s commitment to interoperability runs deep

- First major CAD vendor to run applications on nonproprietary hardware
- Released an open way to get data in and out of our flagship application before any other major CAD vendor (DXF)
- Founding member of International Alliance for Interoperability (which became buildingSMART)
Autodesk realizes the importance of data interoperability

Interoperability in architecture, engineering, and construction (AEC) industry:

- Allows systems and applications to work together and freely exchange design and construction data
- Prevents data from being “locked in” specific applications or vendors
- Is key to driving end-to-end Building Information Modeling (BIM) process across teams, projects, and applications including building operations.
Industry Foundation Class (IFC) file format supports interoperability and is:

- A platform-neutral, object-based, open file format designed to transfer 3D geometry and attribute information
- Developed and maintained by buildingSMART International
- A commonly used collaboration format to share information within BIM-based projects including Arch, MEP and Structural disciplines.
- Supported by about 150 software applications worldwide to enable better workflows in AEC industry
Autodesk supports IFC and buildingSMART International
openBIM

Actively participates in buildingSMART’s Strategic Advisory Committee and Standards Committees

- Secured the rigorous IFC 2x3 Coordination View 2.0 certification in the first wave of vendors
- Includes IFC 4 capabilities in Autodesk® Revit® 2017
- Maintains the most IFC certifications of any vendor
- Made IFC import/export tool for Revit open source (only vendor)
There is only one buildingSMART’s openBIM®
History of IFC in Autodesk Revit (through Revit 2017)

- **Revit Building 8**: IFC added
- **Revit 2008**: Full Extended Coordination View certification
- **Revit 2012 UR2**: Open Source added for export
- **Revit 2013**: Full Singapore Code Checking View certification
- **Revit 2013**: Open Source Alternate UI added for export
- **Revit 2014**: Basic IFC4 export
- **Revit 2015**: Link IFC added to open source
- **Revit 2016**: Import Link IFC is certified
- **Revit 2017**: Enhancement & bug fixes
The IFC certification process is crucial

The buildingSMART IFC software certification process:
- Is the only official IFC certification process
- Promotes consistent and reliable IFC specifications, regardless of vendor or application
- Improves quality of software interfaces

The certification process includes:
- Automatic IFC file checking
- High-quality test cases for export and import
- Certification award logo
Advantages of Autodesk Revit IFC open source

- Increase customer flexibility - adapt your IFC output based on your corporate standards.
- In the first 5 years since its release there have been 50 software updates of the open source toolkit.
- Provide a method for quick support of IFC schemas and model view definitions (MVDs) as they are introduced.
- Allow others outside the Autodesk Revit software development team to make contributions to IFC functionality.
- Allow our Product Team to benefit from our experience and introduce IFC exchange capabilities.
Revit IFC has 120,000+ downloads
Download momentum is growing every day
Many file formats - IFC simplifies workflows

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14 Autodesk 2017 products that support IFC

- Advance Steel (In progress)
- AutoCAD Architecture (Export certified, Import in progress)
- AutoCAD MEP (In progress)
- AutoCAD Civil 3D
- BIM 360 Team (TBL)
- BIM360 Glue (TBL)
- CADmep
- Fabrication ESTmep
- InfraWorks
- Inventor
- Navisworks solutions (In progress)
- Autodesk Revit (Architecture, Structure, MEP) (IFC certified)
- Autodesk Revit LT (Export certified, Import in progress)
- Robot Structural Analysis

- 5 certified products
- 4 in progress
- 2 to be launched
- Revit on all MVDs
IFC Viewing – BIM 360 Platform / BIM 360 Family
Open API’s also allow for Collaborative Platform Development

- Core to Autodesk DNA
- 4,000 Autodesk Developer Network members
- Open software architecture – API – addons
- Business logic, Countrification, Industry Segments
Governments support BIM in EU Public Procurement.
Autodesk commitment to openBIM®

FOUNDER & INITIATOR & STRATEGIC ADVISOR COUNCIL

14 PRODUCTS SUPPORTING IFC

http://buildingsmart.org/about/about-buildingsmart/history/

https://www.facebook.com/AutodeskRevit/

INTEROPERABILITY PART OF AUTODESK DNA

Focus on openBIM


http://buildingsmart.org/about/about-buildingsmart/history/

http://www.facebook.com/AutodeskRevit/
openBIM web sites

EU openBIM sites:
- www.autodesk.com/ifc
- www.autodesk.com/openbim
- www.autodesk.com/interoperability
- www.autodesk.fr/ifc
- www.autodesk.fr/openbim
- www.autodesk.fr/interoperability
- www.autodesk.de/ifc
- www.autodesk.de/openbim
- www.autodesk.de/interoperability
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