OTS 2 Standardisation

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What is meant by OTS?

OTS
OpenTrafficSystems

Communication Architecture	Instruments	Process
OTS 2 Protocol Specification for exchange of **OTS** and **DATEX II** data	System model for traffic management systems	Support
Implementations		Extensions
Testing Framework		Certification Authority

OTS is successor of OCIT*; Origins: cities, municipal areas D/A/CH.

* Open Communication Interface for Road Traffic Control Systems

OTS is supported by the OTS City Association (OCA).

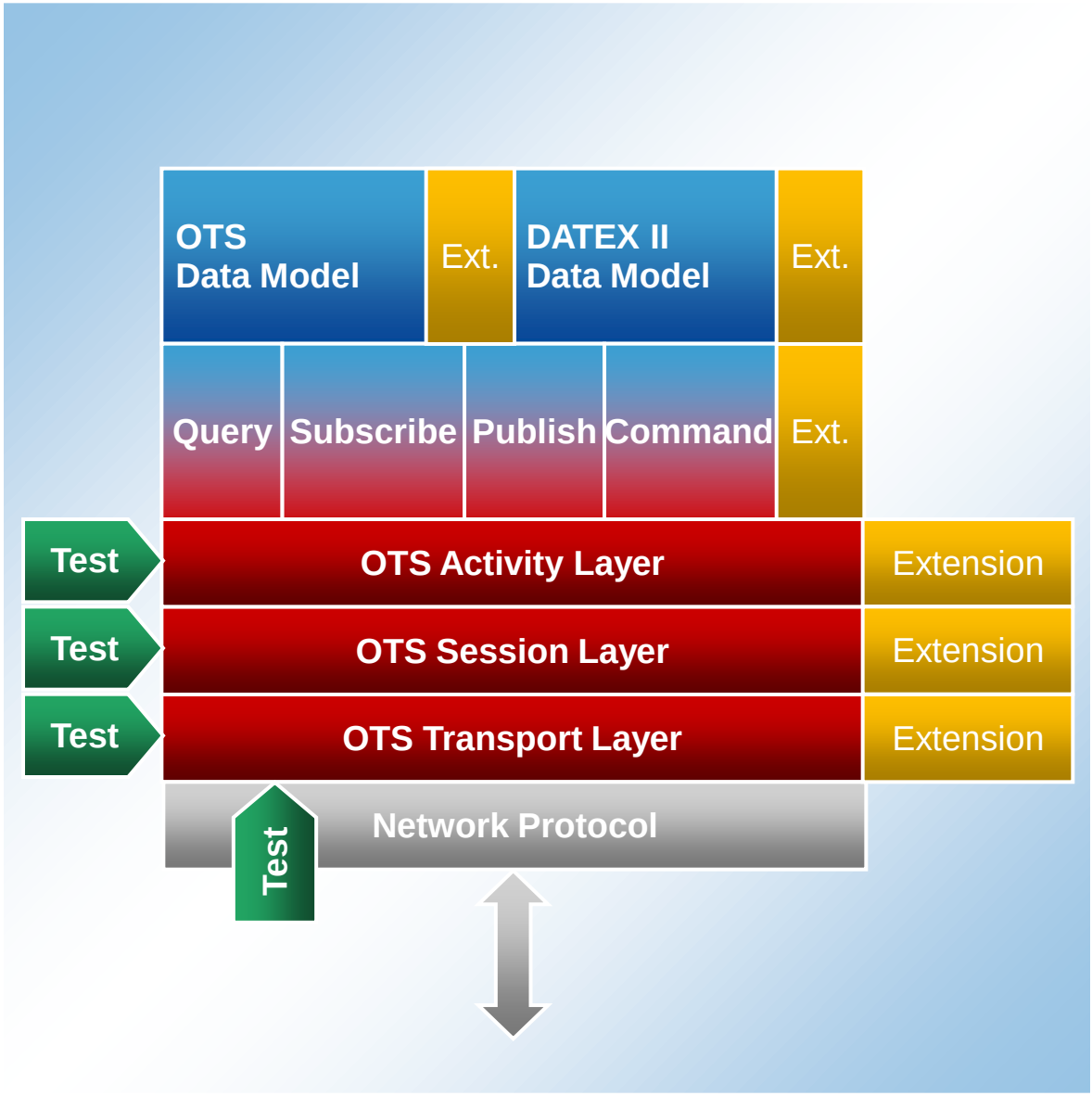
OTS main objective: **Interoperability.**

(Seamless integration of components of multiple manufacturers within or between systems)

www.opentrafficsystems.org

OTS 2 Protocol Specification

- Lower layers (OTS Transport, OTS Session) provide basic services, encapsulate / abstract from network protocol (connection surveillance, blocking pull, …)
- OTS Activity layer provides functionality for applications
- Extensions possible on different levels
- Test framework is an integral part of OTS



OTS 2 Special Features

Configuration negotiation

- Communicating implementations automatically choose necessary features in corresponding versions

Extensibility

- Extensions on different levels possible; no incompatibility because of configuration negotiation

Extension

Testability with provided standard test framework

- Implementations can be developed using standard tests and test framework

TTCN-3
Testing & Test Control Notation

Certifiable by certification authority

- Implementations in future can be certified as OTS 2 compliant

OTS
OpenTrafficSystems

Integration of DATEX II as data model

Idea

- DATEX II data model as addition to OTS data model
- Complementing data models: devices / urban systems ↔ messages / out of town systems

Methods

- Query
- Subscription
- Data delivery

```
<OTS2:msg xsi:type="OTS2:aSnippetsType">
 <OTS2:subscrId>4</OTS2:subscrId>
 <OTS2:data xsi:type="OTS2:acDataElaboratedType">
  <OTS2:base/>
  <OTS2:edPublication xsi:type="D2:ElaboratedDataPublication" …>
   <D2:publicationTime>2009-11-01T14:48:58.29</D2:publicationTime>
   <D2:publicationCreator>…</D2:publicationCreator>
   <D2:headerInformation>…</D2:headerInformation>
   <D2:elaboratedData>
    <D2:basicDataValue xsi:type="D2:TrafficStatusValue">
     <D2:time>2009-11-01T14:40:32</D2:time>
     <D2:pertinentLocation xsi:type="D2:GroupOfNonOrderedLocations">
      <D2:locationContainedInGroup xsi:type="D2:Linear">
       <D2:alertCLinear xsi:type="D2:AlertCLinearByCode">
        …
       </D2:alertCLinear>
      </D2:locationContainedInGroup>
     </D2:pertinentLocation>
     <D2:trafficStatus>freeFlow</D2:trafficStatus>
    </D2:basicDataValue>
   </D2:elaboratedData>
  </OTS2:edPublication>
 </OTS2:data>
</OTS2:msg>
```

DATEX II Namespace

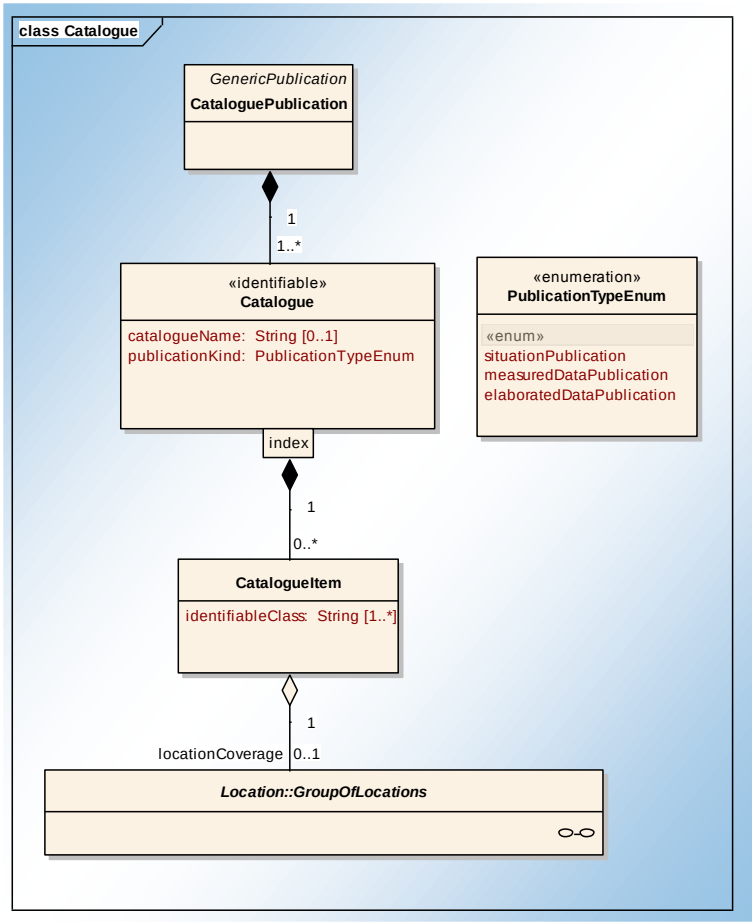
DATEX II Integration

- Need for an extension to describe available data
- To be used in queries and subscriptions

Catalogue Extension

- Catalogue items inform about elaborated or situation data a server has to offer
- Locations can be specified for which the data is available (optionally)
- Using the OTS 2 protocol a client is able to ask the server for a CataloguePublication and then place subscriptions referencing to the Catalogue(s) and CatalogueItem(s).
- A client can choose between different data publications and a server only needs to publish the data someone has ordered.

www.datex2.eu/content/catalogue-extension



DATEX II + OTS 2 in project simTD

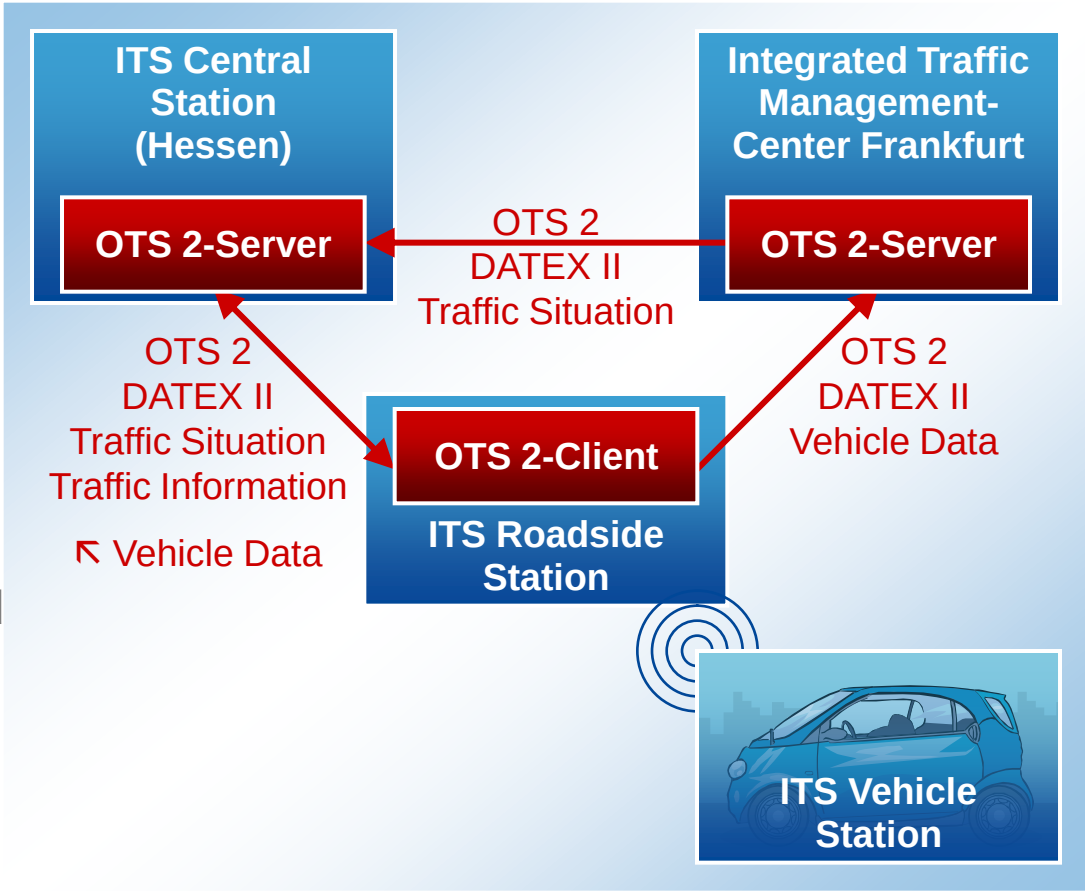
simTD

- Car-to-X communication
- Road safety, traffic efficiency, value-added services

www.simtd.de

OTS 2 + DATEX II

- OTS 2 used as protocol
  - between central systems
  - between central station and roadside stations
- DATEX II used as data model for exchanged traffic information
- OTS 2 components implemented by GEVAS software as sub-contractor to Heusch/Boesefeldt



OTS 2 DIN Publicly Available Specification

DIN

- German Institute for Standardization

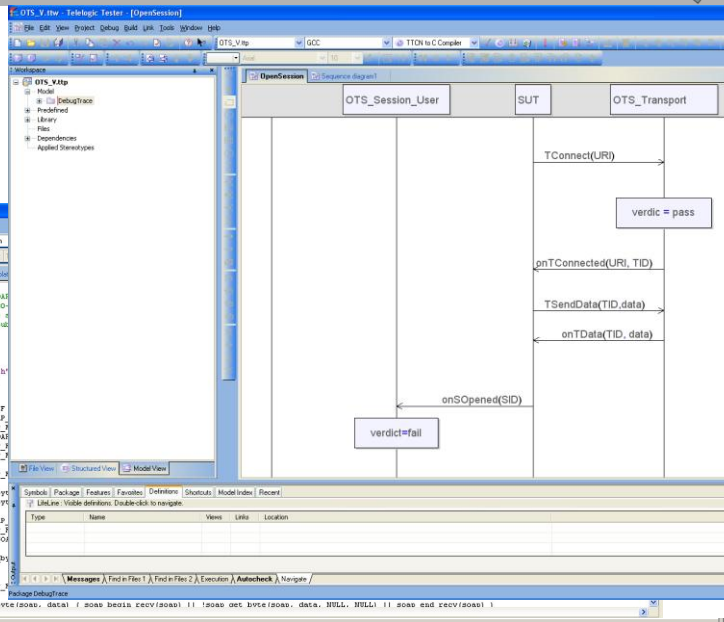
OTS 2 Interface Specification

- DIN SPEC 1213 (PAS) to secure OTS 2 project results and as a first step to standardization
- “The DIN SPEC planned following the PAS procedure is offering a new and open interface standard for an interoperable data exchange in Intelligent Traffic Systems (ITS).”

OTS 2 Software

OTS 2 Library

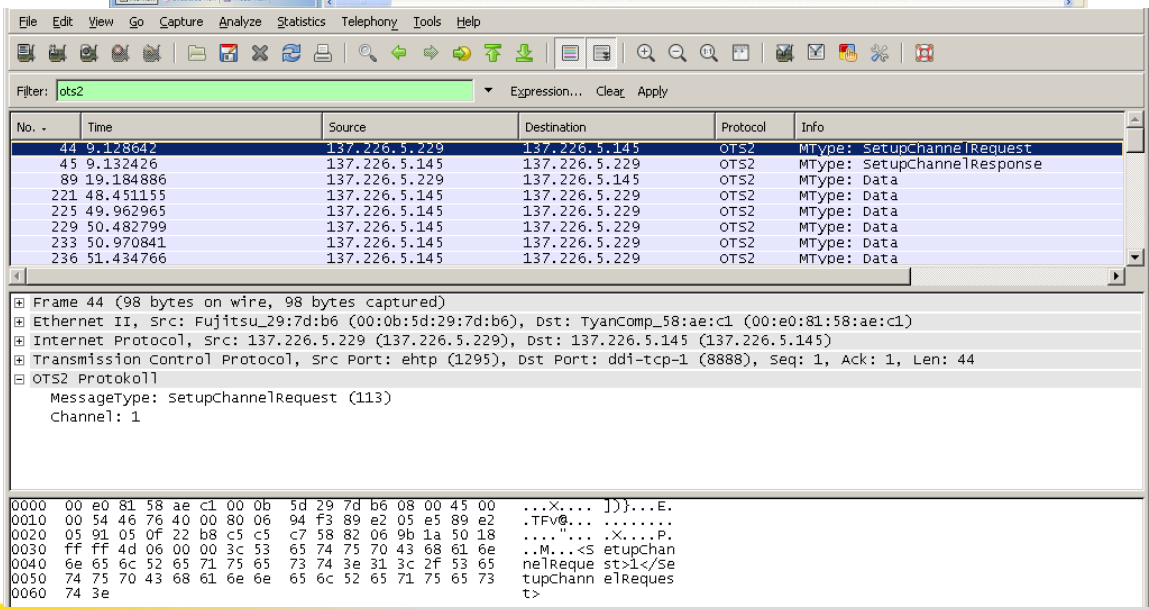
- Prototype by ComNets (RWTH Aachen)
- First implementation for real-life systems currently developed by GEVAS software (will be available for licensing)



OTS 2 Tools

TTCN-3
Testing & Test Control Notation

- TTCN-3 testing environment (using IBM Telelogic Tester)
- OTS 2 plugin for Wireshark protocol analyzer



WIRESHARK

Mobility is Life – Life is Mobility

Thank you for your attention!

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