

A Review of BIM-Guidelines: Content, Scope & Positioning

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Interreg midtvejsseminar
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EUROPEAN
UNION
European Regional
Development Fund



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Introduction

Main objectives of most BIM guideline documents:

- To instruct AEC audience in best practice.
- How to handle the creation or use of BIM data.
- How to improve effectiveness and efficiency of activities throughout the DCO lifecycle.
- How to implement BIM processes.

The main aim of the organizations behind them is to improve the ability to **communicate, re-use and share data efficiently without loss, contradiction or misrepresentation** during the lifecycle of a facility.

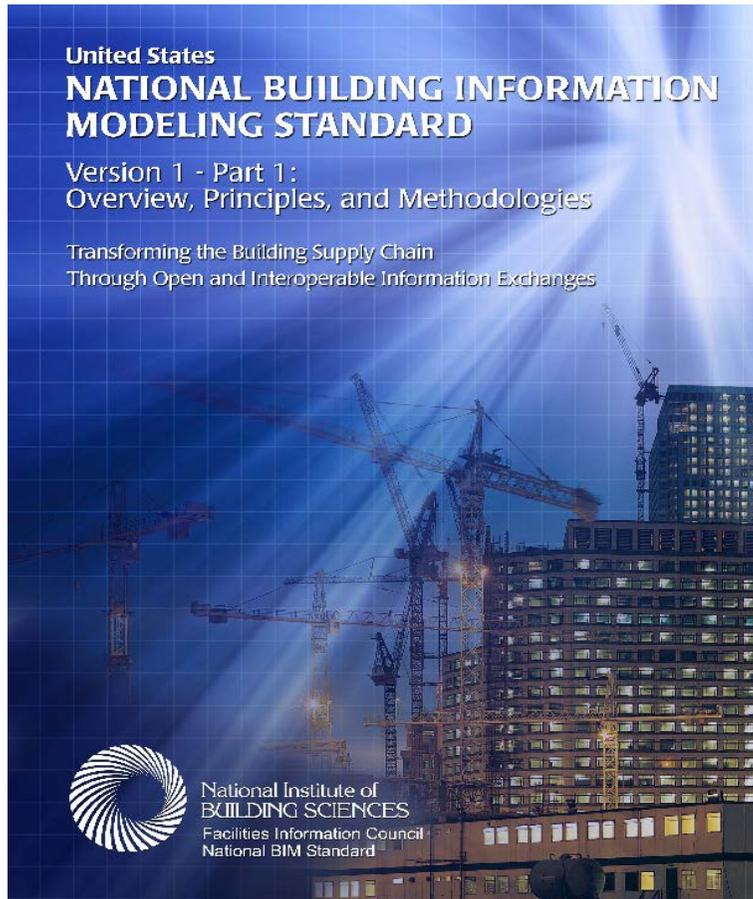




BIM Patterns: A spotlight on selected BIM Standards & Guidelines worldwide



NBIMS (US)



Key Features:

- National Standard (foundation)
- Foundation related to goals & activities of the BuildingSMART.
- Intention improve DCO process using standardized, machine-readable information.
- Most conceptual
- Intended to be first of many parts.
- Little attempt has been made to adopt the principles in the US.



“Although many American companies are at the forefront of BIM software use, the sheer size of the construction industry makes altering course towards a universal acceptance of BIM difficult. This is not helped by the culture of litigation and large damages claims”.*

**Ten truths about BIM – The most significant opportunity to transform the design and construction industry (WSP & Kairos Future 2011)*



BIM PEPG (US)



Key Features:

- Project based strategic planning guide.
- Enables a process to identify:
 - Project goals
 - BIM-Uses
 - Information exchanges
 - Supporting infrastructure
- Backed by BuildingSMART
- Facilitates formation of an project specific IDM and MVD's.
- Private initiative.



AIA Document E202 – 2008 (US)

 **AIA** Document E202™ – 2008
Building Information Modeling Protocol Exhibit

This Exhibit is incorporated into the accompanying agreement (the "Agreement") dated the _____ day of _____ in _____ the year _____
(In words, indicate day, month and year.)

BETWEEN:
(Name, address and contact information, including electronic addresses)

AND:
(Name, address and contact information, including electronic addresses)

for the following Project:
(Name and location or address)

TABLE OF ARTICLES

1	GENERAL PROVISIONS
2	PROTOCOL
3	LEVEL OF DEVELOPMENT
4	MODEL ELEMENTS

ARTICLE 1 GENERAL PROVISIONS
§ 1.1 This Exhibit establishes the protocols, expected levels of development, and authorized uses of Building Information Models on this Project and assigns specific responsibility for the development of each Model Element to a defined Level of Development at each Project phase. Where a provision in this Exhibit conflicts with a provision in the Agreement into which this Exhibit is incorporated, the provision in this Exhibit will prevail.
§ 1.1.1 The parties agree to incorporate this Exhibit by reference into any other agreement for services or construction for the Project.

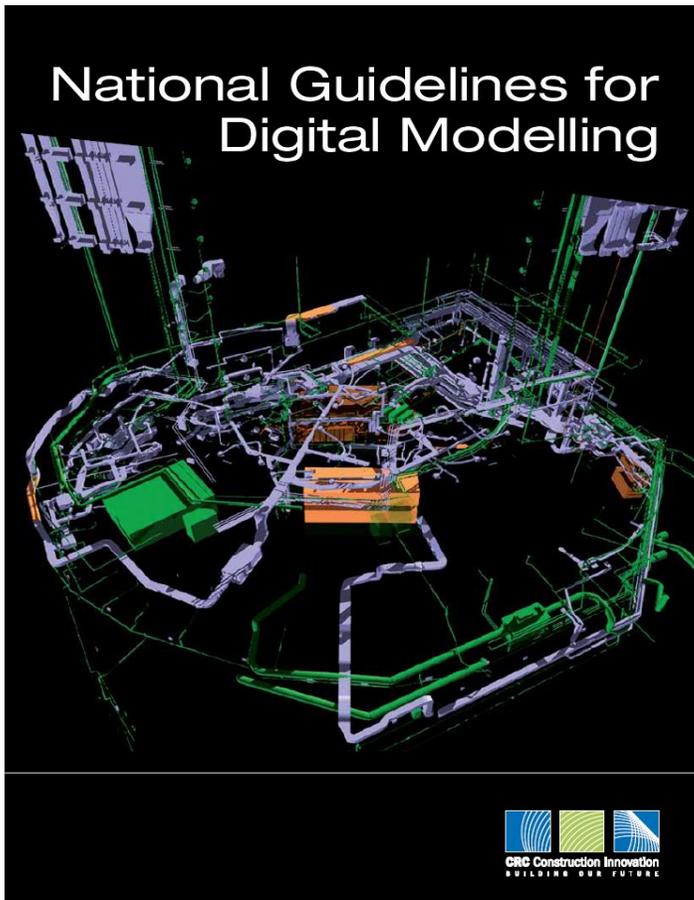
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Key Features:

- Contractual status
- Key strategic BIM decisions
- Collaboration parameters
- Compatible with IPD philosophy
- Key concepts:
 - Level of detail schedule
 - Authorized uses
 - Object author matrix
 - BIM deliverables



NGDM (Aus)



Key Features

- Intention to motivate industry towards BIM use.
- Simplified, down to earth language.
- Summarized mainstream concepts.
- Case studies appendix.
- Multi-discipline appeal.
- Lacking tangible tools.



“BIM is starting to take off, but governments and industry associations are being urged to help speed up the process. The Sydney Opera House is a shining example of how BIM is used in the management of existing buildings”.*

**Ten truths about BIM – The most significant opportunity to transform the design and construction industry (WSP & Kairos Future 2011)*



AEC BIM Standard (UK)

Key Features

- Intention to improve process of design information production, management & exchange.
- One of several documents, not integrated.
- Appendices application specific.
- Private initiative.
- Lacking tangible examples & solutions.

AEC (UK) BIM Standard

A practical & pragmatic BIM standard for the Architectural, Engineering and Construction industry in the UK.

Version 1.0 November 2009 First release



“The UK construction industry has less enthusiasm for BIM than some other countries discussed. Just recently the government’s decision to make BIM part of its procurement policy has met with some scepticism. There are also concerns about the software”.*

**Ten truths about BIM – The most significant opportunity to transform the design and construction industry (WSP & Kairos Future 2011)*



Senate Properties BIM Requirements (FIN)



Key Features:

- Multi-volume guide.
- Discipline specific appendices.
- Intention to develop customer-orientated & cost-effective working method.
- Compulsory use on state projects.
- Both strategic & administrative



“The adoption of BIM in Finland is further advanced than anywhere else in the world. Finland is a technologically advanced nation with a small, agile construction industry and a long history of trust and open standards – the perfect environment for BIM to thrive. It is often used on small-scale projects”.*

**Ten truths about BIM – The most significant opportunity to transform the design and construction industry (WSP & Kairos Future 2011)*



Statsbygg BIM Manual (NO)

Public Beta Remarks: All "yellow marker" text is intended to indicate "work in progress" (WIP) or to highlight sections / clauses that should be noted as "any comments especially welcomed".
[Struckeled text set in red] color is comments about alternative approaches etc.
Please use Statsbygg web comment form when commenting.

ENGLISH VERSION

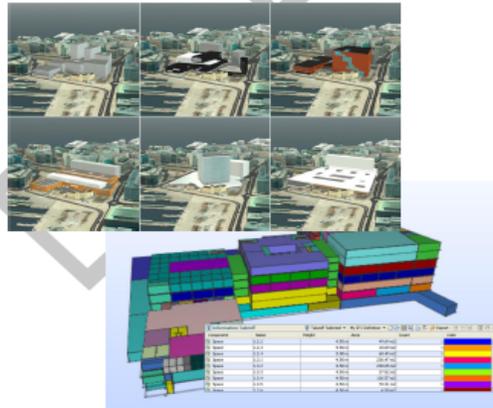


Date: 2011-03-31

Statsbygg BIM Manual 1.2

Statsbygg Building Information Modeling Manual - version 1.2 - SBM1.2

Statsbygg, P.O. box 8106 dep., N-0032 Oslo, Norway
www.statsbygg.no/bim - bim@statsbygg.no



Illustrations: From Architectural Competition for new National Museum at Vestbanen, Oslo,

Key Features:

- The result of government initiative.
- Compulsory use for state projects.
- Guidelines for BIM in projects and the property asset management.
- Based on experiences and feedback on previous versions.
- Strong on strategic planning.



“A small construction industry and a government, regulatory bodies and the construction industry all actively promoting the use of BIM have combined to make Norway a BIM success story. It’s essential for all major infrastructure and government building projects. It’s even being taught in school”.*

**Ten truths about BIM – The most significant opportunity to transform the design and construction industry (WSP & Kairos Future 2011)*



Bygghandlingar 90 (Swe)



Key Features

- Administrative guidelines.
- A development of traditional working method.
- Some aspects abstract & conceptual.
- Often referred to but of little importance.
- Lacks concrete examples.
- Lacks strategic insight.



“Sweden is catching up with Finland and Norway and in particular is leading the field in using BIM to design and build large and complex infrastructure projects, such as the Stockholm Bypass and the new City Line in Stockholm. In 2009 the OpenBIM organization was launched to establish BIM standards in Sweden”.*

**Ten truths about BIM – The most significant opportunity to transform the design and construction industry (WSP & Kairos Future 2011)*



BIPS (DK)

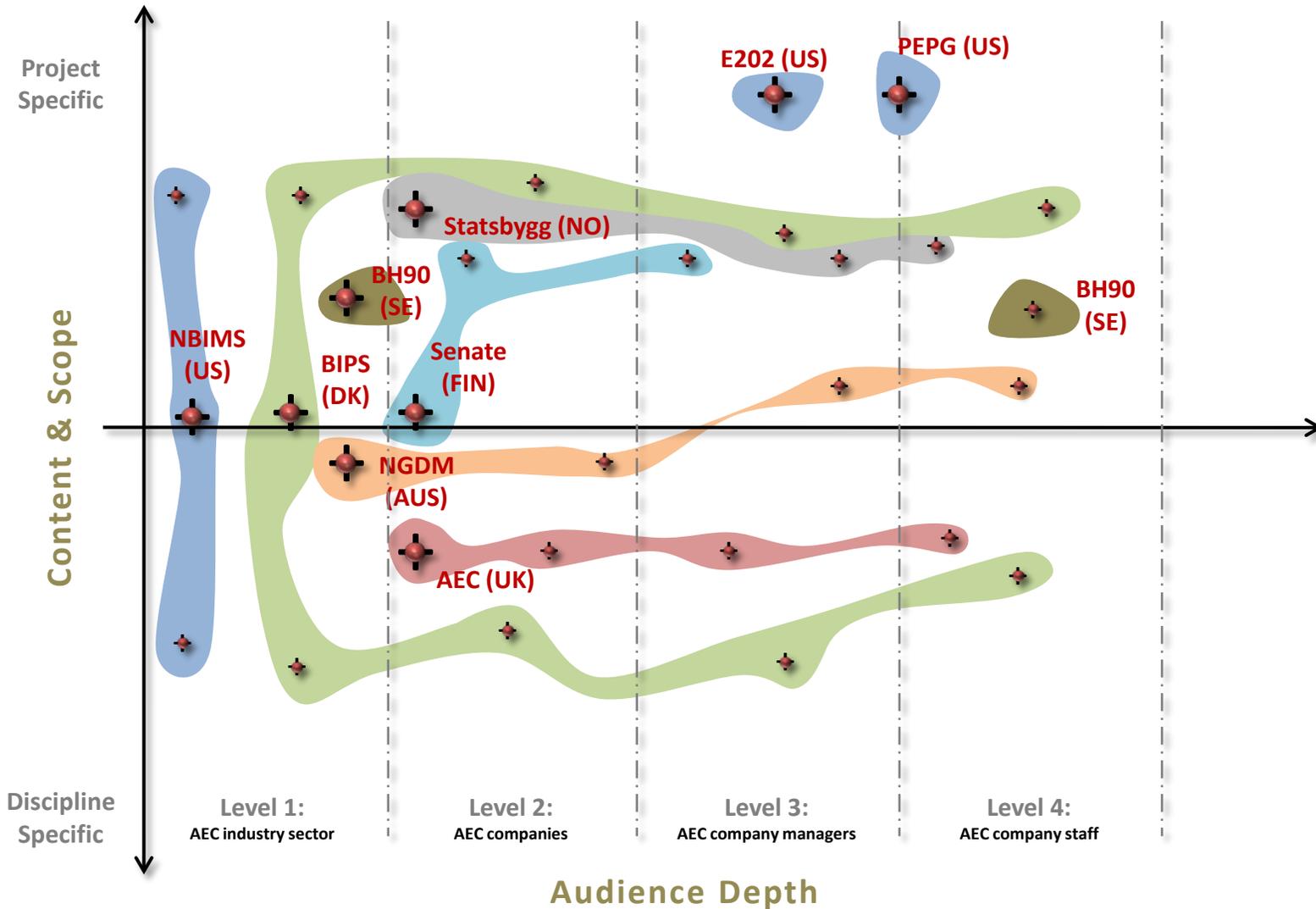


Key Features

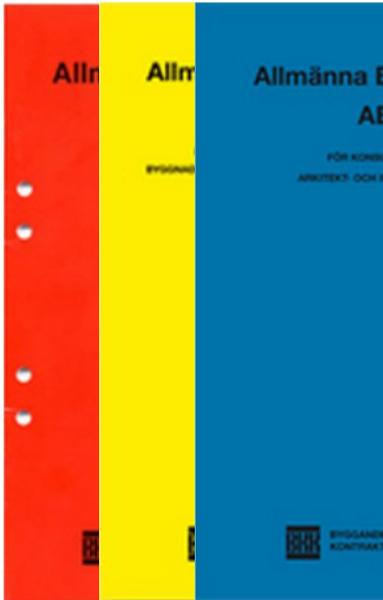
- Commissioned by Digital Construction – government initiative.
- Multiple documents inc:
 - 3D Working Methods
 - 3D CAD Manual
 - Object Structures
- Covers all audience levels
- Intention to improve efficiency & quality of design
- Comprehensive package



BIM-Guidelines: Positioning



BIM-Docs: Sweden



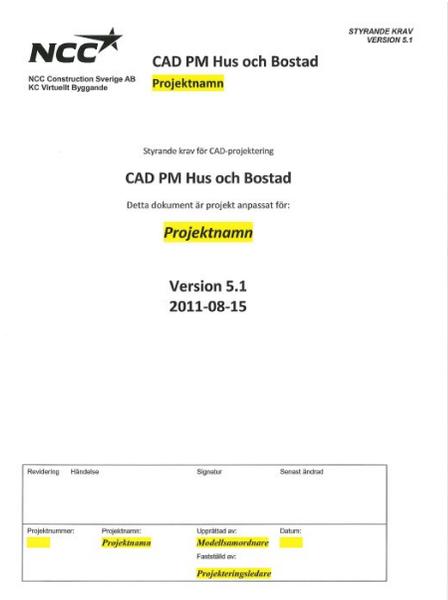
Contract



Appended BIM-Supporting Docs



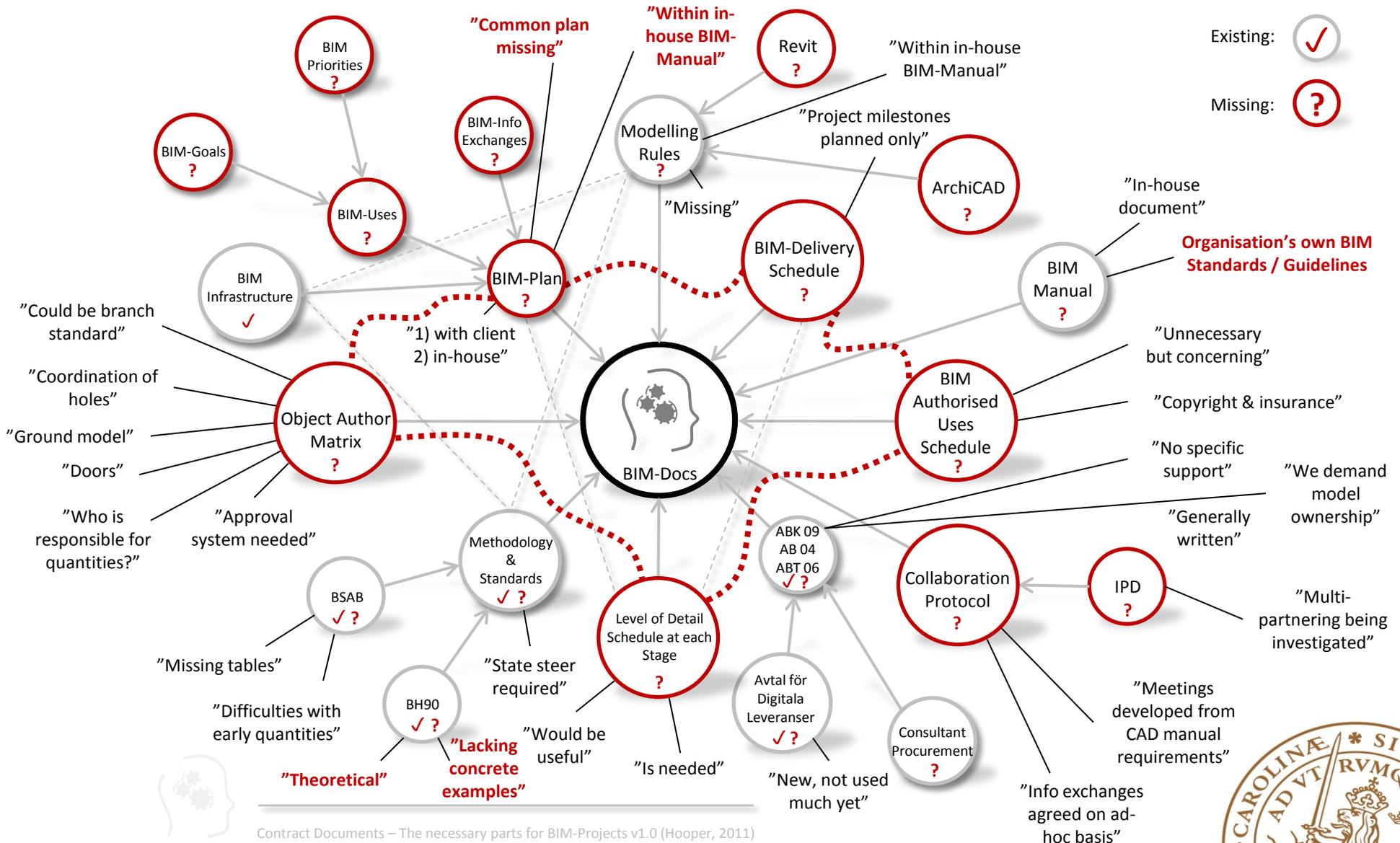
Digital Info Guides



In-house Manuals



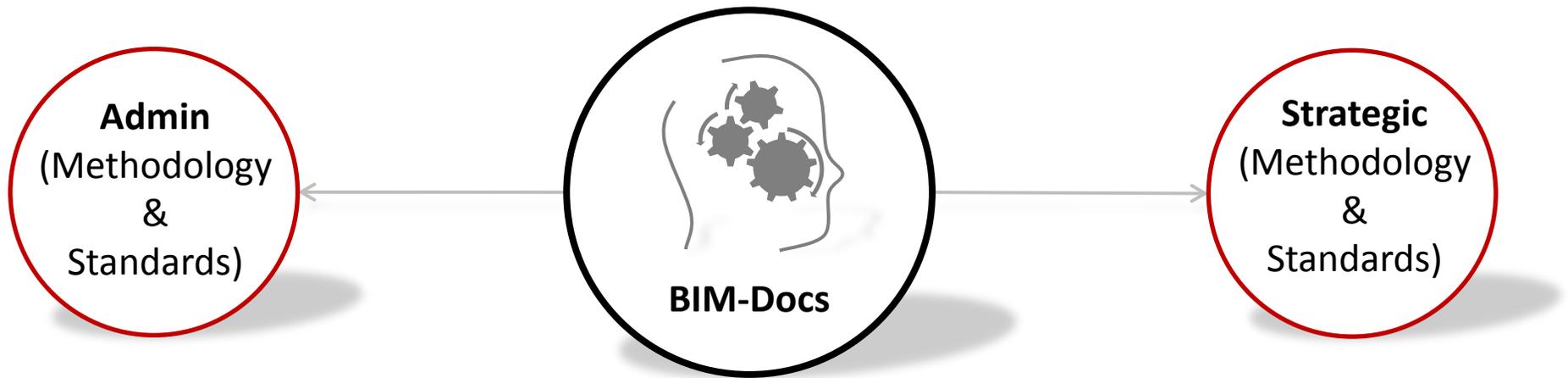
BIM-Docs: The necessary parts for BIM-Projects



Contract Documents – The necessary parts for BIM-Projects v1.0 (Hooper, 2011)

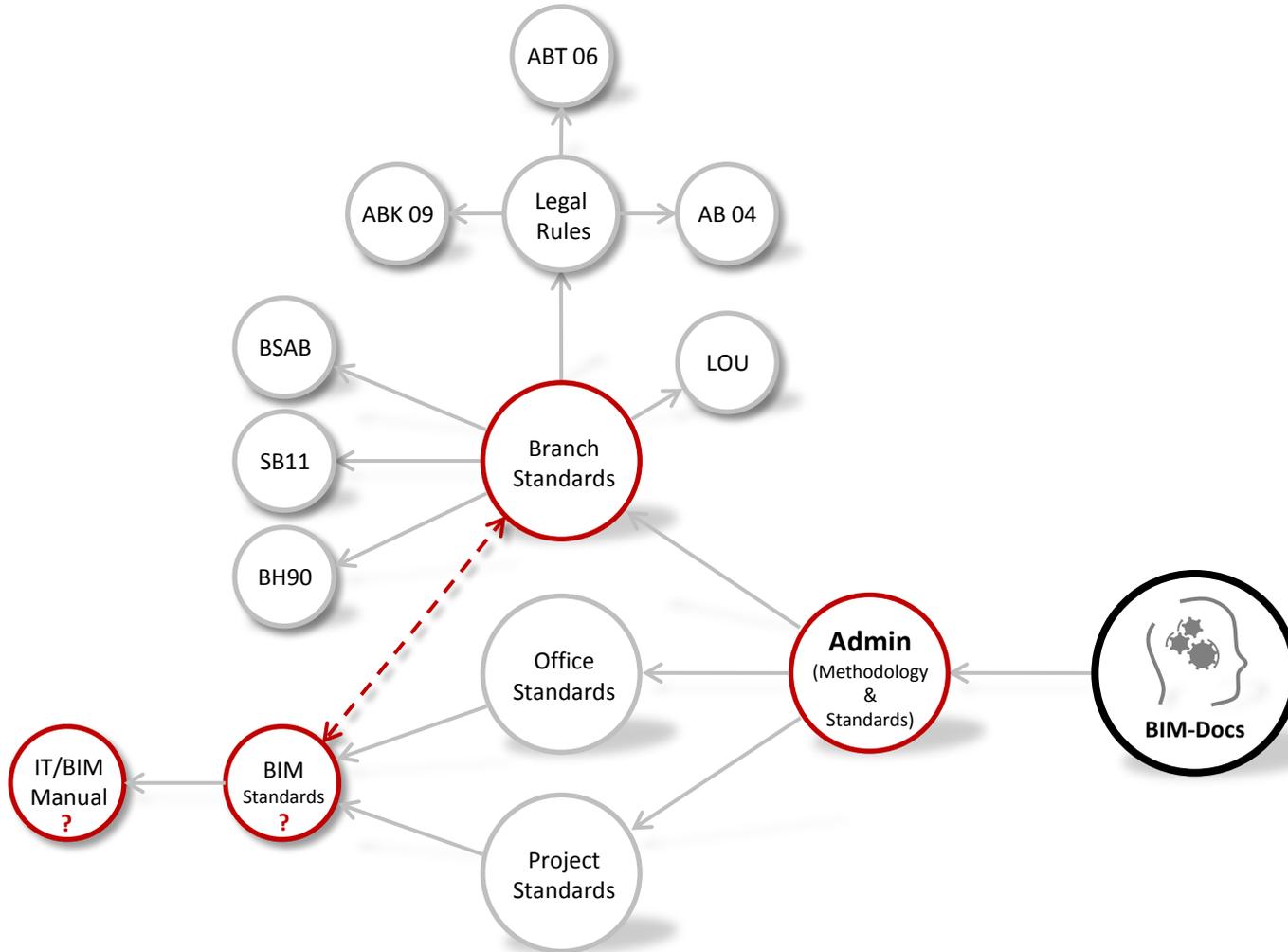


BIM-Docs: Administrative & Strategic



BIM-Docs: Sweden

Existing: 
Missing: 



BIM-Docs: Sweden

Existing: 

Missing: 



Strategic
(Methodology & Standards)

Branch Standards

Project Standards

Office Standards

BIM-Delivery Schedule ?

BIM Infrastructure

IT/BIM Manual

Level of Detail Schedule at each Stage ?

Collaboration Protocol ?

BIM Authorised Uses Schedule ?

Legal Rules

Object Author Matrix ?

Modelling Rules

Revit ?

ArchiCAD ?

BIM-Plan

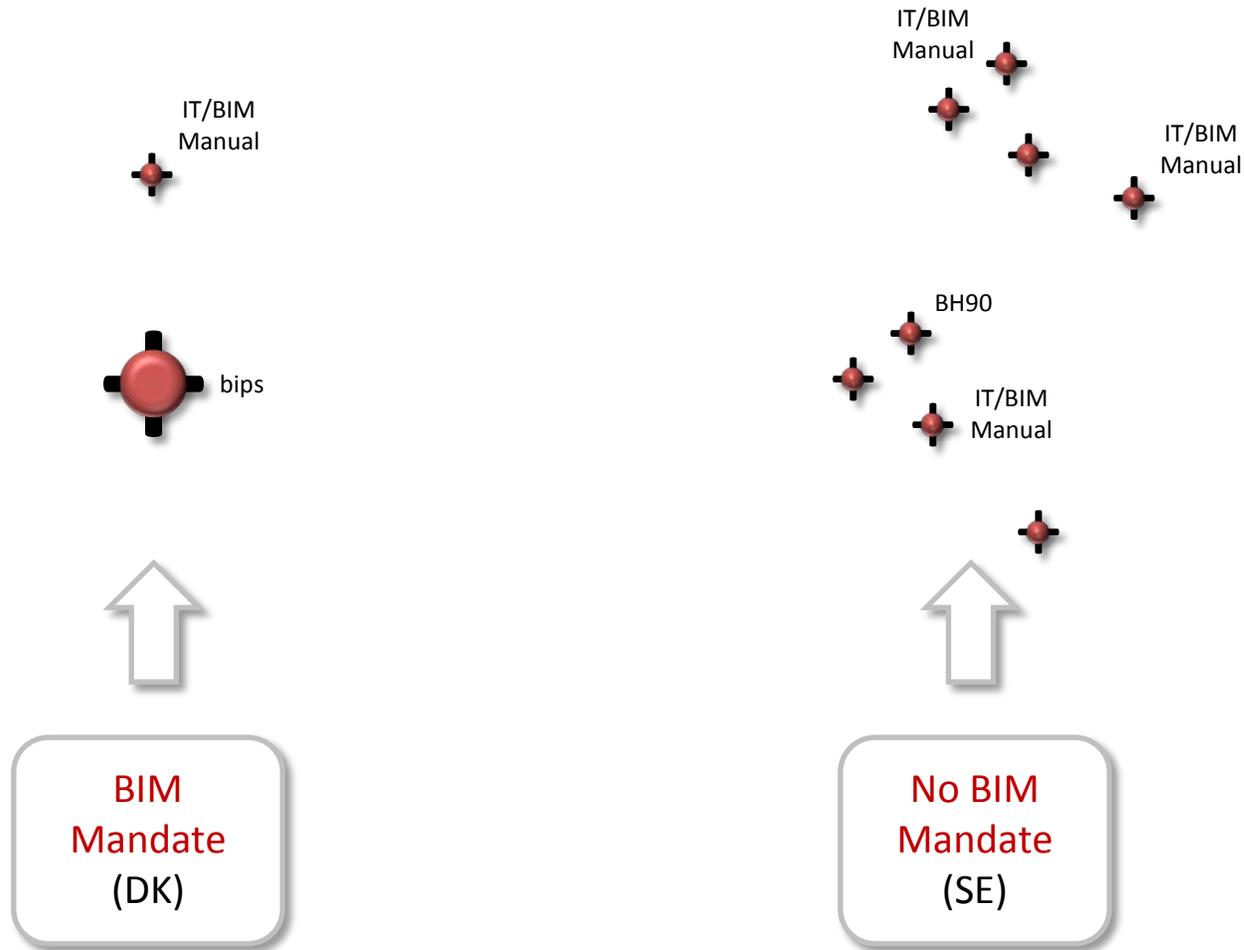
BIM-Goals ?

BIM-Uses ?

BIM-Info Exchanges ?



BIM-Docs: Sweden



BIM-Docs: Sweden – A Repositioning Proposition

Concepts desirable to be:

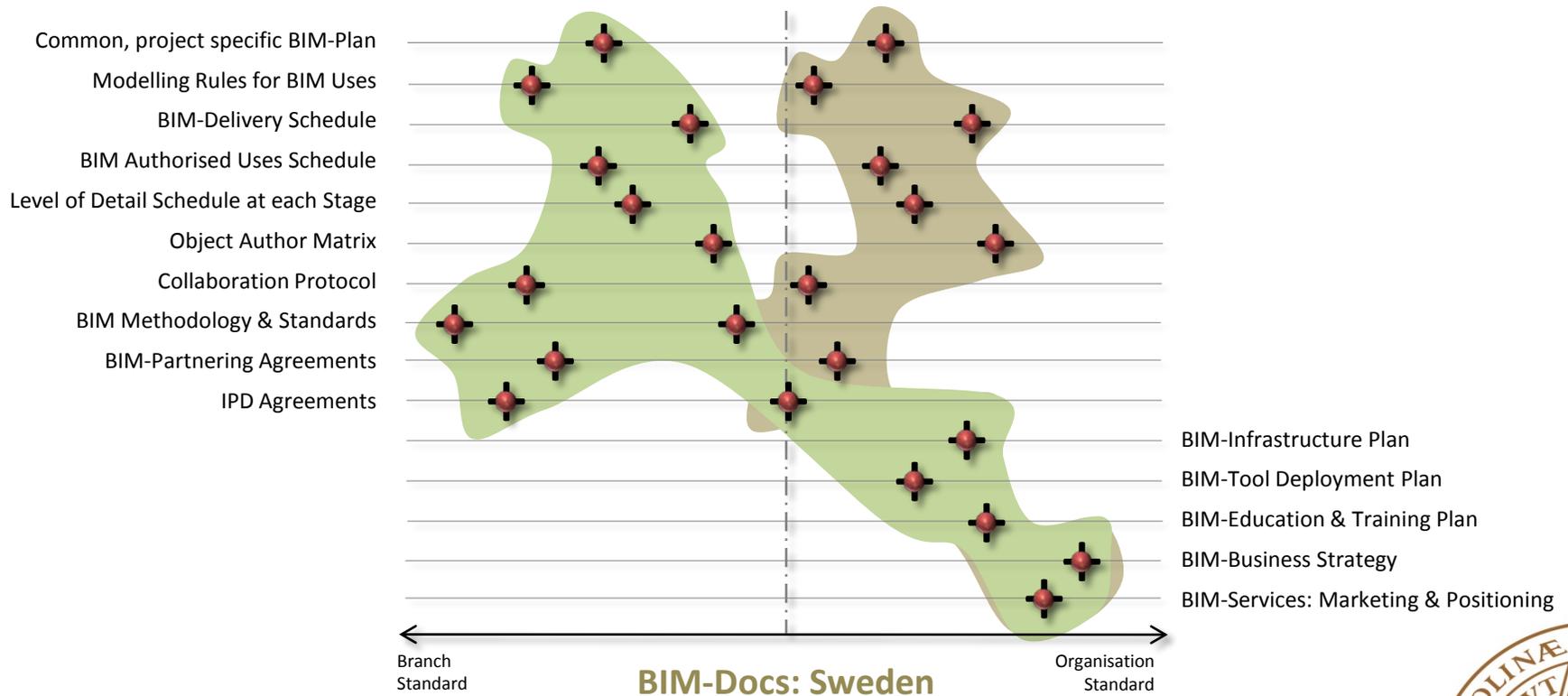
Branch Standard

(to lift implementation quality)

Concepts desirable to be:

Organisation Standard

(to maintain market competition)



Findings / Conclusions / Recommendations

- If one looks at **other nations**, on the one hand one has a **government mandate** and on the other a state driven demand for BIM together with **state driven national standards**.
- In **Sweden development and implementation of BIM** has been deliberately **left to the AEC organizations**.
- **Challenges exists** in aligning or harmonizing DK / SE guidelines as they have **emerged from different drivers & initiatives**:
 - BIM implementation & documentation in SE is largely market driven and the result of private initiatives. National guidelines are not specifically BIM orientated & don't have a broad audience.
 - DK guidelines are centrally driven and the result of public initiatives, have a broad audience, have the capacity to form the basis for BIM implementation.



Findings / Conclusions / Recommendations

- There are a number of key BIM supporting concepts emerging elsewhere that are hidden / missing from both SE & DK models.
- If one is to harmonize DK / SE working methodologies, **one must look further** than bips & BH90 as **BH90 appears not to represent** or reflect practice BIM adoption in Sweden.
- There is a **tendency** or sector culture to **optimize at individual / organizational level only**, not the entire process.
- In Sweden there is a need to:
 - **identify and shift** those BIM supporting concepts, (hidden in organization's BIM documents) **to Branch Standards**,
 - define which BIM supporting concepts should be **contract**,
 - identify BIM services market competition drivers.



Findings / Conclusions / Recommendations

- **Architects role in Sweden** - architects must seize the opportunity to lead and raise their game, win back lost ground with BIM-leadership.
- **Education:** lack of BIM-training, leadership skills.
- **National BIM strategy** needs to be better documented & promoted.
- **Comprehensive, multi-audience set of guideline** documents to enable teams to learn, work better together, make strategic project-based decisions.
- **Government mandate** required to strengthen legitimacy to the Swedish BIM-drive.



Det kärvar
mellan BI
och Byggnads s05



Safety Week
-kampanj för
hela året s18



Tio i topp
med smarta
miljöidéer s28

byggIndustrin

NYHETER OCH INSIKTER – VARJE VECKA I BYGGSVERIGES NYHETSTIDNING!



WSP:s vd Rikard Appelgren är bekymrad:

”Beställare måste
kräva att få bim” s07

JM vinner årets Leanpris s14

byggIndustrin
BYGGSVERIGES NYHETSTIDNING

NYHETER

Förstasidan | Nyhetsarkiv | Nyhetsbrev | Kontakta oss | Prenumerera | För prenumeranter

WEBB-TV LEDARE FÖRETAG EKONOMI NYHETER TEKNIK ENERGI & MIL



Den offentliga sektorn har ett ansvar för att driva utvecklingen mot effektivare byggprocesser med hjälp av bim, anser Rikard Appelgren, vd på konsultföretaget WSP Europé och Mats Lindgren, koncernchef på Kairos Future. FOTO JONAS EDENVIK

”Staten måste ställa krav på bim”

Nyheter Sveriges byggbransch riskerar att tappa konkurrenskraftiga krav på bim.



Future Output

BIM Implementation Road Map



Standards

- Office standards
- Project team standards
- National standards
- International standards



Delivery Specifications

- BIM use definitions
- BIM exchange information content
- BIM info delivery schedule
- BIM info authorship responsibility / ownership



Common Understanding of Concepts

- Model information levels
- Content definitions
- Classification interoperability (IFC / IFD)

3 Questions
to be solved
in every
project



Future Output



Interreg IV

BIM in a Öresund Regional Perspective - Harmonisation of Swedish & Danish Implementation Standards

2011



BIM-Info

BIM Implementering – Vägledning för Arkitekter och Ingenjörer

2011



Thank you!

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