

California Compliance Software Symposium 2

Industry Perspective: DOE/Labs, Coordination with Federal Efforts

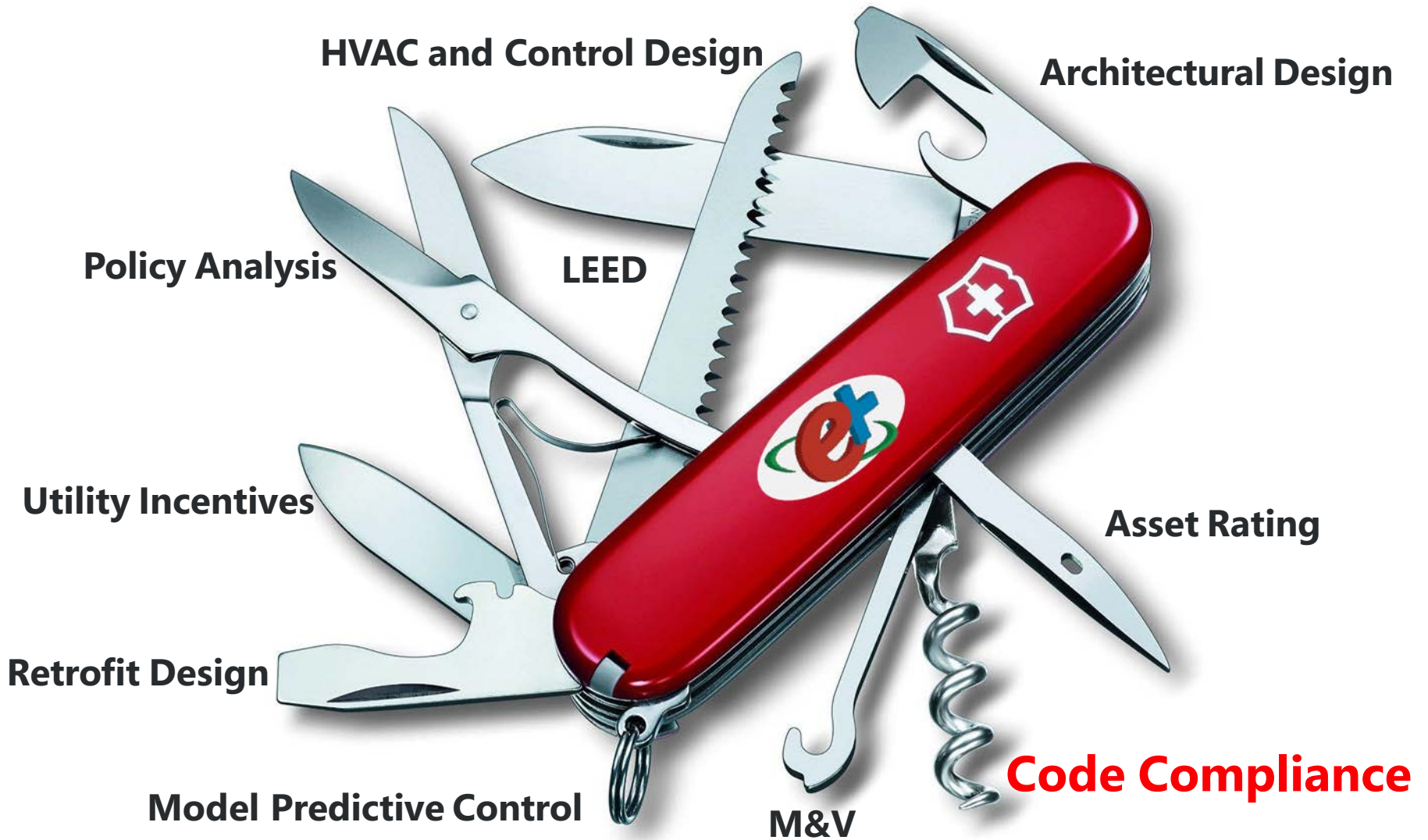
Thursday, July 12, 018

Amir Roth, Ph.D

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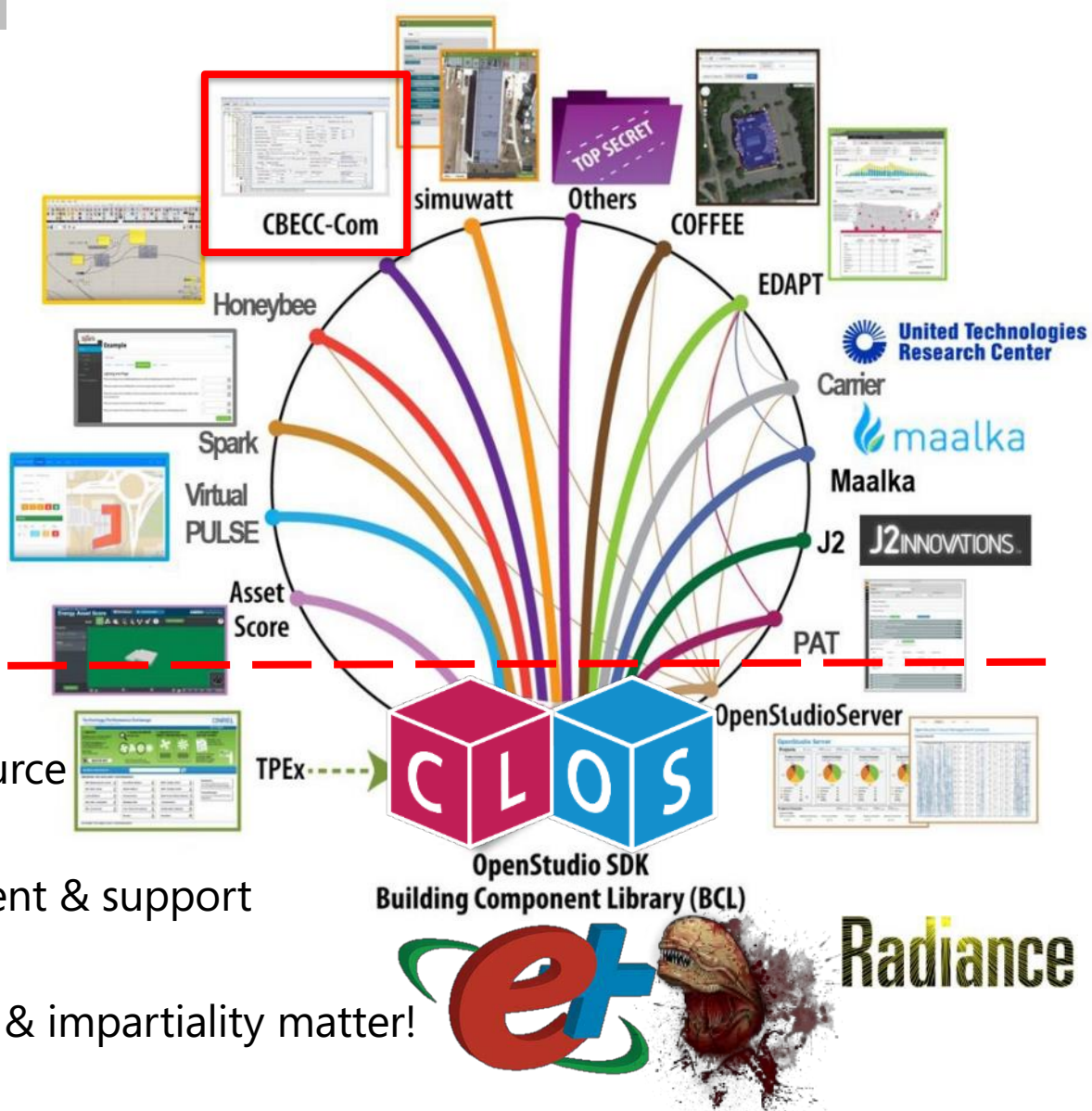
Some (Hopefully) Relevant Updates from BTO



BTO Strategy

Apps: use-case specific

- Open-source or proprietary
- Public or private funding



Platform: general

- Commercial-friendly open-source
- State-of-the-art capabilities
- Commercial-grade development & support
- Long-term commitment
- Public funding □ transparency & impartiality matter!

Supporting activities

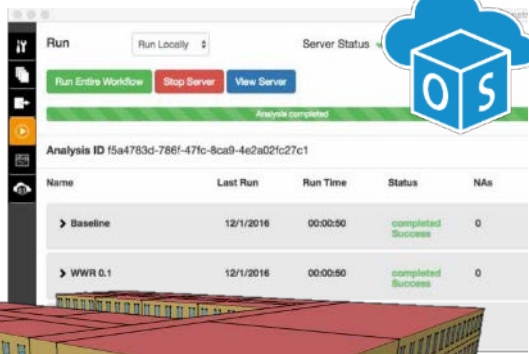
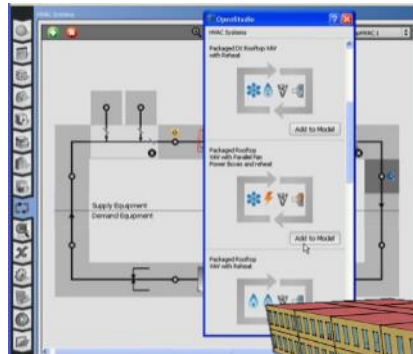
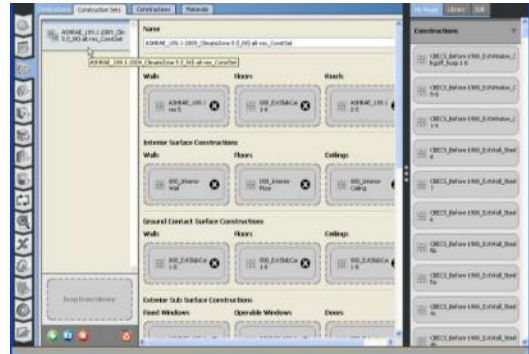
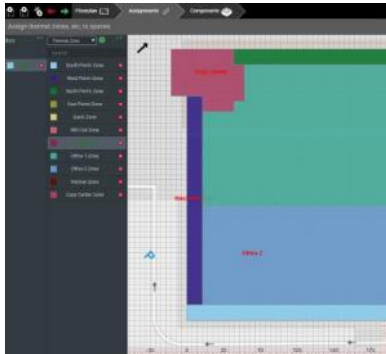
- R&D, testing & validation, data-collection, sponsorships, competitive solicitations



The Platform



Run, compare, report, QAQC, & parametric analysis



EnergyPlus (energyplus.net), Spawn, Radiance, THERM

- Capable documented physics engines

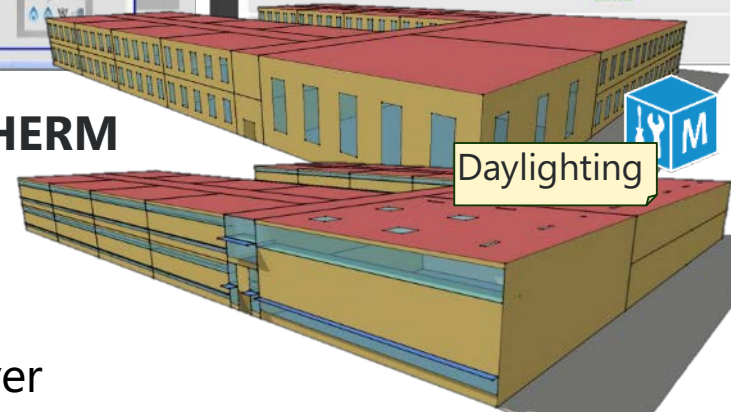
OpenStudio SDK (openstudio.net)

- SDK/bindings, CLI, Measures, Standards "gem", Server
- Automation & large-scale analysis

OpenStudio Application

Which pieces provide the most value?

- YMMV



API (C++, Ruby, Python, JS, C#)



The Platform c 2020

IBPSA Vendor Advocacy Group

- "Collective voice of vendors"
- Engaged DOE since Aug. 2017
- Pushing for less activity near end-users

DOE/NREL will spin off OpenStudio App

- Separate App from SDK (repository, build, test, installer)
- Recruit non-DOE/NREL caretaker
- Que sera sera

Avoid new graphical widgets unless necessary ...

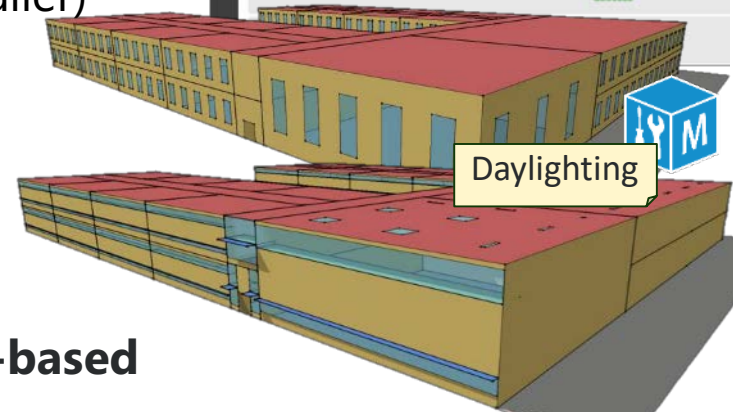
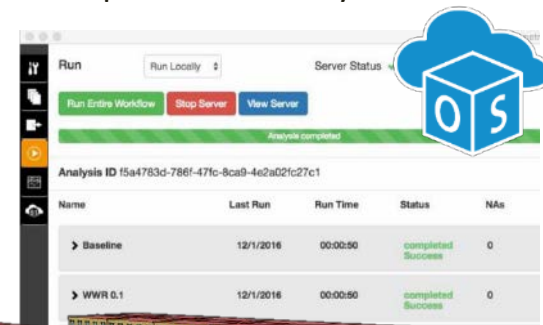
If necessary, make schema (not OpenStudio API)-based

- More portable & generally usable
- Less SDK development/maintenance/testing burden
- Cheaper third-party development
- Floorspace.JS, PAT 2.0

Continue IBPSA Discussions



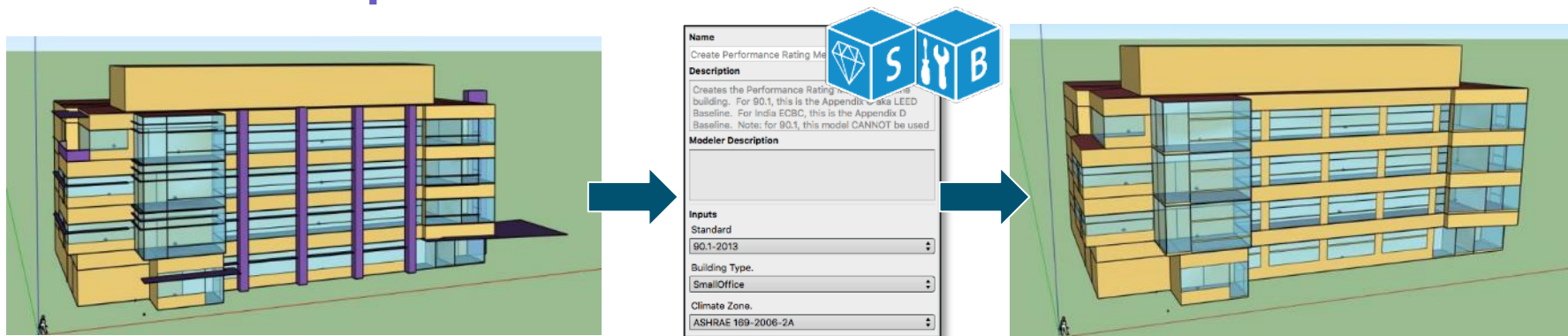
Run, compare, report, QAQC,
& parametric analysis



API (C++, Ruby, Python, JS, C#)



What About Compliance “Rulesets”?



Rulesets can be implemented at multiple levels in software stack

API-based: “Create Performance Rating Method Baseline Building” Measure

- Model + { Type, CZ, Code-Version } □ “Appendix G” Baseline Model
- 90.1 2010, Canada NECB, India ECBC, Title 24?
- openstudio-standards “gem” (rubygems.org/gems/openstudio-standards)

Schema-based

- CBECC-Com/CBECC-Res on SDD
- HERS/ERI on HPXML

Pros and cons

- Detail/control vs. conciseness/abstraction

“Rulesets Are Great. Certified Rulesets Are Greater.”

Compliance/baseline automation benefits modelers

- Alleviates ambiguity, tedium, cheating, improves consistency
- Frees time/effort for more creating productive tasks

Model review remains largely manual □ bottleneck ...

Benefits could be conferred to reviewers by “certifying” implementations

- CA situation of certification by fiat unlikely to work elsewhere
- Benefits to alternative implementations include speed, integration, etc.

Certifying “rulesets” a lot easier than certifying physics-engines

- Especially if a transparent reference implementation already exists
- Use reference to generate test-pairs from projects or randomly generated models
- Transparency helps in diagnosing/disputing discrepancies
- California already set up for this with CBECC-Com
- Openstudio-Standards as reference for ASHRAE 90.1?



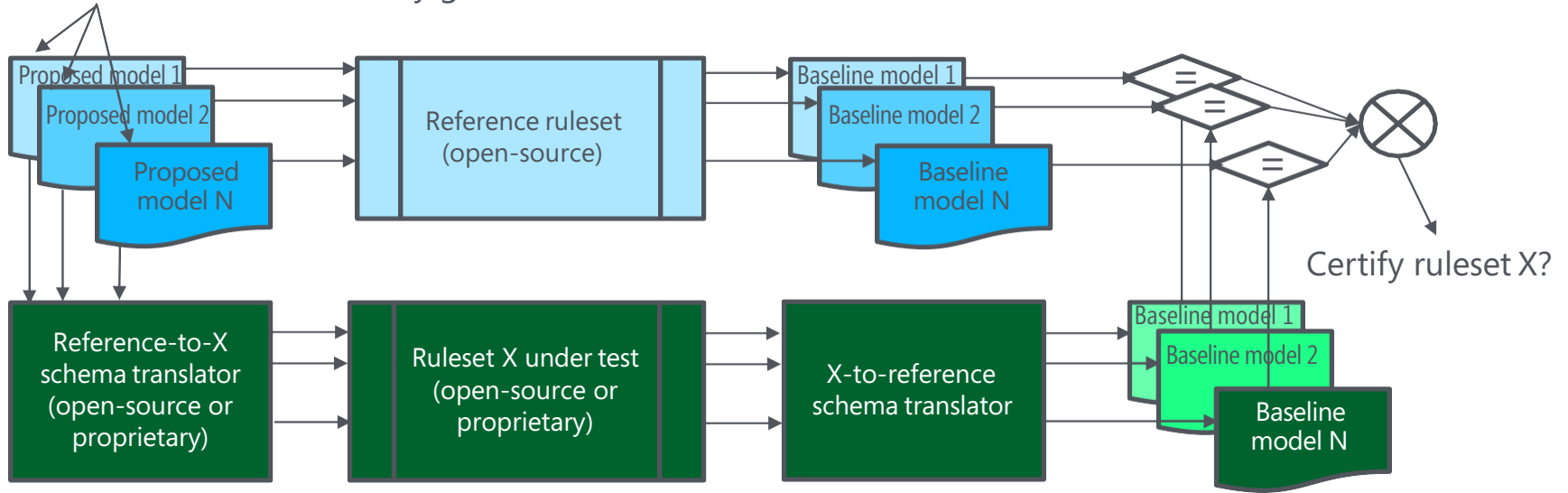
What do you think?



- Any questions?
- Comments?

See You @ ACEEE

Submitted and/or randomly generated models



Panel 5, Thu. 10:30am

Let's move on to a discussion of...

Wrap-up: **Action Items & Next Steps**

Abhijeet Pande

Thank you.

- **Amir Roth, Ph.D.**
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