EU Registry on Industrial Sites

Data model documentation

Version 4.1 – 13/11/2018

European Environment Agency

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Layout: EEA

Acknowledgments

This data model documentation was prepared by the European Environment Agency (EEA) in cooperation with the European Topic Centre for Air Pollution and Climate Change Mitigation (ETC/ACM). The data model was produced using Unified Modelling Language (UML) and designed as an extension of the INSPIRE Data Specification on Production and Industrial Facilities. For the latter, the EEA was assisted by the external contractor Epsilon Italia.

Should you have any need of clarification, please contact industrial.emissions@eea.europa.eu.

Contents

1 Overview of the EU Registry on Industrial Sites

As part of an initiative to streamline the reporting of industrial emissions, the EU Registry on Industrial Sites (hereafter EU Registry) is planned as a coherent database of industrial entities that release emissions and also centralises existing mechanisms for the collection of administrative data for these industrial entities. As a first stage, the EU Registry will collect identification and administrative data for:

- European Pollutant Release and Transfer Register Regulation (EC) No 166/2006 -(E-PRTR) facilities,
- installations under the scope of the Industrial Emissions Directive (IED)[1],
- large combustion plants (LCPs) (Chapter III of the IED),
- waste incineration and co-incineration plants (WI) (Chapter IV of the IED).

At the same time, the EU Registry will be the reference dataset to which relevant thematic reporting on LCPs under the IED and facilities under the E-PRTR Regulation will link to, reported under the companion data flow, 'Integrated E-PRTR and LCP reporting'; i.e. thematic data on releases and transfers will refer to entities reported to the EU Registry. The EU Registry will contain all relevant permit and geospatial information which will not be duplicated in the thematic data flow. Unique identifiers will be used to link the EU Registry with the emissions data for querying and publishing information.

The data model presented in this document is a formal extension of the INSPIRE Production Facilities (INSPIRE PF) data model[2]. This implies important advantages for countries (as investments in implementing the EU Registry are building on their INSPIRE compliance) and makes the system flexible to future extensions. However, expansions of the EU Registry to cover additional entities (with the exception of references IDs to other reporting systems e.g. Seveso establishments), enabling it to be used as a reference dataset for more reporting obligations is not currently envisaged.

Figure 1 shows how the EU Registry is part of an overall effort to streamline the reporting of industrial emissions. This document is concerned only with the data model that will be used to transmit administrative information about industrial emission entities from the reporting countries to the EEA. Aggregation of administrative and thematic data by the EEA in European-wide data bases followed by dissemination to the public, for instance in XML data flows that can subsequently be viewed on a web interface (e.g. E-PRTR website, Google Maps/Open Street Map application), are other aspects of this effort that will not be discussed here. Further information on reporting requirements, data handling and publication of data is provided in the EU Registry Manual for Reporters.

[1] Directive 2010/75/EU. Specific IED reporting requirements are specified in Commission Implementing Decision (EU) 2018/1135 of 10 August 2018 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.

[2] The data model validates correctly in the eENVplus Validation Service, an online tool for the validation of GML application schemas and GML datasets, based on the OGC validator GML test suite. This ensures that the resulting IT tools of this model are in conformity with the INSPIRE requirements.

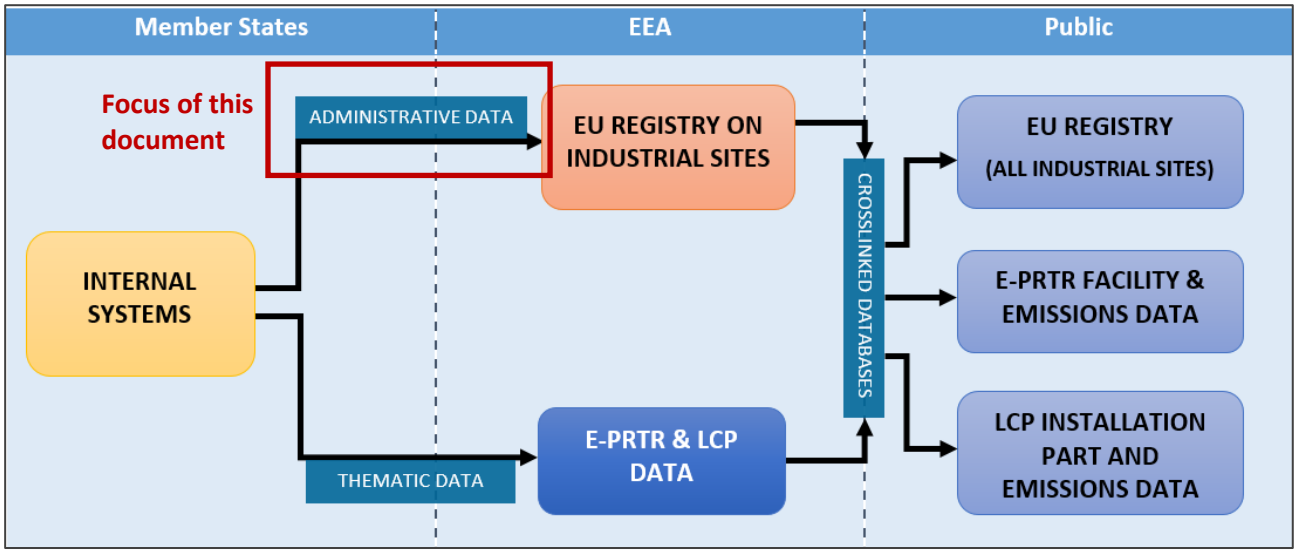


Figure 1 Planned data flows for reporting and handling administrative and thematic data on industrial emissions.

2 Access to the data model

During the development phase, all materials related to the EU Registry on Industrial Sites are posted at the project website: http://cdrtest.eionet.europa.eu/help/ied_registry

This website contains the latest updates of:

- The data model views (streamlined and complete),
- the European Extensible Markup Language (XML) Schema[3], and
- the associated code lists.

The website also hosts the documentation associated with these materials, including this data model documentation, the QA/QC Logic Manual and the Manual for Reporters.

3 Introduction

This document describes the new data model that has been developed for the EU Registry in order to handle the necessary administrative and regulatory information for the facilities that European Member States and other reporting countries are required to report under relevant EU legal instruments. The detailed data specifications provided here have been reviewed by the European Commission Directorate-General Environment (DG ENV) and the Joint Research Centre.

[3] This XML Schema will essentially provide an empty template for reporters and their IT staff that contains guiding explanations. The schema will be based on XML code and adhere to the conventions set out by INSPIRE (http://inspire.ec.europa.eu/).

The document tackles the following issues:

- The scope definition and logic of the reporting,
- the specific data requirements towards countries, and
- compliance aspects of the EU Registry data model with INSPIRE data specifications.

This document has been reviewed under consultation with reporting countries before its finalisation, and has since been updated to account for the requirements set out in Commission Implementing Decision 2018/1135/EU which are detailed below.

The legal basis

Reporting countries indicated their desire for obtaining more legal certainty by means of EU legislation codifying the principles and practices that have been agreed in the E-PRTR[4] and IED[5] Expert Groups. Recognising this need, DG ENV have developed a replacement for Commission Implementing Decision 2012/795/EU that aims to provide legal clarity to reporting countries as they implement changes in their reporting systems regarding reporting to the EU Registry. This new decision, 2018/1135/EU, is formally referred to as the 'Commission Implementing Decision of 10 August 2018 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'.

The legal basis for the EU Registry is therefore primarily the Commission Implementing Decision 2018/1135/EU and the Annex 3 to the E-PRTR Regulation. The data model is largely based on these pieces of EU law.

The submission procedure

The EU Registry will be an XML-based dataflow. Reporters will have two options to generate reports:

1) populate an XML file compliant with the European XML Schema;
2) transform a Microsoft Access file, according to a predefined structure, into a XML file via a conversion service provided by the EEA.

XML submissions compliant with this data model will be submitted, by reporting countries, via the Central Data Repository (CDR) using the existing Reportnet infrastructure. Reports will be submitted on an annual basis. Such XML submissions (or re-submissions for previous years) will include data for a particular year on all applicable industrial entities in a reporting country. The EEA will then harvest country data submissions to aggregate a European-wide multi-year dataset of industrial sites that will be used for analysis, publication and support of environmental programs.

Data modelling performed and INSPIRE compliance

The data model is intended to satisfy the limited reporting obligations that countries must satisfy; a legal remit does not exist to collect more detailed information from MS. Another key factor in the development of this data model was to ensure conformity with the INSPIRE Production and Industrial Facilities (PF) data

[4] http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=2921

[5] http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=2611

specifications[6]. The INSPIRE Directive (2007/2/EC) aims to create a European Union spatial data infrastructure for the purposes of EU environmental policies and understanding activities which may have an impact on the environment. In this context, countries have an obligation to make their data available in a harmonised form. As regards data under the scope of the INSPIRE Data Specification for Production and Industrial Facilities this shall happen by 21/10/2020 at the latest.

Geographic location information of industrial sites is the foundation of INSPIRE compliance for this theme. Development of other building blocks (e.g. use of web services for data transmission, relationships with other environmental reporting obligations) therefore becomes feasible for subsequent investments by MS.

The data model presented in this document is a formal extension of the INSPIRE PF data specifications. This means that the original model developed in the context of the INSPIRE process has been the basis, from which the EEA then built an extension of the model to cater for the specific requirements stemming from the industrial emissions legislation. The overall goal of reusing and extending the INSPIRE Data Specification for Production and Industrial Facilities is to avoid multiple reporting in different formats and further fragmentation of data flows.

The extension rules set out by INSPIRE require to formally keep the original model in its entirety. The formal extension is presented in Annex 1. The boxes in grey in the diagrams in Annex 1 refer to those aspects included in the initial INSPIRE PF data specifications while the boxes in blue refer to the extensions developed for the EU Registry on Industrial Sites.

The original INSPIRE PF data specifications are very comprehensive and cater for a very high level of detail. A number of fields and entire feature types were therefore identified as not relevant in this context. It was therefore possible to create a 'streamlined view' which includes only feature types and fields relevant to the EU Registry reporting (Figure 3). More details on this process, including the justifications for not using irrelevant fields and feature types, are provided in Annex 2, while Figure 4 summarizes the steps involved in creating the 'streamlined view.'

The direct message to countries is that only the fields included in the 'streamlined view' are to be reported by countries. Section 4 of this document includes a detailed description of the conditions and contents expected for these fields.

The streamlined view of the EU Registry incorporates all mandatory and non-voidable elements from the respective INSPIRE data model in a joined together with the domain reporting requirements. This would already satisfy the INSPIRE Implementing Rules on interoperability of spatial data sets and services (EU/1089/2010) assuming that no further data on the subject is collected and available in the Member States (MS). In case that further data on the subject is available the MS should use the full EU Registry data model to satisfy both the INSPIRE Directive and the environmental reporting obligations.

For MS reporting to the EEA, a web service based approach will not be used initially. Therefore, files uploaded to EIONET Reportnet will be used as the reporting mechanism for the time being. An assessment of the capacity of both sides to use web services to transfer data could be made at a later stage.

In order to facilitate the operation of the EU Registry workflow and schema validation process, the EU Registry schema will reference locally stored modified versions of both the INSPIRE Production and Industrial

[6] http://inspire-regadmin.jrc.ec.europa.eu/dataspecification/ThemeOverview.action?hideMenu=&themeId1=pf

Facilities schema and the INSPIRE Activity Complex schema. The modifications are outlined below. These modifications have no impact on the INSPIRE compliance of data from reporting countries, i.e. the datasets will be fully INSPIRE compliant.

- The application schema is a modified version of the INSPIRE 'Production and Industrial Facilities - Core' application schema (v4.0). In the local version of the schema the multiplicity of the 'pointGeometry' element has been changed from [0..1] to [1..1] both in the ProductionInstallation feature type and in the ProductionInstallationPart feature types. The multiplicity of the 'status' element has been changed from [1..*] to [1..1] and it is no longer a voidable field. This change to 'status' has been made for the ProductionFacility, the ProductionInstallation and the ProductionInstallationPart feature types
- In the modified version of the Activity Complex core schema the geometry of the Activity Complex is forced to be point.

4 Data model overview

From the 'complete model' to the 'streamlined view'

As outlined in the previous section, the EU Registry data model is an extension of the INSPIRE PF data model. The formal extension is referred to as 'complete model' in this document. An extension of an INSPIRE data specification is a model that re-uses a pre-existing INSPIRE data model by adding specific additional data types, fields and enumerations and defining associated constraints.

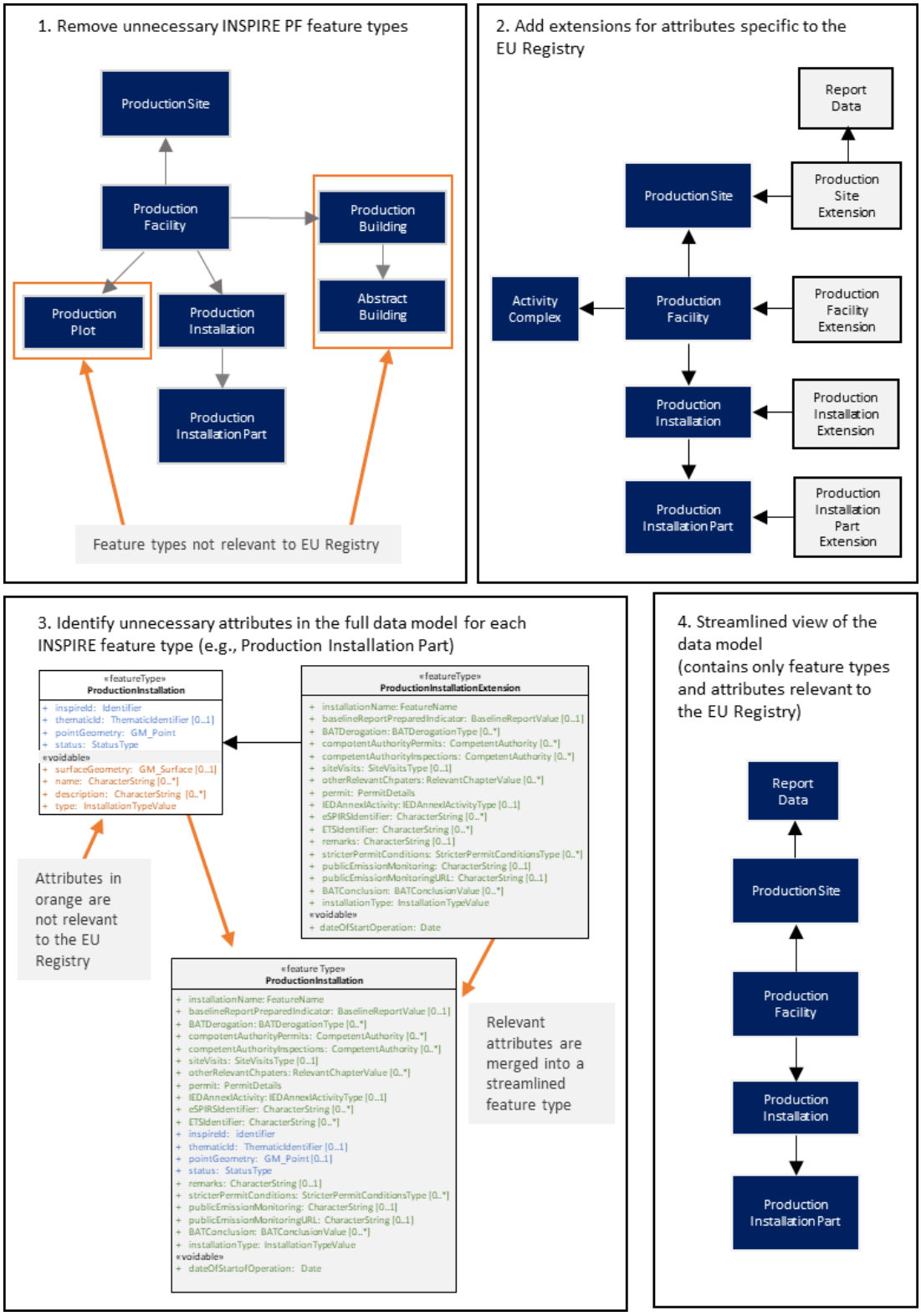
To gain clarity, we subsequently removed all aspects from the 'complete model' that are irrelevant in the context of the industrial pollution legislation, calling the resulting summary view as the 'streamlined view'. The process followed is explained in detail in Annex 2.

In short, we followed these steps:

1) Taking as a basis the original INSPIRE PF, we removed unnecessary feature types (e.g. *ProductionBuilding*)
2) Adding extensions, i.e. requirements specific to the industrial pollution legislation
3) Identifying unnecessary attributes (i.e. fields) in the full model which originally were in the INSPIRE PF and were not mandatory
4) Producing a summary view (streamlined view) only with those feature types, data types and fields relevant for the EU Registry

The steps involved in creating the streamlined view are shown in Figure 2.

Figure 2 Steps involved in creating the streamlined view



Understanding the streamlined view

The streamlined view includes, as outlined, the actual requirements in the context of the EU Registry. The model is presented through three main elements:

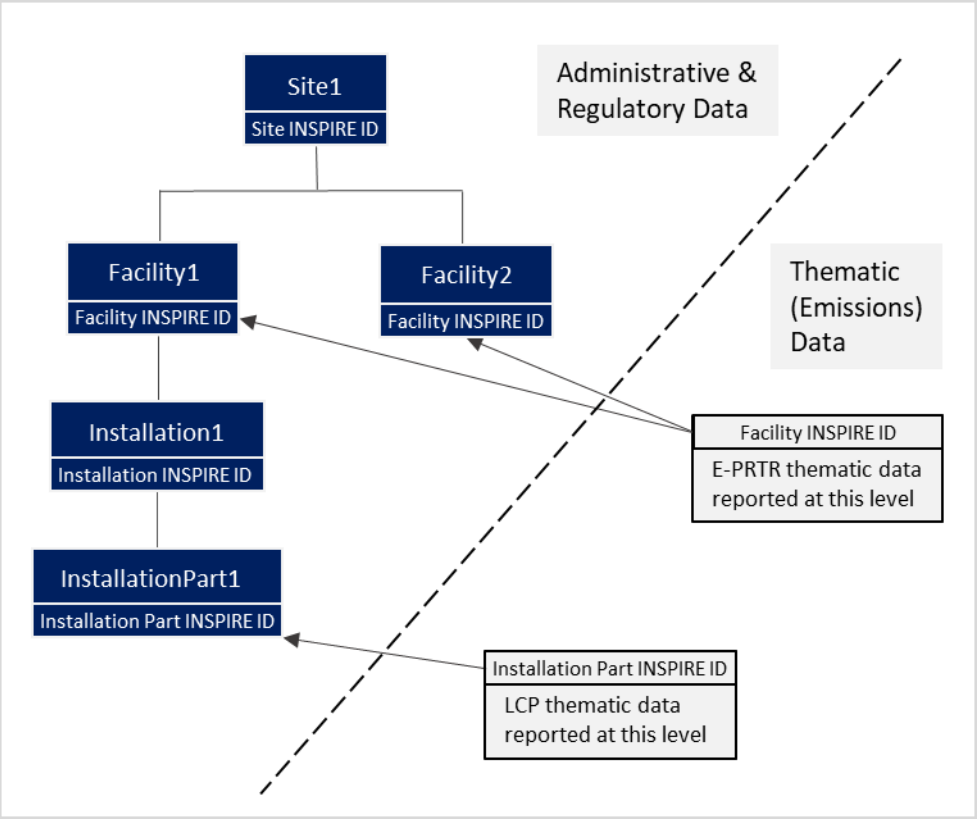
1. **Feature types**: *ProductionSite*, *ProductionFacility*, *ProductionInstallation* and *ProductionInstallationPart*.

2. **Data types:** used when a data field has several items of information (e.g. Address)

3. **Code lists**: a series of pre-defined values to standardise the information gathered in certain fields (e.g. E-PRTR Activity details)

The fundamental structure of the EU Registry is based on geographic and ownership attributes to define and correlate facilities and their associated sub-entities.

Figure 3 Data structure and entity definitions



The four feature types (sites, facilities, installations and installation parts) are the core entities or objects which the data model uses to conceptualise reality. More importantly, this is also a logical data hierarchy that is legally, geographically and physically-based which will be easily understood by countries' thematic staff and industrial reporters. Figure 3 provides a schematic of the data structure and key entity definitions that are based on definitions in the INSPIRE PF Data Specification, the E-PRTR regulation and the IED. This

figure also shows how the INSPIRE ID's for different feature types are used to link the EU Registry with the thematic data.

The streamlined view, containing the information requirements for countries to report to the EU Registry, is presented in the three following images (Figure 4a, 4b and 4c).

Figure 4a EU Registry on Industrial Sites (streamlined view – feature types)

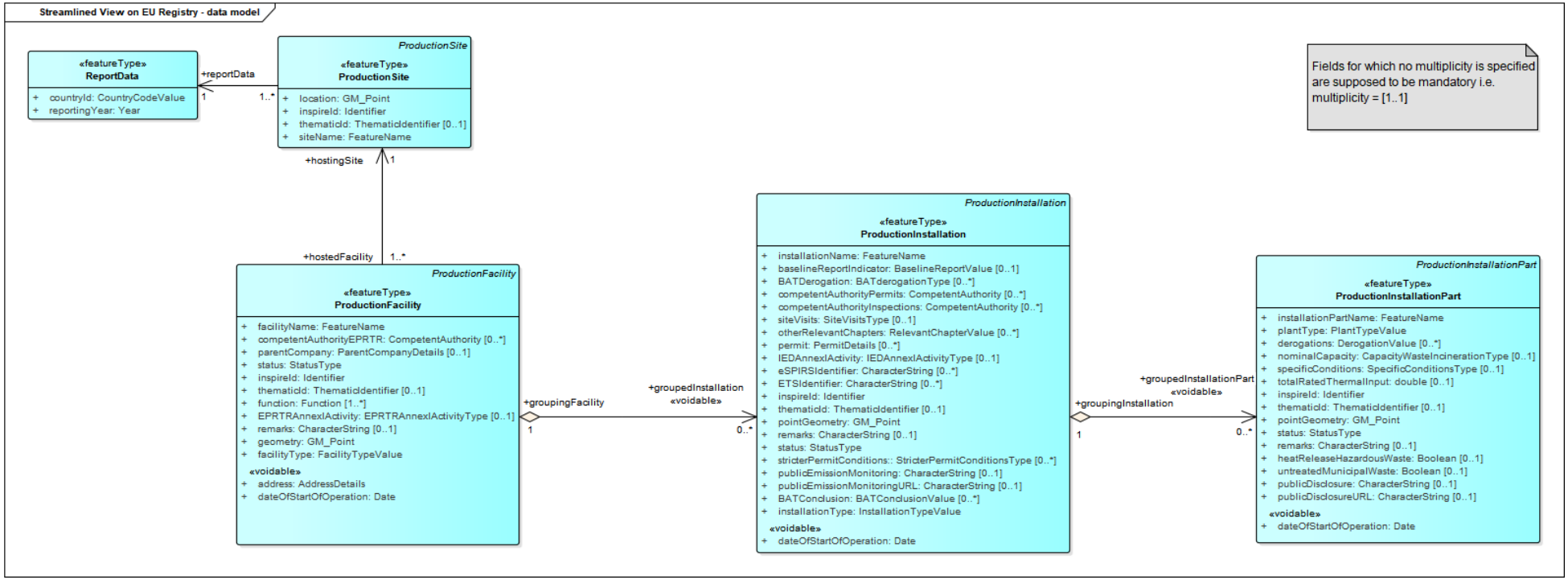


Figure 4b EU Registry on Industrial Sites (streamlined view – data types)

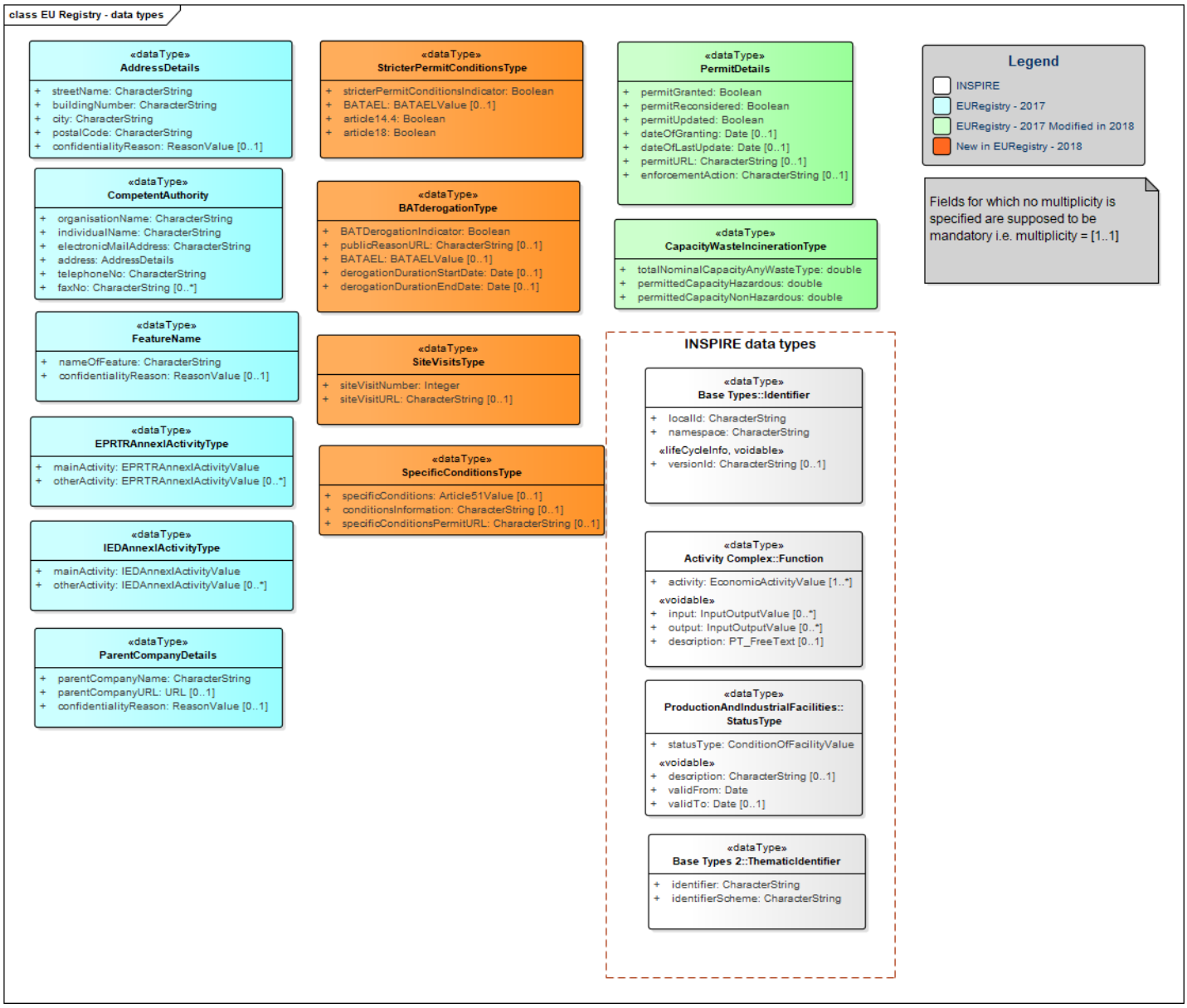
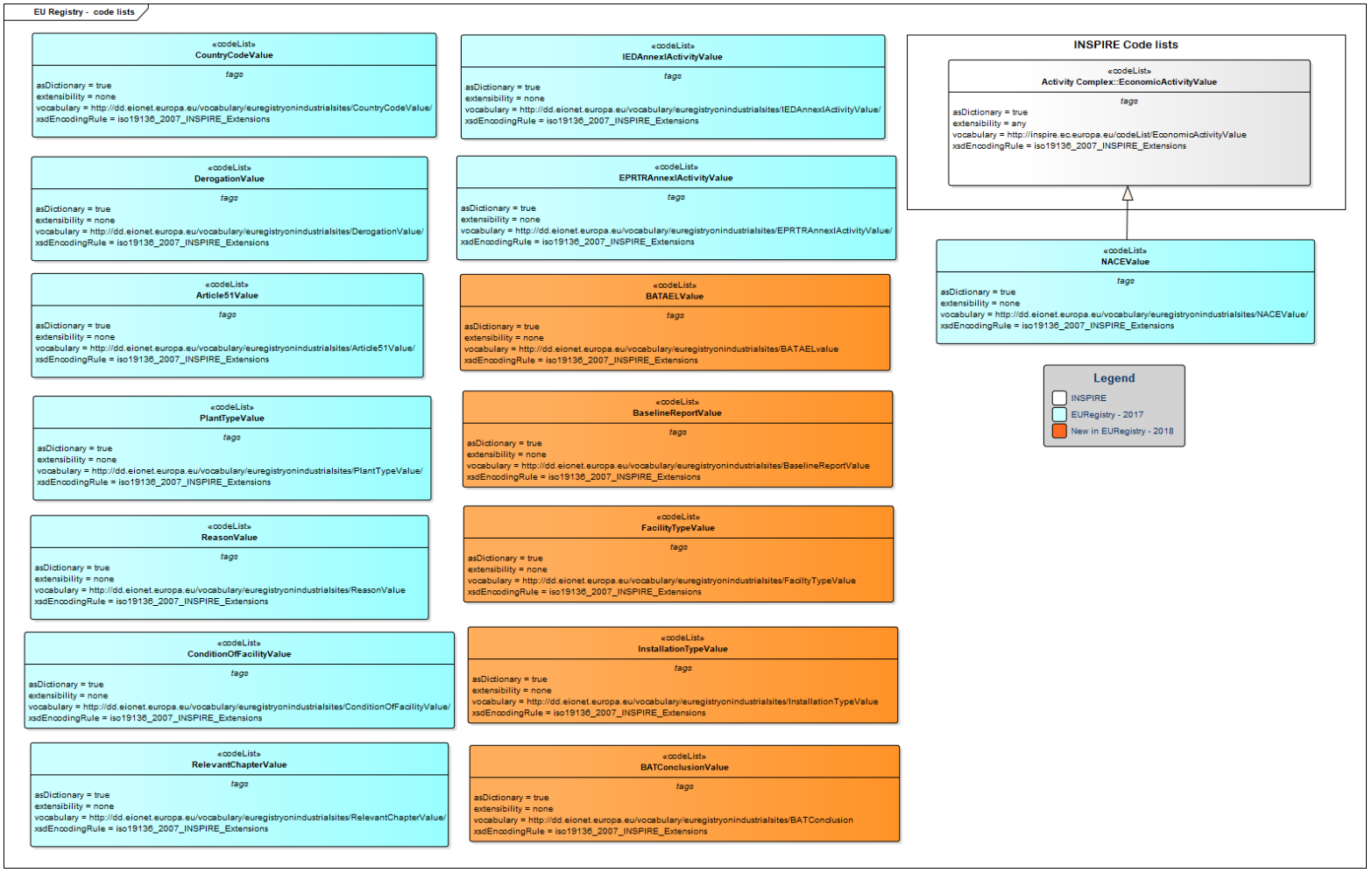


Figure 4c EU Registry on Industrial Sites (streamlined view – code lists)



The streamlined view is thus the actual reporting requirement for countries when it comes to the EU Registry on Industrial Sites. It is important to note that not all aspects of the INSPIRE PF data specifications are included. This is again necessary because associated additional reporting requirements cannot be imposed upon MS.

As a result, accessory spatial feature types such as Production and Industrial Building and Production Plot from the INSPIRE PF data model will not be utilised in the EU Registry data model. Also, more detailed information at the lowest data level (i.e. Production Installation Part), including stack parameters or information about other discharge or emission points, is not addressed in the EU Registry data model. Such data, using the appropriate Production Installation Part INSPIRE IDs, could be added later if their collection is mandated by future legislation.

The extension of the INSPIRE PF data model which constitutes the complete EU Registry data model and UML feature catalogue, including all feature types, data types and code lists, is described in Annex 1. The UML containing the formal extension of the INSPIRE PF data model (referred to in this document as the 'complete data model') is available at the project webpage[7]. A feature catalogue, containing the feature types, data types and code lists used in the data model, is also available at this webpage.

Logic of the model

ProductionSite and *ProductionFacility* will always need to be reported. If a facility is only subject to the E-PRTR Regulation then the thematic data can be reported at the facility level, as shown in Figure 3. All *ProductionInstallations* subject to the IED will need to be reported to the EU Registry but *ProductionInstallationParts* will only need to be reported if they are large combustion plants (LCPs) or waste incineration or co-incineration plants (WI), where the relevant thematic data will also have to be reported at this level. The *ProductionInstallationPart* feature type will collect jointly the information on LCPs and WI that is required to be reported by the legislation. The geographical approach of INSPIRE means the two entities fall in the same hierarchical level in the real world. Specific data fields in this feature type will handle the different reporting requirements for WI and LCPs and will also allow distinguishing between LCPs and WI when subsequently querying the database.

The concepts of 'multiplicity' (i.e. zero to one or one to many) and 'voidable' (i.e. an attribute only has to be provided if acquisition of this information is mandated by a regulation) will be used to address situations where feature types have to handle data for different types of entities (e.g. Both WI and LCPs under the IED are to be populated using the ProductionInstallationPart feature type). So, where a situation is not applicable then certain fields need not be entered. These requirements (and associated quality assurance and control checks) will be documented in the EU Registry Manual for Reporters and the EU Registry QA/QC Manual.

Single geographic points must be provided for all feature types in the data model. Although point coordinates are the minimum level of geographic information, at this stage the reporting of a greater level of detail is not mandated by relevant legislation. They will be crucial for checking and tracking that all facilities and associated sub-entities are located at the same site. This also complies with the INSPIRE PF data specifications for the minimum level of detail for the spatial representation of facilities and sub-entities.

[7] http://cdrtest.eionet.europa.eu/help/ied_registry

5 Description of the streamlined view

This section of the document describes the requirements included in the so-called 'streamlined view'. The text goes through the parent/daughter data structure of the feature types, all fields included in the feature types, the characteristics of data types where these are used for some of the attributes in the feature types, and finally, it makes reference to the code lists which are used across the data model.

Hosting/Grouping

The hosting and grouping criteria are key to reading the streamlined view and understanding what feature types must be reported and how these feature types must relate to each other. The INSPIRE PF data specifications require the reporting of a *ProductionFacility* as a bare minimum. Every *ProductionFacility* feature type must have a single parent *ProductionSite*. So for a facility that is subject only to the E-PRTR and has no IED installations, only one *ProductionSite* and one *ProductionFacility* would have to be reported, and no *ProductionInstallation* and *ProductionInstallationPart* data need be reported.

The daughter relationship of a *ProductionInstallation* to a *ProductionFacility* is voidable in the INSPIRE PF data specifications. However, the EU Registry data model requires that this feature type must be reported for every IED installation. So for an installation that is subject to the IED (regardless of whether it is subject to the E-PRTR), data in the *ProductionInstallation*, *ProductionFacility* and *ProductionSite* feature types must all be reported.

The daughter relationship of a *ProductionInstallation Part* to a *ProductionInstallation* is voidable in the INSPIRE PF data specifications. However, the EU Registry data model requires that data in the *ProductionInstallationPart* feature type must be reported for every LCP and WI unit.

Feature types

A feature type is the core entity in a Unified Modelling Language (UML) data model. It represents a class of data together with relevant attributes. The attributes may refer to data types or be populated with values from code lists or numeric or text data.

3.1 ReportData

The *ReportData* feature type is a new feature type created for the EU Registry data model. It acts as a container for a Member State's complete annual submission to the EU Registry.

countryId: This attribute contains values from the *CountryCodesValue* code list which contains a list of countries that will report to the EU Registry.

reportingYear: Defines the year that the submission covers. The internal data harvesting process within the EEA database will produce a full European-wide dataset covering multiple years.

3.2 ProductionSite

location: This is an attribute created for the EU Registry which is specified in an extension to the INSPIRE PF data specification *ProductionSite* feature type. The format for this attribute is *GM_Point*. This attribute supersedes the INSPIRE PF attribute geometry which requires data in the format *GM_MultiSurface*; this more complex (polygon) format is not mandated by the current reporting legislation.

Point coordinates will need to use the ETRS89 (2D)-EPSG:4258 coordinate reference system with a 10-meter accuracy (i.e. to five decimal places) for the approximate centre of a site.

inspireId: This crucially important identifier needs to be provided for all feature type levels in the data model. This attribute is the fundamental building block that enables the effective sharing of geospatial environmental information. The provide guidance in the EU Registry Manual for Reporters on how INSPIRE IDs unique to each country can be defined. MS will have the flexibility to use their national identifiers provided they comply with the INSPIRE requirements for such IDs (see Annex 4 for more details). The identifier value must be unique at each feature type level throughout the Member State. This attribute references the *Identifier* data type detailed later in the data type section.

thematicId: The thematicId originates in the INSPIRE PF Specification and references the *ThematicIdentifier* data type. The attribute is to be used by reporting countries as an opportunity to provide an additional identifier specific to their own national reporting system. The attribute is subject to [0..1] multiplicity so need not be populated if desired.

siteName: This attribute is populated with the *FeatureName* data type. Submission of the site name to the EU Registry is mandatory; however, if a valid confidentiality reason is provided in the relevant attribute within the *FeatureName* data type then the site name will not be published by the EEA in public data products.

3.3 ProductionFacility

The INSPIRE *ProductionFacility* is a special kind of INSPIRE *Activity Complex*, so attributes in that feature type must also be considered as well as attributes in the INSPIRE PF specifications for the *ProductionFacility* feature type.

facilityName: This attribute is populated with the *FeatureName* data type. Submission of the facility name to the EU Registry is mandatory; however, if a valid confidentiality reason is provided in the FeatureName data type then the facility name will not be published by the EEA in public data products.

competentAuthorityEPRTR: Links to the *CompetentAuthority* data type. It is possible that a facility is not subject to the E-PRTR Regulation so multiplicity of [0..*] is permitted.

parentCompany: Links to the *ParentCompanyDetails* data type where, if a valid confidentiality reason is provided then the name of the parent company and its URL will not be published by the EEA in public data products. It is possible that a facility is not subject to the E-PRTR Regulation so multiplicity of [0..1] is permitted.

status: This attribute is subject to a multiplicity of [1..1] and denotes the operational status of the entity relative to the 31st December of the reporting year. The status is populated using a controlled vocabulary, specifically the ConditionOfFacilityValue code list.

inspireId: See above.

thematicId: See above.

function: This attribute is part of the INSPIRE *ActivityComplex* feature type. The function of a *ProductionFacility* is described by the activities performed using a controlled vocabulary, specifically the *NACEValue* code list. This list contains current NACE codes and is a refinement of the INSPIRE EconomicActivityValue code list.

EPRTRAnnexIActivity: Links to the *EPRTRAnnexIActivityType* data type which allows reporting of the main activity and any other activities at the facility that are listed in Annex I of the E-PRTR Regulation.

remarks: This is an optional attribute (i.e. multiplicity of zero is permitted) since its provision is optional in the E-PRTR Regulation. It allows MS to provide additional information about the entity.

geometry: The INSPIRE specifications for *ActivityComplex* require a *GM_Object* format for this attribute. Current EU reporting legislation mandates the provision of point coordinates (i.e. latitude and longitude) for each facility. Since point coordinates (i.e. *GM_Point*) are a valid type of *GM_Object*, this attribute can accommodate the required information. Therefore, GM_Point is the required format for this attribute.

Point coordinates will be required, using ETRS89 (2D)-EPSG:4258 coordinate reference system with a 10-meter accuracy (i.e. to five decimal places) for the approximate centre of a facility.

Facility type: This attribute is subject to [1..1] multiplicity, meaning that it must be populated during reporting. The attribute references the 'FacilityTypeValue' code list, which in turns contains options defining whether the ProductionFacility reported is within the scope of the E-PRTR Regulation.

address: Links to the *AddressDetails* data type where if a valid confidentiality reason is provided within the relevant attribute then the facility address will not be published by the EEA in public data products. Note that the address attribute is voidable so it will be possible to handle certain facilities, such as offshore aquaculture facilities, that may not have an address.

dateOfStartOfOperation: Date on which this entity began operating relative to the EPRTR Annex I Activity. Since this information may not always be known this field is voidable.

3.4 ProductionInstallation

installationName: This attribute is populated with the *FeatureName* data type. Submission of the installation name to the EU Registry is mandatory; however, if a valid confidentiality reason is provided in the FeatureName data type then the installation name will not be published by the EEA in public data products.

baselineReportIndicator: This attribute indicates, via the *BaselineReportValue* code list, if a baseline report for the installation has been prepared and submitted under Article 22 of the IED.

BATDerogation: This attribute references the *BATDerogationType* data type, which in turn contains a range of attributes relating to the reporting requirements if an Installation is subject to the IED and subject to a derogation under Article 15(4) of the IED. The attribute is subject to [0..*] multiplicity, due to the fact not all IED installations are subject to this specific derogation.

competentAuthorityPermits: Links to the *CompetentAuthority* data type. It is possible that a competent authority for permits has not been identified for the installation and it is also possible that there may be more than competent authority for permits so multiplicity of [0..*] is permitted.

competentAuthorityInspections: Links to the *CompetentAuthority* data type. It is possible that a competent authority for inspections has not been identified for the installation and it is also possible that there may be more than competent authority for inspections so multiplicity of [0..*] is permitted.

siteVisits: This attribute refers to the *SiteVisitsType* data type, which in turn contains a range of attributes relating to inspections and site visits detailed under Article 23 of the IED. The attribute is subject to [0..1] multiplicity, meaning it may be left unpopulated if the installation reported is not within the scope of the IED.

otherRelevantChapters: This attribute should be populated with at least one value from the *RelevantChaptersValue* code list to indicate which of Chapters III, IV, V, VI and IV of the IED also apply to the installation (or part thereof). The attribute is subject to [0..*] multiplicity, meaning it may be left unpopulated if the installation reported is not within the scope of the IED.

permit: Links to the *PermitDetails* data type which includes a Boolean attribute to indicate whether a permit has been granted for the Installation alongside update actions. The attribute is subject to [0..*] multiplicity, meaning it may be left unpopulated if the installation reported is not within the scope of the IED.

IEDAnnexIActivity: Links to the *IEDAnnexIActivityType* data type which allows reporting of the main activity and any other activities at the installation that are listed in Annex I of the IED. The attribute is subject to [0..1] multiplicity, meaning it may be left unpopulated if the installation reported is not within the scope of the IED.

eSPIRSIdentifier: This attribute can be used to provide the unique identifier used in the Seveso Plant Information Retrieval System (SPIRS) where the installation is fully or partly covered by the Seveso III Directive[8].

ETSIdentifier: This attribute can be used to provide the unique registry permit identifier from the EU Transaction Log where the installation is fully or partly covered by EU ETS Directive[9].

inspireId: See above.

thematicId: See above.

pointGeometry: This attribute has a multiplicity of [0..1] in the INSPIRE PF data specifications, but has been tightened [1..1] multiplicity to reflect the requirements of Commission Implementing Decision 2018/1135/EU, meaning it is required to be populated during reporting. Point coordinates will be required for each installation (although these values can be inherited from the parent facility if applicable).

Coordinates will use ETRS89 (2D)-EPSG:4258 coordinate reference system with a 10-meter accuracy (i.e. to five decimal places) for the approximate centre of the installation.

[8] Directive 2012/18/EU

[9] Directive 2003/87/EC

Remarks: See above.

Status: See above.

stricterPermitConditions: This attribute references the *StricterPermitConditionsType* data type, which in turn contains a range attributes required to be reported under Commission Implementing Decision 2018/1135/EU, for installations where the permit conditions have been reconsidered in accordance with Article 21(3), and the permit sets stricter emission limit values than the lower value of the BAT-AEL range. The attribute is subject to [0..*] multiplicity, meaning it may be left unpopulated if the installation reported is not within the scope of the IED or if emission monitoring is yet to have taken place.

publicEmissionMonitoring: This attribute is populated using a character string, which details how the results of emission monitoring have been made available to the public under Article 24(3)(b) of the IED. The attribute is subject to [0..1] multiplicity, meaning it may be left unpopulated if the installation reported is not within the scope of the IED or if emission monitoring is yet to have taken place.

publicEmissionMonitoringURL: This attribute is populated using a character string, which details the URL containing the results of emission monitoring made available to the public under Article 24(3)(b), if a website has been created for this purpose. The attribute is subject to [0..1] multiplicity, meaning it may be left unpopulated if the installation reported is not within the scope of the IED or if a website has yet to be developed.

BATConclusion: This attribute is populated using the *BATConclusionValue* code list and refers to the Commission Implementing Decisions on BAT conclusions that are applicable to any of the activities carried out at the installation. The attribute is subject to [0..*] multiplicity, meaning it may be left unpopulated if the installation reported is not within the scope of the IED.

InstallationType: This attribute is subject to [1..1] multiplicity, meaning this must be populated during reporting. The attribute references the *InstallationTypeValue* code list, which in turns contains options defining whether the ProductionInstallation reported is within the scope of the IED.

dateOfStartOfOperation: See above.

3.5 ProductionInstallationPart

installationPartName: This attribute is populated with the *FeatureName* data type. Submission of the installation part name to the EU Registry is mandatory; however, if a valid confidentiality reason is provided in the *FeatureName* data type then the installation part name will not be published by the EEA in public data products.

plantType: This attribute indicates whether the installation part is a large combustion plant, a waste co-incineration plant or an incineration plant. These are currently the three types of installation parts that can be reported using the *ProductionInstallationPart* feature type.

derogations: This attribute should be populated with a value from the *DerogationValue* code list to indicate the applicable articles in the IED that cover derogations applicable to combustion plants.

nominalCapacity: Links to the *CapacityWasteIncinerationType* data type. Since this information is only applicable to waste incineration units, a multiplicity of zero is permitted.

specificConditions: This attribute should be populated with a value from the *Article51* code list to indicate the applicable subparts of Article 51 of the IED that apply to the installation.

totalRatedThermalInput: Indicates the thermal heat input (in MWth) of an installation. Since this characteristic would only apply to LCP, a multiplicity of zero is permitted. The presence of data in this field differentiates LCP from WI units which are also reported in the *ProductionInstallationPart* feature type.

inspireId: See above.

thematicId: See above.

pointGeometry: This attribute has a multiplicity of [0..1] in the INSPIRE PF data specifications but has been tightened to [1..1] multiplicity to reflect the requirements of Commission Implementing Decision 2018/1135/EU, meaning it is required to be populated during reporting. Point coordinates will be required for each installation part (although these values can be inherited from the parent facility).

Coordinates will use ETRS89 (2D)-EPSG:4258 coordinate reference system with a 10-meter accuracy (i.e. to five decimal places) for the approximate centre of the installation part.

Status: See above.

remarks: See above.

HeatReleaseHazardousWaste: A Boolean attribute, which, when set to true, indicates that for the waste incinerator more than 40% of the heat release resulting from the incineration comes from hazardous waste in reference to Article 46(2) of the IED. The attribute is subject to [0..1] multiplicity, meaning it may be left unpopulated if the installation part reported is not a waste incinerator.

untreatedMunicipalWaste: A Boolean attribute, which, when set to true, indicates that for the waste incinerator, untreated mixed municipal waste is co-incinerated in reference to Article 46(2) of the IED. The attribute is subject to [0..1] multiplicity, meaning it may be left unpopulated if the installation part reported is not a waste incinerator.

publicDisclosure: An attribute populated using a character string to provide an indication of how the information referred to in Article 55(2) of the IED has been made available to the public.

publicDisclosureURL: An attribute populated using a character string to provide a URL of the information referred to in Article 55(2) of the IED made available to the public if a website has been developed for this purpose.

dateOfStartOfOperation: See above.

Data Types

A data type is a UML data model element that defines both characteristics of data and which operations can be performed on the data. It will typically contain more than one attribute. The attributes can refer to other data types or be populated with code list values or numeric or text data. Unless otherwise indicated, the data types listed below were created specifically for the EU Registry data model.

Identifier: This is a standard INSPIRE data type used for a wide range of themes. The data type consists of two main attributes the *localId* and *namespace*. MS will have the flexibility to use their existing national level identifiers provided they comply with the EU INSPIRE requirements for such IDs. Where new INSPIRE IDs need to be created it is recommended that the *namespace* field be populated with the two letter ISO country code and the acronym CAED (for Competent Authority for Environmental Data). It is recommended that the *localId* field be a maximum of nine digits and is unique to all other entities at each feature type level submitted by the MS. The *versionId* field is voidable and will not be required to be populated since multiple ID's for the same entity will not be permitted in the EU Registry. See Annex 4 for more details and examples.

Guidance for the EU Registry will be developed that will indicate how new ID's for new/split/merged entities should be handled.

ThematicIdentifier: This is an INSPIRE PF data type used to provide an alternative identifier to the InspireId. The data type consists of two attributes, both of which are character strings. The first attribute, *Identifier*, denotes the identifier itself, whereas the second attribute, *identifierScheme*, denotes the scheme or system to which the identifier has relevance. It is envisaged that reporting countries will populate this data type with an identifier describing the entity within their national system, and therefore the *identifierScheme* attribute would reference the national system.

Function: This is a standard INSPIRE data type used for all activity complexes. The activity field is populated from a list of currently valid NACE (Statistical Classification of Economic Activities in the European Community) codes. This list is a refinement of the INSPIRE *EconomicActivityValue* code list. The input, output and description fields are all voidable and so do not need to be populated in the EU Registry data model.

StatusType: This is an INSPIRE PF data type. The *ConditionOfFacilityValue* will be populated with values appropriate to functional, decommissioned, disused or not regulated production entities (i.e. facilities, installations and installation parts). The description, *validFrom* and *validTo* fields are all voidable and so do not need to be populated in the EU Registry data model. Only one status value for a reporting year will be required for each applicable data level in the EU Registry data model. Essentially, this will be the status on December 31 of each reporting year.

AddressDetails: Although other INSPIRE data types for handling address information are available, this data type was created for the EU Registry as it matches the fields that must be reported as required by existing legislation. When an address is expected (i.e., for all competent authorities and for the vast majority of facilities) then all fields in this data type with the exception of confidentialityReason must be populated. If confidentialityReason is populated with a valid code in the ReasonValue code list (which contains the specific exceptions provided in the EU Environment Information Public Access Directive[10]) then the address of a facility must still be submitted to the EEA but it will not be disclosed in public data products. The claim of confidentiality on environmental matters is limited by EU legislation and is expected to remain exceptional. Therefore, when designing the quality assurance mechanisms of the EU Registry, feedback will be given on the use of confidentiality with a threshold signalling potential overuse of it (e.g. a maximum percentage of feature types that can reasonably be confidential within a country report). Guidance will be provided to elaborate further on cases where confidentiality is reasonable. If a country over-uses this designation, the case will be sent to DG ENV for judgement and a dialogue with

[10] Directive 2003/4/EC

the country will be initiated to discuss compliance with the EU Environment Information Public Access Directive. However, EEA will not reject data on the grounds of misuse of confidentiality unless instructed otherwise by DG ENV.

CapacityWasteIncinerationType: This data type will only need to be populated for waste incineration units, in which case a value for *totalNominalCapacityAnyWasteType* in tonnes per day must be provided. Values for *permittedCapacityHazardous* and *permittedCapacityNonHazardous* should also be reported in tonnes per day.

CompetentAuthority: All fields in this data type will need to be populated with the exception of *faxNo* for which zero multiplicity is allowed. The field *individualName* can be used in a generic sense to provide detail on contact points such as departments, teams, functional mailboxes in addition to specific individuals.

EPRTRAnnexIActivityType: A value is required for the *mainActivity* whereas zero through multiple values are permitted for *otherActivity*.

FeatureName: This data type is used to provide the name of each feature type (i.e. ProductionSite, ProductionFacility, ProductionInstallation and ProductionInstallationPart). The name of each feature must always be reported to the EU Registry. However, if *confidentialityReason* is populated with a valid code in the *ReasonValue* code list (which contains the specific exceptions provided in the EU Environment Information Public Access Directive) then the name of the feature will not be disclosed in public data products.

IEDAnnexIActivityType: A value is required for the *mainActivity* whereas zero through multiple values are permitted for *otherActivity*.

ParentCompanyDetails: This data type is used to provide the name of the company that owns the facility. The name of the parent company must always be reported to the EU Registry for PRTR facilities, along with a URL for the company if this is available. However, if *confidentialityReason* is populated with a valid code in the ReasonValue code list (which contains the specific exceptions provided in the EU Environment Information Public Access Directive) then the name of the parent company or its URL will not be disclosed in public data products.

PermitDetails: All Boolean check fields in this data type will need to be populated to ensure that MS affirmatively confirm whether key permit actions (permit granting, reconsideration and updating) have occurred. The multiplicity of [0..1] for the other (non-boolean) date fields means that the dates of granting and updating actions only need to be provided if applicable. A URL at which the permit is made available to the public is also required if applicable. In accordance with Commission Implementing Decision 2018/1135/EU, from the reporting year 2018 this data type is also used to describe the enforcement action taken if no permit has been granted and the installation is carrying out an IED activity.

BATDerogation: This data type is used to provide a range of information if the installation reported is subject to a derogation under Article 15(4) of the IED. Under such circumstances a range of information must be provided:

- the URL making available to the public the specific reasons for the derogation (in accordance with Article 24(2)(f) of the IED);
- the BAT-AEL from which the derogation was granted;

- and, if applicable, the duration of the derogation is required to be reported.

The attributes contained within this data type reflect these requirements.

SiteVisitsType: This data type is used to detail the number of inspections by the competent authority that occurred in the reporting year, alongside any website information containing the outcomes and reporting from these inspections in accordance with Article 23(6) of the IED.

StricterPermitConditionsType: This data type contains the requirements set out in Commission Implementing Decision for installations where the permit conditions have been reconsidered in accordance with Article 21(3), and the permit sets stricter emission limit values than the lower value of the BAT-AEL range. Under such circumstances the applicable BAT-AEL and whether those stricter emission limit values were set pursuant to Article 14(4) or Article 18 of the IED or both of those Articles are to be reported. The attributes contained within this data type reflect these requirements.

SpecificConditionsType: This data types aims to fulfil the requirements set out for scenarios where waste incinerators are subject to a change of the operating conditions under Article 51 of the IED. Under such circumstances further information on the nature of the authorised change to the operating conditions, the URL for the permit setting out the operating conditions; and the URL of the last site visit report made publicly available pursuant to Article 23(6) are required to be reported. The attributes contained within this data type reflect these requirements.

Code Lists

Unless otherwise indicated, all code lists were created specifically for the EU Registry data model.

All code lists are stored and maintained at the so-called EEA Data Dictionary in a dedicated folder here.

EconomicActivityValue: This is an INSPIRE code list which is defined with an extension so that NACE codes from the *NACEValue* code list must be used.

NACEValue: This is a list of current NACE (Statistical Classification of Economic Activities in the European Community) codes which allows compliance with the legislation that requires this field to be reported.

Article51Value: This list allows details of authorisations given by reporting countries to change operating conditions under Article 51 of 2010/75/EU.

ConditionOfFacilityValue: This code list relates to the status of the entity, which can either be decommissioned, disused, functional or not regulated. Guidance and QA/QC checking will enforce a subset of valid values in this INSPIRE code list.

CountryCodeValue: This code list includes the countries that will be using the registry.

DerogationValue: This list covers a series of articles in the IED that cover derogations applicable to combustion plants.

EPRTRAnnexIActivityValue: This code list contains all valid categories and sub-categories in Annex I of the E-PRTR.

IEDAnnexIActivityValue: This code list contains all valid categories and sub-categories in Annex I of the IED.

PlantTypeValue: This list contains the three type of units that are required to be reported using the *ProductionInstallationPart* feature type.

ReasonValue: This list covers the different subsections of Article 4 Directive 2003/4/EC on public access to environmental information.

RelevantChaptersValue: This list contains possible chapters of the IED that might apply to the installation.

BATConclusionValue: A list containing current Commission Implementing Decisions on BAT conclusions.

BATAELValue: A list containing current BAT-Associated Emission Levels (BAT-AEL).

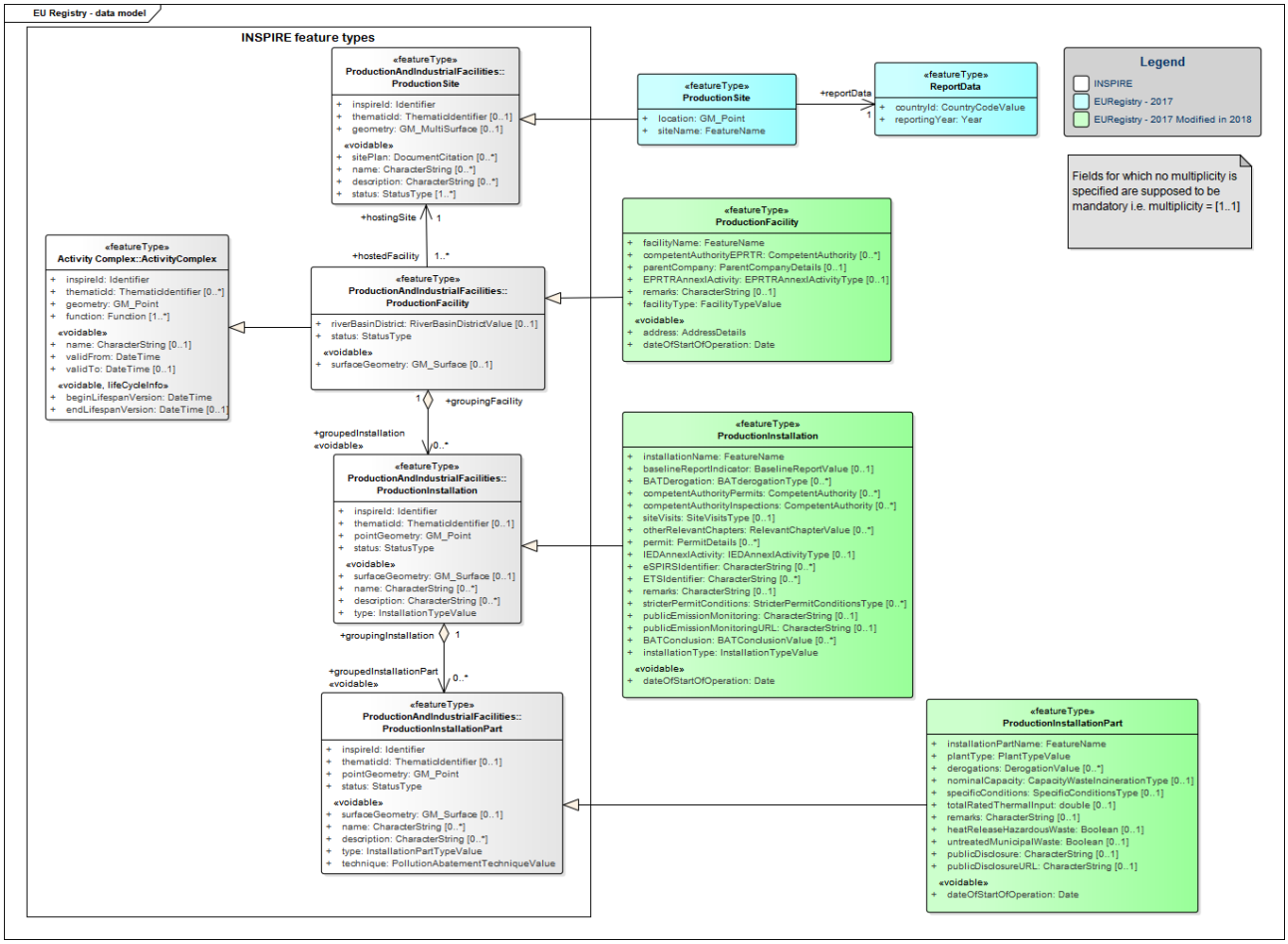
BaselineReportValue: This list contains a range of values indicating the preparation and submission of a baseline report, as referenced in Article 22(2) of the IED.

FacilityTypeValue: A list containing options to define whether the facility is subject to the E-PRTR Regulation or not.

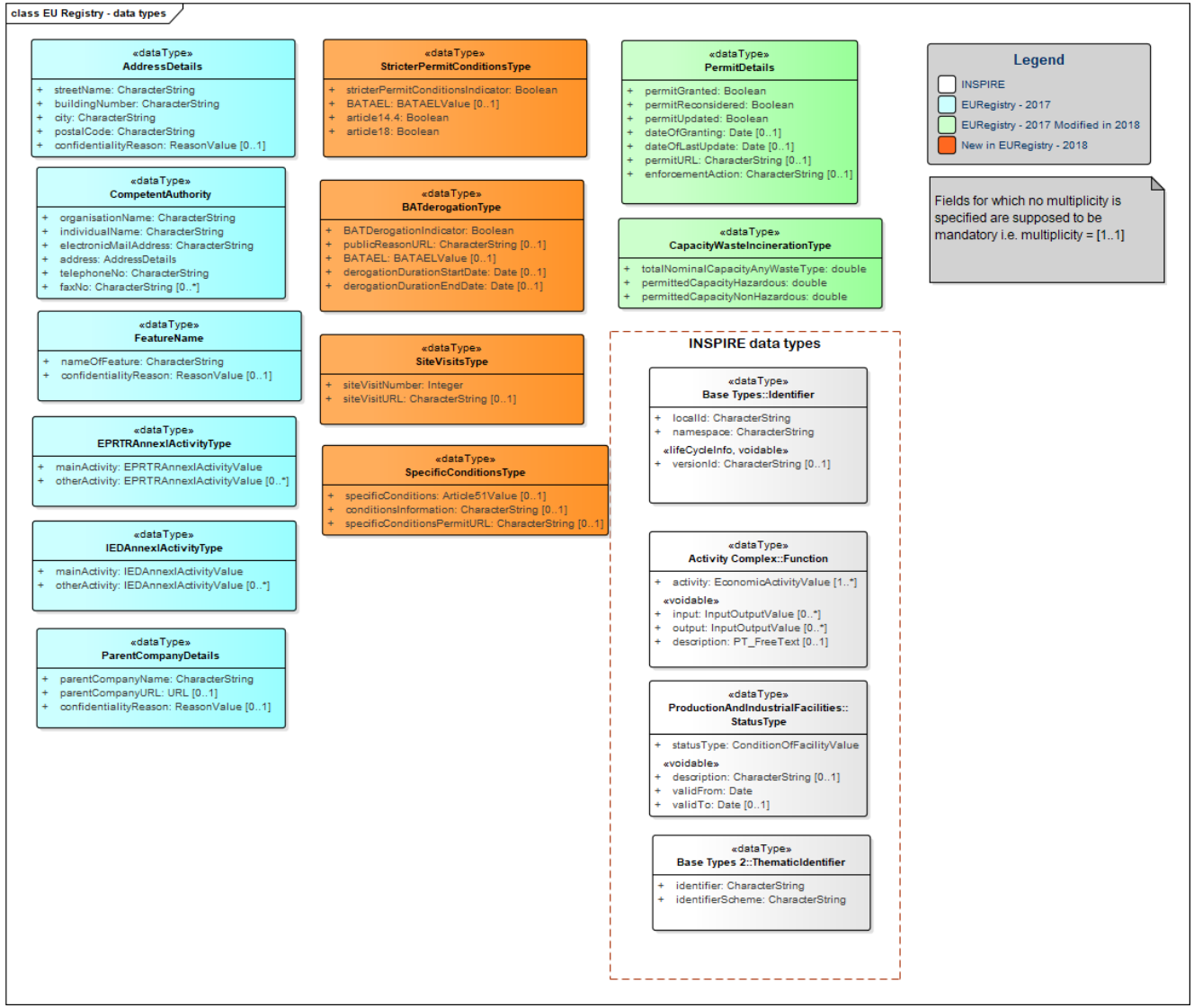
InstallationTypeValue: A list containing options to define whether the facility is subject to the IED or not.

Annex 1 - Complete INSPIRE PF EU Registry Extension

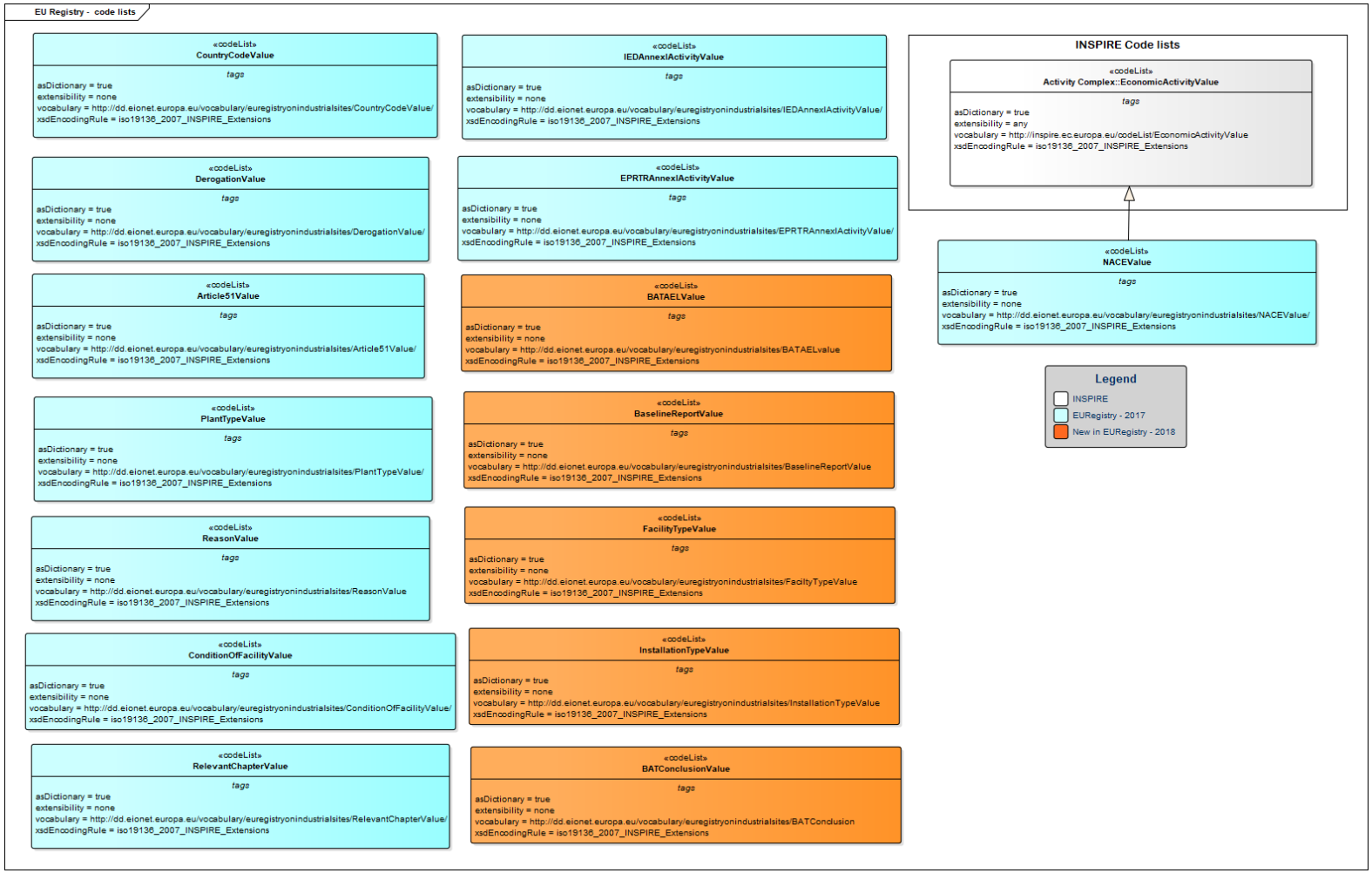
Feature types



Data types


class EU Registry - data types
«dataType»
AddressDetails
+ streetName: CharacterString
+ buildingNumber: CharacterString
+ city: CharacterString
+ postalCode: CharacterString
+ confidentialityReason: ReasonValue [0..1]
«dataType»
CompetentAuthority
+ organisationName: CharacterString
+ individualName: CharacterString
+ electronicMailAddress: CharacterString
+ address: AddressDetails
+ telephoneNo: CharacterString
+ faxNo: CharacterString [0..*]
«dataType»
FeatureName
+ nameOfFeature: CharacterString
+ confidentialityReason: ReasonValue [0..1]
«dataType»
EPRTRAnnexIActivityType
+ mainActivity: EPRTRAnnexIActivityValue
+ otherActivity: EPRTRAnnexIActivityValue [0..*]
«dataType»
IEDAnnexIActivityType
+ mainActivity: IEDAnnexIActivityValue
+ otherActivity: IEDAnnexIActivityValue [0..*]
«dataType»
ParentCompanyDetails
+ parentCompanyName: CharacterString
+ parentCompanyURL: URL [0..1]
+ confidentialityReason: ReasonValue [0..1]
«dataType»
StricterPermitConditionsType
+ stricterPermitConditionsIndicator: Boolean
+ BATAEL: BATAELValue [0..1]
+ article14.4: Boolean
+ article18: Boolean
«dataType»
BATderogationType
+ BATDerogationIndicator: Boolean
+ publicReasonURL: CharacterString [0..1]
+ BATAEL: BATAELValue [0..1]
+ derogationDurationStartDate: Date [0..1]
+ derogationDurationEndDate: Date [0..1]
«dataType»
SiteVisitsType
+ siteVisitNumber: Integer
+ siteVisitURL: CharacterString [0..1]
«dataType»
SpecificConditionsType
+ specificConditions: Article51Value [0..1]
+ conditionsInformation: CharacterString [0..1]
+ specificConditionsPermitURL: CharacterString [0..1]
«dataType»
PermitDetails
+ permitGranted: Boolean
+ permitReconsidered: Boolean
+ permitUpdated: Boolean
+ dateOfGranting: Date [0..1]
+ dateOfLastUpdate: Date [0..1]
+ permitURL: CharacterString [0..1]
+ enforcementAction: CharacterString [0..1]
«dataType»
CapacityWasteIncinerationType
+ totalNominalCapacityAnyWasteType: double
+ permittedCapacityHazardous: double
+ permittedCapacityNonHazardous: double
INSPIRE data types
«dataType»
Base Types::Identifier
+ localId: CharacterString
+ namespace: CharacterString
«lifeCycleInfo, voidable»
+ versionId: CharacterString [0..1]
«dataType»
Activity Complex::Function
+ activity: EconomicActivityValue [1..*]
«voidable»
+ input: InputOutputValue [0..*]
+ output: InputOutputValue [0..*]
+ description: PT_FreeText [0..1]
«dataType»
ProductionAndIndustrialFacilities::
StatusType
+ statusType: ConditionOfFacilityValue
«voidable»
+ description: CharacterString [0..1]
+ validFrom: Date
+ validTo: Date [0..1]
«dataType»
Base Types 2::ThematicIdentifier
+ identifier: CharacterString
+ identifierScheme: CharacterString
Legend
INSPIRE
EURegistry - 2017
EURegistry - 2017 Modified in 2018
New in EURegistry - 2018
Fields for which no multiplicity is specified are supposed to be mandatory i.e. multiplicity = [1..1]

Code lists


EU Registry - code lists
«codeList»
CountryCodeValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/CountryCodeValue/
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
IEDAnnexIActivityValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/IEDAnnexIActivityValue/
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
INSPIRE Code lists
«codeList»
Activity Complex::EconomicActivityValue
tags
asDictionary = true
extensibility = any
vocabulary = http://inspire.ec.europa.eu/codeList/EconomicActivityValue
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
DerogationValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/DerogationValue/
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
EPRTRAnnexIActivityValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/EPRTRAnnexIActivityValue/
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
NACEValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/NACEValue/
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
Article51Value
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/Article51Value/
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
BATAELValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/BATAELvalue
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
Legend
INSPIRE
EURegistry - 2017
New in EURegistry - 2018
«codeList»
PlantTypeValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/PlantTypeValue/
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
BaselineReportValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/BaselineReportValue
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
ReasonValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/ReasonValue
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
FacilityTypeValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/FacilityTypeValue
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
ConditionOfFacilityValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/ConditionOfFacilityValue/
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
InstallationTypeValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/InstallationTypeValue
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
RelevantChapterValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/RelevantChapterValue/
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions
«codeList»
BATConclusionValue
tags
asDictionary = true
extensibility = none
vocabulary = http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/BATConclusion
xsdEncodingRule = iso19136_2007_INSPIRE_Extensions

Annex 2 - Developing the EU Registry data model

Introduction

The following are the key steps in deriving the EU Registry data model based on the UML in the INSPIRE PF data specifications:

1. Initial starting point was the UML diagram overview (on Page 20 of D2.8.III.8_v3.0).
2. The voidable feature types *ProductionBuilding* and *ProductionPlot* were not used at all.
3. Attributes in the remaining feature types that will not be used were identified.
4. Extensions to each remaining feature type that contain additional information required by the reporting legislation were then defined.
5. Constraints to narrow the permissible range of options for some aspects of the INSPIRE PF specifications were then defined.

Feature Types Not Used

The INSPIRE PF specification feature types *ProductionBuilding* and *ProductionPlot* are voidable sub-entities of the *ProductionFacility* feature type. They permit the handling of more specific detail than the current reporting requirements cover and therefore will not be used in the EU Registry data model.

Attributes Not Used

This section outlines by feature type why certain attributes (for which the INSPIRE PF specifications either permit a multiplicity of zero or allow an attribute to be voidable) will not be used in the core EU Registry data model. The INSPIRE PF attributes that will be used are discussed in more detail in the main section of this document.

3.1 ProductionSite

geometry: Data for this attribute must be provided in the *GM_MultiSurface* format according to the INSPIRE PF specifications. While areal constraints (polygon data) may be available for industrial sites in some cases, MS are only mandated to provide point coordinates for regulated facilities according to current EU legislation. INSPIRE PF specifications permit a multiplicity of zero for this attribute and it therefore does not need to be populated. A separate attribute, *location*, is defined in the *ProductionSite* extension which has a required format of *GM_Point*.

sitePlan: This is a voidable attribute in the INSPIRE PF data specifications. Since collection of such information is not legally required of MS it will not be required to be submitted. As such this attribute does not appear as part of the 'streamlined view' of the EU Registry data model. This field therefore does not be populated in a complete XML submission.

name: This is a voidable attribute in the INSPIRE PF data specifications and so does not need to appear as part of the 'streamlined view' of the EU Registry data model. This field therefore does not need to be populated in a complete XML submission. The attribute siteName, which is defined in the *ProductionSite* extension, links to the featureName data type which must be used to report the site name.

description: This is a voidable attribute in the INSPIRE PF specifications. For simplicity this field will not be required (any additional information about particular facilities can be provided by the MS in the remarks field

which is defined in the extension to the *ProductionFacility* feature type). This field therefore does not need to be populated in a complete XML submission.

status: This is also a voidable attribute in the INSPIRE PF specifications. The operating status of the facilities at a production site will be tracked at the *ProductionFacility* level. As such this attribute does not appear as part of the 'streamlined view' of the data model. Again, this field therefore does not need to be populated in a complete XML submission.

3.2 ActivityComplex

name: This is a voidable attribute in the INSPIRE Activity Complex data specifications and so does not need to appear as part of the 'streamlined view' of the EU Registry data model. This field therefore does not need to be populated in a complete XML submission. The attribute facilityName, which is defined in the *ProductionFacility* extension, links to the featureName data type which must be used to report the facility name.

validFrom/validTo: These are voidable attributes in the INSPIRE Activity Complex Guidance[11]. A submission to the EU Registry will inherently indicate that a production facility existed for that reporting year. The history of a facility will be tracked across multiple years within the EEA database. Therefore, these fields do not need to be populated in a complete XML submission.

beginLifespanVersion/endLifespanVersion: These are voidable attributes in the INSPIRE Activity Complex Guidance. Only one instance of a production facility can exist in a submission to the EU Registry for a particular reporting year. Therefore, these fields do not need to be populated in a complete XML submission.

3.3 ProductionFacility

riverBasinDistrict: Annex III of the E-PRTR Regulation contains a heading 'River basin district' but it does not specify how that data should be reported. Given that Member States report spatial river basin district (RBD) data every six years, linking accurately reported latitude and longitude coordinates (i.e., to five decimal places) to the latest version of the spatial RBD data is sufficient to meet the reporting requirement for this information. Since this attribute has a multiplicity of [0..1] in the INSPIRE PF specifications it will not be required to be reported as part of an XML submission to the EU Registry.

surfaceGeometry: This is a voidable attribute in the INSPIRE PF data specifications. Since point coordinates must be provided for the geometry attribute in the INSPIRE Activity Complex feature type, this attribute does not appear as part of the 'streamlined view' of the data model. This field therefore does not need to be populated in a complete XML submission.

3.4 ProductionInstallation

surfaceGeometry: This is a voidable attribute in the INSPIRE PF data specifications. Since point coordinates must be provided for the *pointGeometry* attribute in the *ProductionInstallation* and *ProductionInstallationPart* feature types this attribute does not appear as part of the 'streamlined view' of the data model. This attribute therefore does not need to be populated in a complete XML submission.

[11] http://inspire.ec.europa.eu/documents/inspire-data-specifications-%E2%80%93-base-models-%E2%80%93-activity-complex

name: This is a voidable attribute in the INSPIRE PF data specifications and so does not need to appear as part of the 'streamlined view' of the EU Registry data model. This field therefore does not need to be populated in a complete XML submission. The attribute installationName, which is defined in the *ProductionInstallation* extension, links to the featureName data type which must be used to report the installation name.

description: This is a voidable attribute in the INSPIRE PF data specifications. For simplicity this field will not be required (any additional information about any aspect of a particular facility can be provided by the MS in the remarks field in the *ProductionFacility* feature type). This attribute therefore does not need to be populated in a complete XML submission.

type: This is a voidable attribute in the INSPIRE PF data specifications. Since detailed information about the activity of an installation is collected via the *IEDAnnexIActivity* and the InstallationType attributes, this attribute will not be required and it does not need to be populated in a complete XML submission.

3.5 ProductionInstallationPart

surfaceGeometry: See above.

name: This is a voidable attribute in the INSPIRE PF data specifications and so does not need to appear as part of the 'streamlined view' of the EU Registry data model. This field therefore does not need to be populated in a complete XML submission. The attribute installationPartName, which is defined in the *ProductionInstallationPart* extension, links to the featureName data type which must be used to report the installation part name.

description: See above.

type: This is a voidable attribute in the INSPIRE PF data specifications. It can be used to define a special kind of an installation part, denoting the operative function which has to be performed. Examples are a specific chimney or a specific pump. Such detailed information is currently beyond the scope of reporting requirements for the EU Registry. This attribute therefore does not need to be populated in a complete XML submission.

technique: This is a voidable attribute in the INSPIRE PF data specifications. It can be used to define a method to reduce pollutant concentration due to the emissions of a technical component. Such detailed information is currently beyond the scope of reporting requirements for the EU Registry. This attribute therefore does not need to be populated in a complete XML submission.

Extensions to the INSPIRE PF data model

ReportData (which acts as a container that must be provided for all facility records submitted by a MS) is a new feature type created for the EU Registry data model. In addition, four extensions to the core INSPIRE PF feature types are created which allow an addition of attributes to collect the administrative and regulatory information required for the EU Registry.

Annex 3 - Defining the EU Registry scope

In the following example, an industrial site is described making reference to the various elements it involves and how they are seen from the EU Registry perspective (i.e. the geographical perspective). Subsequently, the elements which are in fact to be reported according the scope as defined by the thematic EU law on industrial emissions are described. The example aims at describing a complex setting to provide guidance for a multitude of reporting situations and is unlikely to represent a reporting commonly-occurring case.

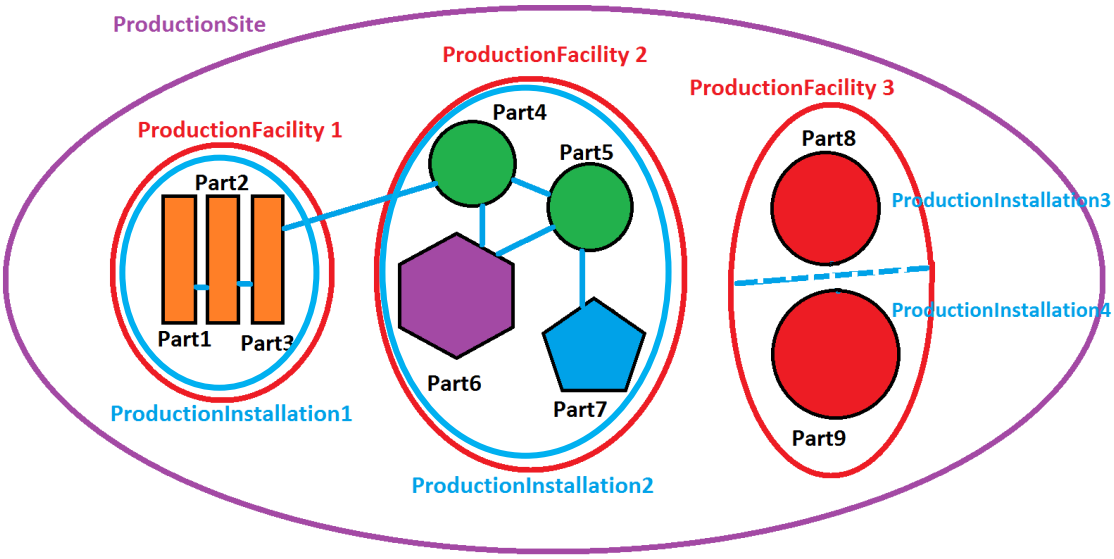


Figure A3.1. Pharmaceutical site and its parts.

Geographical/factual perspective

ProductionSite is a pharmaceutical complex, its geographical extent is delimited by the violet line in Figure A3.1.

All entities within the site are performing activities which contribute to the production of pharmaceutical products. This represents the main activity of the pharmaceutical complex.

- *ProductionFacility 1* performs a combustion process to generate heat and electricity. The heat is provided to the reactors of *ProductionFacility 2*. The whole of *ProductionFacility 1* is owned by ENERGY LTD.
    - *ProductionFacility 1* has a single *ProductionInstallation 1* as all its parts have a technical connection.
        - There are three *ProductionInstallationParts* (*1*, *2* and *3*) since each of them are independent boilers, above 50MW, with independent stacks.
- *ProductionFacility 2* is a purely pharmaceutical facility owned by PHARMA LTD.

- This facility has different sub-entities which are all technically connected and are essential to the functioning of the whole facility. Therefore, they all constitute a single *ProductionInstallation 2* which has four parts.
  - *ProductionInstallationPart 4* and *ProductionInstallationPart 5* are the reactors producing the pharmaceutical product.
  - *ProductionInstallationPart 6* is a waste water treatment plant which is functionally connected to the reactors
  - *ProductionInstallationPart 7* is a storage of raw materials

- *ProductionFacility 3*, owned by SUPPLY LTD, performs a chemical activity producing biochemical and organic solvents. These are used in *ProductionFacility 2* but also by other companies outside the site. This facility has two independent installations which do not have a technical connection and which use entirely different chemical processes:
  - *ProductionInstallation 3*: is a biochemical reactor which produces a biochemical solvent
    - There is a single *ProductionInstallationPart 8* belonging to this installation
  - *ProductionInstallation 4*: is a chemical reactor which refines an organic solvent
    - There is a single *ProductionInstallationPart 9* belonging to this installation

Scope for reporting

This section describes the entities that are subject to reporting under the EU Registry on Industrial Sites according to the IED and the E-PRTR Regulation. It illustrates that the EU Registry captures only the subset of reality that is defined by the EU law on industrial emissions (see also Figure A3.2).

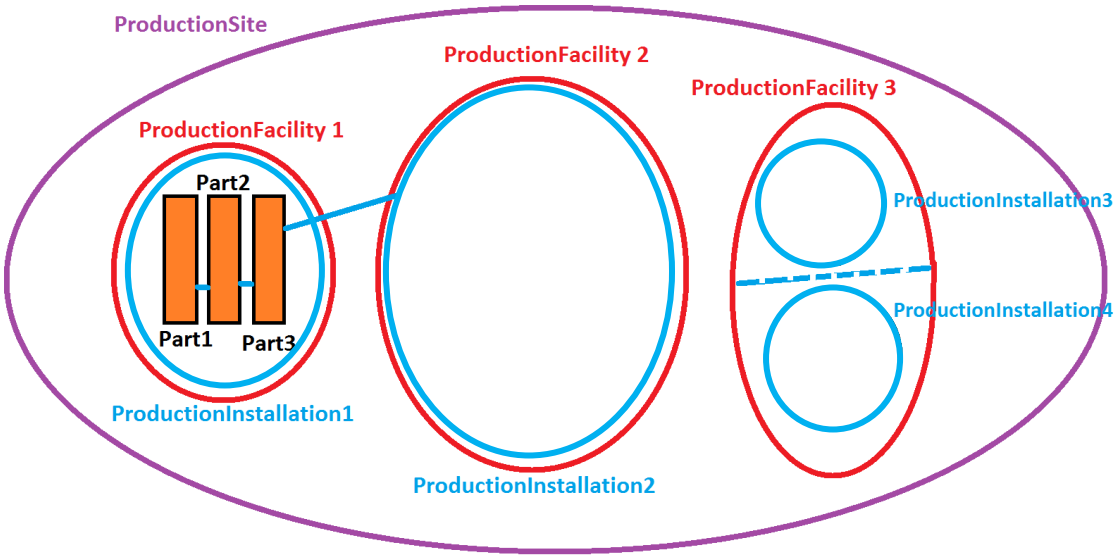


Figure A3.2. Elements of the pharmaceutical site which are subject to reporting to the EU Registry

This is defined by the data model which follows the INSPIRE PF data specifications. However, the scope of entities to be reported to the EU Registry is defined by the various pieces of legislation that provide the reporting obligations behind the EU Registry.

In our example, the only entities to be reported to the Registry would be:

- The entire *ProductionSite* (i.e. including ENERGY LTD, PHARMA LTD and SUPPLY LTD, three companies performing activities with a common purpose and related in nature)

- The three *ProductionFacilities* (i.e. ENERGY LTD, PHARMA LTD and SUPPLY LTD, as they are legally independent bodies with separate ownership)

- The four *ProductionInstallations* 1, 2, 3 and 4. While *ProductionInstallation 1 and 2* are coincidental with their mother *ProductionFacilities*, the other two (*ProductionInstallation 3 and 4*) belong both of them to the same mother *ProductionFacility 3*

- *ProductionInstallationPart 1*, *ProductionInstallationPart 2* and *ProductionInstallationPart 3* (i.e. the three parts of the installation operated by ENERGY LTD)

Interpretation of ProductionSite

The *ProductionSite* has to be reported as this is an inherent requirement of the EU Registry for all reported entities. A more detailed definition of ProductionSite will be included in future guidance of this dataflow, but the underlying idea is that 'sites' are entities that embrace industrial entities which are in the same location and share a common purpose or nature. In this example, the production of 'pharmaceuticals'.

Interpretation of ProductionFacility

The three *ProductionFacilities* (marked in red in Figure A3.2) - namely ENERGY LTD, PHARMA LTD and SUPPLY LTD - are in the scope of the Annex 1 to the E-PRTR Regulation.

The EU Registry only requires an industrial facility to be listed in Annex 1 to the E-PRTR Regulation for the facility to be within the scope of the dataflow. The EU Registry does not take into account whether the releases and/or off-site transfers of such an industrial facility are above the thresholds of Article 5 and Annex 2 to the E-PRTR Regulation. This is only relevant for the thematic reporting to the E-PRTR.

In the example, this means that all three *ProductionFacilities* have to be reported without any consideration on their releases/off-site transfers.

Interpretation of ProductionInstallation

The four *ProductionInstallations* (marked in blue) are within the scope of the EU Registry, as they all fall under Annex 1 to the IED.

ProductionInstallation 1 and *ProductionInstallation 2,* although having a technical connection, are owned by two different legal entities (ENERGY LTD and PHARMA LTD). The EU Registry implements the rule that different ownership implies separate feature types for all levels including *ProductionFacility*. This is referred to as '**ownership criterion**'. Future guidance for this dataflow will elaborate further on this criterion.

Despite both belonging to SUPPLY LTD, *ProductionInstallation 3* and *ProductionInstallation 4* are however to be reported on separately because they do not have a technical connection. This follows the provisions on technical connection of Article 2(3) of the E-PRTR Regulation and Article 3(3) of the IED.

Interpretation of ProductionInstallationPart

ProductionInstallationPart 1, *ProductionInstallationPart 2* and *ProductionInstallationPart 3* (all operated by ENERGY LTD) have to be reported. This is the case because they are all combustion plants as defined by Chapter III of the IED and therefore need to be reported according to Article 72 of the same directive. (Note that the rest of the *ProductionInstallationParts* (*4*, *5*, *6*, *7*, *8* and *9*) would not be under the specific scope of the EU Registry since they do not need to be reported separately according to any piece of EU law on industrial pollution.

Main messages

The governing principles of this data model are the hierarchical logic of the INSPIRE PF data specification and the definition of facility therein as well as in 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 (again: 'ownership criterion').

Unfortunately, the IED does not provide a definition of facility or address the concept of ownership in particular. In the example above, *ProductionInstallation 1* and *ProductionInstallation* 2 could constitute a complete single installation under the IED since they have a technical connection. However, in this data model these *ProductionInstallations* need to be reported separately under different *ProductionFacilities* because of their separate ownership, as explained above.

The focus on ownership is in line with the permitting approach that is followed by many MS. Provided that changes in ownership of facilities are effectively tracked this also creates an understanding and clear identification of the entities that need to be reported to the Registry.

Annex 4 – INSPIRE identifier rules

Governance of identifiers

Each unique INSPIRE identifier must satisfy four requirements:

1. **Uniqueness:** The identifier must be unique within all the spatial objects published. It should be noted that different versions of the same spatial object will still have the same identifier, this necessitates that identifiers are not reused.
2. **Persistence:** The identifier must remain unchanged during the lifetime of a spatial object.
3. **Traceability:** The identifier must supply sufficient information about the source of the spatial object so that the download service can be determined.
4. **Feasibility:** The system must be designed to allow that identifiers under existing national identifier systems can be mapped.

Countries can use their own system of existing national identifiers directly within the EU Registry, provided that these identifiers meet the above requirements, i.e., they are INSPIRE compliant. Where a country has not already developed a system of INSPIRE identifiers then use of the following approach for the EU Registry will satisfy the above requirements. In that case existing national identifiers may need to be mapped to new identifiers for use in the EU Registry.

Recommended approach for composing new identifiers

The identifiers of each feature type in the model consist of two parts.

- The first part, called 'namespace', identifies the data source. This namespace is, for the sake of the EU Registry the ISO2 code of the relevant country according to the EU Registry code list (http://dd.eionet.europa.eu/vocabulary/euregistryonindustrialsites/CountryCodeValue) + a dot (.) + the acronym CAED (Competent Authority for Environment Data).
    - Example namespace for Italy: IT.CAED

- The second part, called 'local identifier (localID)', is assigned by the data provider. The local identifier is unique with the 'namespace' i.e. no other spatial object produced by that data provider can have the same identifier. Although it is to be assigned by the data provider it should follow the following rules:
    - First a 9-digit chain of numbers
    - Then a dot (.)
    - Then a sub-index which refers to the relevant feature type:
        - ProductionSite = SITE
        - ProductionFacility = FACILITY
        - ProductionInstallation = INSTALLATION
        - ProductionInstallationPart = PART
    - Example: 123456789.Facility

- The resulting identifier in this example would be, in the XML file, as follows:

```
<pf:inspireId>
        <base:Identifier>
                <base:localId>123456789.Facility </base:localId>
                <base:namespace>IT.CAED </base:namespace>
        </base:Identifier>
</pf:inspireId>
```

- For a simple situation with one installation part it is possible to have the same numeric part of the localId for the identifier for each feature type. For example:
  100010001.SITE
  100010001.FACILITY
  100010001.INSTALLATION
  100010001.PART

- If this example site contained a further facility which had two installations then the identifiers might appear as:
  100010001.SITE
  100010001.FACILITY
  100010001.INSTALLATION
  100010001.PART
  100020001.FACILITY
  100020001.INSTALLATION
  100020001.PART
  100020002.INSTALLATION
  100020002.PART

  The key issue is that the localId's must be unique to each feature type within a country's submission.

- A 9-digit chain of numbers is recommended for the first part of the localId. However, countries who do not already have a fully-developed system of national INSPIRE identifiers might prefer to use some other character string that may be longer or include other characters such as dots or letters. Combined with the other aspects of the recommended INSPIRE identifiers described above (i.e. the namespace and the sub-index part of the localId) then a country's existing national identifiers could potentially be efficiently mapped for use in the EU Registry.

Annex 5 – Glossary of Terms

This section contains explanations of the key terms used in this document.

Activity Complex – A single unit under the management control of a legal entity (operator), covering activities listed in the Eurostat NACE classification. The Activity Complex represents the whole area managed by the same operator including infrastructure, equipment and materials.

BAT – Best Available Techniques

BAT-AEL – Best Available Techniques Associated Emission Level

Boolean attribute – These attributes are evaluated as either true or false.

Constraints – These define properties that certain data elements must comply with, for example, not null or must be unique.

Conversion service – A process that facilitates the conversion of data from one format to another.

Data types – A data model element that defines both characteristics of data and which operations can be performed on the data.

Enumeration – An enumeration is a complete, ordered list of all items in a collection. Enumerated data has a finite set of values.

Extensions – INSPIRE provides a large number of data models that cover core use cases. However, extensions offer a means to expand these data models to serve specific organisational needs.

Feature catalogue - Contains definitions and descriptions of the object types, their attributes and associated components occurring in a data model.

Feature type – Represents a class of data together with relevant attributes.

Geospatial information – Data about a physical object that can be represented by numeric values in a geographic coordinate system.

INSPIRE – Infrastructure for Spatial Information in the European Community. The INSPIRE Directive (2007/2/EC) aims to establish an infrastructure for the sharing of environmental spatial data within the European Union. This will enable sharing among public sector organisations, facilitate public access to spatial data across Europe, and will aid in cross-boundary policy making.

Multiplicity – A definition of cardinality - i.e. the permitted number of elements - of some collection of elements.

Parent/daughter data structure – Also known as a tree structure, it consists of a root value with subtrees of children with a parent node, represented by a set of linked nodes.

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.

Production Facility – One or more installations on the same site that are operated by the same natural or legal person. A Production Facility is a special kind of Activity Complex.

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.

Production Installation Part – Represents a specific technical part of the installation, developing a representative functionality that should be registered under the legislation.

Schema – This describes the structure and content of XML data. It defines the elements, attributes and data types of the XML data.

Semantic data – Semantic data includes information that adds basic meaning to the data and the relationships between them. The data is organised in such a way that it can be interpreted in a meaningful manner without human intervention.

UML – Unified Modelling Language, a modelling language intended to provide a standard way to visualise the design of a system.

Voidable – In data modelling, voidable means that whenever information does not exist then it does not have to be provided.

XML – EXtensible Markup Language is a markup language that defines a set of rules for encoding documents. This format is readable by both humans and machines.