

Für Mensch & Umwelt

Umwelt   
Bundesamt

**INSPIRE Conference 2018**

# Streamlining PRTR data provision for INSPIRE and e-Reporting duties

Marco Hohmann  
German Environment Agency  
Section I 1.7 Data Infrastructure

Simon Jirka  
52°North - Initiative for Geospatial Open Source Software GmbH

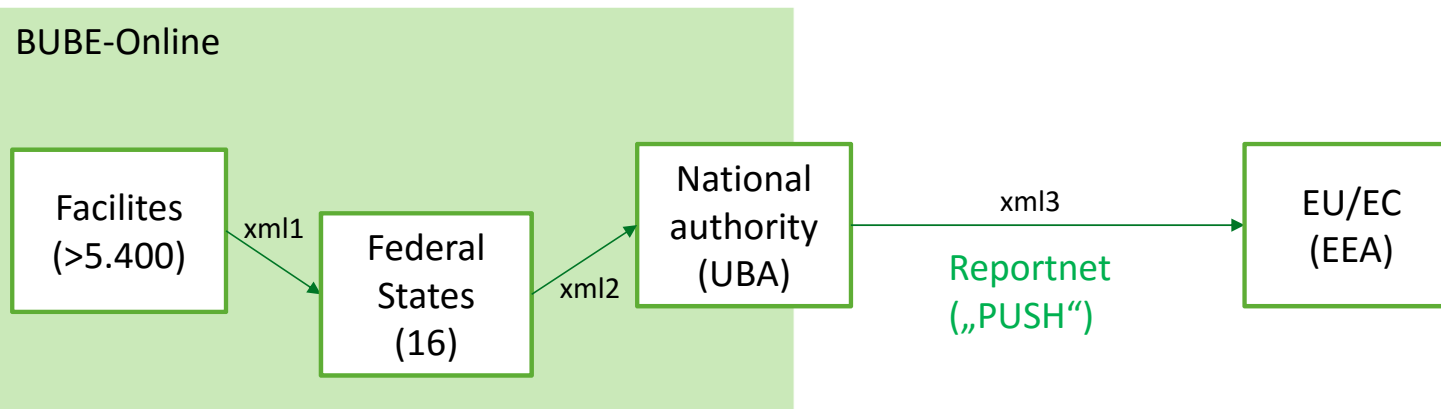
## Content

- 1) Short Introduction in reporting process
  - BUBE-Online and
  - UBA.gdi
- 2) Reflections and targets of PRTR-SOS
- 3) Implementation of PRTR-SOS
- 4) Results/Outcome
- 5) Conclusion (prospects/outlook)

## Short Introduction in reporting process: part 1

### BUBE ONLINE

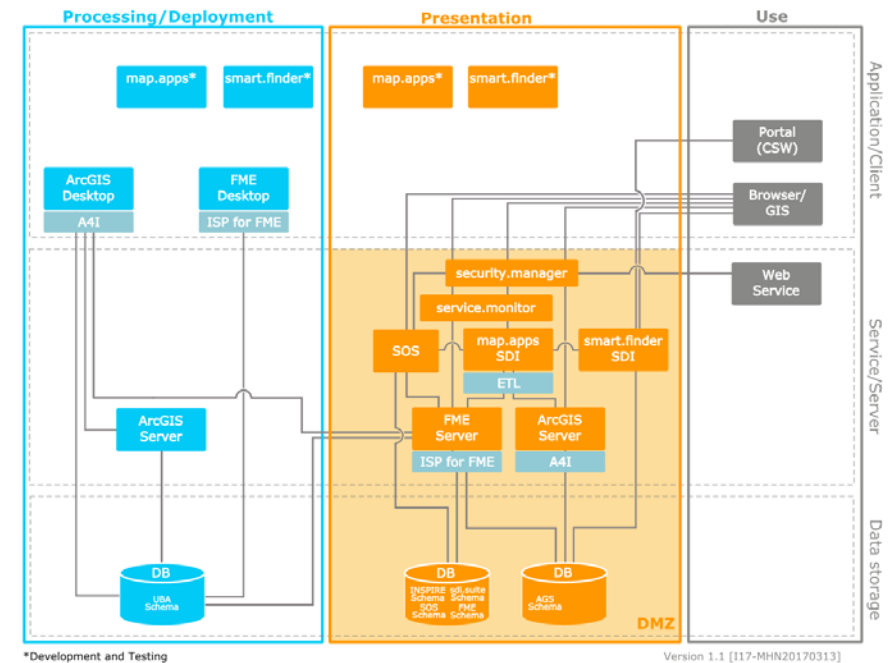
- a web tool for the transmission of German PRTR and other emission data
- used by Federal States respectively the operators of a reportable industrial plant
- more than 5.400 facilities involved/registered (Reporting year 2016)
- themes: pollutant releases, pollutant transfer, waste transfer
- currently: No support for INSPIRE yet / only manual Reporting
- scheduled until 2020: redesign of organizational levels, processes and tools (→BUBE Online II)



## Short Introduction in reporting process: part 2

### UBA.GDI

- central (Spatial) Data Infrastructure of the Agency
- established in 2007 to implement the INSPIRE Directive
- purpose (2018): INSPIRE-Reporting, Open Data and (prospective) e-Reporting
- Is the “INSPIRE Extension” for BUBE Online



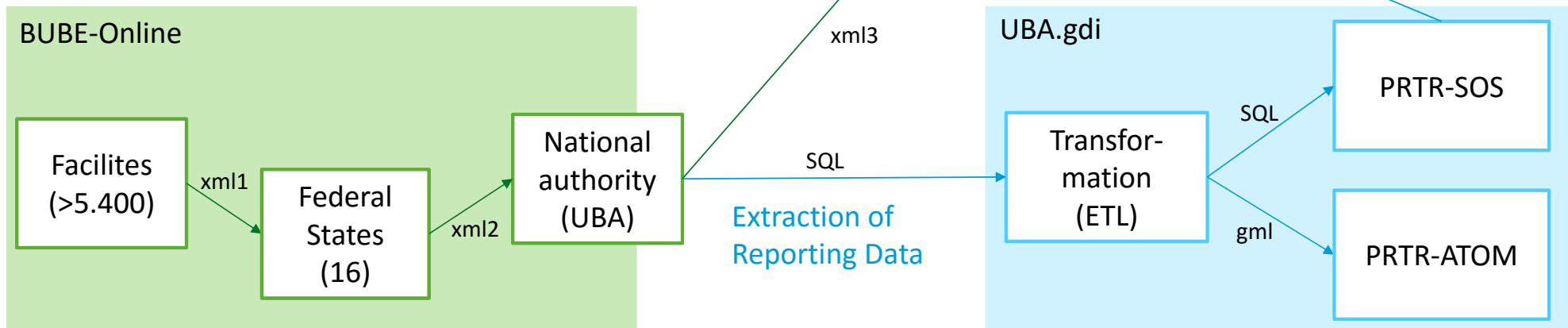
## Reflections and targets

### → REFLECTIONS:

- use data (outcome) of BUBE (“BUBE-Schema”)
- data transformation for master data and measurements (where possible → secrecy)
- BUBE-Online extended by components of UBA.gdi:
  - Use ETL-Tool for transformation and upload to SOS-Database
  - Use SOS for data access / as interface (web services/REST API)

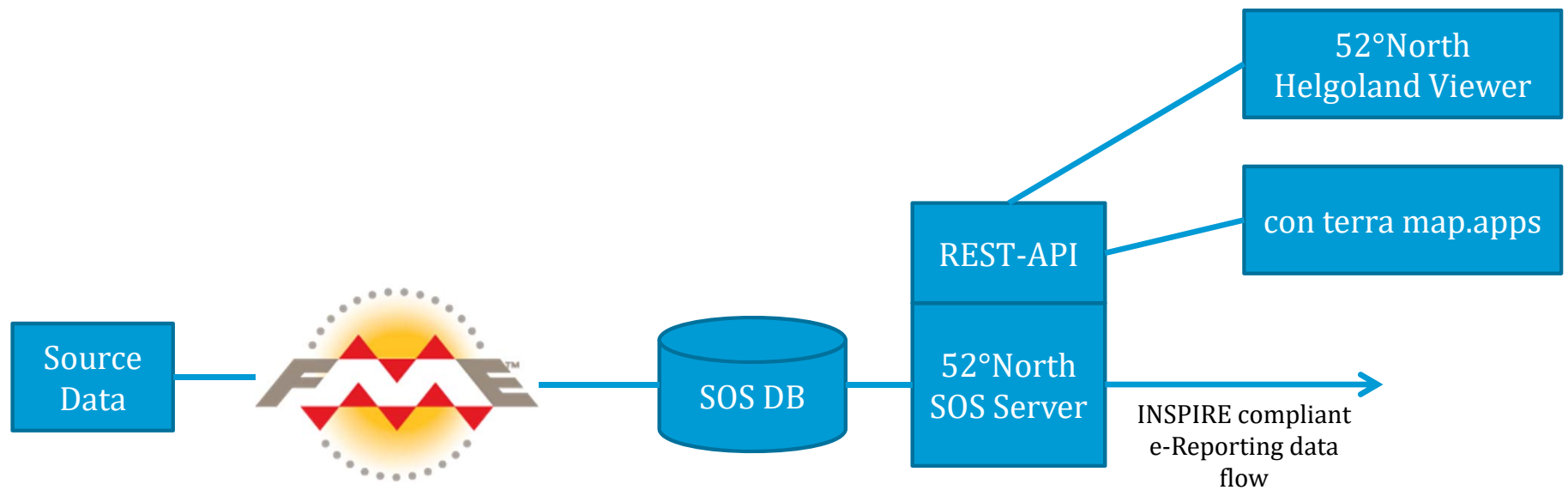
### → TARGETS

- one possibility to use both reporting procedures: INSPIRE and e-Reporting
- Approach similar to e-Reporting of Air Quality Data



## Implementation of PRTR-SOS

- Implementation based on
  - FME for data transformation and loading
  - 52°North SOS as INSPIRE compliant Download Service



# Implementation of PRTR-SOS

Helgoland Diagramm Karte Favoriten Anbieter Listenauswahl Einstellungen

suche Adresse ...

Methane (CH<sub>4</sub>)  
Naphthalene  
Nickel and compounds (as Ni)  
Nitrogen oxides (NO<sub>x</sub>/NO<sub>2</sub>)  
Nitrous oxide (N<sub>2</sub>O)  
Non-hazardous waste  
Non-methane volatile organic compounds (NMVOC)  
Nonylphenol and Nonylphenol ethoxylates (NP/NPEs)  
Octylphenols and Octylphenol ethoxylates  
Organotin compounds (as total Sn)  
Particulate matter (PM<sub>10</sub>)  
PCDD + PCDF (dioxins + furans) (as Teq)  
Pentachlorophenol (PCP)  
Perfluorocarbons (PFCs)  
Phenols (as total C)  
Polychlorinated biphenyls (PCBs)  
Polycyclic aromatic hydrocarbons (PAHs)  
Simazine  
Sulphur hexafluoride (SF<sub>6</sub>)  
Sulphur oxides (SO<sub>x</sub>/SO<sub>2</sub>)  
Tetrachloroethylene (PER)  
Tetrachloromethane (TCM)  
**Toluene**  
Total nitrogen  
Total organic carbon (TOC) (as total C or COD/3)  
Total phosphorus  
Tributyltin and compounds  
Trichlorobenzenes (TCBs) (all isomers)  
Trichloroethylene  
Trichloromethane  
Triphenyltin and compounds  
Vinyl chloride

<http://service25.eggits.net/52n-sos-prtr-webapp/api/>

## Conclusion

→ We profiting from the knowledge of the air quality project

→ We have a (temporary) Solution:

- in the spirit of the “Linked Approach Concept” (EEA/DG ENV)
- performant data access (updates for corrected data, time series, themes, filter options)
- as a basis for discussion how to enable service-based e-Reporting for further data flows
- covers INSPIRE compliant data provision and efficient data access for client development

Prospects/Outlook:

→ Middle-term: Link between both Infrastructures (remove predetermined breaking point)

- Project will help to realize INSPIRE and e-Reporting in BUBE Online in a permanent way

→ Providing of data on further industrial emission topics (e. g. IED, LCPs, UWWTD)

→ Considers requirements of the EU-Registry



# Thank you!

**Marco Hohmann**

[marco.hohmann@uba.de](mailto:marco.hohmann@uba.de)

**Simon Jirka**

[jirka@52north.org](mailto:jirka@52north.org)

<https://.gis.uba.de>

## Example: Pollutant Release

### →O&M OBSERVATION

- Time period of data (phenomenonTime)
- Publishing date (resultTime)
- Data type (Procedure)
- Facility (FeatureOfInterest)
- Pollutant release (result)

```
<om:OM_Observation gml:id="o_10D32EF441C92FEBFABDFE220121DCD03A697D8D" xmlns:xsi="http://www.w3.org/2001/XMLSchema-Instan
"http://www.opengis.net/gml/3.2" xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:sams="http://www.opengis.net/samplingSp
http://www.opengis.net/sampling/2.0" xmlns:swe="http://www.opengis.net/swe/2.0" xsi:schemaLocation="http://www.opengis.ne
http://www.opengis.net/om/2.0 http://schemas.opengis.net/om/2.0/observation.xsd http://www.opengis.net/gml/3.2 http://sc
http://www.opengis.net/samplingSpatial/2.0 http://schemas.opengis.net/samplingSpatial/2.0/spatialSamplingFeature.xsd">
  <om:type xlink:href="http://www.opengis.net/def/observationType/OGC-OM/2.0/OM_SWEArrayObservation"/>
  <om:phenomenonTime>
    <gml:TimePeriod gml:id="phenomenonTime_1">
      <gml:beginPosition>2007-01-01T00:00:00.000Z</gml:beginPosition>
      <gml:endPosition>2007-12-31T23:59:59.000Z</gml:endPosition>
    </gml:TimePeriod>
  </om:phenomenonTime>
  <om:resultTime>
    <gml:TimeInstant gml:id="ti_2712C6710A53D95C107155F8A08CEC9A6ED27551">
      <gml:timePosition>2010-09-23T11:14:35.000Z</gml:timePosition>
    </gml:TimeInstant>
  </om:resultTime>
  <om:procedure xlink:href="PollutantRelease"/>
  <om:observedProperty xlink:href="pollutants"/>
  <om:featureOfInterest xlink:href="01-10-51048040567" xlink:title="Shell Deutschland Oil GmbH - Raffinerie Heide"/>
  <om:result xsi:type="swe:DataArrayPropertyType">
    <swe:DataArray>
      <swe:elementCount>
        <swe:Count>
          <swe:value>8</swe:value>
        </swe:Count>
      </swe:elementCount>
      <swe:elementType name="Components">
        <swe:encoding>
          <swe:TextEncoding blockSeparator="#" tokenSeparator=","/>
        </swe:encoding>
      <swe:values>
        2007,AIR,Sulphur oxides (SOx/SO2),C,,3570000.0,0.0,false,,#
        2007,AIR,Non-methane volatile organic compounds (NMVOC),C,,221000.0,0.0,false,,#
        2007,AIR,Benzene,C,,2460.0,0.0,false,,#
        2007,WATER,Zinc and compounds (as Zn),AIR,,484.0,0.0,false,,#
        2007,AIR,Nitrogen oxides (NOx/NO2),M,,1630000.0,0.0,false,,#
        2007,AIR,Nickel and compounds (as Ni),C,,1860.0,0.0,false,,#
        2007,AIR,Carbon dioxide (CO2),C,,1140000000.0,0.0,false,,#
        2007,AIR,Particulate matter (PM10),M,,60000.0,0.0,false,,</swe:values>
      </swe:DataArray>
    </om:result>
  </om:OM_Observation>
```

## Example: Pollutant Release

### →STRUCTURE

- Similar to AQD
- Comma separated (like CSV)
- Structure description in XML-Tag *elementType*
- Values of Pollutant Release in XML-Tag *values*

```
.....<swe:elementType name="Components">
.....<swe:DataRecord>
.....<swe:field name="Year">
.....<swe:Time definition="Year">
.....<swe:uom xlink:href="http://www.opengis.net/def/uom/ISO-8601/0/Gregorian"/>
.....</swe:Time>
.....</swe:field>
.....<swe:field name="MediumCode">
.....<swe:Text definition="MediumCode"/>
.....</swe:field>
.....<swe:field name="PollutantCode">
.....<swe:Text definition="PollutantCode"/>
.....</swe:field>
.....<swe:field name="MethodBasisCode">
.....<swe:Text definition="MethodBasisCode"/>
.....</swe:field>
.....<swe:field name="MethodUsed">
.....<swe:Text definition="MethodUsed"/>
.....</swe:field>
.....<swe:field name="TotalQuantity">
.....<swe:Quantity definition="TotalQuantity">
.....<swe:uom code="KGM"/>
.....</swe:Quantity>
.....</swe:field>
.....<swe:field name="AccidentalQuantity">
.....<swe:Quantity definition="AccidentalQuantity">
.....<swe:uom code="KGM"/>
.....</swe:Quantity>
.....</swe:field>
.....<swe:field name="ConfidentialIndicator">
.....<swe:Boolean definition="ConfidentialIndicator"/>
.....</swe:field>
.....<swe:field name="ConfidentialCode">
.....<swe:Text definition="ConfidentialCode"/>
.....</swe:field>
.....<swe:field name="RemarkText">
.....<swe:Text definition="RemarkText"/>
.....</swe:field>
.....</swe:DataRecord>
.....</swe:elementType>
.....<swe:encoding>
.....<swe:TextEncoding blockSeparator="#" tokenSeparator=","/>
.....</swe:encoding>
.....<swe:values>
.....2007,AIR,Sulphur oxides (SOx/SO2),C,,3570000.0,0.0,false,,#
.....2007,AIR,Non-methane volatile organic compounds (NMVOC),C,,221000.0,0.0,false,,#
.....2007,AIR,Benzene,C,,2460.0,0.0,false,,#
.....2007,WATER,Zinc and compounds (as Zn),AIR,,484.0,0.0,false,,#
.....2007,AIR,Nitrogen oxides (NOx/NO2),M,,1630000.0,0.0,false,,#
.....2007,AIR,Nickel and compounds (as Ni),C,,1860.0,0.0,false,,#
.....2007,AIR,Carbon dioxide (CO2),C,,1140000000.0,0.0,false,,#
.....2007,AIR,Particulate matter (PM10),M,,60000.0,0.0,false,,</swe:values>
.....</swe:DataArray>
```