



# IBPSA Project 1

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## WP 3.2 Application

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## Objective of WP 3.2

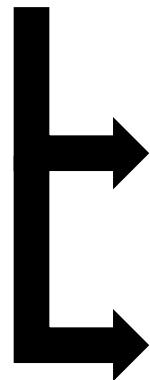
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To demonstrate capabilities enabled by the use of Modelica for building and district energy systems design and operation

## Outcome

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Collection of application case studies that aim at sharing best practices and document them for dissemination to the simulation community

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- Case studies will be described using a **case study template**
  - Information gathered through the template will be used to illustrate the case studies on **IBPSA Project 1 website**

# Work done since meeting in Rome

- The case study template has been finalized and uploaded on GitHub

## Template for description of application case studies – IBPSA Project 1 WP3.2

### 1. Title and authors

-Provide a title for the application case study

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-Name the authors that are responsible for the case study

Name/Institution/Country.....

Name/Institution/Country.....

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### 2. General Description:

-Formulate a general outline of the case study by including: objective, description of HVAC/district system and main results (if already available)

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-What's the status of the case study?

- ☐ On going  
☐ Completed

-Which is the scale of the simulation?

- ☐ Component

### 3. Diagram and picture

-Include at least two pictures for your case study:

1. One diagram showing the layout of the HVAC/district system
2. One picture of Modelica model

### 4. Thermal zone modeling

-How many buildings have you modelled?

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-How many thermal zones per building have you modelled? How many in total?

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-What's the complexity of the thermal zone model (Low order / High order)?

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-(only for district simulations) Are network and buildings coupled or decoupled?

- ☐ Coupled  
☐ Decoupled

### 5. Modelica libraries and tools:

-Which Modelica library have you used? (Keep in mind that IBPSA library is for developers, not for users)

- ☐ AixLib  
☐ Buildings  
☐ BuildingSystems  
☐ IDEAS  
☐ Other .....

-Which simulation tools have you used?

- ☐ Dymola  
☐ OpenModelica  
☐ JModelica  
☐ Other .....

the file is available at:

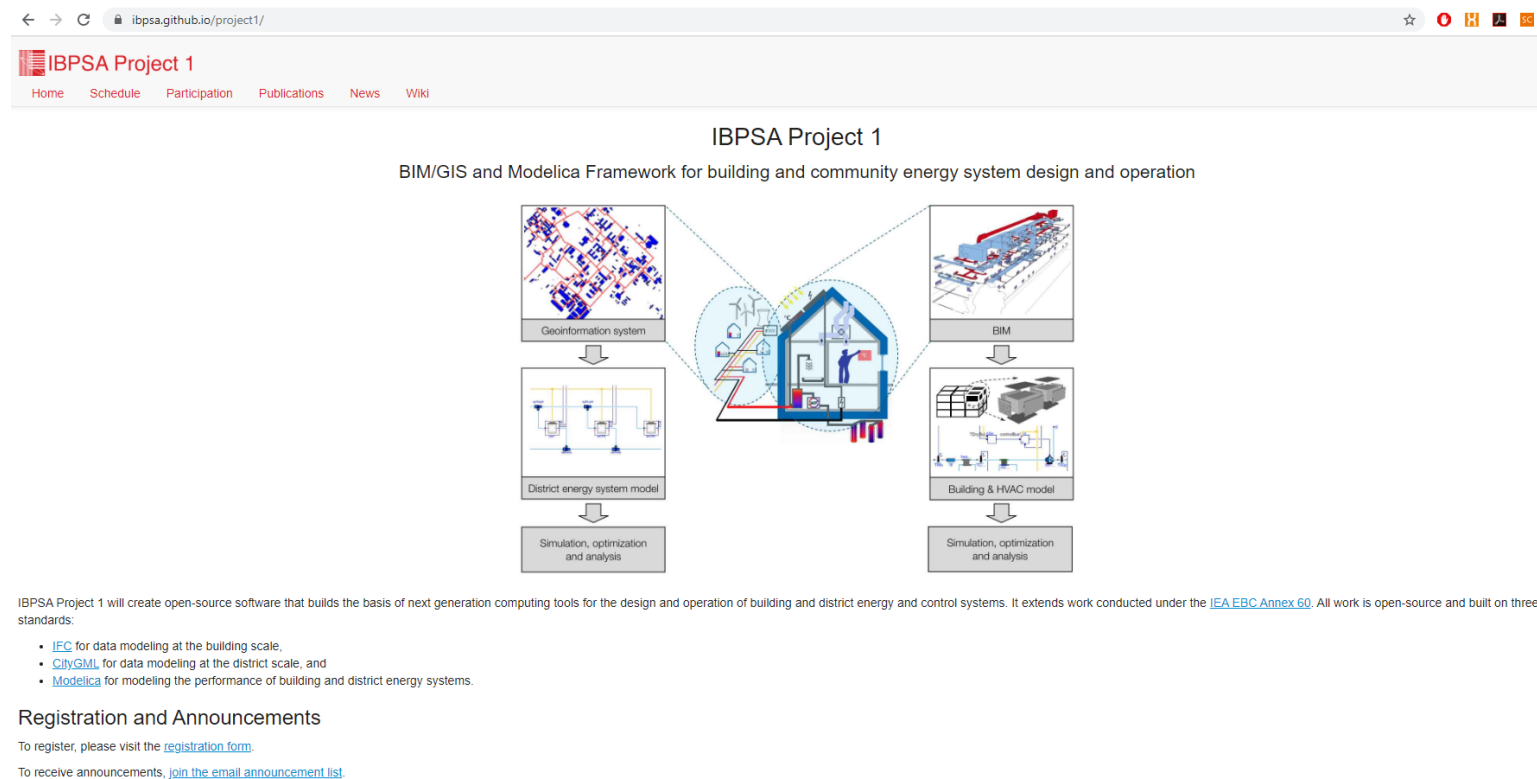
[https://github.com/ibpsa/project1/tree/master/wp\\_3\\_2\\_app](https://github.com/ibpsa/project1/tree/master/wp_3_2_app)

A total of 11 case study templates have been collected so far

	Institute	Contact person	Scale
1	KU Leuven	Ina De Jaeger	District
2	University of Southern Denmark	Konstantin Filonenko	District
3	University of Southern Denmark	Esben Gammelgaard	District
4	University of Southern Denmark	Konstantin Filonenko	District
5	University of Southern Denmark	Tao Yang	Building
6	University of Colorado Boulder	Xu Han	Building
7	University of Colorado Boulder	Kathryn Hinkelman	District
8	University of Colorado Boulder	Jing Wang	District
9	University of Colorado Boulder	Yunyang Ye	Component
10	RWTH Aachen University	Michael Mans	District
11	Aalborg University	Alessandro Maccarini	District

# Work done since meeting in Rome

- Initiated the work on the development of a new webpage for the IBPSA Project 1 website where the case studies will be illustrated



The screenshot shows the IBPSA Project 1 website. At the top is a navigation bar with links: Home, Schedule, Participation, Publications, News, and Wiki. Below the navigation bar is the title "IBPSA Project 1" and the subtitle "BIM/GIS and Modelica Framework for building and community energy system design and operation". The main content area features a central diagram illustrating the framework. The diagram shows a central building icon connected to two main paths. The left path starts with a "Geoinformation system" box, leading to a "District energy system model" box, and finally to a "Simulation, optimization and analysis" box. The right path starts with a "BIM" box, leading to a "Building & HVAC model" box, and finally to a "Simulation, optimization and analysis" box. The central building icon is connected to both paths, indicating its role as the core of the framework.

IBPSA Project 1 will create open-source software that builds the basis of next generation computing tools for the design and operation of building and district energy and control systems. It extends work conducted under the [IEA EBC Annex 60](#). All work is open-source and built on three standards:

- [IFC](#) for data modeling at the building scale,
- [CityGML](#) for data modeling at the district scale, and
- [Modelica](#) for modeling the performance of building and district energy systems.

Registration and Announcements

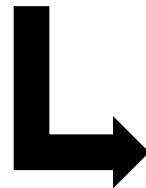
To register, please visit the [registration form](#).

To receive announcements, [join the email announcement list](#).

## Planned work for the next period

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- Improving the webpage → In particular about the layout of the page for single case studies
- Synergies with WP1.1 → Development of Aquifer Thermal Energy Storage (ATES) model – Aalborg University
- Collection of case studies continues...



Interest from Ghent University (Belgium) to provide 2-3 case studies