SensorThings API in INSPIRE (108th OGC Technical Committee)

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Meeting Sponsors

SensorThings API in INSPIRE

108th OGC Technical Committee

Stuttgart, Germany

Kathi Schleidt, Sylvain Grellet

11 September 2018

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INSPIRE Background I

- Directive 2007/2/EC establishing an Infrastructure for Spatial Information in the European Community
- Covers 34 Spatial Data Themes grouped into 3 Annexes
- OGC based conceptual models created by TWGs, formalized in Implementing Rules (IR), XSD generated from UML published
- Implementing Rules also govern download services
- Finalization date for data from Annex II & III fall 2020
- Current status: >100 000 datasets; ~7,000 institutions (and rising. Note: To date, most available datasets have not been harmonized)

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INSPIRE Background II

- Most Themes with spatial focus, classic SDI. Examples:
  - Administrative units
  - Cadastral parcels
  - Land Use & Land Cover
  - Hydrographic Networks
  - Protected sites
  - Elevation
  - Utility and governmental services
  - Environmental monitoring facilities
  - Geology
  - Atmospheric conditions & Meteorological ge ures
  - Oceanographic geographical features

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SOS in INSPIRE

- Question how to serve observational data in INSPIRE
- Theoretically possible via WFS, but not really satisfactory
- Decision reached to analyse suitability of SOS
- 2011 first guidance document for use of O&M in INSPIRE https://inspire.ec.europa.eu/id/document/tg/d2.9-o%26m-swe
- Technical Guidance for implementing download services using the OGC Sensor Observation Service finalized 2016 https://inspire.ec.europa.eu/tags/sos

but...

- SOS scares folks!

- What about trying SensorThings API???

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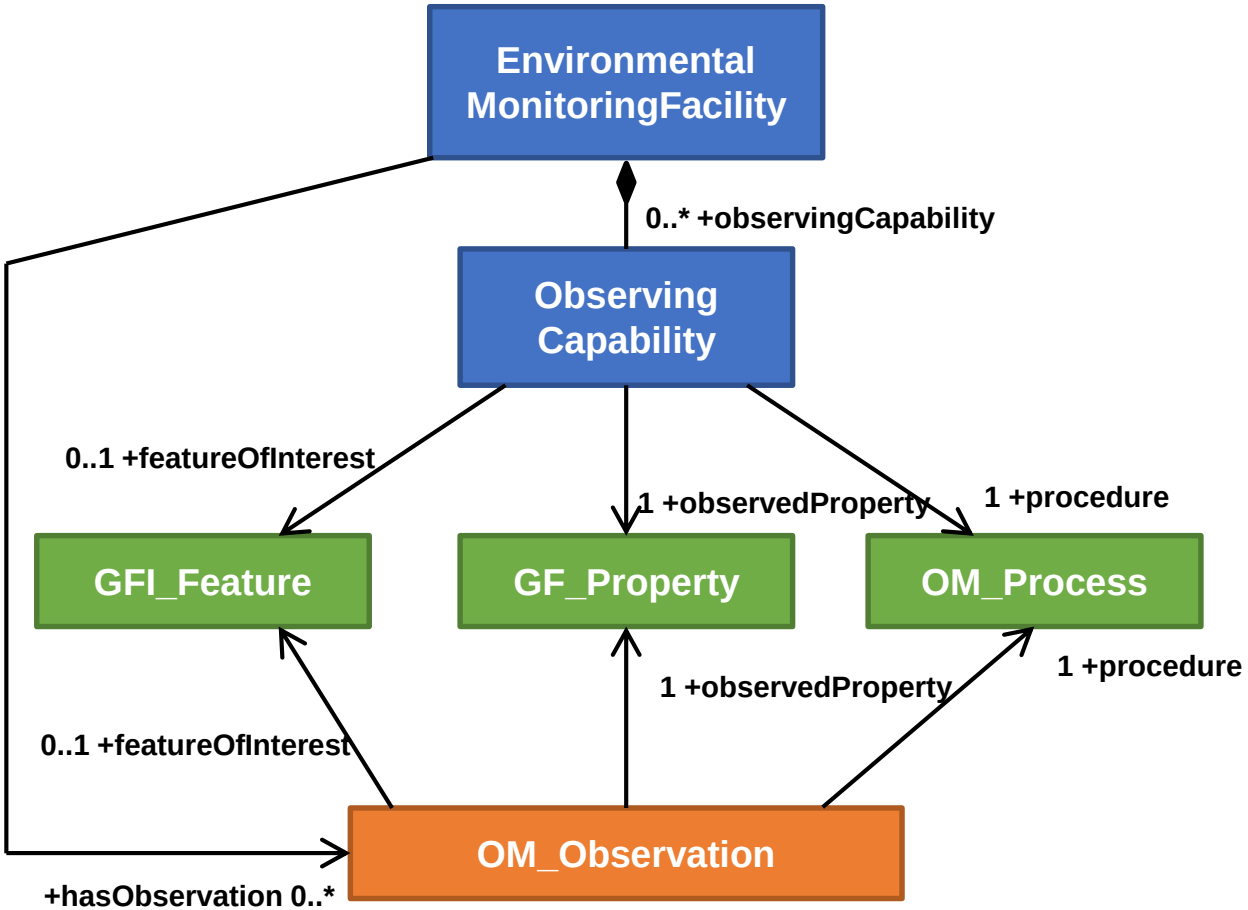
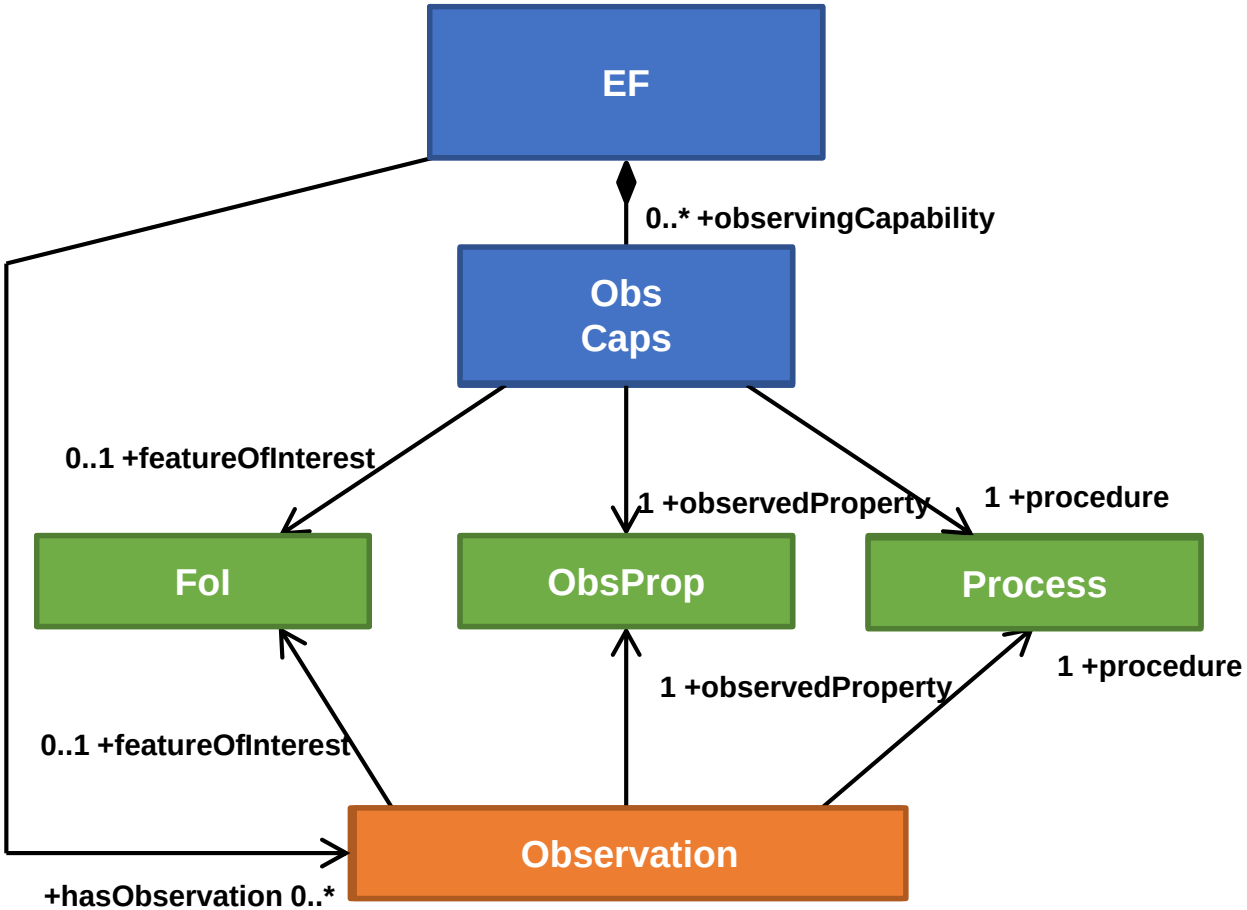
INSPIRE EF


Environmental MonitoringFacility
0..* +observingCapability
Observing Capability
0..1 +featureOfInterest
1 +observedProperty
1 +procedure
GFI_Feature
GF_Property
OM_Process
1 +observedProperty
1 +procedure
0..1 +featureOfInterest
OM_Observation
+hasObservation 0..*

INSPIRE EF



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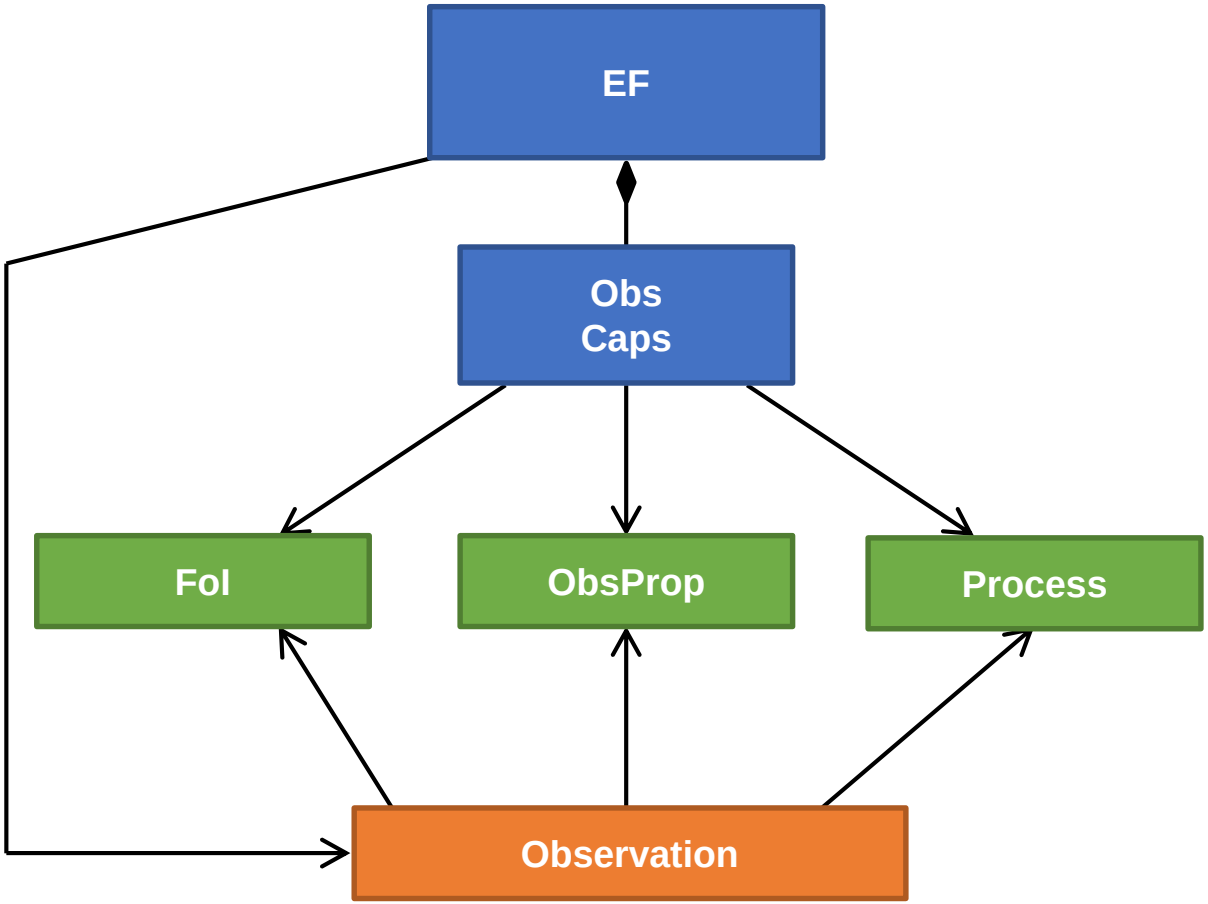
INSPIRE EF



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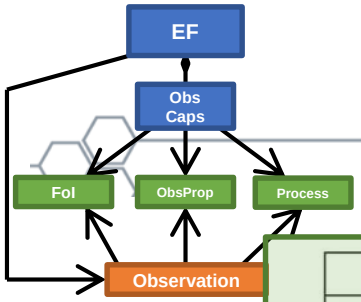
INSPIRE EF



Process

ObsProp

ObsCaps

Observation

EF

FoI

Sensor
+name: CharacterString
+description: CharacterString
+encodingType: ValueCode
+metadata: Any

ObservedProperty
+name: CharacterString
+definition: URI
+description: CharacterString

Datastream
+name: CharacterString
+description: CharacterString
+observationType: ValueCode
+unitOfMeasurement: JSON_Object
+observedArea: GM_Envelope[0..1]
+phenomenonTime: TM_Period[0..1]
+resultTime: TM_Period[0..1]

Observation
+phenomenonTime: TM_Object
+resultTime: TM_Instant
+result: Any
+resultQuality: DQ_Element[0..*]
+validTime: TM_Period[0..1]
+parameters: NamedValue[0..*]

Thing
+name: CharacterString
+description: CharacterString
+properties: JSON_Object[0..1]

HistoricalLocation
+time: TM_Instant

Location
+name: CharacterString
+description: CharacterString
+encodingType: ValueCode
+location: Any

«CodeList»
ValueCode

FeatureOfInterest
+name: CharacterString
+description: CharacterString
+encodingType: ValueCode
+feature: Any

+datastreams
+thing
+things
+historicalLocations
+locations
+location
+datastream
+observations
+featureOfInterest

INSPIRE EF Details

- Class level mapping clear, but what to do with the mandatory attributes?
- EF Requirements on Thing:
  - measurement Regime
  - mobile
  - operational Activity Period

Provide JSON Object in Thing properties!

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INSPIRE EF Details - Thing

INSPIRE	STA
inspireId	
localId	ID
namespace	PROPERTIES/namespace
name	NAME
mediaMonitored	PROPERTIES/mediaMonitored
measurementRegime	PROPERTIES/measurementRegime
mobile	PROPERTIES/mobile
operationalActivityPeriod	
beginPosition	PROPERTIES/beginTime
endPosition	PROPERTIES/endTime

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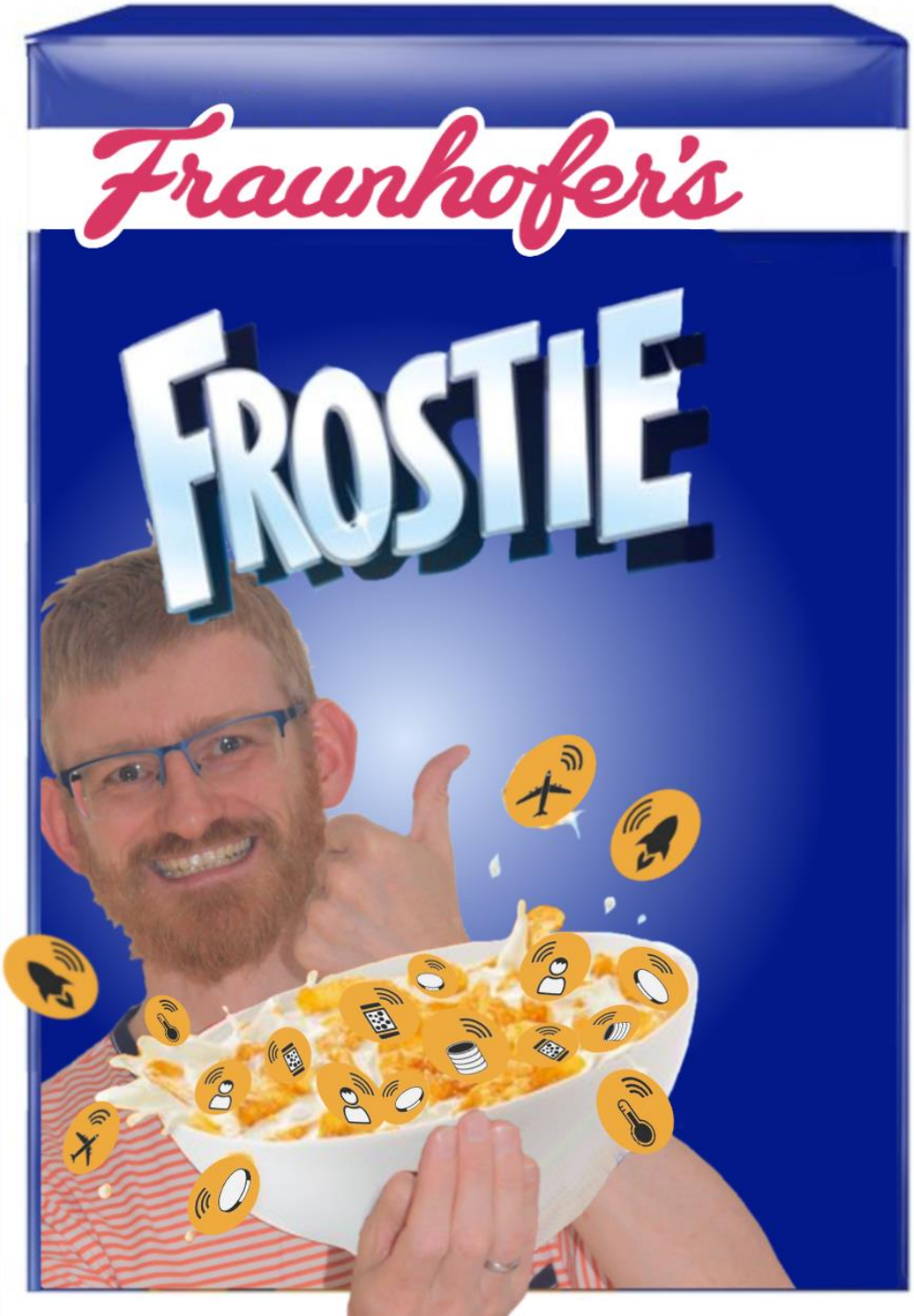
INS eam

EF Requirem

- observing T
- process Ty
- result Natu
- online Resc
- featureOfIn
- observedPr
- procedure

But – no prop



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INSPIRE EF Details - Datastream

INSPIRE	STA
Id	ID
observing Time	
beginPosition	PHENOMENON_TIME_START
endPosition	PHENOMENON_TIME_END
process Type	PROPERTIES/processType
result Nature	PROPERTIES/resultNature
online Resource	PROPERTIES/onlineResource
featureOfInterest	FEATURE_ID – from Observations
observedProperty	OBS_PROPERTY_ID
procedure	SENSOR_ID

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Conclusions

- SensorThings API is well suited for provision of measurement data under INSPIRE
- This does require an extension, adding properties element to other classes
  - This has been proposed for the 1.1 Version of STA
- Some issues pertaining to the INSPIRE download services Implementing Rules still open, but should be fairly simple to align (just as has been done for SOS, WFS, WCS...)
- So much simpler to deploy and configure
- And even simpler to utilize data!
- http://service.datacove.eu:8080/SensorThingsServer-1.0_BRGM/v1.0

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