Linkage

Development Kickoff

10/28/20

Agenda

1. Introductions
    - LBL, Building Intelligence Group, Modelon, Devetry
2. Context
3. Requirement Overview
4. Scheduling
5. Discussion and Next Steps

Context - Designing and Modeling HVAC Systems and Controls

OpenBuildingControl

Digitizing the control delivery

- from specification
- through building energy modeling (BEM)
- to implementation, and
- formal verification

Spawn-of-EnergyPlus

- Next-generation whole-building simulation engine
- Enable integrated BEM-control workflows

ASHRAE SGPC 36P & SPC 231P

obc.lbl.gov

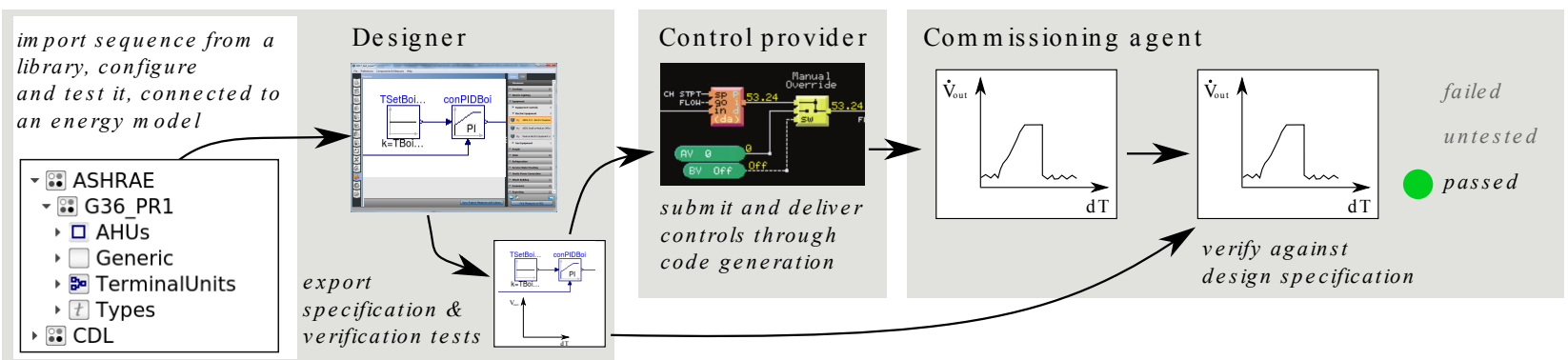
Performers

- Lawrence Berkeley National Lab
- Pacific Northwest National Lab

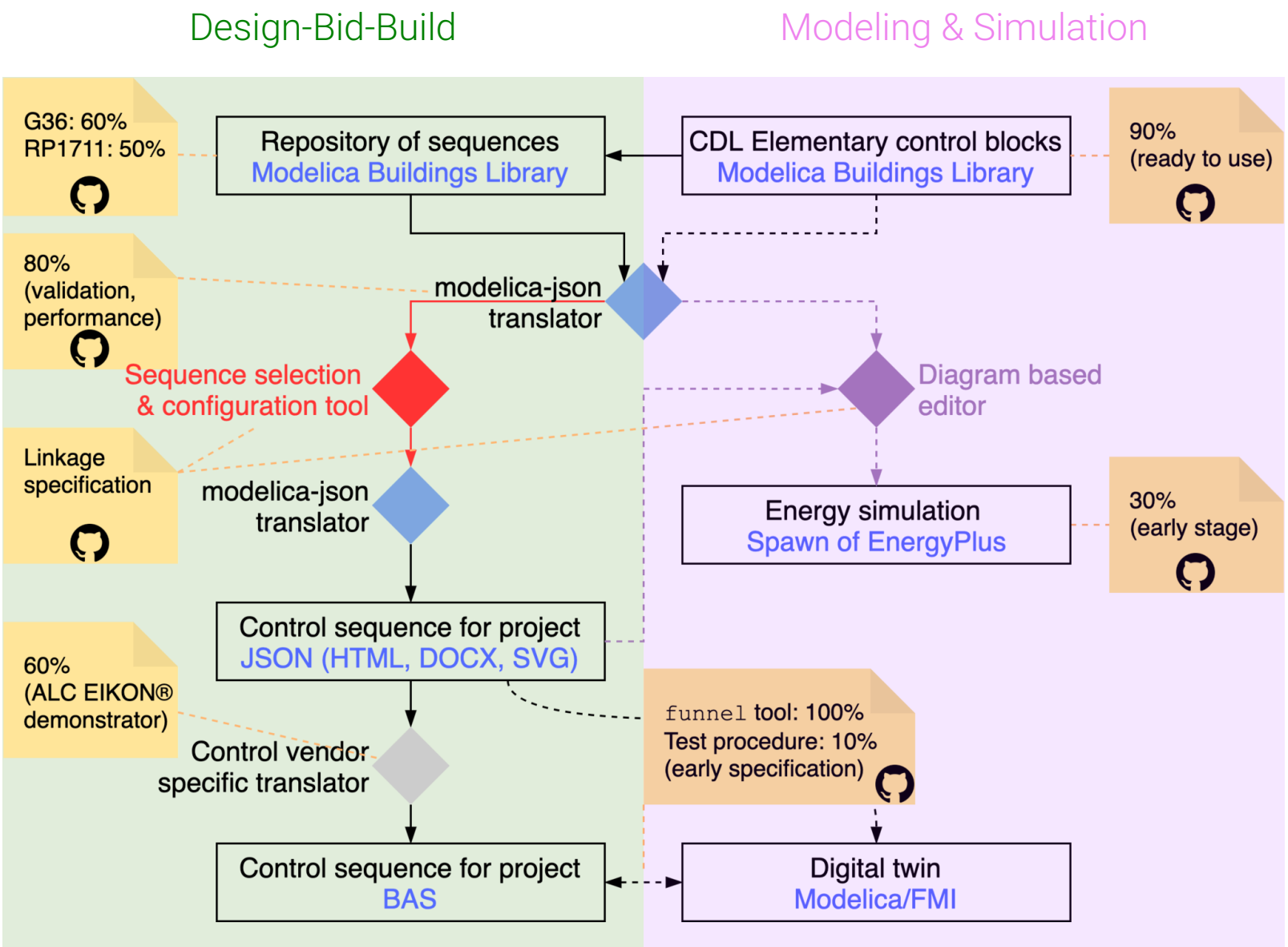
Partners

- kW Engineering – Oakland, CA
- Taylor Engineering – Alameda, CA
- Building Intelligence Group – Portland, OR

Performance Period: Oct. 1, 2019 – Sep. 30, 2021

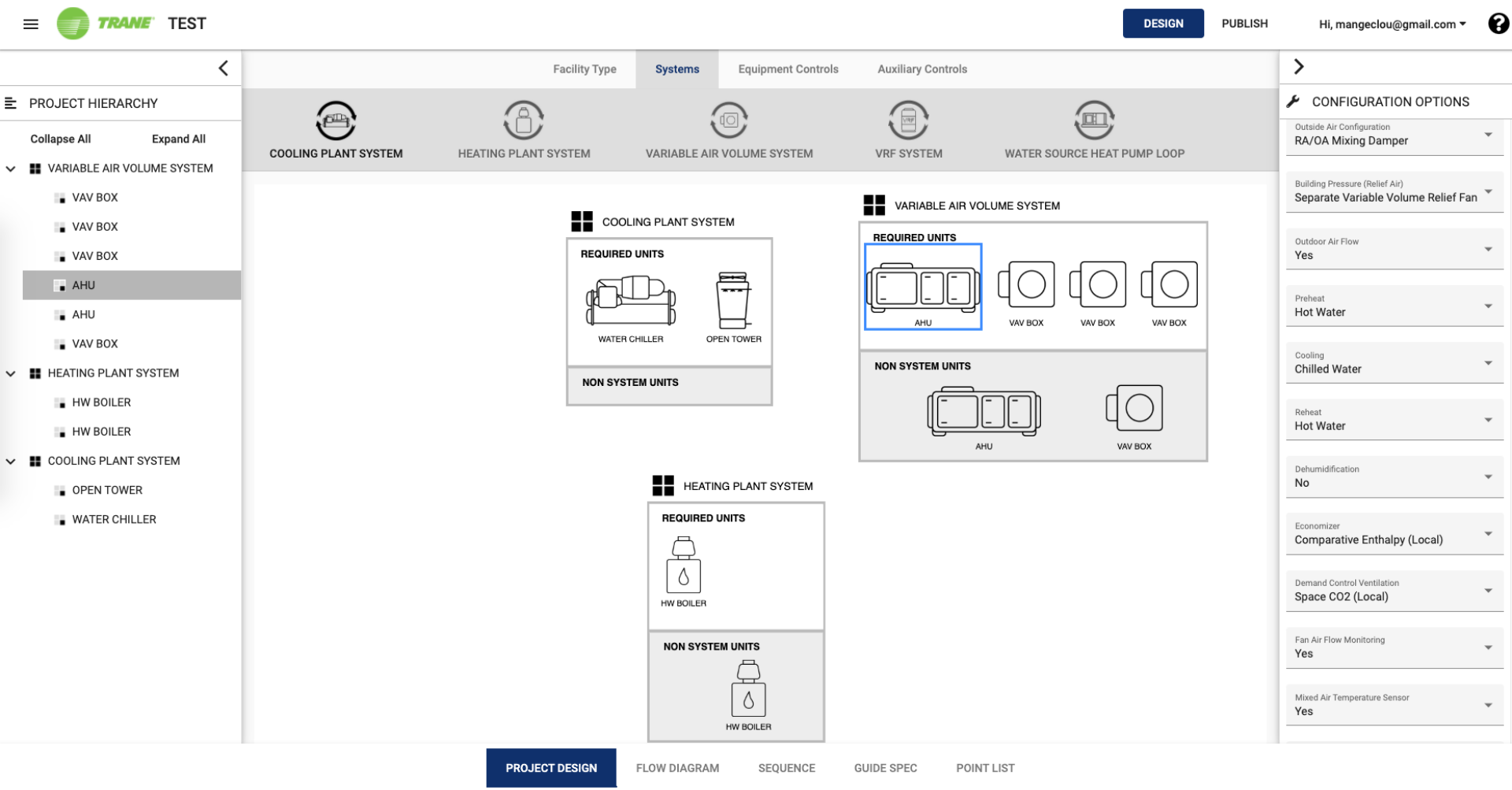


Context - Practical Worflows

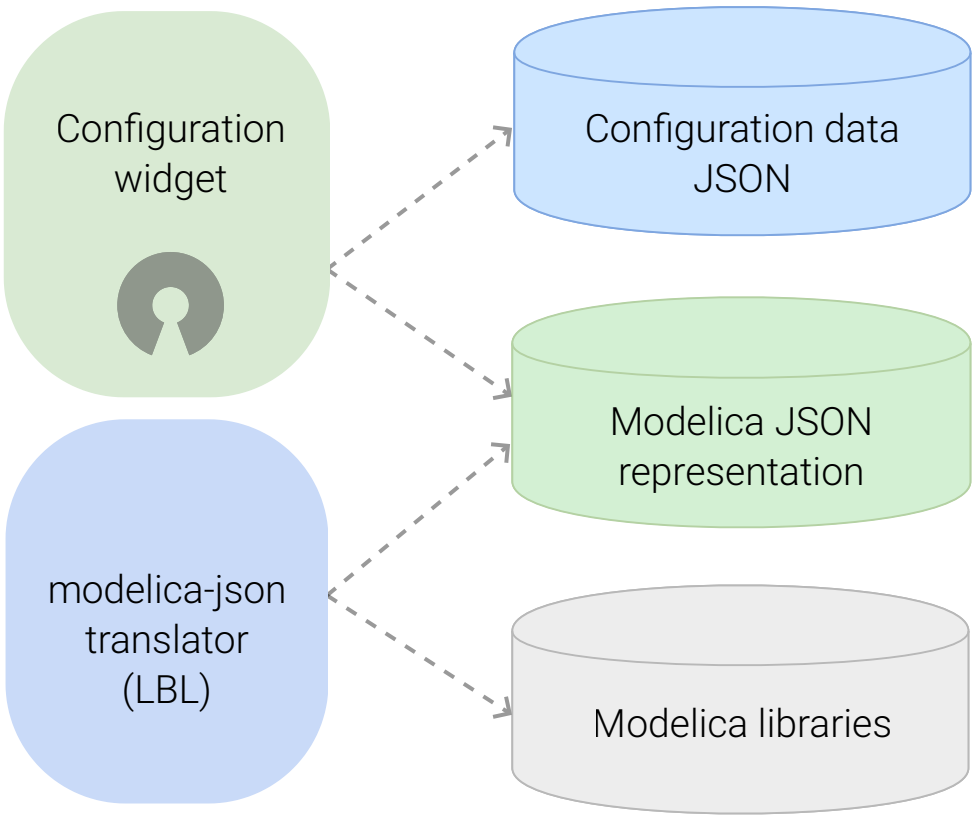


Context - Existing Solutions for Design & Specification

tranedesignassist.com



Requirement Overview



- Based on template-oriented schema specified by LBL
- Allow for 100+ configurations, automatic generation of `connect` clauses for advanced controls

- Based on Modelica JSON schema and parser developed by LBL
- JS libraries can be leveraged

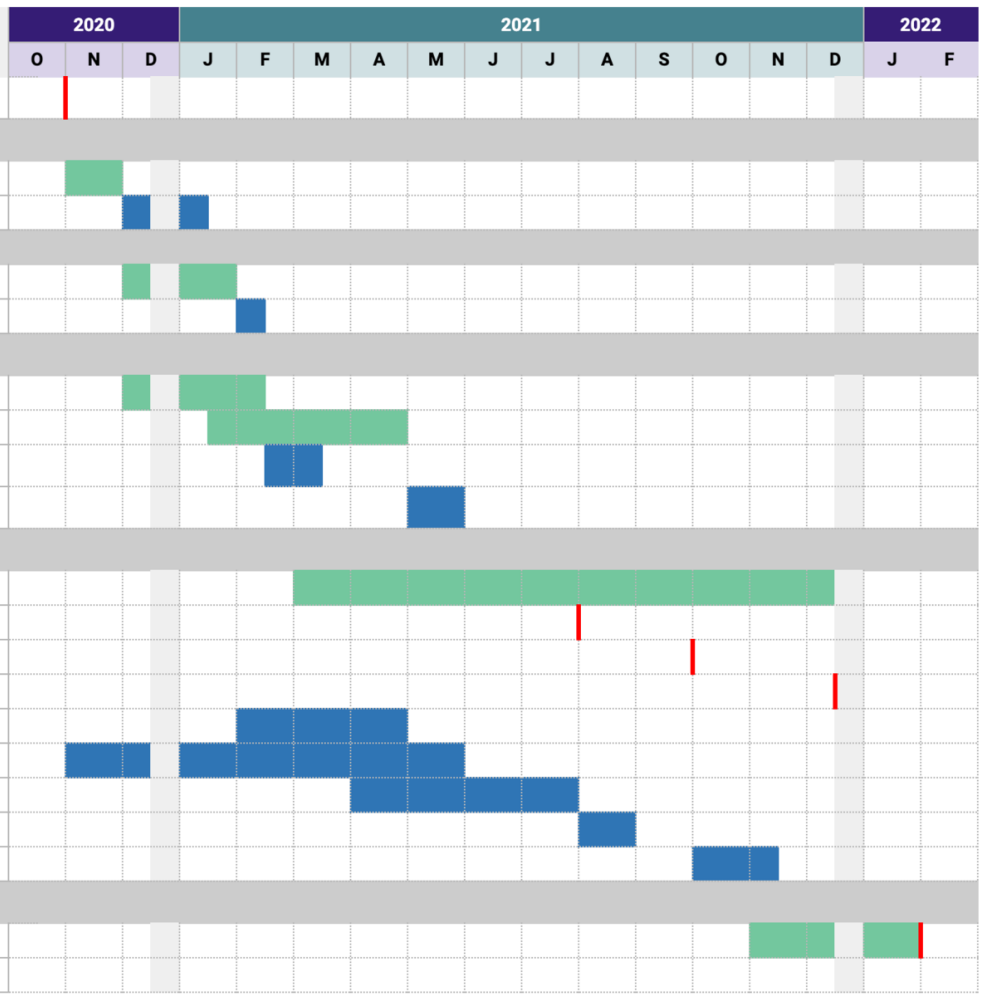
- Based on Modelica specification
- Conditional instances typically allow for 10+ configurations

- Client-side JS code with minimal dependencies
- Open source (3 or 4-clause BSD)
- Available as a free software

Full specification available at github.com/lbl-srg/linkage.js

Linkage Phase I Scheduling (Draft)

#	TASK TITLE	TASK OWNER	DUE DATE
-	Start Date	All	11/1/20
1	**Review of the software requirements specification**		
	Review, submit comments and questions	D+M	12/1/20
	Address questions, update specification	LBL	1/15/21
2	**Specification of the configuration data model**		
	Develop, release specification	D+M	2/1/21
	Review spec, submit comments and questions	LBL	2/15/21
3	**UI/UX design**		
3.1	Discovery phase	D+M	2/15/21
3.2	Design/Test/Iterate	D+M	5/1/21
	Develop example of HVAC template	LBL	3/15/21
	Validate mockups and wireframes	LBL	6/1/21
4	**Software implementation (web app)**		
	Implement, test, document	D+M	12/15/21
4.1	Alpha release	D+M	8/1/21
4.2	Beta release	D+M	10/1/21
4.{3,4,5}	Stable release (w/ user and developer documentation)	D+M	12/15/21
	Develop module to connect block connectors	LBL	5/1/21
	Develop modelica-json	LBL	7/1/21
	Develop library of HVAC templates	LBL	8/1/21
	Review alpha release	LBL	9/1/21
	Review beta release	LBL	11/15/21
5	**Integration into a third-party Modelica editor**		
5.{1,2}	Demonstrator with developer documentation	D+M	2/1/22



Discussion and Next Steps

Validate planning

- https://docs.google.com/spreadsheets/d/1R6HB4_-zItPC-74J3IYnMwFfwt2tEtSvo4sckCoIMYI/edit?usp=sharing

Collaboration

- github.com/lbl-srg/linkage.js
  - Use Github for iterating on the requirements?
- Iteration meetings
- Devetry & Modelon suggestions

Include partners?

- Include HVAC/Controls designers for UI/UX discovery phase
- Group of beta testers
- ...