Data Spaces: Common data models for Energy, Home, Mobility

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Building on use-cases from Energy, Home and Mobility domains

- Use-cases: a design vector to specify the actions performed by a system, incl. identification of the participating actors and exchanged data
  - See in particular IEC 62559 series of standards for the Energy domain
- Several initiatives to consider, leading to 3 main use-cases over 3 domains
## Focus on some references

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Short description &amp; references of interest</th>
<th>Website</th>
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<tbody>
<tr>
<td>BRIDGE EC initiative gathering <strong>90+ H2020 projects on smart grids</strong>, with a total funding ≈ €1bn. One WG focusing on Data Management WG. A <strong>use-case repository</strong> has been developed.</td>
<td><a href="https://bridge-smart-grid-storage-systems-digital-projects.ec.europa.eu/">https://bridge-smart-grid-storage-systems-digital-projects.ec.europa.eu/</a></td>
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<tr>
<td>InterConnect</td>
<td>Major H2020 project focusing on <strong>interoperability for Smart Home, Building and Grid</strong> (2019-2023, €30m funding) D1.3 defines the 112 HLUCs of the project. D2.3 defines the <strong>InterConnect ontology</strong> based on the 66 services and 166 APIs developed in the project.</td>
<td><a href="https://interconnectproject.eu/">https://interconnectproject.eu/</a></td>
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<td>SmartBuilt4EU</td>
<td><strong>Community on Smart Building</strong> innovation (H2020 CSA). TF2 Topic A white paper is on building interoperability TF3 Topic A white paper is on the provision of power flexibility by building to the grid</td>
<td><a href="https://smartbuilt4eu.eu/">https://smartbuilt4eu.eu/</a></td>
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<tr>
<td>IEC SyC Smart Energy</td>
<td>IEC System Committee focusing on the <strong>system definition of the Smart Energy</strong> domain. Relevant series: IEC 62559, IEC 63200, IEC 62913, ...</td>
<td><a href="https://syc-se.iec.ch/">https://syc-se.iec.ch/</a></td>
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Required data exchanges based on use-cases

- Device (sensors, actuators, ...)
  - Measures
  - Commands
  - Time series
  - Forecast
  - Geospatial
  - User preferences

- Grid & topology
- Energy & power
- Flexibility
- Metering & tariff

- Energy
- Building
- Home & Building
- Mobility / transport
- Charging contract
- Mobility

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Enabling cross-sector data exchange

Cross-sector data exchange requires interoperability at every level:

- **Business level**: roles, governance, regulation, ...
  - e.g. The HEMRM (Harmonized Electricity Market Role Model) includes data-related roles. It is therefore a good starting point from electricity perspective... How to bridge with other sectors?

- **Function level**: functional processes for data exchange

- **Information level**: data models, ontologies, ...
  - One of the challenges is to “connect” sector-specific models together... This is where ontologies can help
  - e.g. IEC CIM (see opposite) covers very well the grid system, but is not suited to exchange data with e.g. mobility, building or water sectors
Thank you!

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