



Data Access Mechanism to Allow Multiple Level Permissions in Energy Management Solutions Supported by IoT devices

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Full paper: <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9584750>

Summary

The use of energy management systems allows the management of electrical loads and resources inside a building. The variety of models allows end-users to optimize their energy usage considering multiple constraints while considering the end-users context and preferences. However, the sharing of data among users and entities, especially external entities, such as microgrid operators, energy community operators, and aggregators is an issue that needs to be addressed to protect data privacy. The proposed solution solves this issue by using signed tokens while being compliant with the European General Data Protection Regulation. The proposed solution is presented in this paper and demonstrated using real data regarding an office building. The results demonstrated the potential of this solution and the possibility of its use to protect the ownership rights of data, given the power to the owner and allow them to define the permissions of each data.

Highlights

- Data access mechanism based on Json Web Tokens (JWT);
- Integration of heterogeneous internet of things devices in the same system, enabling interoperability and the cooperation needed to deploy energy management systems in buildings;
- Access to the data in accordance with the contract signed by both entities;
- Data visualisation of each user's data, considering the data access mechanism;
- Results show that the solution prevents data leakage caused by unreliable third parties and guarantees an all-data utility and individual data privacy at the same time.



Info

The TradeRES project will develop and test innovative electricity market designs that can meet society's needs of a (near) 100% renewable power system. The market design will be tested in a sophisticated simulation environment in which real-world characteristics such as actors' limited foresight into the future and risk aversion are included.



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Start date
1 February 2020

End date
31 January 2024

Overall budget: € 3 988 713,75



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 864276