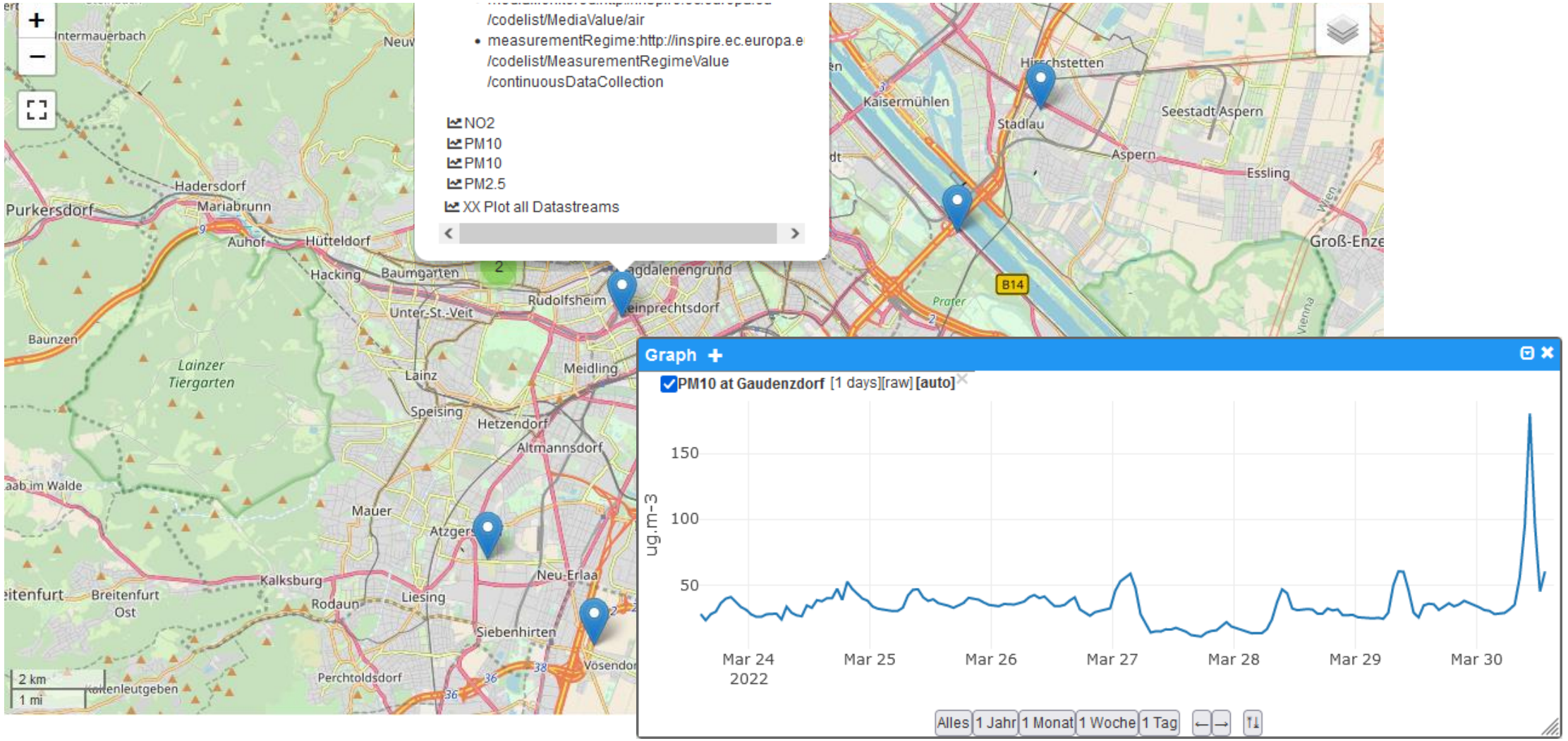
Observaties en Metingen (en Monsters!)

Adding Dynamic Data

to

Spatial Features

Dynamic Data on Spatial Features

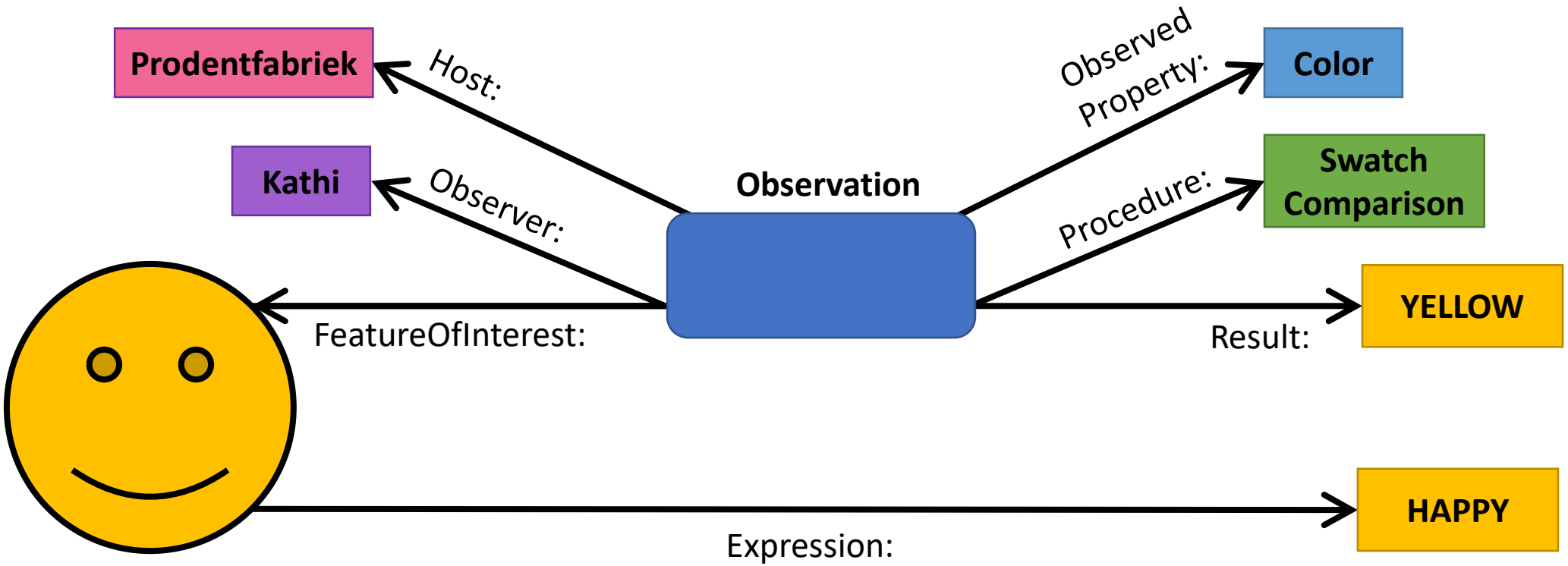


Observations, Measurements and Samples

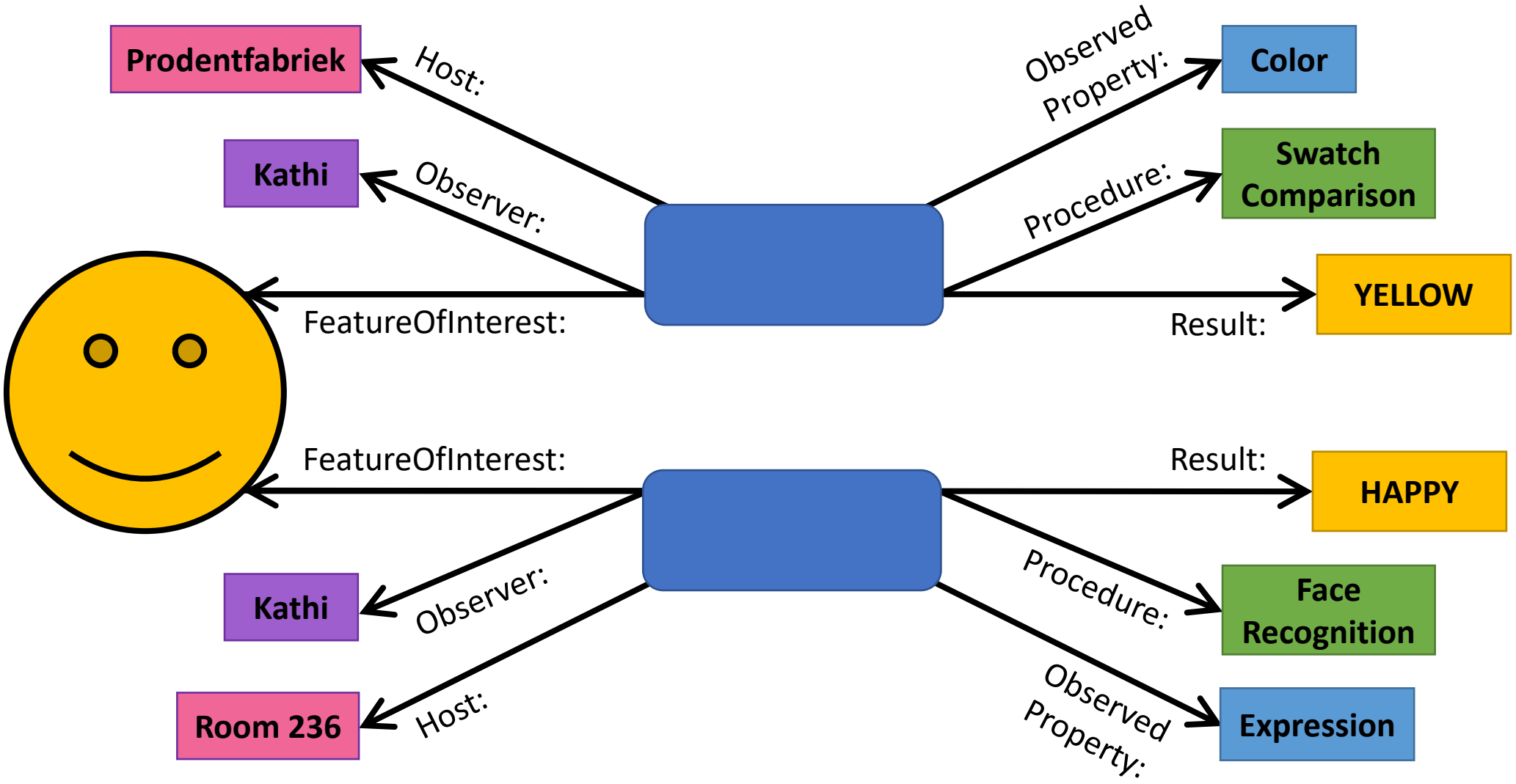
- ISO 19156:2011 Geographic information — Observations and measurements (O&M)
  - Currently under update as:
    ISO/DIS 19156:2022 Geographic information — Observations, measurements and samples (OMS)
- Part of the ISO 191XX Suite of Spatial Data Standards
- OGC provides as Abstract Topic 20
- Utilized across diverse INSPIRE Themes as well as Smart Cities and Digital Twins

Observational (Meta)Data

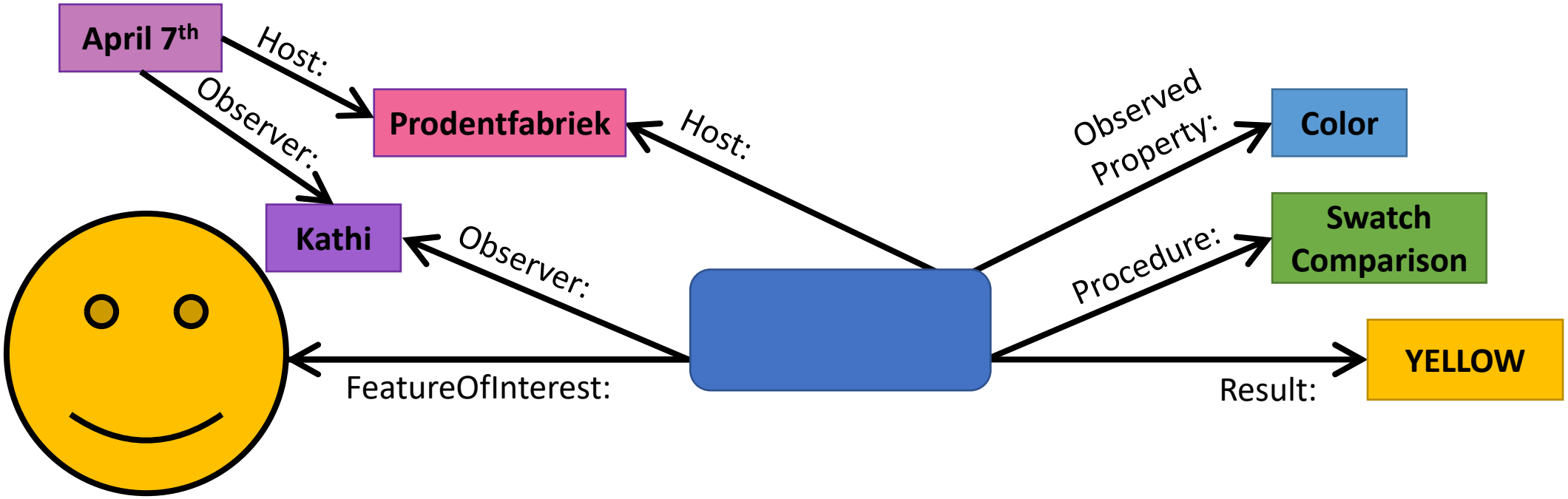
Observational (Meta)Data



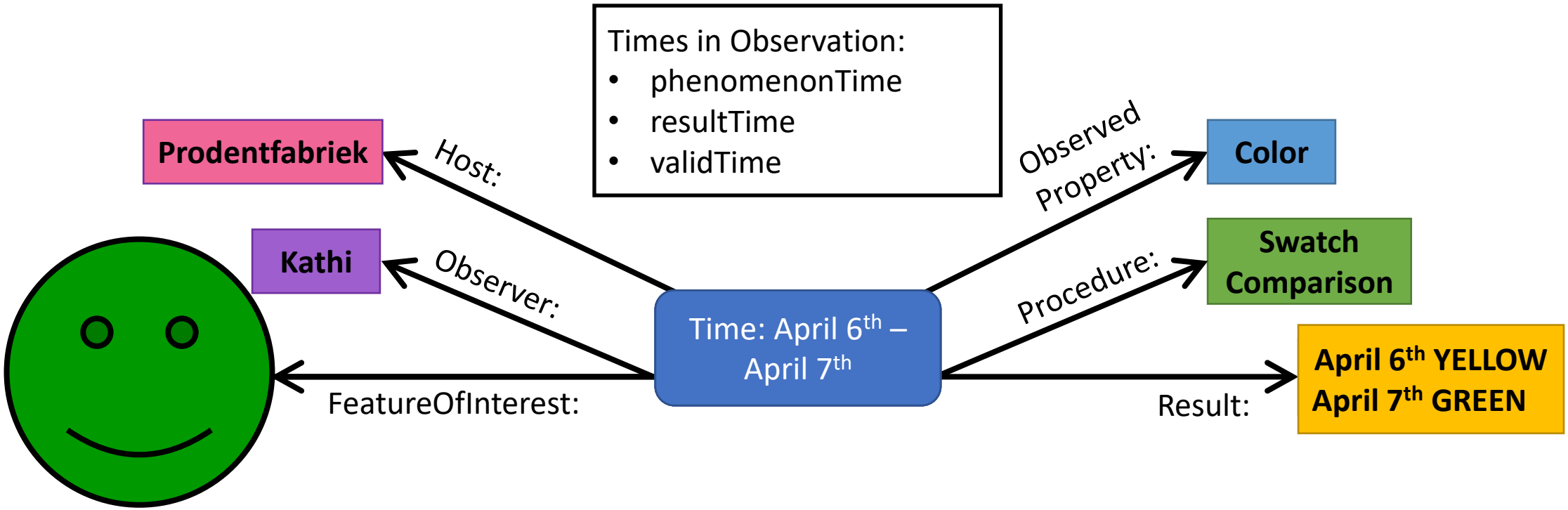
Observational (Meta)Data



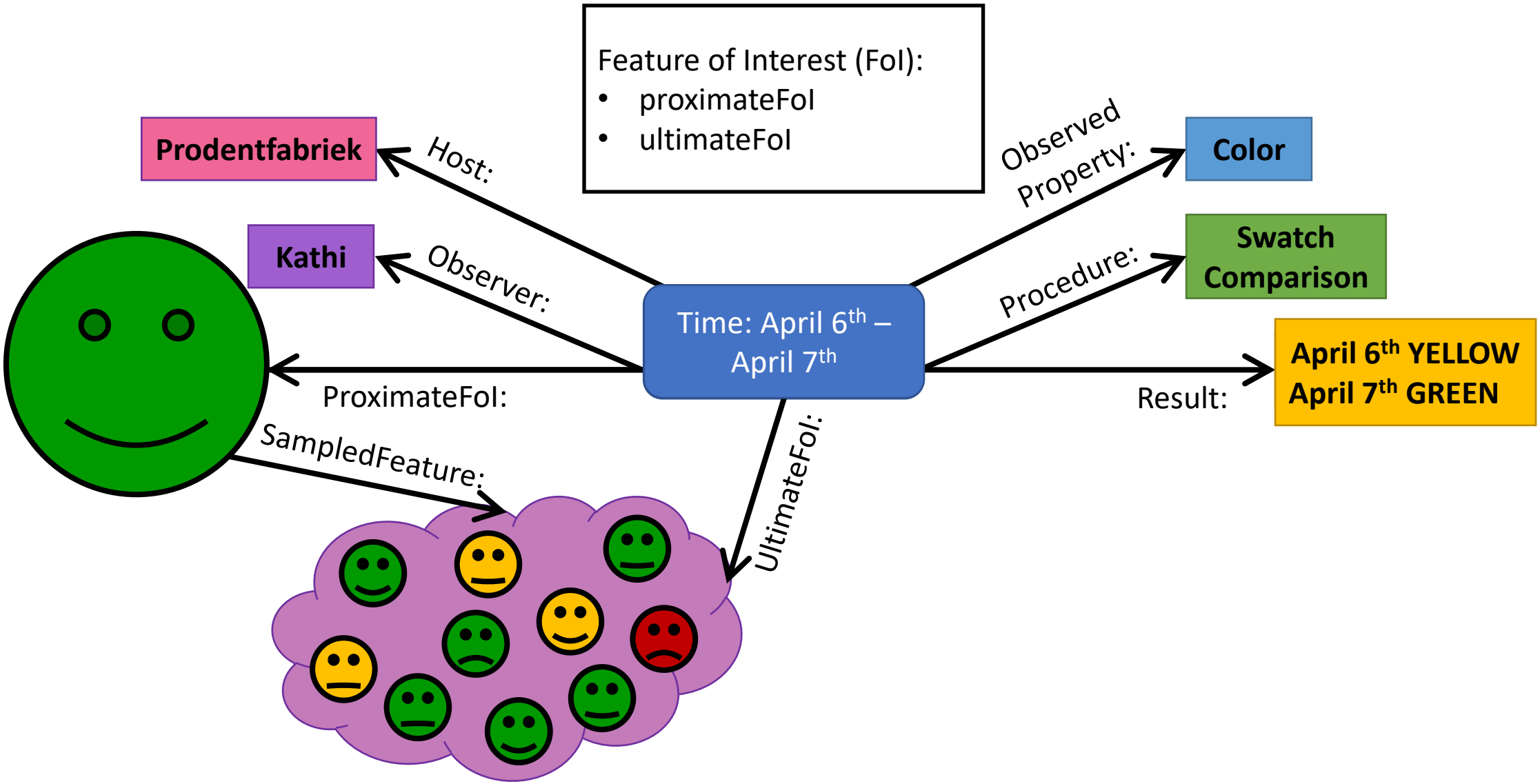
Observational (Meta)Data



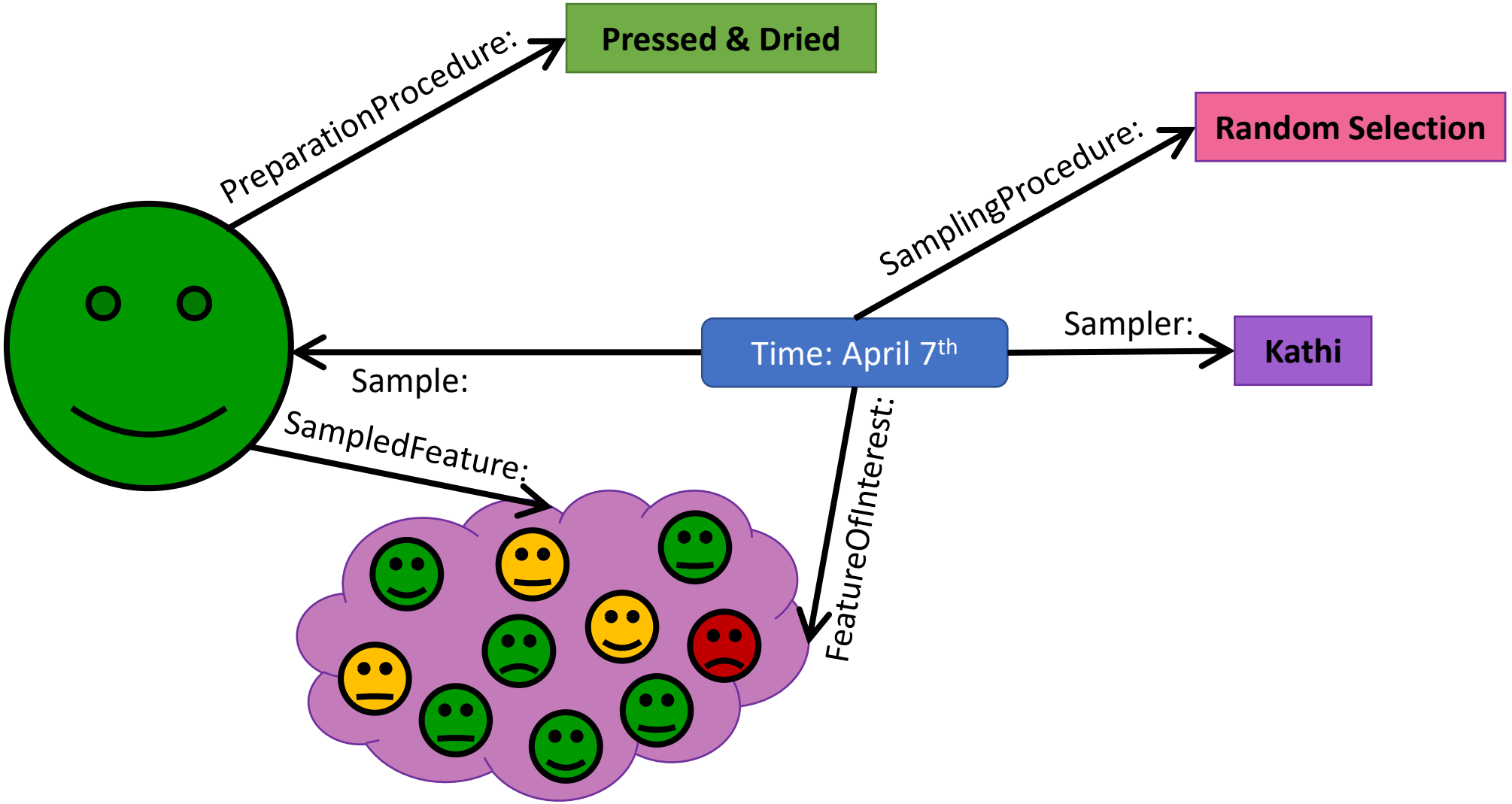
Observational (Meta)Data



Observational (Meta)Data



Sampling (Meta)Data



O&M in INSPIRE

- General Usage:
  - Observation Model in Generic Conceptual Model
  - Details in:
    D2.9 Guidelines for the use of Observations & Measurements and Sensor Web Enablement-related standards in INSPIRE
- Integrated in various INSPIRE Themes:
  - Geology
  - Atmospheric Conditions
  - Environmental Monitoring Facilities
  - Oceanographic Geographical Features
  - Soil
  - Species Distribution

Use of O&M

- EU Reporting for Air Quality Directive (AQD)
  - Based on INSPIRE Environmental Monitoring Facilities
  - Extended with additional reporting information
- GeoSciML
  - International standard for geological data
- Water ML 2.0 Part 1
  - International standard for hydrological time series structures
- GloSIS – Global Soil Information System
  - Utilizes ISO 28258, that in turn is based on O&M

Where’s the UoM?

- OMS Standard is flexible to the location of UoM, various options, depending on Use Case:
  - Link to the ObservableProperty
    → can cause issues where the same Property is provided with different UoM
  - Provide in Observation
    → ‘parameter’ attribute allows for provision
  - Provide with Result
    → OGC SWE Common types support this
- UoM IS Required in OMS V3.0:

  /req/obs-cpt/Observation/uom: The **Observation** SHALL provide a unit of measure (UoM) if the result is measurable. If the UoM is not contained in the result, it SHALL be provided in the context of the **Observation**; the provision modality is to be defined by communities.

O&M in Use - SOS

- Sensor Observation Service(SOS)
  - OGC Web Service (OWS)
  - Aligned with WFS, WMS, WCS…
  - XML Encoding
  - Limited Filtering capabilities
  - Difficult to use

- Example Service – Austrian Air Quality
  - SOS: http://luft.umweltbundesamt.at/inspire/sos?service=SOS&version=2.0.0&request=getCapabilities
  - WFS: http://luft.umweltbundesamt.at/inspire/wfs?service=WFS&version=2.0.0&request=getCapabilities

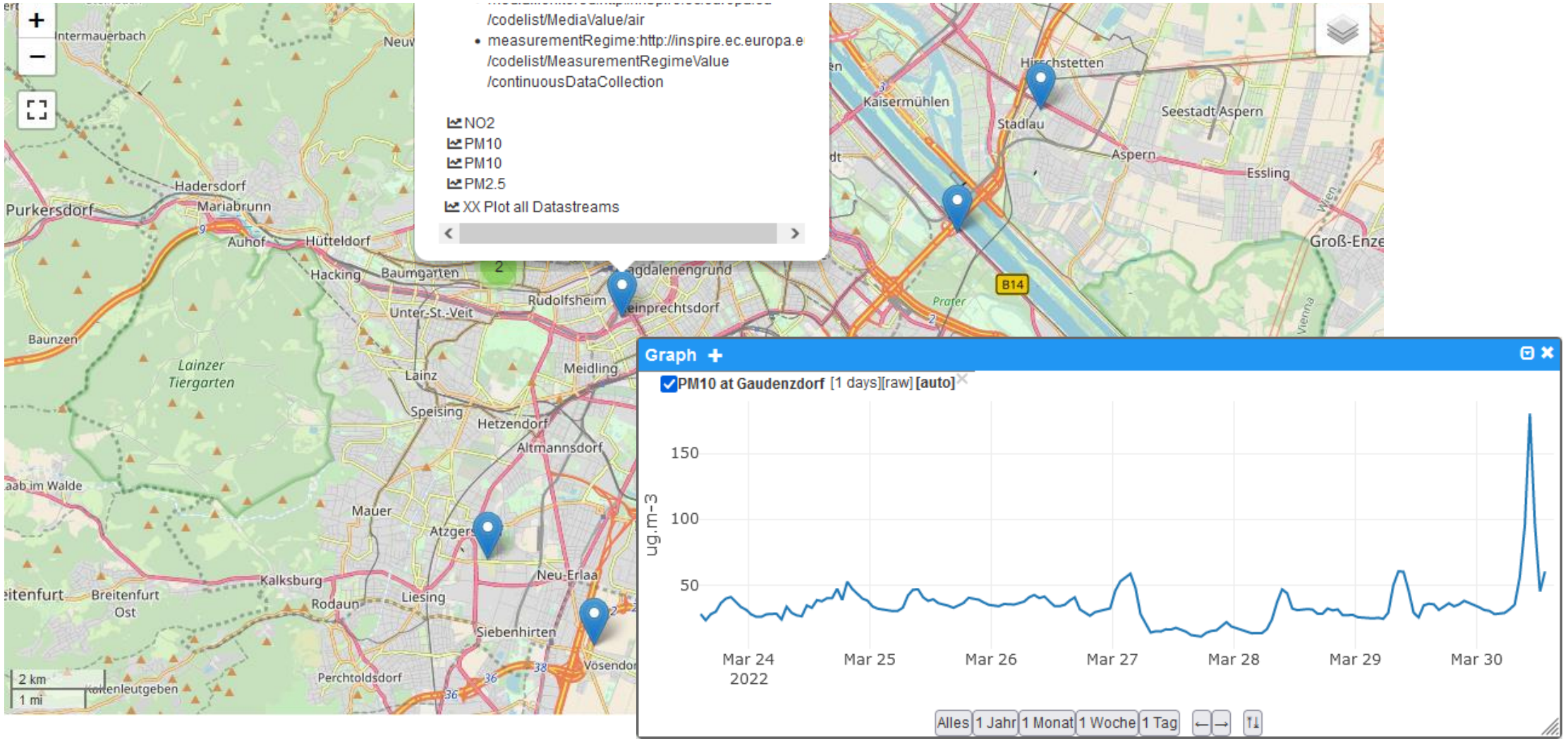
O&M in Use - STA

- OGC SensorThings API (STA)
  - Lightweight API based on O&M
  - INSPIRE Good Practice: https://inspire.ec.europa.eu/good-practice/ogc-sensorthings-api-inspire-download-service
  - Powerful query/filter options due to underlying OData logic
    - Thus not quite aligned with wider OGC APIs
  - JSON Encoding
  - Quite easy to use

- Example Service – European Air Quality (mirrored)
  - STA: https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1
  - Viewer: https://api4inspire.k8s.ilt-dmz.iosb.fraunhofer.de/servlet/is/127/

Details at: https://datacoveeu.github.io/API4INSPIRE/

Dynamic Data on Spatial Features



Questions?

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