DATEX II model for status and faults

DATEX USER FORUM

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UTRECHT

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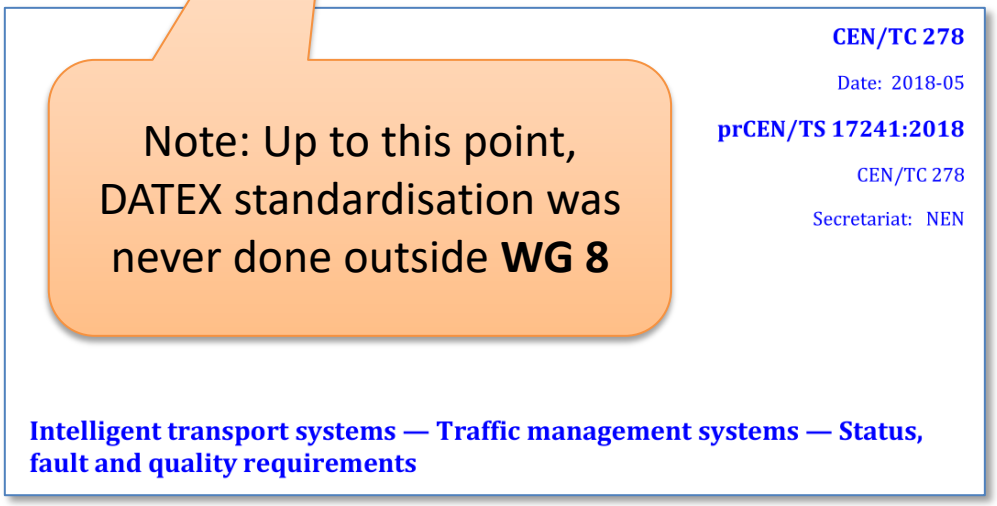
- Study of Computer Science, born 1977
- Since 2005 project engineer at AlbrechtConsult (Aachen, Germany)
- Emphasis on software engineering / software processes, communication networks und distributed systems, software architectures as well as data modelling, esp. in the field of ITS, C-ITS
- Specification of DATEX II-profiles for the German Mobility Data Market Place (MDM)
- Participation in technical DATEX development and maintenance (in Technical Management Group of EC Programme Support Action for DATEX II)
- Participation in the DATEX standardisation:
  Editor of CEN/TS 16157 Part 6 (Parking Publications) and CEN/EN 16157 Part 7 (Common data elements)
- Member of CEN TC278 WG17 “Urban ITS”

Background

- CEN TC 278 **Working Group 17** called for experts end of 2016
- „Project Teams“ should drive forward Technical Specifications on Urban ITS
- PT1704 elaborated the following standard and included a **DATEX II data model on status and faults**:



Note: Up to this point, DATEX standardisation was never done outside **WG 8**

prCEN/TS 17241

What is this standard about?

- **Quality and performance criteria**
- **DATEX II data model on status and faults**
- **ASN.1 representation**

```
TmsMessageSet {iso(1) identified-organization(3) cen(162) statusFault
(17241) tmsMsgSet (1) version0 (0)}
DEFINITIONS AUTOMATIC TAGS::=BEGIN
IMPORTS
DevicePublication, FaultPublication, StatusPublication
FROM TmsStatusFault {iso(1) identified-organization(3) cen(162)
statusFault (17241) publications (2) version0 (0)}
;
-- End of IMPORTS
-- CLASS
-- Reference values for messages of the TMS message set
RefTmsMsg::=INTEGER (0..MAX)
```

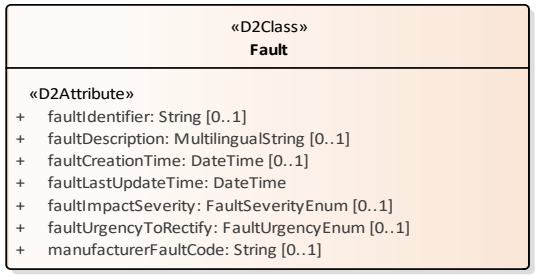
- **Example use case: Tunnel project**

Urban administrator of 10 road tunnels wants to migrate its systems into one user-interface

- Quality: fitness for purpose
- System quality
  - Availability and uptime
  - System compatibility and integration
  - Configurability of systems
  - Security
  - Continuity of service and future proofing
- Device quality
  - Physical robustness
  - Failure modes
  - Reliability and maintainability
- Functional quality
  - Stated requirements and compliance
  - Functional effectiveness
  - Functional integration
  - Usability
- Data quality
  - Accuracy and related concepts
  - Timeliness and granularity
  - Spatio-temporal granularity
  - System data
- Quality and performance management
  - Lifecycle quality
  - Quality evaluation8
  - Risk management

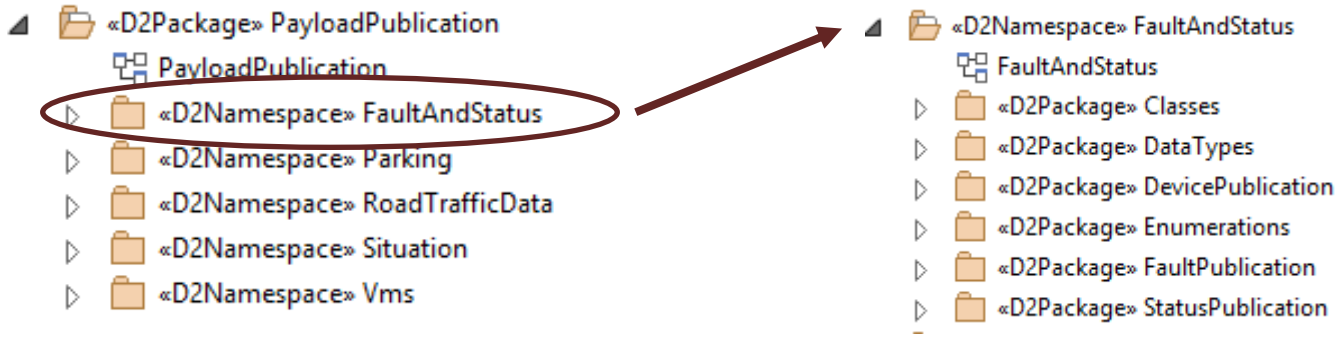
The status and faults data model

- Existing fault model is too weak
  for urban purpose
  (e.g. for field device information on fault and status)



Existing fault model in DATEX

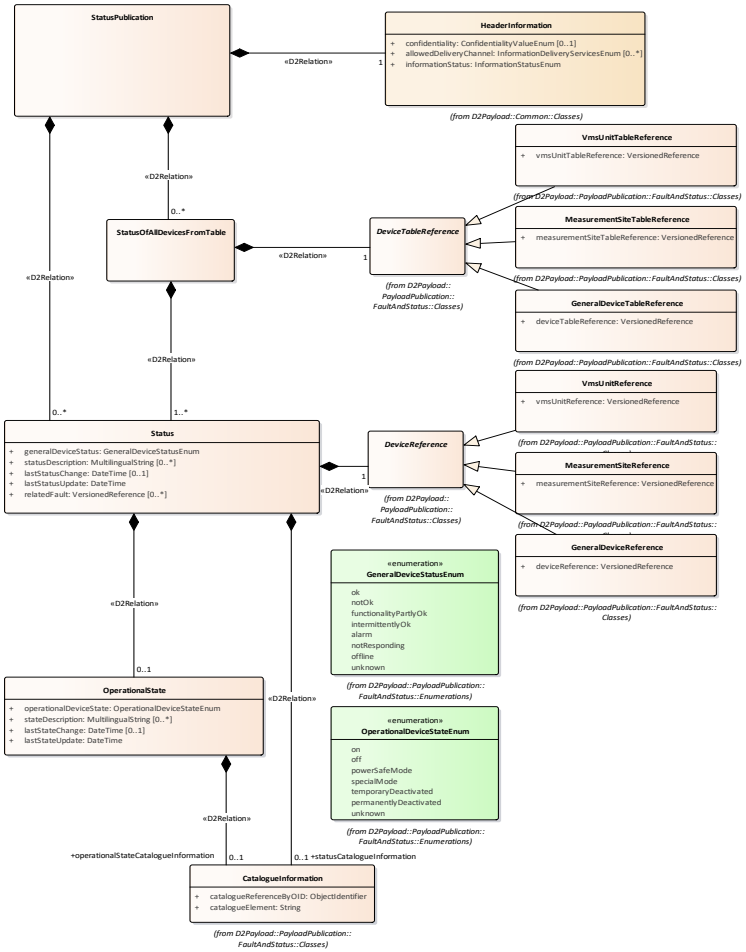
→ new namespace in DATEX II Version 3.0 manner



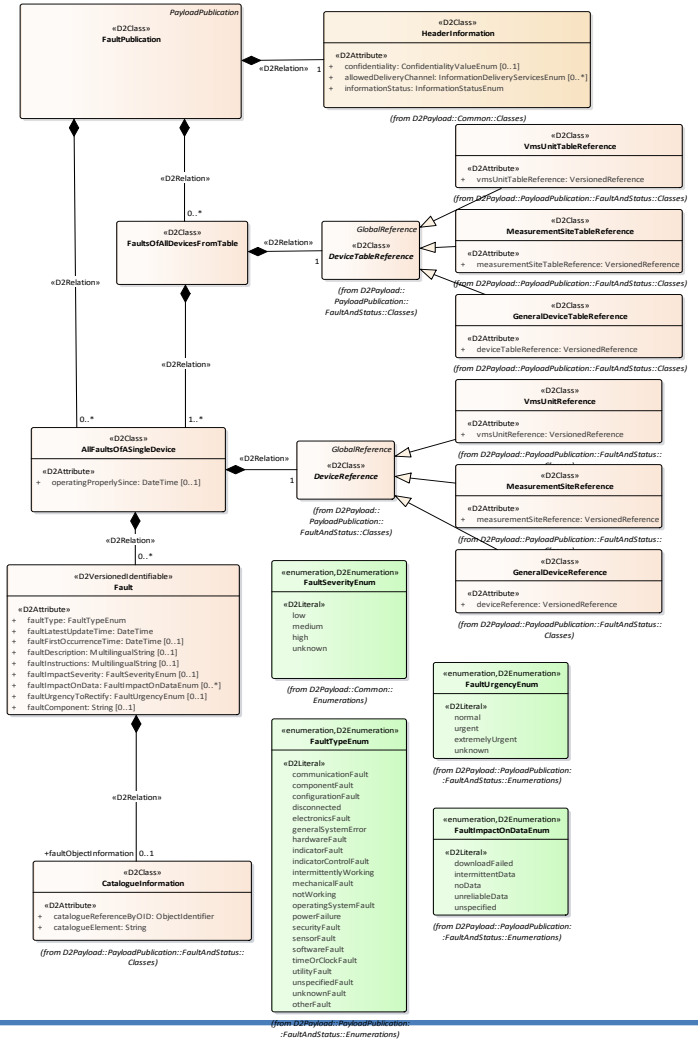
→ no longer bound to existing Fault class

The status and faults data model

New urban status model



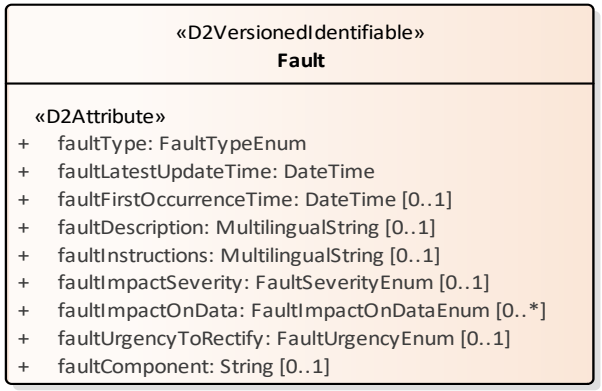
New urban fault model

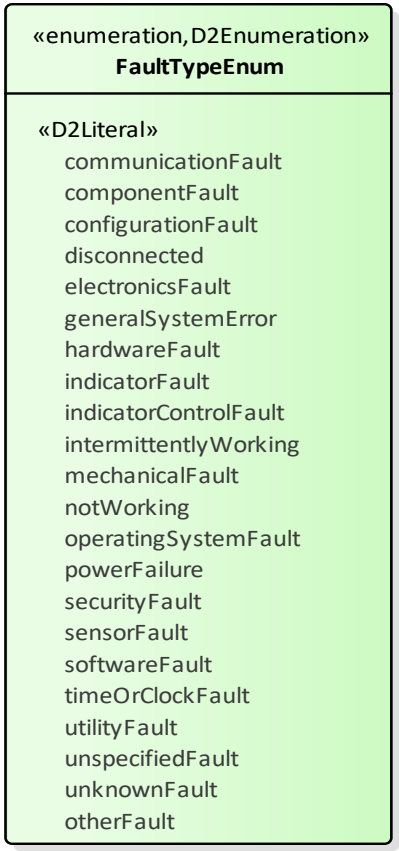


The status and faults data model

- Possibility to transmit status and faults from multiple devices (e.g. centre-to-centre)
- But also single device information (e.g. from traffic signals, VMS, …)

- Fault class improved and extended
- Status and state information added
- New Enumeration types
- Possibility to point to specific fault catalogues





(from D2Payload::PayloadPublication::FaultAndStatus::Enumerations)

Summary

- prCEN/TS 17241: Urban standard for status, fault and quality requirements
- Includes a DATEX II data model for status and faults of field devices
- First DATEX standard outside the CEN/EN* 16157 series
- Use of DATEX II version 3.0 namespace-module
- Centre-to-centre as well as field device to centre communication
- Possibility to refer to specific fault or status-catalogues
- Data model in UML, ASN.1 and XSD (as electronic annex)
- prCEN/TS 17241 coming to formal vote right now (as of Mai 2018)

* formerly CEN/TS

Members of PT1704

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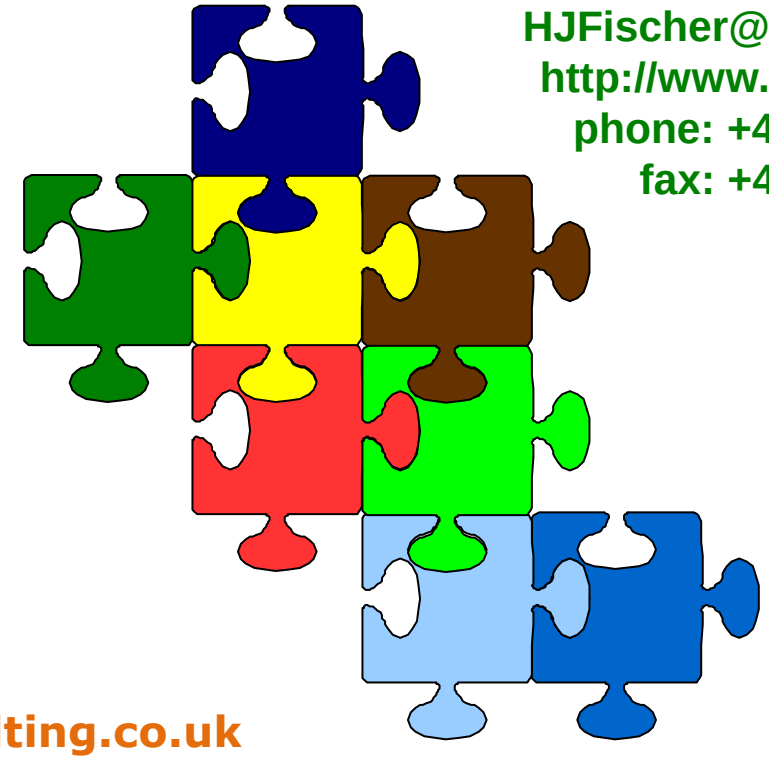

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CEN/TC 278 WG17

For your interest: Further activities of Working Group 17 “Urban ITS”:

(not all of them are DATEX-related)

Blue=Complete Green=ongoing Yellow=starting now

PT1701	TR 17143 Urban ITS Review	Published Jun 2017
PT1703	Location Referencing Harmonisation	TC review Mar+Jun 2018
PT1704	Traffic Management - System status, fault and quality standards	TC review Mar 2018
PT1705	Emissions management in urban areas	TC review Jun 2018
PT1706	Mixed Vendor Environment - Methodologies & Translators (MVEMT)	TC review Mar 2019
PT1707	Mixed Vendor Environment - Standards (MVES)	TC review Mar 2019
PT1708	Mixed Vendor Environment - Guide (CONOPS) (MVEG)	TC review Mar 2019
PT1709	Traffic Management - Data Models (TMDM)	TC review Mar 2019
PT1710	Traffic Management - Interfaces and Information (TMII)	TC review Mar 2019
PT1711	Models and Definitions for New Modes (MDNM)	TC review Mar 2019
	European ITS communications and information protocols (EU-ICIP)	TBD
	Urban ITS issues associated with automated mobility	TBD
	Management for Electronic Traffic Regulations (METR)	New PTs end 2018?