

IBPSA Project 2: BOPTEST Virtual Progress Meeting

11/14/2023

9:00 – 10:30 AM U.S. Eastern Time

Participation

Present	Name	Affiliation
1	Lieve Helsen	KU Leuven
1	Javier Arroyo	
1	Jelger Jansen	
1	Filip Jorissen	Builtwins
1	David Blum	LBNL
	Michael Wetter	
	Christoph Gehbauer	
1	Ettore Zanetti	
	Zhe (Walter) Wang	Hong Kong University of Science and Technology
	Dan Wang	
1	Wanfu Zheng	
	Valentin Gavan	ENGIE Lab
	Piljae Im	ORNL
	Yeonjin Bae	
	Sen Huang	
	Yan Chen	
	Xing Lu	PNNL
	Draguna Vrabie	
1	Laura Zabala	
	Vadim Liventsev	R2M
	Roel De Coninck	DeltaQ
1	Iago Cuepero	
1	Bart Merema	
1	Harald Taxt Walnum	SINTEF
	Gaurav Chaudhary	NTNU Norway
	Esther Borkowski	ETH Zurich
	Kyle Benne	NREL
	Gregor Henze	University of Colorado-Boulder
1	Patrick Henkel	RWTH Aachen
	Fabian Wullhorst	
	Laura Maier	
1	Peder Bacher	DTU
1	Konstantin Filonenko	
	Sicheng (James) Zhan	National University Singapore
	Rossella Aleksi	Politecnico di Milano
1	Davide Fop	Politecnico di Torino
	Justin Prince	Arup
	Fabian Ochs	University of Innsbruck
	Xu Han	Harvard University, University of Kansas
	Zheng Oneill	Texas A&M University
1	Mingzhe Liu	
1	Kun Zhang	École de Technologie Supérieure (ÉTS)

Total Participants: 17

Notes (timing is approximate)

1. Project Administration (~ 0:00)

- In-Person Meeting at IBPSA USA SimBuild 2024 in Denver CO May 21-23 – Dave heard back from Carrie and put in touch with planning, conference to be held in Auraria Higher Education Campus. To start, asked for 4 hours room, 20 people, A/V, power, coffee/water, Dave awaiting availability and pricing. Zoom poll: How many would have interest in attending (non-committal)? ~6 (Dave, Ettore, Javier, Laura, Kun, one PhD from Lieve's group). **Dave** to send out poll online too.
- Additional in-person meeting could be at American Modelica Conference in Connecticut in October 2024.

2. Emulators (~0:15)

- Multizone Hydronic Simple [Bart, Iago] – no updates. Waiting for IDEAS updates.
 - i. Internal zonal airflow still working on bugs, then merge IBPSA, and then release new version of IDEAS. Hoping a few weeks for interzonal airflow and then another week.
 - ii. **Iago** will test with compilation in OCT with latest IDEAS possible. **Iago** will also add heat pump. Check in on next meeting.
 - iii. Next year will not be able to compile with OCT anymore. Moving to OpenModelica. LBNL has OCT and could compile.
- Large Office [Yan, Xing] – Kun finished first round of review and sent back forms in October.
 - i. Review document provided was exhaustive and good. **Suggestion**: to update review documentation to reflect use of Spawn. Consider also Harald's comments from Aachen on improving model review process with more testing.
 - ii. Primary comments being addressed: **Xing** implementing infiltration model (schedule based) and Co2 measurements for KPIs. **Dave** to check CO2 calculation to see why testcase was running just fine
- ADRENALIN Emulators and general update [Harald]
 - i. Updated to 0.5.0 version of BOPTTEST and tested ok.
 - ii. ADRENALIN will not be launched before Christmas. **Harald** would like to be in touch with **Kyle**.
 - iii. Need to think about minimizing cheating – Arup thinking about this too.
 1. Thoughts: Possibility through Service to make models only available to participants? And if can initialize with API key then know how many times?
 2. Filip: Do we need for general BOPTTEST and not just competition? Keep in mind iterative process to improve controller.
 3. Dave: one careful point is not training model or RL on testing periods.
 4. Lieve: Not practical to make generic whole process to stop cheating. But click some box to check for common practice.

5. Davide: Are there guidelines for BOPTEST testing? Should they be in user guide? Add to documentation to make it clear how to use BOPTEST. Javier suggests e.g. do not train on testing periods.
- DOPTEST [Javier]
 - i. Lots of ongoing work – keep improving tiny cluster test case in different ways. Focused on having each building reacting to prices from embedded controllers. Started working on EV modeling.
 - ii. Workflow for compiling models with OpenModelica automatically (https://gitlab.kuleuven.be/positive-energy-districts/moped/-/merge_requests/131) and running yearly simulation with pyfmi. Realized a couple of things:
 1. **Suggestion:** Use filter option of pyfmi to filter for variables that are needed – user defines data to use on initialization so can further filter variables?
 2. OpenModelica translation and compilation back-and-forth, leading to improvements on software.
- Twozone Apartment Hydronic [Ettore] – **Laura M.** implementing changes we agreed upon.
3. Software (~0:35)
 - General [Dave] - BOPTEST v0.5.0 released Oct 4, BOPTEST-Service v0.3.0 with support for v0.5.0 deployed ~ Nov 6. – some issues reported with Service by one user (Verdigris, USA <https://verdigris.co/>) after update, let us know if issues.
 - Weather Forecast Uncertainty [Wanfu, Laura] – delayed after city learn challenge ends tomorrow since Wanfu participating. Meeting next week to recap and discuss. **Laura** will forward meeting invite to Peder or others interested.
 - Repo Refactor [Dave] – see presentation
 - i. Iago mentioned orchestration of dependencies between BOPTEST repos (when making a PR that affects multiple places)
 - ii. Javier made comment about keeping some small testcases inside BOPTEST for unit test purposes? Dave agrees.
 - iii. Iago suggested to have FMUs available for download from the cloud. Dave thinks of adding them as assets on GitHub releases.
 - BOPTEST-Gym v0.5.0 - updated to use v0.5.0 and Service 0.3.0.
4. Trials (~0:55) – No updates.
5. Community Engagement and Outreach (~1:10)
 - RLEM23 Workshop associated with BuildSys - given on Nov 12 and materials posted to repo. 4 people at beginning and 2 by end. One particular interested participant from FZI – associated with a university in Karlsruhe.
 - PhD student at Melbourne using BOPTEST-Gym and sent PR
 - i. Vectorized environments to train agents in parallel, as many cores had.
 - Website “Training” tab to be filled in? **Javier** to propose and PR.
6. Miscellaneous (if time)
 - Next meeting on December 12. Look for doodles to schedule future meetings.
 - Task leader meeting being scheduled to further organize initiatives and structure under each task.