TITLE: Design Space Construction: Vertically Integrated Project

GOAL: Develop and test design space exploration systems to support decisions like:

- What Massing for the Cancer Treatment Facility?
- What Façade Dimensions for the Children’s Hospital?
- What Section and Plan Dimensions for the high-rise?

TECHNOLOGIES: We use and develop a federation of tools, including:

- Eliciting stakeholder importance and preferences: Wecision
- Generating design alternatives: Grasshopper, Digital Project, Revit, Dynamo, ...
- Search algorithms: Combinatorial, Dynamic, Evolutionary, Gradient, Stochastic
- Visualizing Design Spaces: Magic Draw, SysML, Model Center, Excel, Wecision
- Process Management: Grasshopper, ModelCenter, Dynamo
- Decision Making: ModelCenter, Galapagos, Octopus, Wecision

RESEARCH ISSUES: Develop theories and methods to enable building and urban design and construction teams to efficiently construct more effective design spaces

TEAM ADVISORS: Experts in design computing, analysis and decision-making:

- Project Lead: John Haymaker, AIA, PhD (Building Construction and Architecture)
- Project Advisors: Daniel Baerlecken (Design); Matt Swarts (Parametric Modeling); Jason Brown (Energy Analysis); Russel Gentry (Structural Analysis); Pardis Pishdahd (Organizational design and incentives); Baabak Ashuri (Risk analysis and decision making); Chuck Eastman (Data Integration); Chris Paredis (Systems modeling and simulation); …

PROJECT PARTNERS AND SPONSORS
Autodesk, Perkins + Will, and other Georgia Tech Digital Building Laboratory member companies

DESIRED DISCIPLINES AND PREPARATION

Example student projects from [Spring 2013](#) and [Fall 2013](#)

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