



Streamlining & integrating industrial emissions reporting in Europe

Transatlantic differences
and similarities with
CAER

International
Emission
Inventory
Conference

16th August 2017
Baltimore

Aether 

European Environment Agency

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European Commission

- Rolf-Jan Hovee
- Ian Hodgson
- Joeri Robbrechet
- Alex Kotsev

Plus numerous EU Member State commenters



- Background & legal basis
- Project drivers & objectives
- Potential approaches to combining data flows
- Complying with INSPIRE requirements
- Entity definitions & data structures
- Resources for Member State reporters
- Comparisons with CAER



Background & Legal Basis

European Environment Agency (EEA)

- Independent agency of the European Union (EU)
- Headquartered in Copenhagen
- Provides sound, independent information on the environment
- Closely collaborates with its 33 member countries and the European Environmental Information and Observation Network (Eionet)

European Topic Centre on Air Pollution and Climate Change Mitigation (ETC/ACM)

- ETCs are centres of thematic expertise contracted by the EEA
- Aether is leading the task to support EEA with the streamlining of industrial emissions reporting
- Focus is on thematic issues and reviewing IT products

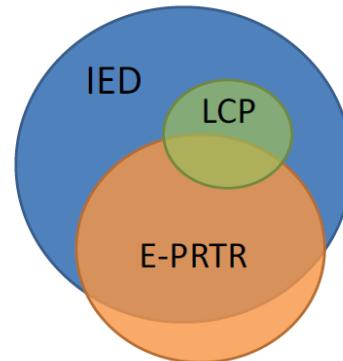
European Pollutant Release & Transfer Registry (E-PRTR)

- Provides easily accessible environmental data from 30,000 facilities in the EU Member States (MS)
- E-PRTR Regulation requires annual facility-level reporting of:
 - Releases to air, water and land
 - Off-site transfers of waste

For 91 key pollutants

Industrial Emissions Directive (IED)

- Main EU legal instrument regulating industrial emissions
- Requires detailed new reporting of administrative information around 50,000 applicable industrial installations
- Requires reporting of annual emissions of NO_x, SO₂ and PM from around 3,400 large combustion plants (LCPs)



Specific Reporting Requirements

E-PRTR Regulation 2006, Annex 3

L 313/4 EN Official Journal of the European Union 4.2.2006

ANNEX III

Form for the reporting of release and transfer data by Member States to the Commission

Reference year		
Identification of the facility		
Name of the parent company		
Name of the facility		
Identification number of facility		
Street address		
Town/Village		
Postal code		
Country		
Coordinates of the location		
River basin district (7)		
NACE code (8 digit)		
Main economic activity		
Production volume (optional)		
Number of installations (optional)		
Number of operating hours in year (optional)		
Number of employees (optional)		
Year field for normal information or website address delivered by facility or parent company (optional)		
All Annex I activities of the facility (according to the coding system given in Annex I and the IPPC code where available)		
Activity 1 (main source category)		
Activity 2		
Activity 3		
Reference data to air for the facility for each pollutant exceeding threshold value (according to Annex II)		Reference to air
Pollutant 1	M measured, Analytical Method used	T: Total
Pollutant 2	C calculated, Calculation Method used	M: In-house
Pollutant 3	E estimated	M: external
		M: in-house
Reference data to water for the facility for each pollutant exceeding threshold value (according to Annex II)		Reference to water
Pollutant 1	M measured, Analytical Method used	T: Total
Pollutant 2	C calculated, Calculation Method used	M: In-house
Pollutant 3	E estimated	M: external
		M: in-house
Reference data to land for the facility for each pollutant exceeding threshold value (according to Annex II)		Reference to land
Pollutant 1	M measured, Analytical Method used	T: Total
Pollutant 2	C calculated, Calculation Method used	M: In-house
Pollutant 3	E estimated	M: external
		M: in-house

IED 2010, Article 72

17.12.2010 EN Official Journal of the European Union L 343/47

CHAPTER VII
COMMITTEE, TRANSITIONAL AND FINAL PROVISIONS

Article 71
Competent authorities

Member States shall designate the competent authorities responsible for carrying out the obligations arising from this Directive.

Article 72
Reporting by Member States

1. Member States shall ensure that information is made available to the Commission on the implementation of this Directive, on representative data on emissions and other forms of pollution, on emission limit values, on the application of the best available techniques in accordance with Article 14 and 15 in particular on the granting of exemptions in accordance with Article 15(6), and on progress made concerning the development and application of emerging techniques in accordance with Article 27. Member States shall make the information available in an electronic format.

2. The type, format and frequency of information to be made available pursuant to paragraph 1 shall be established in accordance with the regulatory procedure referred to in Article 72(3). This shall include the determination of the specific activities and pollutants for which data referred to in paragraph 1 shall be made available.

3. For all combustion plants covered by Chapter III of this Directive, Member States shall, from 1 January 2016, establish an annual inventory of the sulphur dioxide, nitrogen oxides and dust emissions and energy input.

Taking into account the aggregation rules set out in Article 29, the competent authority shall obtain the following data for each combustion plant:

(a) the total rated thermal input (RTI) of the combustion plant;

(b) the type of combustion plant: boiler, gas turbine, gas engine, diesel engine, other (specifying the type);

(c) the date of the start of operation of the combustion plant;

(d) the total annual emissions (tonnes per year) of sulphur dioxide, nitrogen oxides and dust (as total suspended particulate);

(e) the number of operating hours of the combustion plant;

(f) the total annual amount of energy input, related to the net calorific value (1) per year, broken down in terms of the following categories of fuel: coal, lignite, biomass, peat, other solid fuel (specifying the type), liquid fuels, natural gas, other gas (specifying the type).

4. Member States shall, from 1 January 2016, report the following data annually to the Commission:

(a) for combustion plants to which Article 11 applies, the sulphur content of the indigenous solid fuel used and the rate of desulphurisation achieved, averaged over each month, for the first year where Article 11 is applied, the technical justification of the non-availability of employing with the emission limit values referred to in Article 10(2) and (3) shall also be reported; and

(b) for combustion plants which do not operate more than 1 500 operating hours per year as a rolling average over a period of 5 years, the number of operating hours per year.

Article 73
Review

1. By 7 January 2016, and every 3 years thereafter, the Commission shall submit to the European Parliament and to the Council a report regarding the implementation of the Directive on the basis of the information referred to in Article 72.

That report shall include an assessment of the need for Union action through the establishment or updating of Union-wide minimum requirements for emission limit values and for rules on monitoring and compliance for activities within the scope of the I-AT conclusions adopted during the process discussed period, on the basis of the following criteria:

(a) the impact of the activities concerned on the environment as a whole; and

(b) the state of implementation of best available techniques for the activities concerned.

That assessment shall consider the opinion of the forum referred to in Article 13(6).

Chapter III and Annex V of this Directive shall be considered to represent the Union-wide minimum requirements in the case of large combustion plants.

IED Implementing Decision 2012, Annex II, Module 2

19.12.2012 EN Official Journal of the European Union L 349/57

COMMISSION IMPLEMENTING DECISION
of 12 December 2012
establishing the type, format and frequency of information to be made available by the Member States for the purposes of reporting on the implementation of Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions
(notified under document (2012) 9181)
(Text with EEA relevance)
(2012/179/EU)

THE EUROPEAN COMMISSION,
Having regard to the Treaty on the Functioning of the European Union,
Having regard to Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (1), and in particular Article 72(3) thereof,
Whereas:

(1) The Commission has developed questionnaires to define the set of information to be made available by the Member States for the purposes of reporting on the implementation of Directive 2010/75/EU during the period 2013-2016.

(2) The Member States should be required to submit replies to a questionnaire covering only the year 2013 in order to report on measures taken by the Member States to implement those requirements of Directive 2010/75/EU which were not already applicable in accordance with the provisions of the Industrial Emissions Directive (IED) of 1 December 2010, on the surveillance and monitoring of emissions originating from waste from the industrial waste industry (2). Council Directive 92/112/EEC of 11 December 1992 on provisions for harmonising the programmes for the reduction and eventual elimination of pollution caused by waste from the chemical industry (3). Council Directive 1999/13/EC of 11 March 1999 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations (4). Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the limitation of waste (5). Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants (6). Directive 2001/80/EC of the European Parliament and of the Council of 13 January 2000 concerning integrated pollution prevention and control (7) before their repeal by Directive 2010/75/EU.

(3) The Member States should also be required to submit replies to a questionnaire in order to report for the period 2013-2016 on representative data on emissions and other forms of pollution, on emission limit values, on the application of Articles 14 and 15 of Directive 2010/75/EU and on progress made concerning the development and application of emerging techniques in accordance with Article 27, enabling the Commission to gather information on general implementation measures (Article 1), to establish an information source on individual installations that aligns with the European Pollutant Release and Transfer Register (Article 2), to confirm that the best available techniques have been applied correctly in plants (Article 1) and to verify the application of minimum required requirements (Article 4).

(4) Under Article 72(1) of Directive 2010/75/EU, Member States are to make the information available in an electronic format.

(5) To ensure the consistency and coherence of the Member State information, the Commission, assisted by the European Environment Agency, should develop a specific electronic reporting format.

(6) The measures provided for in this Decision are in accordance with the opinion of the Committee established by Article 73(1) of Directive 2010/75/EU.

HAS ADOPTED THIS DECISION:

Article 1
Reporting by Member States

Member States shall make information available to the European Commission on the implementation of Directive 2010/75/EU by replying to the questionnaires set out in Annex I and II, using the specific electronic format to be developed for the purposes of this reporting.

The reply to the questionnaire set out in Annex I shall be submitted by 30 September 2014 at the latest.

The reply to the questionnaire set out in Annex II shall be submitted by 30 September 2017 at the latest.

(1) OJ L 334, 17.12.2010, p. 17.
(2) OJ L 54, 23.12.2010, p. 94.
(3) OJ L 278, 11.12.1992, p. 1.
(4) OJ L 409, 31.12.1999, p. 1.
(5) OJ L 85, 29.12.2000, p. 1.
(6) OJ L 342, 24.11.2001, p. 1.
(7) OJ L 24, 28.1.2004, p. 8.



Europe

LCP Reporting

Convention on Long-Range
Transport of Air Pollutants
(CLRTAP)

E-PRTR

Seveso Reporting

European Union Emission Trading
System (EU ETS)

European Commission
Information Requests

United States

National Emissions Inventory
(NEI)

Toxics Release Inventory (TRI)

EPCRA Tier II Reporting

Greenhouse Gas Reporting
Program (GHGRP)

Compliance and Emissions Data
Reporting Interface (CEDRI)



Project Drivers & Objectives

Why integrate reporting?

- European Commission decision in 2014
- E-PRTR and LCP fit well together
- Immediate QA/QC cross-checks can improve data quality
- Reduce the cost of data management and review

Address key problems:

- Different identifiers
- Different rules on handling changes over time
- Duplications and inconsistencies

Project goals:

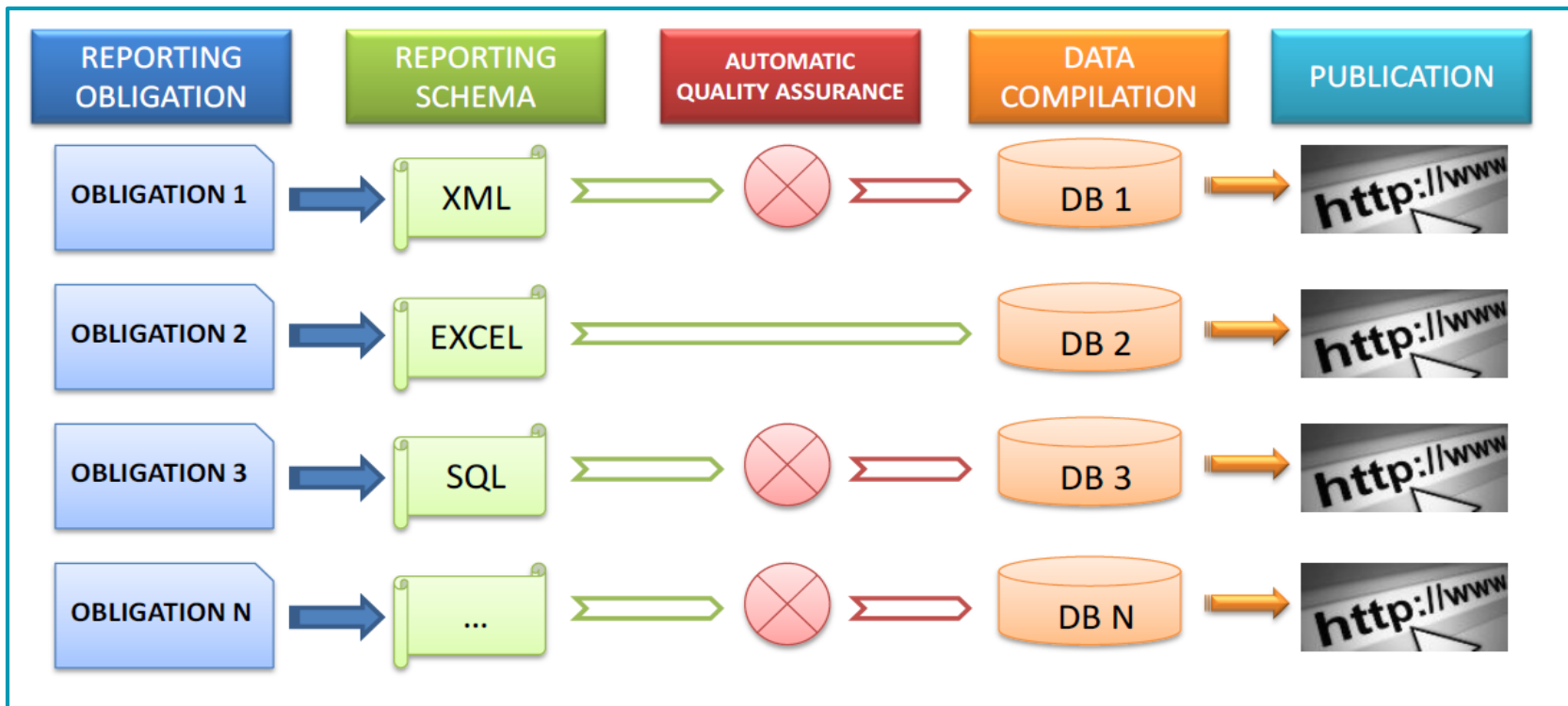
- To simplify and clarify industrial emissions reporting, reducing the administrative burden where possible
- Provide a robust reporting structure for the EU Registry on Industrial Sites
- Establish an integrated reporting channel for E-PRTR and LCP emissions data
- Develop a coherent view of the universe of reporting facilities
- Generate consistent EU thematic datasets
- Comply with INSPIRE requirements



Potential Approaches to Combining Data Flows

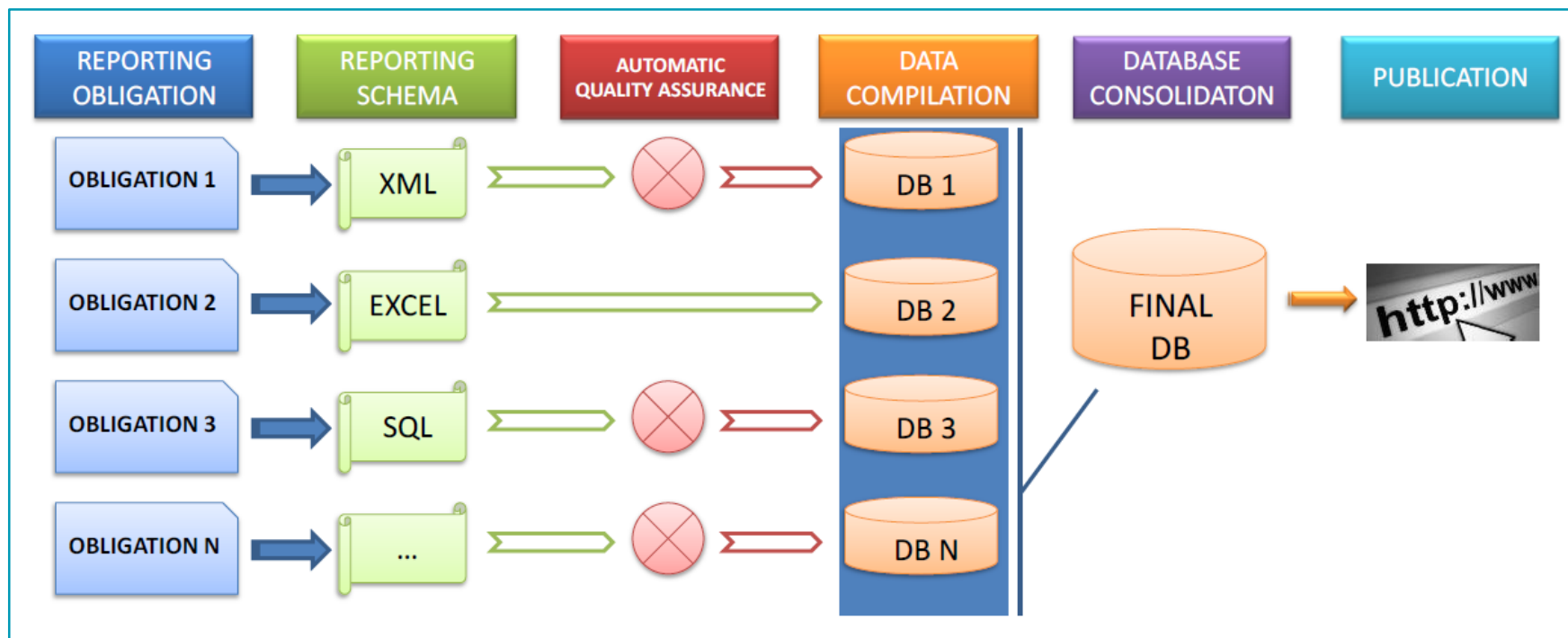
1) Business as Usual (As is State)

- Current situation with no further action to streamline industrial point source reporting
- Various reporting processes follow separate paths from data submission to publication
- Data published at different times, very hard to correlate and check data between reporting obligations



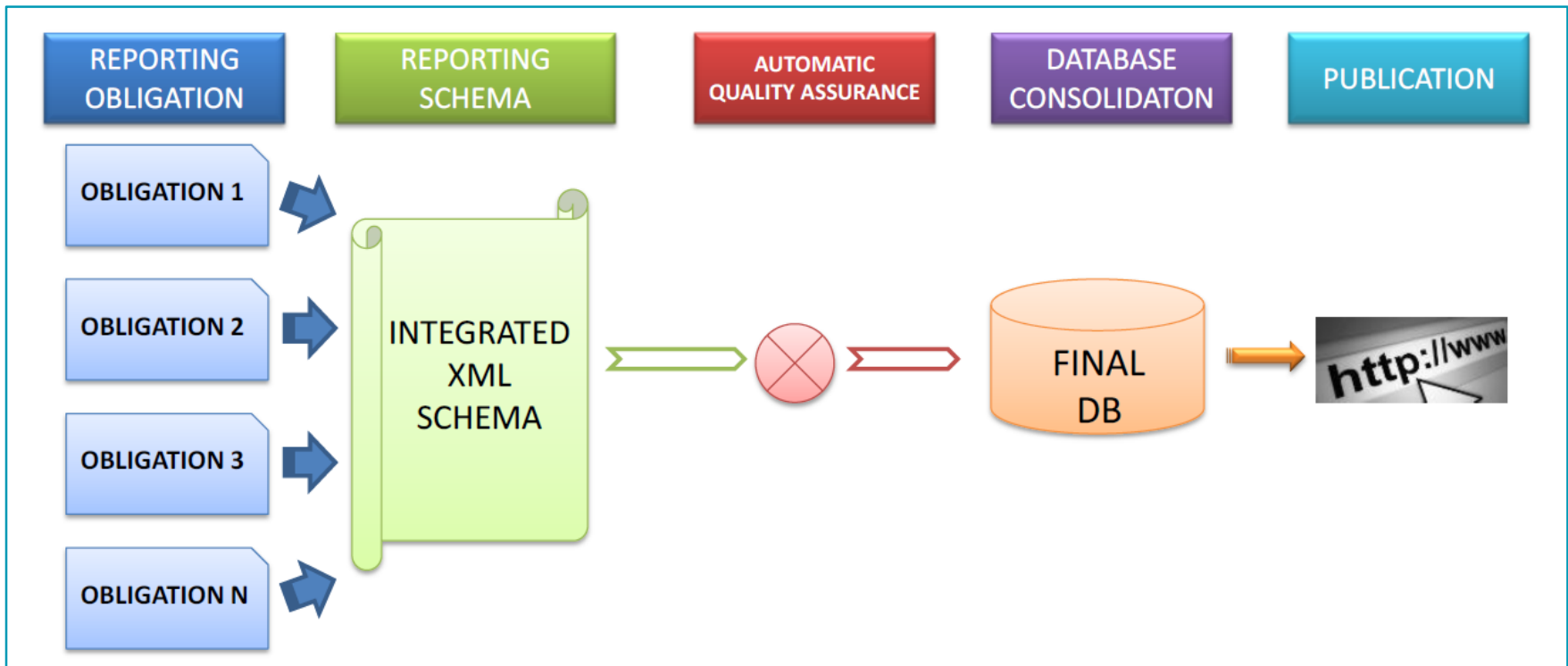
2) Consolidation at Database Level

- Linking of different datasets
- Based on linking of the unique identifiers reported in the different datasets
- Impact is limited to the output (a single database) but does not improve the reporting process itself



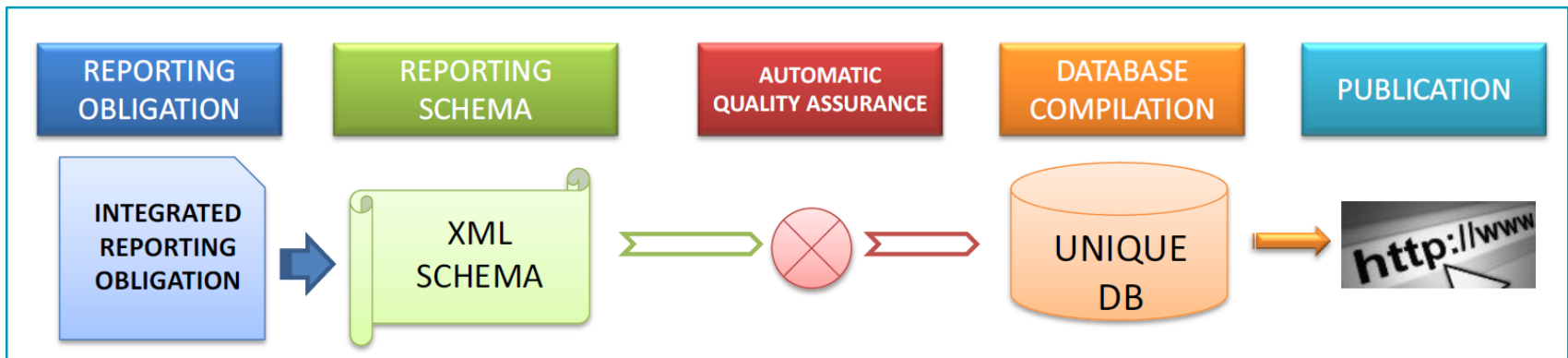
3) Integrated Reporting

- Merging of reporting schemas
- Tackles data reporting streamlining in an earlier phase
- Main challenges are the differences in criteria and definitions set out by the different legal frameworks



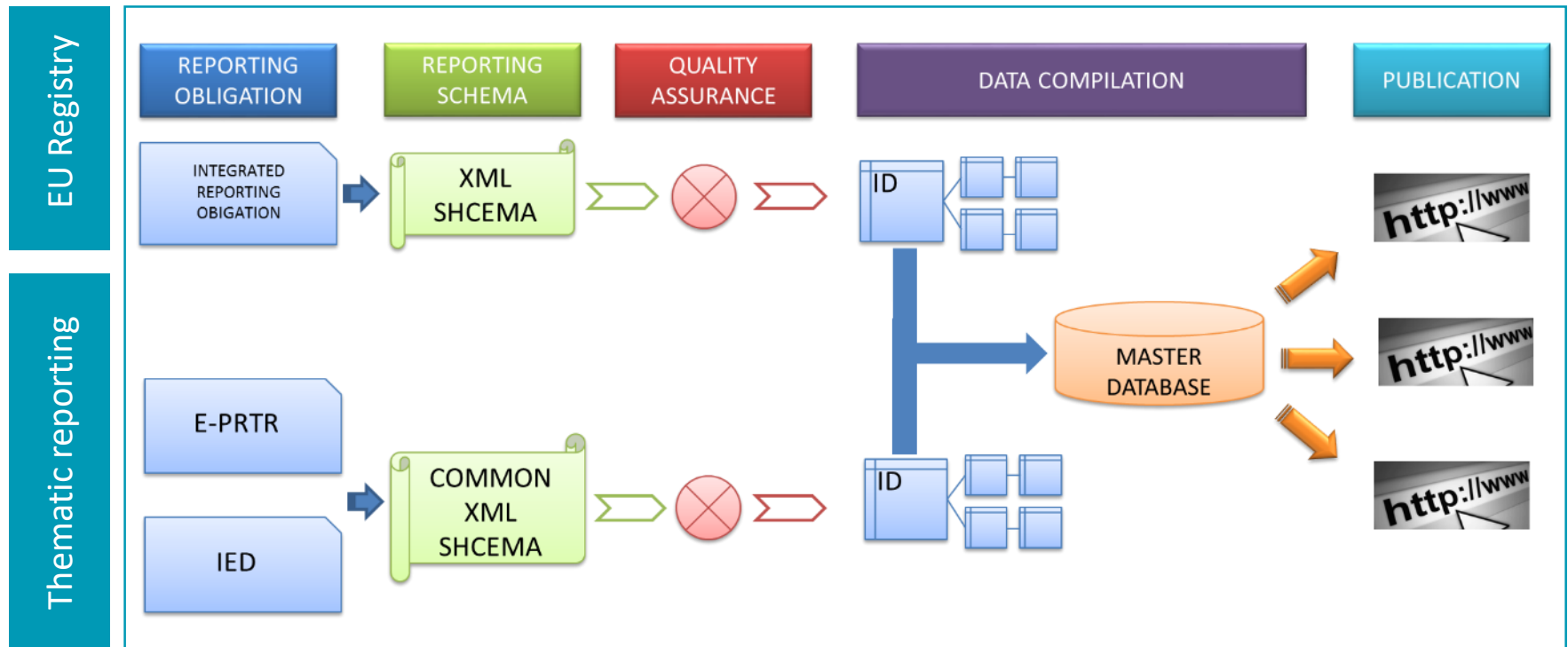
4) Streamlining of Legislation


- Streamlining of legislation aims at removing inconsistencies, reducing duplications and aligning definitions
- High initial investment:
 - Legislative action (involves full co-decision process for the different legislative acts)
 - Substantial changes needed to the existing legislation
 - Development of a single reporting framework



5) Implemented Approach

- New centralized EU Registry to gather administrative data for all industrial sites
 - Includes names, ownership, geographic coordinates, competent authority details
- Separate integrated data flow for thematic data submissions that meets all legal requirements





Complying with INSPIRE Requirements

Aether 

Infrastructure for Spatial Information in Europe


Basic principles:

- Data collected once and kept where maintained most effectively
- Seamlessly combine spatial information from different sources across Europe
- Information collected at one level/scale shareable with all levels/scales
- Geographic information should be readily and transparently available

Member States must be compliant with INSPIRE Directive by 2020

The screenshot shows the INSPIRE website homepage. At the top, there is a navigation bar with the European Commission logo, the INSPIRE logo, and a search bar. Below the navigation bar, there is a main content area with several sections: 'INSPIRE Video' featuring a video player for 'The INSPIRE Directive: a brief description'; 'Focus on' featuring a banner for the 'INSPIRE CONFERENCE 2017' held from 4-5 September in Kehl, Germany, and 6-8 September in Strasbourg, France, with the hashtag #INSPIRE_EU2017; 'Latest News' listing recent updates such as the release of the common INSPIRE validator version 1.0.0 on 25/07/2017; and 'INSPIRE knowledge base' with a grid of links to various resources including the knowledge base, legislation, library, themes, and thematic clusters. The footer contains a logo for 'INSPIRE - Infrastructure for Spatial Information in Europe' and a list of links for 'INSPIRE Tools' and 'INSPIRE knowledge base'.

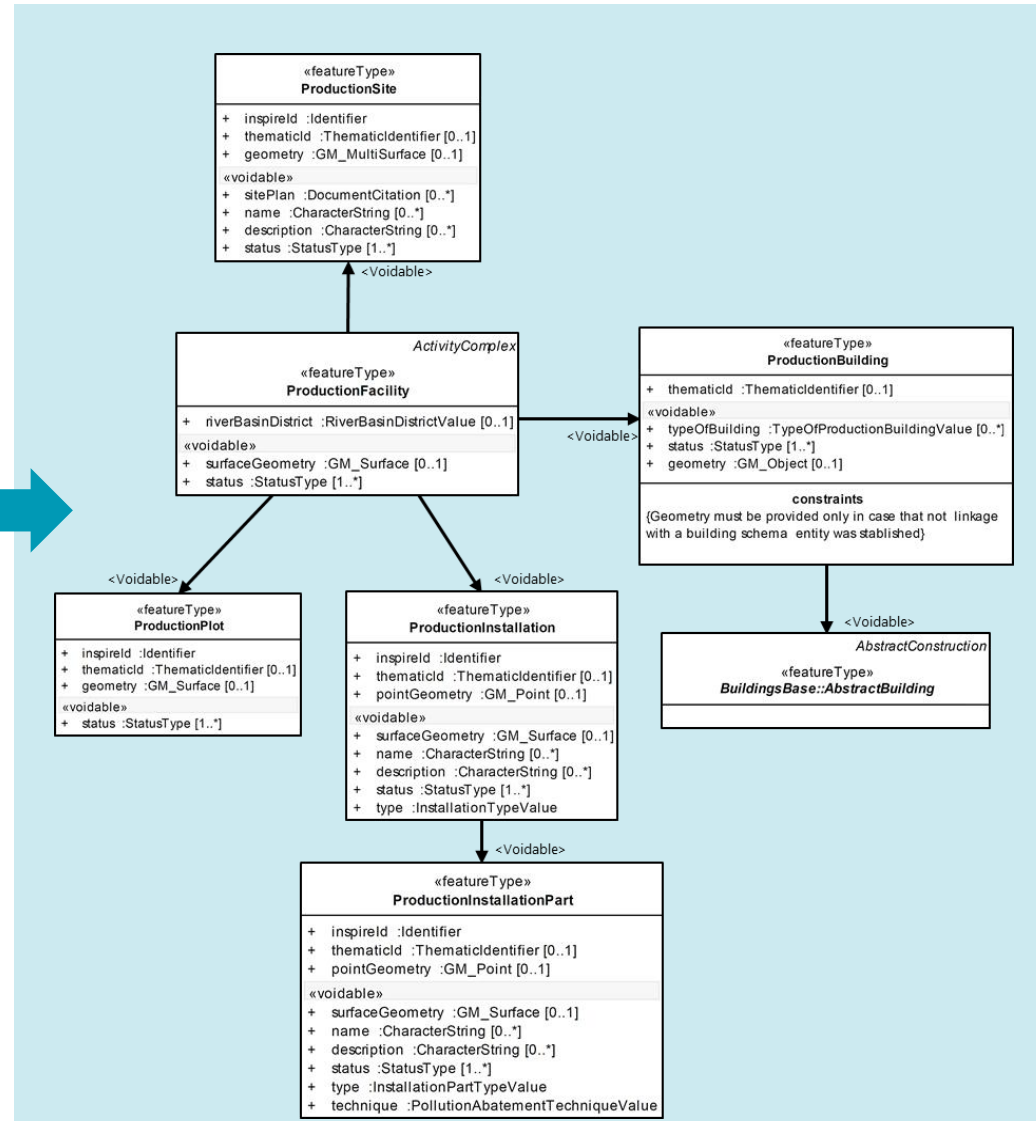
PF Data Specification



INSPIRE
Infrastructure for Spatial Information in Europe

D2.8.III.8 Data Specification on *Production and Industrial Facilities* – Technical Guidelines

Title	D2.8.III.8 INSPIRE Data Specification on <i>Production and Industrial Facilities</i> – Technical Guidelines
Creator	INSPIRE Thematic Working Group <i>Production and Industrial Facilities</i>
Date	2013-12-10
Subject	INSPIRE Data Specification for the spatial data theme <i>Production and Industrial Facilities</i>
Publisher	European Commission Joint Research Centre
Type	Text
Description	This document describes the INSPIRE Data Specification for the spatial data theme <i>Production and Industrial Facilities</i>
Contributor	Members of the INSPIRE Thematic Working Group <i>Production and Industrial Facilities</i>
Format	Portable Document Format (pdf)
Source	
Rights	Public
Identifier	D2.8.III.8_v3.0
Language	En
Relation	Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)
Coverage	Project duration

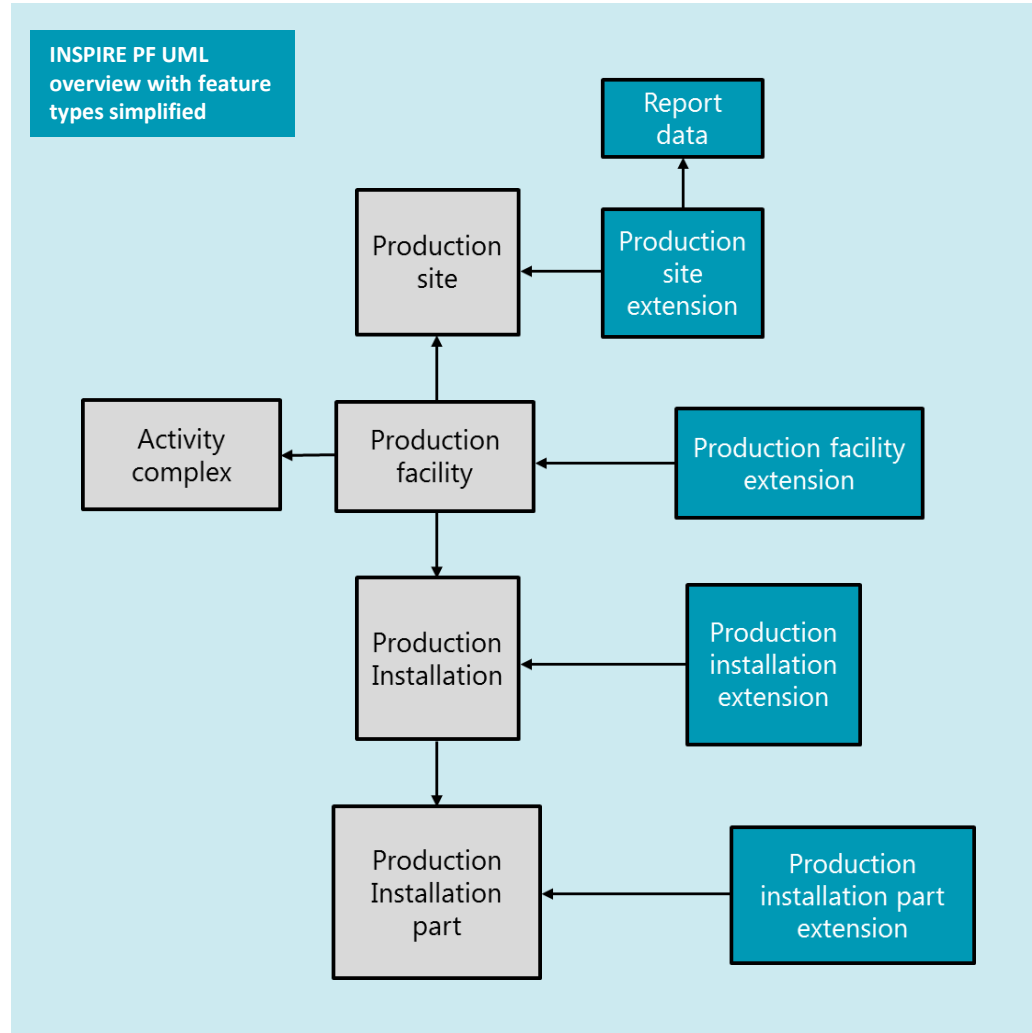


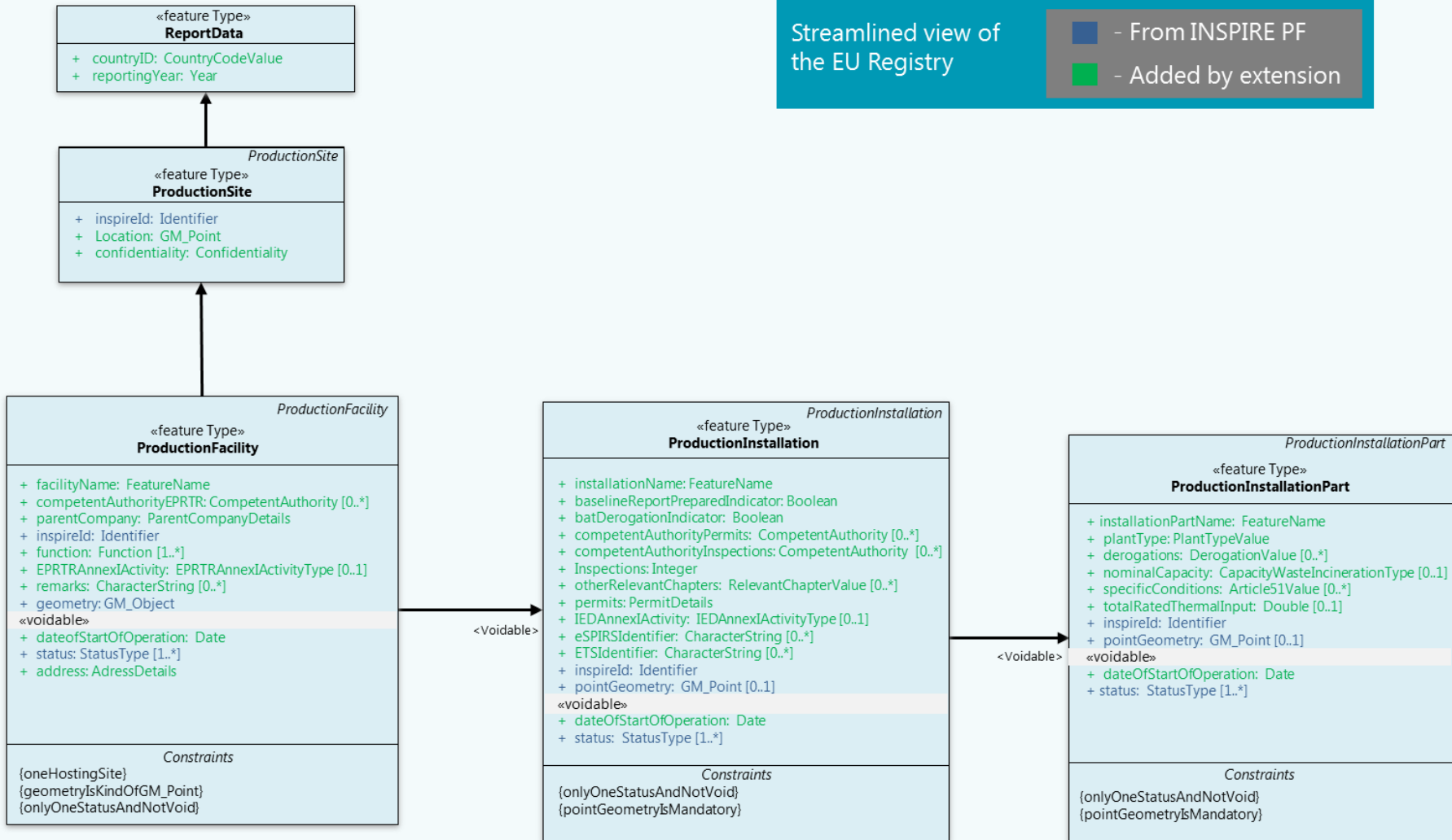
Data modelling exercise:


- Removed unnecessary feature types
- Added extensions to include fields specific to the reporting legislation

INSPIRE identifiers can be defined by MS, but must satisfy requirements for:

- Uniqueness
- Persistence
- Traceability
- Feasibility







Entity Definitions and Data Structures

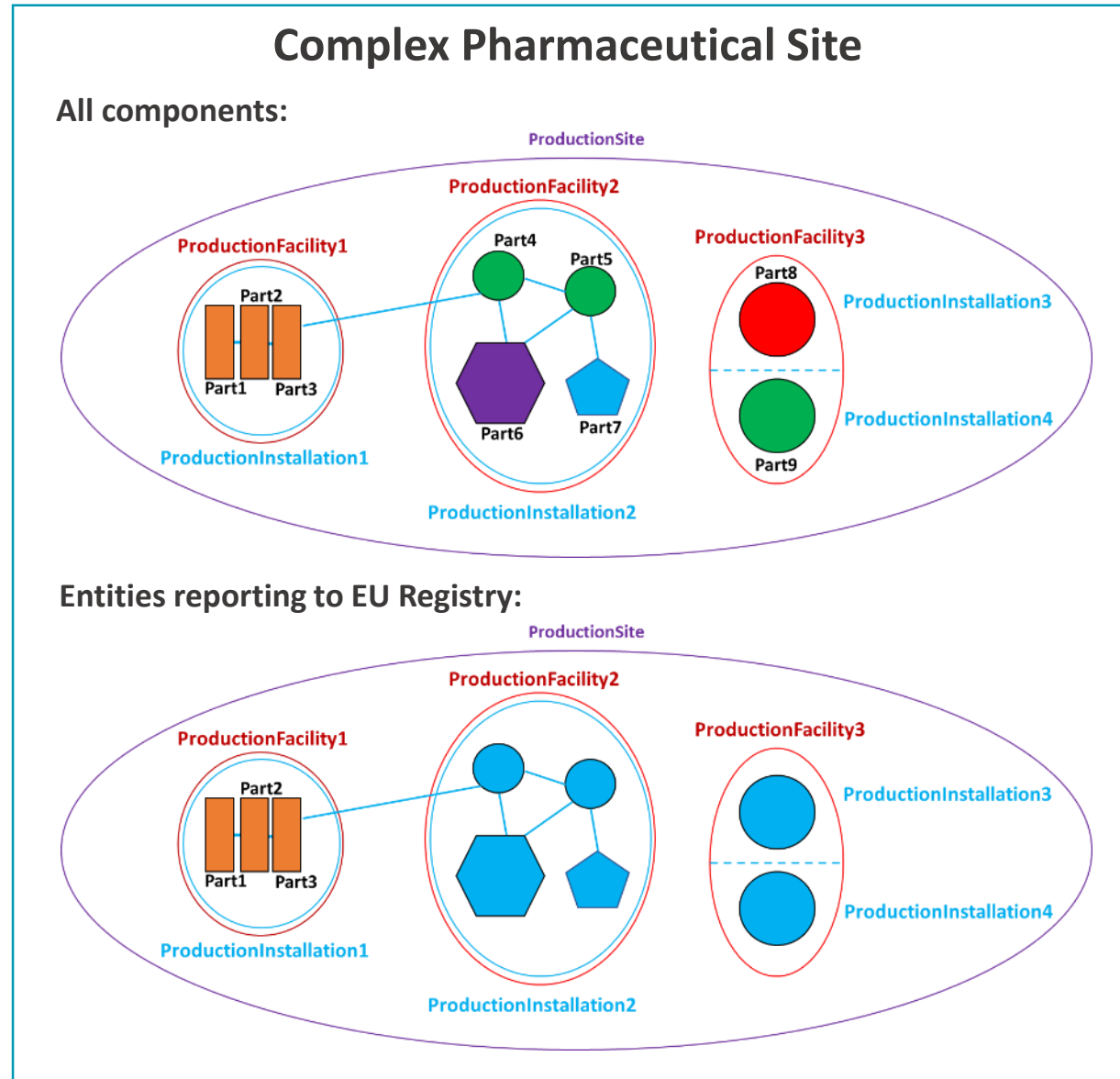
Term	INSPIRE	E-PRTR	IED
Site	<i>'A Production Site represents the geographical location of the facility or a piece of land where the facility was, is, or is intended to be located.'</i>	<i>'Site means the geographical location of the facility.'</i>	No definition
Facility	<i>'A Facility represents something designed, built, installed to serve a specific function, comprehending the complete equipment or apparatus for a particular process or operation. A facility groups together one or more installations that are operated on the same site by the same natural or legal person'</i>	<i>'Facility' means one or more installations on the same site that are operated by the same natural or legal person.'</i>	No definition
Installation	<i>'A Production Installation represents something installed, such as machinery, an apparatus, a device, a system, or a piece of equipment placed in position or connected for use.'</i>	<i>'Installation means a stationary technical unit where one or more activities listed in Annex I [of the E-PRTR] are carried out, and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution'</i>	<i>'Installation means a stationary technical unit within which one or more activities listed in Annex I or in Part 1 of Annex VII [of the IED] are carried out, and any other directly associated activities on the same site which have a technical connection with the activities listed in those Annexes and which could have an effect on emissions and pollution'</i>
Installation Part	<i>'A Production Installation Part represents a specific technical part of the installation, developing a representative functionality that should be registered under the legislation.'</i>	No definition	Equivalent to: 'combustion plant' (Article 3 [25]) 'waste incineration plant' (Article 3 [40]) 'waste co-incineration plant' (Article 3 [41])

Governing principles of the EU Registry data model:

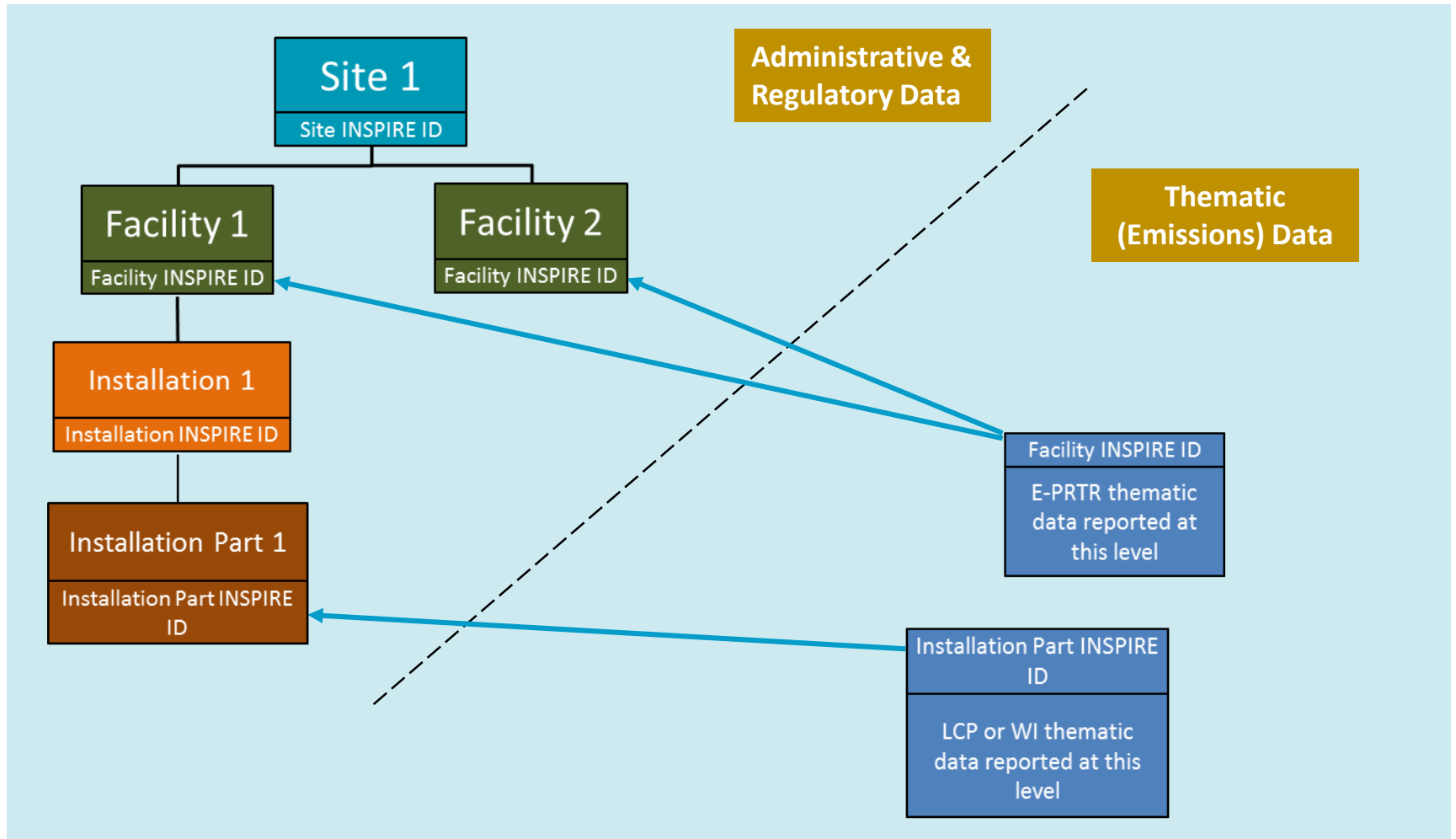
- Geographic hierarchy
- Facility definition in the INSPIRE PF data specification and the E-PRTR Regulation

In both documents a facility is defined as one or more installation(s) on the same site operated by the same natural or legal person.

This focus follows the permitting approach in many countries



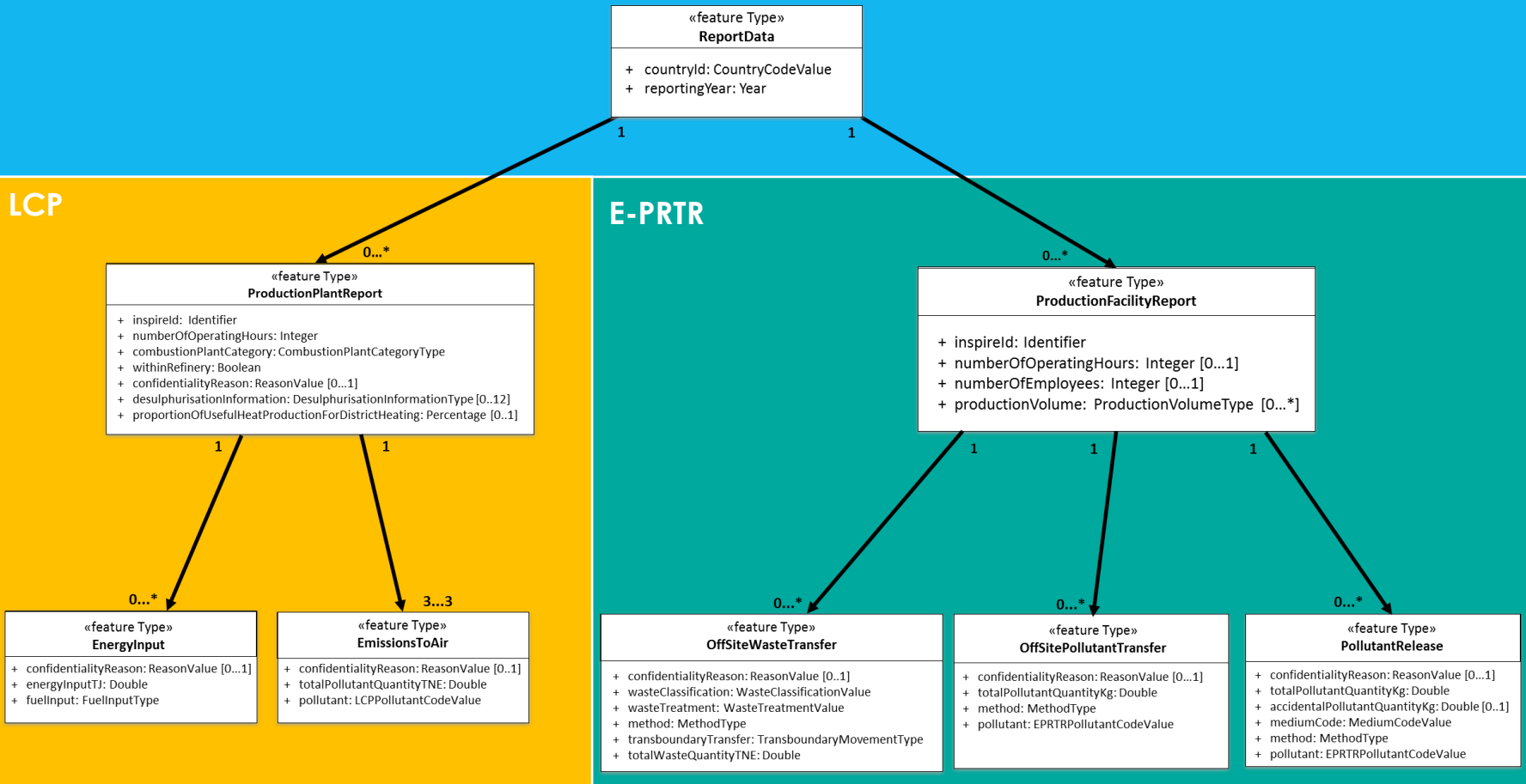
Geographical hierarchy



Contextual

LCP

E-PRTR

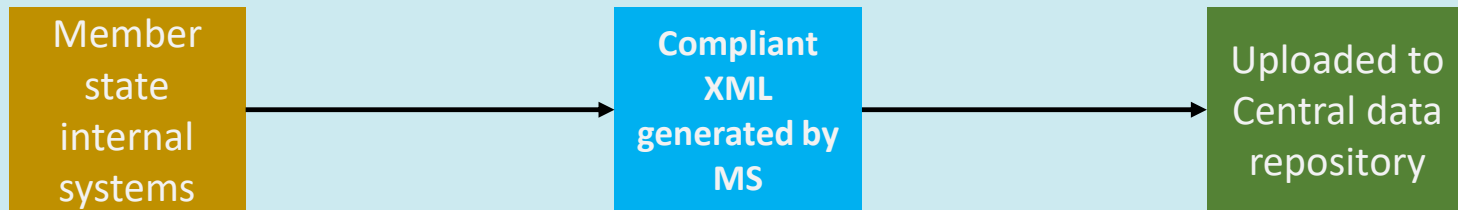




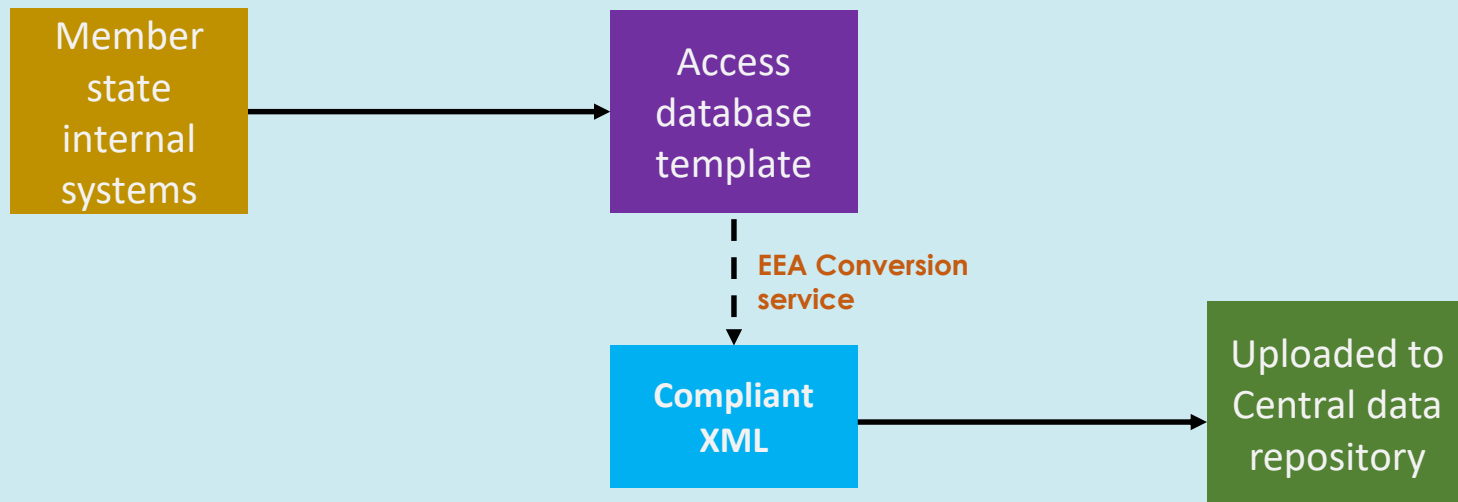
Resources for Member State Reporters

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Route 1



Route 2



Documentation of the E-PRTR+LCP data model

Annex 1 – Synergies with previous LCP and reporting formats

Both the E-PRTR and the IED have reporting formats that were previously established to collect data from reporting countries. This annex is focused on attempting to map the various existing reporting formats to the E-PRTR+LCP dataflow presented in this document. The table below lists the fields/attributes listed in the E-PRTR+LCP dataflow alongside the aspect or field of the previous format.

Field/attribute	Previous LCP reporting format	Previous E-PRTR reporting format
CountryId	Replaces the 'Member State' field.	Replaces the 'Country' element.
reportingYear	Replaces the 'Reference Year' field.	Replaces the 'ReportingYear' element.
inspireId	Replaces the 'Plant ID' field.	Replaces the 'National ID' element (as the InspireID stays constant throughout the lifetime of the facility).
numberOfOperatingHours	Replaces the 'Operating Hours' field.	Replaces the 'OperatingHours' element.
CombustionPlantCategory	Replaces the 'Gas turbine', 'Gas engine', 'Boiler', 'Diesel Engine' and 'Other' Boolean fields.	N/A
WithinRefinery	Replaces the 'Refineries' Boolean field.	N/A

European Environment Agency



EU Registry data model – Eionet consultation

Log of feedback received from countries

1. How to read this document

Countries were invited to provide feedback on the data model of the EU Registry on Industrial Sites by 24 March 2017. As a result, several countries contacted the EEA with questions or comments on the materials. This document logs the feedback to track the actions on them.

2. Log of feedback

MS	Comment	EEA's reaction to the comment
AT	<p>(MAJOR) „MASTER DATA“ AND „REPORT DATA“ SHOULD BE SEPARATE FROM EACH OTHER</p> <p>Facts:</p> <ul style="list-style-type: none"> There is a „ReportData“ structure at site level, defined as „It acts as a container for a Member State's complete annual submission to the EU Registry“ There is an announcement that initially the data will flow into the EU registry via annual uploads by Member States, but that at a later stage this data can also flow via INSPIRE services LCP/PRTR reporting is foreseen to be based on the EU Registry on Industrial Sites 	<p>Until web-services are used, the reporting mechanism requires the transmission of a unique XML file containing all information for a reporting year, regardless of its character.</p> <p>The comment from AT is, in fact, a good practice that we acknowledge and will be reported to the following reasons:</p> <ul style="list-style-type: none"> simplicity with respect to the data submission MS yearly submission European-wide data continuity with existing reporting mechanisms resource implications management-of-change the specific changes

```
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xmlns:net="http://www.interactive-instruments.de/ShapeChange/AppInfo"
xmlns:net2="http://inspire.ec.europa.eu/schemas/net/4.0">
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  </gml:featureMember>
</gml:FeatureCollection>
```

Daniel Montalvo | March 2017

Webinar – EU Registry on Industrial Sites Data model

Webinar - Integrated E-PRTR and LCP reporting The E-PRTR+LCP data model



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European Environment Agency



Comparisons with CAER

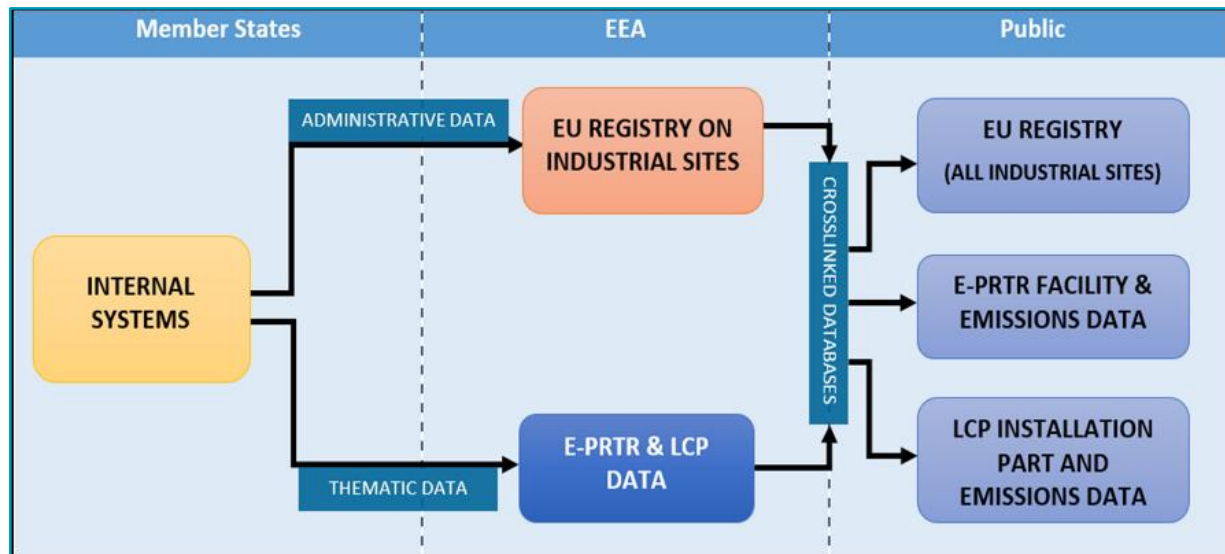
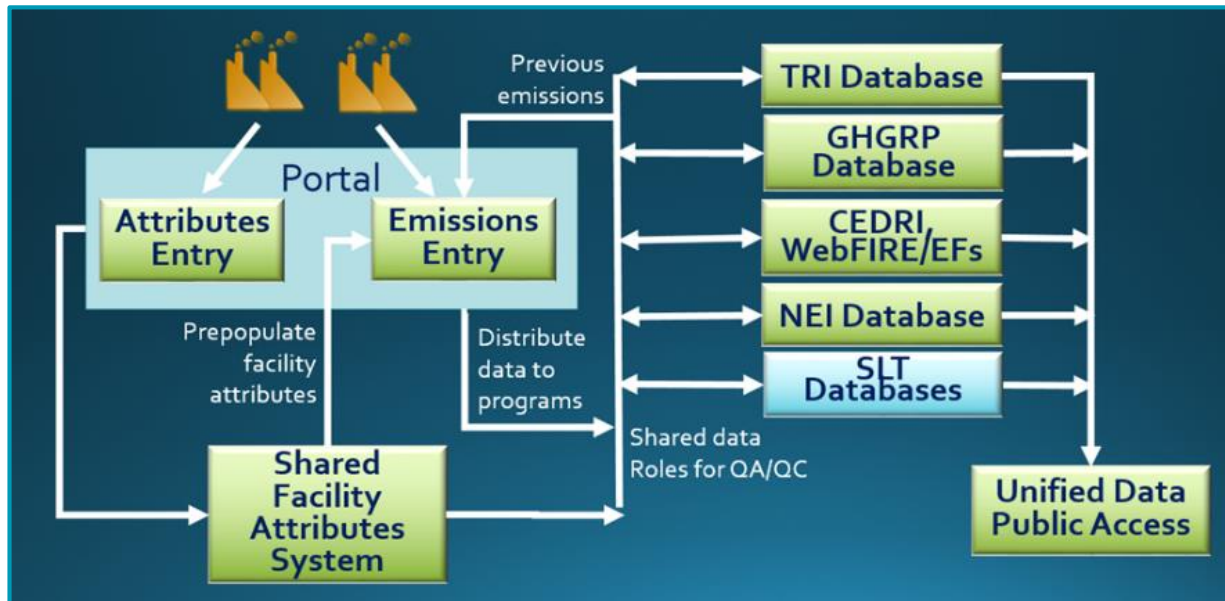
Aether 

Compare and contrast...



- There are key differences with the US Combined Air Emissions Reporting (CAER) project
- European effort is simpler in scope:
 - Lower level of reporting detail
 - Limited controls information collected
 - Only certain sources are resolved to the installation part (process) level
- Fundamental reporting legislation unchanged
- Project is more tightly constrained and more tightly defined
- Quicker timeline – full implementation by March 2019

A simpler implementation



The European effort:

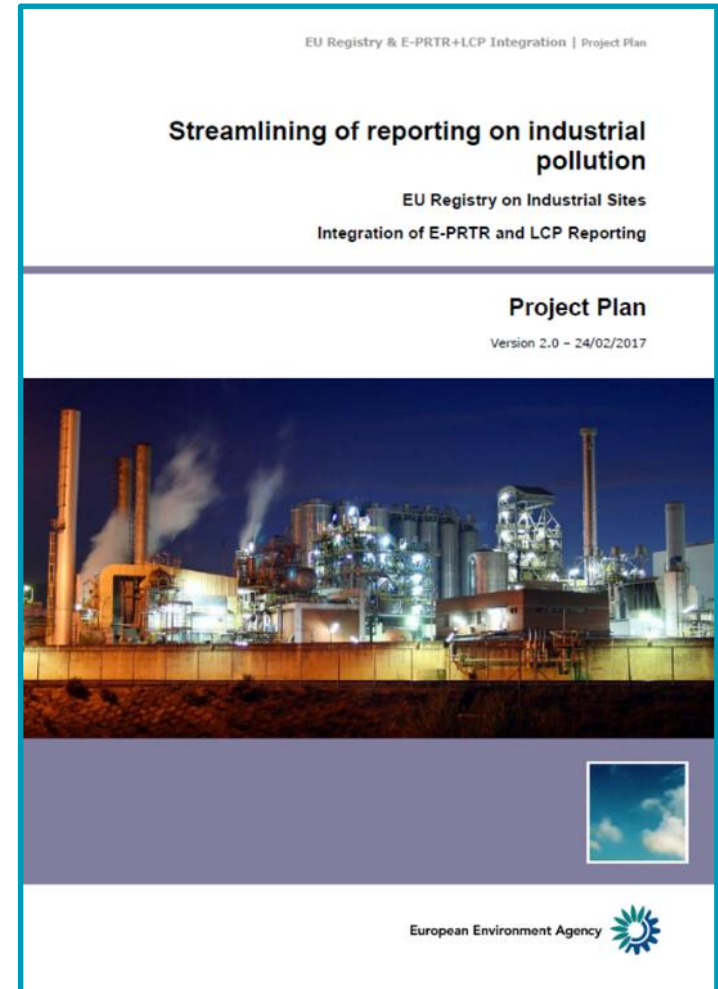
- Only deals with data flows between Member States and the EEA
 - Equivalent to just State/Local/Tribal (S/L/T) reporting of data to EPA
- Does not deal with industry reporting to Member States
- Only addresses two emissions reporting flows
 - With simpler reporting elements
- Adheres to existing thematic reporting requirements
 - No direct equivalency of emissions

- Streamlining industrial emissions reporting in Europe faces challenges similar to those in the US
 - The European effort has greatly benefited from the US experience with CAER
 - And indeed from the earlier implementation of the US Emission Inventory System
 - Compared to CAER, a simpler, more constrained solution is being implemented in Europe
- 80/20 Rule:
 - A less comprehensive *but*
 - A more tractable solution?
 - What are the most benefits that can be achieved, without full integration and full equivalence?
 - Can the more limited-scope European project help delineate and deconvolve some issues that could apply to the E-Enterprise CAER and Facility Team projects?

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Project websites:
http://cdrtest.eionet.europa.eu/help/ied_registry
http://cdrtest.eionet.europa.eu/help/eprtr_lcp





Thank You

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