Open APIs for Open Minds

Smart Data Models for cross-domain data sharing

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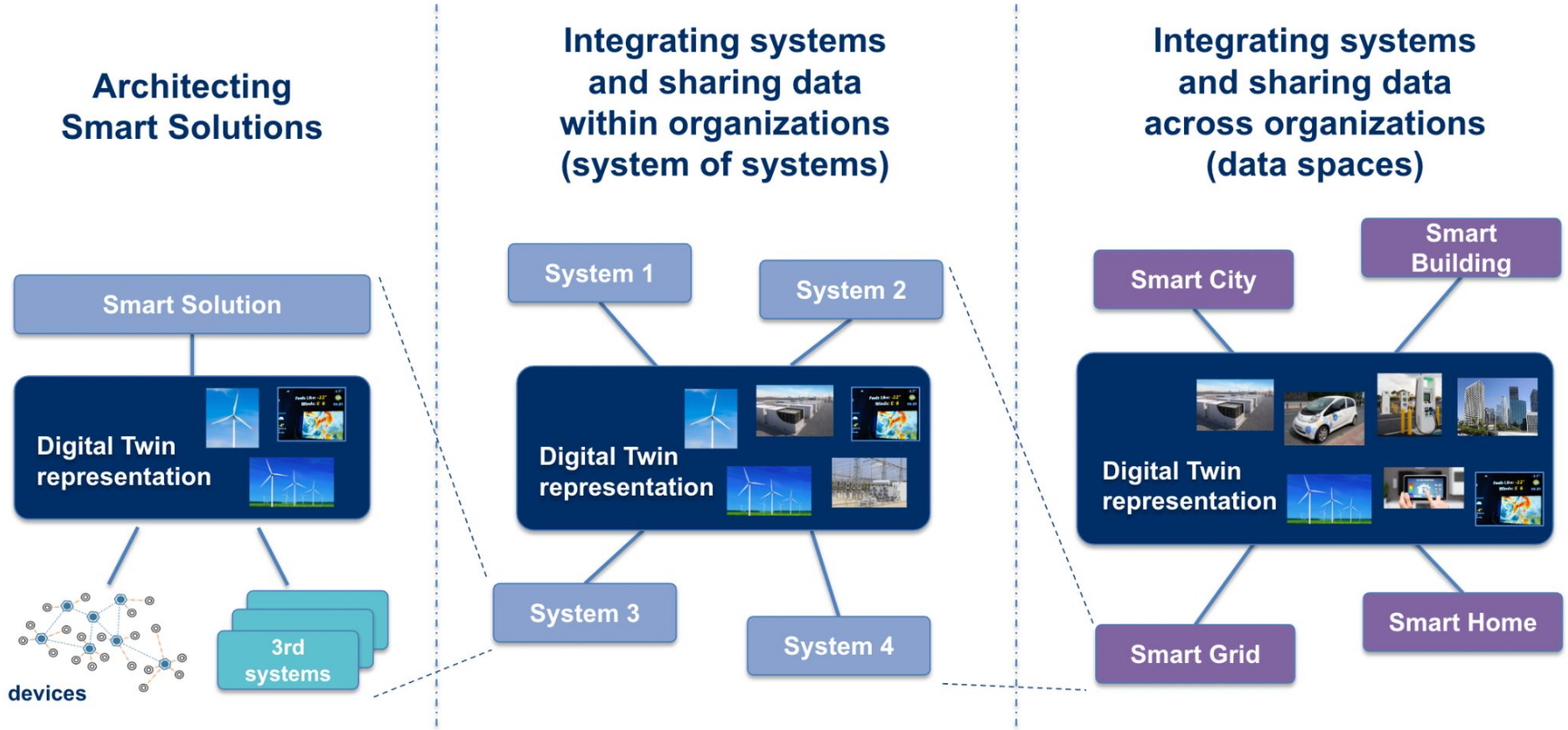
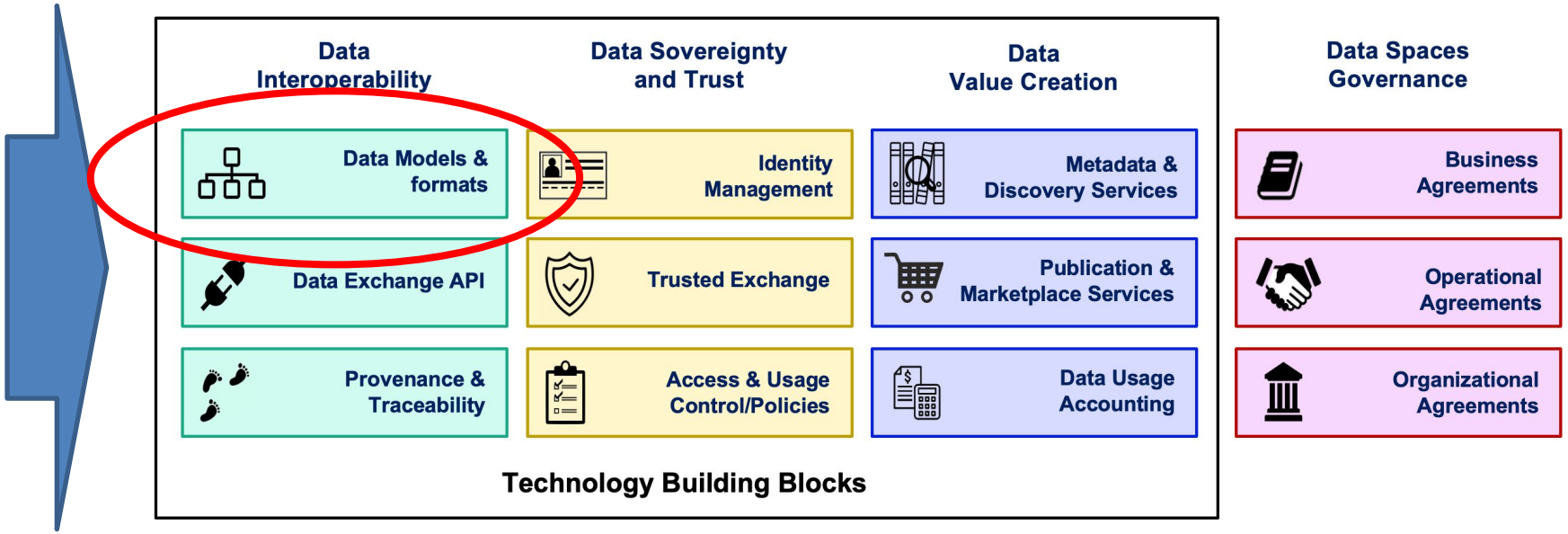
Digital Twins: the right approach for digitisation at multiple levels



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

OPENDEI



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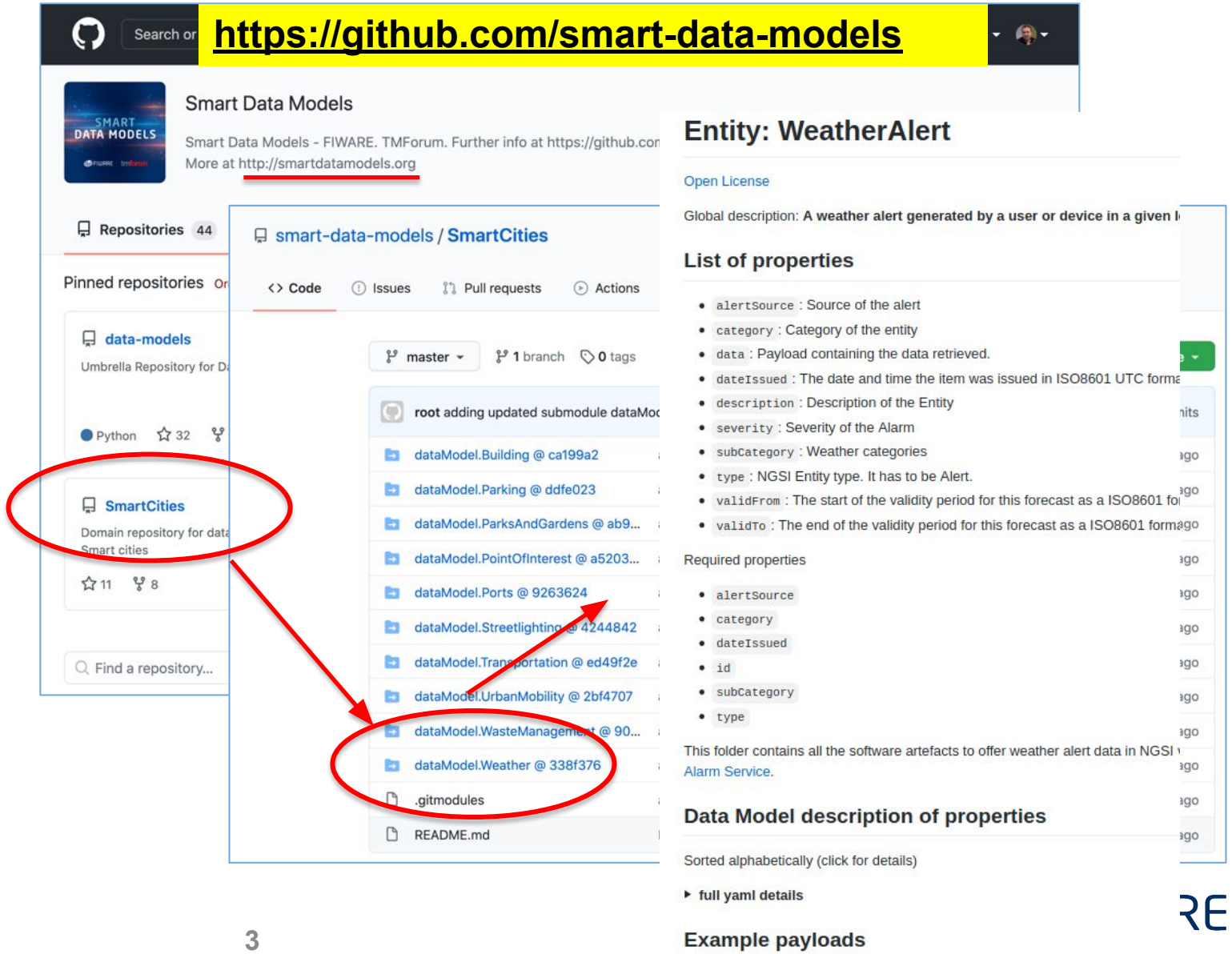
The Smart Data Models initiative

A GLOBAL PROGRAM LED BY FIWARE IUDX OPEN & AGILE SMART CITIES tmforum

- 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



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

DATA MODELS

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

LIFECYCLE MANAGEMENT REPOSITORIES

Incubated | Harmonization

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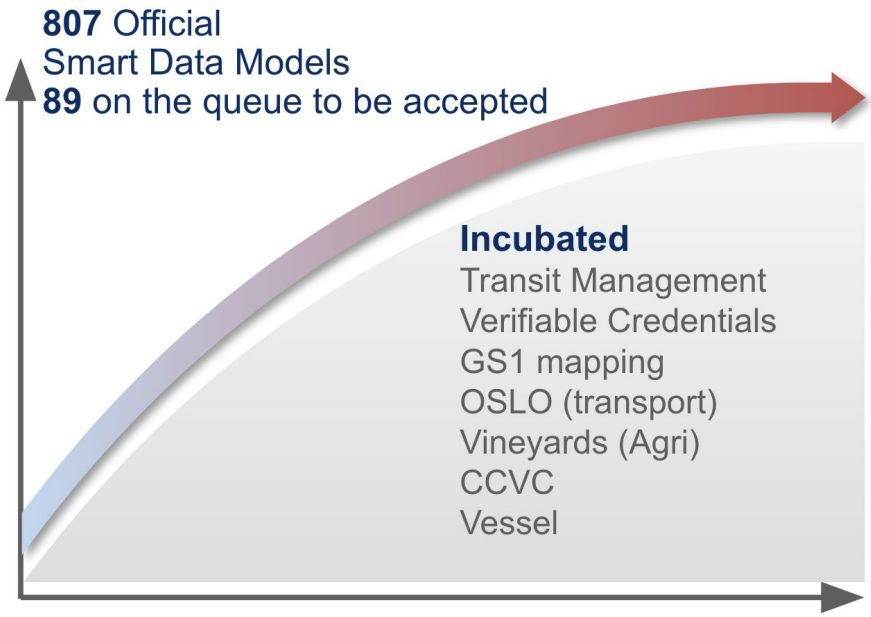
Smart Data Models: Current status

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

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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

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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!

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