

Open APIs
for Open
Minds

Smart Data Models for cross-domain data sharing

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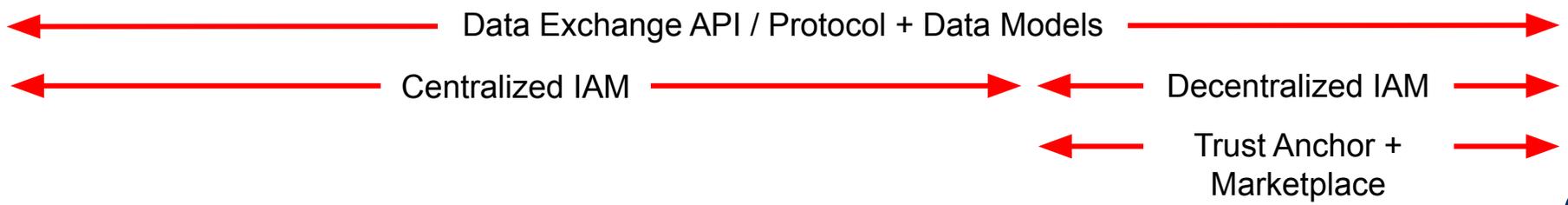
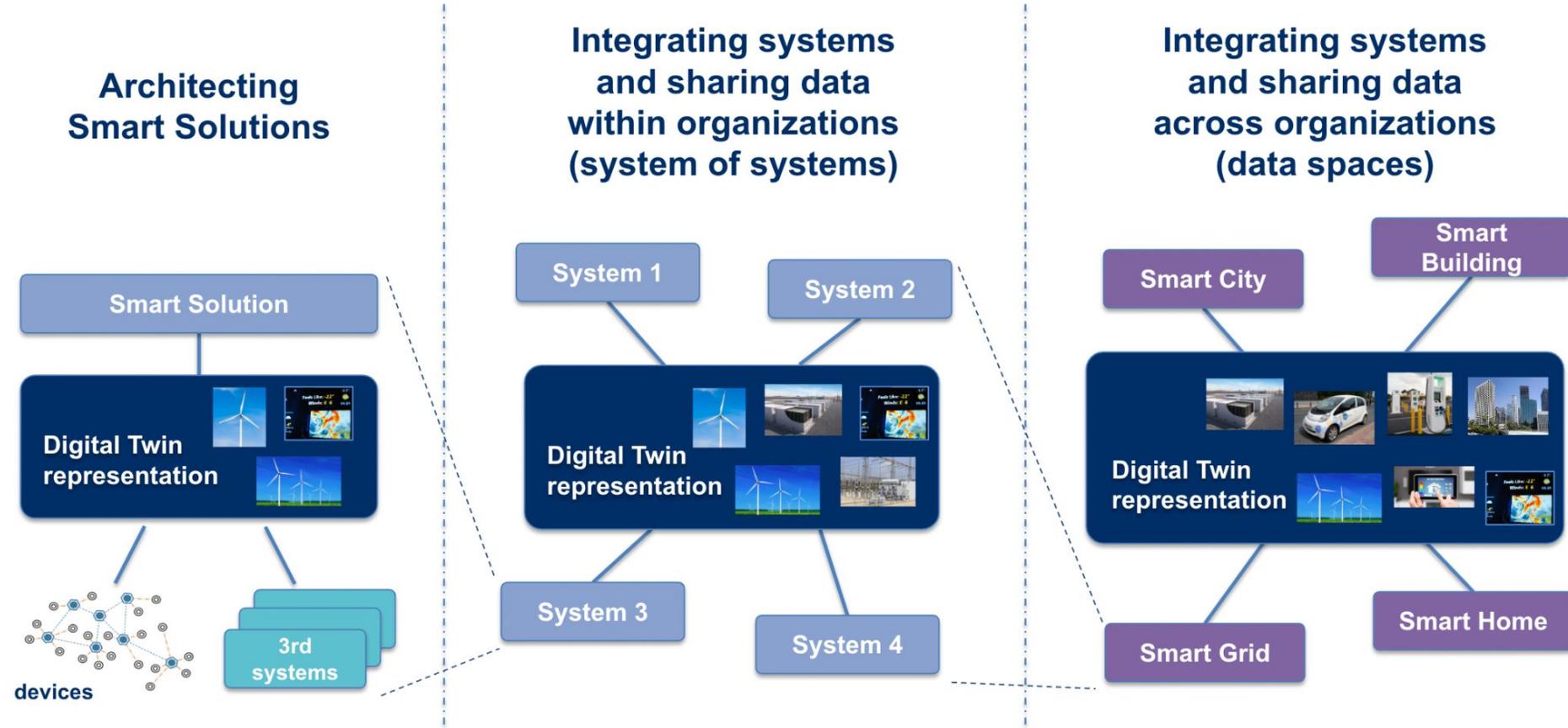
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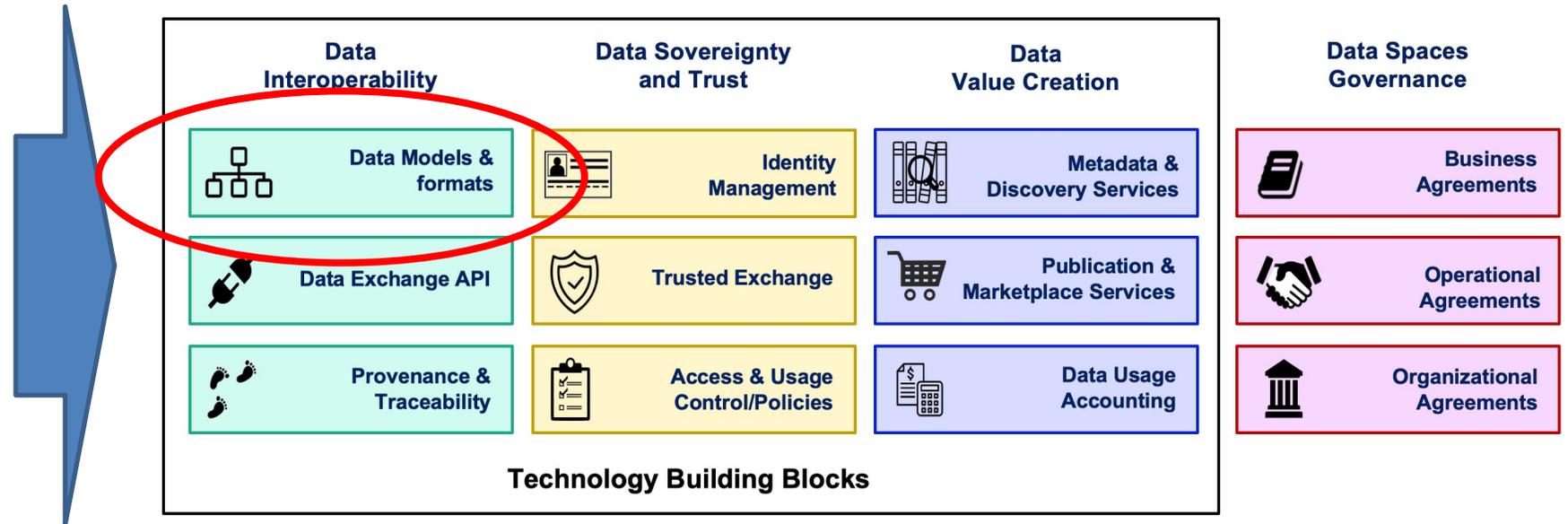
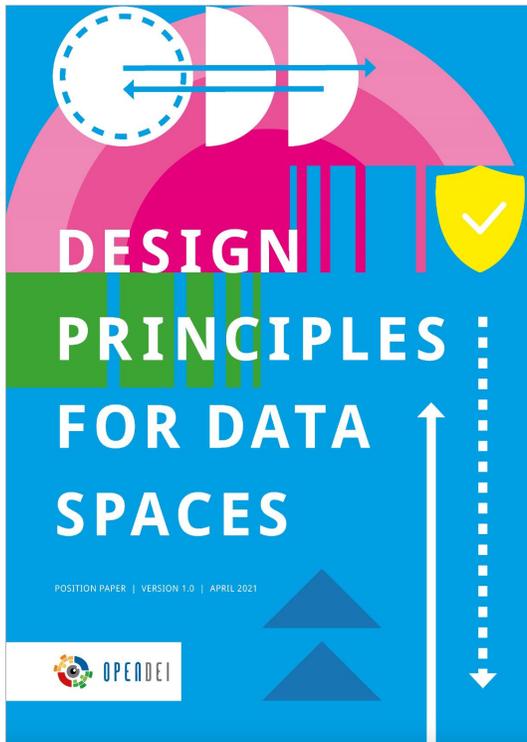
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Digital Twins: the right approach for digitisation at multiple levels

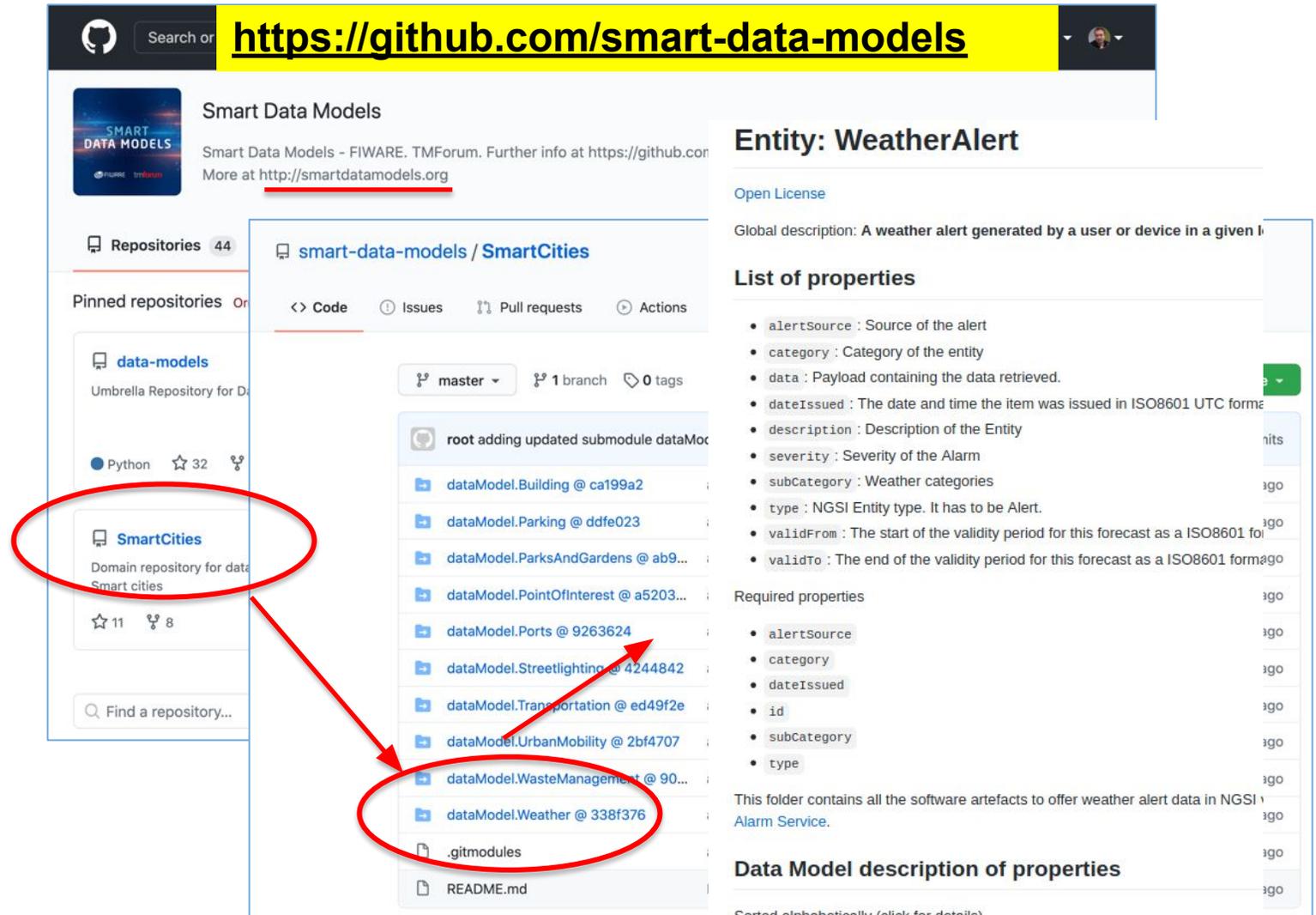


Common data models and formats: key for interoperability in Data Spaces



The Smart Data Models initiative

- Goal: provide a useful global “resource library” for developers
- For each model:
 - documentation in 6 languages
 - mapping (with validation schemas and examples) to DTDL and 4 serialization formats: JSON, JSON-LD, CSV, GeoJSON feat.
- Principles:
 - Agile process (6 weeks)
 - Implementation-driven
 - Cross-sector
- Defined data models rely on relevantly adopted standards (e.g., schema.org, SAREF, IEC CIM in Energy or UNE 178503 for Tourism) and contributions from real projects by the Community



The screenshot displays the GitHub repository for Smart Data Models. The main repository is highlighted with a yellow background and the URL <https://github.com/smart-data-models>. The repository is titled "Smart Data Models" and is described as "Smart Data Models - FIWARE. TMForum. Further info at https://github.com/SmartDataModels".

The repository structure is shown, with the "SmartCities" repository highlighted in red. The "SmartCities" repository is described as the "Domain repository for data Smart cities" and has 11 stars and 8 forks.

The "SmartCities" repository is expanded to show its contents, including a list of submodules. The "dataModel.Weather @ 338f376" submodule is highlighted in red. A red arrow points from the "SmartCities" repository to the "dataModel.Weather" submodule.

The "Entity: WeatherAlert" page is shown, detailing the entity's properties and required properties. The "List of properties" includes:

- alertSource : Source of the alert
- category : Category of the entity
- data : Payload containing the data retrieved.
- dateIssued : The date and time the item was issued in ISO8601 UTC format
- description : Description of the Entity
- severity : Severity of the Alarm
- subCategory : Weather categories
- type : NGSI Entity type. It has to be Alert.
- validFrom : The start of the validity period for this forecast as a ISO8601 format
- validTo : The end of the validity period for this forecast as a ISO8601 format

The "Required properties" section lists:

- alertSource
- category
- dateIssued
- id
- subCategory
- type

The "Data Model description of properties" section is also visible, along with a "full yaml details" link.

Smart Data Models: domains and subjects

DATA-MODELS

- Guides for coding new data models
- Template for new data models and examples
- Directory for scripting tools to check data models
- Inventory of domains and data models
- Inventory of attributes and terms
- @Context for json-ld



data-models
Umbrella repo

DOMAINS REPOSITORIES

Readme pointing to the list of subjects
General info or shared resources



Smart Water

Smart Cities

Smart Environment

Cross Sector

Smart Destinations

Smart Agrifood

Smart Energy

Smart Manufacturing

Smart Aeronautics

Smart Robotics



Subject 1
(sewage)

Subject 2
(parking)

Subject 3
(weather)

Subject 4
(Power Transformer)

SUBJECTS' REPOSITORIES

Readme pointing to the list of data models for the objects
Contributors.md
subject-schema.json



LIFECYCLE MANAGEMENT REPOSITORIES

Incubated

Harmonization

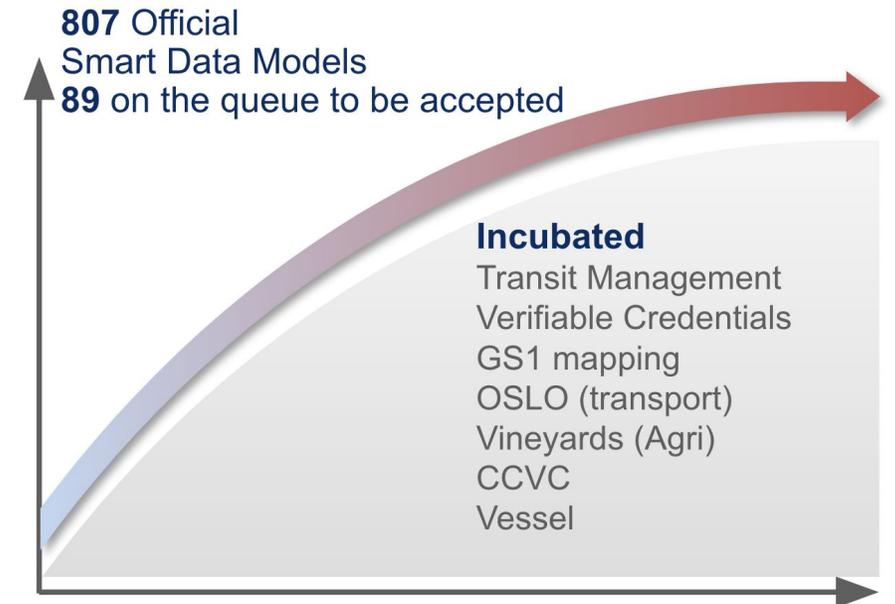
DATA MODELS

README.md
/doc/spec.md
/examples
schema.json
Adopters
LICENSE

Smart Data Models: Current status

| | | |
|---|------------------|-----|
| 1 | Smart Energy | 424 |
| 2 | Smart Sensoring* | 138 |
| 3 | Smart Cities | 85 |
| 4 | Cross Sector | 77 |
| 5 | Smart Water | 35 |
| 6 | Smart Agrifood | 30 |

| | | |
|----|---------------------|----|
| 7 | Smart Environment | 23 |
| 8 | Smart Aeronautics | 13 |
| 9 | Smart Robotics | 12 |
| 10 | Smart Destination | 11 |
| 11 | Smart Manufacturing | 3 |
| 12 | Smart Health | 2 |



Updated 20-6-22

* Many sensors are specific from other domains but not counted there
 Water 4, Environment 12, health 19, energy 5, cities 27, agrifood 1, robotics 1

Contributors and dissemination



- 116 active contributors
- 226 contribution in data models
- 22 services to contributors in data models



- Contributors belong to 75 different organizations
- Terms available for search 18.271
- Documented adopters 130



- Every term in data models has an associated page <https://smartdatamodels.org/term>
- Google finds 1570 pages in smartdatamodels.org

Updated 20-6-22

Conclusions

- Adoption of a minimum but common set of data interoperability mechanisms is key in development of a strategy for digitisation:
 - system of systems approach within orgs
 - materialization of cross-sector data spaces
 - develop once, integrate plug&play
- Defining common data models is crucial but it's not only about defining ontologies but also bring the answer to how data should be serialized when used together with APIs
- The Smart Data Models program meets the requirements to become the reference for developers:
 - open, community-driven
 - agile, implementation-driven
 - great momentum, growing fast



| Sounds nice? - Contact us!

<http://fiware.org>

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