Energy ADE Occupancy Modules
Activities, Request of changes for the Energy ADE v0.6

München
30.11.2015
Working Group Organization

- As the occupant behaviour is a **key issue** for building and systems energy consumption, the aim of this WG is to investigate **questions related to occupancy, ownership or system scheduling**.

- As other WG, the ADE modules related to Occupancy present **many dependencies** and need common modelling decisions (e.g. with the Core or Energy systems WG).

- 4 participants
Main modules – UML overview
Main modules – UML overview
Activities over the last 6 months

- 2 online-conferences
- GitHub
  - 6 Requests of change for ADE v0.6
  - 1 open issue
- Ongoing documentation of the ADE v0.5
- Watch and link with related initiatives (e.g. INSPIRE)
General feedbacks on ADE v0.5

- Test & get feedbacks from use cases
- Bring more consistency & avoid redundancies in the existing schema
- Watch & update content with existing materials
- Codelists
- Link with other WGs
General feedbacks on ADE v0.5

- Links with other WGs have to be strengthen (e.g. Energy Systems WG)

- Reuse as far as possible existing material

  An ontology to represent energy-related occupant behavior in buildings. Part I: Introduction to the DNAs framework Building and Environment , 92 , 764 - 777

- Codelist

- Time series

- Integration of ADE in 3D CityDB
Open Issue #31
Lighting in Building

ADE v0.5

- The building model do not integrate specific attributes for lighting.
- Luminance Threshold (Lux) could be included in UsageZone for instance.
- LightingFacilities/Systems could be specified such as DHWFacilities.

Issue

- Illuminance Threshold (lx) is not necessary at the urban scale (Jerome)
- LightingFacilities are not yet a part of the EnergyADE v0.5 but were thought to be integrated in the new version EnergyADE v0.6 (Romain)
Issue #32
Internal Gains management

ADE v0.5
- Up to now, internal gains are attributes in the following featureTypes:
  - as "internGains" within the "occupancy" featureType
  - as "heatLosses" within the "electricalAppliances" featureType.

Proposition ADE v0.6
- Rename:
  - "internGains" (within the "occupancy" featureType) → "heatDissipation"
  - "heatLosses" (within the "electricalAppliances" featureType) → "heatDissipation"
Issue #33
Rename the "Occupancy" featureType "Occupants"

ADE v0.5
- To avoid misunderstanding regarding the multiplicity indices with BuildingUnit or UsageZone, it may be relevant to rename the "Occupancy" featureType as "Occupants".

Proposition ADE v0.6
- Rename:
  - "Occupancy" featureType
  → "Occupants"
Issue #47
Building floor areas

ADE v0.5
- different Floor areas are used in AbstractBuilding (referenceHeatedFloorArea) and in ThermalZone (heatedFloorArea, cooledFloorArea).

Proposition ADE v0.6
- Introduction of Object FloorArea...
- ... optionally multi-associated with AbstractBuilding, ThermalZone, UsageZone and BuildingUnit
- With attributes type (codeList OfficialArea) and measure
Issue #48
Schedule LoD1/ daily usage ending and starting time

ADE v0.5
- In Object ScheduleLOD1, usage time defined by starting time and ending time are not adapted to all cases.
- For example, for cases that starting time and ending time of different days a week varies, like a restaurant with off-day on Thursdays.
- Original aim of ScheduleLOD1 is to comply with the norm calculations ISO 13790 or DIN18599, presently it is not.

Proposition ADE v0.6
- Delete parameters “dailyUsageEndingTime” and “dailyUsageStartingTime“ in the class “ScheduleLOD1”.
- Introduce the parameter “usageHoursPerDay“ in the class “ScheduleLOD1”. Optional Parameter. Type: measureType. Definition: average number of hours per day of building occupation, during usage day.
Issue #53
Identify Building Unit also with address(parts)

ADE v0.5
- Currently it is not possible to identify a BuildingUnit by means of its complete address (e.g. “Donau street 1/5”, with /5 being for example the door number).
- To identify a BuildingUnit by their full address would allow the connection to existing databases which might contain other useful data (e.g. energy certificates).

Proposition ADE v0.6
- Add a link from BuildingUnit to normal address class in CityGML, which via xAI data type already allows to store all possible address configurations.
- The relation BuildingUnit-to-Address should allow 1 BuildingUnit to have 0 to * addresses.
Issue #34
Hierarchy within the "OwnershipType" codeList

ADE v0.5
- In the existing OwnershipType codelist the value Government is too general, and should be renamed.
- Possible solution is to have a hierarchical codelist, similar to the CurrentUseValue defined in INSPIRE or BEDES

Proposition ADE v0.6
- Hierarchical Codelist to be provided in a ISO19135 Registry with values:
  - corporation
  - nonOccupantPrivate
  - occupantPrivate
  - occupantPublic
    - european
    - national
    - regional
    - municipal
  - otherOrCombination
  - propertyManagementCompany
Use of INSPIRE codelists

INSPIRE REGISTRY
Enhancing access to European spatial data

INSPIRE registry
ID: http://inspire.ec.europa.eu/registry

Label: INSPIRE registry

Content Summary:
The INSPIRE infrastructure involves a number of items, which require clear descriptions and the possibility to be referenced through unique identifiers. Examples for such items include INSPIRE themes, code lists, application schemas or discovery services. Registries provide a means to assign identifiers to items and their labels, definitions and descriptions (in different languages). The INSPIRE registry provides a central access point to a number of centrally managed INSPIRE registers. The content of these registers are based on the INSPIRE Directive, Implementing Rules and Technical Guidelines.

Registry manager: European Commission, Joint Research Centre
Use of INSPIRE codelists
Use of INSPIRE codelists
### Use of INSPIRE codelists

The INSPIRE registry is a platform for enhancing access to European spatial data. It includes codelists that are used to standardize the representation of spatial data across the European Union. The codelists are managed by the European Commission and are designed to ensure consistency and interoperability.

Here is an example of a codelist from the INSPIRE registry:

<table>
<thead>
<tr>
<th>Label</th>
<th>Parent</th>
<th>Status</th>
<th>Governance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>agriculture</td>
<td></td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
<tr>
<td>ancillary</td>
<td></td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
<tr>
<td>collective residence</td>
<td>residential</td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
<tr>
<td>commerce and services</td>
<td></td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
<tr>
<td>individual residence</td>
<td>residential</td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
<tr>
<td>industrial</td>
<td></td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
<tr>
<td>more than two dwellings</td>
<td>collective residence</td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
<tr>
<td>office</td>
<td>commerce and services</td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
<tr>
<td>public services</td>
<td>commerce and services</td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
<tr>
<td>residential</td>
<td></td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
<tr>
<td>trade</td>
<td>commerce and services</td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
<tr>
<td>two dwellings</td>
<td>collective residence</td>
<td>Valid</td>
<td>Legal (EU)</td>
</tr>
</tbody>
</table>

In this example, the codelist includes terms like 'residence for communities' which can be used to describe the type of residential area in spatial data.
Use of INSPIRE codelists

**Residence for Communities**

- **ID:** [http://inspire.ec.europa.eu/codelist/CurrentUseValue/residenceForCommunities](http://inspire.ec.europa.eu/codelist/CurrentUseValue/residenceForCommunities)
- **This version:** [http://inspire.ec.europa.eu/codelist/CurrentUseValue/residenceForCommunities:1](http://inspire.ec.europa.eu/codelist/CurrentUseValue/residenceForCommunities:1)
- **Latest version:** [http://inspire.ec.europa.eu/codelist/CurrentUseValue/residenceForCommunities](http://inspire.ec.europa.eu/codelist/CurrentUseValue/residenceForCommunities)

**Label:** residence for communities

**Definition:** The building (or building component) hosts a residence for communities.

**Description:** This class includes residential buildings for communities, including residences and service residences for the elderly, students, children and other social groups.

**Theme:** Buildings
Use of INSPIRE codelists

Wohnheim

ID: http://inspire.ec.europa.eu/codelist/CurrentUseValue/residenceForCommunities
Diese Version: http://inspire.ec.europa.eu/codelist/CurrentUseValue/residenceForCommunities:1
Letzte Version: http://inspire.ec.europa.eu/codelist/CurrentUseValue/residenceForCommunities

Name: Wohnheim
Definition: In dem Gebäude (oder Gebäudekomponente) befindet sich ein Wohnheim.
Beschreibung: [Nicht vertieft auf deutsch] This class includes residential buildings for communities, including residences and service
residences for the elderly, students, children and other social groups.
Thema: Gebäude
# Use of INSPIRE codelists

![INSPIRE Registry](https://inspire.ec.europa.eu/codelist/CurrentUseValue/residenceForCommunities/)

<table>
<thead>
<tr>
<th>CodeListe</th>
<th>Gegenwärtige Nutzung</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regelungsebene</td>
<td>Rechtsgültig (EU)</td>
</tr>
<tr>
<td>Status</td>
<td>Gültig</td>
</tr>
<tr>
<td>Übergeordneter Wert</td>
<td>Wohngebäude</td>
</tr>
</tbody>
</table>

**Andere Formate:**
- XML
- XML beta (ISO 19135)
Use of INSPIRE codelists
New codelists and extension of INSPIRE