



## Indlæg om BIM i et internationalt perspektiv

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*Publication date:*  
2015

*Document Version*  
Peer reviewed version

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*Citation (APA):*  
Karlshøj, J. (2015). Indlæg om BIM i et internationalt perspektiv [Sound/Visual production (digital)]., Gladsaxe, Denmark, 30/09/2014

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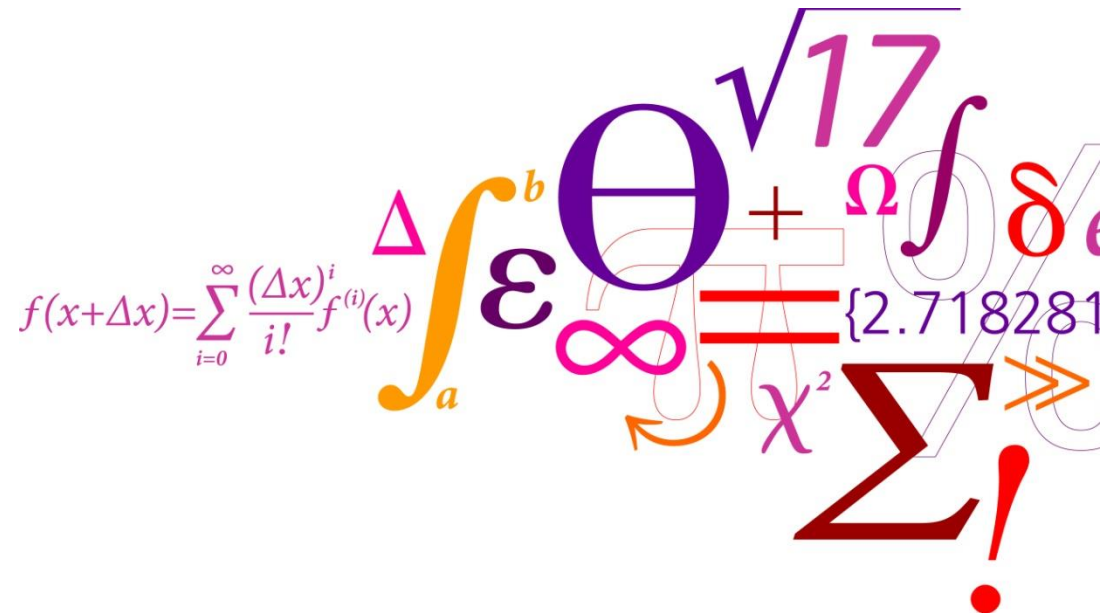
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# Indlæg om BIM i et internationalt perspektiv

Jan Karlshøj, DTU Byg



# Profil

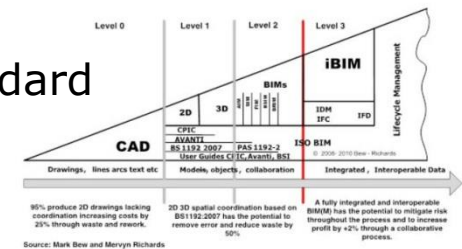
- DTU Byg
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  - Lektor
- buildingSMART
  - International IDM Coordinator/Leder af Process Room
  - Nordisk formand
  - Medlem af buildingSMART Forum i bips
- Bips
  - Medlem af styregruppe
- Standardisering
  - TC59/SC13/WG 8 & 13
  - CEN BT WG 215
  - DS S-808
- Gravicon
  - Konsulentvirksomhed
  - Fokus på buildingSMART relaterede ydelser

# Internationalt perspektiv

- Deltagelse i buildingSMART siden 1996
  - Norden
  - Internationale møde i Europa, Nordamerika, Mellemøsten, Asien og Australien
- Innovation platform
- Videnskabelige konferencer
- Intergraph og Bentley brugermøder i USA – mange år siden

# Open BIM

- Danmark: Bygherrekrav siden 2007, seneste revision 2013
- Norge: Krav om open BIM i 2016
- UK: BIM Level 2 i 2016
- Nyt nationalt initiativ i Tyskland med fokus på åbne standard
- Frankrig rører også på sig
- Holland er i gang med krav
- Amerikanske stater
- Korea, 28.2M\$ projekt med fokus på open BIM
- Singapore startede tidligt



## IFC, IDM, MVD, bSDD og BCF

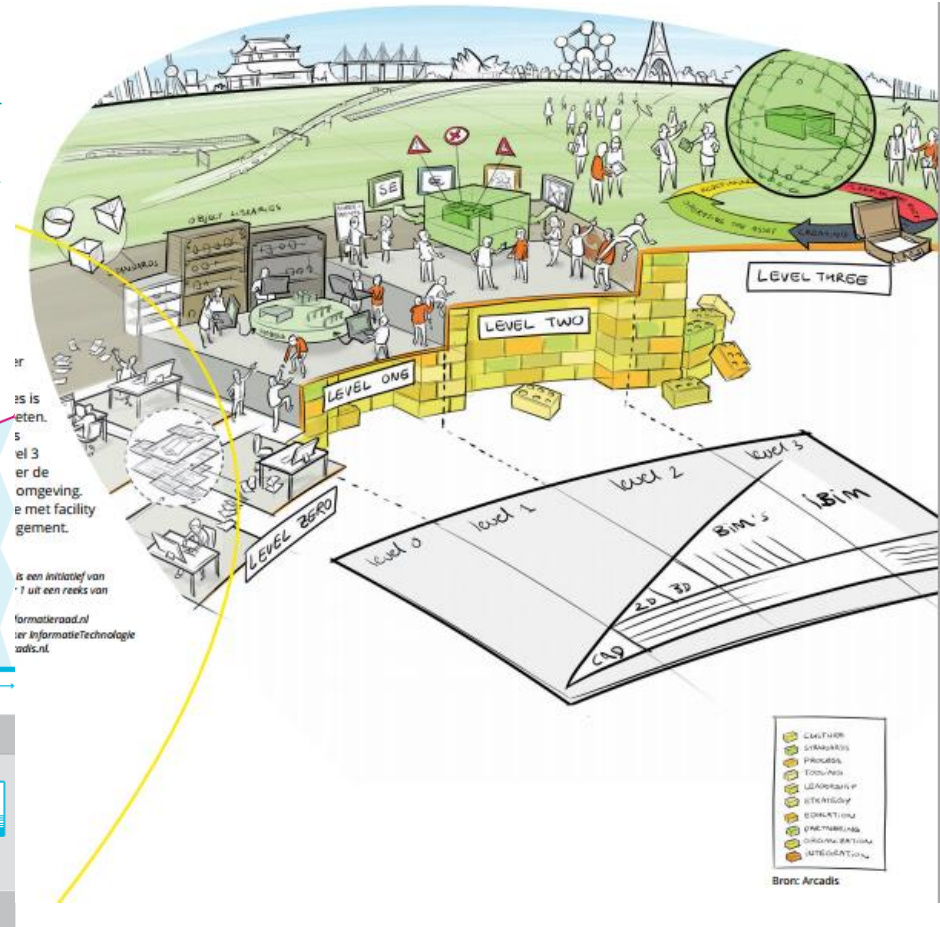
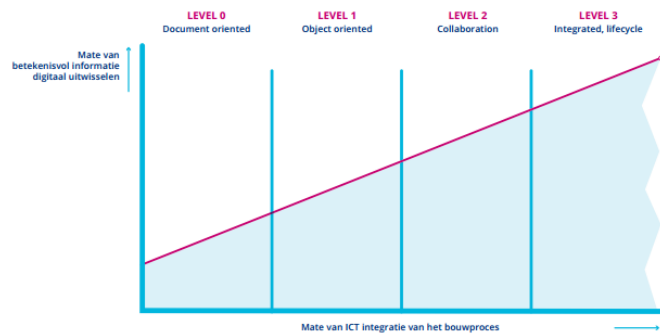
### About buildingSMART.

BuildingSMART is a world-wide alliance driving the development of open internationally-recognised standards, tools and training to support the wider use of Building Information Modelling (BIM) across the architecture, engineering and construction (AEC) and facilities management (FM) industries.



# Netherlands

- <http://www.bouwinformatieraad.nl/wp-content/uploads/2014/04/Kenniskaart001.pdf>



Werkwijze	LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3
Data	Drawings, lines, arcs, text, etc.	Models, objects	Models, objects, common libraries	Integrated, interoperable data
Tools	Paper (CAD, Excel, Word, etc.)	2D, 3D	File based collaboration & library management, 4D, 5D, ...	Integrated web-services
Level of Cooperation	Coordination	Coordination	Collaboration	Integration


Mede gebaseerd op: Bew-Richards UK 2008

# BIM Guidelines: 59 registreret

← → ↻ [bimguides.vtreem.com/bin/view/BIMGuides/Guidelines#t=alldocs&p=1&l=250&s=Name&d=asc](http://bimguides.vtreem.com/bin/view/BIMGuides/Guidelines#t=alldocs&p=1&l=250&s=Name&d=asc) ★ ☰

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 International home of openBIM  en

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BIM Guides

## BIM Guides

Senest ændret af Brice GAUDIN den 2014-05-21 Kommentar (2) · Bilag (0) · Historik · Information

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Please register (link in top-right corner) to create a new guide.

BIM Guides

Resultater 1 - 59 ud af 59 pr. side for  Side 1

Name	Country	Fee	Institution	DocumentDate	Type	Lastest update	Latest reviewer	Status
Achieving Spatial Coordination Through BIM: A Guide for Specialty Contractors (fee)	USA		The Mechanical Contractors Association of America, Inc.	12/2013	Single Association Guidelines	2014-07-04	Susan Keenlside	Created

GENVEJE

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- Bruger katalog

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MINE SENESTE ÆNDRINGER

- UI Extension Class

# Finland: COBIM

HOME INFO STANDARDS NEWS CALENDAR **COBIM 2012** CONTACT

 buildingSMART Finland 

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## Common BIM Requirements 2012

Common BIM Requirement 2012, COBIM, is based on the BIM Requirements published by Senate Properties published in. The update project was funded by Senate Properties in addition to several other real estate owners and developers, construction companies and software vendors. BuildingSMART Finland participated also in the financing of the project. As a result, the updated Series 1-9 and new Series 10-13 were released in Finnish on March 27th 2012.

Series 1: General part

Series 2: Modeling of the starting situation

Series 3: Architectural design

Series 4: MEP design

Series 5: Structural design

Series 6: Quality assurance

Series 7: Quantity take-off

Series 8: Use of models for visualization

Series 9: Use of models in MEP analyses

Series 10: Energy analysis

Series 11: Management of a BIM project

Series 12: Use of models in facility management

Series 13: Use of models in construction

### COBIM 2012 in English

The Common BIM Requirements, that were published March 27th 2012, are now available also in English. Click on the link COBIM 2012 in the menu.

### News

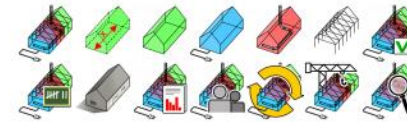
5/23/13  
Reijo Hänninen was elected to Deputy Chair of buildingSMART International  
[Read more »](#)

3/25/13  
IFC4 released!  
[Read more »](#)

3/17/13  
IC meeting in May moved to Helsinki, Finland  
[Read more »](#)

### Contact

BuildingSMART Finland  
PL 1004  
00101 Helsinki



**COBIM** Common BIM Requirements  
2012

v1.0

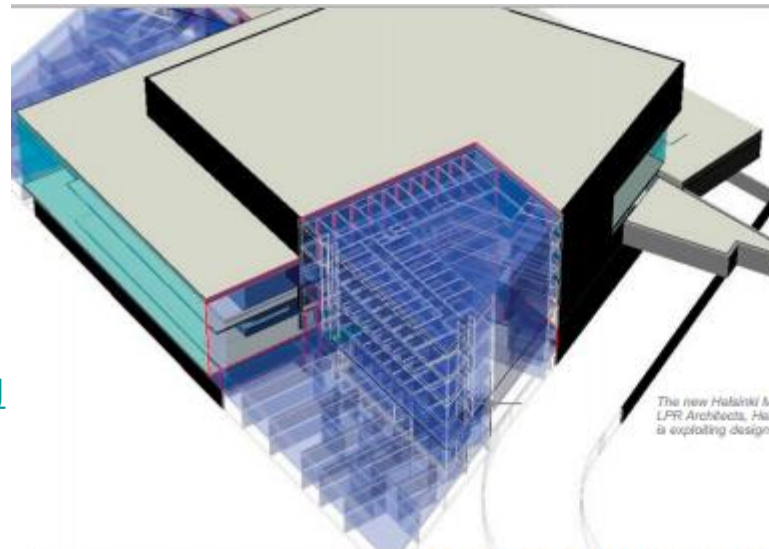


**Series 5**  
Structural design

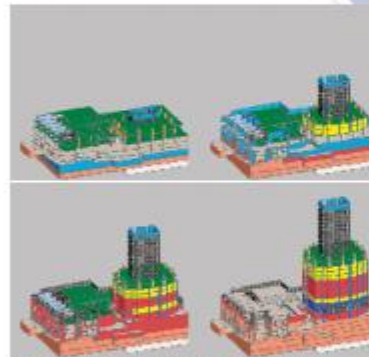


# Projekter

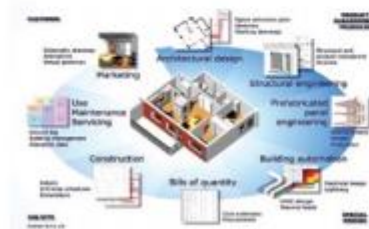
- Norge:  
<http://iug.buildingsmart.org/resources/itm-and-iug-meetings-2013-munich/process-room/process-room-experiences>
- Finland: Helsinki Music Centre



The new Helsinki Music Centre design, by LPR Architects, Helsinki, Finland uses BIM and is exploring design collaboration using IFC.



BIM supports simulation of construction activities and integrated costing.  
 Images courtesy Webcor, San Francisco, USA



Product model based design vision adopted by Finnish construction industry.  
 Image courtesy Prof. Helsing, Finland

## BETTER PLANNING AND CONTROL OF BUILDING CONSTRUCTION PROJECTS through better collaboration, co-ordination and sharing of project information

The International Alliance for Interoperability (IAI) has spent the last 10 years establishing an open standard - IFC - for the use of object technology in construction and facilities management.

In the last two years IAI has turned its attention to broader issues of achieving beneficial change in industry, using Building Information Models (BIMs) and IFCs as the trigger to smarter ways of working. This is the origin of the rebranding last year of IAI as **buildingSMART**.

Under the **buildingSMART** banner, IAI is seeking alliances with other similarly motivated organisations to support processes which deliver faster, better, less expensive and more predictable results than can be achieved with traditional methods.

## BuildingSMART = BIM + IFC

Building information modelling is a new approach to describing and displaying the information required for the design, construction and operation of built facilities. IFC provides a comprehensive specification for the totality of information within the lifecycle of a constructed facility



# Projekter

- Korea:  
[http://bips.dk/files/bips.dk/article\\_files/4e\\_2010.pdf](http://bips.dk/files/bips.dk/article_files/4e_2010.pdf)
- Kina

**Glodon 广联达**

中文

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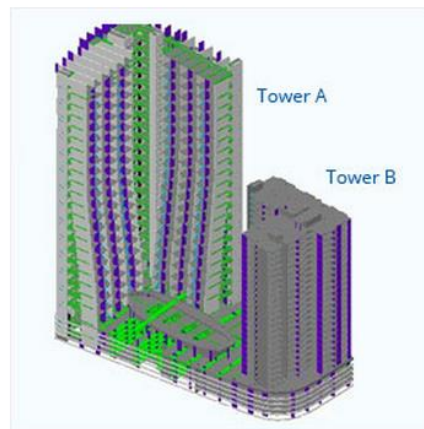
Home > Products > TAS



## Glodon Takeoff for Architecture and Structure TAS



- Product Introduction >
- Case Studies >
- Download Center >



Building type : Mixed Development  
 Location : Subang

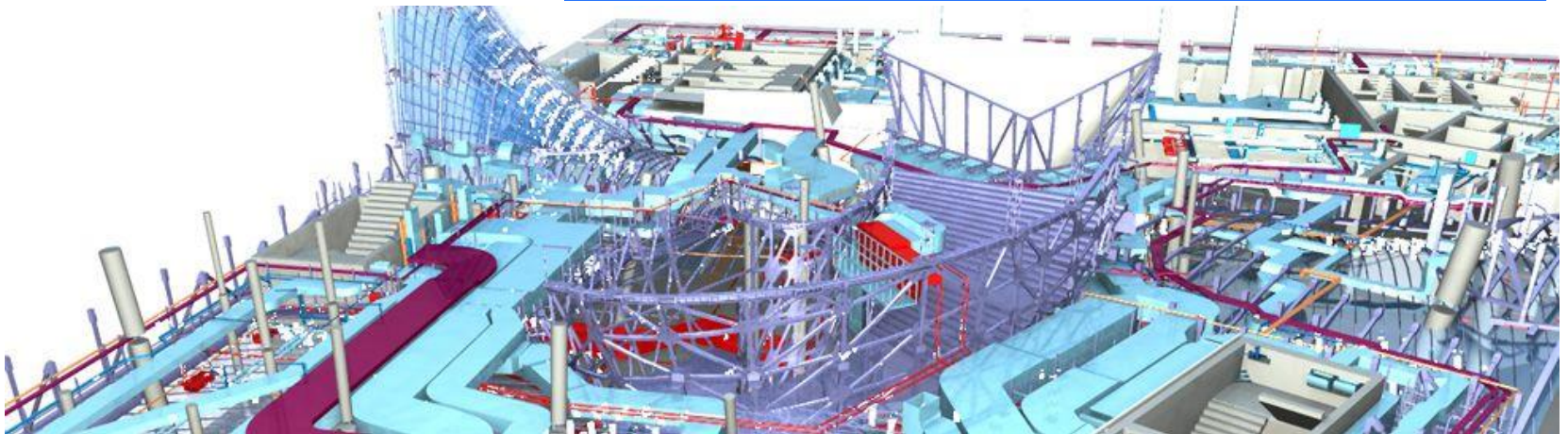
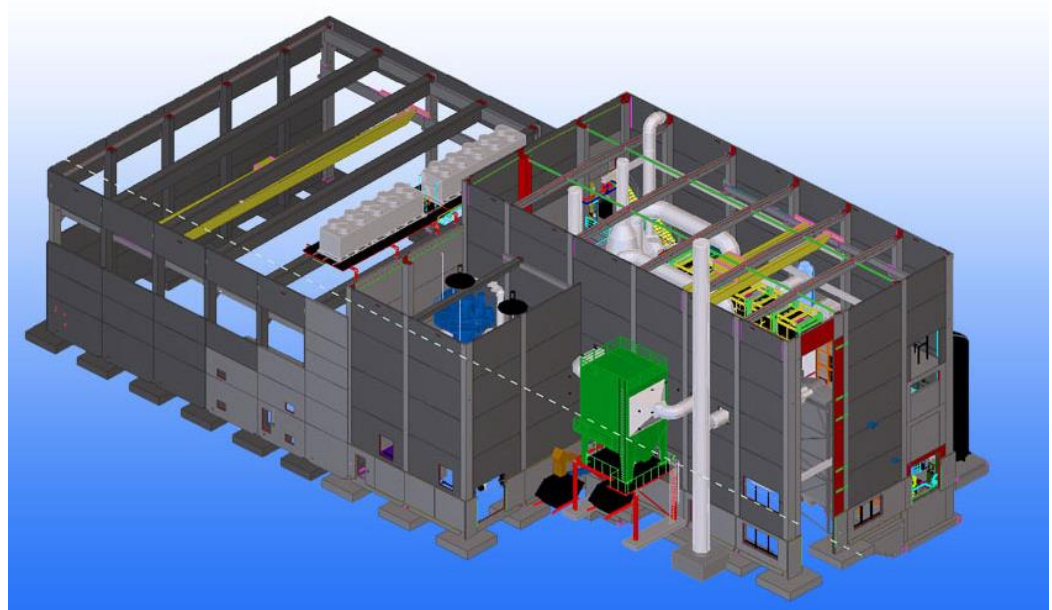
Numbers of floors :  
 Tower (A) - 52  
 Tower (B) - 28

Using TAS made easy :

- Fast in copying elements to other similar floors, entails only modification on gradually changing elements.

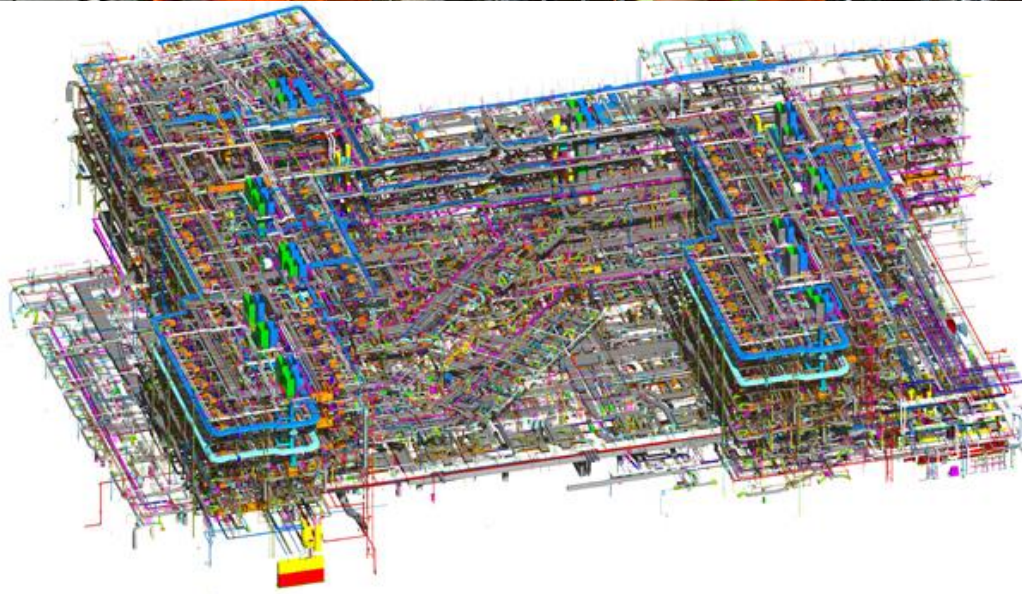
# Projekter

- Tyskland:
  - Meget 2D CAD
  - Undtagelser
    - Max Bögl
    - Hochtief
    - ..



# Projekter

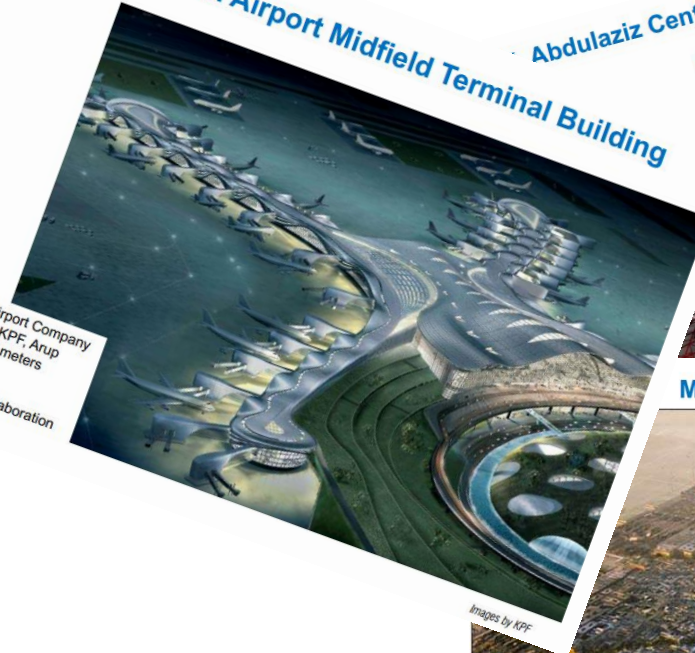
- USA
  - DPR



# Projekter

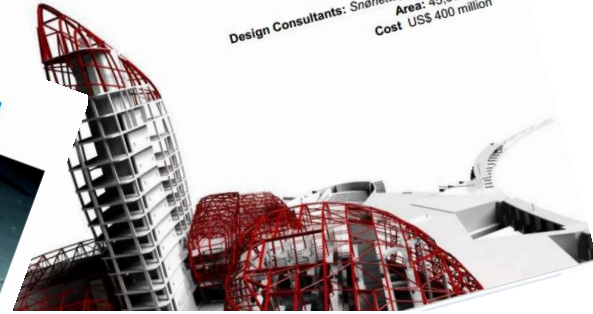
- Mellemøsten: [ht/oslo/process-ro-2012/BIM%20](http://ht.oslo/process-ro-2012/BIM%20)
- Krav om BIM
  - Museum i Kairo

## Abu Dhabi Airport Midfield Terminal Building



Client: Abu Dhabi Airport Company  
 Design Consultant: KPF, Arup  
 Area: 630,000 square meters  
 Cost: US\$ 6.8 billion  
 BIM Spec: Written in collaboration with buildingSMART ME.

## Abdulaziz Centre for World Culture, Saudi Arabia



Client: Saudi Aramco  
 Design Consultants: Snohetta, Buro Happold  
 Area: 45,000sqm  
 Cost US\$ 400 million

## Masdar City, Abu Dhabi



Client: Mubadala (Abu Dhabi Government)  
 Area: 6 square km  
 Cost: US\$19 billion

BIM Spec: Written by Bentley mentions IFC but requests DGN as primary model delivery format

Requirements: modelling, coordination, construction support

## Al Mafraq Hospital, Abu Dhabi

'BIM shall be developed using Revit Architecture, Revit Structure and Revit MEP or other IFC/BIM comp and be compatible with Navisworks'



Client: SEHA – Abu Dhabi Health Authority  
 Design Consultants: Burt Hill  
 Area: 246,000 sqm  
 Cost: US\$1 billion



BIM Spec: Written by Design Consultant, Revit is the required BIM software, and delivery of model to be in RVT format. Deliver their models in other formats (including IFC) is acceptable.



## Saadiyat Island Cultural Centre, Abu Dhabi

### Louvre Abu Dhabi

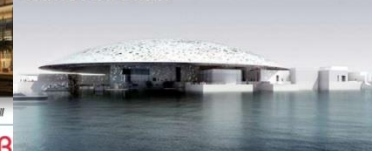


Image by Atelier Jean Nouvel

### Guggenheim Abu Dhabi



Image by Gehry Partners

Client: Mubadala (Abu Dhabi Government)  
 Design Consultants: as above + Buro Happold  
 BIM Spec: Written with support from Gehry Technologies

# Udvikling Præfabrikeret beton

## Precast BIM Standard Project

Building Information Modeling Standard for Precast Concrete Construction

FOR IMPLEMENTERS

### STATUS

We have completed specification of the Model View Definitions (MVDs) necessary for implementation of the specified IDM functionality. We are using the MVD and Concept definition approach to modularize the exchange specification, to facilitate implementation and testing. Documentation of the MVD are complete. The definition of test files for implementers are now being prepared.

### ORGANIZATION

This project is sponsored by the Charles Pankow Foundation and Precast/Prestressed Concrete Industry and undertaken in collaboration with National Institute of Building Sciences, buildingSMART Alliance, Georgia Institute of Technology, Technion-Israel Institute of Technology and Digital Alchemy.



HOME PARTICIPANTS DOCUMENTS TESTING SEMS DEMO LINKS CONTACT



### CURRENT STEP AT THE STANDARD DEVELOPMENT PROCESS



### DESCRIPTION

A committee of the Precast/Pre-stressed Concrete Institute (PCI) advised by Georgia Tech are developing a national BIM standard to support the critical information exchanges surrounding precast concrete. The precast pieces include stemmed deck members, flat deck members, beams, columns, load bearing walls and spandrels, piles, and architectural facades, plus others. Multiple business cases have been identified, addressing design-bid-build, design-build and precast as lead contractor modes of project delivery. The lifecycle phases include architectural design and construction modeling, structural engineering of precast, fabrication level detailing and manufacture planning, through to logistics and erection. These results are incorporated in a completed [Information Delivery manual \(IDM\)](#). The Exchange Requirements have been defined

### RECENT ACTIVITIES

Meeting -Implementation of PCI National BIM Standard – Phase 2, March 28, 2012 [Minutes](#), [Presentation](#)

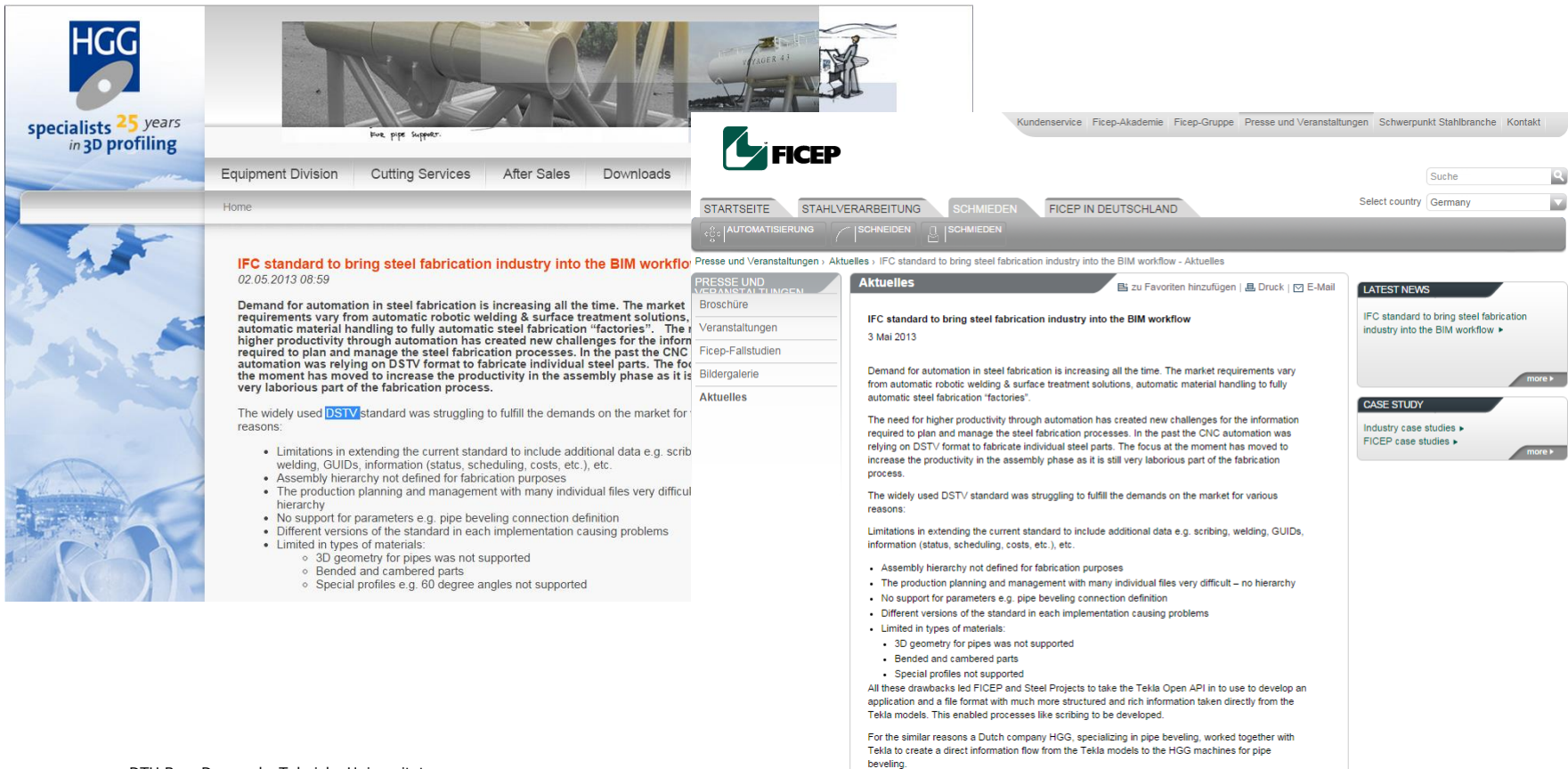
4th Meeting of PCI National BIM Standard – PCI Convention, Salt Lake City, UT October 15, 2011

Read More: [AECbytes Article](#)

Initial steps at implementation of the Precast National BIM standards was demonstrated at the PCI Convention, chaired by Georgia Tech. The three hour session involved the demonstration by four different companies, demonstrating interoperability among six different software applications. These included Nemetschek Vectorwork, Nemetschek Scia Engineer, Structureworks, Tekla, Structureworks Plant Manager. and

# Udvikling Stål fabrikation

- One important element within IFC was the fact that by taking this format in to use it would bring the whole steel fabrication industry into the BIM workflow.



The screenshot shows the FICEP website interface. At the top left is the HGG logo with the text "specialists 25 years in 3D profiling". The main navigation bar includes "Equipment Division", "Cutting Services", "After Sales", and "Downloads". The FICEP logo is prominently displayed in the center. Below the navigation, there are tabs for "STARTSEITE", "STAHLVERARBEITUNG", "SCHMIEDEN", and "FICEP IN DEUTSCHLAND". A search bar and a "Select country" dropdown (set to Germany) are also visible.

The main content area features an article titled "IFC standard to bring steel fabrication industry into the BIM workflow" dated 02.05.2013 08:59. The article text reads:

Demand for automation in steel fabrication is increasing all the time. The market requirements vary from automatic robotic welding & surface treatment solutions, automatic material handling to fully automatic steel fabrication "factories". The higher productivity through automation has created new challenges for the information required to plan and manage the steel fabrication processes. In the past the CNC automation was relying on DSTV format to fabricate individual steel parts. The focus at the moment has moved to increase the productivity in the assembly phase as it is a very laborious part of the fabrication process.

The widely used DSTV standard was struggling to fulfill the demands on the market for various reasons:

- Limitations in extending the current standard to include additional data e.g. scrib welding, GUIDs, information (status, scheduling, costs, etc.), etc.
- Assembly hierarchy not defined for fabrication purposes
- The production planning and management with many individual files very difficult hierarchy
- No support for parameters e.g. pipe beveling connection definition
- Different versions of the standard in each implementation causing problems
- Limited in types of materials:
  - 3D geometry for pipes was not supported
  - Bended and cambered parts
  - Special profiles e.g. 60 degree angles not supported

The article continues to discuss how these drawbacks led FICEP and Steel Projects to take the Tekla Open API in to use to develop an application and a file format with much more structured and rich information taken directly from the Tekla models. This enabled processes like scribing to be developed. It also mentions that a Dutch company HGG, specializing in pipe beveling, worked together with Tekla to create a direct information flow from the Tekla models to the HGG machines for pipe beveling.

On the right side of the page, there are sections for "Aktuelles" (Latest News) and "CASE STUDY". The "Aktuelles" section includes a "more" link. The "CASE STUDY" section includes a "more" link.