Renovation decision support system (RenoDSS)

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Call identifier: LC-EEB-02-2018

About me

- Senior scientist and lecturer at Vienna University of Technology and SBA Research since 2006
- PhD in Computer Science in 2008 (Research field: information security risk management and decision support)
- Managing director at Xylem Technologies

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Introduction

- European Green Deal is to make Europe the first climate-neutral continent with no net emissions of greenhouse gases by 2050
- Increasing the renovation rate of buildings is a key initiative to drive energy efficiency in the sector and contribute to the European Green Deal objectives
- The main aim of RenoDSS is to put forward an intuitive, BIM-based, and easy-to-use interface that illustrates the building's renovation options, evaluates their impact on the building performance and guides the user through various alternatives

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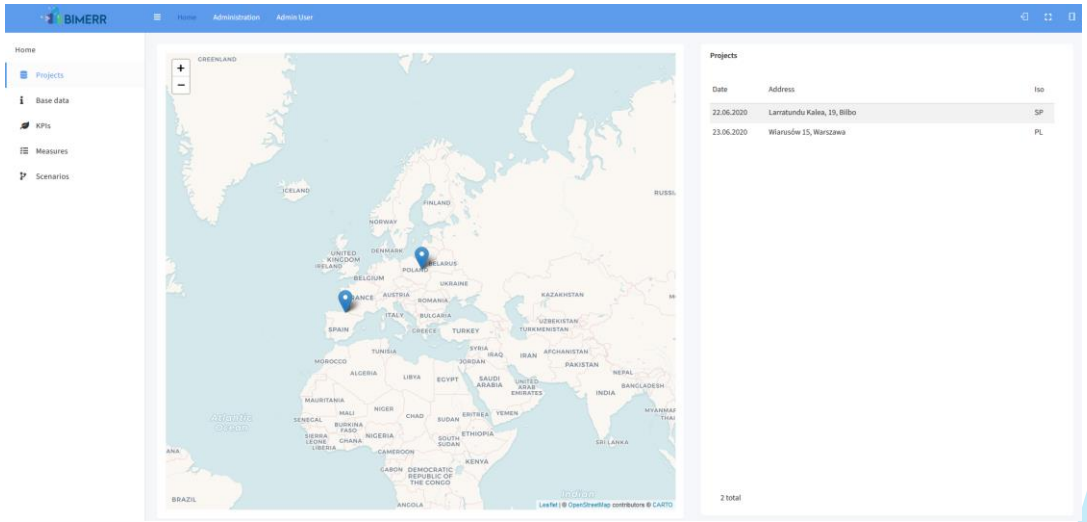
RenoDSS: renovation decision support system

- BIM integration
- Automated generation of renovation designs
- Providing financial, technical, and sustainability KPIs for each renovation design
- Visual feedback on renovation designs
- Enabling the user to identify the renovation design which meets all or most target KPIs



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How does it work

1. BIM model (IFC) of current building configuration as input
2. KPI calculation for status quo building (energy performance, etc.)
3. Setting target KPIs which should be met by the renovated building
   - Lifecycle cost, environmental impact, energy performance, contribution to energy goals on district level, etc.
4. Automated generation of many renovation designs by combining potential renovation measures (e.g., insulation, windows, PV, heating systems, solar collectors, heat pumps, etc.)
5. User selects with our decision support system the most suitable renovation design based on its KPIs

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Live Demo

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What is the benefit?

- Currently, renovation designs are done mostly manually with tool support. Problems:
  - Renovation designs are dependent on the expert who configures them
  - Only a limited number of renovation designs can be analyzed because of expert's time constraints
  - There might be a more optimal renovation design which is simply overlooked by the expert
- RenoDSS configures the renovation designs automatically based on internal rule sets on how the renovation measures can be combined
- This enables us to generate and calculate many renovation designs
- Based on the large number of renovation designs the user can select the most suitable one

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