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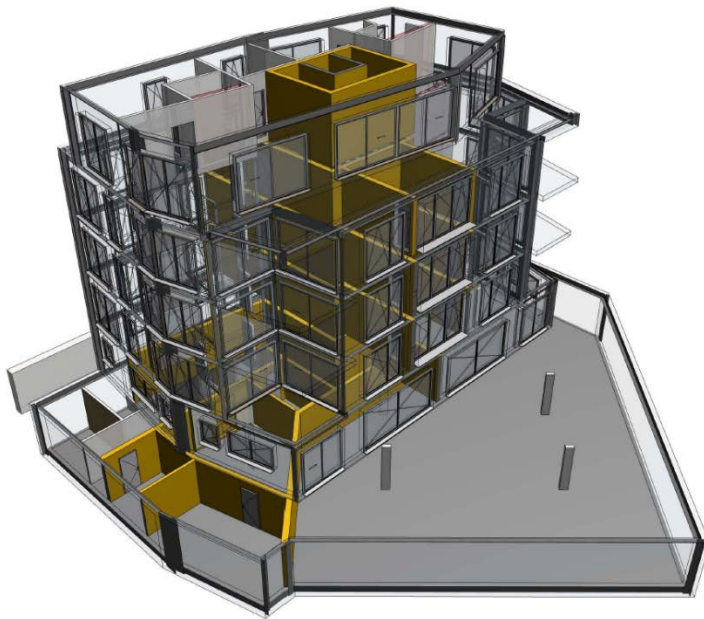
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BIM – Building Information Modelling
People, processes, technology and methods

Manfred Huber, FHNW, manfred.huber@fhnw.ch

Source: aardeplan

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Agenda

Agenda

- What is not BIM?

- People

- Methods

- Processes

- Technology

- Challenges

- Conclusion

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What is not BIM?

Source: aardeplan

At the front ok - …

Souce: Bundesarchiv (D)

... – and behind, there's nothing

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BIM is more than 3D-Modelling

- The "G" alone, the 3D-geometry isn't the core of BIM.

- The "I", the information is missing.

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BIM is not a software

… or a tool.

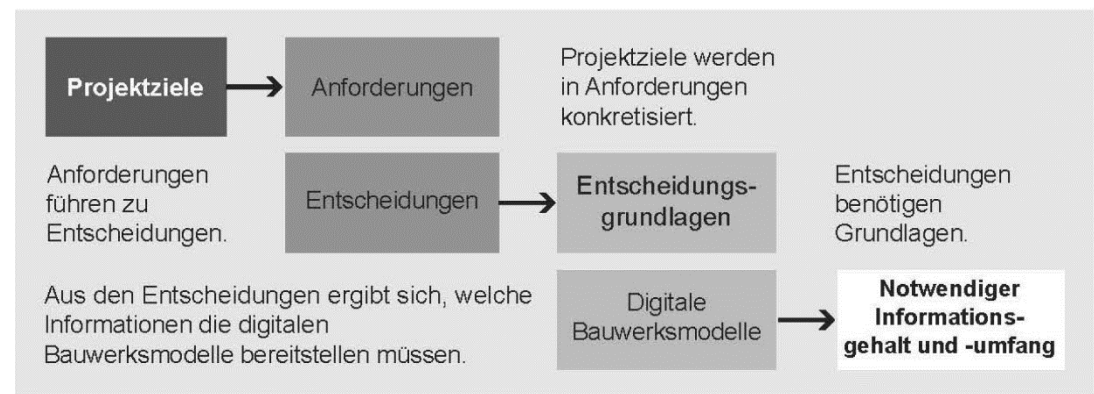

Source: ban993HAO

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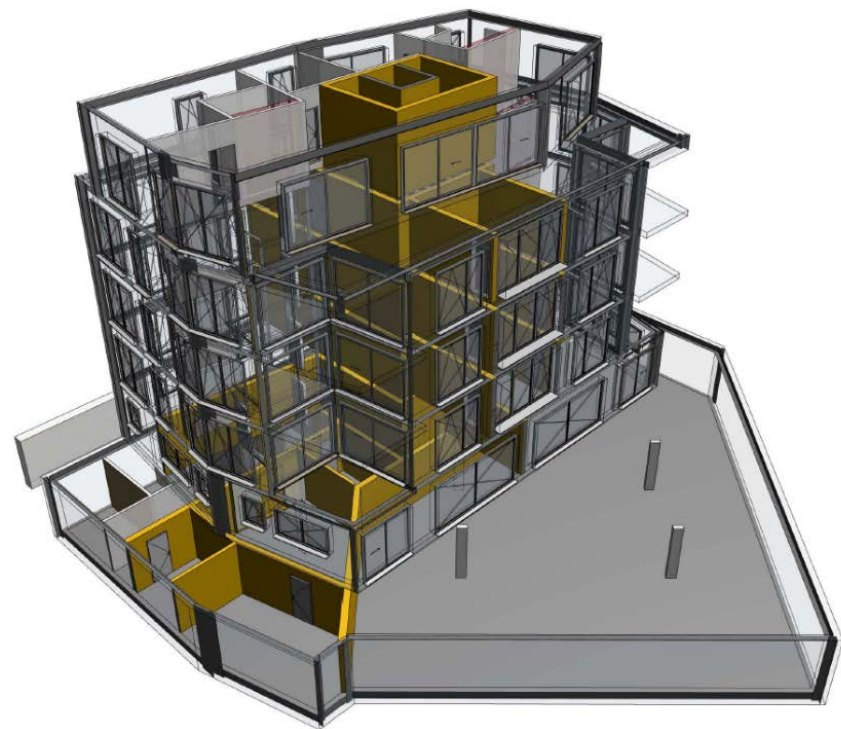BUILDING SKINS

BIM is…

… a method:

"Virtual design, construction and operating, which combines the use of digital building models and appropriate organisational forms and processes."

Source: SIA 2051 BIM

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A method…

… which supports <u>interdisciplinary collaboration</u> between stakeholders by using digital building models.

Source: aardeplan

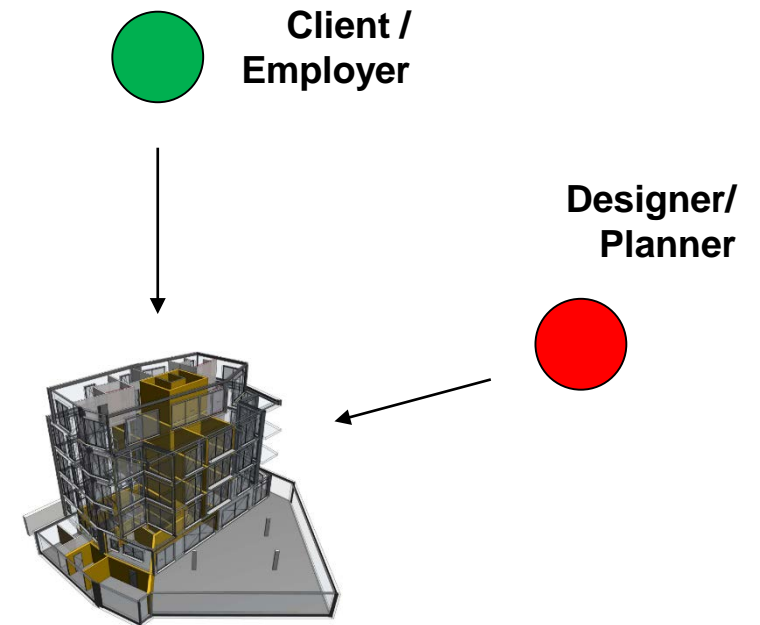University of Applied Sciences and Arts Northwestern Switzerland
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1. People

BIM is more than the digital collaboration between clients and planners

Client – Designer/Planner

**Client /
Employer**

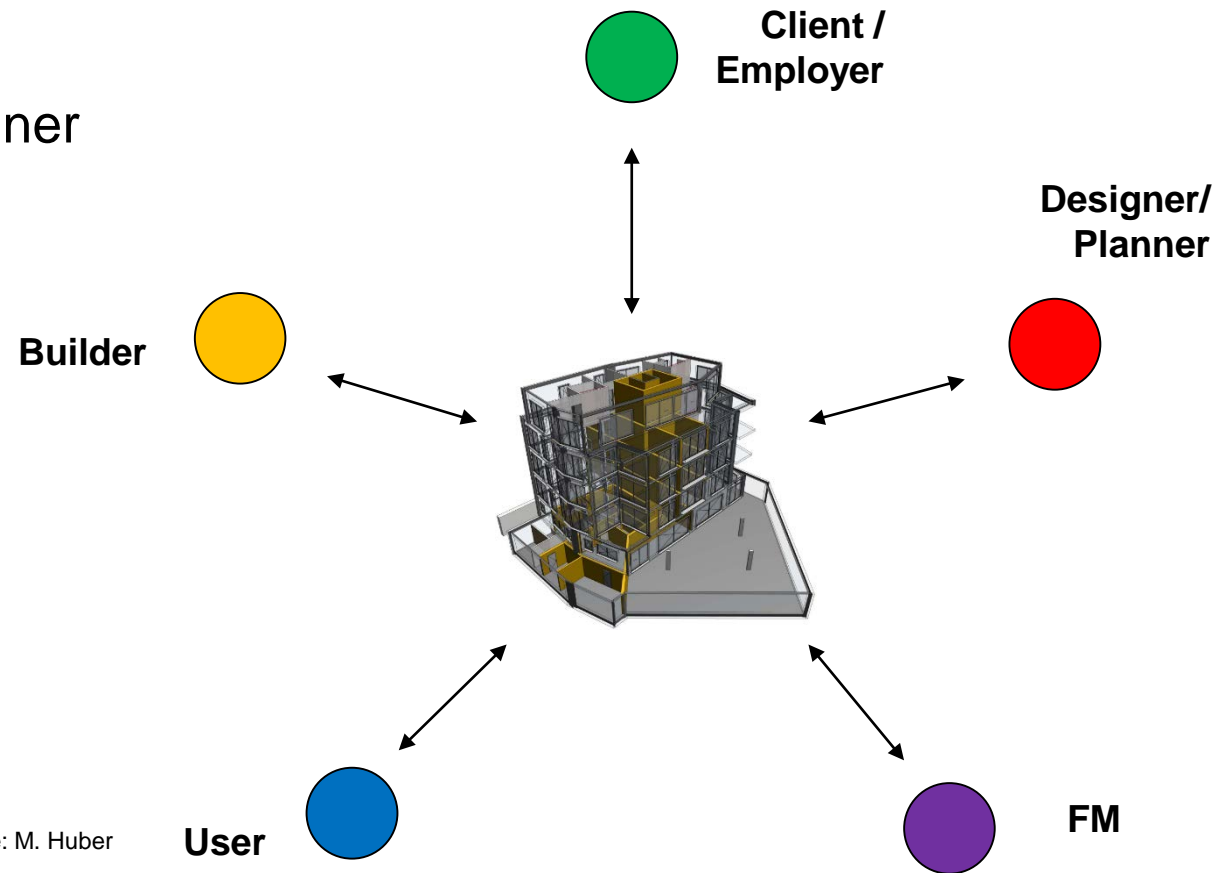**Designer/
Planner**

Source: M. Huber

BIM gets together a bunch of stakeholders using a common method

Client – Designer/Planner

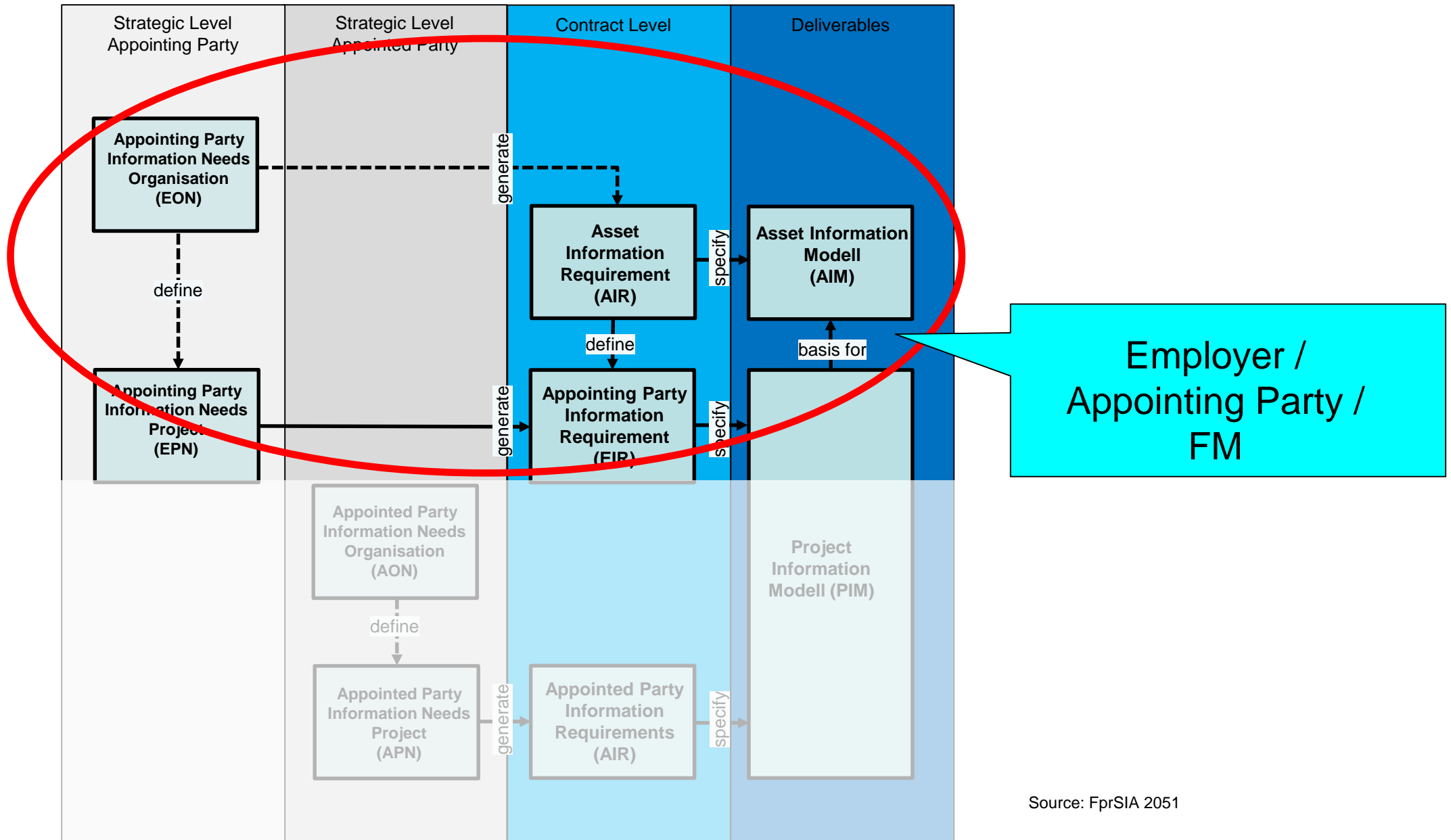Designer/Planner – Designer/Planner

Designer/Planner – Builder

Designer/Planner – User – FM
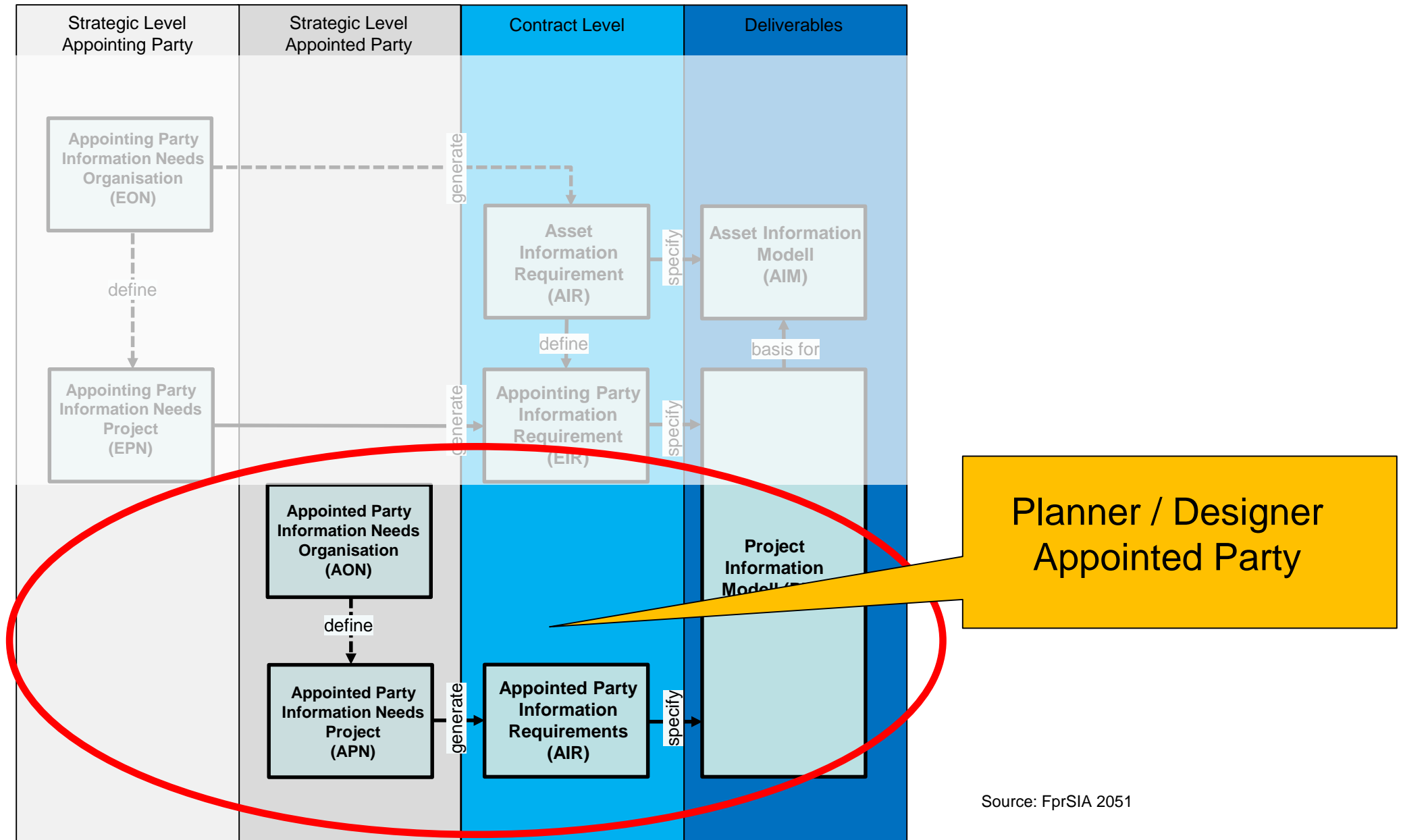

Client /
Employer

Designer/
Planner

Builder

User

FM

Source: M. Huber

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And each of them, has their own needs and requirements

The appointing party side as the appointed party side.

Strategic Level Appointing Party	Strategic Level Appointed Party	Contract Level	Deliverables

Appointing Party Information Needs Organisation (EON)

generate

Asset Information Requirement (AIR) — specify → **Asset Information Modell (AIM)**

define

Appointing Party Information Needs Project (EPN)

define

generate

Appointing Party Information Requirement (EIR) — specify

basis for

Employer / Appointing Party / FM

Appointed Party Information Needs Organisation (AON)

define

Project Information Modell (PIM)

Appointed Party Information Needs Project (APN)

generate

Appointed Party Information Requirements (AIR)

specify

Source: FprSIA 2051

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Strategic Level Appointing Party	Strategic Level Appointed Party	Contract Level	Deliverables

Appointing Party Information Needs Organisation (EON)

generate

define

Asset Information Requirement (AIR)

specify

Asset Information Modell (AIM)

define

basis for

Appointing Party Information Needs Project (EPN)

generate

Appointing Party Information Requirement (EIR)

specify

Appointed Party Information Needs Organisation (AON)

define

Appointed Party Information Needs Project (APN)

generate

Appointed Party Information Requirements (AIR)

specify

Project Information Modell

Planner / Designer Appointed Party

Source: FprSIA 2051

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Source: FprSIA 2051

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2. Method

To achieve the goals with the BIM Method, it needs more than technology

It needs people who are using the right processes.
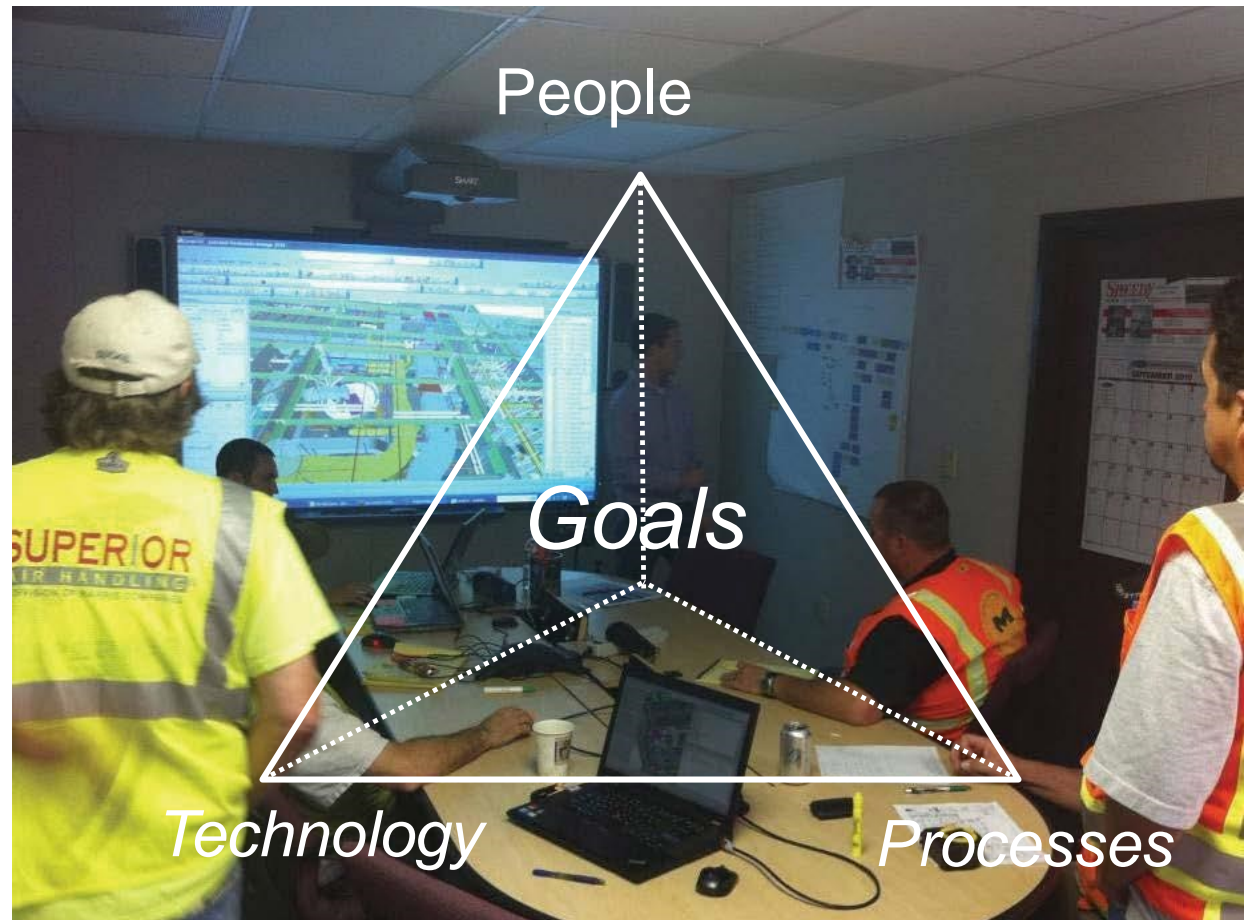
The goal is …

… at the beginning

Source: pixaby, Claudia Wehrli

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…. and the goals should be fixed in a common way at the beginning.

Source: pixaby, Henning Westerkamp

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Get the goal

And to achieve a goal, it needs **activities** and
«tools/aids» (information).

Source: pixaby, Simon Steinberger

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3. Processes

BIM Process: A troika with goals, … .

Goals

- Requirements
- Metrics

Source: M. Huber

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BIM Process: A troika with goals, content … .

Goals
- Requirements
- Metrics

Content
- Information
- Depth/Width

Source: M. Huber

BIM Process: A troika with goals, content and quality.

Goals
- Requirements
- Metrics

Content
- Information
- Depth/Width

Quality Assurance
- Coordination
- Communication
- Change management
- Session Mode

Source: M. Huber

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And each of them is fixed in the BIM Execution Plan
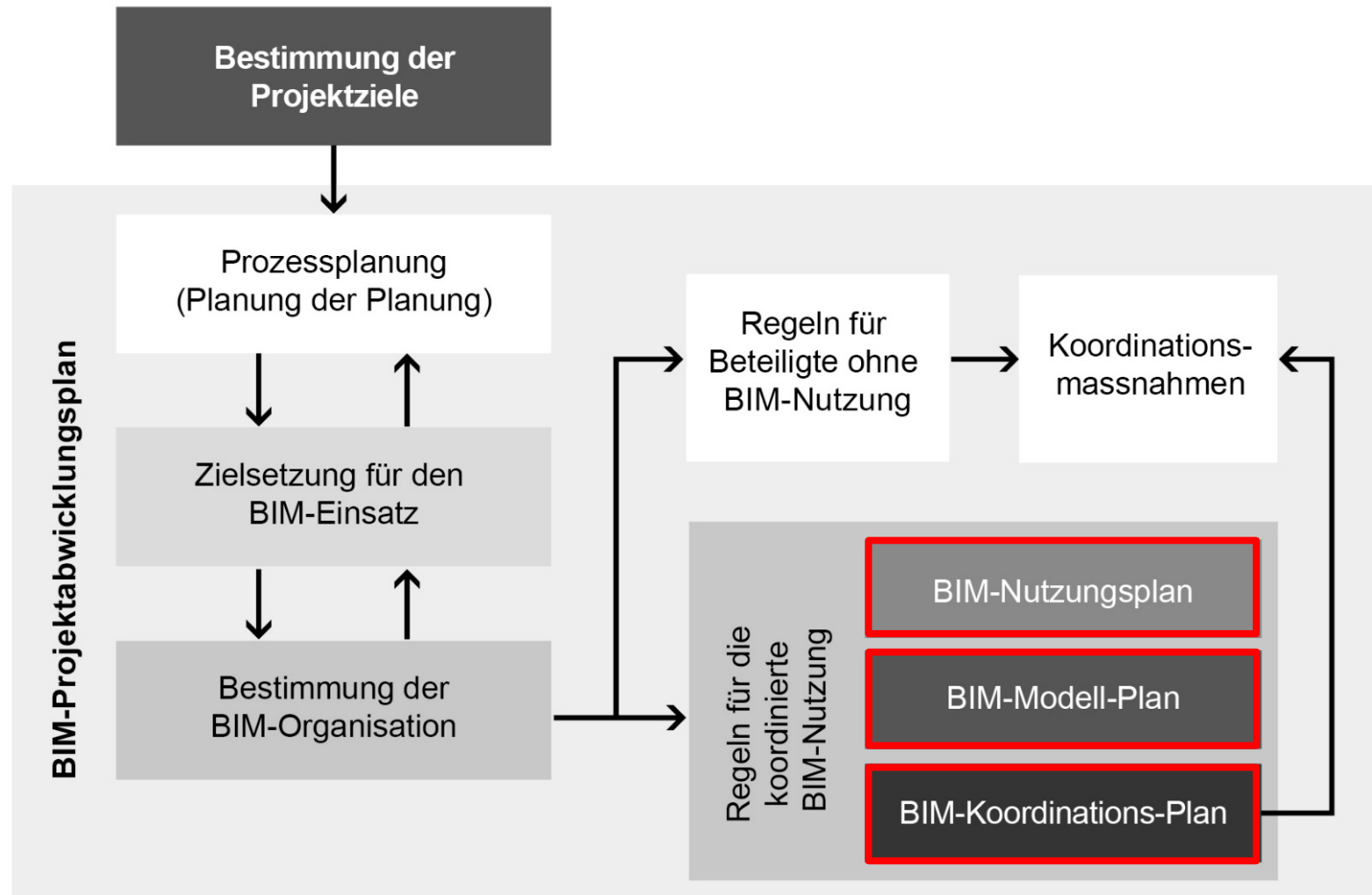
Source: Grundlage prSIA 2051

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4. Technology

BIM is not a software

… or a tool.

Souce: ban993HAO

BIM is not a software

… or a tool.

But we need digital tools to
execute projects with the BIM
method in an efficiency way.

Souce: ban993HAO

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e.g. architect

e.g. building skin designer
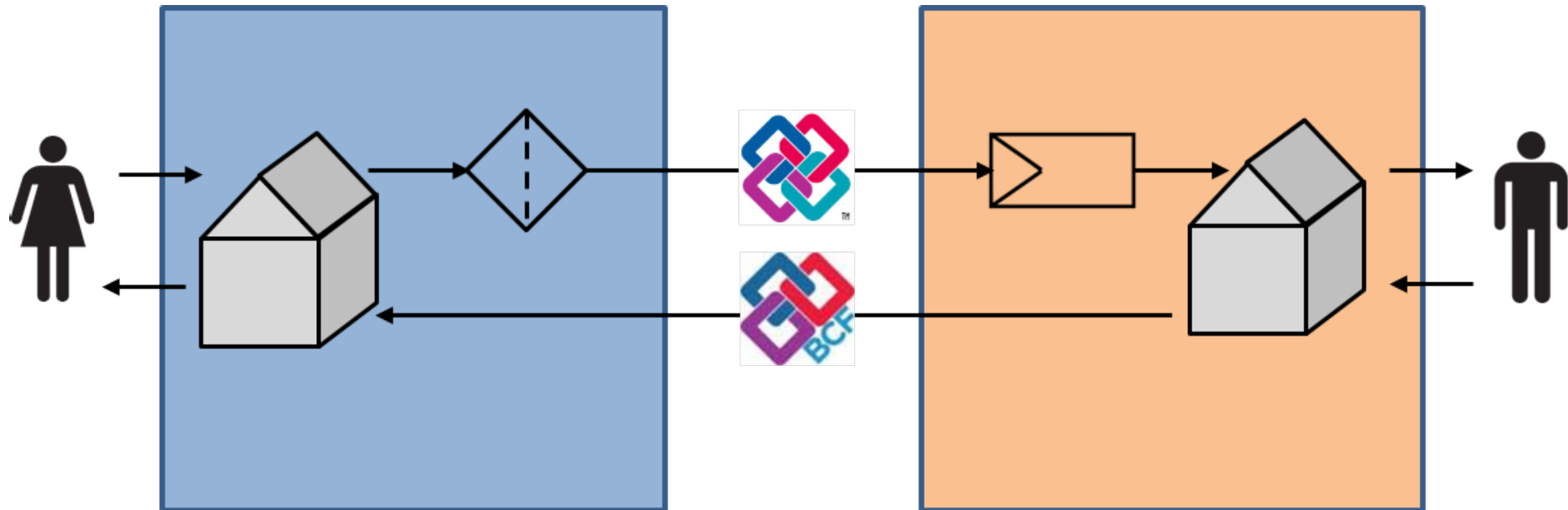
Source: M. Huber
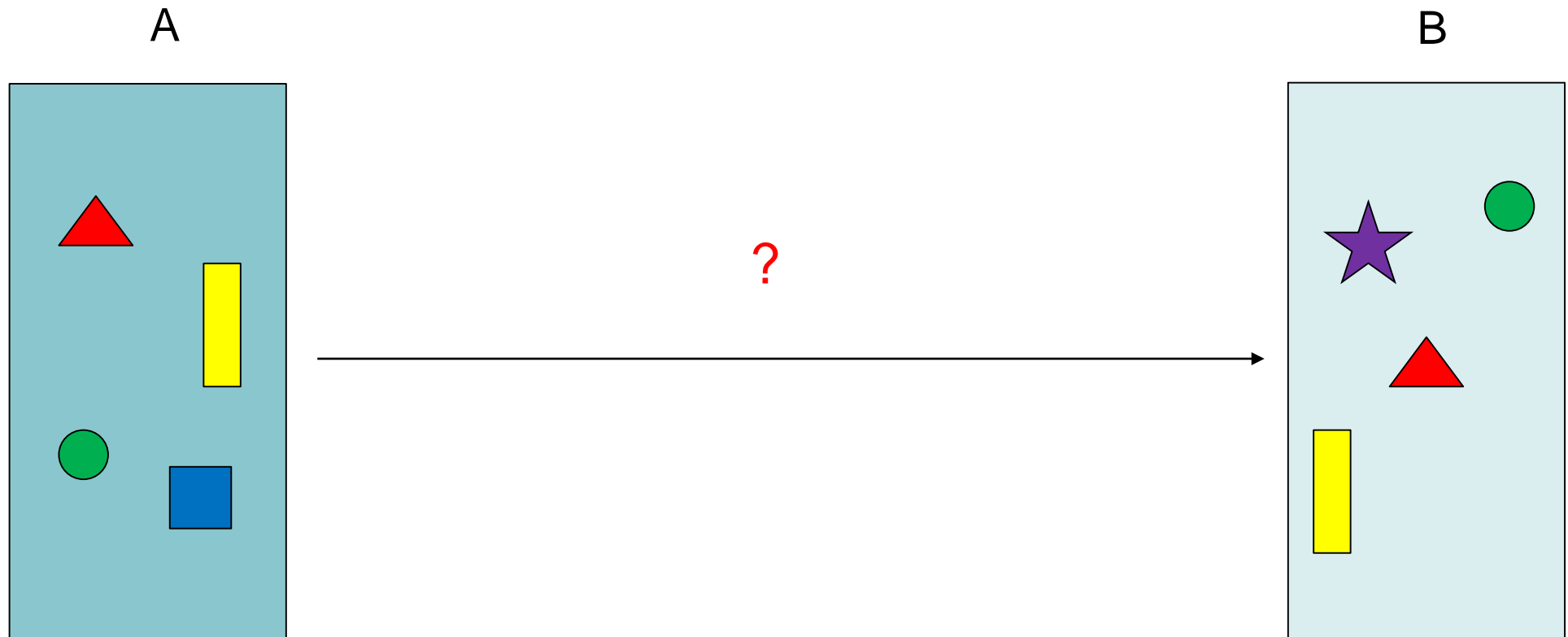
Source: M. Huber

Exchange model standard

For an efficient exchange of information with digital building models, we need an common open exchange standard.

Digital building models − Data exchange standard

IFC (SN EN ISO 16739: 2016) as independent
open exchange standard.

Source: buildingSMART

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IFC

Source: M.Huber

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Challenges

Quellen: wikipedia.org
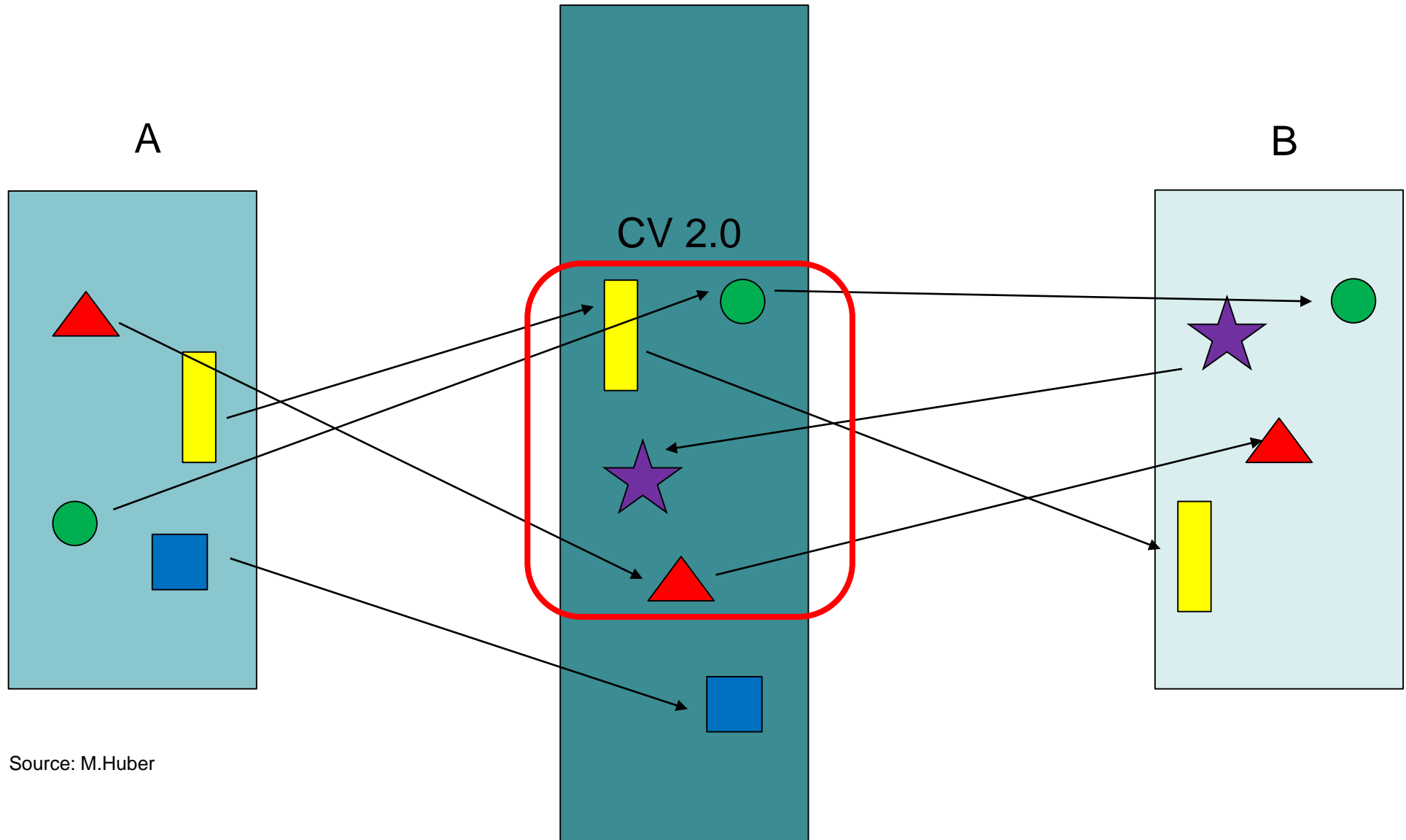
New Tools: Renaissance

Filippo Brunelleschi: Invention of perspective

Leon Battista Alberti: Ten Books about architecture -> plan

Place of planning ≠ Construction site

- Dome Santa Maria del Fiore (1418-1436)

- Church San Lorenzo (1418-1428)

- Foundling hospital (1421-1455)

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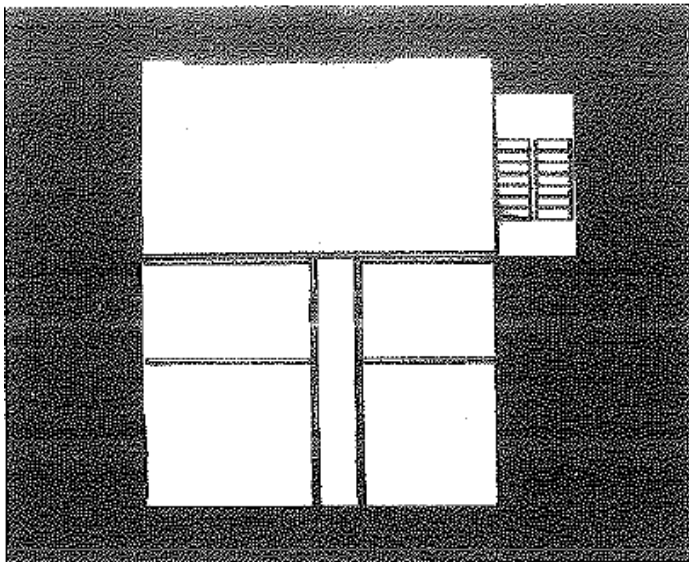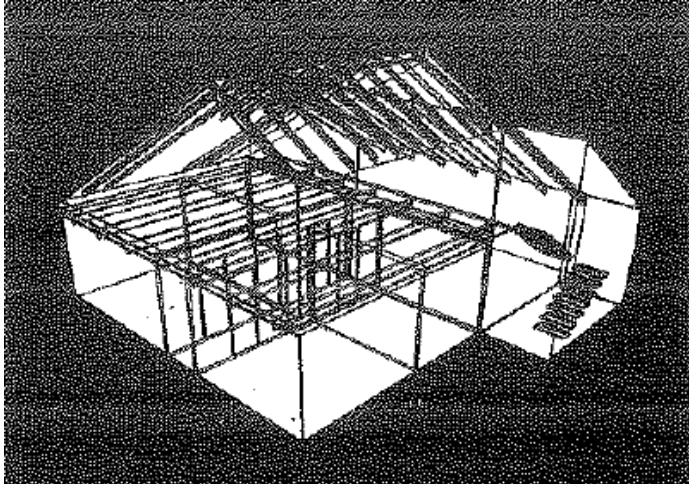
Quellen: Eastman, 1975, S. 49 und 50

Vision: Charles Eastman 1975

"It would combine the positive aspects of both drawing and models and eliminate their common weakness. It would incorporate three-dimensional information in an easy-to-read format and would require any change to be made only once for its full effect to be revealed. It would accept changes easily and provide automatic checking for spatial conflicts"
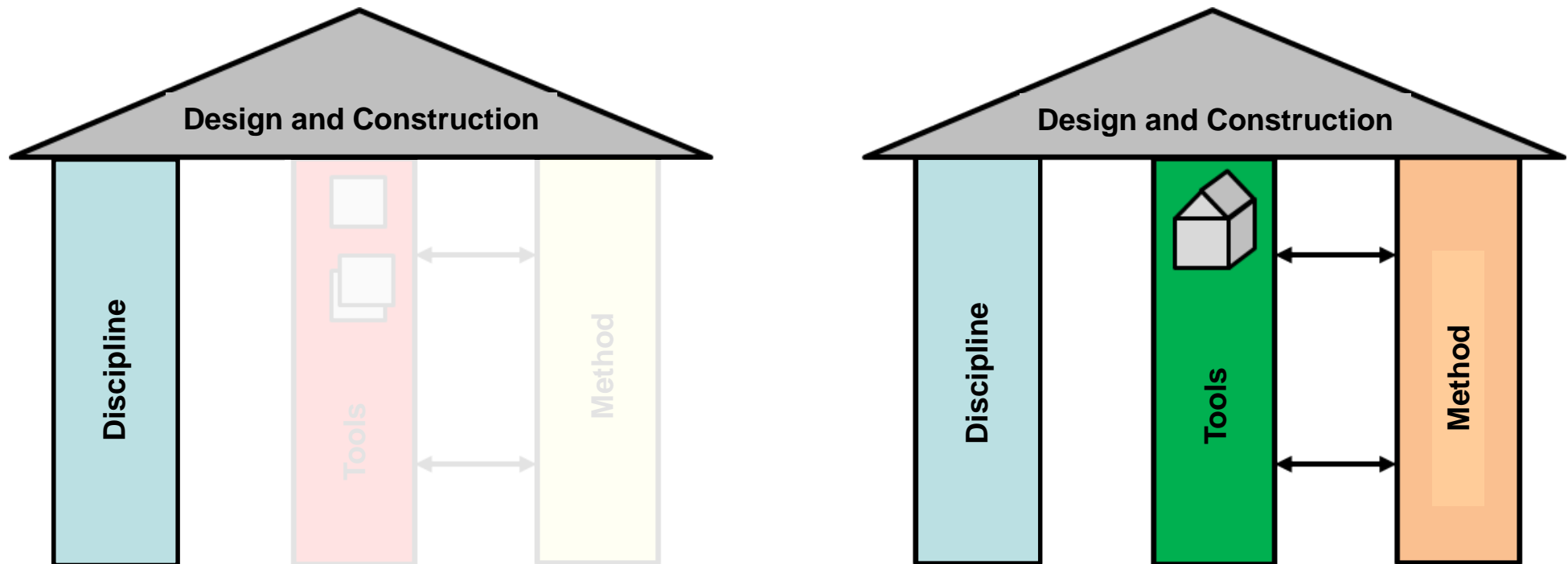
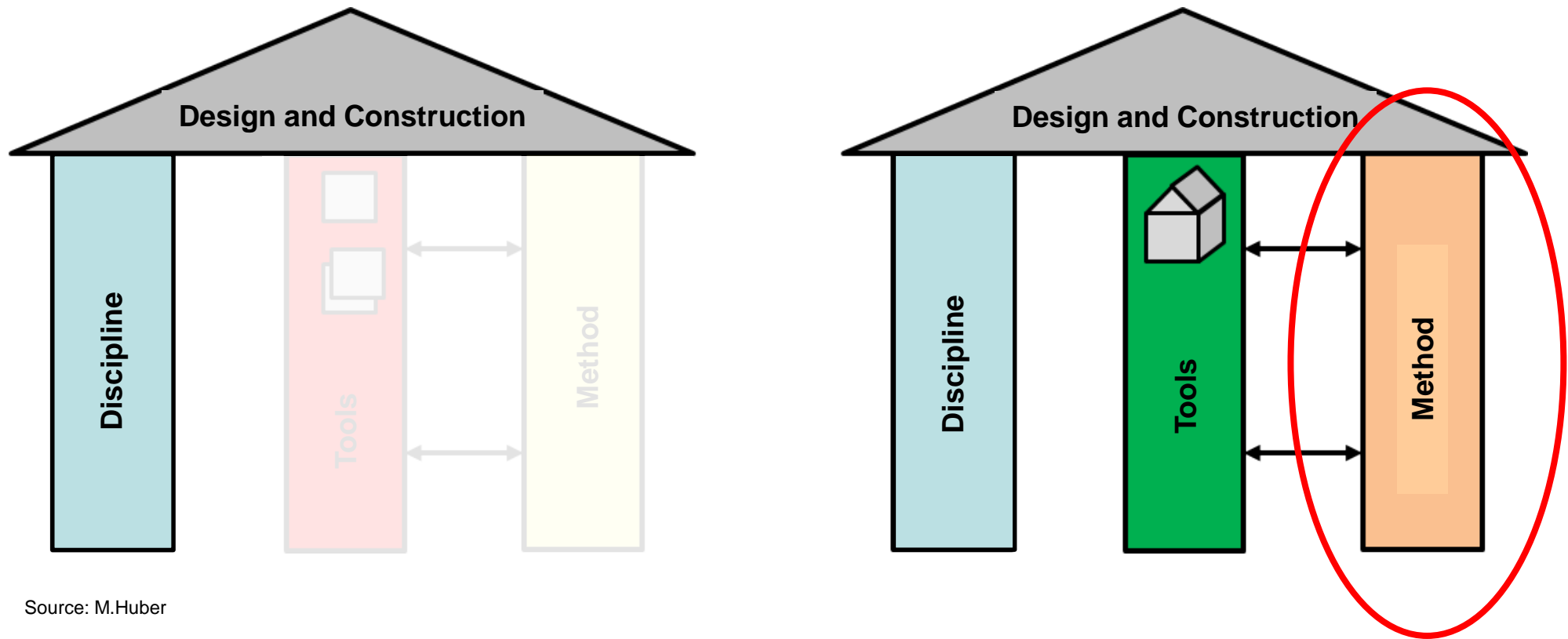Source: Eastman, 1975, P. 46

Connection: Discipline – Tools – Method
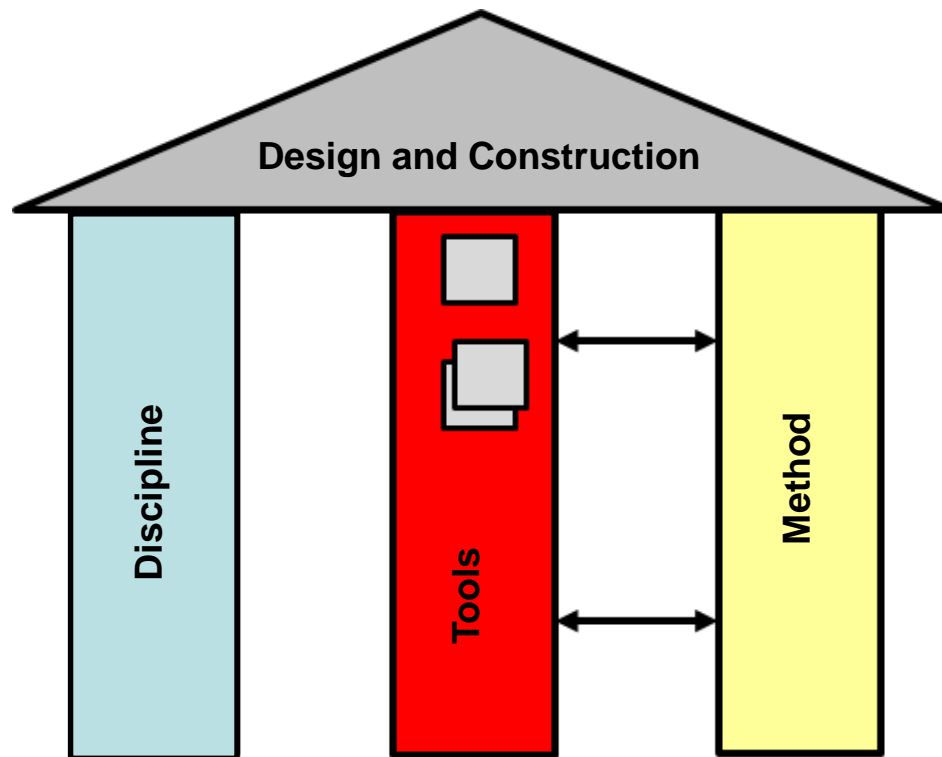
Source: M.Huber

Connection: Discipline – Tools – Method

Source: M.Huber

Connection: Discipline – Tools – Method

Source: M.Huber

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Conclusion

Conclusion

- BIM is not a tool.

- BIM is more than 3D geometry.

- It's the "I", which makes the difference.

- BIM is a method.

- … an interdisciplinary, collaborative method …

- … based on open BIM workflows and …

- … using an neutral exchange standard (IFC)

- We are leaving an over 500 years old history behind us. The plans as information carrier are leaving us, an the digital building model as single source of all information becomes reality.

- And it the end: The BIM method is a big opportunity for advanced building skins.

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Thanks!

Prof. Manfred Huber, dipl. Arch. ETH SIA, MAS FHNW VDC

Fachhochschule Nordwestschweiz
Hochschule für Architektur, Bau und Geomatik
Kompetenzzentrum Digitales Bauen

manfred.huber@fhnw.ch

T +41 61 228 55 17

Kanton Bern
Canton de Berne

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