IBPSA Project 2
Online meeting: Task 1 – mission BOPTEST funding

13/03/2025

Attendees:

Name	Affiliation
Antonio Galvez	R2M, Spain
Bertrand Terres	Terion, Denmark
Iago Cupeiro	Cupeiro Sinte, Spain
Javier Arroyo	Wedoco, Spain
Laura Zabala	R2M, Spain
Lieve Helsen	KU Leuven, Belgium
Rossano Scoccia	Politecnico di Milano, Italy

Agenda.

- Events, workshops, and presentations [10 min]
- Website and other media [5 min]
- Mission BOPTEST funding [40 min]
- Miscellaneous [5 min]

Intro

Introduction to Rossano: Researcher and teacher at Politecnico di Milano. Supervisor of Ettore during his PhD.

Events, workshops, and presentations.

- **2025/01/29 → 2nd Project 2 research webinar at IBPSA Webinar Series**. Topic: BOPTEST in action. Two presentations took place:
    1) Robert Lastinger & Aaron Fish (Distech Controls) explain how Distech integrates BOPTEST into its applications testing and customer training programs and demonstrate how they have built open-source tooling to use their hardware to monitor and control BOPTEST testcases.
    2) Yuan Gao (Kyushu University) demonstrates how BOPTEST can be integrated into studies on model predictive control and reinforcement learning.

    Webinar recording [here](#).
- **2025/03/26 → 3rd Project 2 research webinar at IBPSA Webinar Series**. Topic: Grid-interactive buildings. Two presentations scheduled:
    1) Flavia de Andrade Pereira (University College London) will explore how demand flexibility controls can be made generalizable and portable across BOPTEST test cases and real-world buildings.
    2) Lucas Bex (KU Leuven) will discuss simulation-based testing of control strategies for districts, introducing Yards, a simulation framework based on DOPTEST.

    Register for the webinar [here](#).

- **2025/05/13 → Presentation at the Building Digital Twin International Congress**. Laura Zabala will present there.
- **2025/08/24 → BS2025 in-person meeting and workshop**. Esther and Walter are organizing the workshop. Dave is in contact with the conference organizers, who have confirmed there is room for workshops like ours.
- **2025/08/24 → BS2025 papers on software and test cases**. Papers have been submitted. Thanks a lot to the main authors, Dave and Ettore for leading the efforts.

Website and other media.

Updates to website

Continued updates for project task meetings.

Pending edits:

- Results Dashboard: add a summary of the dashboard and a link to it.
- Documentation: Needs multiple updates here and there. Particularly to remove those sections that are deprecated. Distinguish between the technical implementation of custom KPIs and other KPIs.

Mission BOPTEST funding

- **Objective:** define a consortium emerging from IBPSA Project 2 that seeks <u>research</u> funding to support BOPTEST developments and community building. Sharing a research project leads to common goals and delivers a united community.
- Interested partners have filled out the form and submitted research interests. Javier has had meetings with specific partners to gather input as well. Shared feedback is that we should focus on research rather than development.
- Partners that have already shown their interest in participating are (listed in alphabetical order):

Organization	Country	Industry/Academy	Main interest
Cupeiro Sinte	Spain	Industry	Modeling and development
DTU	Denmark	Academy	Demand response
ÉTS*	Canada	Academy	Advanced control in B/DOPTEST
KU Leuven	Belgium	Academy	DOPTEST
Politecnico de Milano	Milan	Academy	Development of a new test case
R2M	Spain	Research org.	
SINTEF	Norway	Research org.	
Terion	Denmark	Industry	Production-grade MPC/RL
Wedoco	Spain	Industry	DOPTEST & advanced controls

A summary of specific potential contributions/inputs from each partner:

- **Cupeiro Sinte**: Software and model development for B/DOPTEST. Model testing and benchmarking. Can also contribute to trainings and workshops.
- **DTU (Technical University of Denmark)**: Advanced control benchmarking in existing and new emulators and extensions toward DOPTEST. Particularly interested in demand response algorithms in districts as well as data-driven approaches for building modeling. They have Modelica expertise.

- o **ÉTS (École de Technologie Supérieure)**: Canada is a third country associated with Horizon Europe (see here). It seems ÉTS can participate as a partner in both Horizon Europe and CET Partnership projects. However, receiving direct funding from these programs depends on specific conditions, such as the essential nature of ÉTS's participation or securing funding from Canadian sources.
  - o **KU Leuven**: Would like to focus mostly on DOPTEST but can contribute to other use cases. ConstrucThor is a large pilot facility under construction that might serve as a pilot for the project. It will be normally ready by the end of this year.
  - o **Politecnico de Milano**: Advanced control benchmarking in new building emulators. They could use the VeluxLab where we have data from 2010.
  - o **Terion**: Optimization engine using BOPTEST-Gym and software engineering for "production-grade" MPC/RL development.
  - o **Wedoco**: Advanced control and extension toward DOPTEST.

- Other partners interested (or that could be interested):
  - o LBNL. Ideally, we could have USA partners as active (funded) partners but not clear yet whether that is a possibility.
  - o Hong Kong University (Walter Zhe): Javier contacted Walter, but they are not eligible to apply for EU funding. Walter mentioned there may be funding opportunities in Hong Kong that he could apply for in parallel and use for BOPTEST development and testing.
  - o Texas A&M University: Guowen Li talked with his advisor Zheng O'Neill about the project. They have a lot of interest in BOPTEST but, due to unclear policies regarding collaborations outside US they will not engage in explicit international collaborations with EU for the moment.
  - o Aachen university. Have not been contacted.
  - o dnergy: Have not been contacted. Might be able to provide a pilot. Javier and Iago will talk to them.
  - o University of Seville, Spain (Prof. Daniel Limon): Have not been contacted. Experts in control theory. They are already using BOPTEST.
  - o BAEDA research lab from Polytechnic University of Turin: Have not been contacted. Experts in RL.
  - o The Sustainable Artificial Intelligence Laboratory (SAIL) from Granada University: Have not been contacted. Developers of Sinergym. Experts in RL.

- When forming the consortium, we should focus on the needed skills to effectively address the proposal. We are likely missing industrial partners and representation from Eastern European countries, which could improve the chances of acceptance.

- We could get support letters to prove the broad and impactful scope of our project from:
  - o DOE
  - o IBPSA
  - o IEA Annex 96

- We are considering two types of calls: HORIZON and CET Joint Call 2025. We need to decide on one or the other. The main disadvantage of the CET Partnership is that it requires compliance with country-specific requirements in addition to the generic call module requirements applicable to the full consortia.

- Calls comparison:

	CET Partnership (formerly ERANET)	Horizon Europe (Cluster 5)
Scope	More regionally adapted funding calls, with country-specific requirements.	Broader, high-impact EU-wide projects.
Complexity	Generally lighter requirements, easier to manage.	Heavier administrative burden, stricter requirements.
Budget	Lower budgets, country-dependent funding.	Higher budgets, typically €5M-€10M+.
Consortium	Often focused on **specific regional/national collaborations**.	Requires EU-wide or international partners.
Technology Readiness Level (TRL)	Often focuses on pilot projects and applied R&D.	Supports both early-stage R&D and pilot projects.
Co-funding from National Agencies	Partially funded by national governments, requiring national matching funds.	Fully funded through the EU.

- Calls planning:
  - **CET Joint Call 2025**: Shifted forward compared to previous years. Prepoposal to be submitted between June-October 2025. Expected acceptance in ~December, and the deadline for submission of the full proposal in ~March.
  - **HORIZON**: The deadline for submission of the full proposal is probably September 2025 (did not find an official deadline yet). After screening the calls, the best fit is on "Cluster 5: Climate, Energy, and Mobility". A draft of The Work Programme 2025-2027 for Cluster 5 can be found here. We align well with the following funding calls:
    - **HORIZON-CL5-2025-D4-02-SRP**: Smarter buildings as part of the energy system for increased efficiency and flexibility.
    - **HORIZON-CL5-2025-D4-03**: Innovative pathways for low carbon and climate-resilient building stock (Built4People Partnership).

- Probably the most interesting is the one on Smarter Buildings. Main points of attention here:
  - Expected TRL 6-8 by the end of the project.
  - Needs to demonstrate the proposed solutions in at least three pilots, covering different climatic zones.
  - It is an SRP (Societal Readiness Pilot), meaning there is an emphasis on real-world implementation and industry partnerships.
  - This topic requires the contribution of the relevant Social Sciences and Humanities (SSH) expertise.
  - The draft requirements emphasize measurable savings and smart readiness levels.

- Suggested title:
  ### BOPTEST+: Smart Building and District Energy Optimization for Next-Generation Control Systems

- Thoughts/discussion:
  - We may want to go for the HORIZON call on Smarter Buildings.
  - We could compare actual savings achieved in pilots with the savings achieved in our models. Also, connection to the energy market is important, in that sense, DOPTEST is well aligned.
  - It is probably a good idea to somehow include system integration or flexibility exploitation in the title. Something that indicates active grid participation or flexibility exploitation. Idea:
    ### BOPTEST+: Smart Building and District Energy Optimization to Enable Flexibility and System Integration
  - We should go for a storyline and work from there. Javier will work on a concept note from the current Work Programme draft and share it with partners for feedback.
  - We need someone with experience to coordinate writing and project management. R2M can provide it as a service.

- The next meeting will be scheduled in ~1 month from now.