UTMC-TS004.0063:2015

UTMC Objects Registry: Updated Environment/Weather Data Model

15 March 2015
Cover + 27 pages

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1 Introduction

1.1 General

1.1.1 UTMC TS004 defines standards for UTMC "common data" (i.e. data communicated between applications of a UTMC system, or between a UTMC system and an external system). These provide for the use of mainstream data transfer protocols, with an increasing recent focus being on XML schema.

1.1.2 This document provides the UML models that abstract the UTMC XML for environmental and weather data. It updates, extends and supersedes previous versions of UTMC-TS004, by direct reference as appropriate to sections of UTMC-TS004.0061:2010 Annex D.

1.1.3 An XML representation of this new specification is also available, as XSDs. These are text files that are modifications of the existing TS004 Annex G.

1.2 Acknowledgments

1.2.1 This document is based on the work of the Environmental and Meteorological Working Group during the period 2010-2014. The work of Env&Met WG members is gratefully acknowledged.

2 Annex D Section 7 (AirQuality)

2.1 Package definition

General information

Qualified Name:	UTMC::AirQuality
Comment:	Package for classes representing air quality measurement equipment.

Diagrams

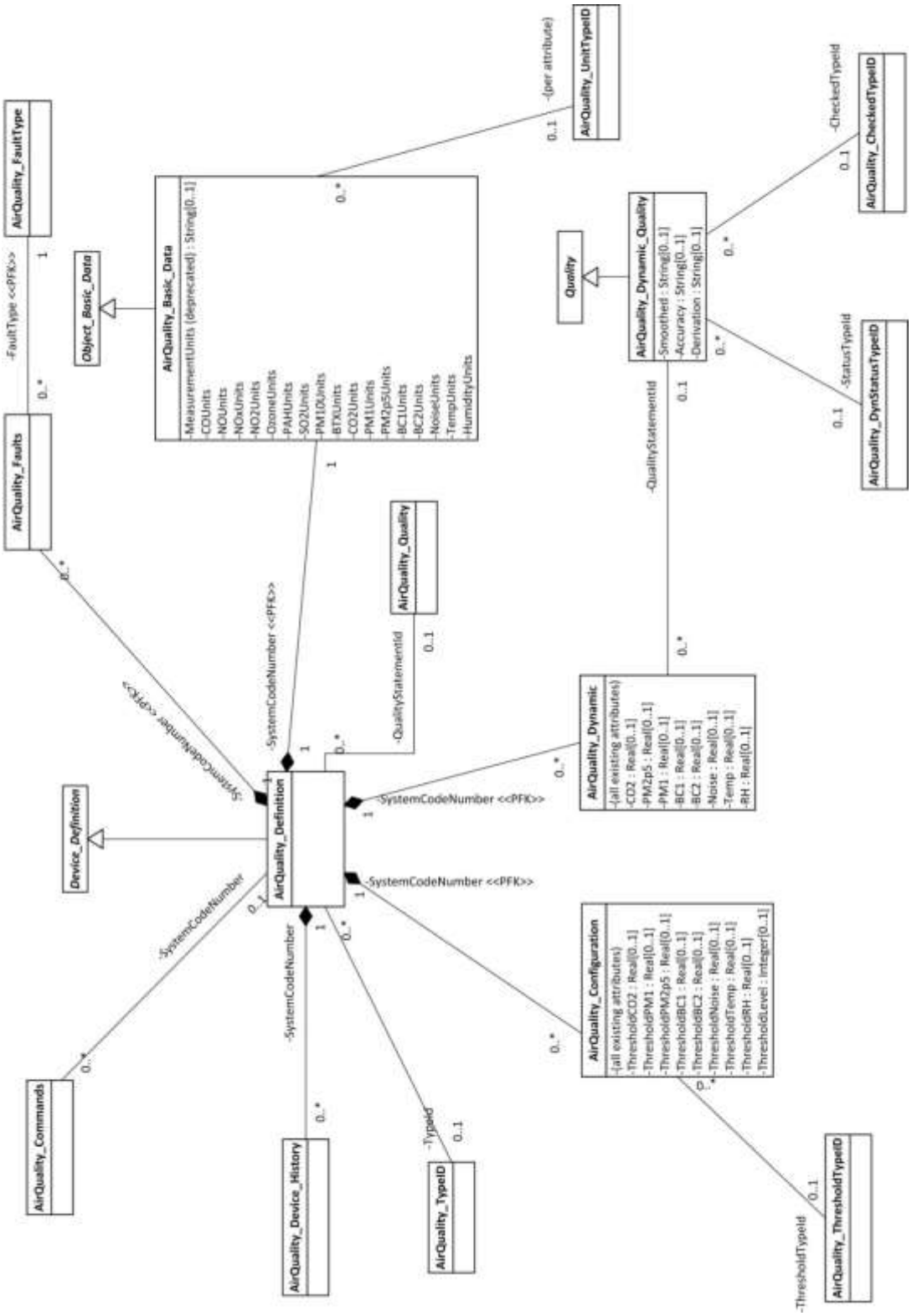

Figure 2-1: AirQuality data class diagram

2.2 AirQuality_Basic_Data Class

General information

Base Classifier:	Object_Basic_Data
Is Abstract:	false
Comment:	Extended static data on air quality equipment.

Attributes

Name	Type	Mult.	Key?	Max	Comments
MeasurementUnits	string	0..1			Description of units of measurement. These must be consistent within the lifetime of the Data Object. Deprecated, maintained for back compatibility
COUnits	AirQuality_UnitTypeID	0..1			Units of measurement for CO data
NOUnits	AirQuality_UnitTypeID	0..1			Units of measurement for NO data
NOxUnits	AirQuality_UnitTypeID	0..1			Units of measurement for NOx data
NO2Units	AirQuality_UnitTypeID	0..1			Units of measurement for NO2 data
OzoneUnits	AirQuality_UnitTypeID	0..1			Units of measurement for Ozone data
PAHUnits	AirQuality_UnitTypeID	0..1			Units of measurement for PAH data
SO2Units	AirQuality_UnitTypeID	0..1			Units of measurement for SO2 data
PM10Units	AirQuality_UnitTypeID	0..1			Units of measurement for PM10 data
BTXUnits	AirQuality_UnitTypeID	0..1			Units of measurement for BTX data
CO2Units	AirQuality_UnitTypeID	0..1			Units of measurement for CO2 data
PM1Units	AirQuality_UnitTypeID	0..1			Units of measurement for PM1 data
PM2p5Units	AirQuality_UnitTypeID	0..1			Units of measurement for PM2p5 data
BC1Units	AirQuality_UnitTypeID	0..1			Units of measurement for BC1 data
BC2Units	AirQuality_UnitTypeID	0..1			Units of measurement for BC2 data
NoiseUnits	AirQuality_UnitTypeID	0..1			Units of measurement for Noise data
TempUnits	AirQuality_UnitTypeID	0..1			Units of measurement for Temperature data
HumidityUnits	AirQuality_UnitTypeID	0..1			Units of measurement for Relative Humidity data
SystemCodeNumber	AirQuality_Definition	1	PFK		

Relations

Type	Begin	End
generalization	AirQuality_Basic_Data class	Object_Basic_Data class

Type	Begin	End
association	AirQuality_Basic_Data class	AirQuality_Definition class
association	AirQuality_Basic_Data class	AirQuality_UnitTypeID class

2.3 AirQuality_Commands Class

General information

Base Classifier:	Command
Is Abstract:	false
Comment:	Represents a command to air quality measurement equipment.

Attributes

Name	Type	Mult.	Key?	Max	Comments
SystemCodeNumber	AirQuality_Definition	0..1			

Relations

Type	Begin	End
association	AirQuality_Commands class	AirQuality_Definition class
generalization	AirQuality_Commands class	Command class

2.4 AirQuality_Configuration Class

General information

Base Classifier:	Object_Configuration
Is Abstract:	false
Comment:	Threshold levels above which pollutant concentrations are considered to be in an alarm status. Supports multiple levels and allows for both rising and falling thresholds

Attributes

Name	Type	Mult.	Key?	Max	Comments
SystemCodeNumber	AirQuality_Definition	1	PFK		
ThresholdBTX	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdCO	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdNO	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)

Name	Type	Mult.	Key?	Max	Comments
ThresholdNO2	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdNOX	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdOZONE	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdPAH	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdPM10	real	0..1			concentration (e.g. ug/m3, as defined by AirQuality_Basic_Data)
ThresholdSO2	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdCO	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdPM2p5	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdPM1	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdBC1	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdBC2	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
ThresholdNoise	real	0..1			Level (as defined by AirQuality_Basic_Data)
ThresholdTemp	real	0..1			temperature (as defined by AirQuality_Basic_Data)
ThresholdRH	real	0..1			percentage (as defined by AirQuality_Basic_Data)
ThresholdLevel	Integer	0..1			Where thresholds exist at various levels, the threshold level associated with these value(s). Although not mandated levels are assumed to be organised in a sensible manner e.g. ascending or descending through level values.
ThresholdTypeId	AirQuality_ThresholdTypeID	0..1			The Threshold type

Relations

Type	Begin	End
association	AirQuality_Configuration class	AirQuality_Definition class
generalization	AirQuality_Configuration class	Object_Configuration class
Association	AirQuality_Configuration class	AirQuality_ThresholdTypeID class

2.5 AirQuality_Definition Class

General information

Base Classifier:	Device_Definition
Is Abstract:	false
Comment:	The Air Quality object provides a dynamic overview of the pollutant levels monitored by the on street device. The Air Quality object has descriptive, location and validity attributes provided by the generic data objects. Configuration information threshold levels for the object may also be provided. This will allow comparisons of current pollutant levels against thresholds for use in automatic problem detections. Fault information, based on the generic Fault Support Object, whether communications faults or equipment faults can also be associated Air Quality objects. Associated fault types may be used to determine the type of fault that has occurred, e.g. comms failure, sensor failure.

Attributes

Name	Type	Mult.	Key?	Max	Comments
QualityStatementId	AirQuality_Quality	0..1			
TypeId	AirQuality_TypeID	0..1			

Relations

Type	Begin	End
association	AirQuality_Definition class	AirQuality_Commands class
association	AirQuality_Definition class	AirQuality_Configuration class
association	AirQuality_Definition class	AirQuality_TypeID class
association	AirQuality_Definition class	AirQuality_Quality class
generalization	AirQuality_Definition class	Device_Definition class
association	AirQuality_Definition class	AirQuality_Faults class
association	AirQuality_Definition class	AirQuality_Dynamic class
association	AirQuality_Definition class	AirQuality_Device_History class
association	AirQuality_Definition class	AirQuality_Basic_Data class

2.6 AirQuality_Device_History Class

General information

Base Classifier:	Device_History
Is Abstract:	false
Comment:	Log entry describing an event relating to air quality measurement equipment.

Attributes

Name	Type	Mult.	Key?	Max	Comments
SystemCodeNumber	AirQuality_Definition	1			

Relations

Type	Begin	End
generalization	AirQuality_Device_History class	Device_History class
association	AirQuality_Device_History class	AirQuality_Definition class

2.7 AirQuality_Dynamic Class

General information

Base Classifier:	Object_Dynamic
Is Abstract:	false
Comment:	Average pollutant concentration values taken over the specified period.

Attributes

Name	Type	Mult.	Key?	Max	Comments
BTX	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
CO	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
NO	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
NO2	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
NOX	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
OZONE	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
PAH	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
Period	integer	0..1			Period in minutes over which the data has been measured

Name	Type	Mult.	Key?	Max	Comments
PM10	real	0..1			concentration (e.g. ug/m3, as defined by AirQuality_Basic_Data)
QualityStatementID	AirQuality_Dynamic_Quality	0..1			Reference to quality of information for the dynamic data.
SO2	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
SystemCodeNumber	AirQuality_Definition	1	PFK		
CO2	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
PM2p5	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
PM1	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
BC1	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
BC2	real	0..1			concentration (e.g. ppb, as defined by AirQuality_Basic_Data)
Noise	real	0..1			level (as defined by AirQuality_Basic_Data)
Temp	real	0..1			temperature (as defined by AirQuality_Basic_Data)
RH	real	0..1			percentage (as defined by AirQuality_Basic_Data)

Relations

Type	Begin	End
generalization	AirQuality_Dynamic class	Object_Dynamic class
association	AirQuality_Dynamic class	AirQuality_Dynamic_Quality class
association	AirQuality_Dynamic class	AirQuality_Definition class

2.8 AirQuality_Dynamic_Quality Class

General information

Base Classifier:	Quality
Is Abstract:	false
Comment:	Quality statement about air quality dynamic data.

Relations

Type	Begin	End
generalization	AirQuality_Dynamic_Quality class	Quality class
Association	AirQuality_Dynamic_Quality class	AirQuality_Dynamic class
Association	AirQuality_Dynamic_Quality class	AirQuality_DynStatusTypeID
Association	AirQuality_Dynamic_Quality class	AirQuality_CheckedTypeID

Attributes

Name	Type	Mult.	Key?	Max	Comments
Accuracy	String	0..1			Some text providing information on the level of accuracy of the data provided, e.g. “+2-3%”, “+-5ppm” etc.
CheckedTypeId	AirQuality_CheckedTypeID	0..1			Indicates how much validation has been performed on the data
Derivation	string	0..1			Some text indicating how the value is derived, e.g. is it an estimation of CO2 or a CO2e level made up of various elements
Smoothed	string	0..1			Some text providing information on how processed the data is.
StatusTypeId	AirQuality_DynStatusTypeID	0..1			Indicates if data is suspect in some manner or not

2.9 AirQuality_Faults Class

General information

Base Classifier:	Faults
Is Abstract:	false
Comment:	Represents a specific fault with air quality measurement equipment.

Attributes

Name	**Type**	**Mult.**	**Key?**	**Max**	**Comments**
FaultType	AirQuality_FaultType	1	PFK		
SystemCodeNumber	AirQuality_Definition	1	PFK		

Relations

Type	Begin	End
generalization	AirQuality_Faults class	Faults class
association	AirQuality_Faults class	AirQuality_Definition class
association	AirQuality_Faults class	AirQuality_FaultType class

2.10 AirQuality_FaultType Class

General information

Base Classifier:	FaultType
Is Abstract:	false
Comment:	Identifies and describes a type of fault that may occur with air quality measurement equipment.

Relations

Type	Begin	End
generalization	AirQuality_FaultType class	FaultType class
association	AirQuality_FaultType class	AirQuality_Faults class

2.11 AirQuality_Quality Class

General information

Base Classifier:	Quality
Is Abstract:	false
Comment:	Quality statement about data on air quality equipment.

Relations

Type	Begin	End
association	AirQuality_Quality class	AirQuality_Definition class
generalization	AirQuality_Quality class	Quality class

2.12 AirQuality_TypeID Class

General information

Base Classifier:	TypeID

Is Abstract:	false
Comment:	Classification of Air Quality equipment. Relates the TypeID field in the object to a particular description. Values are as follows: 1 = AQ Reference Monitor 2 = AQ Indicative Monitor 3 = AQ/MET Reference Monitor 4 = AQ/MET Indicative Monitor 5 = AQ Virtual/Derived Monitor 999 = Other

Relations

Type	Begin	End
association	AirQuality_TypeID class	AirQuality_Definition class
generalization	AirQuality_TypeID class	TypeID class

2.13 AirQuality_ThresholdTypeID Class

General information

Base Classifier:	TypeID
Is Abstract:	false
Comment:	Identifies the threshold type, and provides a mechanism to support hysteresis management across threshold transitions: 1 = Rising 2 = Falling 3 = RisingAndFalling Note threshold sets should be consistently defined, i.e. either a single set of RisingAndFalling thresholds should be provided, or pairs of Rising and Falling thresholds ones.

Relations

Type	Begin	End
association	AirQuality_ThresholdTypeID class	AirQuality_Configuration class
generalization	AirQuality_ThresholdTypeID class	TypeID class

2.14 AirQuality_CheckedTypeID Class

General information

Base Classifier:	TypeID
Is Abstract:	false

Comment:	Indicates how much validation has been performed on the data: 0 = raw from (virtual or real) sensor 1 = validated (reliable data from a sensor, e.g. cross checked via co-location) 2 = ratified (AURN data fully validated) 99 = unknown

Relations

Type	Begin	End
association	AirQuality_CheckedTypeID class	AirQuality_Dynamic_Quality class
generalization	AirQuality_CheckedTypeID class	TypeID class

2.15 AirQuality_DynStatusTypeID Class

General information

Base Classifier:	TypeID
Is Abstract:	false
Comment:	Indicates if data is suspect in some manner or not: 0 = Normal / Not Suspect 1 = Incomplete (derived from data with missing values) 2 = Inconsistent (compiled from data that is not guaranteed to be consistent – e.g. two different data types where the instances don't exactly time align) 3 = Suspect (other reason) 99 = Unknown

Relations

Type	Begin	End
association	AirQuality_DynStatusTypeID class	AirQuality_Dynamic_Quality class
generalization	AirQuality_DynStatusTypeID class	TypeID class

2.16 AirQuality_UnitTypeID Class

General information

Base Classifier:	TypeID
Is Abstract:	false

Comment:	Identifies the unit of measurement: 1 = ppm 2 = ppb 3 = µg m^{-3} 4 = LAeq dBA 5 = degrees centigrade 6 = percentage 99 = undefined / unknown

Relations

Type	**Begin**	**End**
association	AirQuality_DynStatusTypeID class	AirQuality_Basic_Data class
generalization	AirQuality_DynStatusTypeID class	TypeID class

3 Annex D Section 20 (Meteorological)

3.1 Package definition

General information

Qualified Name:	UTMC::Meteorological
Comment:	Package for classes representing Meteorological Stations and measuring equipment.

Diagrams

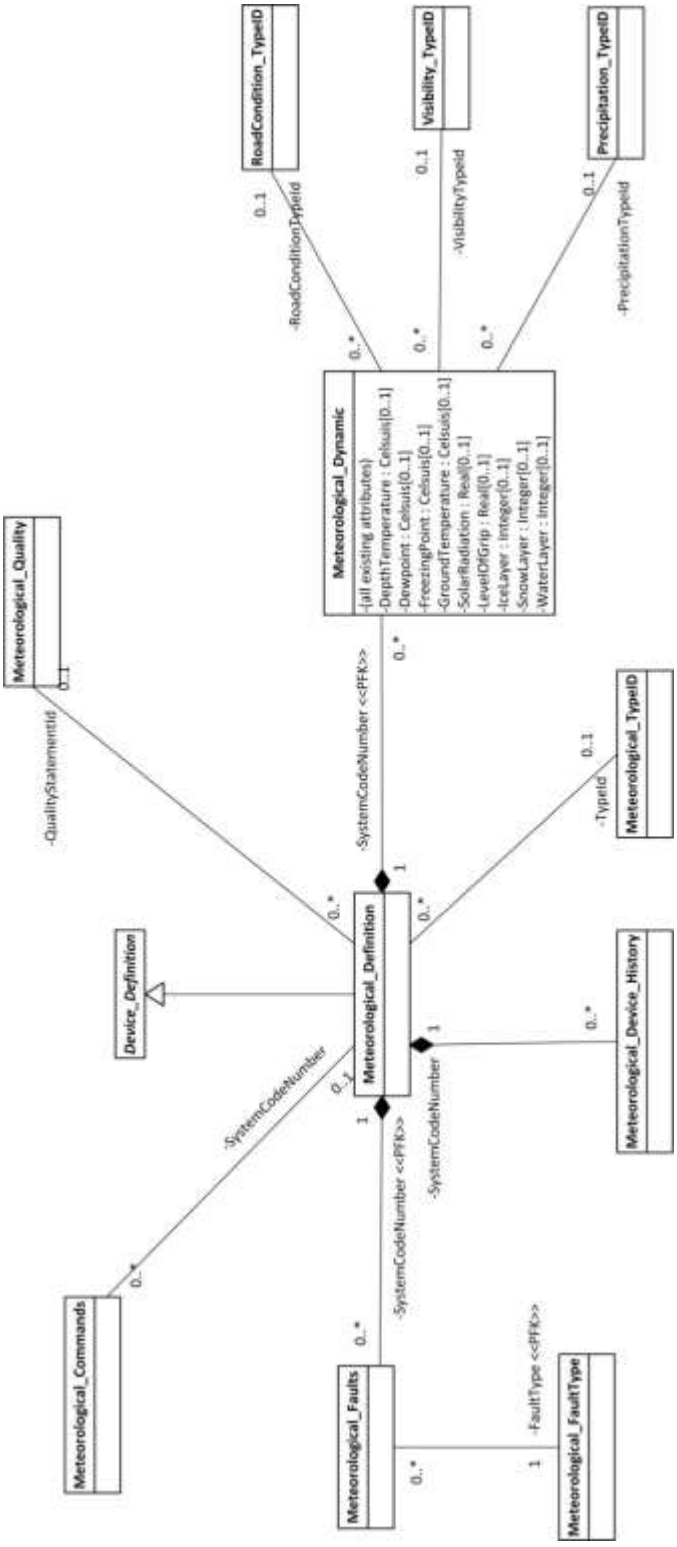

Figure 3-1: Meteorological data class diagram

3.2 Meteorological_Commands Class

General information

Base Classifier:	Command
Is Abstract:	false
Comment:	Represents a command to meteorological equipment.

Attributes

Name	Type	Mult.	Key?	Max	Comments
SystemCodeNumber	Meteorological_Definition	0..1			

Relations

Type	Begin	End
generalization	Meteorological_Commands class	Command class
association	Meteorological_Commands class	Meteorological_Definition class

3.3 Meteorological_Definition Class

General information

Base Classifier:	Device_Definition
Is Abstract:	false
Comment:	The meteorological object describes the weather conditions at a current point in time or the forecast conditions. Information about the device may be logged using a generic log table for the Meteorological data. Fault information, based on the generic Fault Support Object, may be stored for the meteorological object where appropriate.

Attributes

Name	Type	Mult.	Key?	Max	Comments
QualityStatementId	Meteorological_Quality	0..1			
TypeId	Meteorological_TypeID	0..1			

Relations

Type	Begin	End
association	Meteorological_Definition class	Meteorological_Device_History class
association	Meteorological_Definition class	Meteorological_Commands class

Type	Begin	End
Generalization	Meteorological_Definition class	Device_Definition class
association	Meteorological_Definition class	Meteorological_Faults class
association	Meteorological_Definition class	Meteorological_Quality class
association	Meteorological_Definition class	Meteorological_Dynamic class
association	Meteorological_Definition class	Meteorological_TypeID class

3.4 Meteorological_Device_History Class

General information

Base Classifier:	Device_History
Is Abstract:	false
Comment:	Log entry describing an event relating to meteorological equipment.

Attributes

Name	Type	Mult.	Key?	Max	Comments
SystemCodeNumber	Meteorological_Definition	1			

Relations

Type	Begin	End
association	Meteorological_Device_History class	Meteorological_Definition class
generalization	Meteorological_Device_History class	Device_History class

3.5 Meteorological_Dynamic Class

General information

Base Classifier:	Object_Dynamic
Is Abstract:	false
Comment:	Dynamic data on weather conditions at a current point in time or the forecast conditions.

Attributes

Name	Type	Mult.	Key?	Max	Comments
AirTemp	Celsius	0..1			Current air temperature (degrees C).
AreaOfEffect	real	0..1			General area in kilometers radius from device centre.

Name	Type	Mult.	Key?	Max	Comments
Forecast	boolean	0..1		1	Indicates if the data is forecast or actual (Y/N). N is actual, Y is forecast.
Humidity	real	0..1			Current humidity level.
MaxTemp	Celsius	0..1			Maximum expected temperature (degrees C).
MaxWindSpeed	KilometresPerHour	0..1			Maximum expected wind speed (kph).
MinTemp	Celsius	0..1			Minimum expected temperature (degrees C).
PrecipitationIntensity	integer	0..1			Indication of precipitation intensity. Higher the value the more intense the precipitation is.
PrecipitationTypeID	Precipitation_TypeID	0..1			Type of precipitation. Id relates to a one of a number of standard types. (e.g. rain, hail, snow).
Pressure	Millibars	0..1			Atmospheric pressure (mB).
RoadConditionTypeID	RoadCondition_TypeID	0..1			Indication of road condition. Id relates to a one of a number of standard types. (Dry, wet, icy, snow covered).
RoadTemp	Celsius	0..1			Current road temperature (degrees C).
SystemCodeNumber	Meteorological_Definition	1	PFK		
VisibilityDist	WholeMetres	0..1			Visibility distance (metres).
VisibilityTypeID	Visibility_TypeID	0..1			Indication of visibility problems. Id relates to a one of a number of standard types. (e.g. clear, hazy, foggy).
WindDirection	WholeDegrees	0..1			Wind direction expressed in degrees from device Northing.
WindSpeed	KilometresPerHour	0..1			Average wind speed (kph).
DepthTemperature	Celsius	0..1			Temperature measured typically 30cm below the road surface. (degrees C).
Dewpoint	Celsius	0..1			The temperature to which a given parcel of air must be cooled to, for water vapour to condense into water. Dew will form on a surface if the temperature of that surface is below the dew point of the air next to the surface (degrees C).

Name	Type	Mult.	Key?	Max	Comments
FreezingPoint	Celsius	0..1			An indication of the temperature at which water and moisture on the road surface will freeze. This is based on the concentration of de-icing chemical present, which varies due to the amount of chemical applied and the amount of water on the road surface. The higher the concentration, the lower freezing temperature (degrees C). Range 0.0 to -21.1C
GroundTemperature	Celsius	0..1			Temperature measured 6cm below the road surface (degrees C).
SolarRadiation	Real	0..1			The power of sunlight in w/m2 Range 0.4 to 1.1 µm (400-1100 w/m2)
LevelOfGrip	Real	0..1			A slipperiness index based on the amount of water, ice or snow on a road surface, scaled against the friction value of a typical road surface and car tyre. Reported as a range 0 to 1 0 to 0.39 = very poor grip* 0.40 to 0.59 = poor grip* 0.60 to 0.82 = good grip* * These descriptions are intended only as indicators, as the real friction values depend on many variables, such as vehicle type and speed, tyre type, road surface structure, etc
IceLayer	Integer	0..1			Water equivalent thickness level of ice on the road surface. Reported in mm.
SnowLayer	Integer	0..1			Water equivalent thickness level of snow on the road surface. Reported in mm.
WaterLayer	Integer	0..1			Water thickness level on the road surface. Reported in mm.

Relations

Type	Begin	End
generalization	Meteorological_Dynamic class	Object_Dynamic class
association	Meteorological_Dynamic class	Precipitation_TypeID class
association	Meteorological_Dynamic class	RoadCondition_TypeID class
association	Meteorological_Dynamic class	Visibility_TypeID class
association	Meteorological_Dynamic class	Meteorological_Definition class

3.6 Meteorological_Faults Class

General information

Base Classifier:	Faults
Is Abstract:	false
Comment:	Represents a specific fault with meteorological equipment.

Attributes

Name	Type	Mult.	Key?	Max	Comments
FaultType	Meteorological_FaultType	1	PFK		
SystemCodeNumber	Meteorological_Definition	1	PFK		

Relations

Type	Begin	End
generalization	Meteorological_Faults class	Faults class
association	Meteorological_Faults class	Meteorological_Definition class
association	Meteorological_Faults class	Meteorological_FaultType class

3.7 Meteorological_FaultType Class

General information

Base Classifier:	FaultType
Is Abstract:	false
Comment:	Identifies and describes a type of fault that may occur with meteorogical equipment.

Relations

Type	Begin	End
generalization	Meteorological_FaultType class	FaultType class
association	Meteorological_FaultType class	Meteorological_Faults class

3.8 Meteorological_Quality Class

General information

Base Classifier:	Quality
Is Abstract:	false
Comment:	Quality statement about meteorological data.

Relations

Type	Begin	End
generalization	Meteorological_Quality class	Quality class
association	Meteorological_Quality class	Meteorological_Definition class

3.9 Meteorological_TypeID Class

General information

Base Classifier:	TypeID
Is Abstract:	false
Comment:	Proposed typeIDs are 1 = Automated Station

Relations

Type	Begin	End
generalization	Meteorological_TypeID class	TypeID class
association	Meteorological_TypeID class	Meteorological_Definition class

4 Other affected Packages

4.1 Annex D Section 12 (CommonTypeIDSupport)

4.1.1 In the CommonTypeIDSupport Package, the following specialisations are added to the TypeID Class:

- AirQuality_ThresholdTypeID Class
- AirQuality_CheckedTypeID Class
- AirQuality_DynStatusTypeID Class
- AirQuality_UnitTypeID Class

4.1.2 No other changes are required to the CommonTypeIDSupport Package.

4.2 Annex D Section 18 (GlobalSupportObject)

4.2.1 In the GlobalSupportObject Package, the range of enumerations for RoadCondition_TypeId defined in Section 18.5 is extended as follows:

General information

Base Classifier:	TypeID
Is Abstract:	false
Comment:	Classifies the road condition Defined types (values from 13 are additional ones aligned with DATEX II values): 1 Dry 2 Wet 3 Deep Water 4 Frost 5 Ice 6 Black Ice 7 Snow 13 Slushy 15 Moist 17 Wet and Chemical 21 Moist and Chemical 99 Invalid (Sensor Error)

4.2.2 No other changes are made to the GlobalSupportObject Package.

4.3 Annex D Section 22 (Prediction)

4.3.1 No changes are made to the Prediction Package. Nevertheless both meteorological nor air quality profile classes have applicable circumstances for the use of Prediction DOs and the base classes should be extended as appropriate in line with this section.

4.4 Annex D Section 23 (Profile)

4.4.1 No changes are made to the Profile Package. Nevertheless both meteorological nor air quality profile classes have applicable circumstances for the use of Profile DOs, and the base classes should be extended as appropriate in line with this section.

A Annex A: superseded class diagrams

A.1 The two diagrams on the following pages recapitulate the class diagrams of the previous version of UTMC-TS004, namely those of version 0061:2010. These are **now superseded**: they are presented here for ease of reference and comparison with the new diagrams in the main text.

A.2 These diagrams are Figures 7-1 and 20-1, respectively, of UTMC-TS004.0061:2010 Annex D.

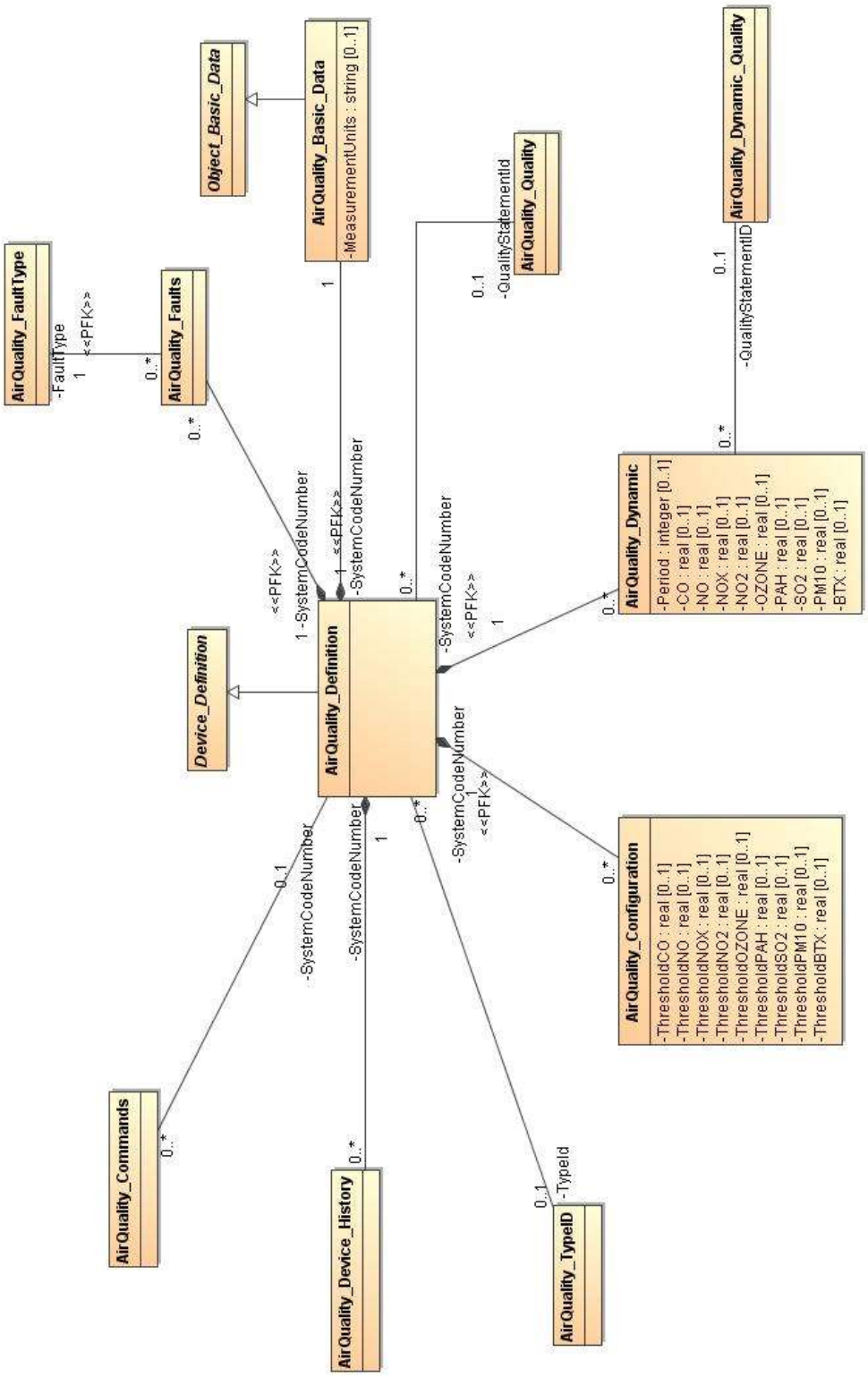

Figure A-1: AirQuality data class diagram (superseded)

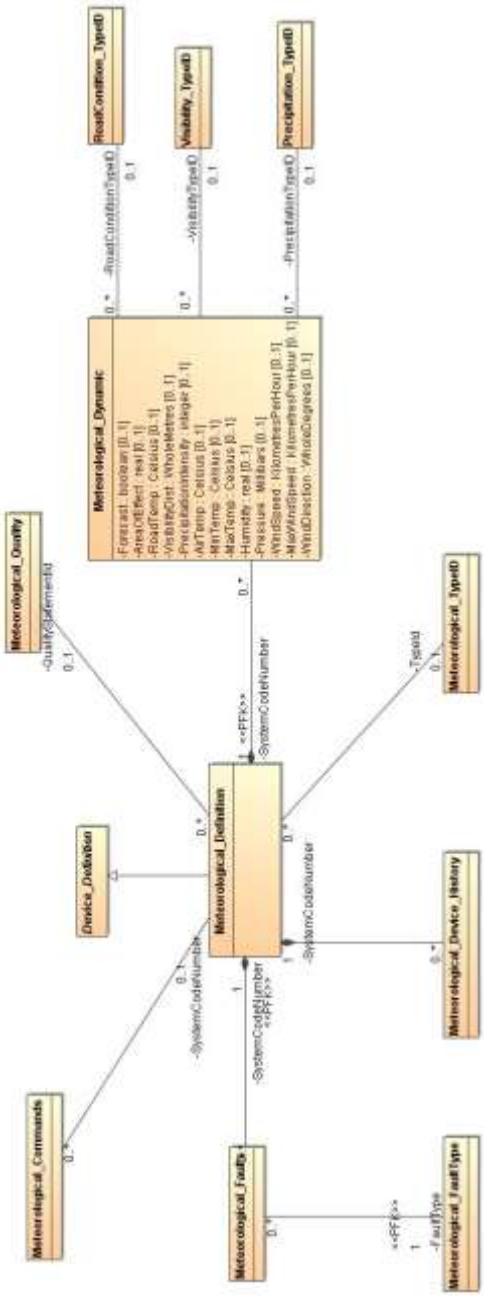

Figure A-2: Meteorological data class diagram (superseded)