

The 3rd Review Meeting was held in the EC premises the 4th of November 2015, the main objective was to present the achievements obtained for the third Project Period of BaaS (from December 2014 to August 2015).

Particularly presentations were focused on showing the achievements obtained per WP and the current situation of BaaS deployed in our three demonstration buildings: ZUB – Kassel (Germany), CARTIF – Valladolid (Spain), and Sierra Elvira School – Granada (Spain). In that sense, the consortium showed that BaaS is ready and delivering energy-aware monitoring and optimized operation services towards the real validation of the prototype in different scenarios (Use Cases) that affects the buildings' behaviour in summer and winter modes. Preliminary results related to the summer Use Cases were also presented

Upcoming events

The final project review will take place in Brussels June 9th 2016.

Centre for Sustainable Building (Kassel)



CARTIF office building (Valladolid)



Sierra Elvira school (Granada)



César Valmaseda, BaaS Project Coordinator

Welcome to the 4th and final issue of the BaaS project newsletter on the research of ICT solutions for optimizing energy performance in the application domain of "non-residential buildings" in an operational stage. This final stage of the project has been remarked by the deployment of the winter mode in our three demonstration sites: two office buildings located in Kassel (Germany) and Valladolid (Spain) and one school placed in Granada (Spain). Additionally, the assessment of the results has been carried out both in summer and winter cases in order to provide specific numbers which help industrial and academic partners to identify potential exploitation initiatives.

Having in mind the objectives of energy efficiency and comfort improvements, the complete BaaS platform has been running during the experiments by gathering heterogeneous data from the buildings with the aim at supporting the model-based and data-driven decision-making services. These high-level services have provided better comfort conditions to the occupants, as well as energy savings for the owner. Finally, its replicability and sensibility analyses have been performed by which the replication potential and impact augur future developments under BaaS umbrella.

Finally, I would like to invite you to continue following BaaS project and its achievements by visiting our communication channels: BaaS project website and BaaS LinkedIn Group.

Experiments and BaaS implementation results:

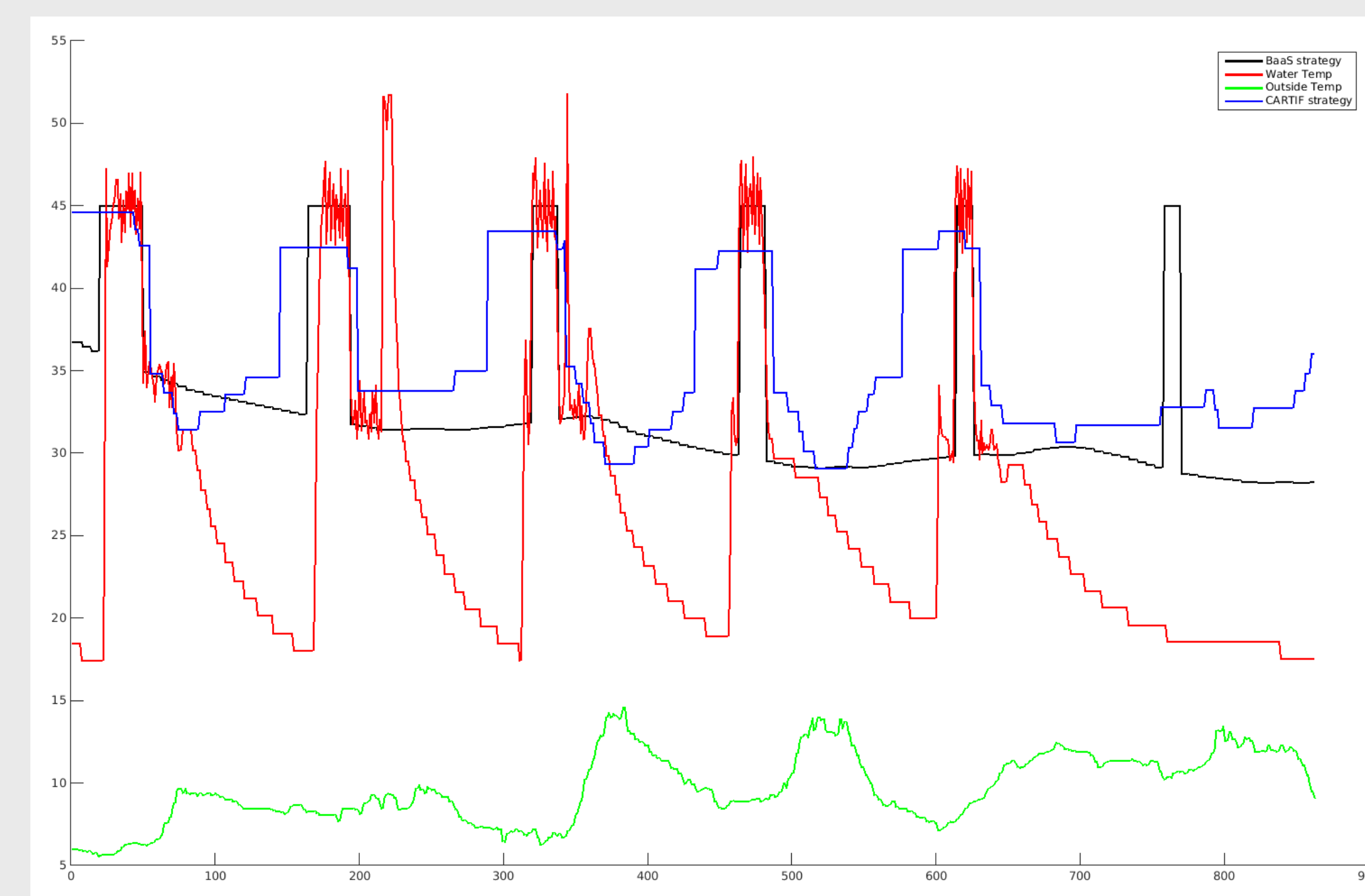
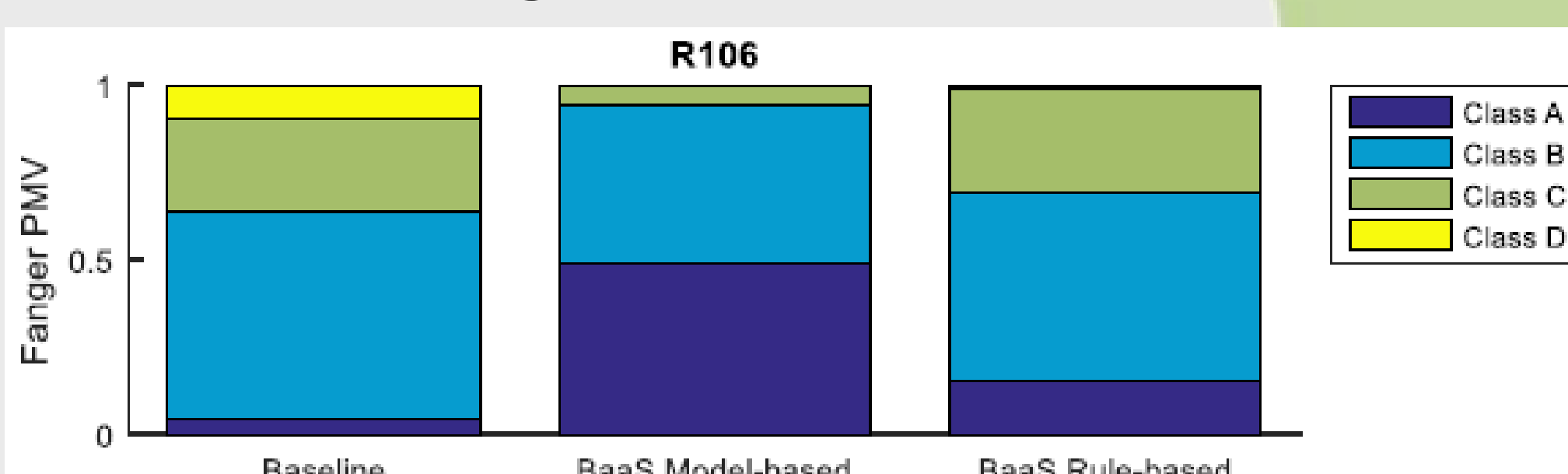
CARTIF Demonstration Site

During the last stage of the BaaS project, the winter mode has been deployed in the CARTIF building which is model-based controller that treats the optimal control of the energy generation and distribution sources for heating. In particular, the inlet temperature water into the radiant floor has been the objective. Thanks to this new control, which overrides the old control strategies, in the CARTIF building 10% of energy savings have been achieved, while the comfort in the zones is ensured.

Additionally, the assessment of the summer mode has been obtained where 24% energy savings are got by means of controlling the set-points offset of the cooling systems.

ZUB Demonstration Site

Two different experiments were implemented during the winter period 2015-2016 in ZUB building.



Period 1 (P1): New control was applied from Dec15 to Jan16 and it alters the previous baseline control strategy, modifying heating sending temperatures as a function of the forecasted ambient temperatures and solar radiation for the next 72 hours.

Period 2 (P2): It was applied from Feb16 to Mar16 when the building is preheated on Sunday afternoon and it is let "free floating" along the week. Some additional heating is provided if necessary until Friday morning, but the building is kept comfortable mostly with the available radiation and the internal loads.

Both measurements lead to combined savings of 17% (13% in P1 and 30% in P2).

Sierra Elvira School Demonstration Site

During the winter season 2015-2016, two different control strategies were implemented in SES building. For the first one, predictive models have been developed in order to implement control and optimization strategies that minimize the energy consumption while meeting the comfort requirements related to the indoor temperature. The second solution consisted on a holistic optimization of HVAC systems via distributed data-driven control and it is based on the principles of reinforcement learning. The overall energy savings achieved in SES are estimated on 18%, while the indoor temperatures reached very acceptable levels (19-20°C) compared to the reference ones.

Publications

The Bass project has presented in the following conferences this year
Further Information:

For most recent events, conferences, papers, you can find updated information on BaaS website:
<https://www.baas-project.eu>

Results summary

Pilot Building	Use Case	Energy consumed	Energy savings	
CAR	Uc1 (Winter)	2,908 kWh _{th}	284 kWh _{th}	10%
	Uc2 (Summer)	1,962 kWh _e	756 kWh _e	24%
ZUB	Uc1 (Winter)	12,462 kWh _{th}	2,566 kWh _{th}	17%
SES	Uc1 (Winter)	31,360 kWh _{th}	6,843 kWh _{th}	18%

BaaS useful contacts



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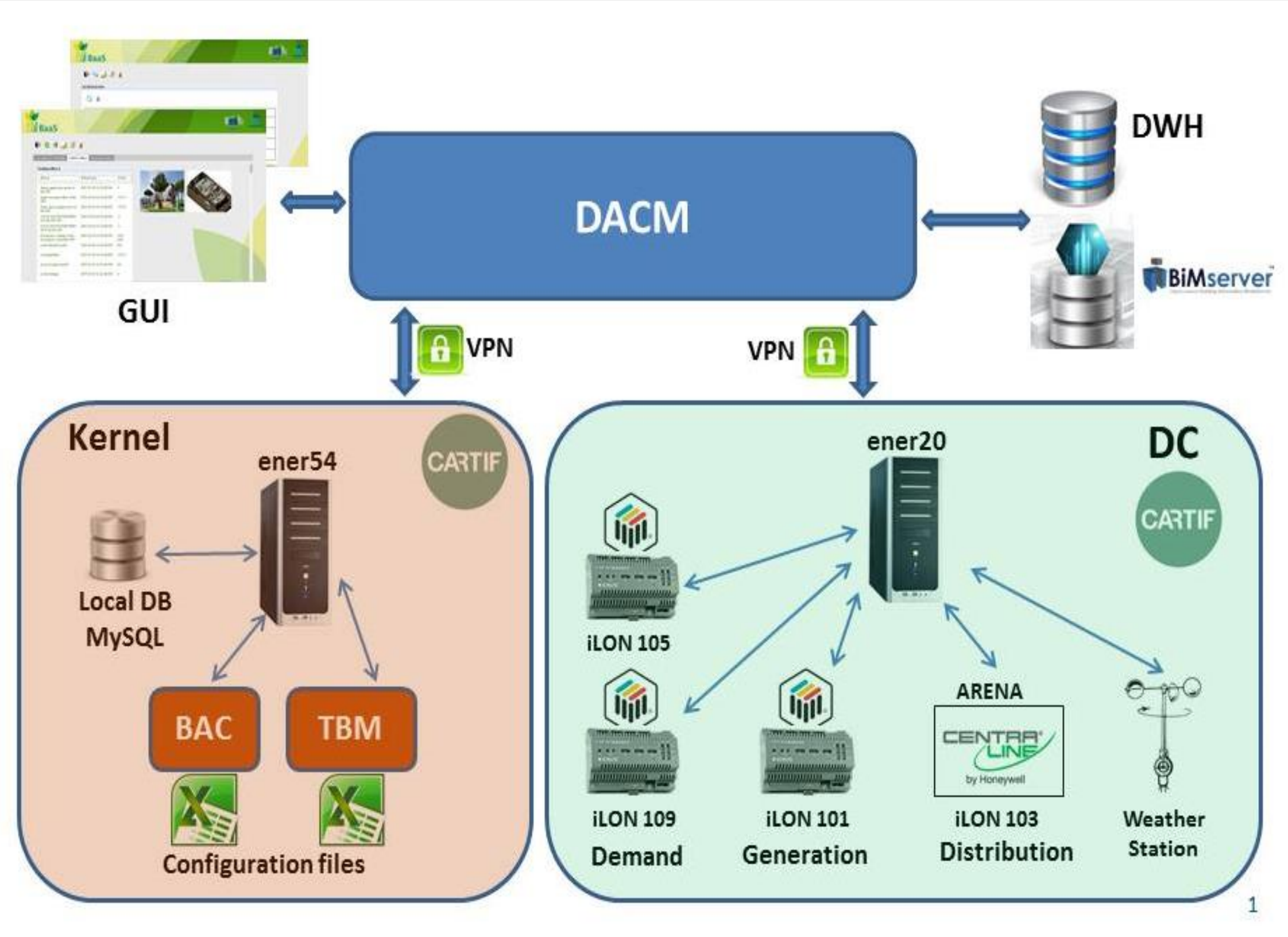


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Final Results and Future works

As it has been remarked before, a set of summer and winter use cases have been applied along the BaaS project lifecycle with unneglectable results. Having in mind them, the building owners will continue the application of the BaaS project during the next summer and winter seasons. In this way, BaaS has been completed through an holistic, interoperable and scalable platform to apply optimal control strategies so as to save energy at the same time than applying comfort constraints.

Under this concept, BaaS will not only continue its application in the pilot buildings, but also, its heterogeneity provides the possibility of replicating the solution, as ECM (Energy Conservation Measure) represented in the picture, in other contexts. Thus, ESCos, such as Veolia may integrate the solution within its business models and exploitation plans. In low-performance buildings which require a significant energy retrofiting, the potential of the BaaS solution is very high in terms of energy efficiency and economic savings, justifying the projects feasibility.



As well, the individual pieces of software are subject of exploitation by other industrial partners.

BaaS has also largely contributed to dissemination activities. In summary, several papers have been published in peer-review journals. Regarding conferences, BaaS partners have carried out a wide activity, reaching more than 20 published papers in proceedings. Finally, BaaS project has organized two workshops where engineers, architects and end-user have participated.

Finally, during the last stage of the project, a set of final deliverables have been submitted, shown in the table below. The public documents are available on the Web site of the project.

No	Title	No	Title
D1.3	End-user acceptance assessment	D6.4	Deployment of BaaS ECM in pilot buildings
D2.5	Prototype deployment, evaluation, monitoring and support	D7.1	Dissemination Plan
D3.8	Prototype documentation deployment, evaluation, monitoring and support	D7.2	Communication Tools
D4.4	Evaluation of WP5 results under different KPIs	D7.3	Project Website
D5.4	Deployment, evaluation, monitoring and support of SO2 Integrated Services	D7.4	Plan for the Use and Dissemination of the Foreground ((PUDF)
D6.3.3	Reporting Period in Pilot buildings	D7.5	Standardisation

BaaS useful contacts:

- In respect to BaaS Project coordination and management you can contact the BaaS Project coordinator Susana from Fundación Cartif, Energy Division; email cesval@cartif.es or baas@cartif.es.
- In respect to BaaS events participation and related dissemination you can contact the BaaS Workshop Coordinator Professor Karsten Menzel from University College Cork, Ireland; email k.Menzel@ucc.ie
- If you have a question related to scientific objectives please contact WP leader
- WP1 Cartif josh@cartif.es
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Visit the BaaS website for more details:
www.baas-project.eu

Follow updates and news and benefit from the exchanges among wide-ranging players in the energy efficient community by joining "**BaaS – Building as a Service (Ecosystem) community**" on LinkedIn.

If you would like to become a member of the BaaS Dissemination Network, please contact us at
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