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Design of an Innovative Energy-Aware IT Ecosystem for Motivating Behavioural Changes Towards the Adoption of Energy Efficient Lifestyles

Eleni Fotopoulou

Senior Software Engineer, UBITECH

efotopoulou@ubitech.eu

Main Objectives and Highlights

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- Provide an **energy-aware IT ecosystem** aiming to support **energy efficiency in the buildings sector** through **behavioral change of the occupants** with regards to their daily energy consumption patterns.
- Exploit **novel data aggregation and management solutions.**
- **Semantically align data** based on **ENTROPY Semantic Models**.
- Materialise a **personalised recommendation framework** based on a rules-based management system, promoting **engagement** and **behavioural change**.
- Materialise a **big data analytics** framework, **detaching** the **design**, **development** and **execution** of data analysis processes.
- **Integrate** and combine set of services and provide them through **open APIs** to application/game developers.
- Develop **serious games** and **personal applications** as enablers of the communication towards behavioural change
- **Engage and empower citizens**, making them actors for the transition to a more efficient society.
- **Validate and evaluate** the research results with proof-of-concept showcases in three countries.

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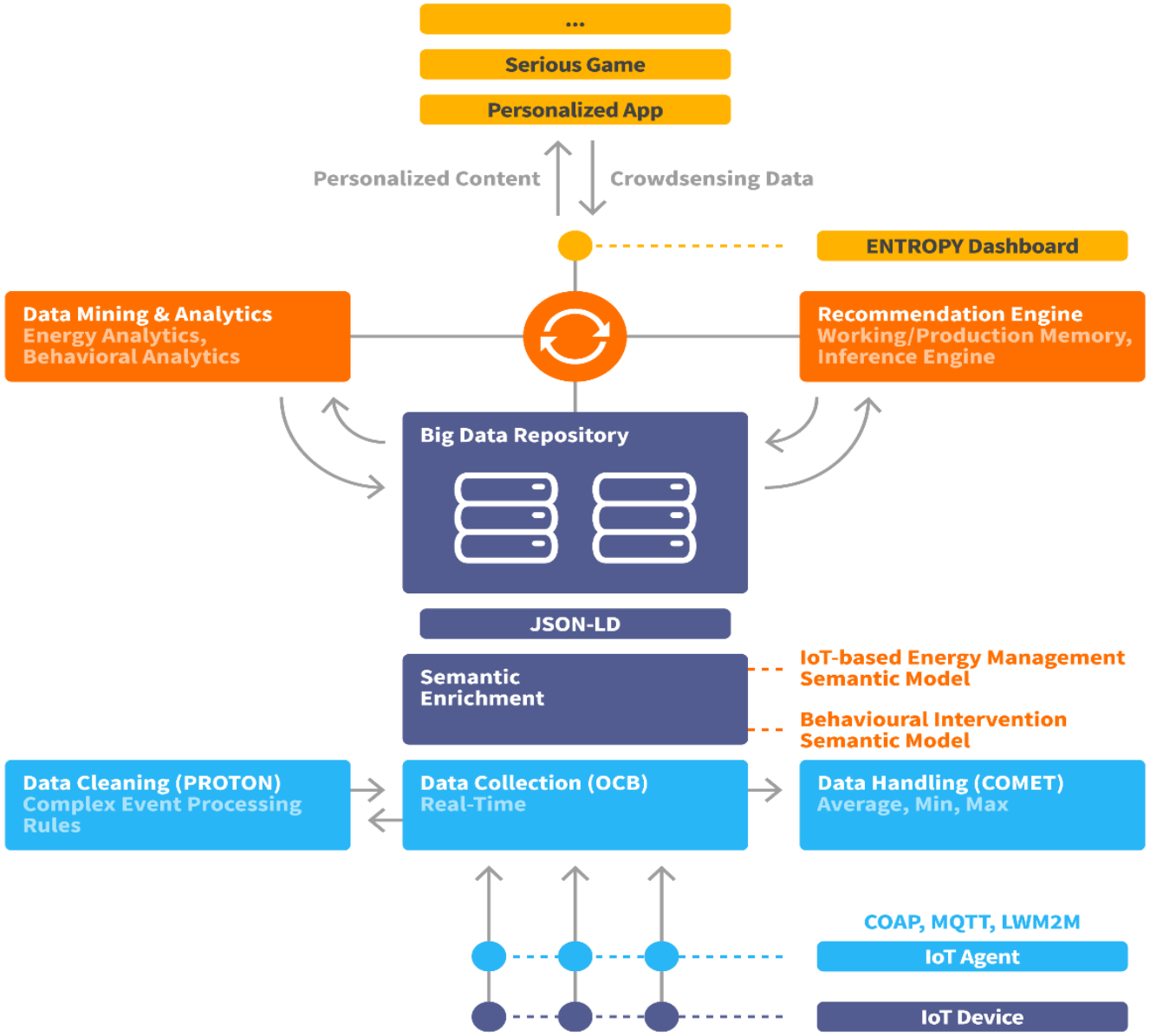

Energy-IoT Semantic Model

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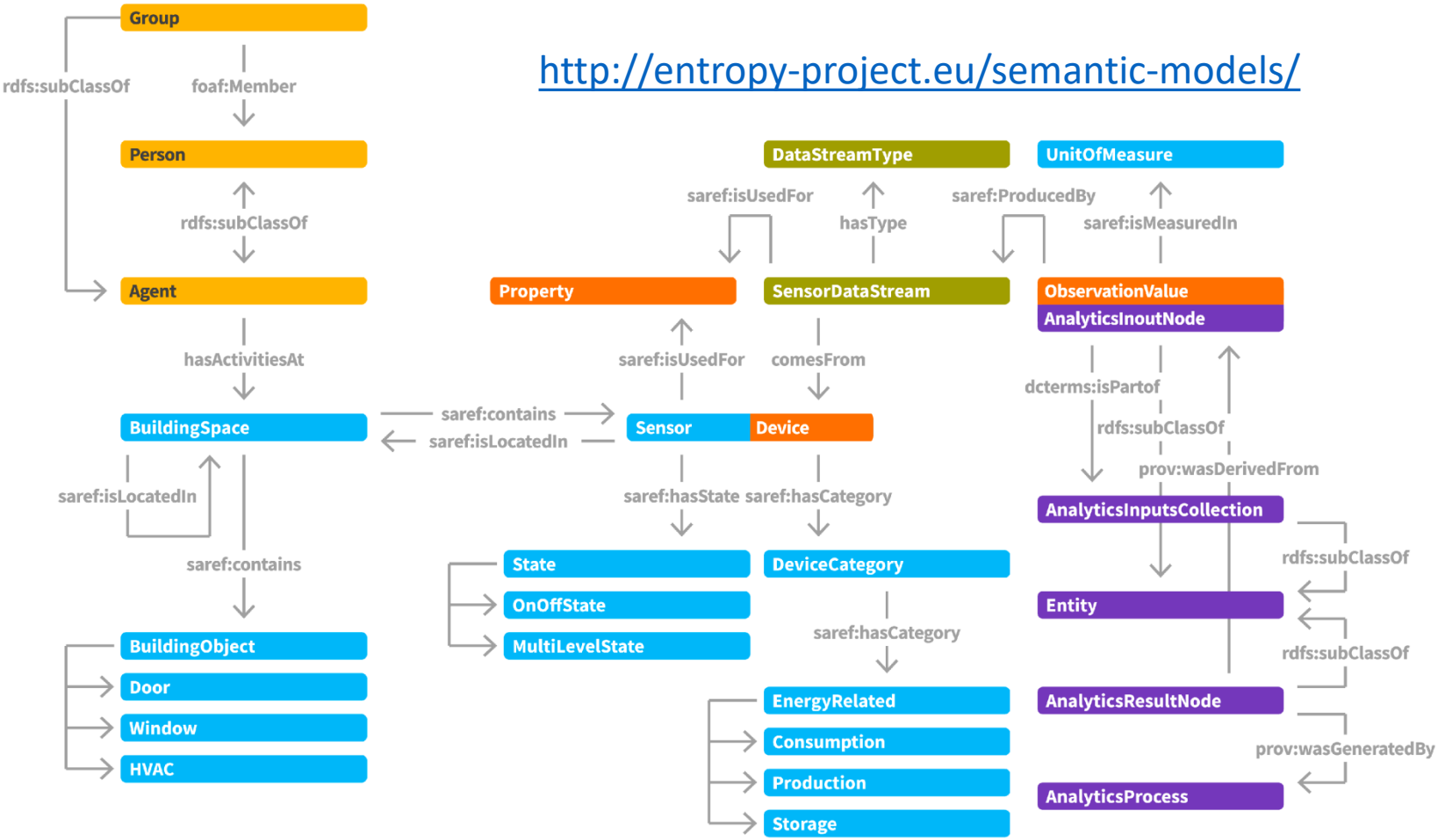
http://entropy-project.eu/semantic-models/



Behavioral Semantic Model

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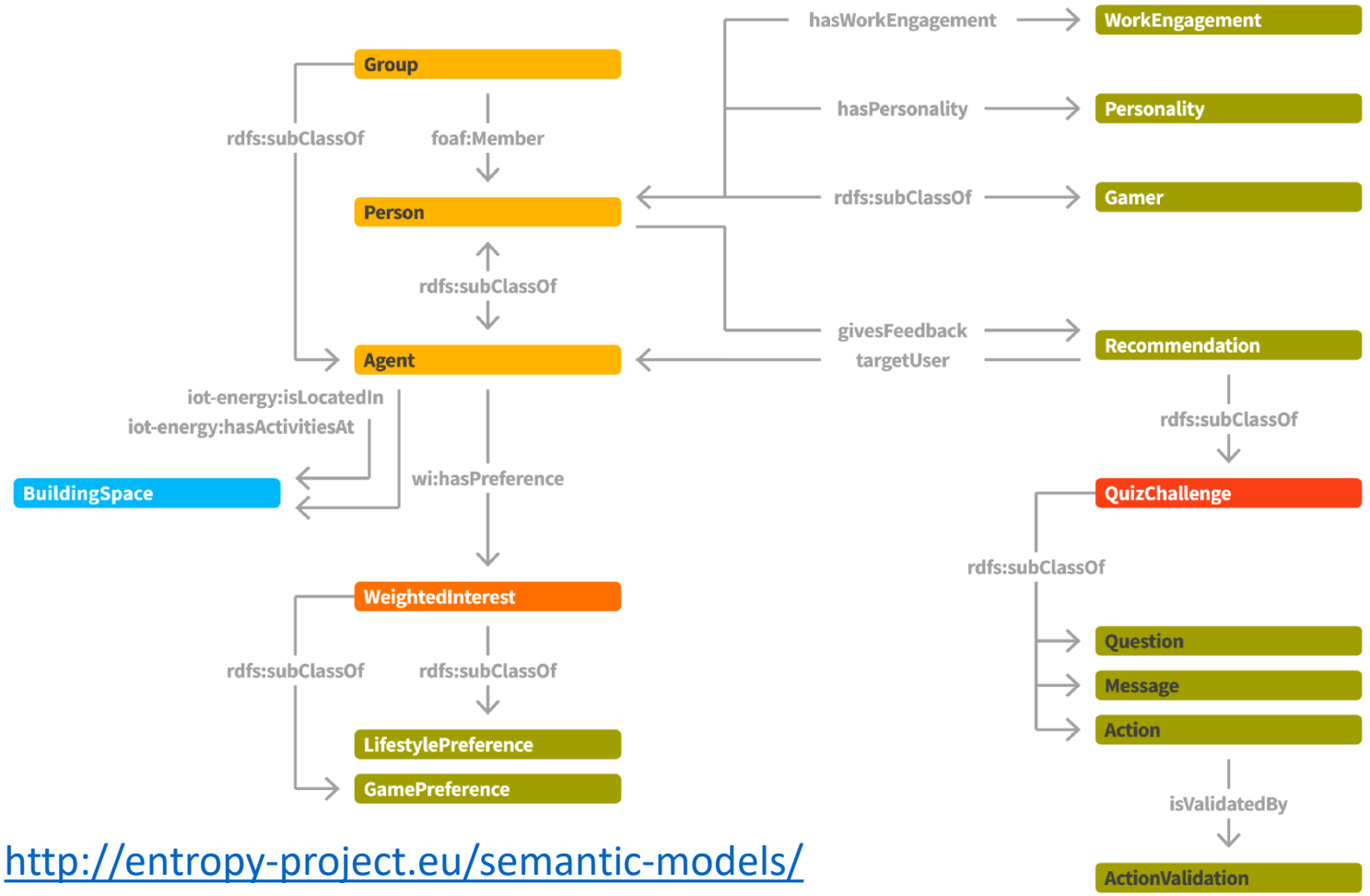

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Recommendation Mechanisms

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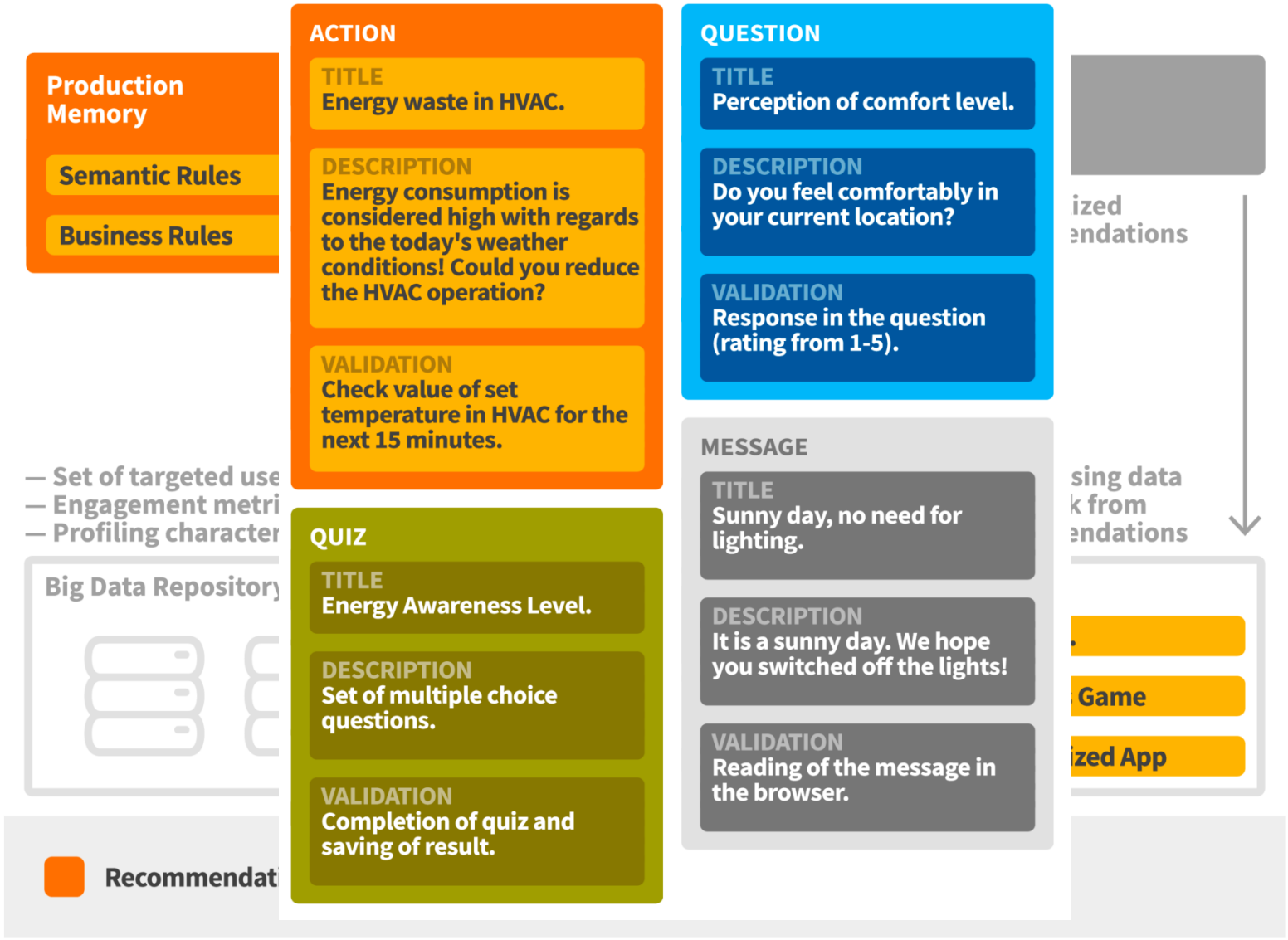

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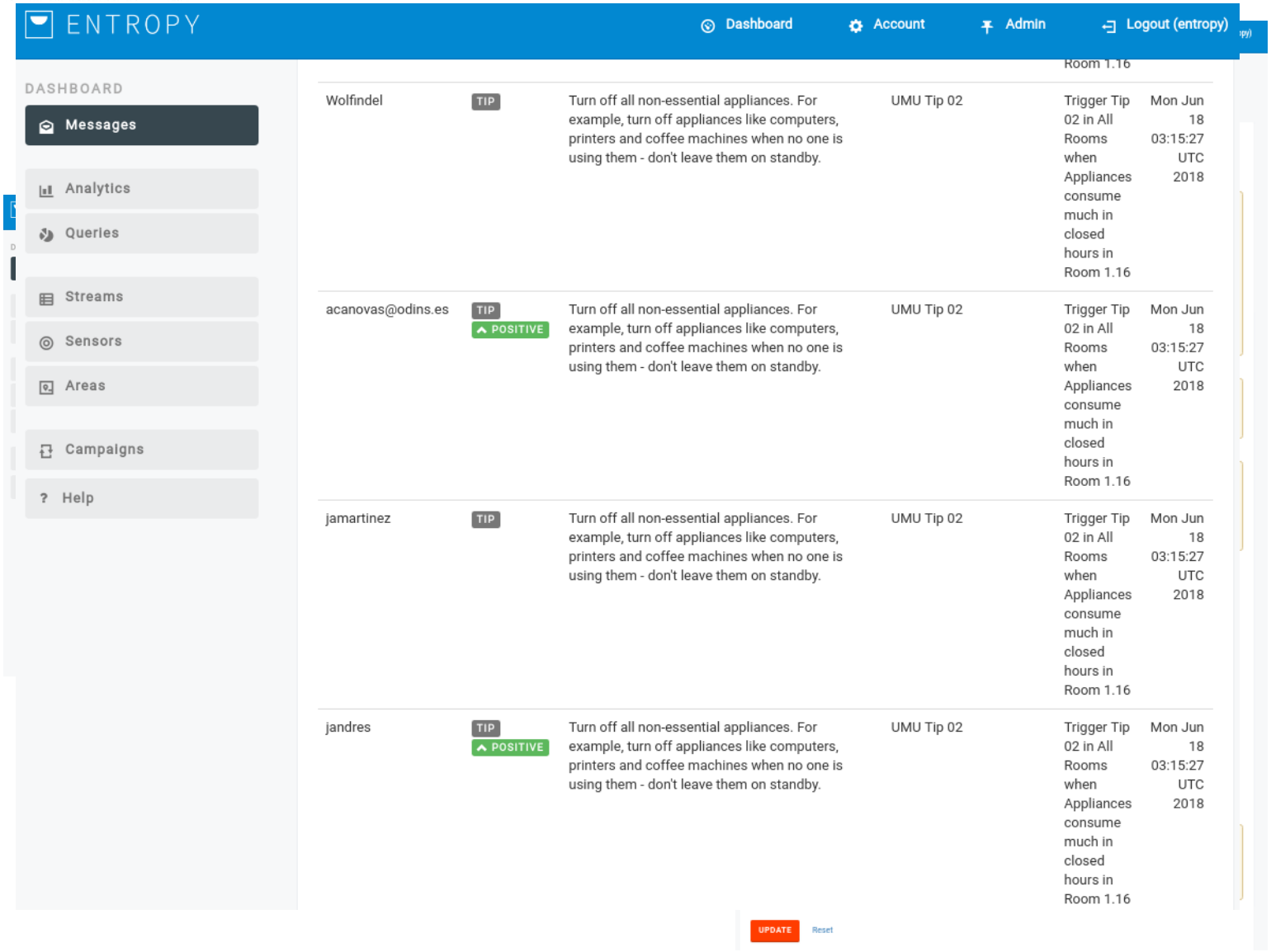

Energy and Behavioral Data Analytics

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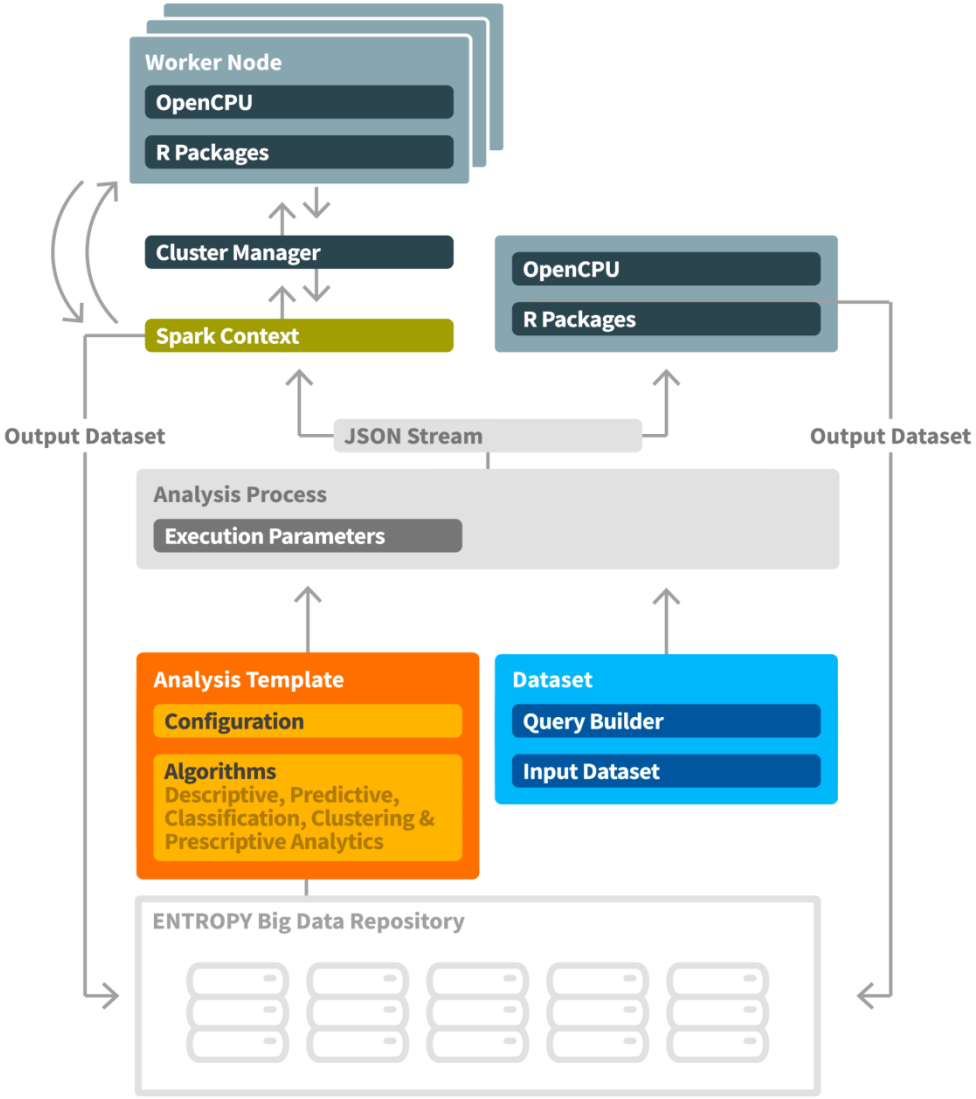
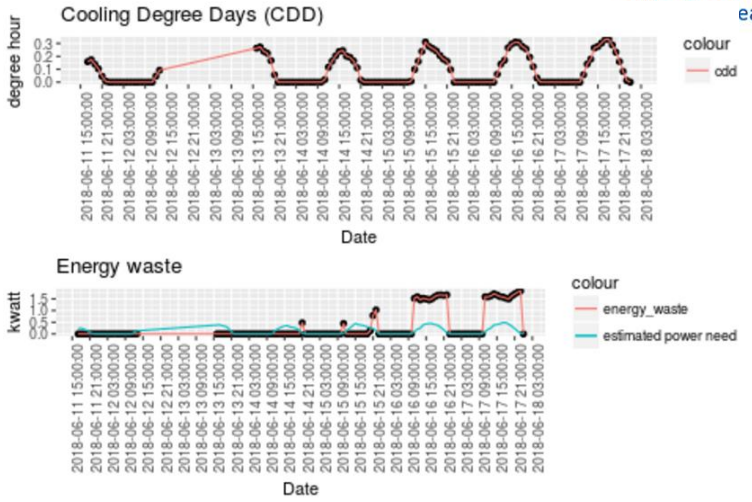
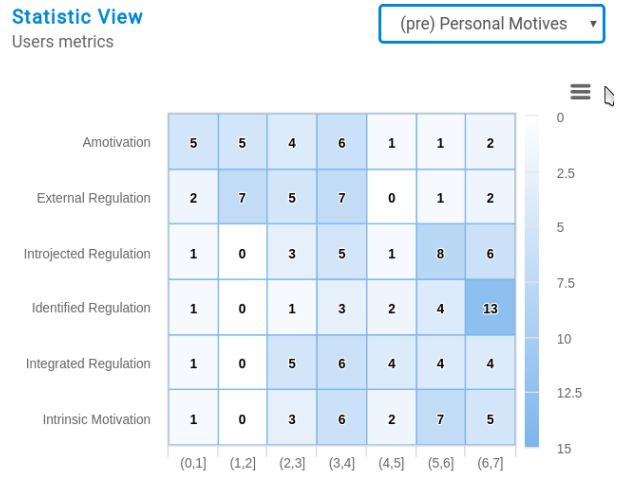




Calculation of cooling degree days & energy waste



Heatmap with behavioral characteristics

Serious Games and Personalised Applications

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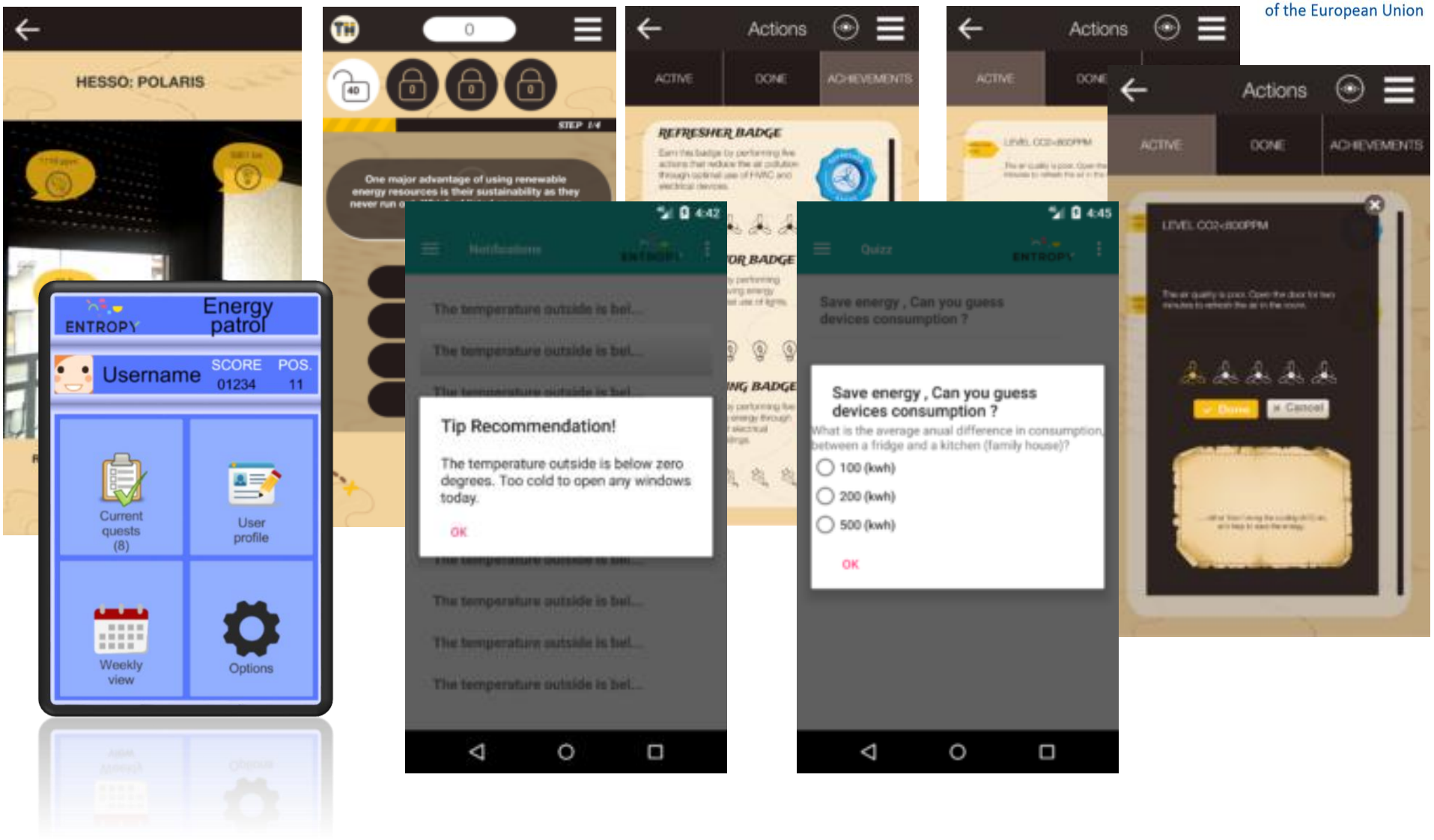

Pilots

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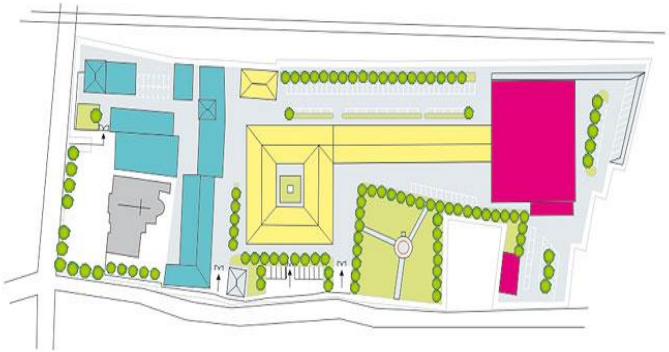
User Community	Pilot Context – Types of Public-owned Buildings	Variables monitored	Estimated number of users	Leading Partner
Employees and visitors in the technology park, residents in the social housing infrastructure	Offices, Social Housing, Incubator, Canteen, Kindergarten, Auditorium, Meeting Rooms	Electricity use, Temperature, Humidity, CO2, Illuminance, among others	Aprox 65	POLO
Students and employees in the University and the Incubators	Classrooms, University Buildings (e.g. Library), Incubator	Electricity use, Temperature, Illuminance, CO2, among others	Aprox 50	UMU
Students and employees in the University and the Incubators	Research institutes labs and offices, a restaurant, fitness room and multiple classrooms.	Electricity use, Temperature, Humidity CO2, Illuminance, among others	Aprox 60	HESSO



Campaign Workflow

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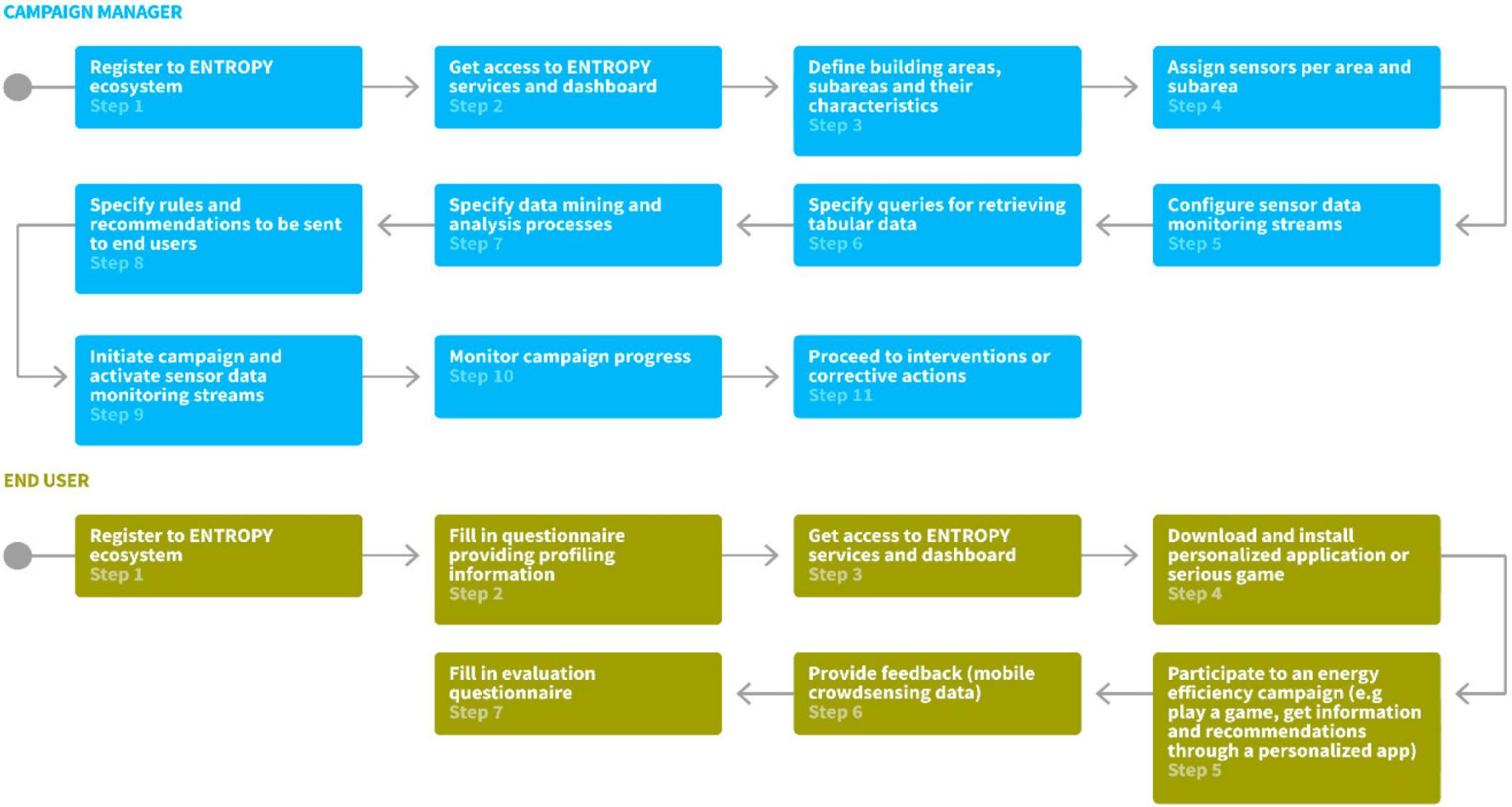

Campaigns Execution

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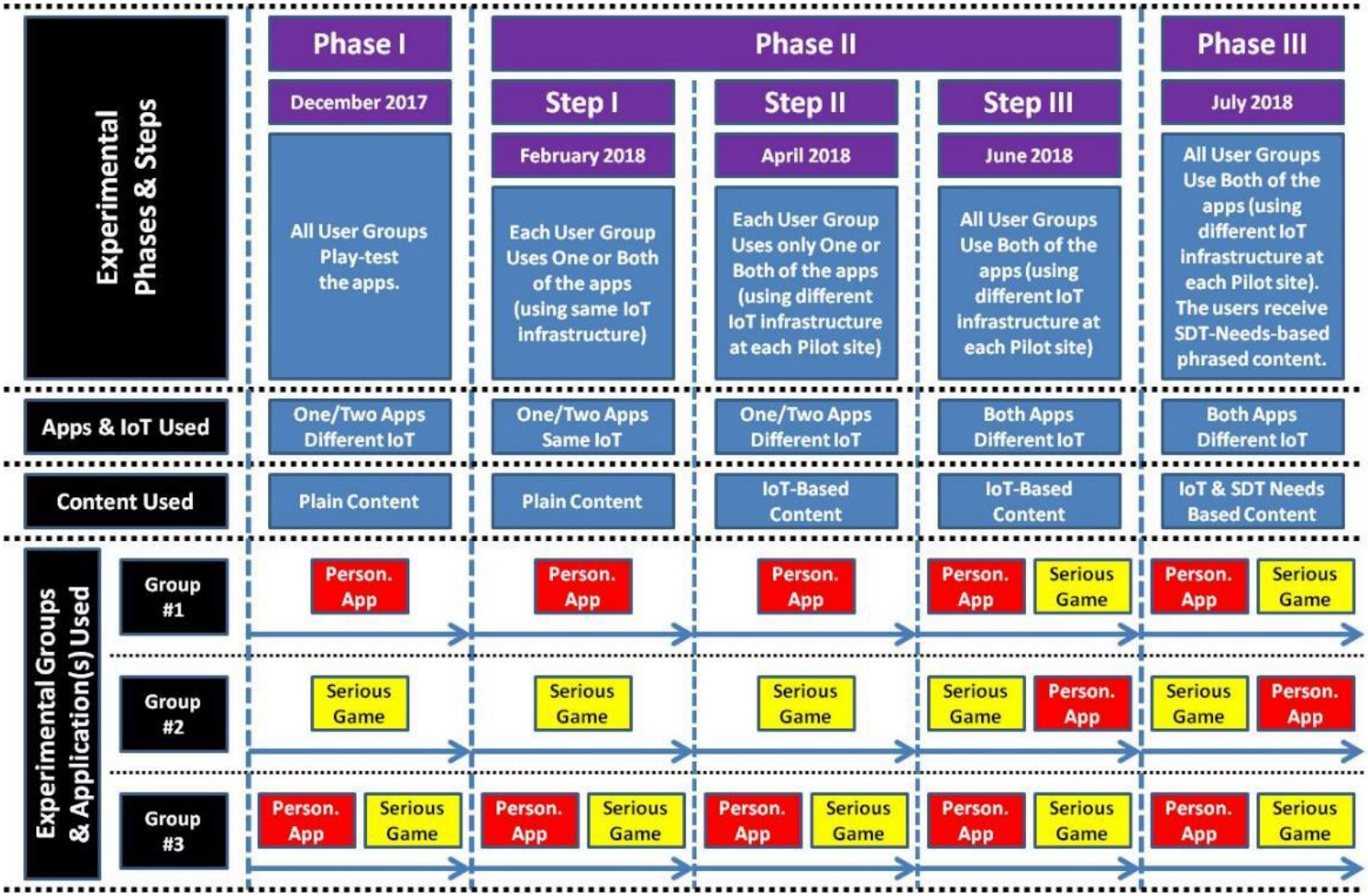

Campaigns Execution – University of Murcia

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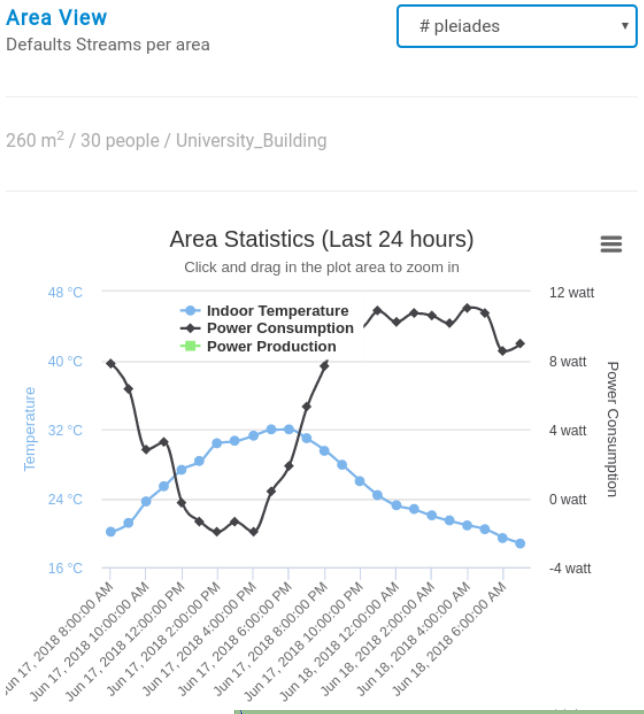
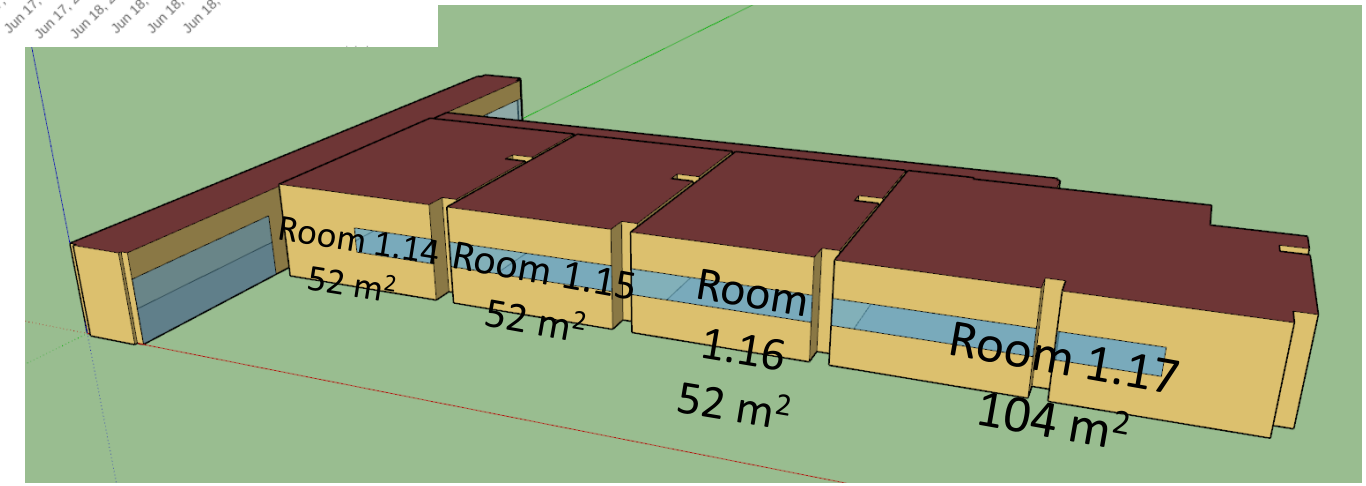


Pleiades Building



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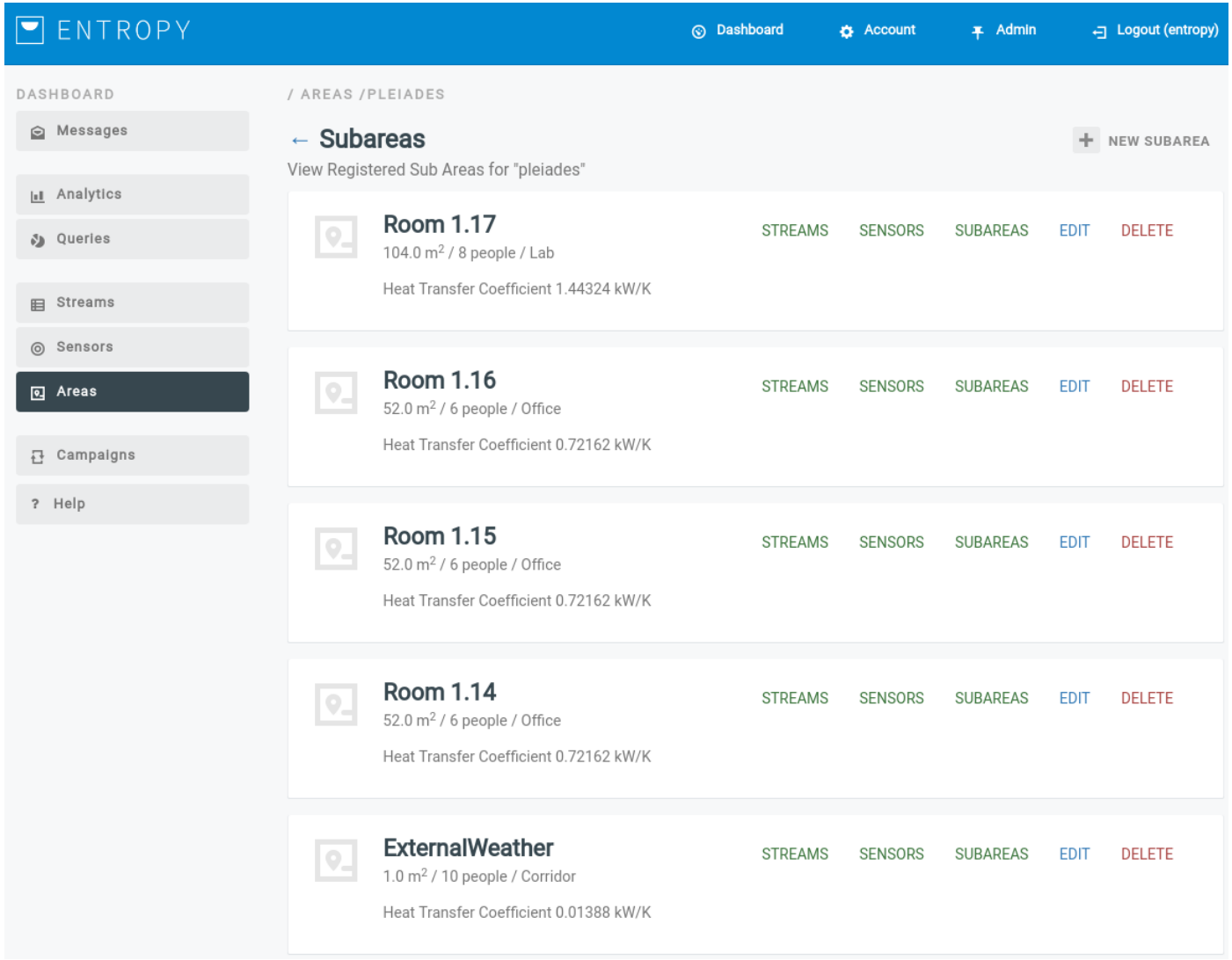

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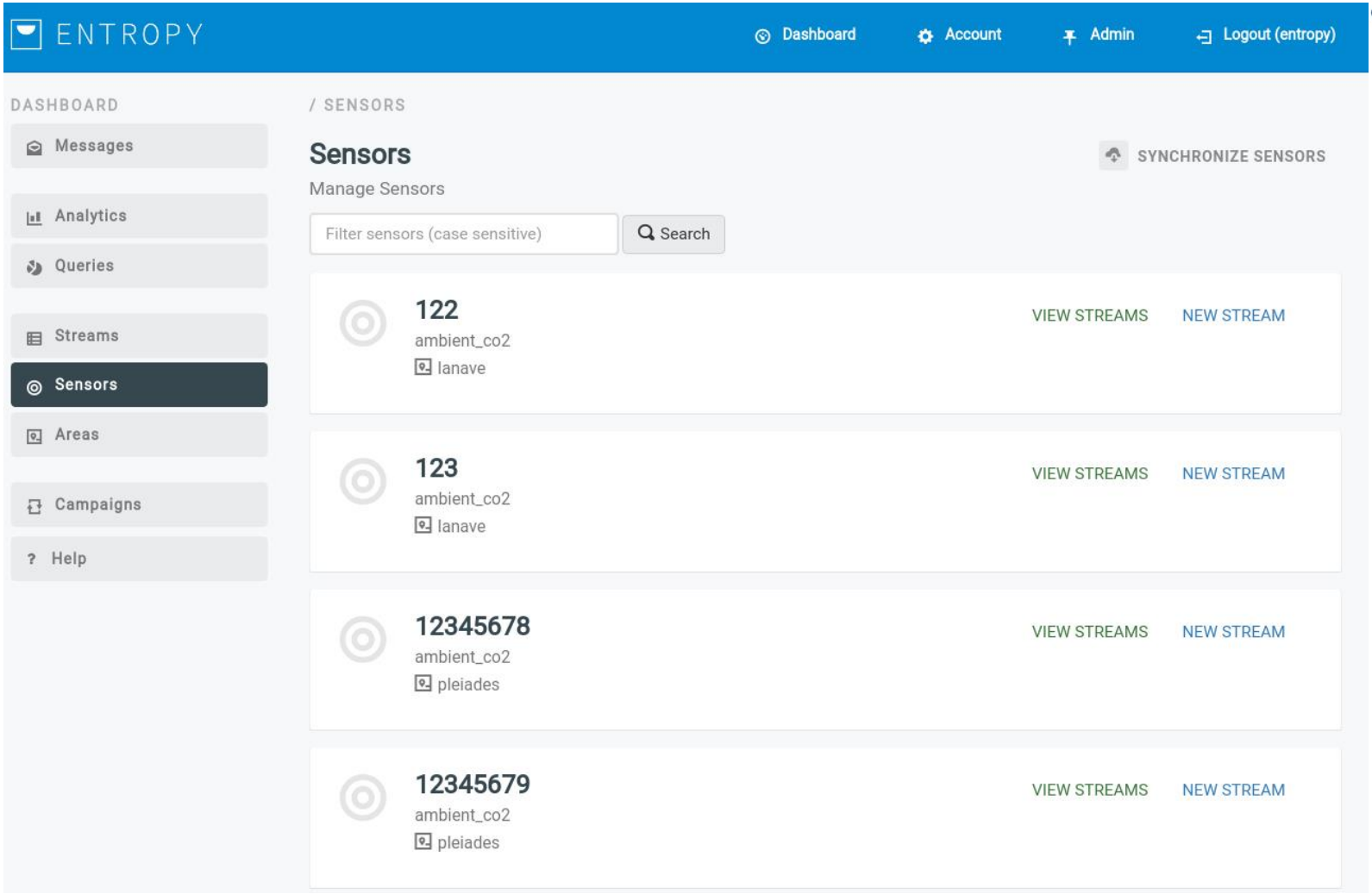

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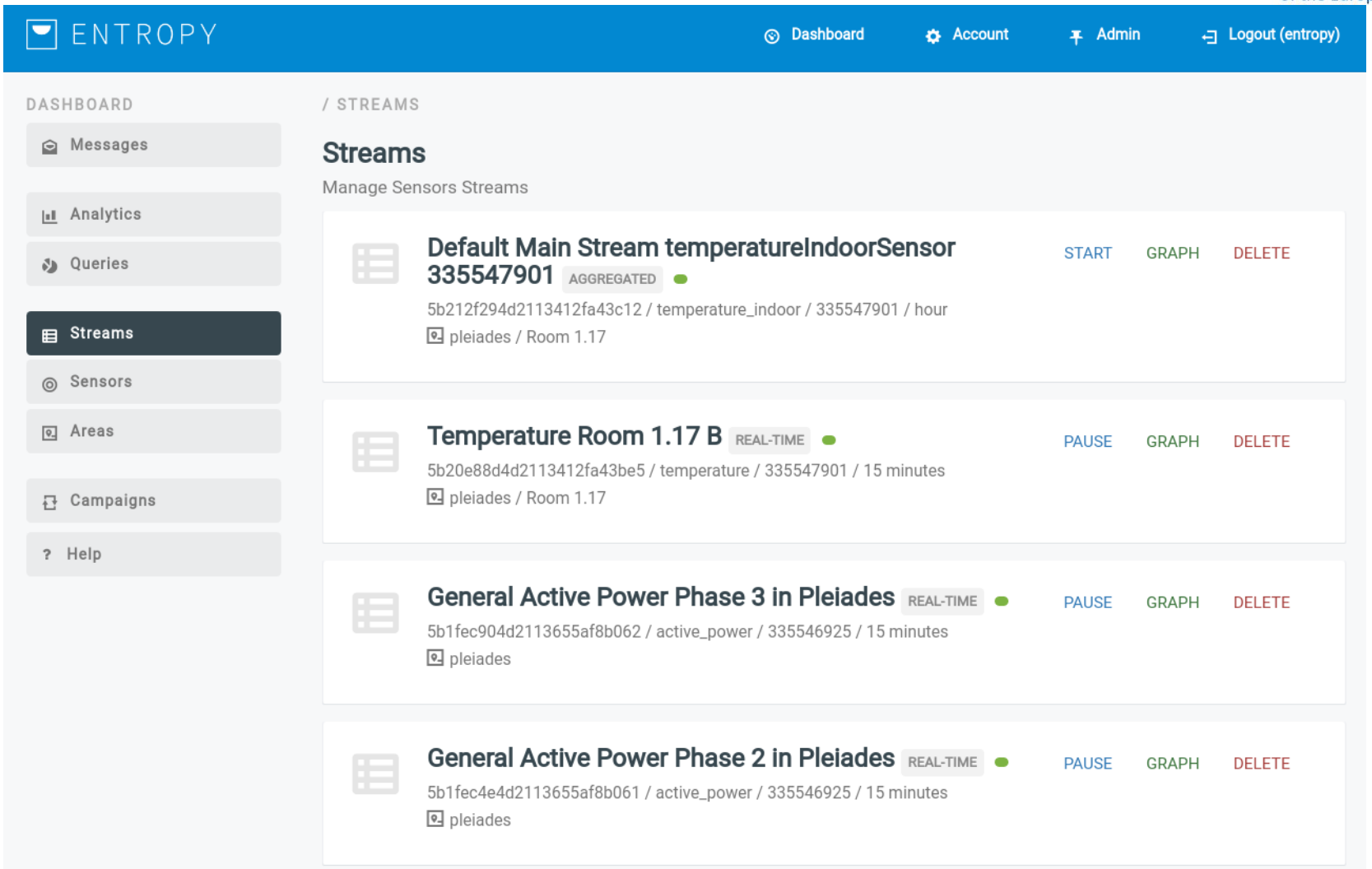

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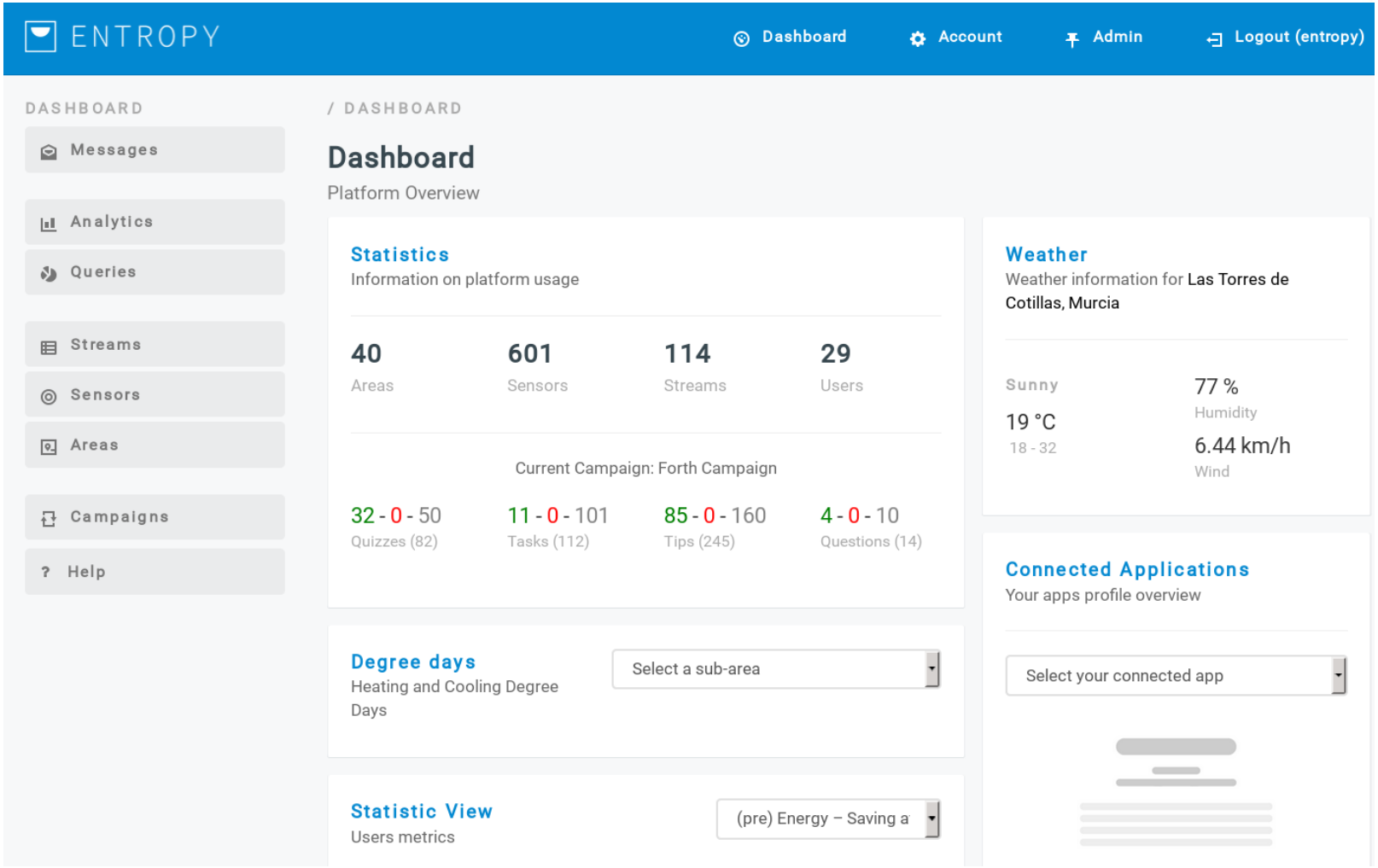

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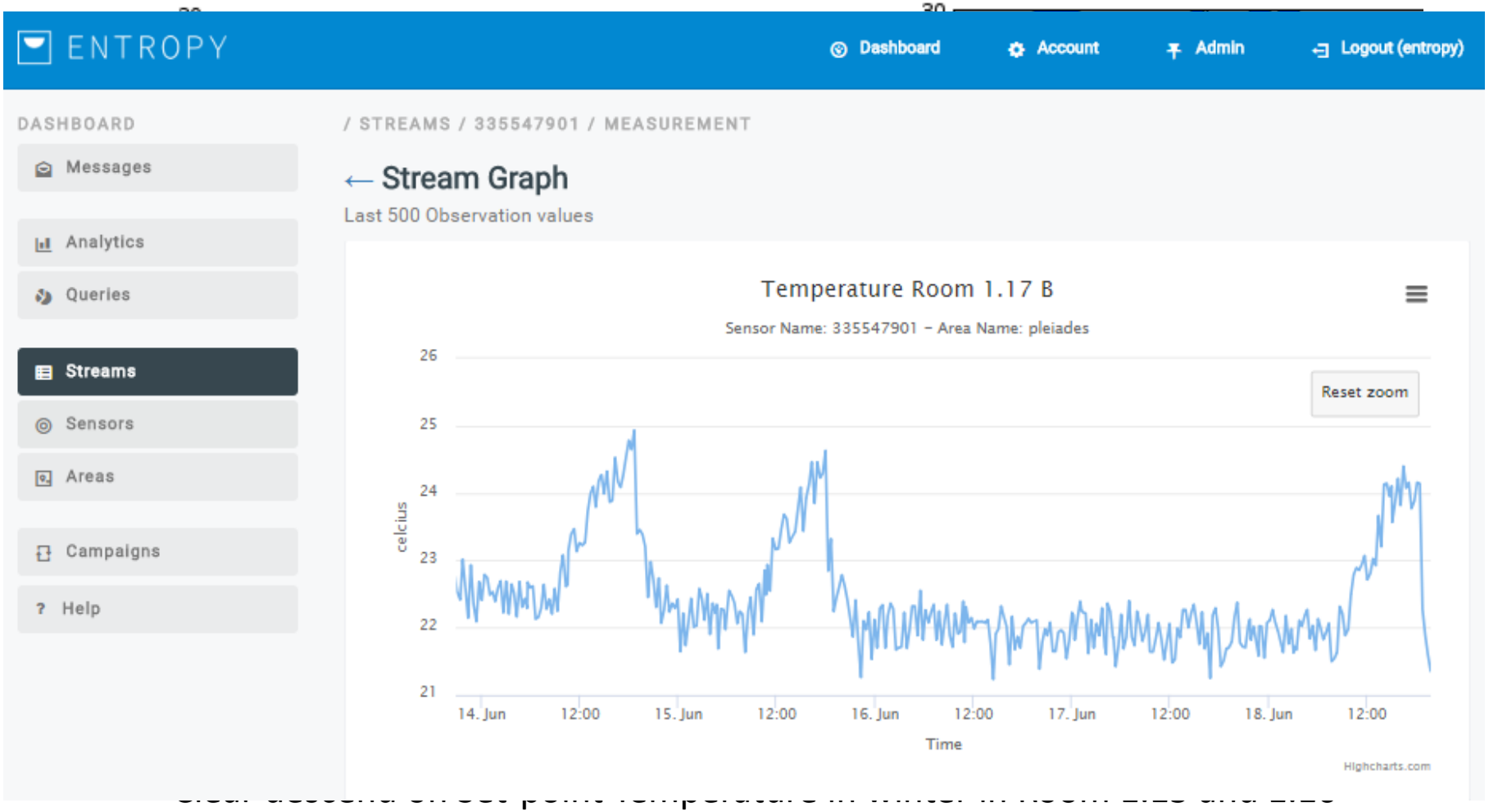

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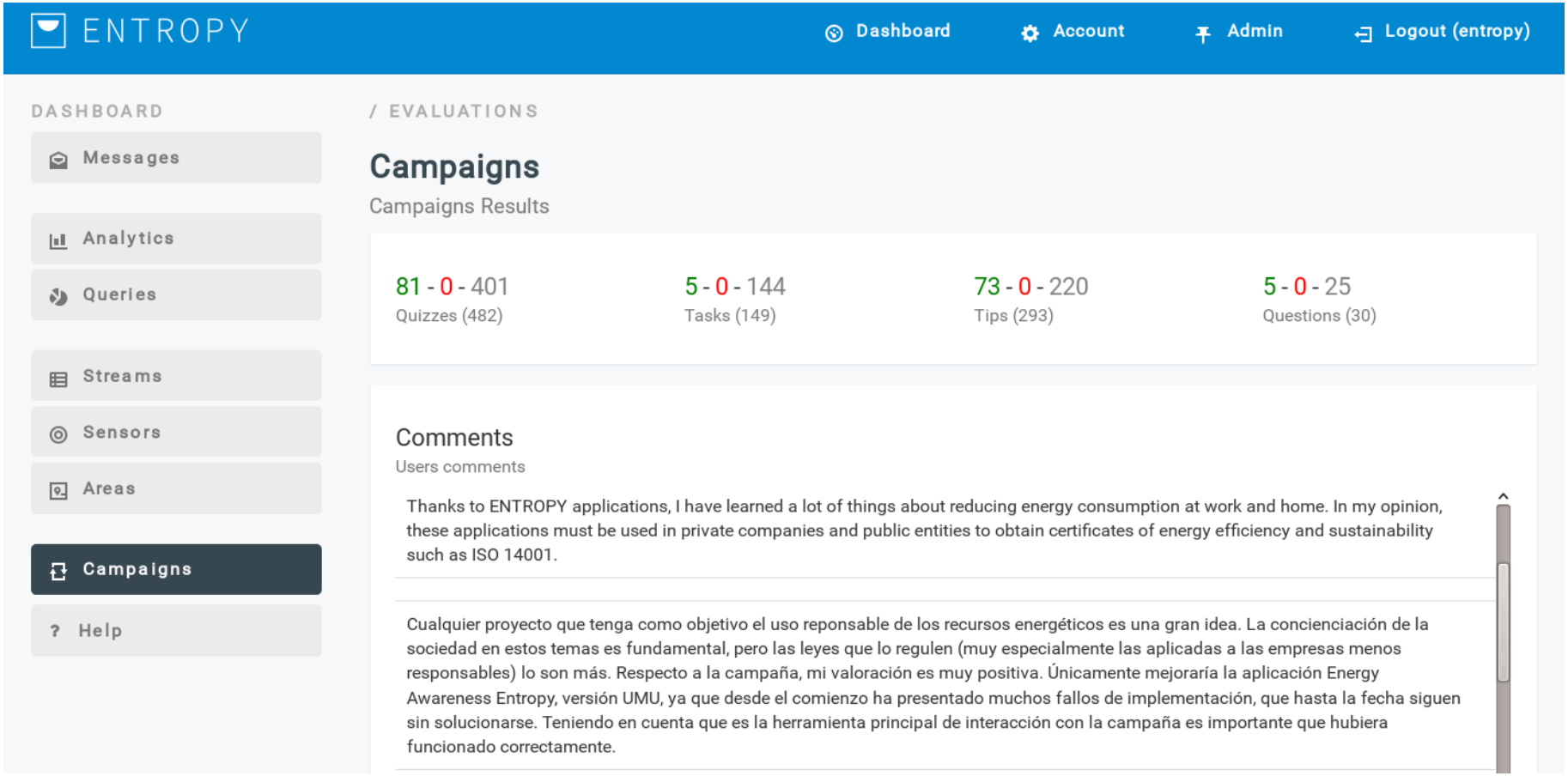

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Contact:
efotopoulou@ubitech.eu