



# **Project Presentation**

#### **BEYOND**

A reference big data platform implementation and AI analytics toolkit toward innovative data sharing-driven energy service ecosystems for the building sector and beyond



## A reference big data platform implementation and Al analytics toolkit toward innovative data sharingdriven energy service ecosystems for the building sector and beyond



Topic: LC-SC3-B4E-6-2020 Big Data for Buildings

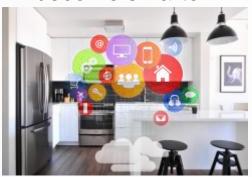


## **Context**

Big cities don't only consume...



since homes & offices become smarter!



energy...



but also produce vast amount of data...

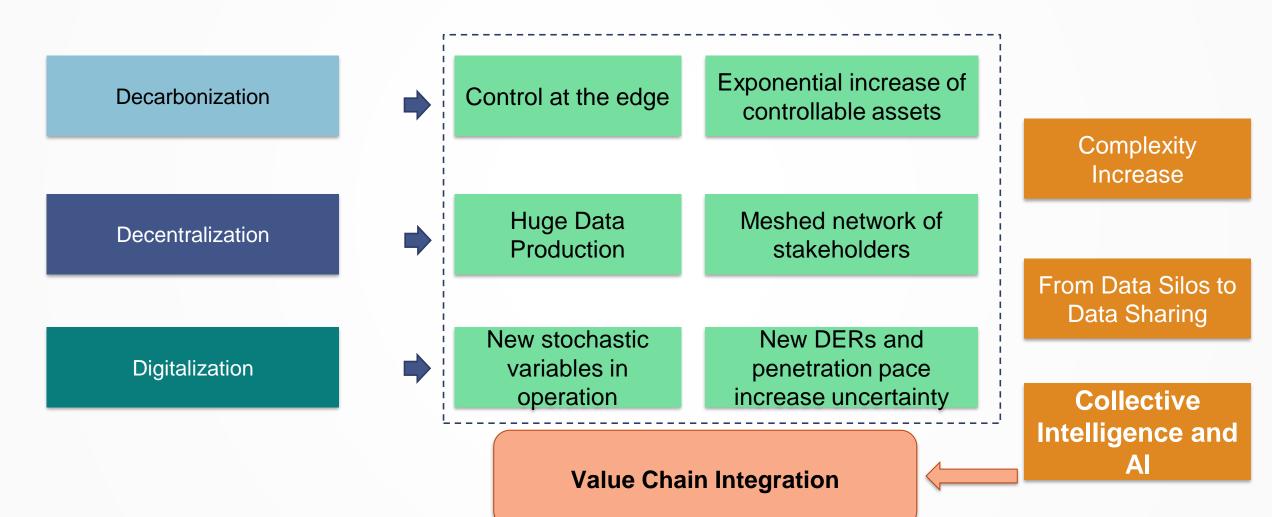


Does this data availability can lead energy actors to exploit new monetary flows by integrating buildings as active nodes in their business models?



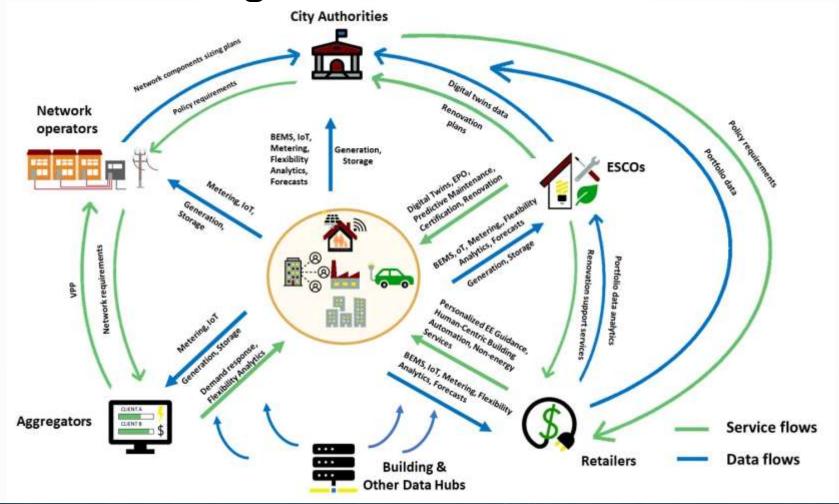


## Why (Big Data for) Buildings?





# Collective Intelligence through Buildings-Data Value Chain Integration





## Trustfulness and Sovereignty in Data Sharing- The BEYOND Approach

#### **Express Needs**

- •Query Building & Evolution
- Combined Data / Intelligence Creation by Provider

#### **Data Matchmaking** Bundle

#### **Deliver Intelligence**

 Interactive Visualizations Scheduled Analytics & Reporting

Data Consumer

#### **Data Analytics Bundle**

#### **Explore & Analyse**

- Data Analysis,
- "Pre-trained" Analytics Execution
- Secure Multi-party Computations
- Privacy-Preserving Analytics Execution

#### Acquire

- Multi-party Data Contract Approval / Negotiation, Contract Signature, Data Payment
- Data / App Access, Data, Decryption, Data Updates Subscription

#### **Get Reimbursed**

- Multi-Party Intelligence **Remuneration Management**
- •Bilateral / Multi-party Data **Contract Payment Settlement**

#### **Extract Data**

- Data Ingestion
- •Data Curation
- Data Mapping
- Data Linking
- Data Updates Management

**Data Collection Bundle** 

**Data & Intelligence Provider** 

#### **Secure Data**

- Data Access Policies Management
- Data Encryption
- Data Sharing License Definition
- Secure Storage in multiple modalities

Data Security Bundle

#### **Data Sharing Bundle**

#### **Share/Trade Assets**

Bilateral / Multi-party Data Contract...

- Creation
- Approval
- Negotiation
- Signature
- Lifecycle Management



## **BEYOND** in a nutshell – Technical novelties (1/2)



Effortless data management
Easing tasks for the curation,
mapping and linking of private
data assets with external data
based on a Common
Information Model



Intuitive data exploration
Support in searching,
locating/"matchmaking",
understanding, exploring and
"preparing" energy-related data
for analytics

Analytic as a Se vice
Enabling nove applications
for the whole value shain

- Per onal Analy cs
- Edge baseline analytly



By-design Interoperability
Provision of standardized
interfaces to collect and export
intelligence



## BEYOND in a nutshell – Technical novelties (2/2)



security
Encrypt and check-in
data through an onpremise environment
with multiple modalities



Real data privacy
Data remains private and
on -premise while
allowing for joint actions
with other "trusted"
stakeholders



playground
Designing and executing
analytics and
"applications" in private
sandbox environments,
spawn on demand



Trusted data sharing Creating, signing and validating smart multiparty data contracts in an immutable manner, while remunerating the involved stakeholders



Regulate access to the private data assets through declarative authorization policies

control



## A bundle of data sharing-driven energy services

- Data-driven Urban Planning → City Authorities
- Evidence-based energy infrastructure planning and sizing → Network Operators (District Heating/ Electricity)
- Advanced renovation support → ESCOs, Construction Companies
- Enhanced Digital Twin for holistic building energy and asset management → ESCOs, Facility Managers
- Bottom-up Portfolio Analytics and Management → Retailers
- Personalized energy analytics and automation -> Prosumers
- Building Energy Performance and Smart Readiness Certification → ESCOs
- VPP Configuration and Residential Demand Response → Aggregators



### **BEYOND Demonstrators**

- Greece: Mytilineos (Retailer)
- Spain: CUERVA (DSO, Retailer)
   URBENER (Aggregator)
- Finland: FVH (City Agency/ Building Management)
- Serbia: BEOELEK (District Heating Network Operator/ Retailer)













## Thank You!



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