

Software Lab:

Automated Building Designer / REVIT

Setting

Next to owner wishes, the design of buildings is dependent of many rules and code compliances. A residential building consists of floors, a floor consists of apartments and an apartment consists of rooms. Next to this also the constructability and sustainable design is important to achieve high quality, less costs and a future ready building.

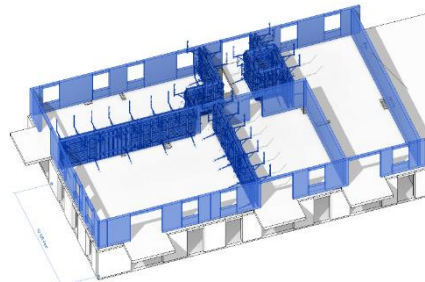


Figure 1: Floor and apartments during the construction; Figure 2: Room plan



Task

Implement a tool with Autodesk Revit to design a floor with corridors, apartments and rooms automatically. Therefore, you can use a parametric model and graph theory. The next step is to look on the constructability. Use a previous Revit Plugin (Splitting tool) to detect start points. You can use a K-clustering approach to combine neighbour elements to find suitable segments.

What happens with the constructability when the design is changing? Taking into consideration the high building information fuzziness in early design stages. What influence has moving of elements or changing of material on constructability?

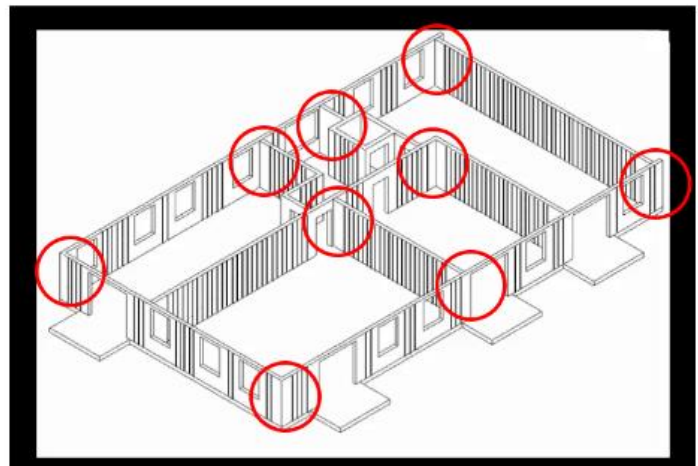


Figure 3: Splitting model for considering the constructability

- Get familiar with the Software Revit from Autodesk
- Programming Language is C#
- Revit-Plugin:
 - Create a concept how you can design a simple floor with apartments, rooms etc. automatically by changing the building constraints
 - Use an existing Revit Plugin, graph theory and K-clustering or other methods to find start points and suitable segments to regard the constructability
 - Implement a graphical user interface (GUI) for your Revit-Plugin

Supervisors

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