Framework for Utilities & Services

Unlocking new & greener business value with digital technology!

Atos Energy Unit, Research & Innovation Spain
What does FUSE offers?
What does FUSE offer?

- Framework for Utilities and Services integrates in one single app all necessary elements for energy management
- Provides energy network visibility & control
- Processes automation and business collaboration for solutions across the energy value chain
- Wide variety of potential target users, including prosumers, micro-grid / building operators, utilities & mobility and infrastructure managers
What does FUSE offer – look out

- Creates a collaborative ecosystem, open to new stakeholders to act as data providers, solution users or energy services developers
- Faster innovation, faster time-to-market, faster revenue
- Device monitoring and control for utilities, Smart Grid Operators or individual users
- Easy integration with existing IT systems, based on the concept of Federation of Platforms and Data Economy
FUSE applications & high level technical solution
Applications

**Energy management model**
Efficient management of the network via automated actions for balancing & minimizing costs

**Smart Flexibility**
Identification and optimal management of local or distributed flexibility to align the user needs and provide efficiency

**Digitalization**
Real time monitoring of distributed Energy resources and complete observability of the network, enabling the provision of advances services

**Electric Vehicle**
Fleet and infrastructure (chargers) management Electric Vehicles as a Distributed Resource of Energy
Applications & Use Cases

FUSE is useful in different domains, including the following sectors:

Housing & smart energy
- Monitoring, assessment, and forecasting of energy resources
- Self-service capabilities management
- Understanding & management of consumer’s personal utility use
- Reducing costs
- Monitoring for batteries, electric vehicles, etc.
- Informed decision making

Utilities
- Anticipate the generation-demand energy variations
- Forecasting capacity for unpredictable nature of renewable energies
- Provide predictive maintenance for energy assets
- Balancing the energy demand

Electric Vehicles
- Electric vehicle charging points management
- Fleet management
- Operation optimization of energy management
- Booking and brokering services

Retail
- Clusterization (customer segmentation) to provide targeted campaigns
- Provision of novel Demand Response techniques
- Informed decision-making
- Customer Experience improvement

Governments
- District Energy management
- Electromobility services for city assets (vehicles and charging points)
- Offices/buildings
- Energy management
- Services for citizens
High Level Technical Solution

Short description

- Maximize interoperability
- Connect to software platform
- Monitoring real-time data
- Data analytics

- Integrating and optimizing assets
- Data-centric platform
- Energy assets management
- Resource booking

- Supports utility companies network transformation
- Clustering & user profiling
Added value of the different components
FIWARE serves as entry point to FUSE ecosystem

- Provides interoperability at multiple levels, including data (different protocols and vendors), platform (connection to already existing clouds), Services (integration of own and third party applications), Harmonized the data being gathered using well-known and standard ontologies both for ICT (i.e. NGSI) and Energy (i.e. SAREF), Integrated data management, security, privacy, visualization and warehousing by design
Leveraging on the FUSE ICT core functionalities for acquisition and harmonization, advanced services provide data valorization.

Together, they form a complex ecosystem of complementary services to serve diverse stakeholder needs at different scales.

They are tailored to the needs of utilities market by offering innovative and practical approaches to energy issues.
Success Stories
Booking and Brokering EV charging
H2020 ELVITEN

Electric Vehicle requirements and problems to solve
▶ Cities have Electric Vehicle are more and more common in cities
▶ New infrastructure and tools to meet consumer demand
▶ Need for booking and brokering of Electric Vehicle charging points

Solution provided by Shuttle
▶ Demonstration of the usefulness of light electrified vehicles for urban transportation
▶ FUSE provides a booking and brokering service for Electric Vehicles, e-hubs and parking spaces
Clusterization and segmentation
H2020 eDREAM

Retail requirements and problems to solve
- New solutions for DSOs using a new decentralized and community-driven energy ecosystem by fully integrating the micro-grid and VPPs (Virtual Power Plants) to local power disruption network

Solution provided by Shuttle
- FUSE provides advanced Big Data Services for clustering flexibility, load profiling and customer segmentation
On-going projects
FLEXIGRID aims to allow the distribution grid to operate in a secure and stable manner when a large share of variable generation electricity sources is connected to low and medium voltage grids.

FLEXIGRID proposes a three-level approach aiming at Flexibility - Reliability - Economic Efficiency through the development of innovative hardware and software solutions.

**Solution provided by Shuttle**

- FUSE is provided as a platform
- Common information model used by adapters to provide data model harmonization
Project requirements and problems to solve

- INCIT-EV aims to demonstrate an innovative set of charging infrastructures, technologies and its associated business models, ready to improve the EV users experience beyond early adopters, thus, fostering the EV market share in the EU.

- Seeks the EV users’ unconscious preferences relying on latest neuroscience techniques to adapt the technological developments to the users’ subjective expectations.

Solution provided by Shuttle

- FUSE is provided as a platform.
- Common information model used by adapters to provide data model harmonization.
- Services orchestration.
Project requirements and problems to solve

► Open-source platform providing a set of interoperable tools for the optimal design, planning, operation and maintenance of the electricity grid

► Supporting TSOs and DSOs towards an active system management approach

► Improving the sustainability and reducing the costs during electricity grid design and planning, through a set of innovative, interoperable and modular software applications

Solution provided by Shuttle

► FUSE is provided as a platform & show interoperability

► Common information model used by adapters to provide data model harmonization
Renaissance
Energy communities

Project requirements and problems to solve

- Develop a platform for integrated management and value delivery across all actors so as to demonstrate energy communities and systems with >27% RES (renewal energy sources).
- Identify stable and equitable business cases for Local Energy Communities focusing on integrated, decarbonized Local Energy Systems in delimited environments.
- Test the replicability approach under market conditions in 4 EU pilots plus 6 replication demonstrators across the globe.

Solution provided by Shuttle

- Energy services Trading Supervision System
- Other services to be integrated
  - Flexibility & DR & Energy
  - Energy Market price forecasting
  - Grid Stability simulation engine
  - Self-portfolio energy balancing
  - Asset Handling
WeDistrict
Heating & cooling systems

Project requirements and problems to solve
- WEDISTRICT aims to demonstrate that District Heating and Cooling systems can be built on a combination of renewable energy sources and waste heat recovery solutions.
- Each demonstration case will be based on the integration of two or more renewable energy-based technologies, building upon local resources and innovative technologies.

Solution provided by Shuttle
- FUSE is provided as a platform for heating & cooling scenarios
- Common information model used by adapters to provide data model harmonization
- Forecasting services
- Command & control
IELECTRIX
Local Energy communities

Project requirements and problems to solve

- Enabling Local Energy Communities as active players at distribution level
- Supporting DSOs in managing energy flexibility from Local Energy Communities through human-centric DR framework
- Improving the resilience of the local energy system, through the implementation of novel optimization tools to be integrated into the EMS

Solution provided by Shuttle

- FUSE as platform for all active players under distribution level
- Offers forecasting services
- Flexibility Scheduling
BD4OPEM
Open innovation marketplace

Project requirements and problems to solve

- BD4OPEM will create a seamless link between energy stakeholders and solutions developed.
- A Marketplace to ensure secure data flows between data providers and solution providers, resulting in new data-driven business models, enhanced asset management and consumer participation in energy balancing.
- Target user groups will be able to find relevant solutions provided by different specialized companies

Solution provided by Shuttle

- Providing FUSE advanced services for predictive maintenance
- Providing capacity of FUSE “on-demand services” (not needing to have all services of the platform)
Our value proposition & business model
Business Challenges for Utility industry

- Need for a complete digitalization of a traditional analogic industry
- Green deal: Europe as zero-emission continent by 2050
- Decentralization of Energy resources, both for generation and storage
- Shift towards a greener, Renewal Energy Sources-based Energy sector
- Irruption of Energy Communities
- Climate change and the environment are priority for governments
- Consumers demand a new and direct role in personal energy management
- Complete and real-time network observability
- Almost 100% reliability and security (including cybersecurity)
- Sector integration (electricity, gas, or water)
- New technologies for Renewal Energy Sources and Storage
- Inclusion of novel techniques coming from AI and Big Data
- Coexistence of IT/OT domains, and needs for standardization

Market / Sector

User habits

Sector needs

Technology development
Business Model

1. Services on demand, adapted to each client supporting customer operation transformation

2. Savings & lower costs thanks to efficient management of energy

3. Faster innovation, faster time-to-market reaching more clients by helping utility companies adapt business processes (power generation optimization, transmission & distribution operations)
Thank you

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