

STREAMER 2<sup>nd</sup> Design Workshop

## EARLY DESIGN CONFIGURATOR



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KIT – Karl-Heinz Häfele, Steffen Hempel

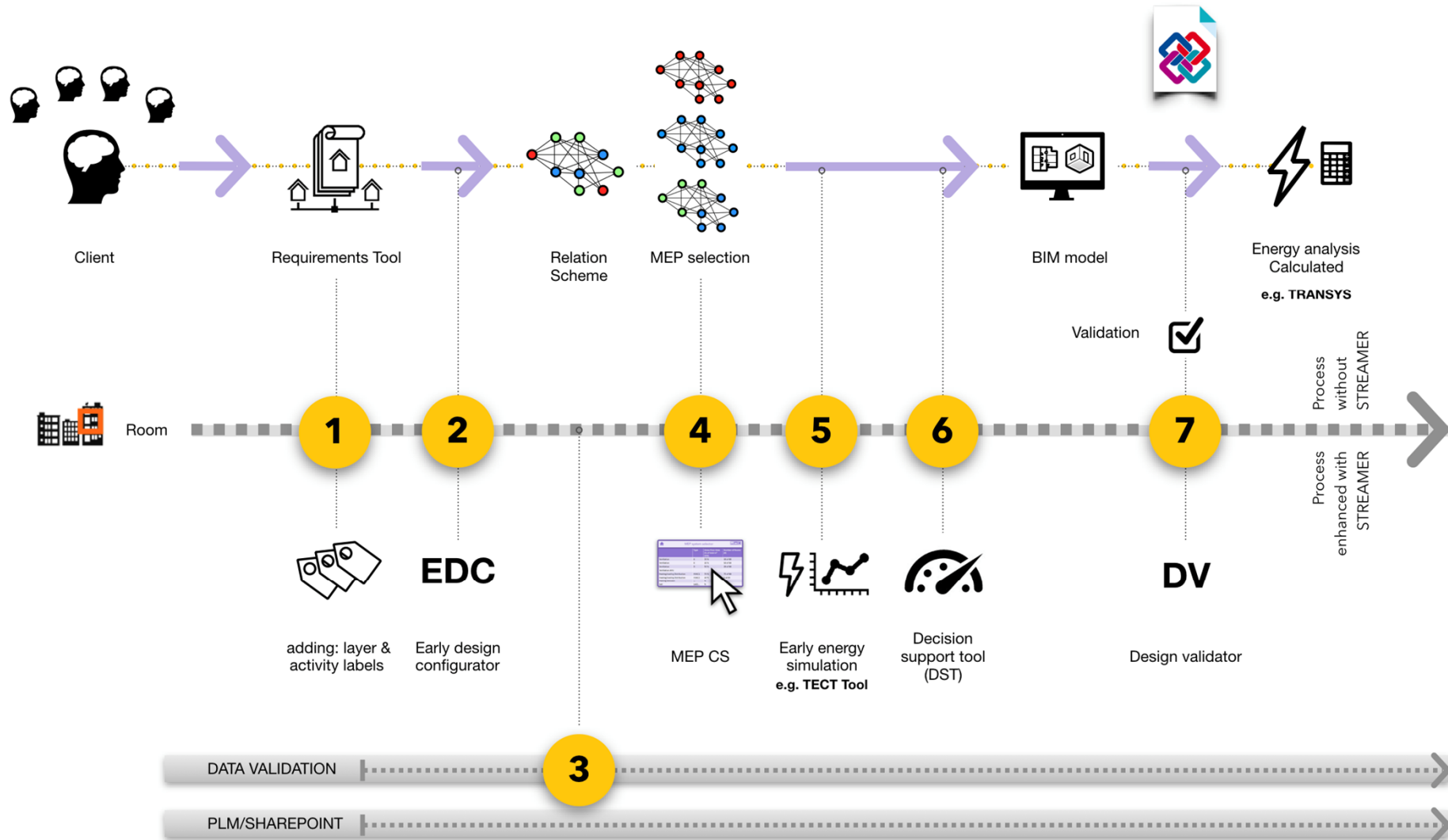


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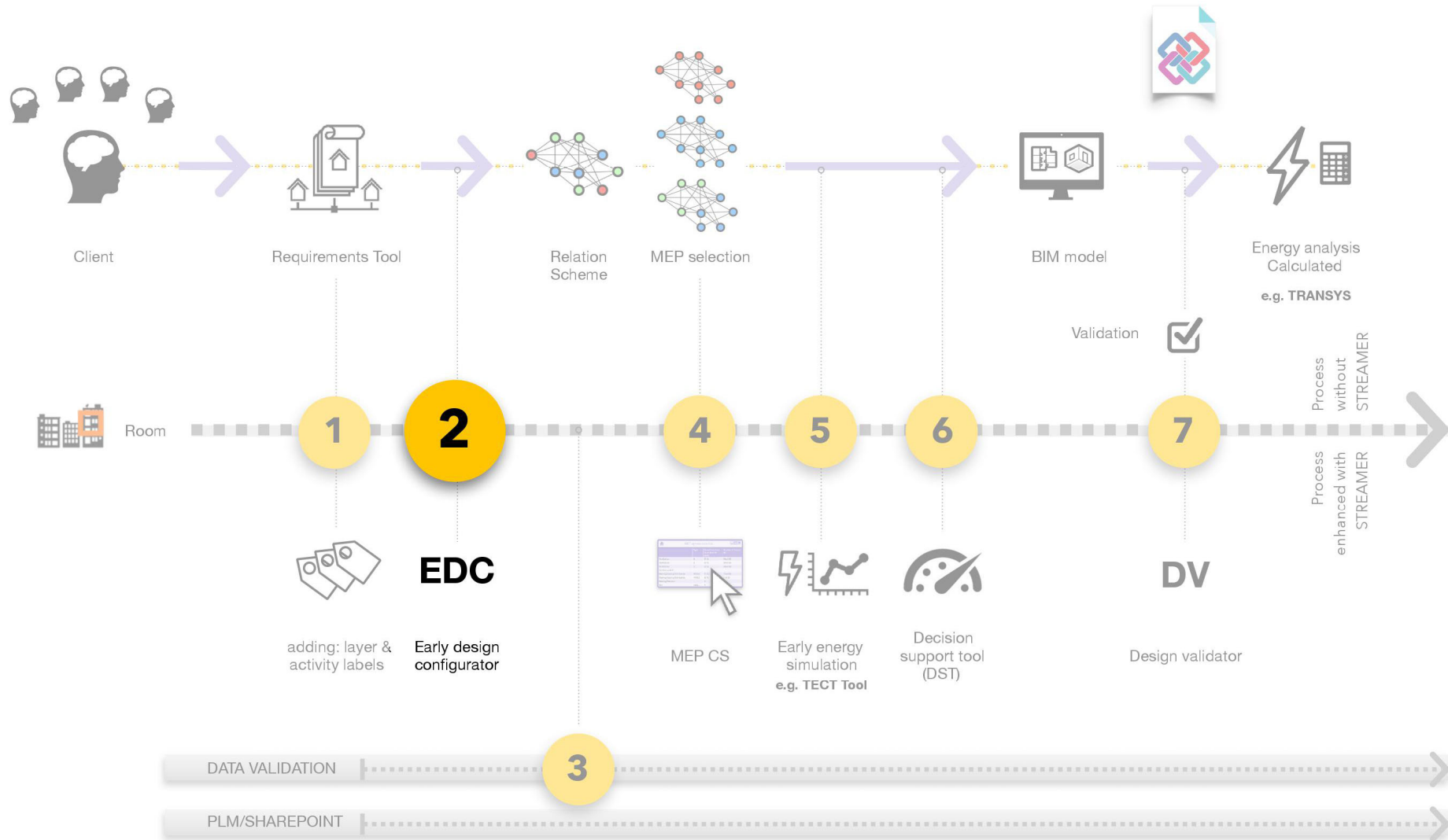


# 1. EDC in the STREAMER workflow





# 1. EDC in the STREAMER workflow



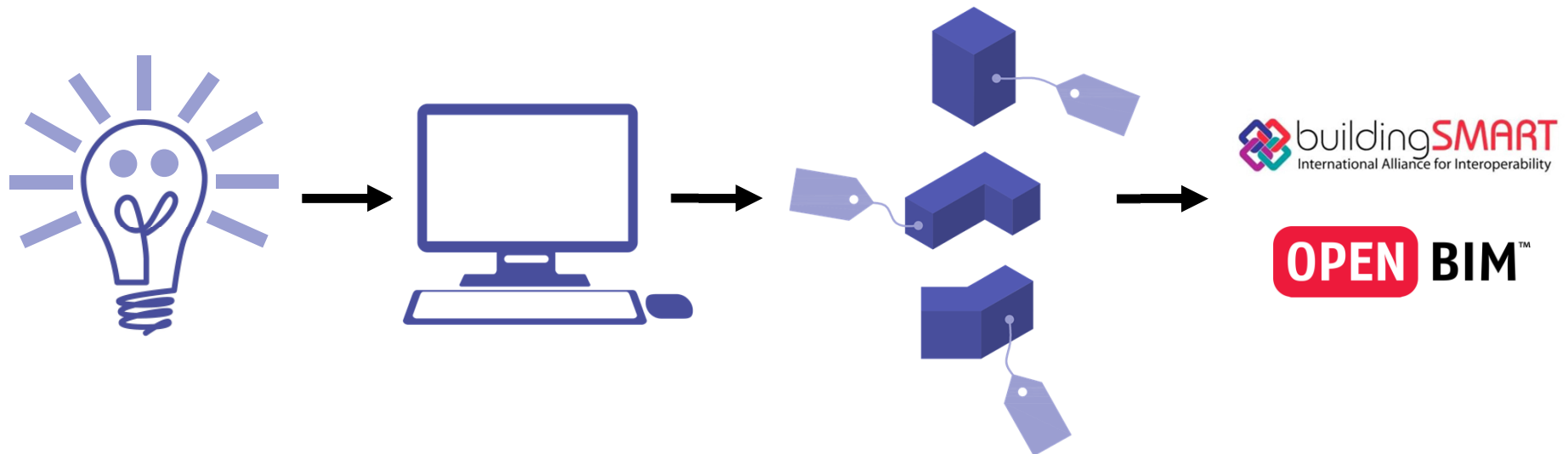


## 2. Background - Current practice





## 2. Background - Future practice with..



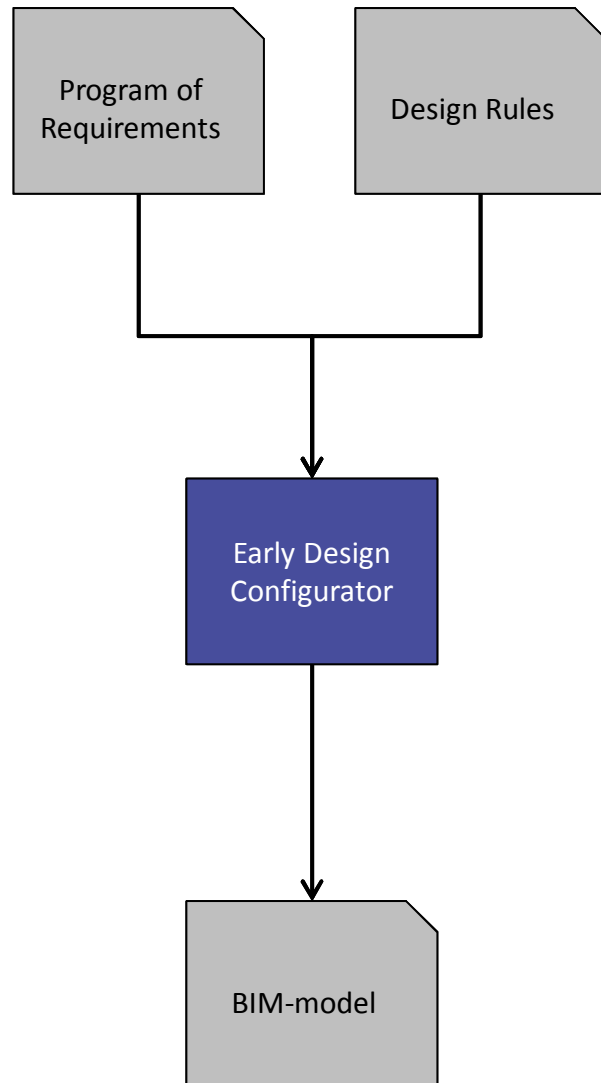


### 3. Description of Early Design Configurator

**Generating optimal designs for hospitals in an early phase based on a program of requirements and design rules by using genetic algorithms (artificial intelligence) for new built and refurbishment scenarios.**



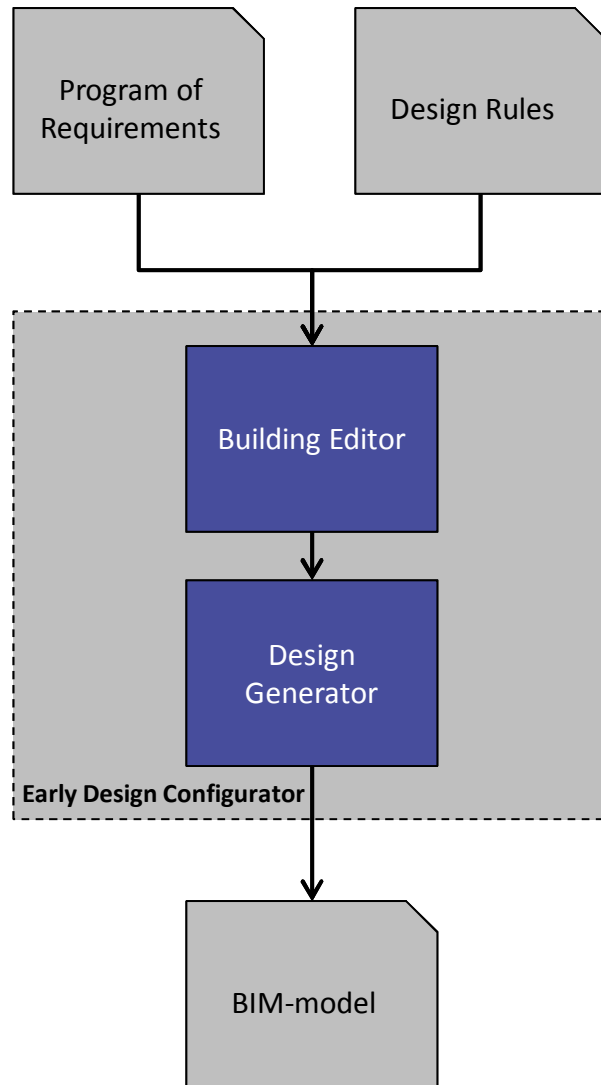
### 3. Description of Early Design Configurator





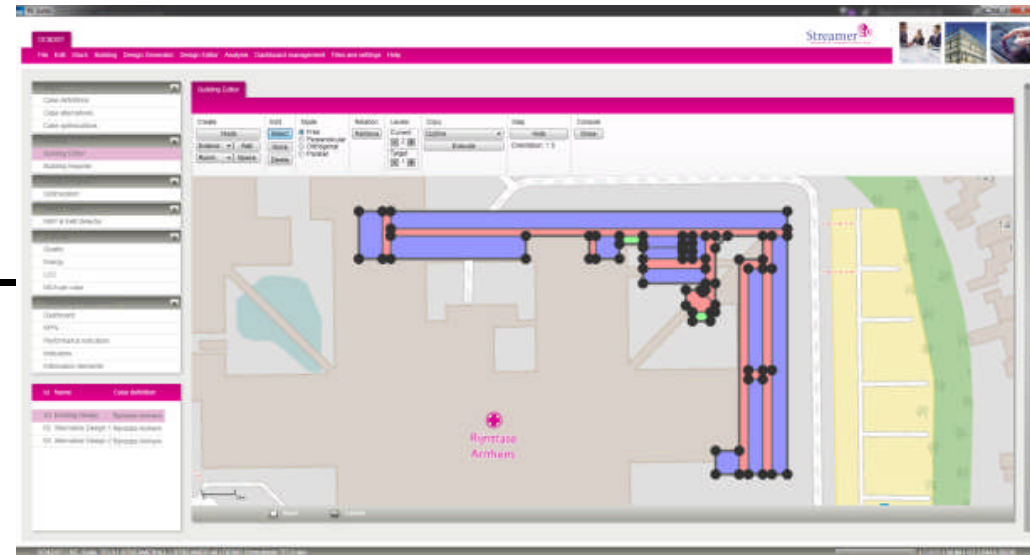
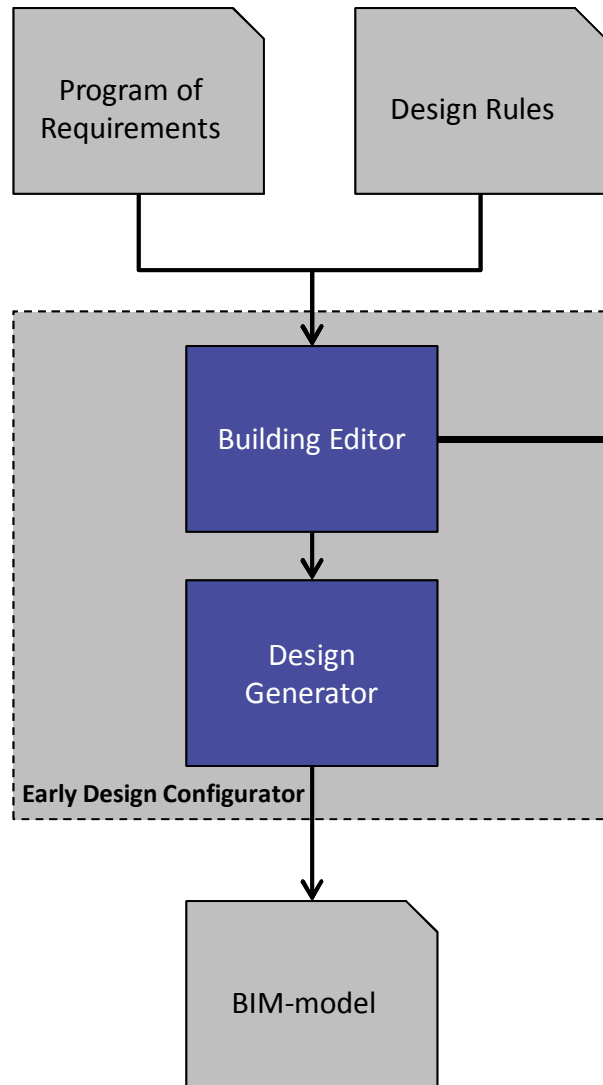


### 3. Description of Early Design Configurator





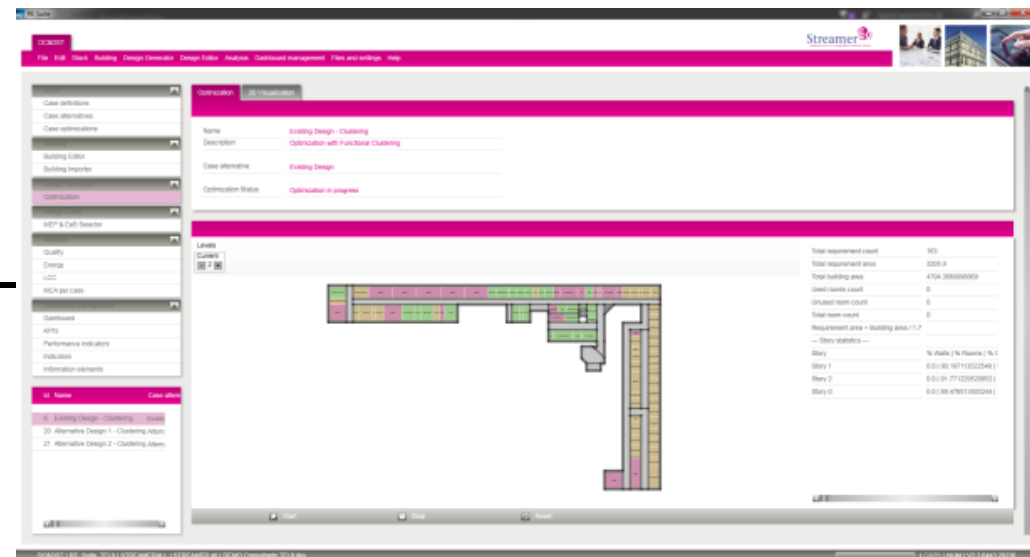
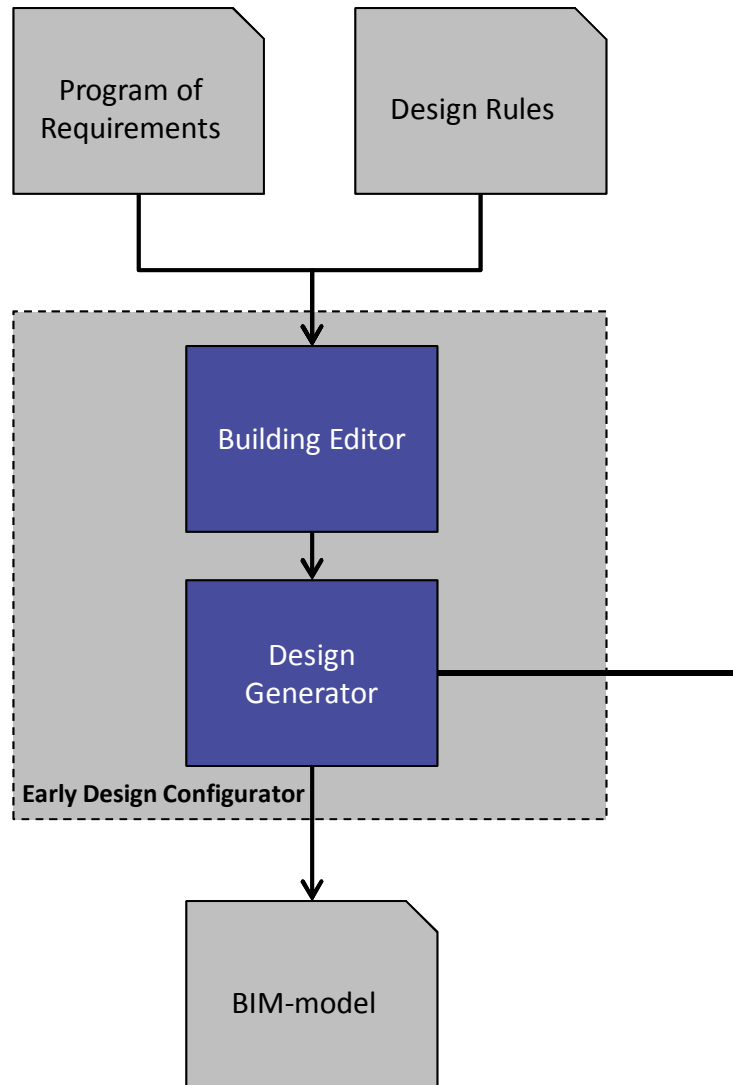
### 3. Description of Early Design Configurator



Defining the building shape, blocked building elements and traffic systems



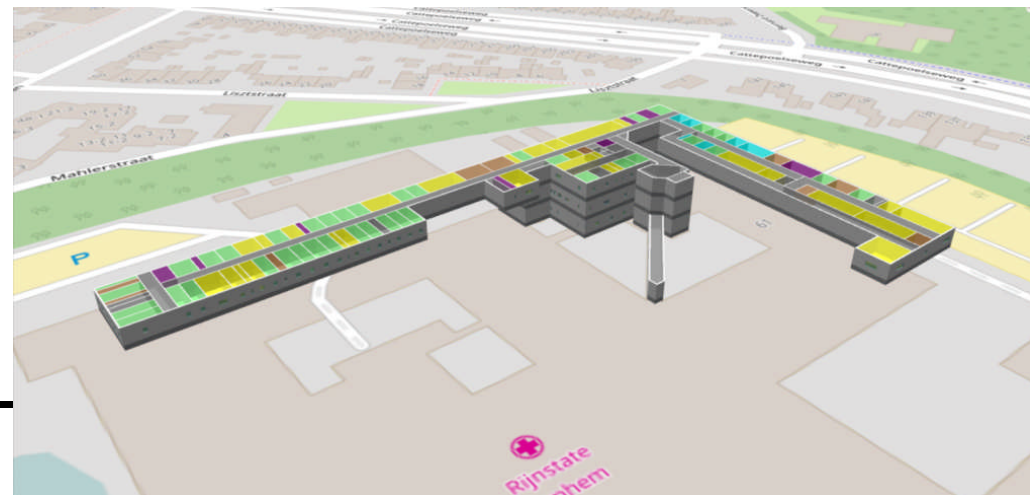
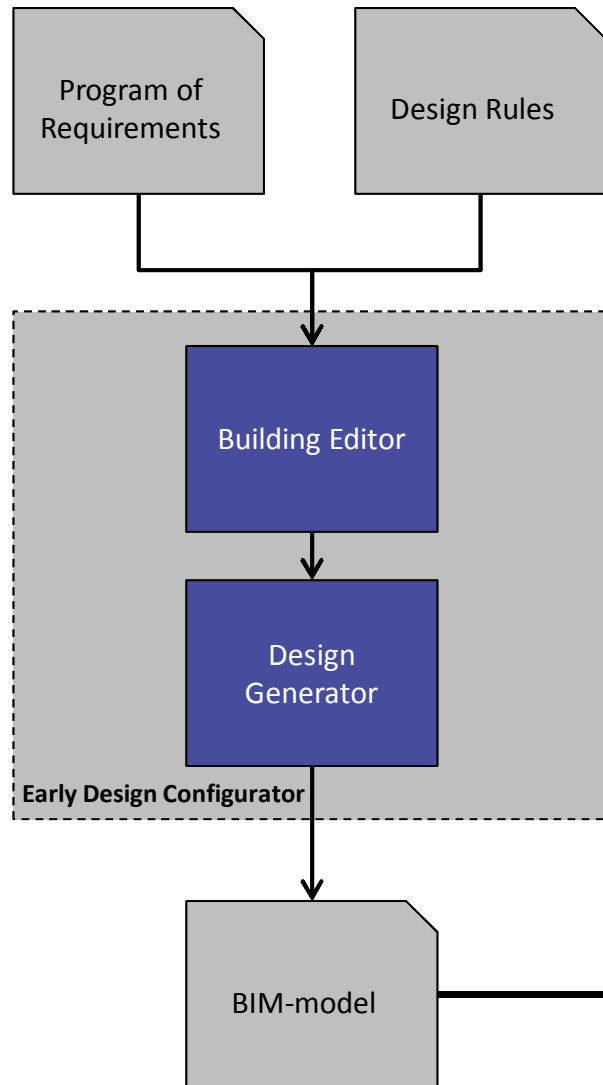
### 3. Description of Early Design Configurator



Filling and optimizing the defined building



### 3. Description of Early Design Configurator



# 4. Demonstration



The screenshot displays the RE Suite software interface. At the top, there is a menu bar with options: File, Edit, Stock, Building, Design Generator, Design Editor, Analysis, Dashboard management, Files and settings, and Help. The main workspace is divided into several sections:

- Left Panel:** A navigation tree with categories: Stock, Case definitions, Case alternatives, Case optimizations, Building, Building Editor, Building Importer, Design Generator, Optimization, Design Editor, Analysis, and Dashboard management. Below this is an 'Objects' list under the 'Source' tab, containing items like '01 POR', '02 Design Rules', '03 Filter Sets', '04 EDC', '05 MEP and EeB Data', '06 MEP and EeB Selector', and '07 I.C.C.'
- Top Right:** The Streamer logo and three small images showing people in a meeting, a building, and a hand pointing at a screen.
- Main Content Area:** A form titled 'General' with tabs for 'Program of Requirements' and 'Location'. The form contains the following fields:
  - Name: Rijnstate Arnhem
  - Description: An extension of the northeast wing
  - Building type: Healthcare
  - Project type: New-built
  - Location: Arnhem
  - Street: Wagnerlaan
  - Latitude: (empty)
  - Longitude: (empty)
  - Program of Requirements: Rijnstate Northeast PoR
- Bottom:** A status bar with text: DC&DST | RE\_Suite\_TFL9 | STREAMERALL | STREAMER all | DEMO Consultants TFL9 dev | CAPS | NUM | V2.2.6443.29226

## 5. Do it yourself – Goals and characteristics

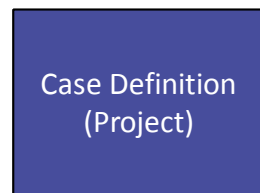
Creating an Energy Efficient Building (EEB) optimization at the early design phase:

- Spatial layout and envelope
  - MEP/HVAC systems for hospitals
- 
- **Characteristics**
    - An extension of the Rijnstate north-east wing
    - Floor area: approximately 5.000 m<sup>2</sup>
    - To be built on and in between the existing hospital buildings

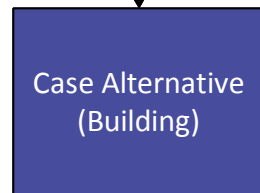




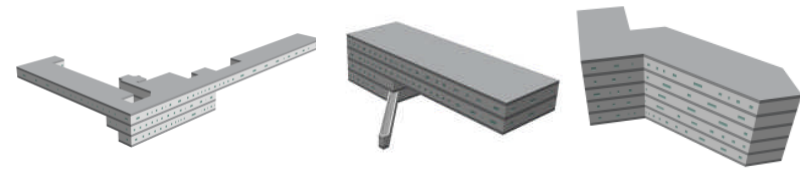
## 5. Do it yourself – EDC structure



Rijnstate Hospital



Different Building Shapes

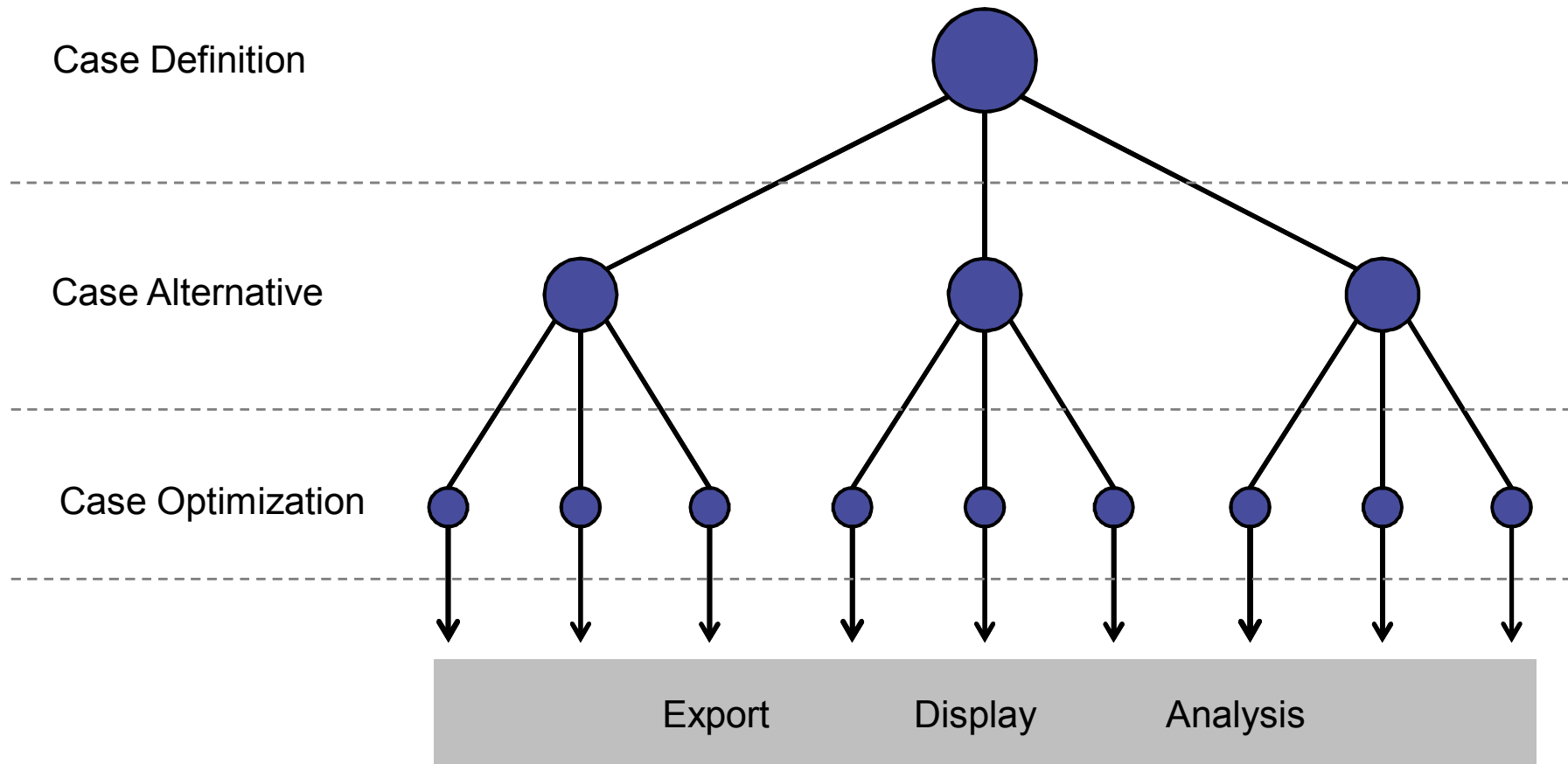


Different Design Rules

*Functional Clustering*  
*60:40 Room Proportions*



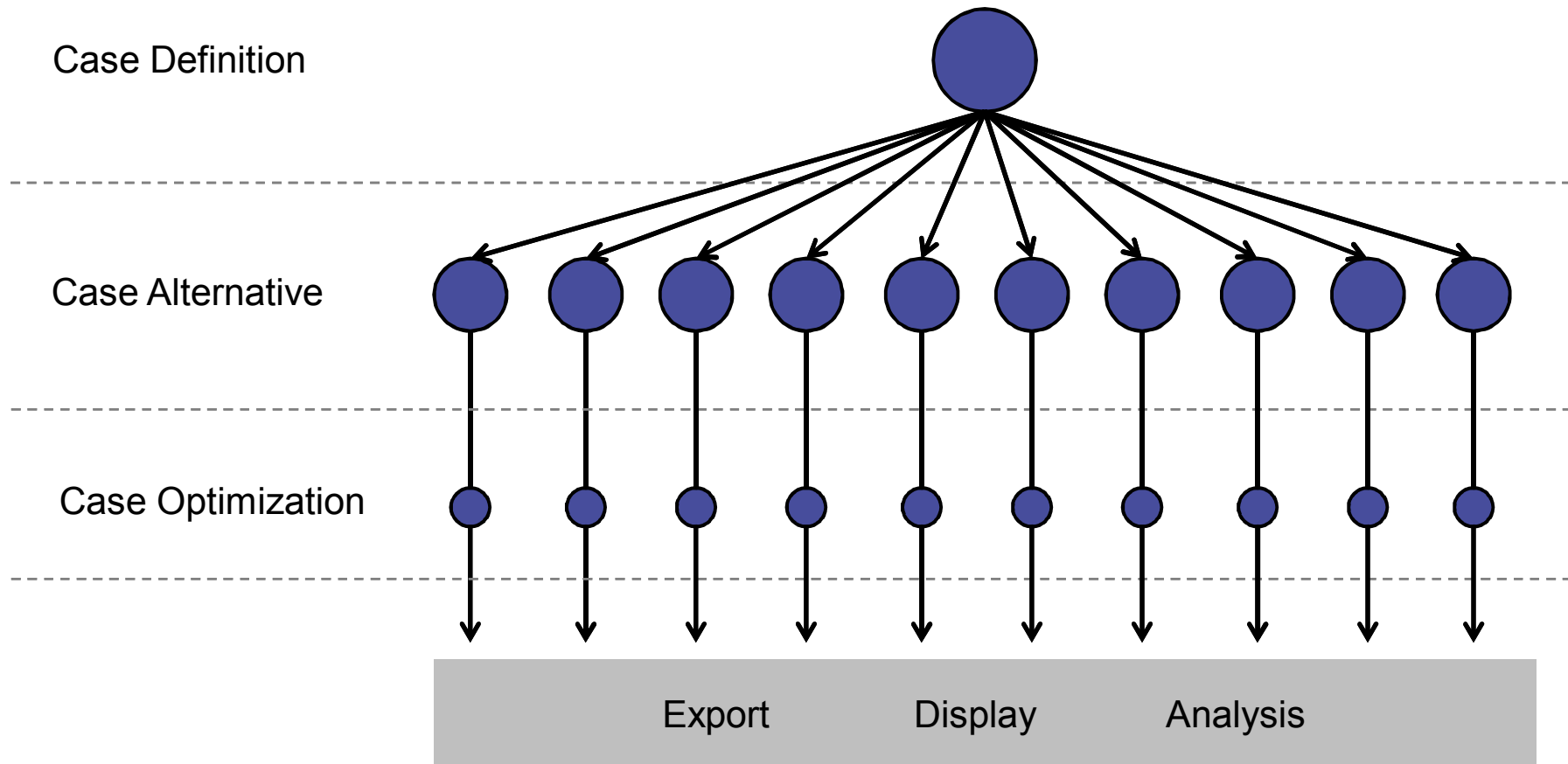
## 5. Do it yourself – EDC structure







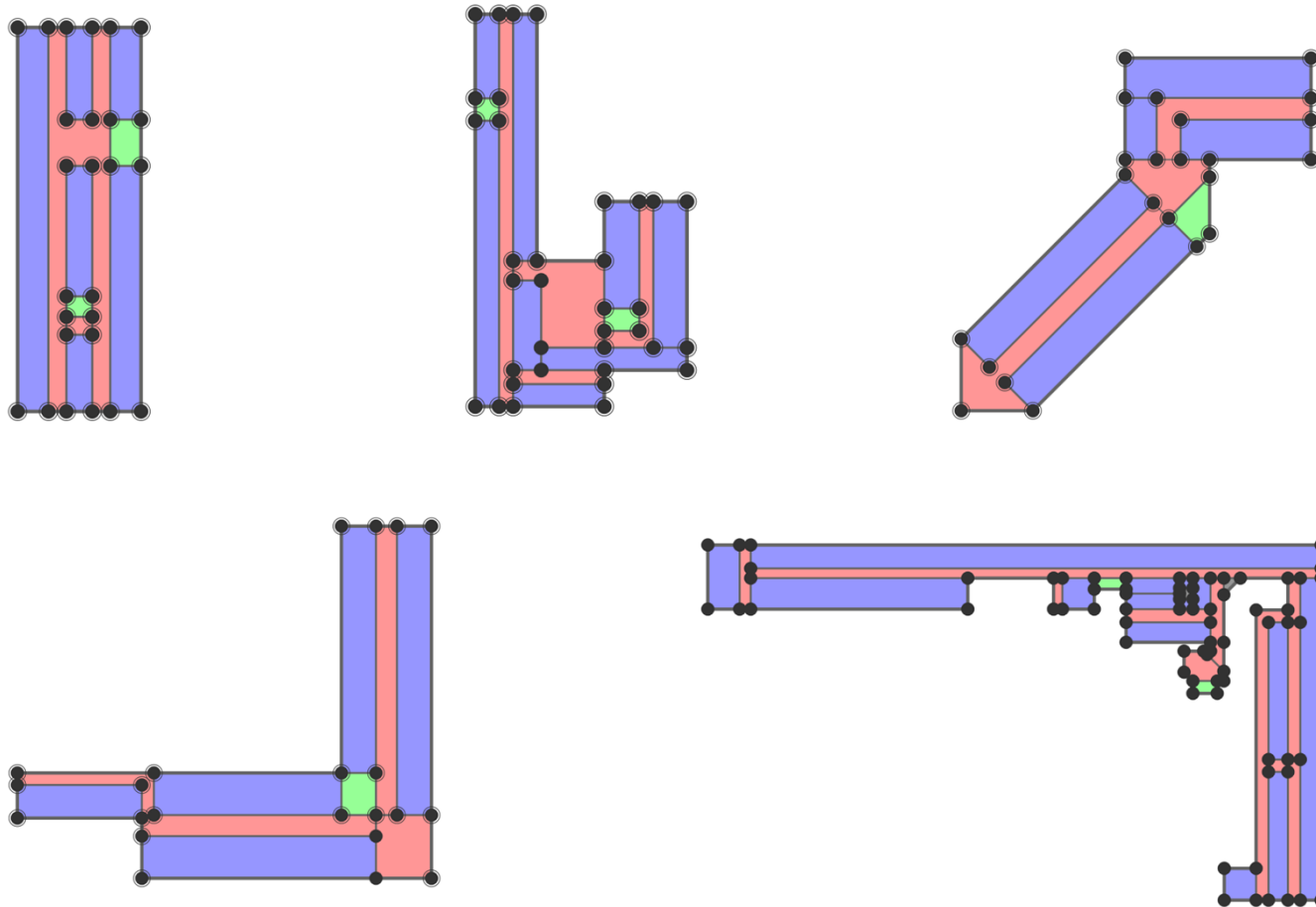
## 5. Do it yourself – Workshop structure





## 5. Do it yourself – Steps

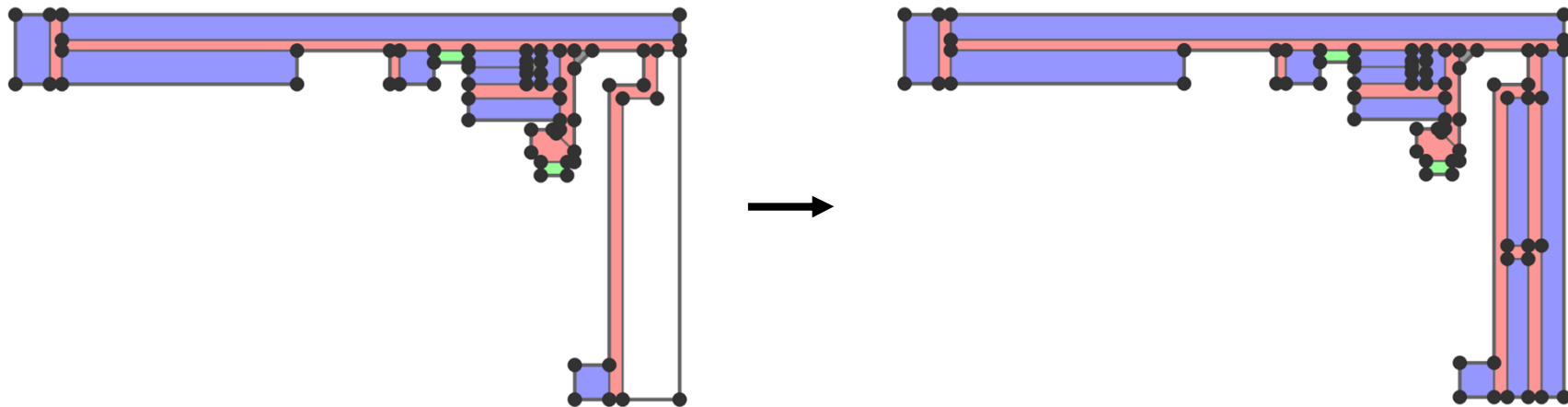
### 1. Choose a building alternative





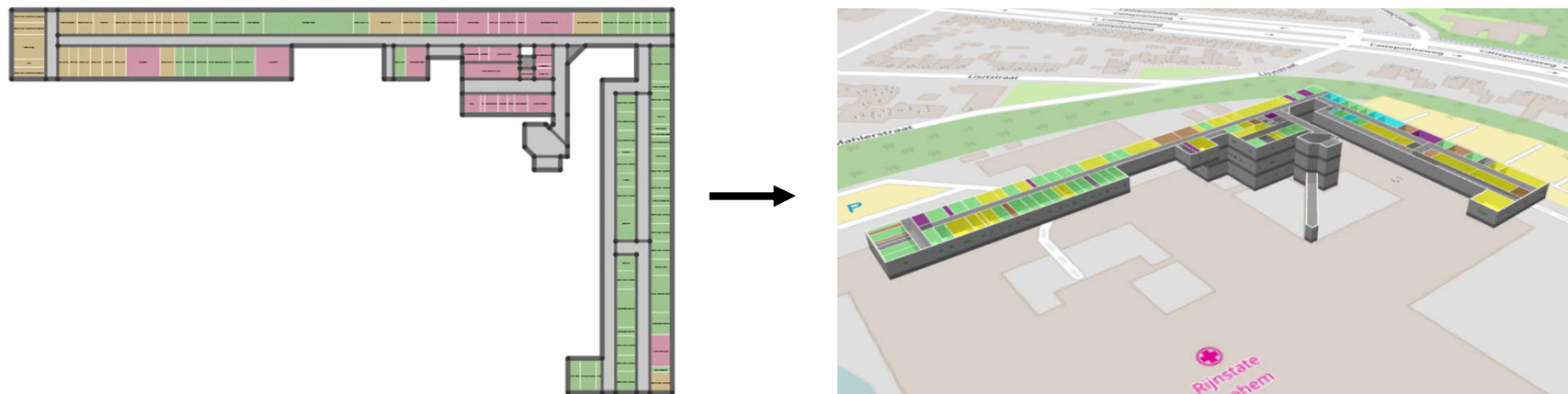
## 5. Do it yourself – Steps

2. Finish the chosen building alternative in the Building Editor



## 5. Do it yourself – Steps

3. Optimize the building and view the optimization result





## 5. Do it yourself – Overview

- Open the **STREAMER OU** shortcut on your desktop
- When asked for a password enter: **DEMO\_Hospital**
  
- Once the RE Suite login screen is displayed, log in with **groepx** (where x is your group number, example: groep4) as your **username and password**
  
- 1. Choose a building alternative
- 2. Finish the chosen building alternative in the Building Editor
- 3. Optimize the building and view the optimization result



## Colophon

PowerPoint: Early Design Configurator

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**Streamer**   
*European research on energy-efficient healthcare districts*



# Building Editor

DC&DST

File Edit Stock Building Design Generator Design Editor Analysis Dashboard management Files and settings Help

Stock

- Case definitions
- Case alternatives
- Case optimizations

Building

- Building Editor**
- Building Importer

Design Generator

- Optimization

Design Editor

- MEP & EeB Selector

Analysis

- Quality
- Energy
- LCC
- MCA per case

Dashboard management

- Dashboard
- KPI's
- Performance indicators
- Indicators
- Information elements

| Id | Name                          | Case definition |
|----|-------------------------------|-----------------|
| 43 | Existing Design               | Rijnstate       |
| 62 | Alternative Design 1          | Rijnstate       |
| 63 | Alternative Design 2          | Rijnstate       |
| 68 | Building Editor Demonstration | Rijnstate       |

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# Optimization

RE Suite

DC&DST

File Edit Stock Building Design Generator Design Editor Analysis Dashboard management Files and settings Help

Streamer

Building Editor

Stock

- Case definitions
- Case alternatives
- Case optimizations

Building

- Building Editor
- Building Importer

Design Generator

- Optimization

Design Editor

- MEP & EeB Selector

Analysis

- Quality
- Energy
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- MCA per case

Dashboard management

- Dashboard
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| 63 | Alternative Design 2 | Rijnstate       |

61

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Edit

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