



Country Report Denmark

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2017 Annual Conference of the European Society of Construction Law
University of Fribourg Switzerland

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1 Introduction

An inconvenient truth?

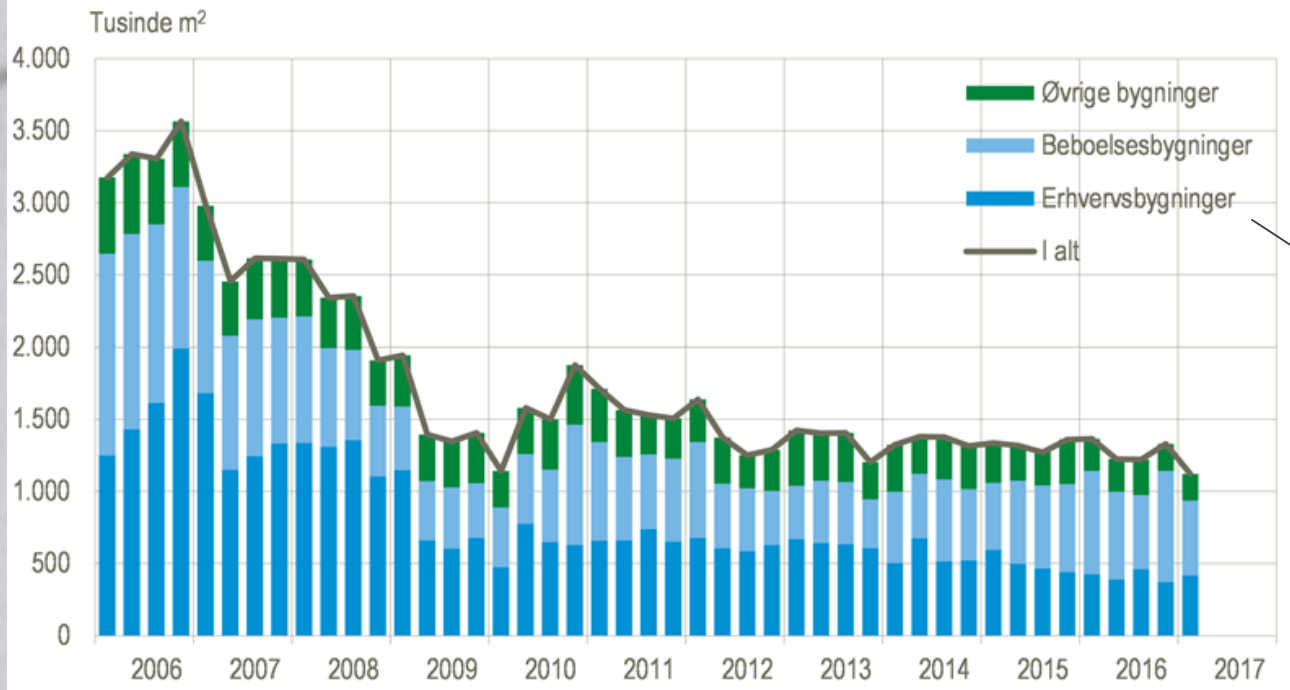
- BIM is not a **new** design tool or new at all
- BIM is much more than a design tool – is the "M" in BIM more **Management** than **Modeling**?
- BIM only has a **value** if project performance is increased – rate of implementation is heavily correlated with "ROI"



1 Introduction

Building activity in 1000 sqm (initiated, estimated and adjusted for seasonality)

Påbegyndt samlet etageareal, estimeret og sæsonkorrigeret



Light Blue = Residential
Blue = Commercial
Green = Other

2

BIM Developments in Denmark



2 BIM Developments in Denmark

- OECD report placed Denmark on 11th spot out of 13 countries with no efficiency improvement in the construction industry since 1986
- 2003 – Publication of the Government initiative, "The State as a Client – growth and efficiency in the Danish Construction Industry"

De 9 initiativer i byggepolitikken

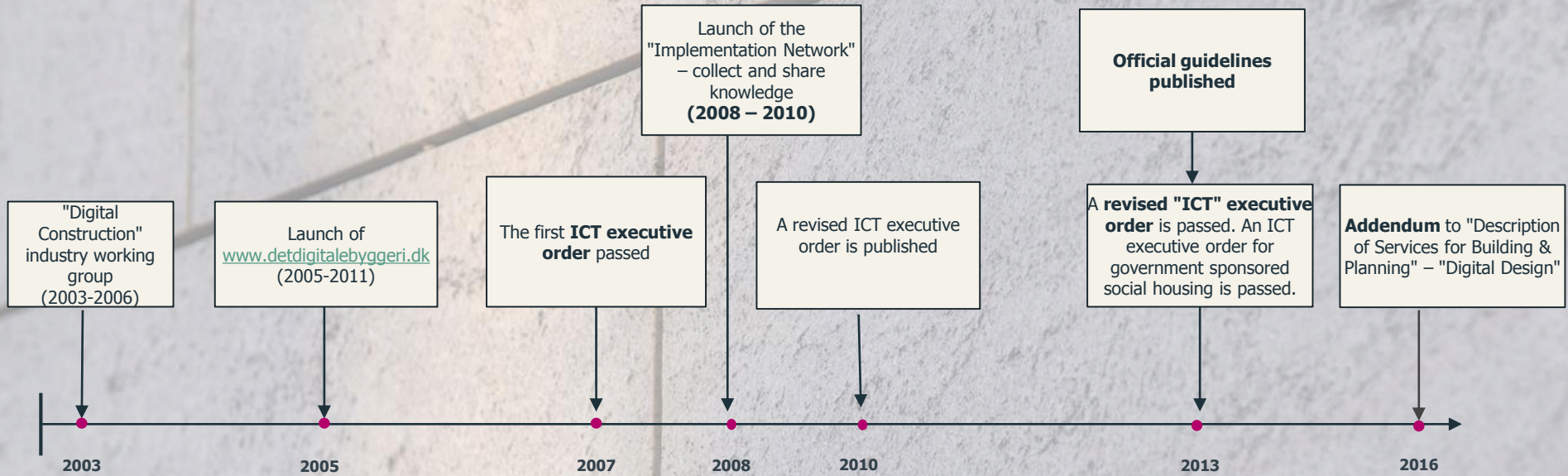
<p>Målsætning</p> <ul style="list-style-type: none">• Mere byggeri for pengene• Højere produktivitet• Bedre kvalitet	<p>De statslige bygherrer og arkitektur</p> <ul style="list-style-type: none">• Etablering af nye moduler om industrialisering af byggeriet på arkitektskolerne• Integrering af arkitektonisk kvalitet i partnerningudbud
<p>Øget brug af nye udbuds- og samarbejdsformer</p> <ul style="list-style-type: none">• Krav om systematisk vurdering af anvendelse af offentlige-private partnerskaber i byggeriet• Udarbejdelse af et centralt aftaledokument (AB-Partnering) til brug ved partnerningprojekter• Krav om systematisk vurdering af anvendelse af partnerning og/eller incitamentsaftaler i udbud af byggeri	<p>Fælles krav til IT-anvendelse i byggeriet</p> <ul style="list-style-type: none">• Fælles retningslinier for statslige bygherrers IT-krav• Digital byggesagsbehandling
	<p>Fælles krav om nøgletal og benchmarks</p> <ul style="list-style-type: none">• Krav til leverandørerne om nøgletal for tidligere byggearbejder med henblik på udvælgelsesdokumentation• Krav om nøgletal for det aktuelle byggeri med henblik på benchmarking af det pågældende byggeri



Foto: Peter Schüttler

2

BIM Developments in Denmark



2

BIM Developments in Denmark

2003 – 2006	Working group - industry stakeholders in a common effort to prepare uniform requirements for clients/employers of construction works
2005-2011	Launch of www.detdigitalebyggeri.dk (a dedicated homepage for knowledge sharing re digital construction in Denmark)
2007	The first ICT executive order published
2008-2010	"The Implementation Network" – industry initiative to collect and share knowledge re practical use of BIM (cases, guidelines, videos etc)
2010	A revised ICT executive order is published
2013	A revised ICT executive order is published. An ICT executive order for government sponsored social housing is published. Each order is supplemented by an official explanatory guide for implementation of the guide
2016	Addendum (revised) to "Description of Services for Building and Planning – Digital Design" prepared by the Danish Association for Consulting Engineers and Danish Association for Architects

2 BIM Developments in Denmark

Application of the ICT order(s) from 2013



Applies for publicly owned or financed building activity



The client/employer is obligated to fulfill the ICT requirements



Application of ICT requirements is mandatory and are "minimum" requirements

2 BIM Developments in Denmark



General requirements

- Coordination of BIM application
- Specs for use and handling of digital building objects
- Application of digital tendering



Requirements re **operations**

- Digital documentation
- Digital hand-over protocols
- Contract-based BIM specs.



Requirements re. **supply-side**

- Digital communication and use of project web
- Application of BIM for all involved
- Inclusion of BIM and use of visualisation in design contests

3

BIM trends in Denmark



3

Case studies – status in 2012/2013



Report from 2012 prepared by DTU (requested by the Danish government). Based on a number of cases depending on project size and characteristics of the parties involved.

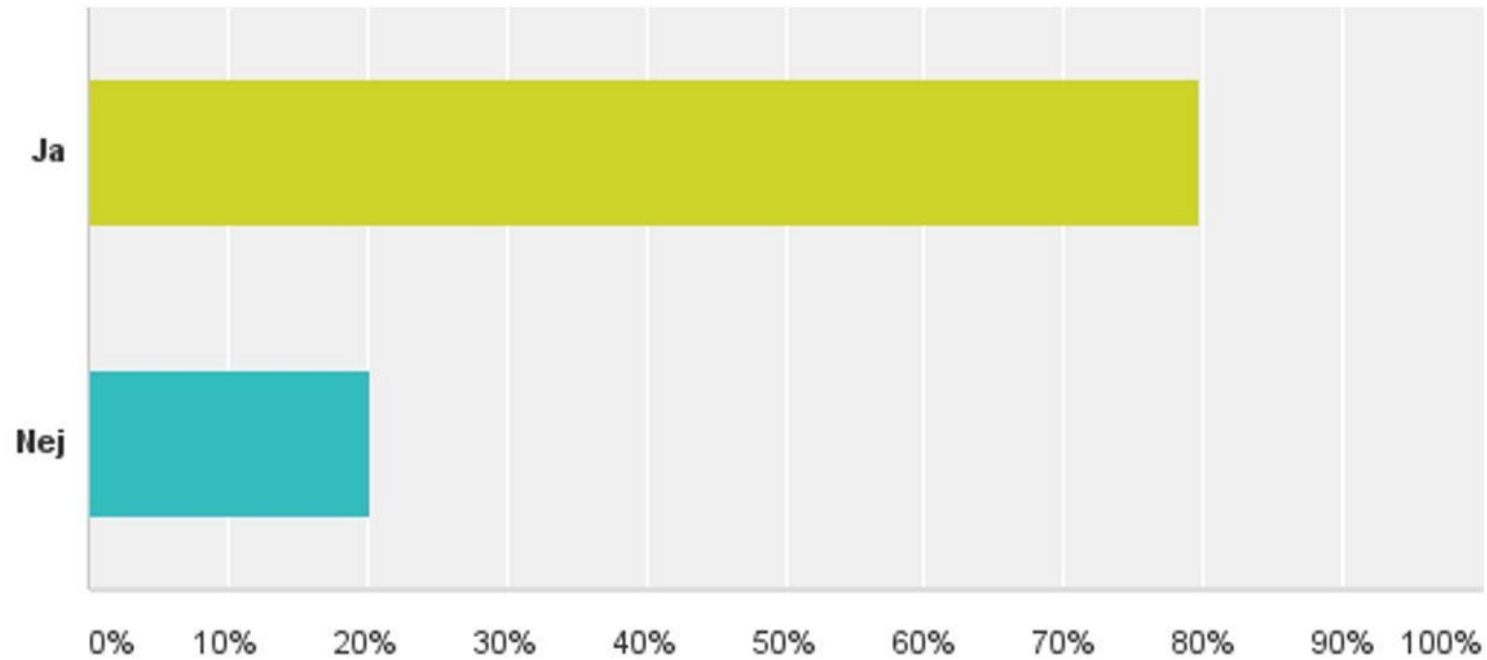
Findings (some of them):

- "Hybrid-models", i.e. an incremental transformation from 2D to 3D. Simple model-based activities are the starting point, i.e. collision control and visualization
- BIM leads to a higher degree of integration
- ICT regulation is an important incentive for BIM implementation
- The cost of BIM is not related to software, but to change of working processes
- More consistent and coordinated design/engineering
- Decrease of tender prices as a result of more efficient construction sequence

3

Latest trends in Denmark

"Do you work based on BIM"?



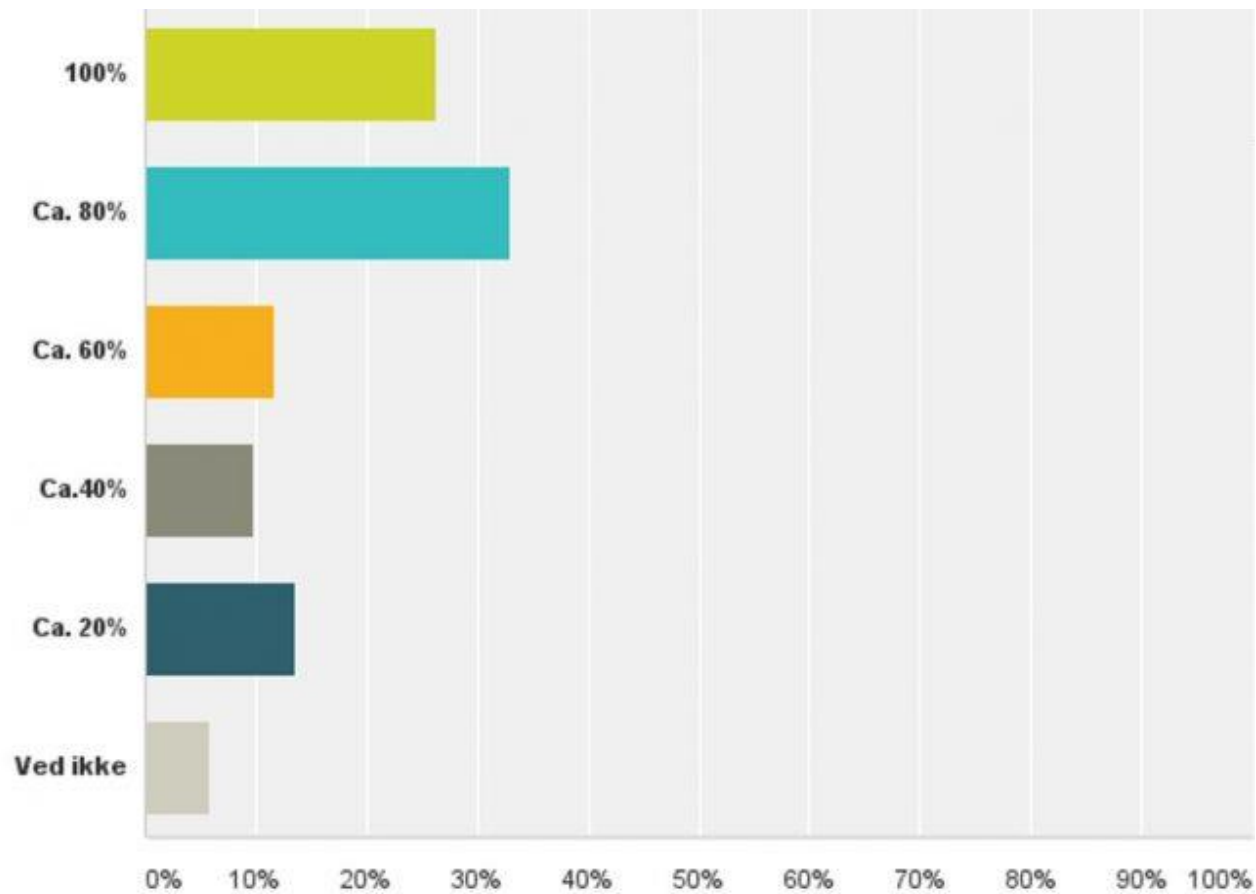
Note: BIMEquity is private initiative, www.bimequity.dk; Analysis is from May 2016

3

Latest trends in Denmark



How much of your work is BIM based (in percentage)?



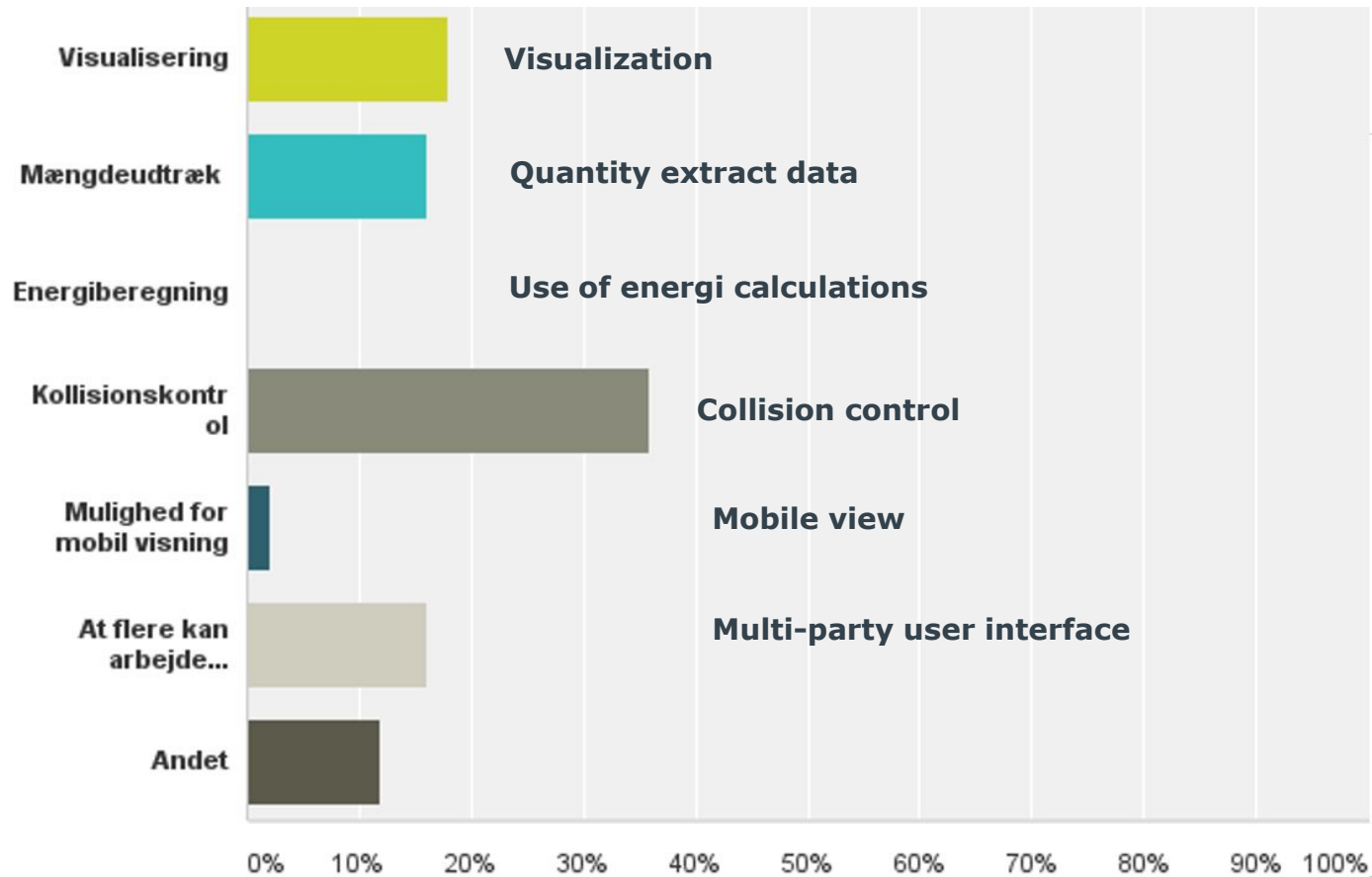
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3

Latest trends in Denmark



What creates the biggest value for you with BIM?



Note: BIMEquity is private initiative, www.bimequity.dk

4

Legal implications



4 Legal implications

- Liability of ICT-coordinator/leader
 - Form of liability?
 - Primary – secondary?
- Liability for objects
 - Standard objects
 - Objects developed by the engineer/architect
 - Objects developed by supplier/manufacturer
- Shift in liability?
 - Traditional roles vs. new roles
 - Entity based vs. collaboration based
 - "Inter-party" liability
- Liability for optimization and redesign
- Ownership of model, objects etc.

5

Status - Denmark



5 Status - Denmark





Q&A

Thank you

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