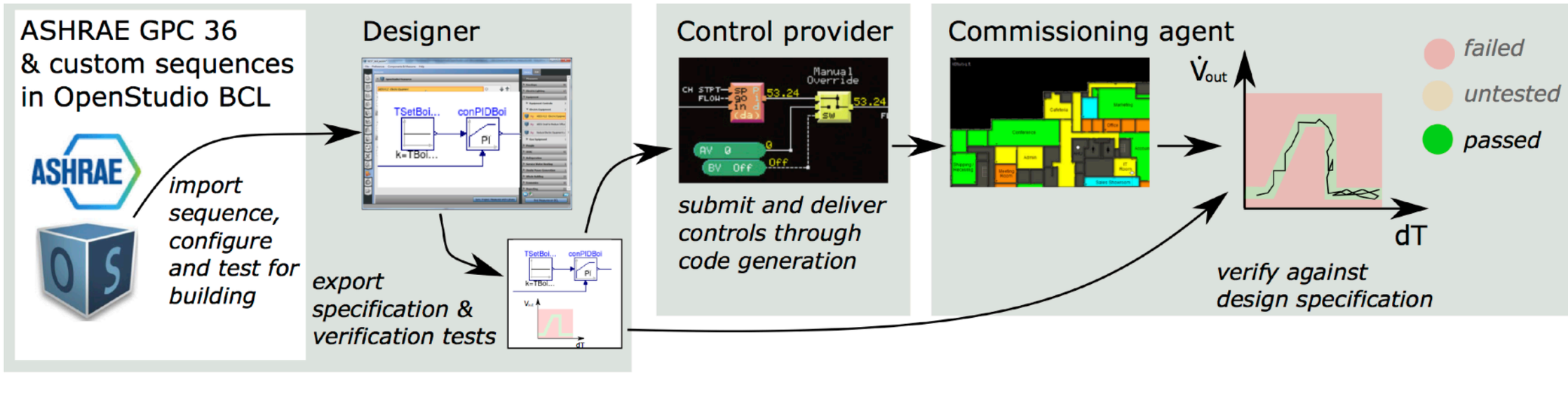
OpenBuildingControl Project
Process Improvements and Tools for Better Control Systems



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June 24, 2019

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Change in process

Current state

- Current process results in sub-optimal performance.
- Design of sequences is not well understood
- How to optimize and compare alternative sequences is even less understood.
- Sequence errors are introduced during documentation, interpretation and programming.
- As built sequences are rarely accurately documented.

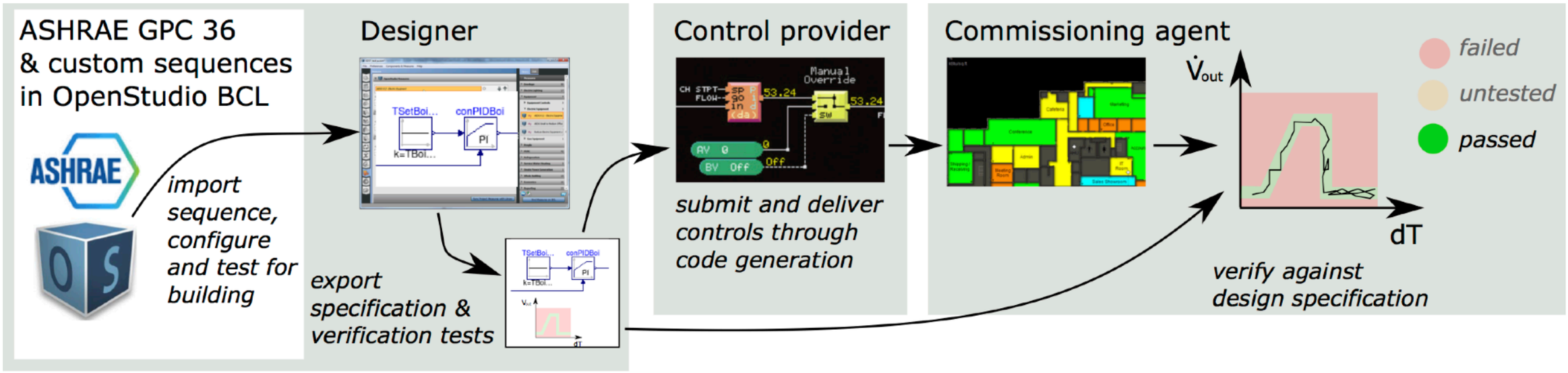
Digitized process

Higher quality

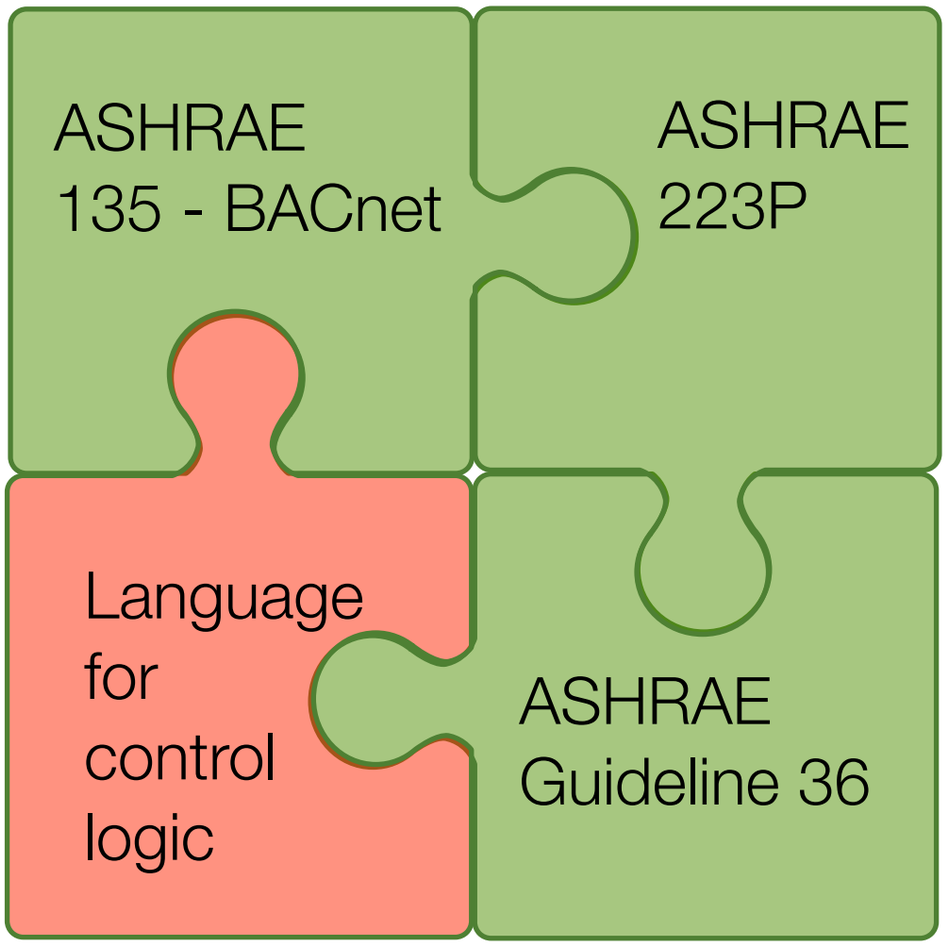
- Designer starts with a library of sequences, including ASHRAE Guideline 36.
- Performance of sequence alternatives can be simulated.
- Tools are provided to verify and document “as built” sequences

More efficient process

- Completed sequence is in a machine readable form called the “**Control Description Language (CDL)**”
- Controls contractor can translate the CDL file for costing and implementation into their programming language.



What is missing?



Why now?

Convergence of:

- Open standards for communications, objects and services
- Semantic tagging to identify system data
- Best in class control sequences
- Open specification language for building systems & controls
- Capability to simulate actual feedback control coupled to energy models
- Code generation for machine-to-machine translation
- Need to control grid-interactive efficient buildings

Collaboration with ASHRAE

Move CDL to be an ANSI / ISO standard

Current state

- Initial work to define and test CDL has been done, with review and feedback from industry
- Everything is “open source” and freely available

Why move to a standard?

- Consensus process used in standards provides robust review and feedback
- Standards make industry adoption easier and more stable
- Adopters can have the confidence that their solution is supported and stable
- Path for international awareness and support

Why ASHRAE?

- Domain expertise
- Complements S135, S223P and G36

Proposed Title Purpose and Scope

Title: CDL - A Control Description Language that enables a Digital Control Delivery Process

Purpose: To standardize a declarative programming language for digitizing the control delivery process, using a human and machine readable format suitable for

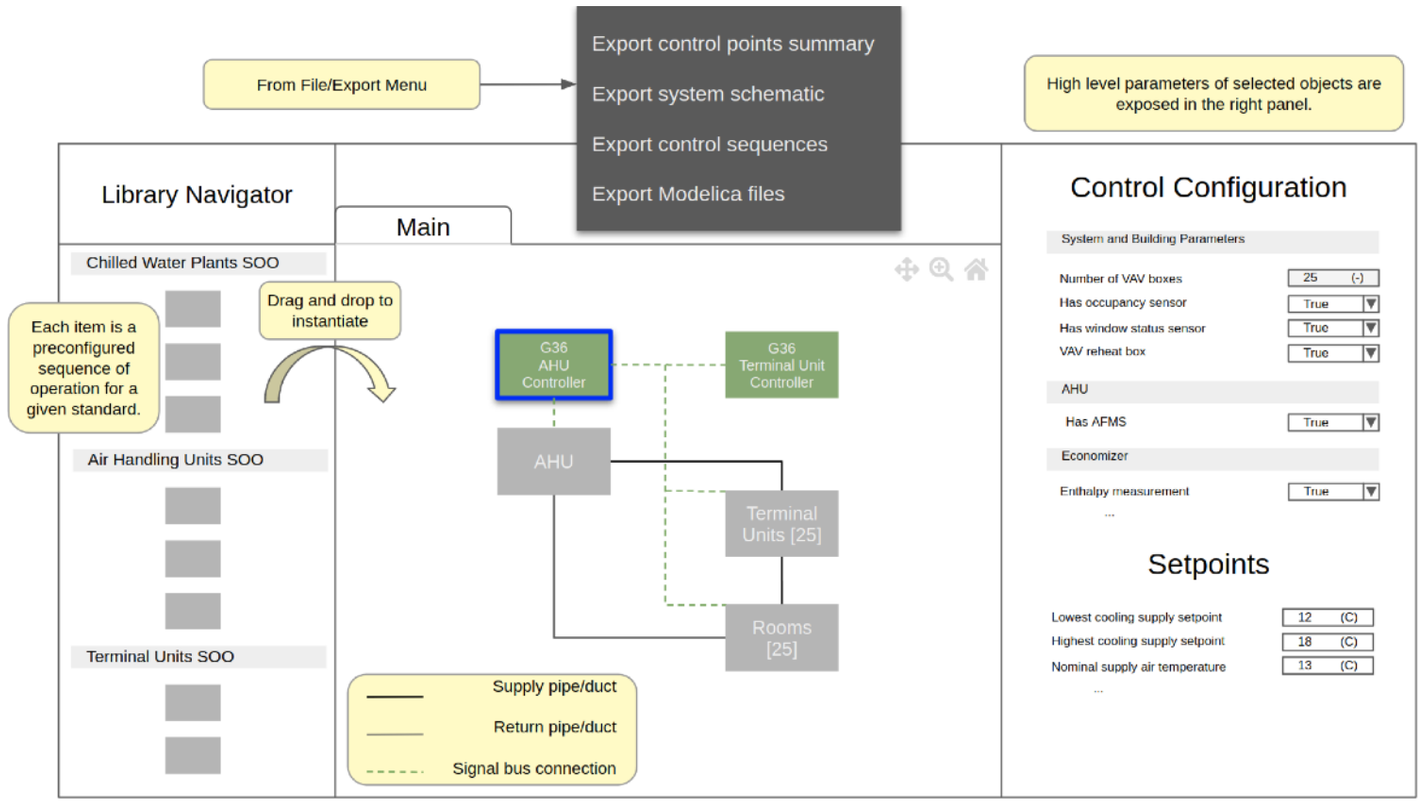
- closed loop performance simulation of the control sequences,
- process to develop and specify sequences,
- machine-to-machine translation, or native use of the sequences for control platforms, and
- verification of the correct implementation of the control sequences.

Scope: This standard applies to control sequences for mechanical systems, active facades, and lighting systems.

Note: Out of scope is water treatment, security, transportation.

Control Sequence Selection and Configuration Tool

- Development 2019-22 in OBC
- Web-based and local use
- Automated Logic has offered use of their Control Spec Builder
- Target audience:
  Mechanical designers and energy modelers
- ASHRAE benefit:
  Provides an easy way for designers to select and customize sequences from Guideline 36
- Challenge:
  The tool will provide a free online way to design and customize sequences. DOE funding requires that it work without license fee or restriction. **We need to verify that this does not violate the ASHRAE copyright for the Guideline 36 document**.



Contact

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