hogeschool **Windesheim**
Dichter bij jou

BILT Academy

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*The Exchange Gap
between BIMmodels and
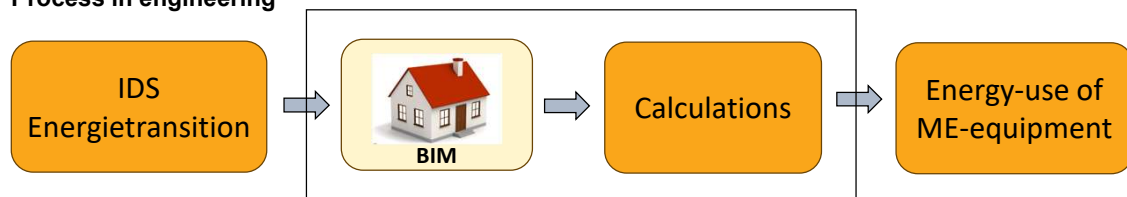energy calculation software*

Data in BEMmodels

BEM = Building Energy Model

Is a BEM equal to a BIM?
Why this question? Because we like to use one model as a basis for several purposes → a BIM

Process in engineering

IDS Energietransition	→	BIM	→	Calculations	→	Energy-use of ME-equipment

We want to extract data from the BIM to the calculations

The data comes from the **IDS = Information Delivery Specification,** which describes the desired data and dataformat (!)

The results of the calculations are used to design the energy-installations

BIMmodel; definitions

3D-model
Only geometry

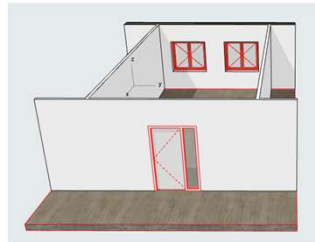| Geometric model **without** deliberately applied information |
| --- |

BIM-model
Carrying data

Geometric model **within** deliberately applied information

Objectmodel

Objects will lead to spaces, but spaces in such a model **are not connected to each other**.
The objects can be much larger then one room and the other way around.

Other difficulty: while looking to the boundaries only the first layer of the wall (floor, etc) will be found, so divides with more layers are not possible to read. The **input of energic calculationsoftware** is **not capable to handle** this.
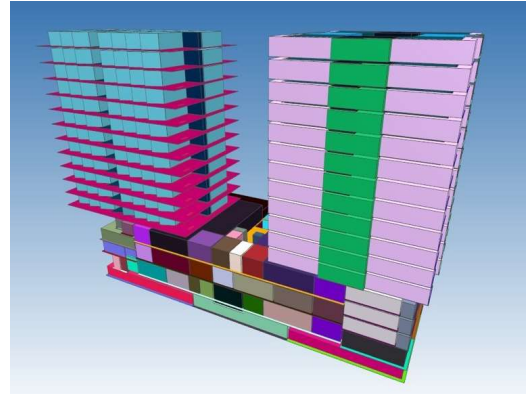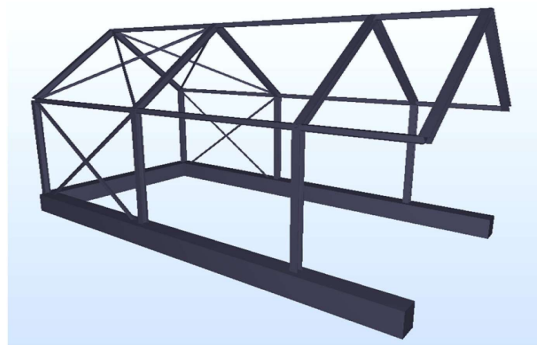
Spacemodel

Spaces in this model do have a **related connection**, the boundaries are **not dimensioned** yet, but do have **properties**.

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Designscheme versus model
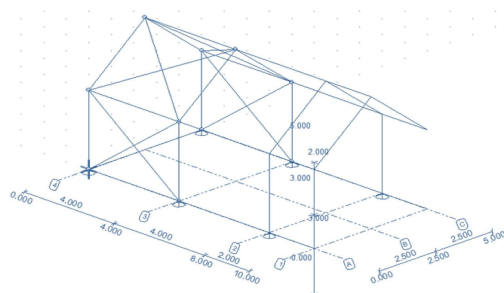
Mostly a designscheme is a spacemodel or a vectormodel.

Architects: do positioning spaces   *Constructors:* Loads and strengths   *Building Physicians*: behaviour of spaces and boundaries.

Corresponding fact: all models are **schematic** with **related elements (vectors, faces or spaces)**

BIM: objects are definitive (geometry) and there is no related connection (although: there is a connection in geometry)

⟹ **Is a BIM equal to a BEM?**   **Is a BIM suitable for the designphase?**

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Models per phase and per discipline

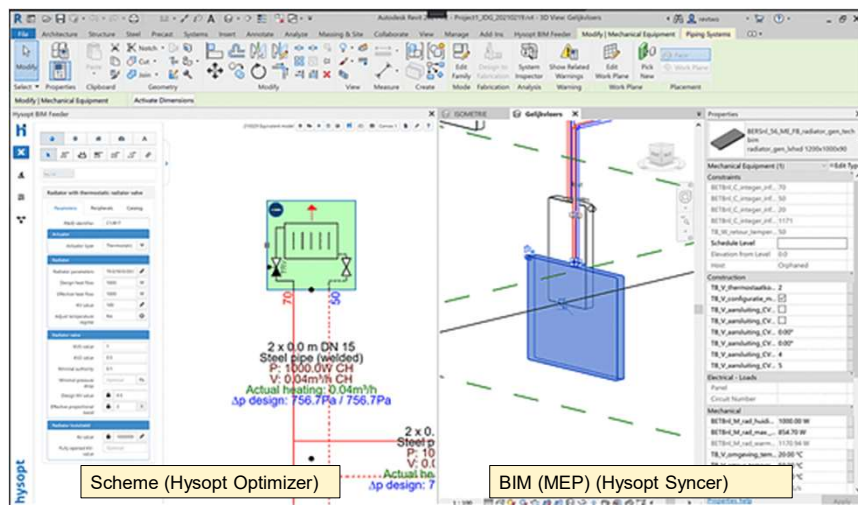Different ways/models are used per phase and per discipline *source: Energetisch Beter met BIM (2024)*

Phase	Architect	Specialist	Contractor	Client, maintenance	Data management
Predesign	**Formstudy** **Spacemodel**	**Spacemodel**			
Preliminary design	Ruimtemodel, 3D-model	**Spacemodel** **Performancemodel**			
Definitive design	3D-model	**Performancemodel** BIMmodel	BIMmodel		
Execution		BIMmodel	BIMmodel		
Use and maintenance				BIMmodel**	**Information-model**

*   per adviseur (bouwfysica, constructie, installatie) kan het modeltype verschillen.

** alleen als input gebruikt, kan ook een IFC-model zijn

Formstudy and Performancemodel are monodisciplinairy models → no data-exchange needed

Spacemodel and BIM are multidisciplinairy models → data-exchange needed

Disclaimer: Uitgangspunt dat een model van de architect geen gegevens bevat en dat een aannemingsbedrijf altijd opnieuw begint met modelleren is niet 100 % correct, maar is nog steeds wel de gebruikelijke gang van zaken, blijkt uit gesprekken.

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Ontwerpscheme versus model

Topologic.app → **Dynamo**
Grasshopper
Blender

Suffisticated knowledge needed

Suffisticated knowledge: seems to bee **evident**. But in the process **many disciplines** are involved, of which some of them do not make **models as core-business**

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Ontwerpscheme versus (MEP)model

Scheme (Hysopt Optimizer)   BIM (MEP) (Hysopt Syncer)

As an example of a designtool, however there is still no connection with the buildingBIM

Conclusions: the GAP

- BIMs are not suitable for Energy Calculation: a BIM is not a BEM!
- Building information modelling is mostly used (and most suitable) for execution: Are BIMs suitable for the Design Phase?

Questions?

BILT Acedemy; Introduction BIM