



**H.F.R.I.**  
Hellenic Foundation for  
Research & Innovation

**Description of the funded research project**  
**1st Call for H.F.R.I. Research Projects to Support Faculty**  
**Members & Researchers and Procure High-Value**  
**Research Equipment**



**Title of the research project:**  
**Innovative Personalised Apps to Motivate and Support Behavioural Energy Efficiency**

**Principal Investigator:**

**John Psarras**

**Reader-friendly title:**

**ATOM**

**Scientific Area:**

**Engineering Sciences and Technology**

**Institution and Country:**

**National Technical University of Athens, Greece**

**Host Institution:**

**National Technical University of Athens**

**Project webpage:**

**<http://atomcoin.gr/>**



**Budget: 187,803.73 €**

**Duration: 36 Months**

## Research Project Synopsis

The goal of ATOM is to generate, develop and validate user-centred applications which will ***empower energy end-users to engage in achieving energy efficiency through behavioural change.*** Innovative user-friendly applications will be developed, to convert data from smart meters, sensors and appliances into value for the buildings' occupants, through actionable personalised information, recommendations and incentives.

***ATOM will introduce a virtual energy currency approach (ATOMcoin) to incentivize behavioural energy efficiency.*** This innovative component of a distributed economy will enable consumers to realise the value of their investment in renewable energy (prosumers) and/or energy efficiency allowing them to monetise their excess energy.

The effectiveness of this novel suite of apps will be verified through an ***agent-based modelling approach*** and ***real-life applications.***

## Project originality

ATOM strives towards the elaboration of **data-driven innovative pathways in intelligent energy management**, by incorporating novel methodological approaches and technologies as a result of interweaving three realms.

- **Dimension 1: Interoperability alignment between existing technologies** – The ATOM Interoperability Framework will extend connectivity, integration and interoperability to the devices deployed in the market today.
- **Dimension 2: “User – Centric” Framework** – Customisations, expansions and upgrades of existing technological elements will lead to 3 personalised energy apps (“M&T”, “Actions”, “Reward”). This “user – centric” framework aims to bridge the gap between ICT-for-companies and occupants.
- **Dimension 3: Energy Efficiency to Value Economy** – ATOM will introduce an innovative reward programme to incentivize behavioural energy efficiency. The innovative aspect of the proposed incentive mechanism is that the energy end-users will be able to automatically generate their own ATOMcoins, by producing energy or reducing their energy consumption.

## Expected results & Research Project Impact

- **Researchers, ICT Developers and Data Scientists**: Through the ATOM Management App, researchers, ICT developers and data scientists will be able to extend the functionalities or to connect them to third-party software.
- **Technology and Standards**: ATOM provides innovation for several emerging technologies, improving existing standards (ISO 50001) and paving the way for technological disruption in the field of ICT supported behavioural change.
- **Contribution to National/European Policies, Regulations and Norms**: ATOM will significantly impact initiatives that can be considered amongst the cornerstones of European policy (in the fields of digital markets, big data and energy) and support the Digital and Green Transformation envisaged in the European Green Deal.
- **Environmental and Societal Impact**: Significant reduction of the final energy consumption, and subsequent reduction of CO<sub>2</sub> emissions are expected.
- **Strengthening Innovation Capacity, Competitiveness and Growth**: The ATOM scope lies within the core of strengthening innovation capacity and developing innovations that meet the needs of energy companies.

## The importance of this funding

Funding from HFRI will allow ATOM to:

- Produce nuggets of innovation that will directly improve end-users lives.
- Improve research capacity of young researchers and provide them with the tools to achieve significant scientific progress.
- Introduce state-of-the-art technologies in university curriculums and courses, equipping students with the professional skills to prosper in their future careers.



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