

**IBPSA Project 2: BOPTTEST**  
**Task 1 Virtual Meeting: Outreach and Community Building**

19/09/2024  
17:00 – 18:00 CET

Participation

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

**Total: 6**

## Notes

### Agenda.

- Introduction.
- Review upcoming events, workshops, and presentations.
- Review past events, workshops, and presentations.
- New adopters, usage, and feedback.
- Website and other media.
- Miscellaneous.

### Introduction.

We start the meeting with future events so Esther can join and give an update on the research webinars (she can only join for the first part of the meeting).

### Review upcoming events, workshops, and presentations.

- Regular research webinars for IBPSA Project 2 within IBPSA Educational Webinar Series.
  - Esther and Walter have been working on this over the past month. The most difficult part has been to integrate within the IBPSA webinar series, but we have already gotten the approval.
  - One more benefit of aligning with IBPSA Webinar Series is that they will upload the recordings to YouTube so we can later post the links on our website.
  - The first webinar will take place on November 27<sup>th</sup> (September was too rushed).
  - The format is 1 hour per webinar, with one presenter from industry and another from academia. 20 mins per speaker and then Q&A. The webinar will be recorded.
  - We should actively advertise the webinar through different channels. We will add general info and links to the website. We should use our personal LinkedIn account to repost the webinar announcement when it comes. Personal contacts should be used to reach the industry. Modelica community can be also exploited through Michael and Modelon (Dave in contact with them). Also disseminate at the American Modelica Conference (October 14<sup>th</sup>), Dave knows the organizers and maybe they can create an announcement there.
  - The first webinar will have Iago Cupeiro (from dnergy) and Parastoo Mohebi (from The Hong Kong University of Science and Technology) as presenters.
  - The second webinar will take place in January. The presenters are not set in stone yet but there are a few candidates.
- Adrenalin smart building HVAC control challenge. See more info [here](#). (\*The following notes are taken from a separate meeting of Harald and Javier since Harald cannot join this meeting).
  - The training phase finished last Sunday. 140 people signed up. 22 people got to submit something, but half of them were invalid submissions. In the end, there are only 12 qualified submissions (that is, submissions with results of a controller that can beat the baseline).
  - The threshold for participation (get a qualified submission) is high. Only one of the submissions has a decent result.

- After inspecting plots of the result trajectories (which are confidential at this stage), Harald emphasizes the need for an actuator travel KPI because of the pulses of the inputs to the emulator. This could lead to aging of the systems but it is not reflected in the results of BOPTEST in any way.
- There has been an issue with the server which is not yet fixed. The issue is that sometimes requests to the server are not working. Harald has done some testing and realized that FMUs are working properly, so the issue relates to the communication infrastructure leading the payload of the request to be lost somewhere. Kyle will add more logging.
- Harald will do the keynote to talk about the learnings of the Adrenalin project in our next meeting at DTU.
- BS2025.
  - In our last Task 1 meeting we considered an internally organized contest for the BS2025. Javier is not joining the BS2025 and cannot lead the efforts so it will probably not take place.
  - Dave would like to host an in-person meeting and a workshop on sharing experiences. The format is not yet fully decided.
  - Jaap and Wang, planning to go to the BS2025 conference and are willing to help in any format.
  - Both abstracts for the papers on BOPTEST developments and test cases have been submitted and we are waiting to get the reviews, which are expected in October.
- Dave will be presenting BOPTEST at the DOE peer review event. The presentation is open to the public and used by DOE to evaluate the project. More information [here](#).

#### Review past events, workshops, and presentations.

- CCAI Summer School 2024: Javier prepared a tutorial with a recorded video and a notebook. This was used by the organizers as materials for the Summer School but we did not get feedback.
- Javier gave a course at the [Control Department](#) of the University of Seville. The course lasted for two days and it was on Modelica and BOPTEST. The audience was interested in developing their own BOPTEST test case for research purposes. Javier will follow along.
- IBPSA USA SimBuild. The session took place in May and Dave presented an overview of BOPTEST. Xing Lu from PNNL presented the large office test case (almost finished). Kyle also presented on Alfalfa (the NREL platform on which BOPTEST service architecture is based). There were around 10-15 participants with some new people.

#### New adopters, usage, and feedback.

- Aniket Dixit (Coventry University): actively participating in BOPTEST-Gym since recently.
- Dave has seen interest from [Arup](#). BOPTEST helps them evaluate different control strategies for retrofits. They want to develop a workflow for that. They are developing Modelica expertise to create their test cases. They may also implement some Bacnet developments in BOPTEST and in collaboration with LBNL.
- [Distech Controls](#) reached out Dave and showed a lot of interest. Dave does not know how far they have gotten with their developments.

- LBNL collaborates with school development programs that will potentially use BOPTTEST to train HVAC technicians (e.g. on how to tune a PID controller, find faults, etc.)
- Xiangwei et al. have published a paper where Javier has aided in the use of BOPTTEST-Gym. The topic is on safe reinforcement learning using model predictive control as a safety filter. See [here](#).
- [dnergy](#): new features control features are being tested by Iago for the commercial multi-zone office simple hydronic emulator. Iago has been creating an adaptor (interface) for BOPTTEST. Implementing a model predictive controller is still in progress.

#### BOPTTEST website and other media.

- It may be a good idea to refactor the “News” tab of the website to have two sub-directories: “Events” and “Updates”. Javier will take care of this.
- Javier searching for more rigorous KPIs to track and quantify usage. Tracking of user information relates to the dashboard. However, the dashboard database is not yet very flexible. Some user data like name or institution is not being collected yet. In this coming fiscal year, Kyle will focus on user data collection and updates for usability. Kyle can also report on the load of service and web service upon request (how many results are submitted per day), but it is not happening systematically.

#### Miscellaneous.

- The breakout session for Task 1 at the upcoming in-person meetin in Denmark on Nov 20, 21 will take place on the second day between 2:45-3:45. The topics for discussion can be accessed through this [Google Sheet](#).