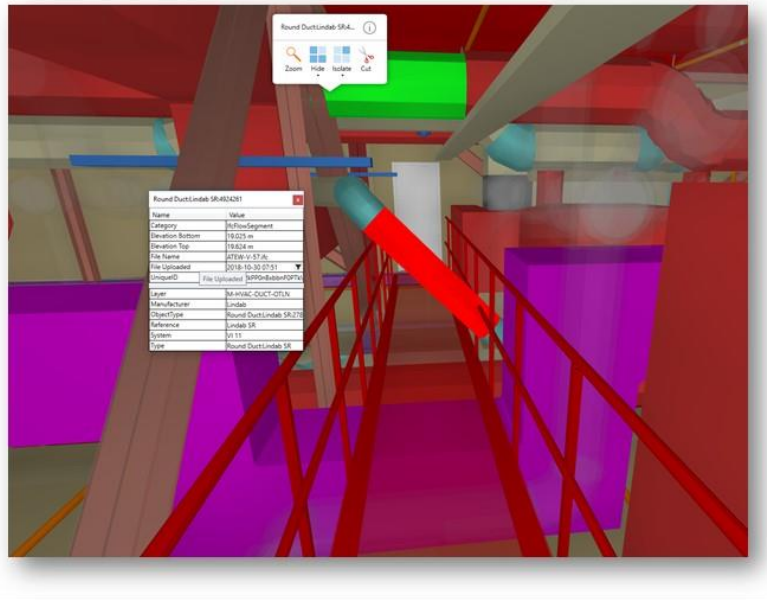
Automated Quality Control

IFC as driver for better quality in projects

Copenhagen Airports CPH

buildingSMART International

The Reason



1. Major errors in building models, throughout the phases of the project.
2. Bad communication of errors and their assigment
3. Construction teams is “misusing” the Asset Managers in CPH

The BIM initiative

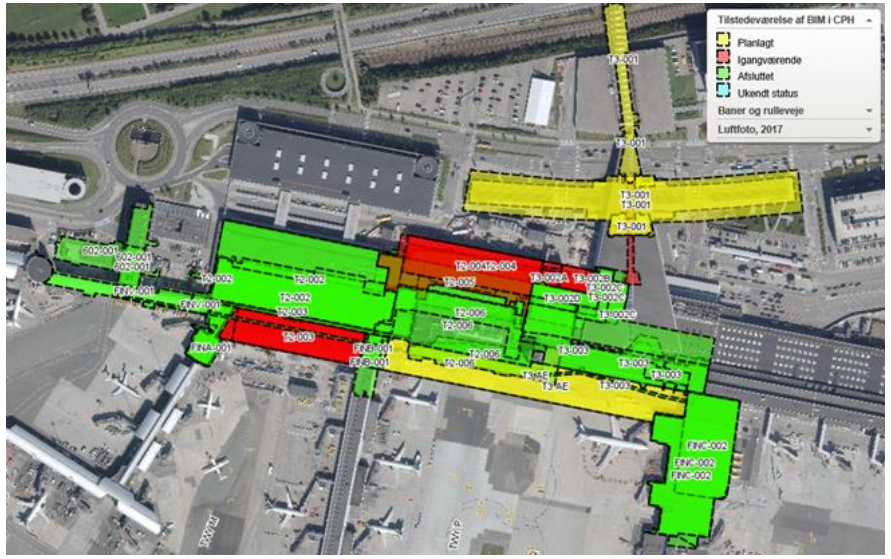
Since 2016 every new project is a BIM project

We have already proven a saving of 4% of the project cost

Every project within a BIM area is a BIM project

More than 60 new projects every year. Much collabortion

Ref	Type	Format
9.1	BIM modeller	IFC BCF Solibri fællesmodel (smc) DWG
9.2	El-tavler	See Electrical - Caddy++ (sep) jf. Tillæg A E-Plan, kun for Bagageprojekter jf. Tillæg C
9.3	2D CAD	MicroStation (dgn) eller AutoCAD (dwg)



The Demands

More than 1200 demands in HVAC, Electrical, Fire, Runways, etc.

30% of those demands are abled to be created as rules

Niras as company to help our Asset Managers to create better and clearer demands

NIRAS

Mechanical Assets

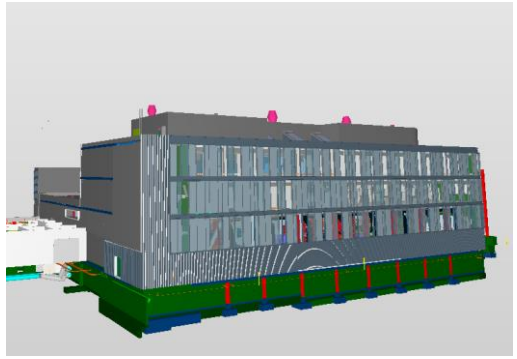
Fire

Buildings

HVAC

Electrical

Material
Dimensions
Functionality
Quality



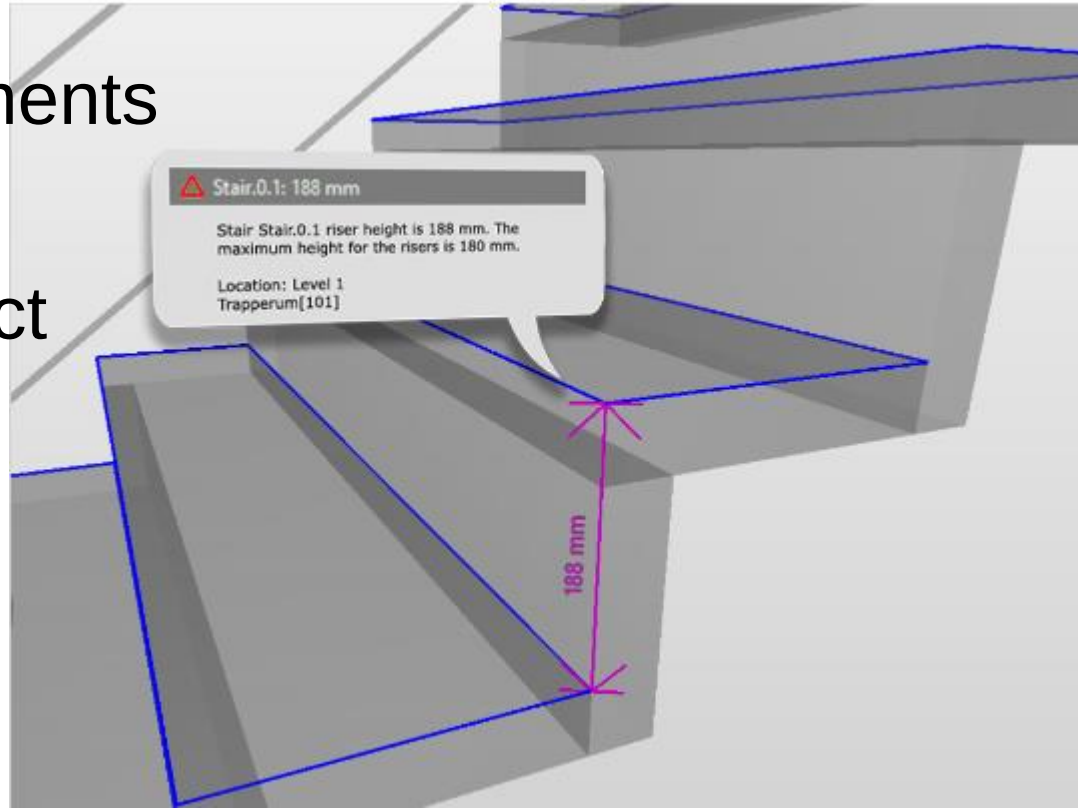
The benefit

A set of rules that work only on IFC files

Demand BCF as a tool to exchange comments

Savings on the first project 4xROI

Much better IFC files throughout the project



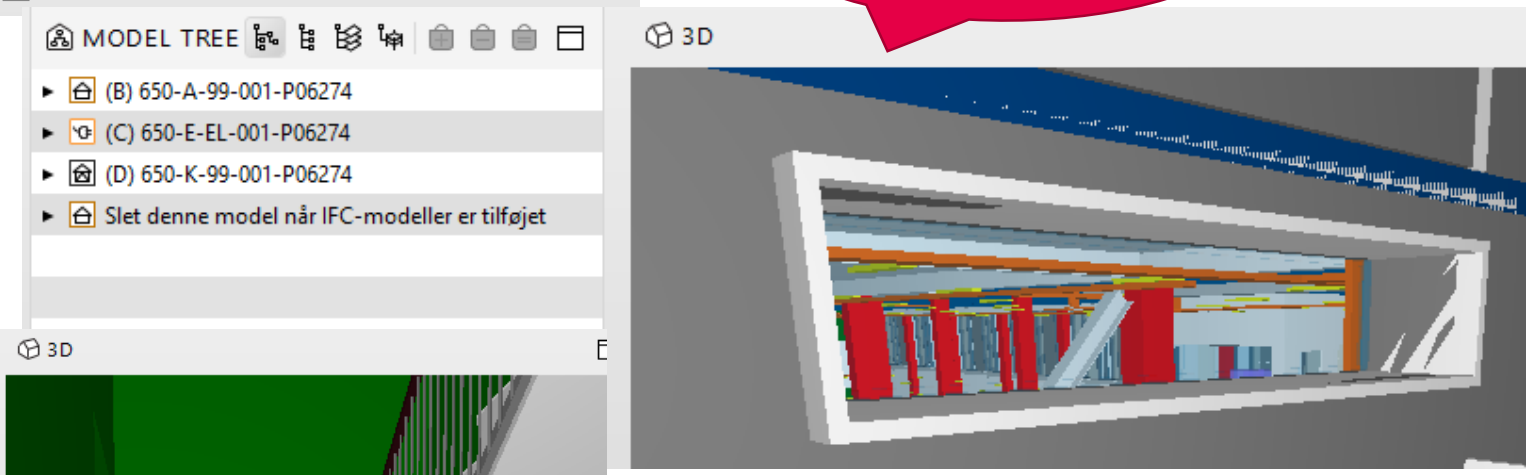
"The Digtial rules have already been used in the preliminary phase. At least two potential errors was found, creating savings for estimated 400.000 $"

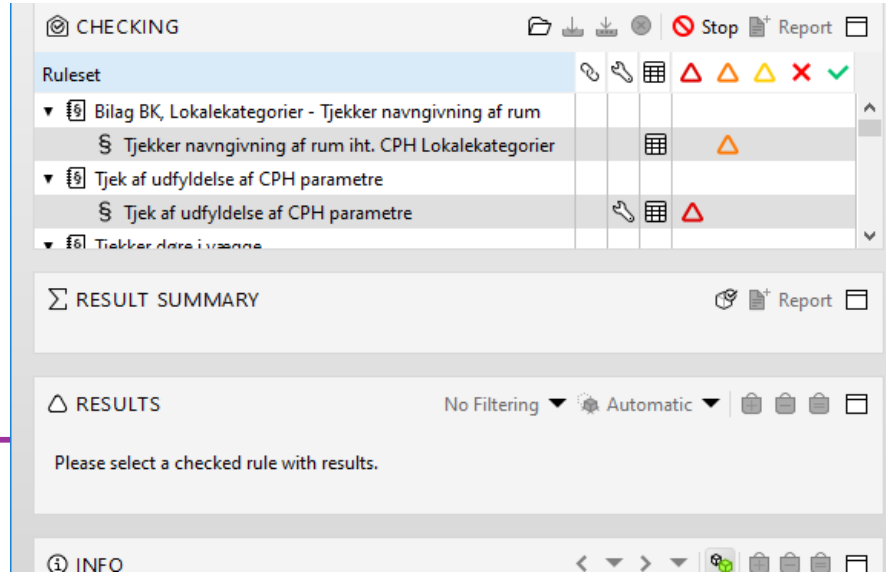
Britta Nissen – Head of Asset Managment

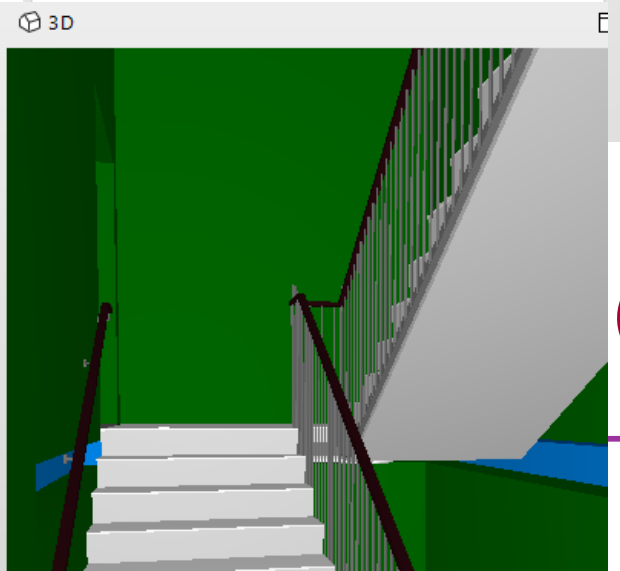
How Does it work? - Simple

"Erase this model when IFC models is added"

"Add IFC Files"







"Run the check"

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A set of rules that work only on IFC files

List of what is checked

(BYG v1.0 8.8.1)

Summery

Result

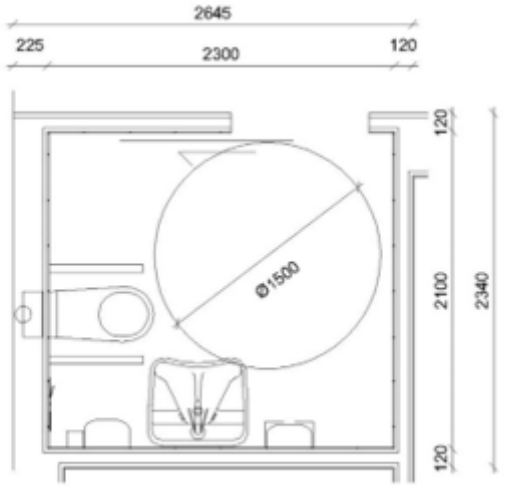
Info

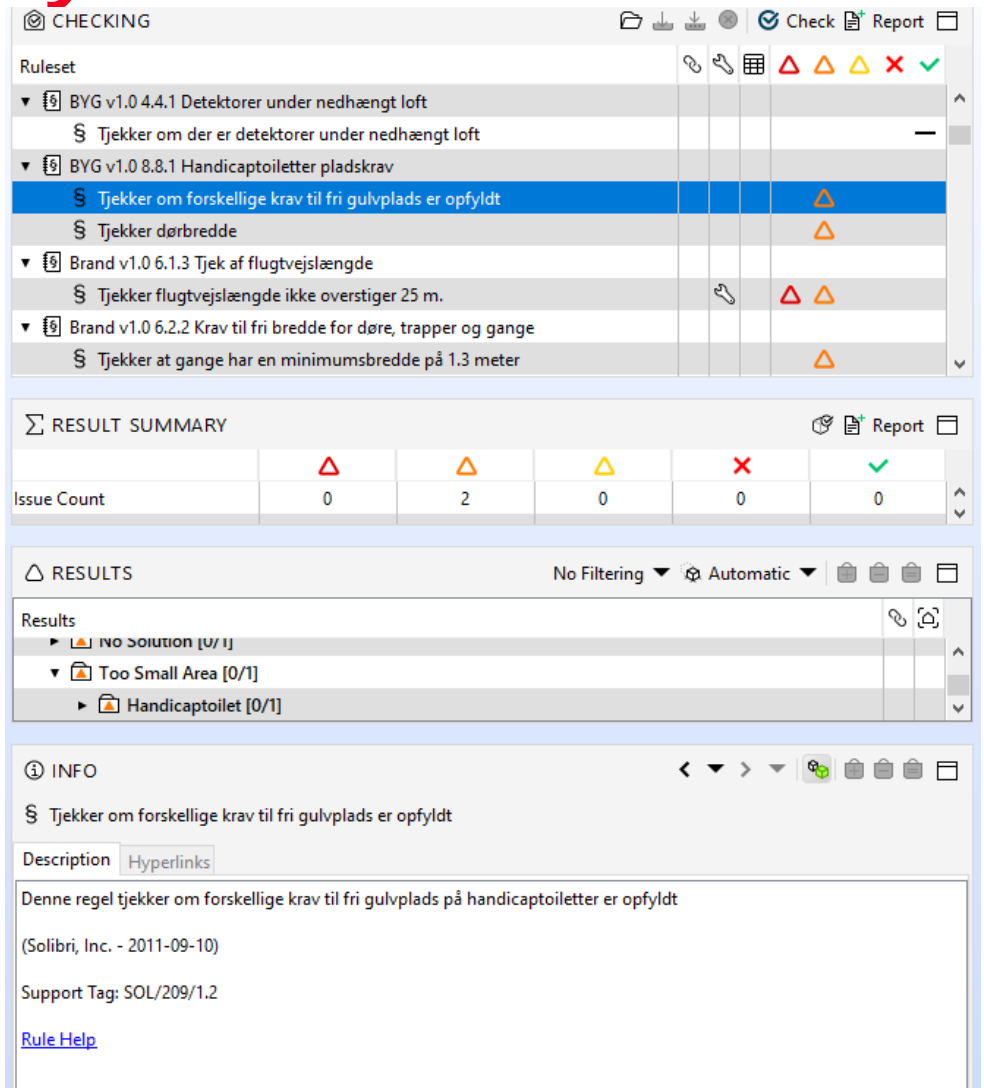
8.8 **Handicaptoiletter**

Krav nr.	Mulighed for dispensation	Kravbeskrivelse.
8.8.1		Handicaptoilet placeres med a
8.8.2		Her skal der være spejl over h
8.8.3		Der udføres skab til rengørinç
8.8.4		Låge til skabet skal udføres m Handicap toilet

Figur 9 - Handicap toilet

Vejledende mål: 2300x2100 mm

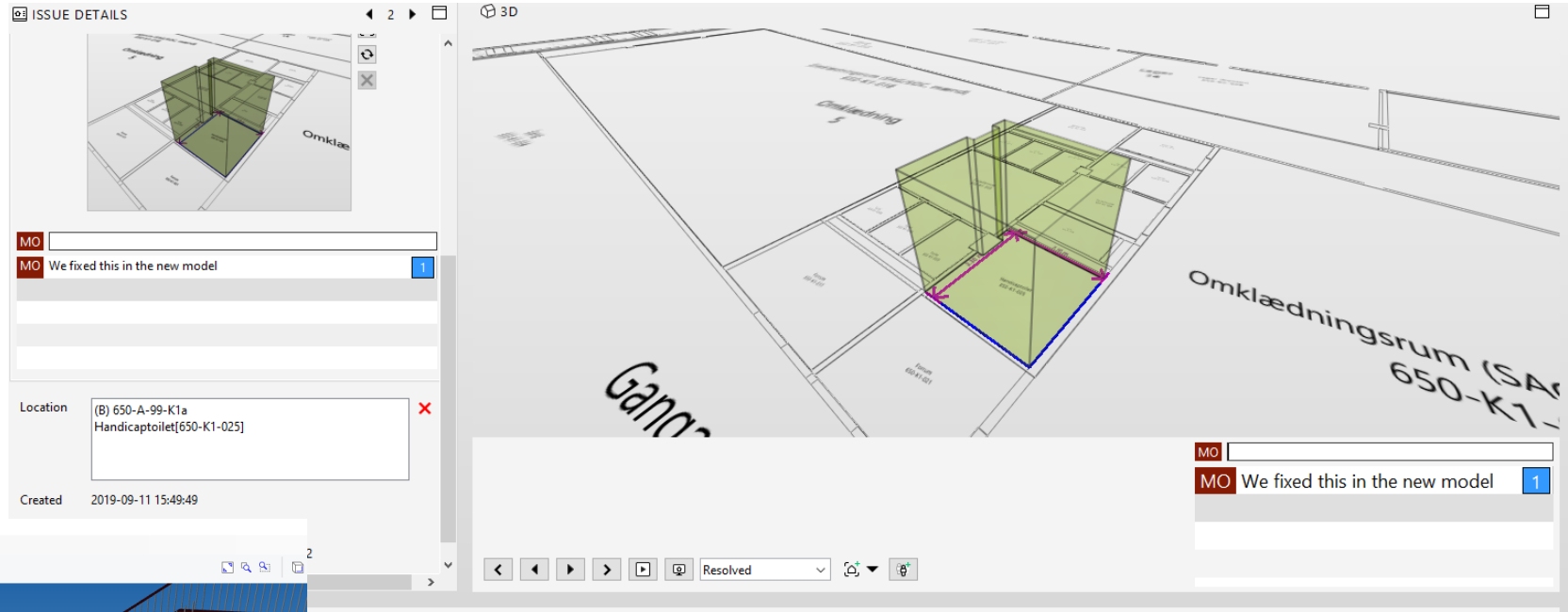


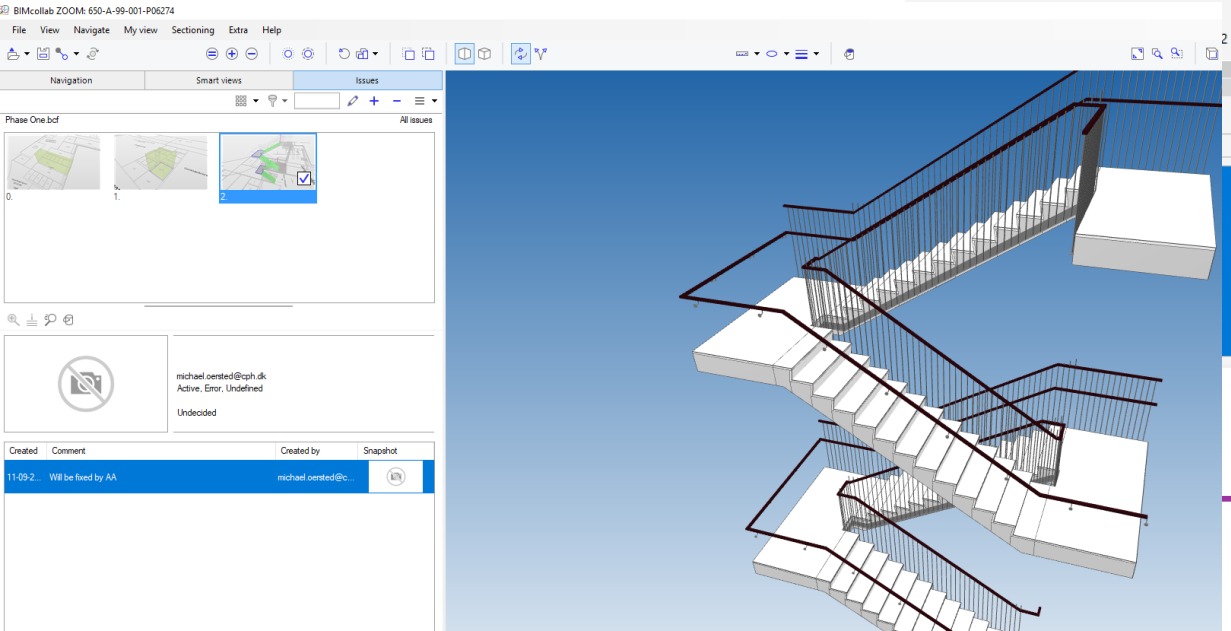


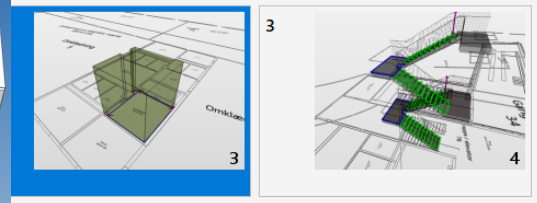
Demand BCF as a tool to exchange comments

BCF links into a lot of software

The neutral format for issue management







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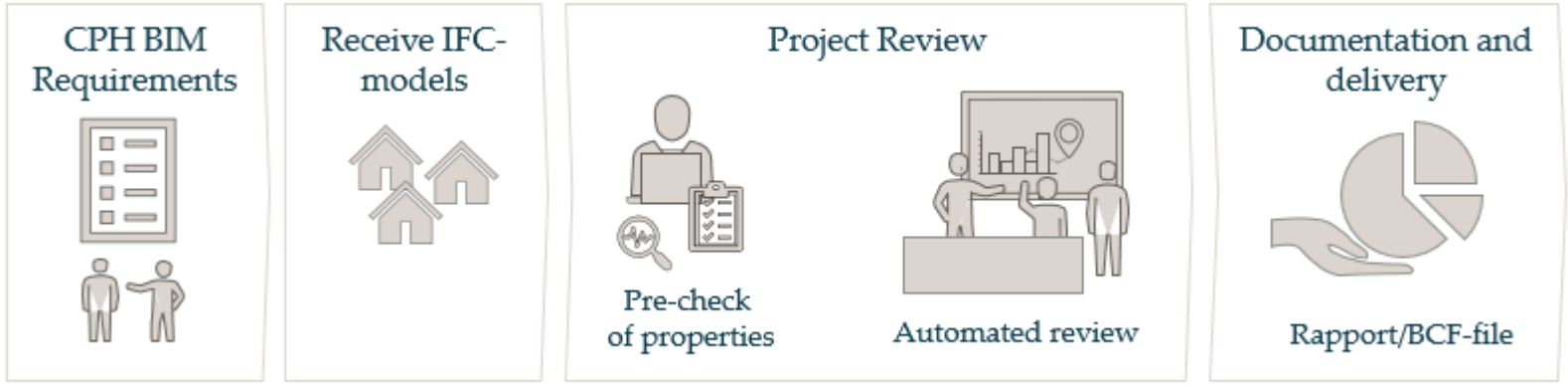
Much better IFC files throughout the project



Using the CPH parameters

Everyone benefits from better IFC files

Review reporting through BCF

"The digital solution is able to run through the entire project in seconds. This means that errors are reduced before the construction starts"

Morten Stig Baden from NIRAS

Morten Stig Baden

Konsulent

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The Next step

Working with the 5 largest building owners in Denmark

A national rule system, based on national building regulation

Use standardized parameters

Creating awareness about the benefit of open standards

Supported by the Danish government

"It is to be assured that a digital building project is supportet by open formats and neutraltechnologies"

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Questions ?

Why, and to what extend should the building owner get involved in the process?

Quality and fulfilling the requirements, is that something we should pursue more as a building owner?

What experiences do we have in “on-site” quality control og the delivered project, in term of not only asset but also functionality?