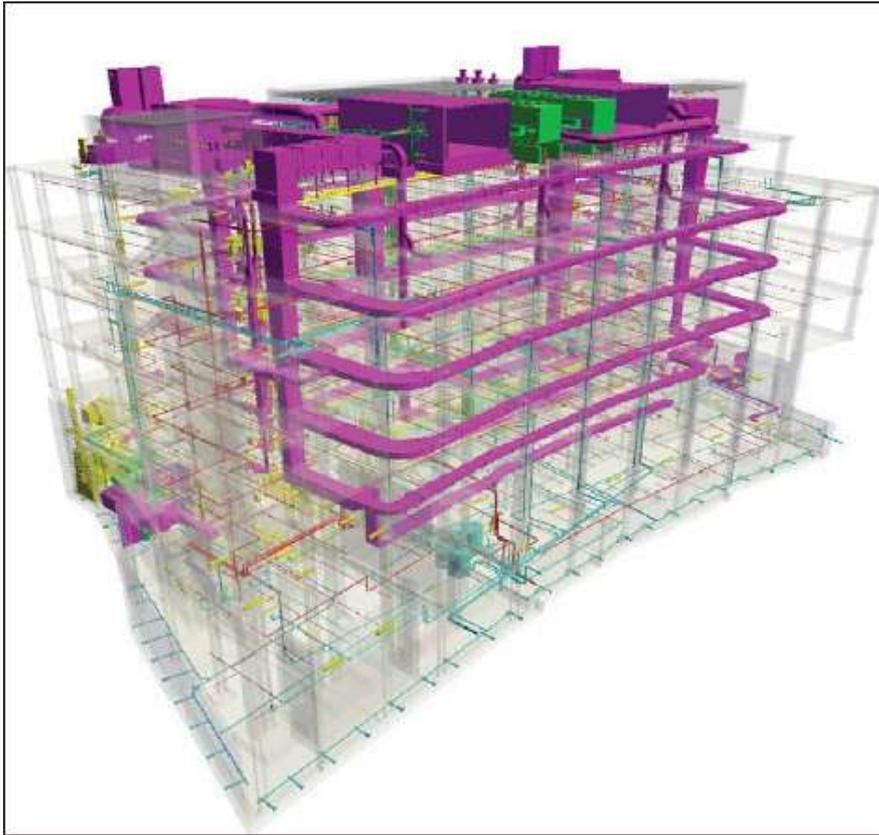# BIM & IFC-to-X3D

Hyokwang Lee

PartDB Co., Ltd. and Web3D Korea Chapter
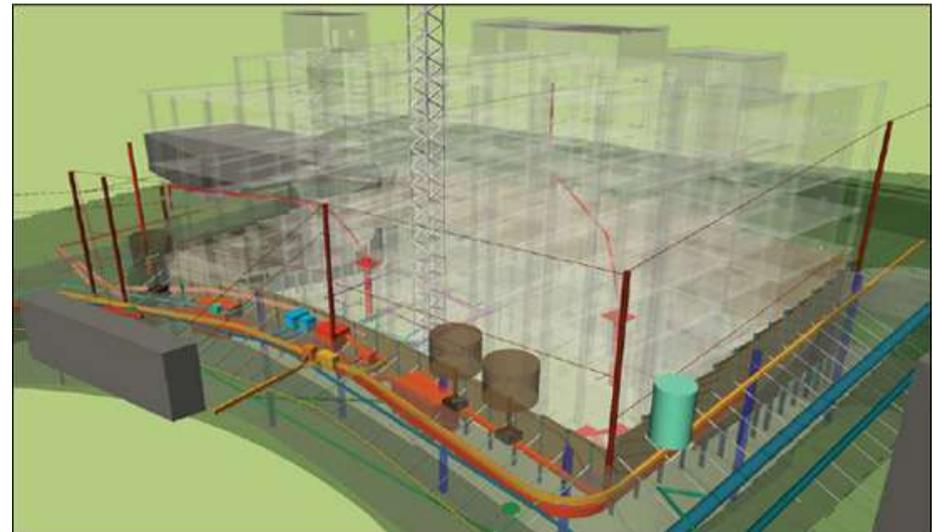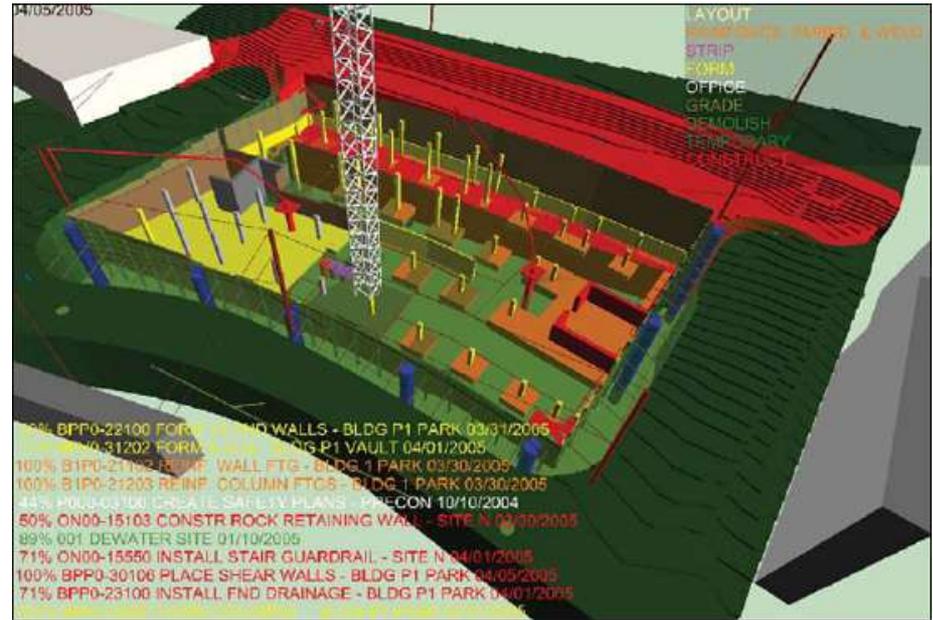
adpc9@partdb.com

BIM

- BIM (Building Information Modeling)
  - A digital representation of physical and functional characteristics of a facility.
  - A shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition.
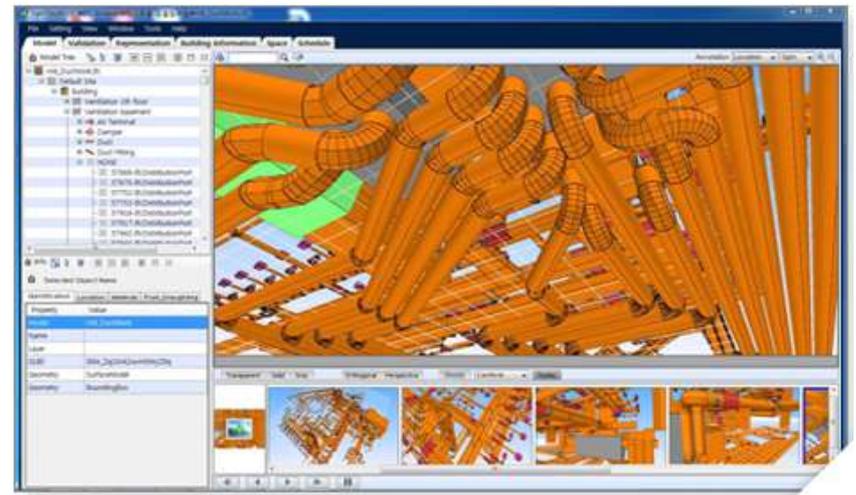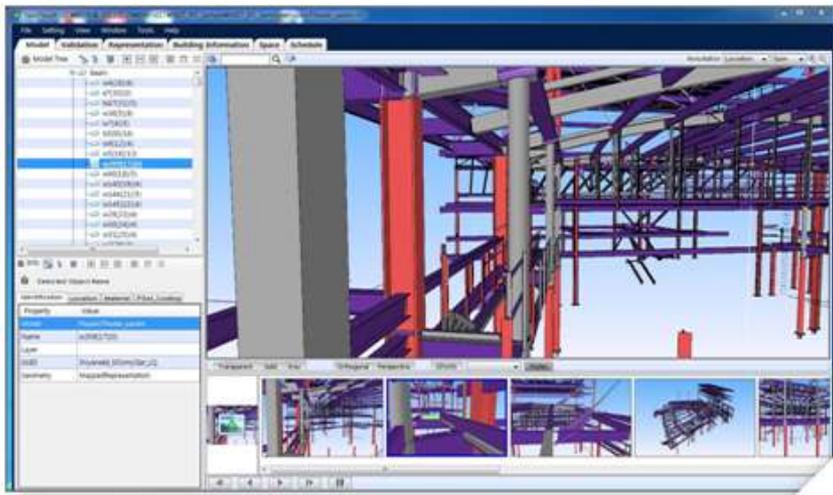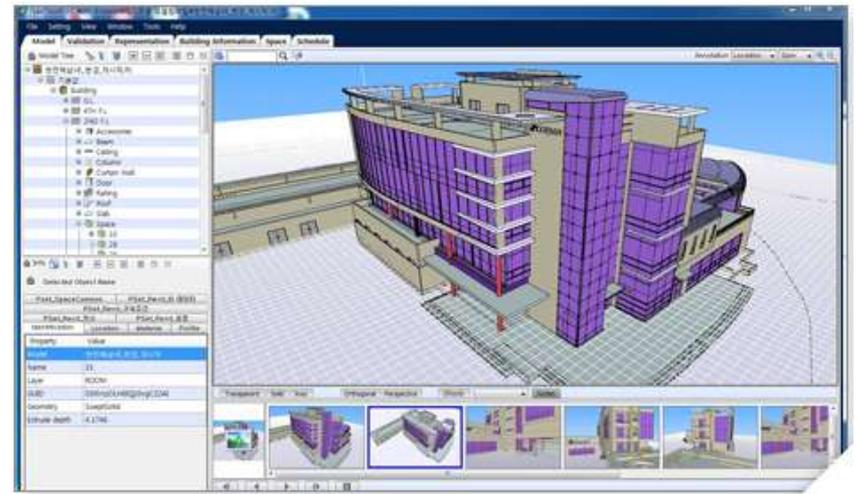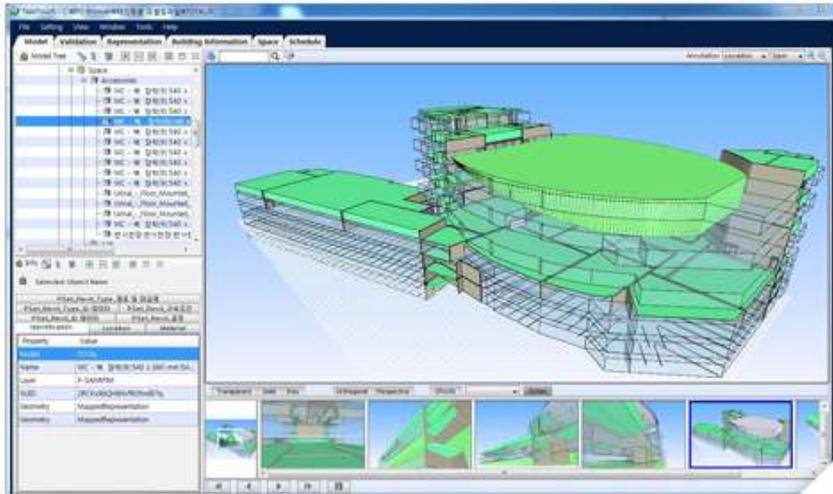

http://www.directindustry.com/

Coordination between the different disciplinary models.
(© M.A. Mortenson Company)

4D scheduling using the BIM model (top image) and the
details of site utilization and civil work (lower image) used
for coordination and communication with local review
agencies and utility companies. (© M.A. Mortenson
Company)

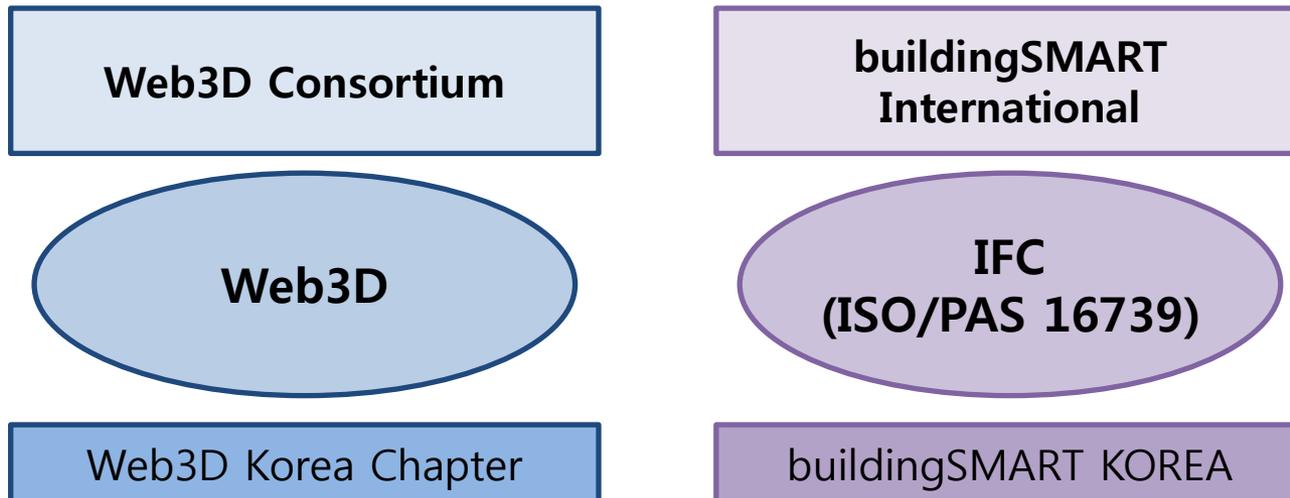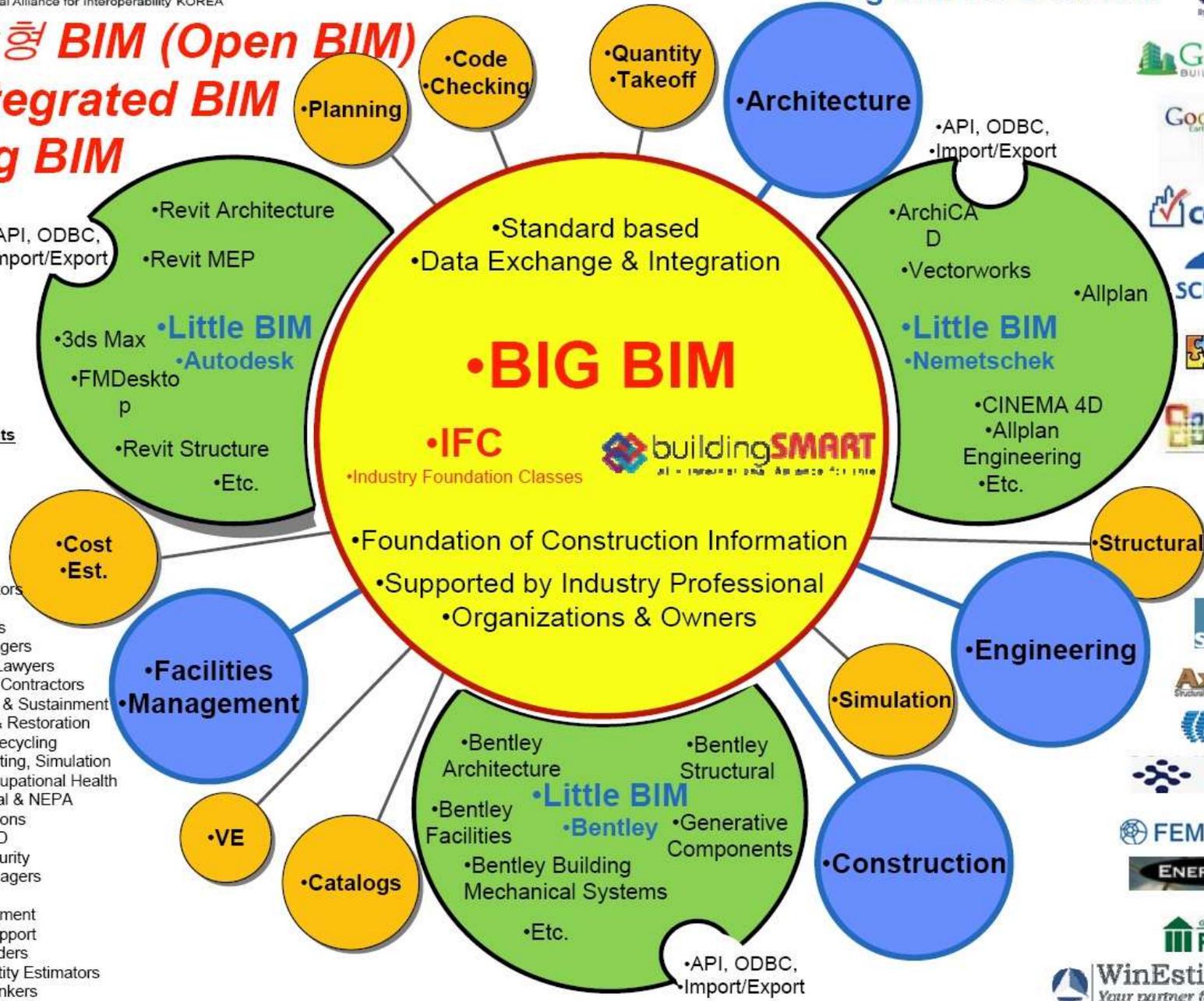SEOKYOUNG SYSTEMS

http://www.quartzsys.com/

OpenBIM

- A universal approach to the collaborative design, realization and operation of buildings based on open standards and workflows.

- An initiative of buildingSMART and several leading software vendors using the open buildingSMART Data Model.

OpenBIM & IFC

- IFC (ISO/PAS 16739)

  - The Industry Foundation Classes (IFC) : an open, neutral and standardized specification for Building Information Models, BIM.
  - The main buildingSMART data model standard

Web3D Consortium	buildingSMART International
Web3D	**IFC (ISO/PAS 16739)**
Web3D Korea Chapter	buildingSMART KOREA

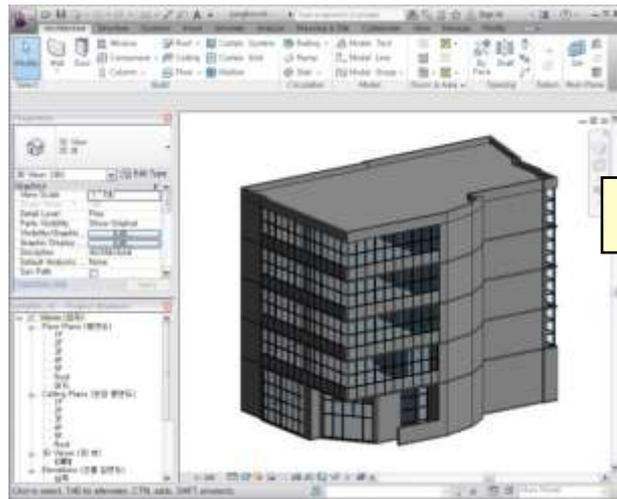- Inhan Kim, What is BIM?, Aug. 2008, http://www.cadgraphics.co.kr/cngtv/data/20080813_1.pdf

BIM CAD Systems

- Autodesk Revit Architecture

- Bently Achitecture

- Nemetschek Allplan

- GRAPHISOFT ArchiCad

- Gehry Technologies (GT) Digital Project
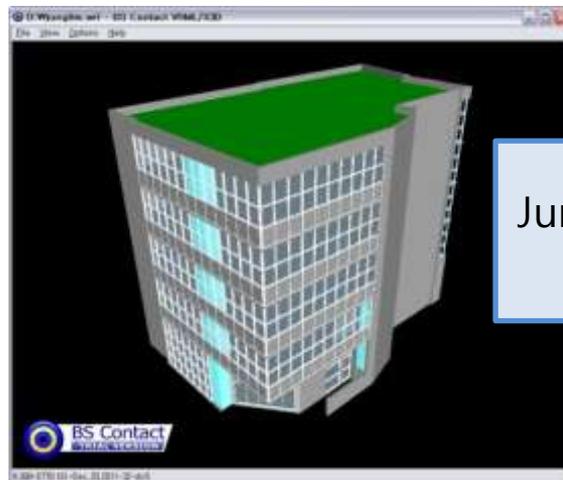 - CATIA V5 as a core modeling engine

- Vectorworks Architect

Simple IFC-to-X3D Conversion

- Loading IFC → Saving as "VRML" → Converting to X3D
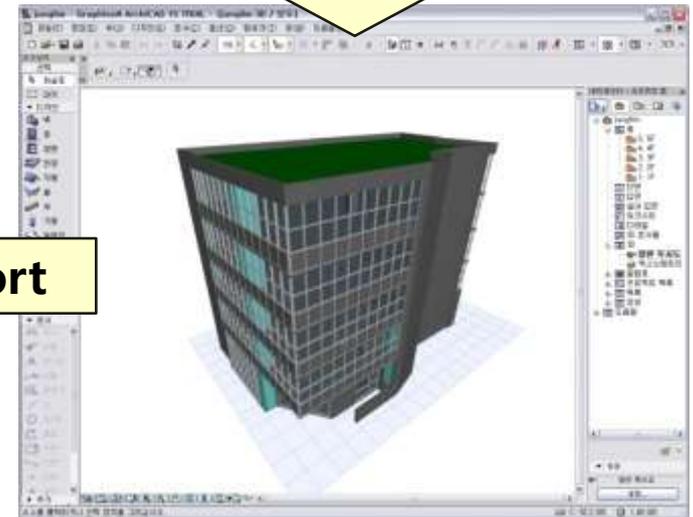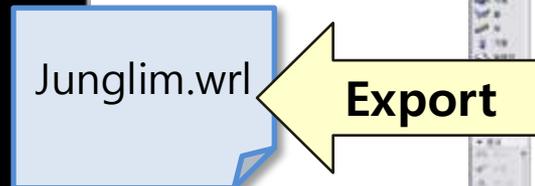   - Most BIM CAD Systems provide IFC export/import functions

Simple IFC-to-X3D Conversion (ArchiCad)
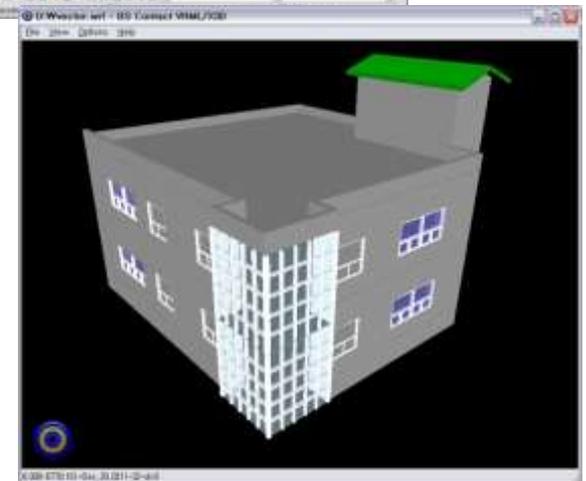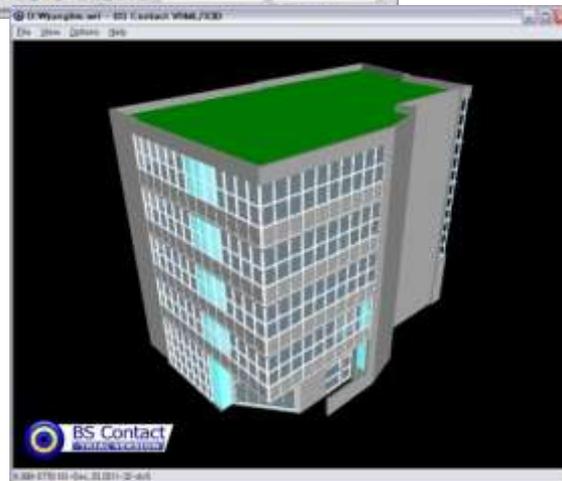

Autodesk Revit 13
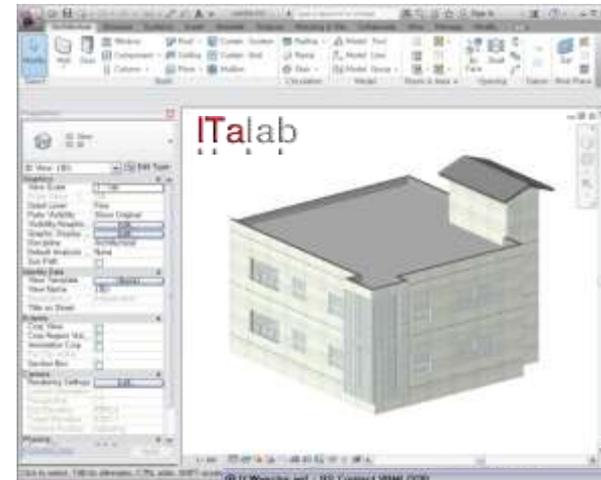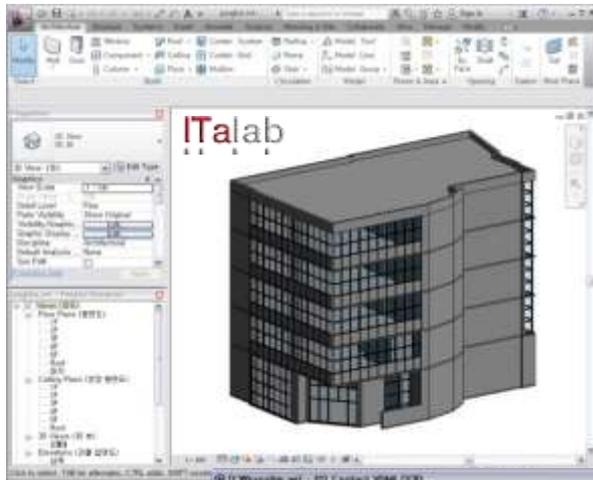
Export → Junglim.ifc

import ↓

GRAPHISOFT ArchiCad 15

Junglim.wrl ← **Export**

BS Contact VRML/X3D Viewer

Conversion of ITalab* Test Models

Next step

- IFC-to-X3D Conversion

    - Parsing IFC → IFC-to-X3D Mapping → Writing as X3D

        - Parsing IFC : EXPRESS (ISO 10303-11)
            - JSDAI (http://www.jsdai.net/) : an API for reading, writing and runtime manipulation of object oriented data defined by an EXPRESS based data model.
              * STEP (ISO 10303), PLIB (ISO 13584), …

        - IFC-to-X3D Mapping : Vocabularies / Structures / …

Thank you!

Hyokwang Lee
http://www.partdb.com