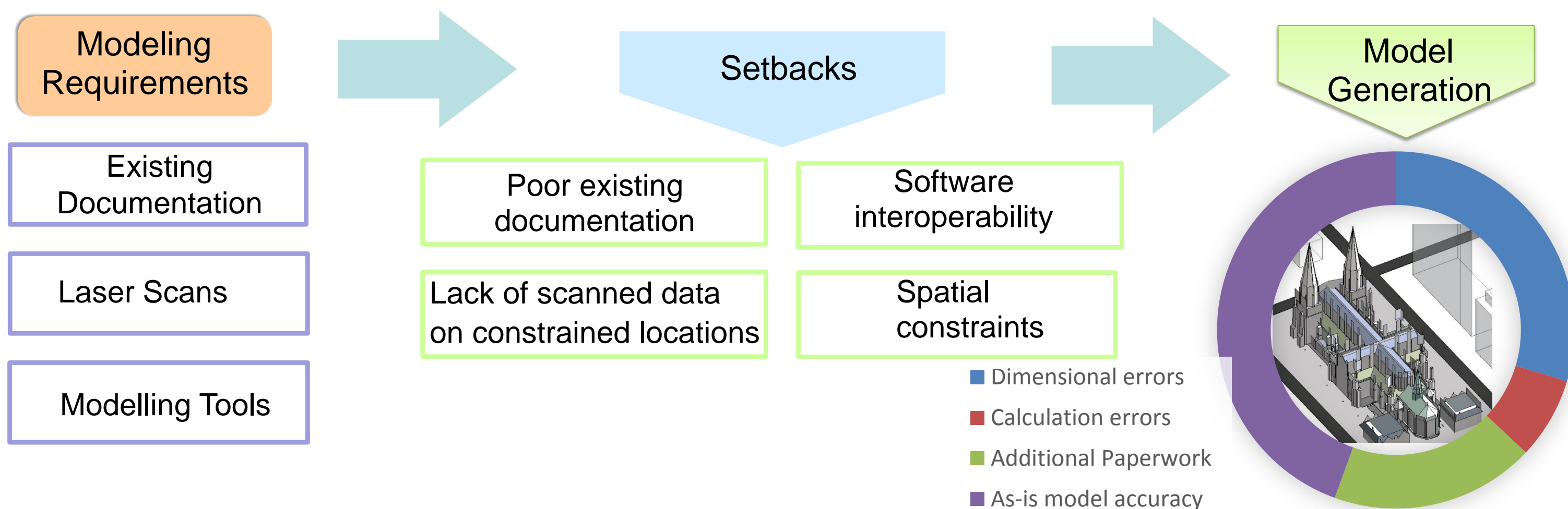# Challenges and lessons learned in the renovation of historical landmarks

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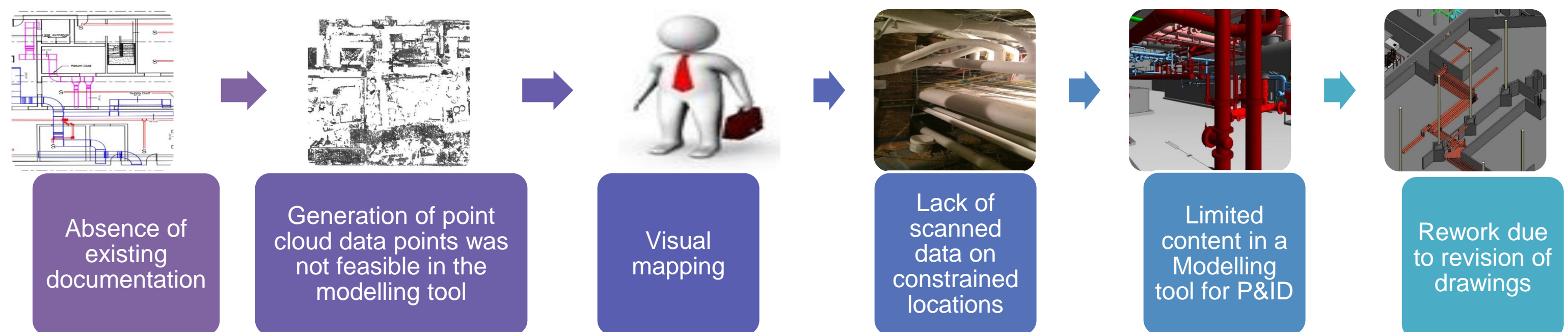Research Advisor : Semiha Ergan, Prof, NYU

Problem Statement

- Renovation projects play a critical role in upgrading the existing infrastructure and preserving the historical landmarks. About 2555 structures are deemed worthy of preservation by National Registry of Historic Places. Challenges in the current renovation projects include unavailability of up-to-date facility geometric information that reflects the as-is geometric and spatial information and seamless integration of the proposed renovation projects with the existing parts of the facilities.
- Building Information Modelling (BIM) and laser scanning help to overcome the challenges within the current practice. However, there are challenges in the process of using BIMs and point cloud data in historical landmark renovations.

Motivating Case Study

Modeling Requirements → Setbacks → Model Generation

Modeling Requirements:
- Existing Documentation
- Laser Scans
- Modelling Tools

Setbacks:
- Poor existing documentation
- Lack of scanned data on constrained locations
- Software interoperability
- Spatial constraints

Model Generation:
- Dimensional errors
- Calculation errors
- Additional Paperwork
- As-is model accuracy

Findings/ Challenges identified

- Absence of existing documentation
- Generation of point cloud data points was not feasible in the modelling tool
- Visual mapping
- Lack of scanned data on constrained locations
- Limited content in a Modelling tool for P&ID
- Rework due to revision of drawings

Expected contributions/ Recommendations

- ☐ Identification of the challenges faced in the renovation of historical landmarks
- ☐ A formalized approach to streamline renovation projects in historical landmarks

Publications

Lazar, D. N., and Ergan, S. "Challenges and lessons learned in the renovation of historical landmarks: A study on an iconic cathedral" Submitted to Construction Research Congress, May 31-June 2, 2016, San Juan, Puerto Rico