

Required Steps

1. Analyse reporting concepts from legal requirements
2. Identify relevant INSPIRE Themes
3. Identify relevant INSPIRE Feature Types
4. Map reporting concepts to INSPIRE Feature Types
 - a) Direct mapping to attributes
 - b) Direct mapping to associations
 - c) Additional attributes necessary → derive class from INSPIRE
 - d) If required, define additional classes
 - e) INSPIRE requires additional attributes → add to reporting guidelines
5. Provide Mapping from reporting concepts to (extended) INSPIRE classes

Background - Air Quality Directive

11.6.2008

EN

Official Journal of the European Union

L 152/1

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(Acts adopted under the EC Treaty/Euratom Treaty whose publication is obligatory)

DIRECTIVES

DIRECTIVE 2008/50/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 21 May 2008

on ambient air quality and cleaner air for Europe

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 175 thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and Social Committee ⁽¹⁾,

Having regard to the opinion of the Committee of the Regions ⁽²⁾,

(2) In order to protect human health and the environment as a whole, it is particularly important to combat emissions of pollutants at source and to identify and implement the most effective emission reduction measures at local, national and Community level. Therefore, emissions of harmful air pollutants should be avoided, prevented or reduced and appropriate objectives set for ambient air quality taking into account relevant World Health Organisation standards, guidelines and programmes.

(3) Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management ⁽³⁾, Council Directive 1999/30/EC of 22 April 1999 relating to limit

Background - Air Quality IPR

<p>11.6.2008 EN Official Journal of the European Union</p>	<p>L 335/86 EN Official Journal of the European Union 17.12.2011</p> <p style="text-align: center;">COMMISSION IMPLEMENTING DECISION of 12 December 2011 laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality (notified under document C(2011) 9068) (2011/850/EU)</p> <p>THE EUROPEAN COMMISSION,</p> <p>Having regard to the Treaty on the Functioning of the European Union,</p> <p>Having regard to Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air⁽¹⁾, and in particular Article 5(4) thereof,</p> <p>Having regard to Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe⁽²⁾, and in particular Article 28(2) thereof,</p> <p>Whereas:</p> <p>(1) Directive 2004/107/EC lays down target values to be met by a certain date, determines common methods and criteria for the assessment of the listed pollutants, lays down the information that needs to be transmitted to the</p> <p>(4) Directive 2008/50/EC provides that Decision 97/101/EC is to be repealed with effect from the end of the second calendar year following the entry into force of the implementing measures on transmission of information and reporting. Accordingly, the provisions of Decision 97/101/EC should be reflected in this Decision.</p> <p>(5) The scope of this Decision covers the annual reporting on ambient air quality assessment and the submission of information on plans and programmes in relation to limit values for certain pollutants in ambient air currently covered by Commission Decision 2004/224/EC of 20 February 2004 laying down arrangements for the submission of information on plans or programmes required under Council Directive 96/62/EC in relation to limit values for certain pollutants in ambient air⁽³⁾ and Commission Decision 2004/461/EC of 29 April 2004 laying down a questionnaire to be used for annual reporting on ambient air quality assessment under Council Directives 96/62/EC and 1999/30/EC and under Directives 2000/69/EC and 2002/3/EC of the European Parliament and of the Council⁽⁴⁾. Accordingly, in the interest of clarity and consistency of Union legislation, those Decisions should be repealed.</p>
<p style="text-align: center;">I</p> <p style="text-align: center;"><i>(Acts adopted under the EC Treaty/Euratom Treaty whose publication would be without effect without their publication in this Official Journal)</i></p> <p style="text-align: center;">DIRECTIVES</p> <p style="text-align: center;">DIRECTIVE 2008/50/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 May 2008 on ambient air quality and cleaner air for Europe</p> <p>THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,</p> <p>Having regard to the Treaty establishing the European Community, and in particular Article 175 thereof,</p> <p>Having regard to the proposal from the Commission,</p> <p>Having regard to the opinion of the European Economic and Social Committee⁽¹⁾,</p> <p>Having regard to the opinion of the Committee of the Regions⁽²⁾,</p> <p>(2) In order to protect human health and the environment, it is necessary to lay down common rules for the assessment and management of ambient air quality. Such rules should be based on the most effective and feasible measures available at national and regional level, taking into account the harmful effects of air pollution on human health and the environment, and the need to reduce air quality taking into account the</p>	<p>(3) Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management⁽³⁾, Council Directive 1999/30/EC of 22 April 1999 relating to limit</p>

Background - Air Quality Guidelines

L 335/86

EN

Official Journal of the European Union

17.12.2011

11.6.2008

EN

Official Journal of the European Union

COMMISSION IMPLEMENTING DECISION

of 12 December 2011

laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality

(Acts adopted under the EC Treaty)

DIRECTIVE 2008/50/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 16 JUNE 2008 ON AMBIENT AIR QUALITY

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 175 thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and Social Committee (1),

Having regard to the opinion of the Committee of the Regions,

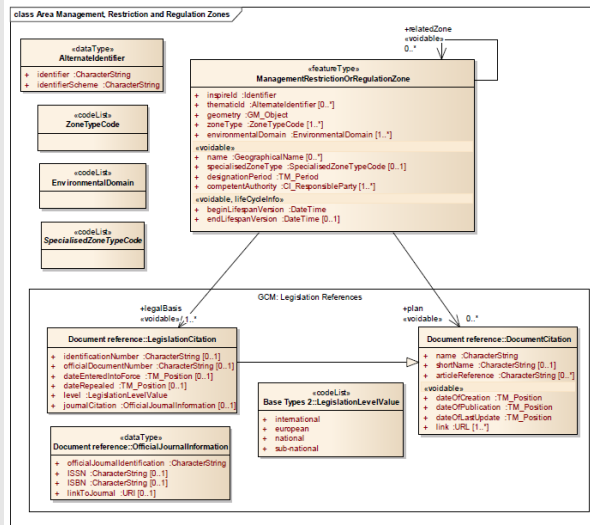
IPR Nr.	Reference	Element	Specification	Description	Requirement	Cardinality
	D.5	<i>The dataset describing Fixed and Indicative Measurements comprises meta-information on three hierarchical levels:</i>			M	1..*
		• Measurement Configuration				
		• Station				
		• Network				
	D.5.1	<i>Information concerning measurement configuration by pollutant (sampling point), to be provided for each measurement configuration for which data is to be reported.</i>			M	1..*
		<i>According to Art. 2 (3), a 'Measurement Configuration' means the technical facilities used for the measurement of one pollutant or one of its compounds at a specific station. For a pollutant, more than one Measurement Configuration at a single station can be in operation.</i>				
1	D.5.1.1	Measurement configuration ID	Identifier	Unique identifier for this measurement configuration. In case of existing measurement configuration the localID should be the Existing code. In case of new measurement configuration the localID is to be defined by data provider, comprising station code, pollutant AirBase code and a number.	M	1
2	D.5.1.2	European station ID	Link	Selection only from existing codes that identify stations for which metadata is provided. <i>Link to D.5.2</i>	M	1
3	D.5.1.3	Network ID	Link	Network which manages the sampling point. <i>Link to D.5.3</i>	M	1
	D.5.1.4	Measurement time references			M	1
7	D.5.1.4.1	Measurement start date	Timestamp	Start of the measurement configuration (measurement of a pollutant at a monitoring station)	M	1
7	D.5.1.4.2	Measurement end date	Timestamp	End of the measurement configuration (measurement of a pollutant at a monitoring station)	C M if the measurement configuration is closed	0..1
	D.5.1.5	<i>Emissions with predominant influence. For each measurement configuration, the type of source is to be given which is responsible for the largest (relative) contribution to the observed concentration. Describes emissions influencing the monitoring station for the specific pollutant. This information is relevant for the interpretation of the measured data and the assessment of the representativeness of the site.</i>			M	1
22	D.5.1.5.1	Classification of station in relation to major emission sources relevant for the measurement configuration	Menu	See codelist Station Classification "Classification of station" represents the "Type of station in relation to dominant emission sources" defined in the Exchange of Information (97/101/EC): • traffic • industrial • background Further guidance is provided in chapter 19.	M	1
23	D.5.1.5.2	Main emission sources	Menu	See codelist Main emission sources The main emission source(s) (D.5.1.5.2) can be selected from the Codelist Main Emission Sources . In addition to the CRF emission categories, two "source" types have been introduced which represent contributions not originating from identifiable sources: "Secondary" and "Long-range	C M if available	0..1

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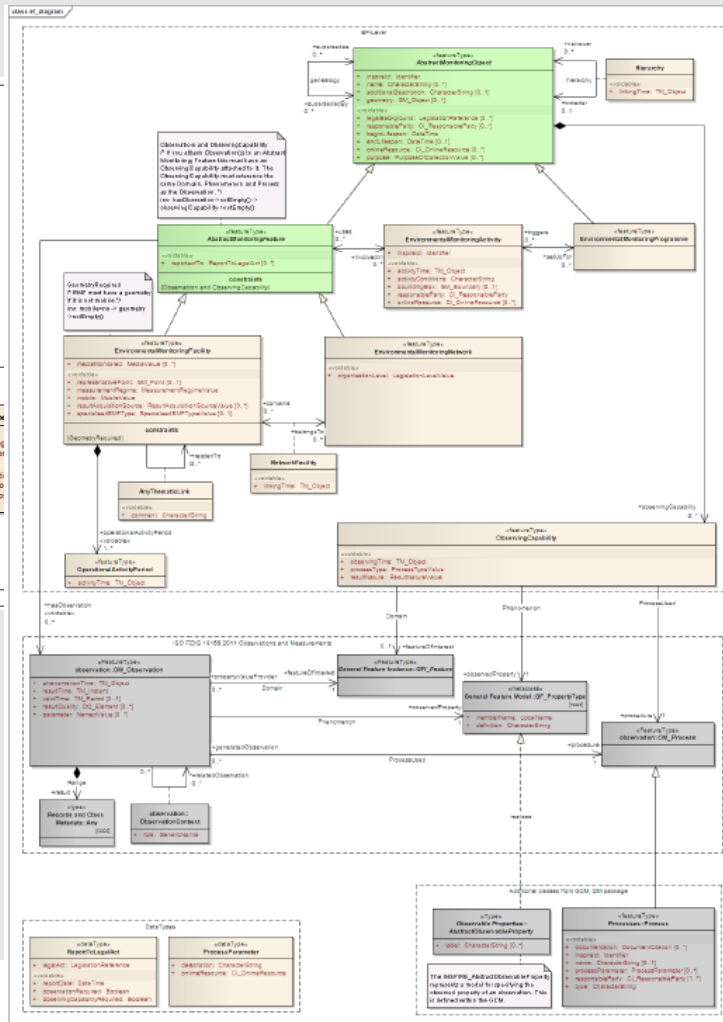
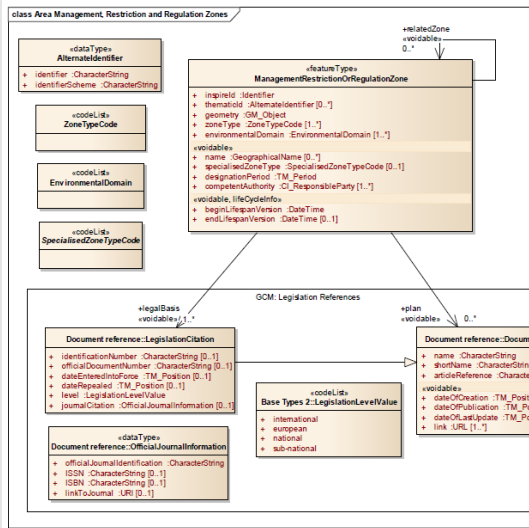
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Background – INSPIRE – AM



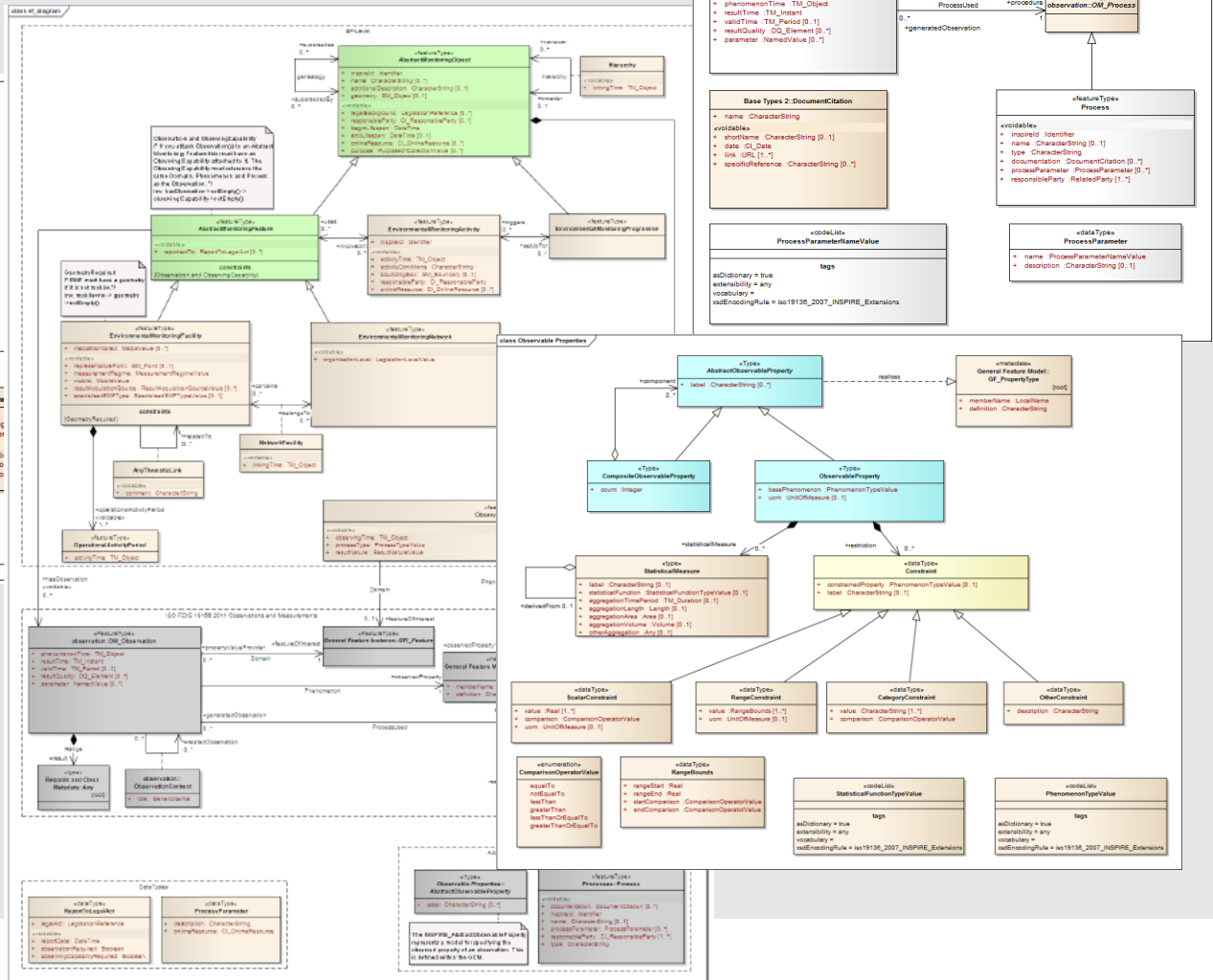
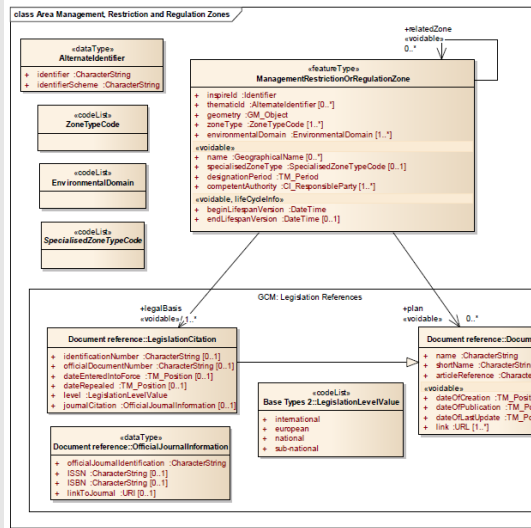
AM: Annex III - 11. Area management/ restriction/regulation zones and reporting units

Background – INSPIRE – EF



EF: Annex III - 7. Environmental monitoring facilities

Background – INSPIRE – OM



OM: GCM D2.9 Guidelines for the use of Observations & Measurements and Sensor Web

Challenge: INSPIRE based Reporting

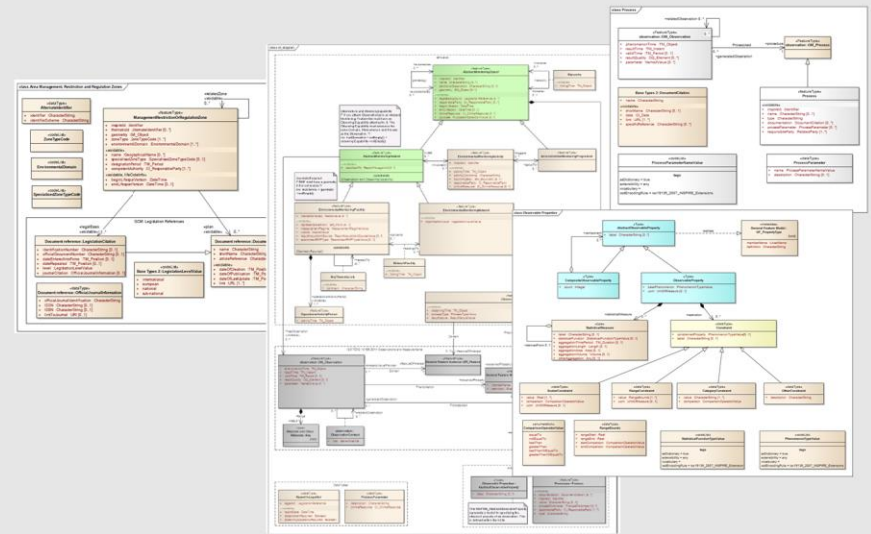
11.6.2008 [EN] Official Journal of the European Union

L 315/86 [EN] Official Journal of the European Union 17.12.2011

COMMISSION IMPLEMENTING DECISION of 12 December 2011 laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality

DFP No.	Reference	Element	Specification	Description	Requirement	Certainty
	D.1	The dataset describing Fixed and Indicative Measurements comprise meta-information on three hierarchical levels: <ul style="list-style-type: none"> • Measurement Configurations • Station • Network 			M	1, 4
	D.1.1	Information concerning measurement configurations to be provided for each measurement configuration for each data set to be reported			M	1, 4
	D.1.1.1	Measurement Configuration ID	Measurement Configuration ID	Unique identifier for the measurement configuration. In non-existing measurement configurations the ID should be the Existing code.	M	1
	D.1.1.2	European station ID	Code	Station only those existing codes that identify stations for which metadata is provided. (Article 17)	M	1
	D.1.1.3	Network ID	Code	Network which manages the sampling point. (Article 17)	M	1
	D.1.1.4	Measurement data reference	Code	Code of the measurement configuration (measurement of a pollutant at a monitoring station).	M	1
	D.1.1.5	Measurement start date	Timestamp	Date of the measurement configuration (measurement of a pollutant at a monitoring station).	M	1
	D.1.1.6	Measurement end date	Timestamp	Date of the measurement configuration (measurement of a pollutant at a monitoring station).	M	1
	D.1.2	Assessment of air pollution influence	Code	For each measurement configuration, the type of source is to be given which is responsible for the largest loading contribution to the observed concentration. Describe the emission influencing the monitoring station for the specific pollutant. This information is relevant for the interpretation of the measured data and the assessment of the representativeness of the data.	M	1
	D.1.3.1	Classification of traffic types	Code	Classification of traffic types in relation to major emission source defined in the Exchange of Information (EOI) file. <ul style="list-style-type: none"> - traffic - industrial - background Further information is provided in chapter 19.	M	1
	D.1.3.2	Main emission source	Code	See codified main emission source. The main emission source(s) (D.1.3.1, 2) can be derived from the Codified Main Emission Source. In addition to the CPE emission categories, two "source" types have been introduced which represent contributions not originating from identifiable sources: "Secondary" and "Long-range".	M	0, 1

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= Reporting Schema

Scope AQD e-Reporting

(B) Dataset "Zones and Agglomerations"

(C) Dataset "Assessment Regime"

(D) Dataset "Information about Assessment Methods"

D.a: Dataset "General"

D.b: Dataset "Fixed measurement Information"

D.c: Dataset "Indicative Measurement Information"

D.d: Dataset "Modelling Information"

D.e: Dataset "Objective Estimation Information"

(E) Dataset "Primary data"

(F) Generated Dataset "Aggregated Data"

(G) Dataset "Attainment of Environmental Objectives"

Scope AQD e-Reporting

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(C) Dataset "Assessment Regime"

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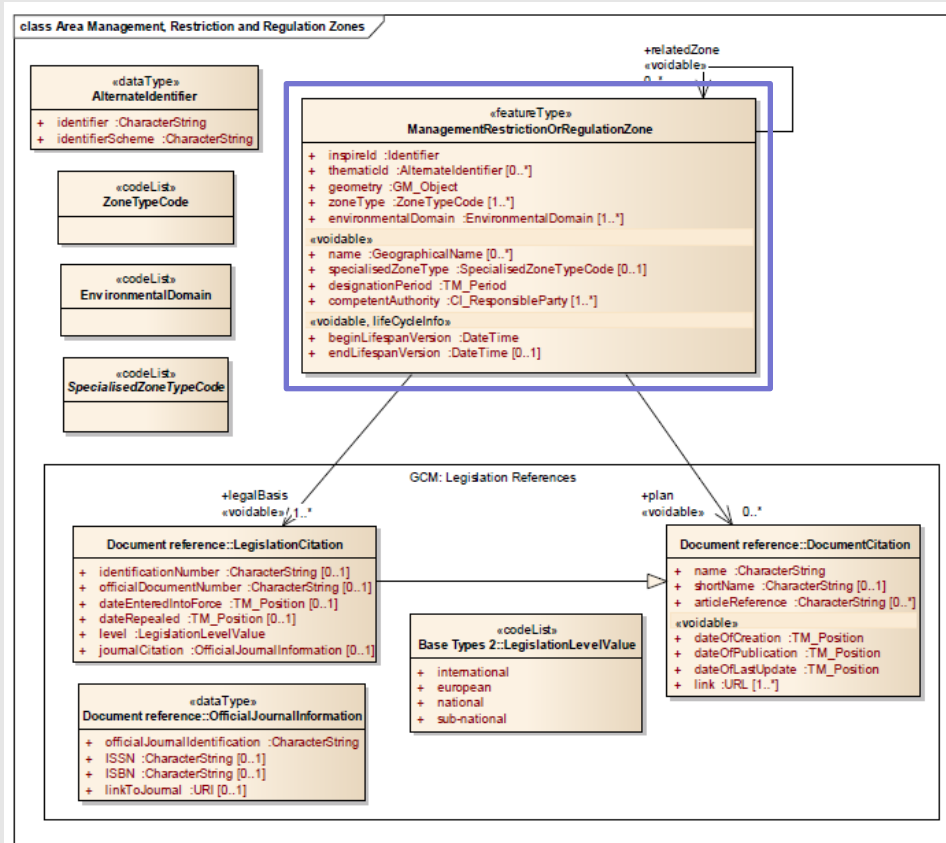
(E) Dataset "Primary data"

(F) Generated Dataset "Aggregated Data"

(G) Dataset "Attainment of Environmental Objectives"

Scope AQD e-Reporting

(B) Dataset "Zones and Agglomerations"



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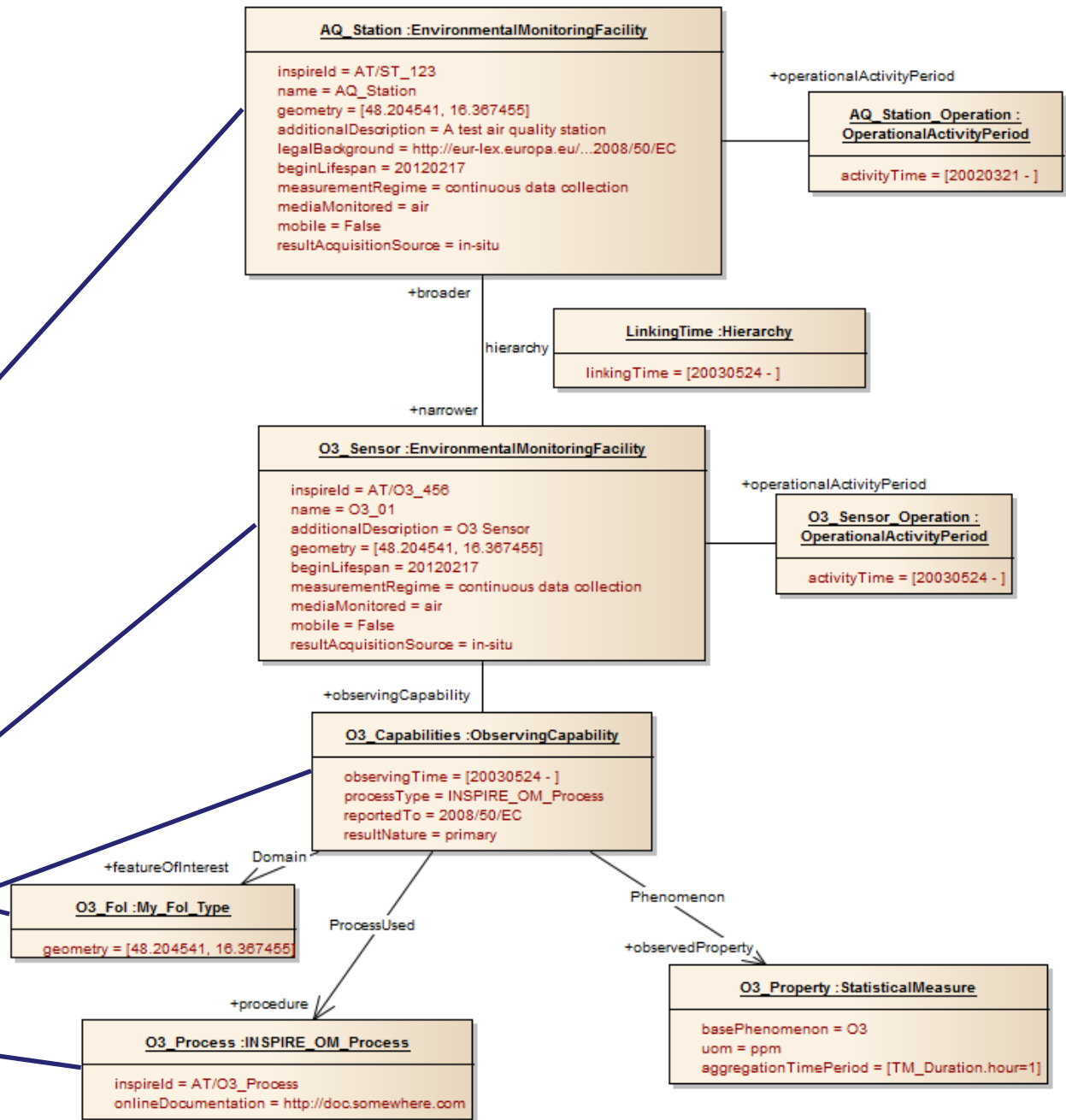
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INSPIRE Themes:

- AM



Air Quality Station



Scope AQD e-Reporting

(B) Dataset "Zones and Agglomerations"

(C) Dataset "Assessment Regime"

(D) Dataset "Information about Assessment Methods"

D.a: Dataset "General"

D.b: Dataset "Fixed measurement Information"

D.c: Dataset "Indicative Measurement Information"

D.d: Dataset "Modelling Information"

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INSPIRE Themes:

- EF

Scope AQD e-Reporting

(B) Dataset "Zones and Agglomerations"

(C) Dataset "Assessment Regime"

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D.a: Dataset "General"

D.b: Dataset "Fixed measurement Information"

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D.d: Dataset "Modelling Information"

D.e: Dataset "Objective Estimation Information"

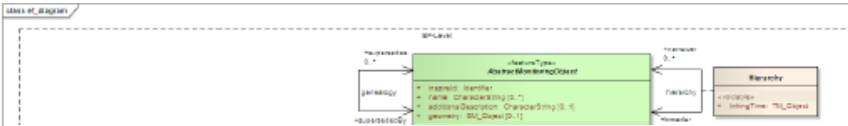
(E) Dataset "Primary data"

(F) Generated Dataset "Aggregated Data"

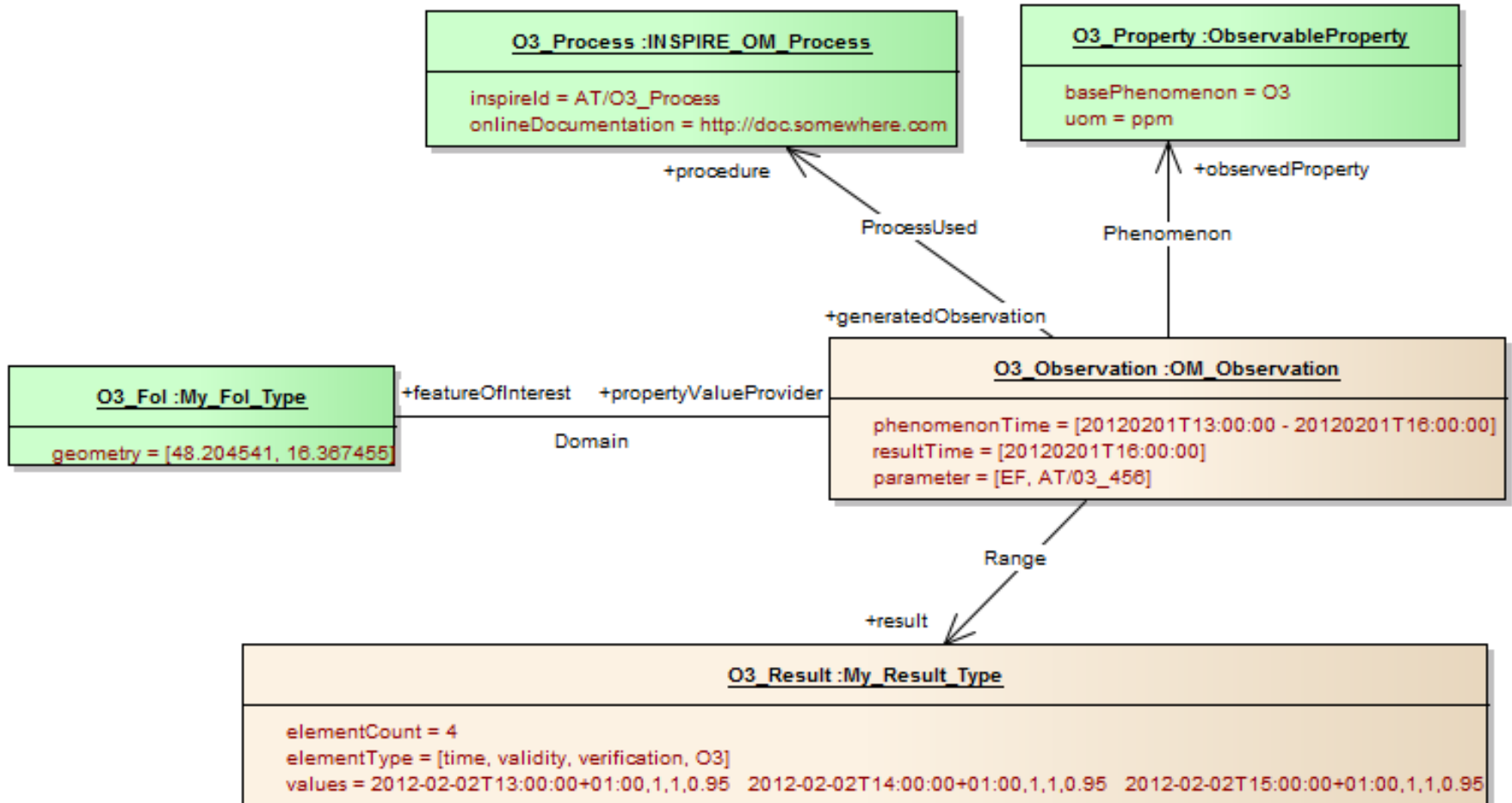
(G) Dataset "Attainment of Environmental Objectives"

INSPIRE Themes:

- EF



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Scope AQD e-Reporting

(B) Dataset "Zones and Agglomerations"

(C) Dataset "Assessment Regime"

(D) Dataset "Information about Assessment Methods"

D.a: Dataset "General"

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(F) Generated Dataset "Aggregated Data" INSPIRE Themes:

(G) Dataset "Attainment of Environmental Objectives"

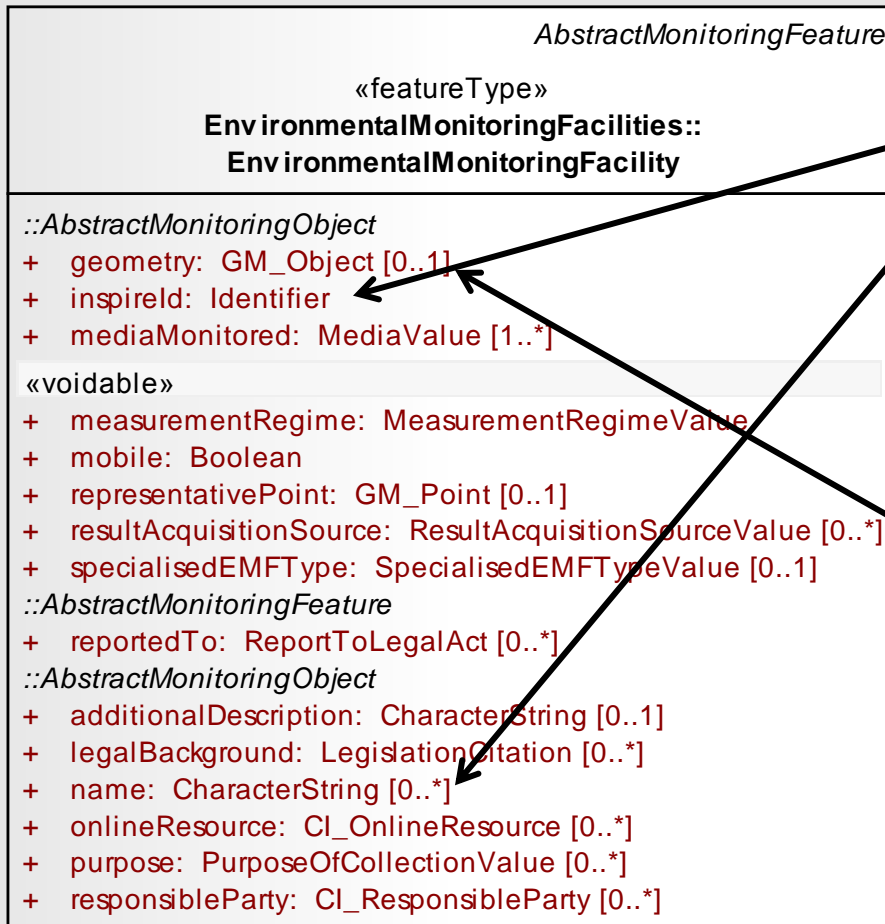
- EF
- OM

INSPIRE Mapping to AQD Requirements

<i>AbstractMonitoringFeature</i>
«featureType» EnvironmentalMonitoringFacilities:: EnvironmentalMonitoringFacility
:: <i>AbstractMonitoringObject</i> + geometry: GM_Object [0..1] + inspireId: Identifier + mediaMonitored: MediaValue [1..*]
«voidable» + measurementRegime: MeasurementRegimeValue + mobile: Boolean + representativePoint: GM_Point [0..1] + resultAcquisitionSource: ResultAcquisitionSourceValue [0..*] + specialisedEMFType: SpecialisedEMFTypeValue [0..1]
:: <i>AbstractMonitoringFeature</i> + reportedTo: ReportToLegalAct [0..*]
:: <i>AbstractMonitoringObject</i> + additionalDescription: CharacterString [0..1] + legalBackground: LegislationCitation [0..*] + name: CharacterString [0..*] + onlineResource: CI_OnlineResource [0..*] + purpose: PurposeOfCollectionValue [0..*] + responsibleParty: CI_ResponsibleParty [0..*]

D.5.2	Monitoring station
D.5.2.1	Station Identifier
D.5.2.2	National station code
D.5.2.3	Name of the monitoring station
D.5.2.4	Name of the municipality
D.5.2.5	European station code
D.5.2.6	Station time references
D.5.2.6.1	Station start date
D.5.2.6.2	Station end date
D.5.2.7	Geographical coordinates (geographical longitude and latitude)
D.5.2.7.1	Geographical longitude
D.5.2.7.2	Geographical latitude
D.5.2.7.3	Geodetic altitude
D.5.2.7.4	Reference geodetic coordinate system
D.5.2.8	Meteorological parameters measured
D.5.2.9	Documentation of station information, including Maps and photographs

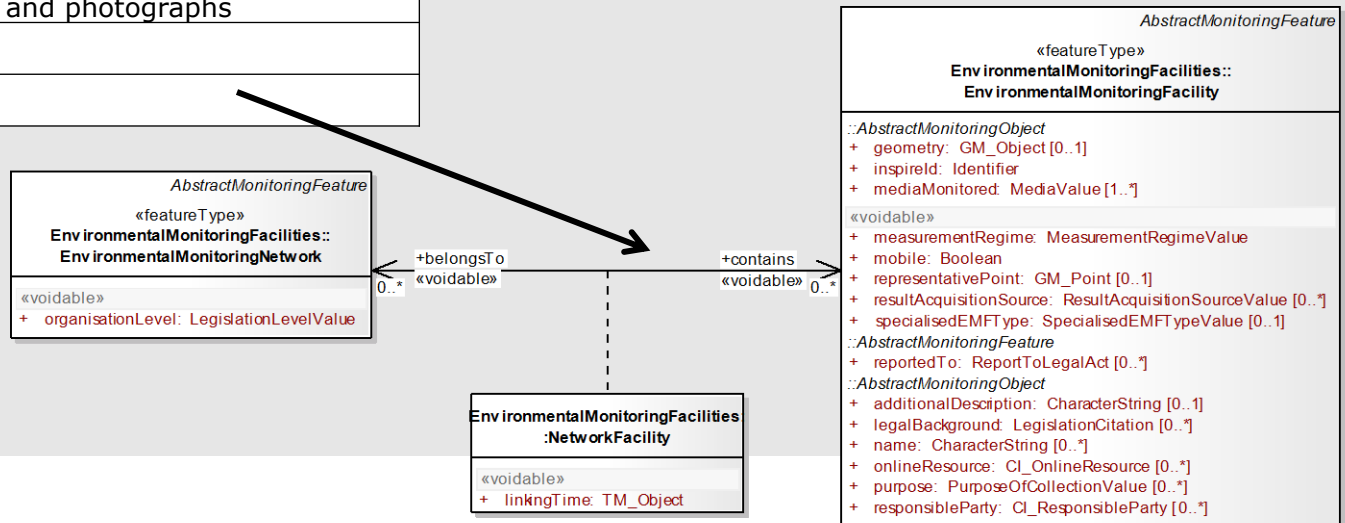
INSPIRE Mapping to AQD Requirements



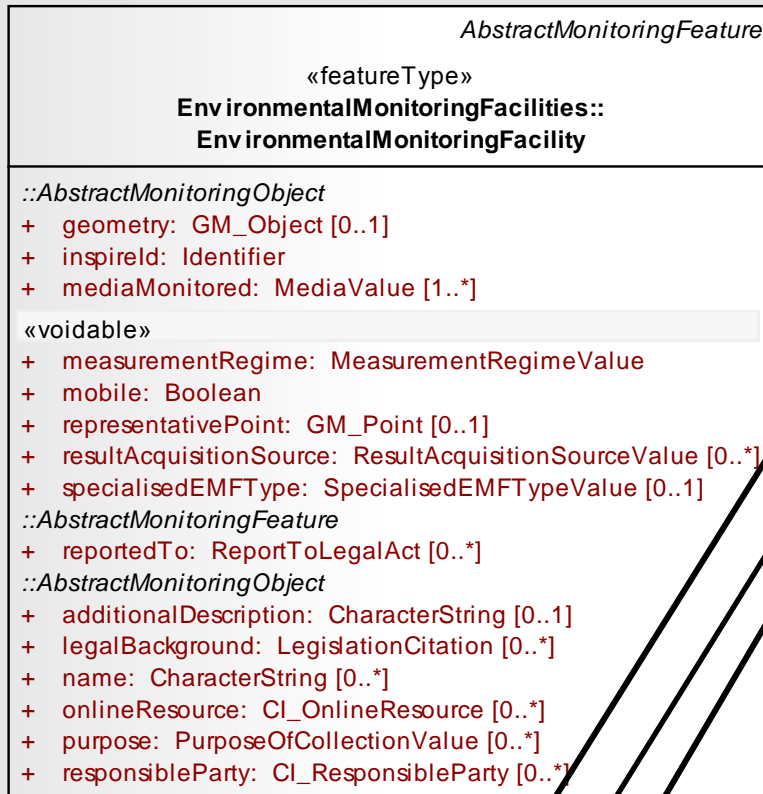
D.5.2	Monitoring station
D.5.2.1	Station Identifier
D.5.2.2	National station code
D.5.2.3	Name of the monitoring station
D.5.2.4	Name of the municipality
D.5.2.5	European station code
D.5.2.6	Station time references
D.5.2.6.1	Station start date
D.5.2.6.2	Station end date
D.5.2.7	Geographical coordinates (geographical longitude and latitude)
D.5.2.7.1	Geographical longitude
D.5.2.7.2	Geographical latitude
D.5.2.7.3	Geodetic altitude
D.5.2.7.4	Reference geodetic coordinate system
D.5.2.8	Meteorological parameters measured
D.5.2.9	Documentation of station information, including Maps and photographs

INSPIRE Mapping to AQD Requirements

D.5.2.1	Station Identifier
D.5.2.2	National station code
D.5.2.3	Name of the monitoring station
D.5.2.4	Name of the municipality
D.5.2.5	European station code
D.5.2.6	Station time references
D.5.2.7	Geographical coordinates (geographical longitude and latitude)
D.5.2.8	Meteorological parameters measured
D.5.2.9	Documentation of station information, including Maps and photographs
...	...
D.5.2.15	Network



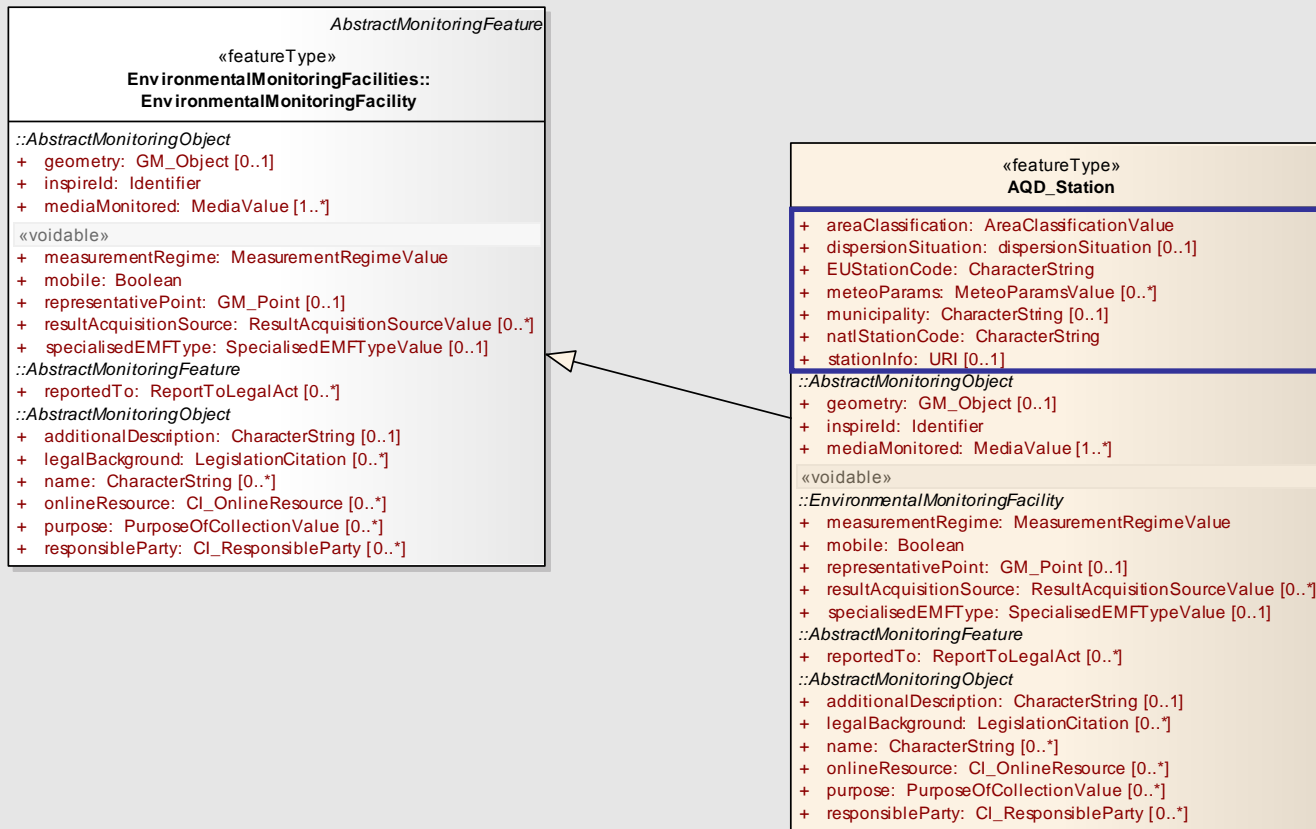
INSPIRE Extension to AQD Requirements



- + **National station code**
- + **Name of the municipality**
- + **European station code**

D.5.2	Monitoring station
D.5.2.1	Station Identifier
D.5.2.2	National station code
D.5.2.3	Name of the monitoring station
D.5.2.4	Name of the municipality
D.5.2.5	European station code
D.5.2.6	Station time references
D.5.2.6.1	Station start date
D.5.2.6.2	Station end date
D.5.2.7	Geographical coordinates (geographical longitude and latitude)
D.5.2.7.1	Geographical longitude
D.5.2.7.2	Geographical latitude
D.5.2.7.3	Geodetic altitude
D.5.2.7.4	Reference geodetic coordinate system
D.5.2.8	Meteorological parameters measured
D.5.2.9	Documentation of station information, including Maps and photographs

INSPIRE Extension to AQD Requirements



INSPIRE Extension to AQD Requirements

AbstractMonitoringFeature

«featureType»

**EnvironmentalMonitoringFacilities::
EnvironmentalMonitoringFacility**

::*AbstractMonitoringObject*

+ geometry: GM_Object [0..1]

+ inspireId: Identifier

+ mediaMonitored: MediaValue [1..*]

«voidable»

+ measurementRegime: MeasurementRegimeValue

+ mobile: Boolean

+ representativePoint: GM_Point [0..1]

+ resultAcquisitionSource: ResultAcquisitionSourceValue [0..*]

+ specialisedEMFType: SpecialisedEMFTypeValue [0..1]

::*AbstractMonitoringFeature*

+ reportedTo: ReportToLegalAct [0..*]

::*AbstractMonitoringObject*

+ additionalDescription: CharacterString [0..1]

+ legalBackground: LegislationCitation [0..*]

+ name: CharacterString [0..*]

+ onlineResource: CI_OnlineResource [0..*]

+ purpose: PurposeOfCollectionValue [0..*]

+ responsibleParty: CI_ResponsibleParty [0..*]

D.5.2.1	Station Identifier
D.5.2.2	National station code
D.5.2.3	Name of the monitoring station
D.5.2.4	Name of the municipality
D.5.2.5	European station code
D.5.2.6	Station time references
D.5.2.7	Geographical coordinates (geographical longitude and latitude)
D.5.2.8	Meteorological parameters measured
D.5.2.9	Documentation of station information, including Maps and photographs
D.5.2.10	Classification of the area
D.5.2.11	Dispersion situation
D.5.2.12	Media Monitored

INSPIRE Extension to AQD Requirements

IPR Nr.	Reference	Element	Specification	Description	Requirement	Cardinality
33	D.5.2.11.6	Street canyon - width of street	Number	In metres	C M if "Type of station in relation to major emission sources" = "traffic" for at least one measurement configuration and "Local dispersion situation" = "Street canyon" if available	0..1
34	D.5.2.11.7	Street canyon - mean height of building facades	Number	In metres	C M if "Type of station in relation to major emission sources" = "Traffic" for at least one measurement configuration and "Local dispersion situation" = "Street canyon" if available	0..1
	D.5.2.11.8	Regional dispersion situation	Menu	Describes the topographic situation on a scale of several kilometres. See codelist Dispersion Regional	V	0..1
	D.5.2.12	Media Monitored	Menu		M	1
	D.5.2.13	Measurement Regime	Menu		M	1
	D.5.2.14	Mobile	Boolean		M	1
	D.5.2.15	Network	Link	Link to D.5.3	M	1
	<i>D.5.3</i>	Information concerning networks (include for each network that has been identified by the Sampling point or monitoring station) <i>Monitoring networks represent the organizational structure of monitoring stations, responsible for station maintenance and QA/QC.</i>			<i>M</i>	<i>1</i>
3	D.5.3.1	Network ID	Identifier	The official, commonly used and unambiguous name of the network should be put in the localID . Ideally it is expected to remain consistent in the future.	M	1
35	D.5.3.2	Network name	Text		M	1

Mapping

IPR #	IPR Name	Class	XPATH
D.5.1	Monitoring Station	AQD_Station	/aqd:AQD_SamplingPoint/ef:broader/@xlink:href Linked to /aqd:AQD_Station
D.5.2.1	Station Identifier	AQD_Station	/aqd:AQD_Station/ef:inspireId/base:Identifier/
D.5.2.2	National station code	AQD_Station	/aqd:AQD_Station/aqd:natlStationCode
D.5.2.3	Name of the monitoring station	AQD_Station	/aqd:AQD_Station/ef:name
D.5.2.4	Name of the municipality	AQD_Station	aqd:AQD_Station/aqd:municipality
D.5.2.5	European station code	AQD_Station	/aqd:AQD_Station/aqd:EUStationCode
D.5.2.1	Station Identifier	AQD_Station	/aqd:AQD_Station/ef:inspireId/base:Identifier/
D.5.2.6	Station time references	AQD_Station	/aqd:AQD_Station/ef:operationalActivityPeriod/ef:OperationalActivityPeriod
D.5.2.6.1	Station start date	AQD_Station	/aqd:AQD_Station/ef:operationalActivityPeriod/ef:OperationalActivityPeriod
D.5.2.6.2	Station end date	AQD_Station	/aqd:AQD_Station/ef:operationalActivityPeriod/ef:OperationalActivityPeriod
D.5.2.7	Geographical coordinates (geographical longitude and latitude)	AQD_Station	/aqd:AQD_Station/ef:geometry/gml:Point/gml:pos/text()

Conclusions

- INSPIRE Themes provide the basic building blocks required by reporting for the AQD
- Feature types provided by INSPIRE will often need be extended to cover the full breadth of reporting requirements
- Reporting requirements guidelines will also often need be extended to cover all INSPIRE requirements
- Advantage is that by covering the thematic reporting requirements, basic INSPIRE requirements are also covered