ETSI ISG CIM

Cross-Cutting

CONTEXT INFORMATION MANAGEMENT

OASC CONNECTED SMART CITIES CONFERENCE 11.01.2018

SESSION: "GLOBAL STANDARDS FOR IOT AND SMART CITIES & COMMUNITIES"

Contact Lindsay Frost (NEC), ETSI ISG CIM Chairman. CIM@neclab.eu

https://portal.etsi.org/CIM
ETSI ISG CIM: Mission

... to make it easier for END-USERS and CITY DATABASES and IoT internet-of-things and 3rd-party APPS to exchange INFO

User Apps
Open Data
IoT

Introduction to ISG CIM

© ETSI 2018. All rights reserved
Context Information Management Layer
- exchanging information between domains -

EVENT-TRIGGERED DATA

USEFUL SERVICES to CITIZENS

(OPEN) DATABASE INFORMATION

CHARACTERISTICS
• information-centric
• joining verticals
• interoperable
• replicable

© ETSI 2018. All rights reserved
Introduction to ISG CIM

- five main domains considered -

**Context Information Management Layer**

**Unredacted Platforms**

- Event-triggered data

**Redacted Databases**

**Data Analytics Platforms**

- Useful services to citizens

**IOT Platforms**

- Usage data

**IoT Platforms**

**Characteristics**

- Information-centric
- Joining verticals
- Interoperable
- Replicable

© ETSI 2018. All rights reserved.
Introduction to ISG CIM

Context Information Management Layer
- with developer-friendly JSON-LD syntax -

User Apps

EXAMPLE:
Citizen Complaints
Photo-App Application

Information Systems

APP

IoT

Wi-Fi 5G LPWAN

Context Information Management

Machine Reasoning System

Context Information Models

APPs

Data Publication Platforms

ISG CIM API [JSON-LD]

Open Data

CHARACTERISTICS
• information-centric
• joining verticals
• interoperable
• replicable
Cross-domain Use Case Example
Use Case: City Hall owns smart lampposts + Cams

The townhall database has locations and functions of its smart lamp posts
Use Case: City Hall owns smart lampposts + Cams

The townhall database has locations and functions of its smart lamp posts.

<table>
<thead>
<tr>
<th>Entity Type</th>
<th>Entity Instance</th>
<th>cRelationship</th>
<th>cProperty</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>urn:ISG-CIM:</td>
<td>SmartLamppostB:</td>
<td>hasAttached</td>
<td>trafficFluidity</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>Downtown1</td>
<td></td>
<td>location</td>
<td>[49.398, 8.672]</td>
</tr>
<tr>
<td>urn:ISG-CIM:</td>
<td>Sensor: Cam1</td>
<td></td>
<td>accuracy</td>
<td>5%</td>
</tr>
</tbody>
</table>
Use Case: Police report an accident

The police reports there was an accident at a certain time and what was damaged.
Use Case: Police report an accident

- **Vehicle**: urn:ISG-CIM: Vehicle: A4567
- **tonnage**: "2.1"
- **eventTime**: 2017-07-29T12:00:00
- **location**: [49.398, 8.672]
- **reportedBy**: urn:isgcim: Org:Officer123

The police reports there was an accident at a certain time and what was damaged.
Use Case: two non-IoT databases and one IoT

- The townhall records smart lamp posts in its databases
- The town hall records e.g. that a webcam is attached to a specific lamppost and delivers videodata about the street
- The police department records traffic accidents
- A policeman records lamppost at position XY was hit by a car
- Townhall can get a notification that a specific lamppost and the data from that lamppost may be affected
- Police can query previous data from camera (nearby)
Use Case: Exchanging the information in an agreed ontology and data model

Vehicle
- urn:ISG-CIM: Vehicle: A4567
- tonnage: "2.1"
- eventTime: 2017-07-29T12:00:00

LegalEntity
- reportedBy: urn:ISG-CIM: Org: Officer123

StreetFurniture
- hasAttached: SmartLamppostB: Downtown1
- location: [49.398, 8.672]
- trafficFluidity: 0.9
- accuracy: 5%

Sensor
- rdf:type: urn:ISG-CIM: Sensor: Cam1

Introduction to ISG CIM
ETSI ISG CIM is NOT specifying ... 

- NOT another IoT/M2M standard
- NOT for low-layer protocol or network-centric connectivity
- NOT just a semantic annotation vocabulary
- NOT specific to one particular environment
- NOT restricted to one type of information source
- NOT dedicated to one particular type of application
Flexible exchange of information between domains

- Federation of (independent) information sources
- Based on directed Graphs
- Core concepts include Entities and their Properties and Relationships
- Relationships/Properties can also have Properties and Relationships

Aim to be developer-friendly

- Using familiar techniques (e.g. HTTP, JSON-LD)
- Simple query interface
  - Based on entity type or identifier, with filtering of results
  - Scoping of query (e.g. by time/geography)

Taking account of "Data on the Web Best Practices" (W3C)

- All terms unambiguously linked/defined in vocabularies/ontologies
- Enables referring to Licensing, Provenance, Quality information, etc.
... so please join the effort to converge Context Information Management.

Contact for further information: ISGSupport@etsi.org

Open pages for consensus material: https://docbox.etsi.org/ISG/CIM/Open

+ visit at: https://portal.etsi.org/CIM
Annex: creating interoperability, local or global ...
Gap Analysis work