DATEX II – Work Item 5
VMS Model

Fabrizio Paoletti
Autostrade//Tech

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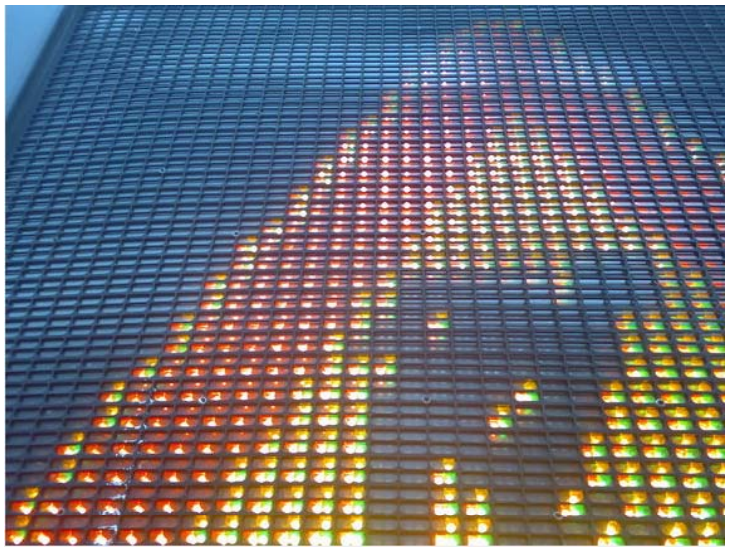
Content

- **VMS across Europe**
  - DATEX II and VMS, a long history
    - user cases
    - Requirements from Mare Nostrum project
    - Italian experience
    - UK experience

- **DATEXII VMS model**
  - Static information: VMS table
  - Dynamic Information: status and messages
  - Situation Record management



- **Achievements and next steps**
  - Link with TMP
  - Managing and Setting requirements

VMS are a technology more and more widely and Intensively used nowadays:

- To inform road users on:
  - Danger Situation
  - Traffic disruption
  - Environmental Conditions
  - Travel Times
- To manage traffic for:
  - Alternative Itineraries
  - Advices
- Additional Information:
  - Comfortable Travelling
    - *Services, Facilities,*
  - Campaigns

Many VMS

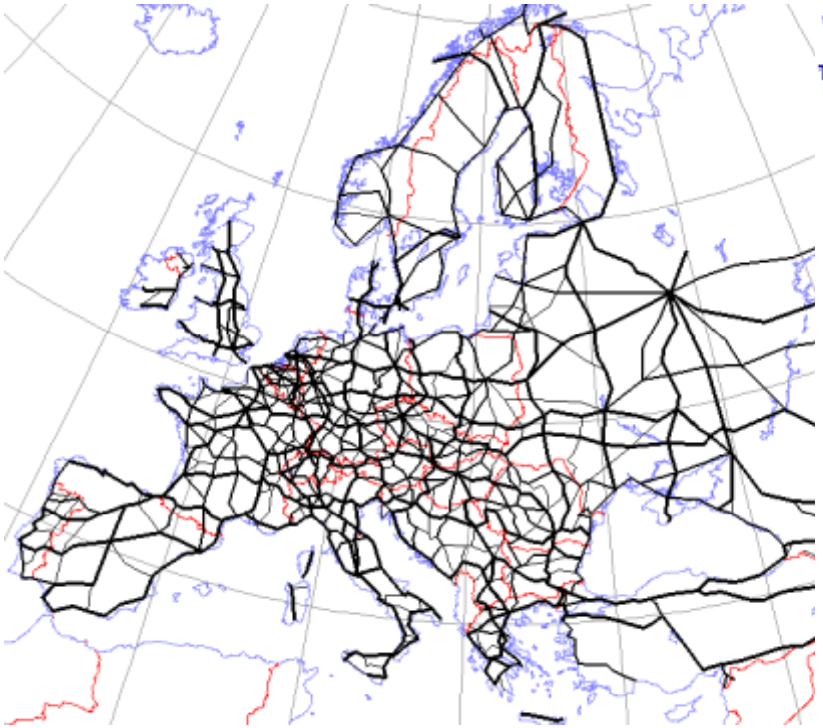
- **Several Types**
- **Several Usages**

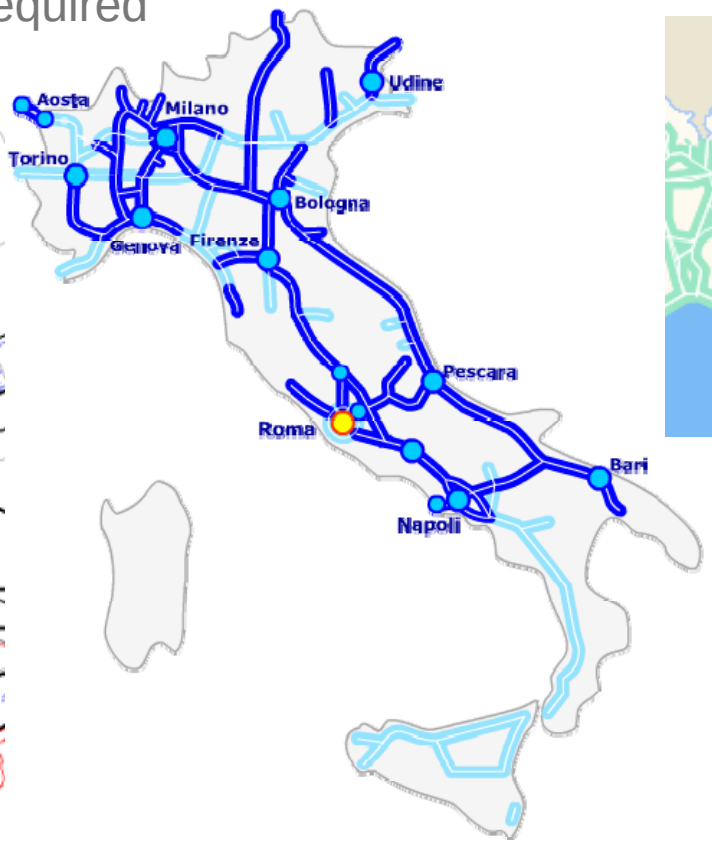
More and more VMS..

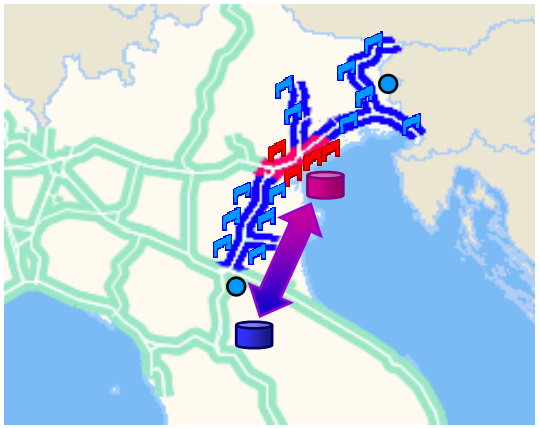
- **Danger warning Signs**
- **Mobile VMS**
- **Special Usages:**
  - Lane Control Systems
  - Tunnels,
  - Park,
  - Fuel prices,
  - General infos

Automatic Data Exchange is a necessity:

- Transport Network is more and more integrated at national and international level
- Several TMCs manage different interconnected roads and motorways
- Real Time data exchange required







VMS and DATEX

DATEX II provides a reliable and consistent data exchange on traffic situation across the network

Centres requires Information about messages displayed on “near” VMS

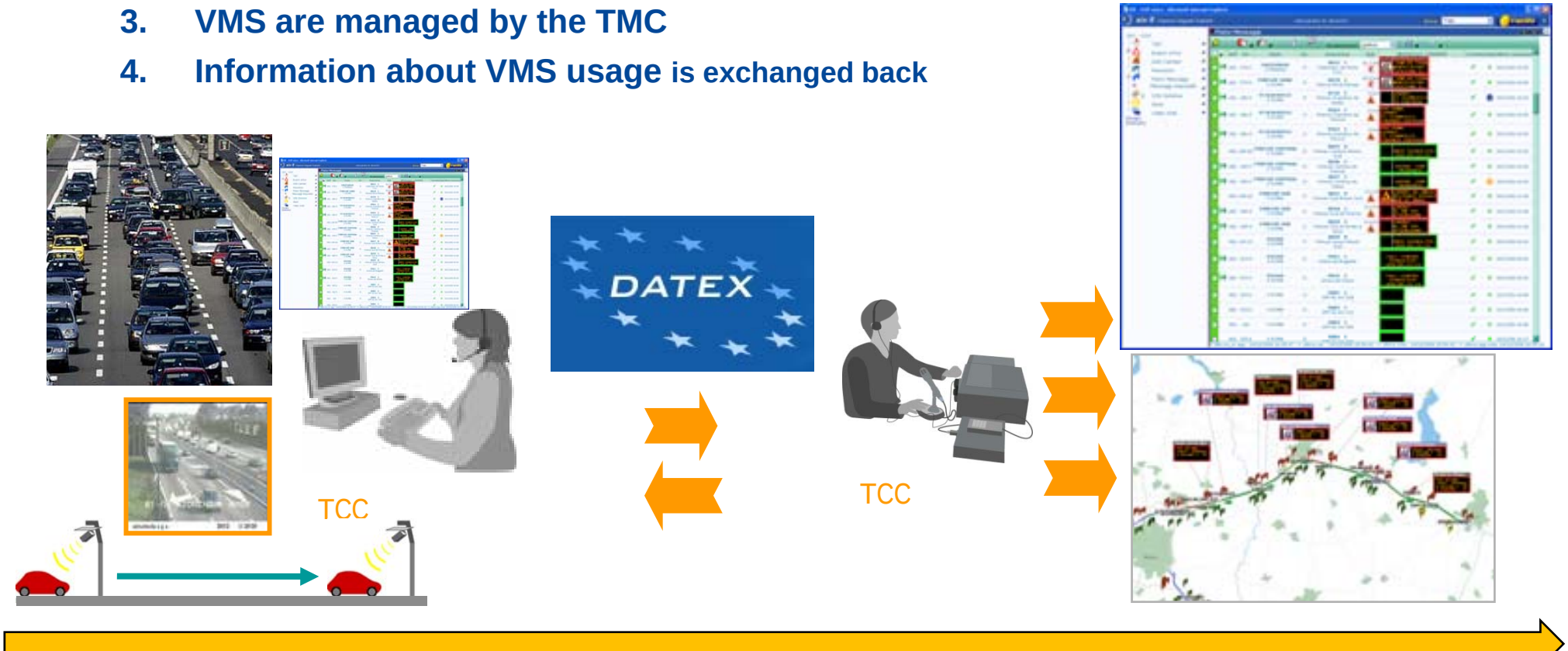
- To be aware of information delivered to users during travel:
  - **Information**
  - **Safety**
  - **Operational purposes**

Two Scenarios for VMS information exchange follows ..

Information Exchange and VMS management

1° Scenario: Road Information is exchanged to manage VMS according to common agreed rules (user cases in Italy)

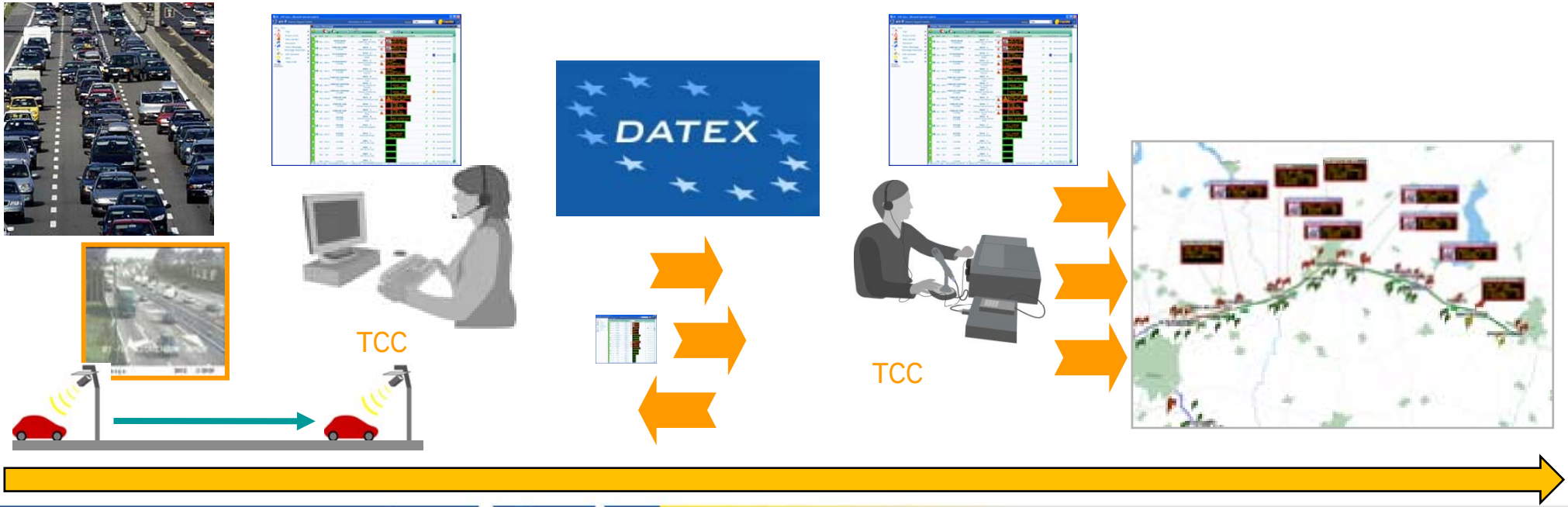
1. Road Situation is detected
2. Traffic or Environmental Information is exchanged one way
3. VMS are managed by the TMC
4. Information about VMS usage is exchanged back



Information Exchange and VMS management

2° Scenario: Proposal of VMS management has to be exchanged and agreed (such as TMP plans agreements)

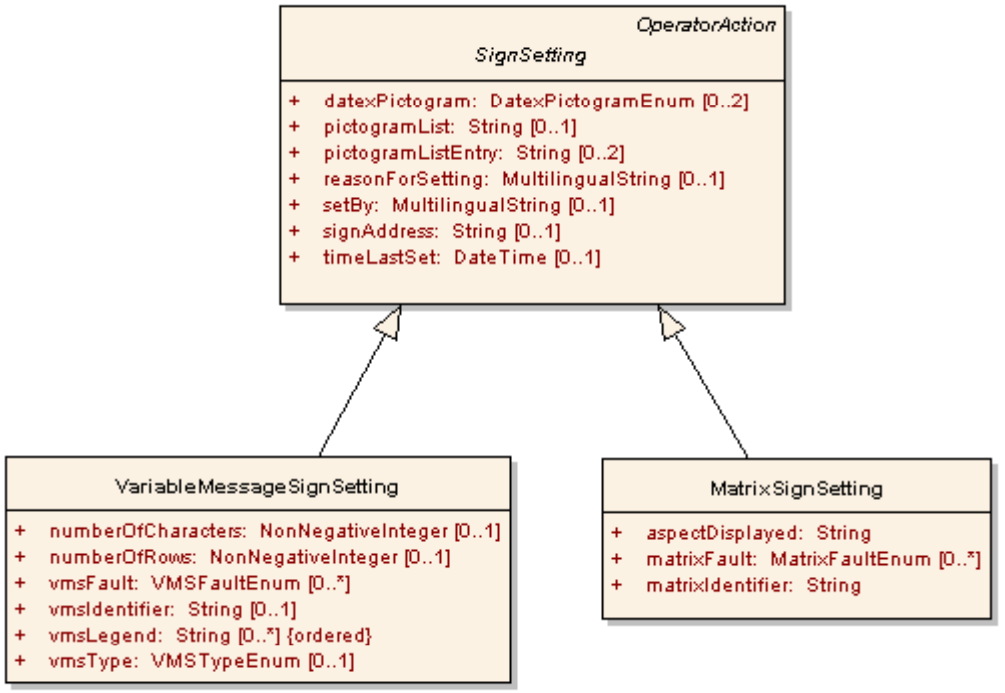
1. Road Situation is detected by TMC
2. VMS management plan is elaborated
3. Traffic or Environmental Information is exchanged
4. Messages to be delivered to other TMC managed VMS are exchanged
5. Approval of Rejection of Message Plan
6. Messages are delivered to VMS



DATEX II VMS modeling

2006 UK proposal for management of VMS in DATEX II version 1.0

- **Used for Barcelona demostrator June 2006**
- **VMS Sign Setting in Situation Publication**
  - Already Available Publication
  - Linked to Situation Element within operator Action
- **Model lacks**
  - Very simple and not complete model
  - does not consider all VMS types
    - Missing multipage messages VMS



Working on a VMS Model

Scope of the new model is to describe VMS information

- Within Situation Publication
- As Separated VMS Publication

Starting from 2007-2008 VMS Model UK and IT taskforce

- **Based on initial Mare Nostrum results (M-VMS text+picto)**
  - Known VMS appearence and usage
  - Initial Picto list from Mare Nostrum experience

2009 → 2010

- Extension based on Version 1.0 proposed to DATEX TG
- WI started in DATEX TG
  - Link with Mare Nostrum to deal with known requirements
  - Included in version 2.0 RC2
  - Model improvement: FR contribution

- Standardization issues to be managed in future

Management of displayed messages and VMS Status

VMS Publication has been needed as VMS information may vary for different reasons

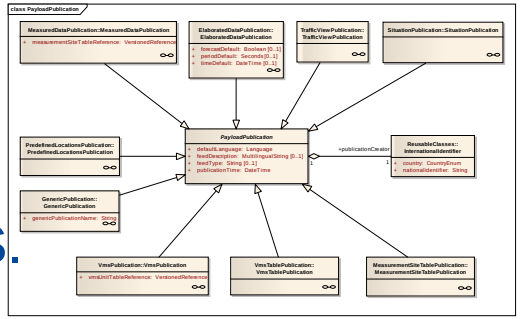
- Situation Record related
  - Road and Traffic Condition, Environment, Operator Actions
  - VMS Setting in Operator Action
    - *Link to reusable class dynamic VMS information*

- Non Situation Record related
  - Travel Times
  - Informational or Security Campaign
  - Manual management by operators
    - *road or not road information:*

    show, fairs, concerts, strikes, pollution, etc

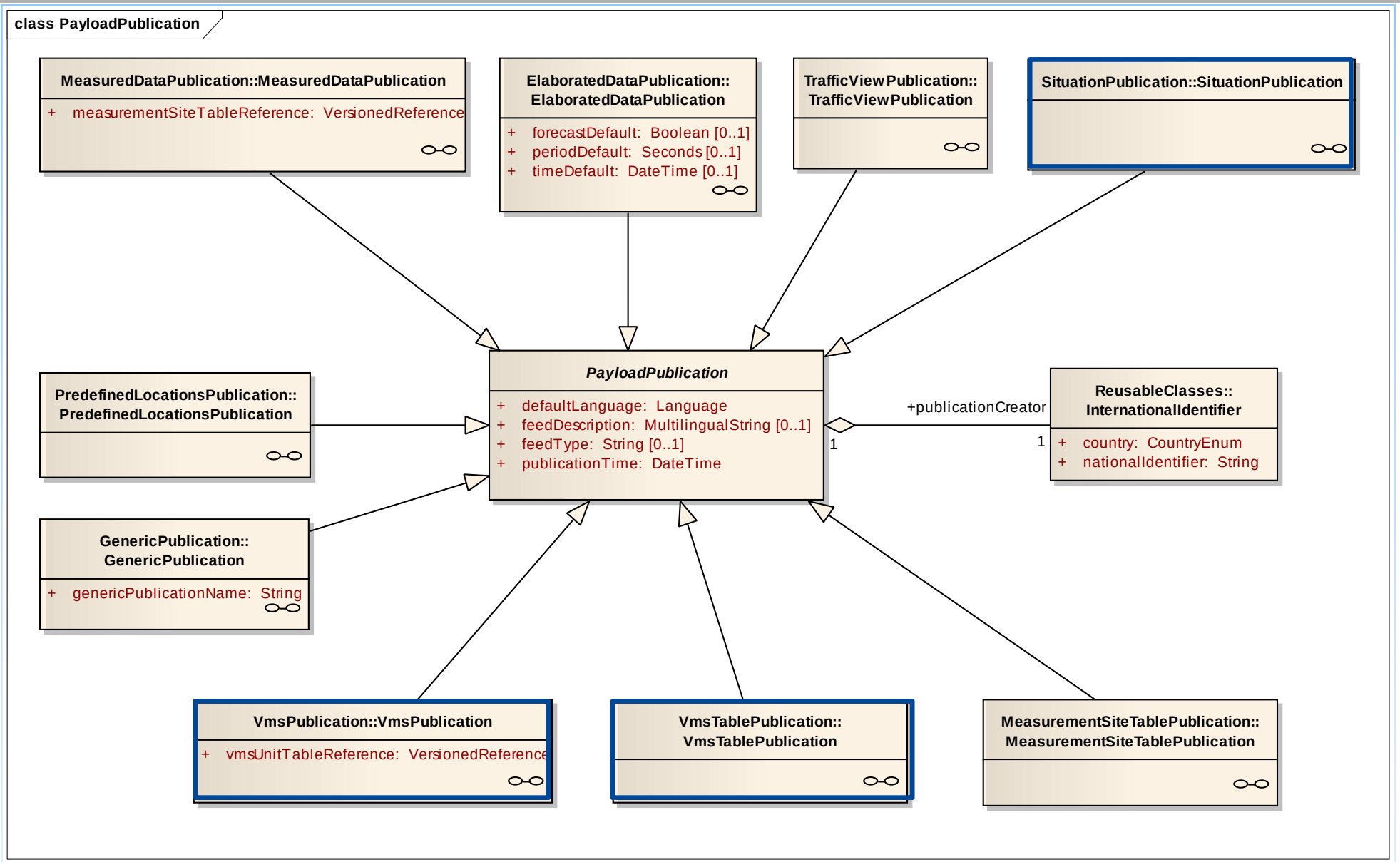
  - VMS Status (fault, component failures)

VMS Model has been developed in 3 Publication



- VMS Unit Table
  - Static information for fixed and not dynamic/mobile VMS.
- VMS “dedicated” Publication optimize Information exchange
  - Best usage for general information on VMS not only related to situations
- VMS are also managed in Situation Publication
  - Direct link with situation element that generate messages

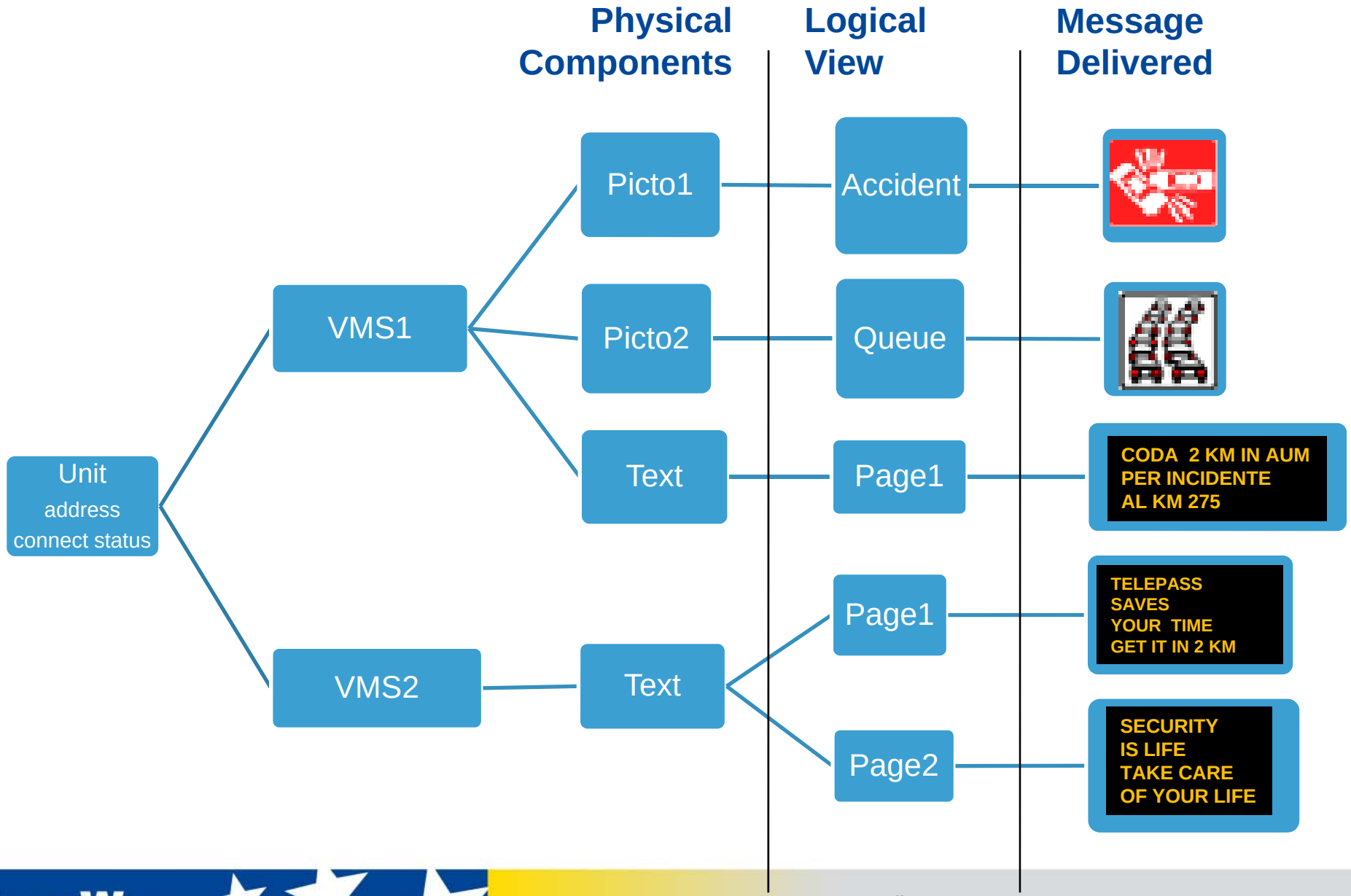
The DATEX II VMS Model (2)



Model needs to fully describe VMS

- Geographic position
  - Where the VMS is?
- Technology
  - How is made?
- Appearence
  - How does it looks like?
- Usage, Displayed Message
  - Which location does it refer to?
  - What does it show?
- Status
  - Does it works?

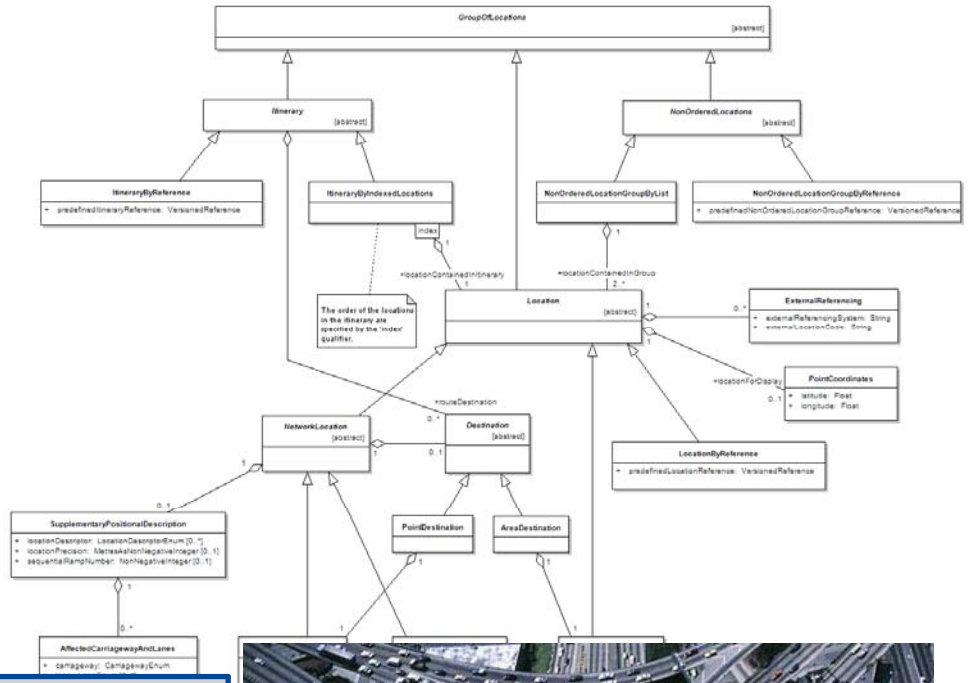
Describing a VMS



Where is it? Location

DATEXII Location is fully suitable for usage for VMS modeling

- **Position (fixed or mobile)**
  - Along the Road
    - Dangerous location
    - In Tunnels
    - Dynamic Speed / Hardshoulder
    - Next to exit / junctions
  - At main road or motorway Entrance
  - On carriageway intersection
  - On point
- **Lane correspondance (e.g. LCS)**
- **All Other needs**



Dynamic Location allowed for Mobile VMS

Implements

- **Physical Location**
- **Managed Location (if relevant)**
  - e.g. other Motorways, Parking, Fuel Station

Looking at it : VMS structure

- **Text**
  - Number of Rows and characters per
  - Graphical matrix text, variable font

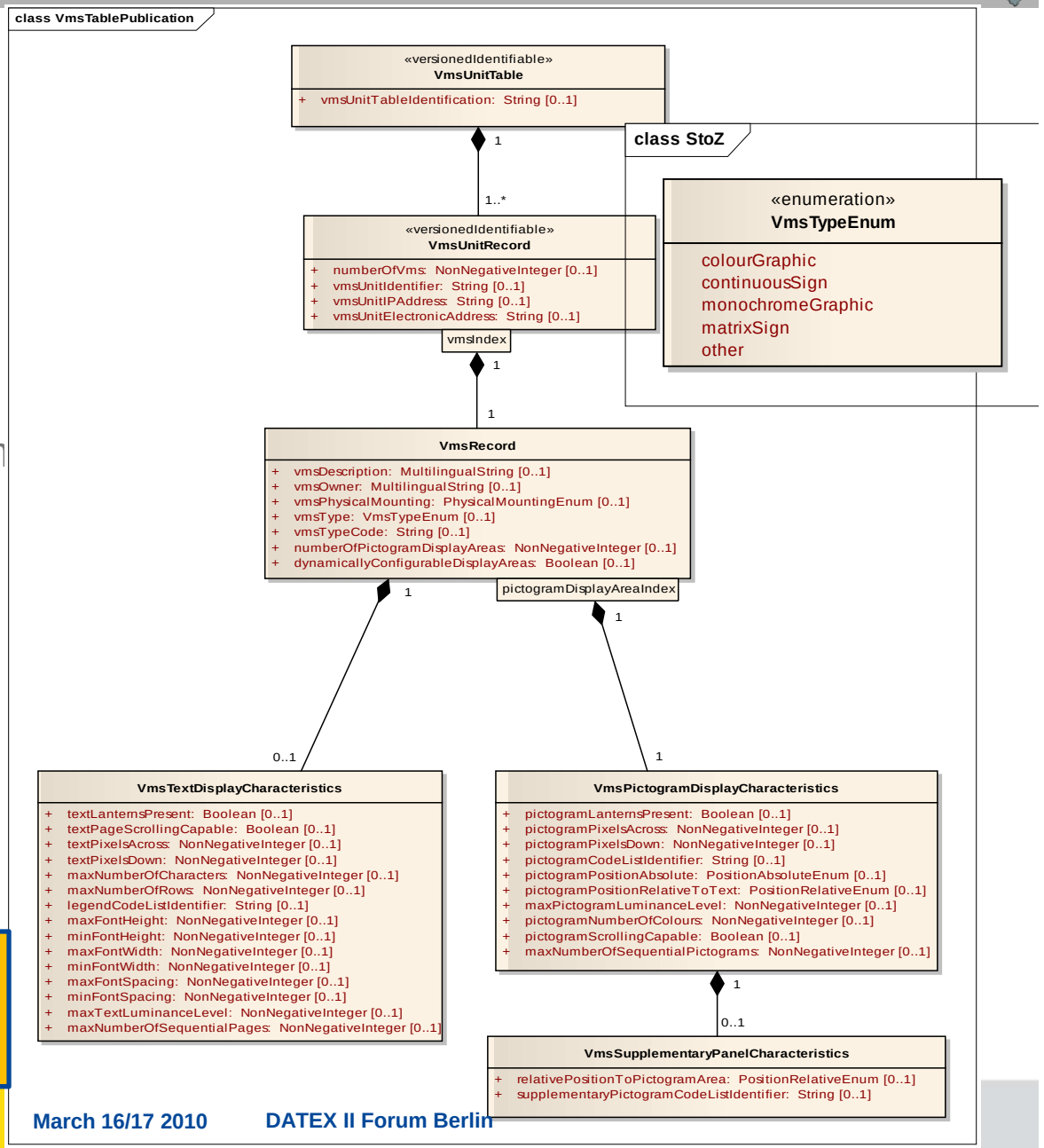
and/or

- **Pictogram(s)**
  - Position relative to text (if exixts)
  - Position relative to primary pictogram
  - Fully Graphical Pictos
  - Predefined (Coded)

and/or

- **Lanterns**

Dynamic Characteristics for full graphic VMS



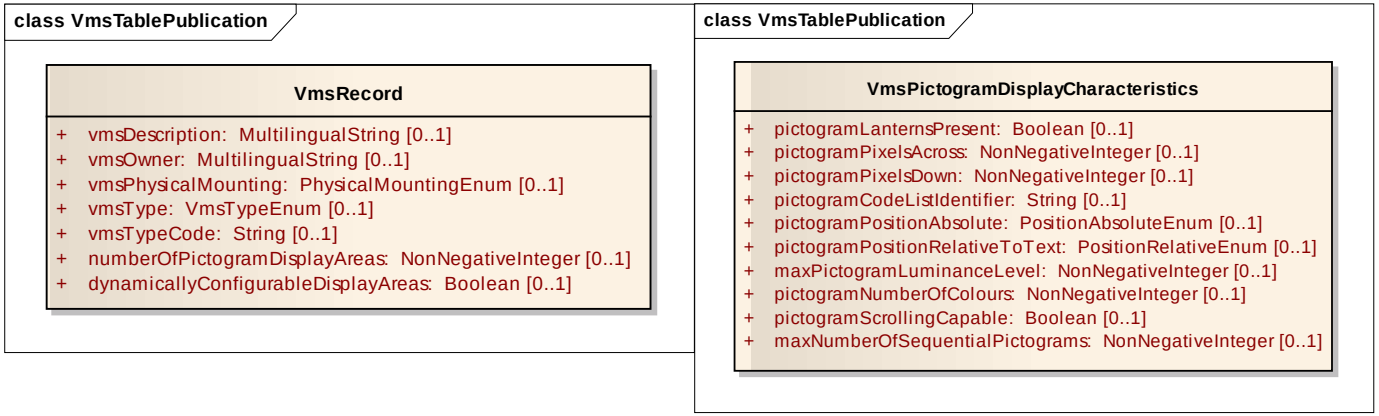
How is made ? Does it work? Technology

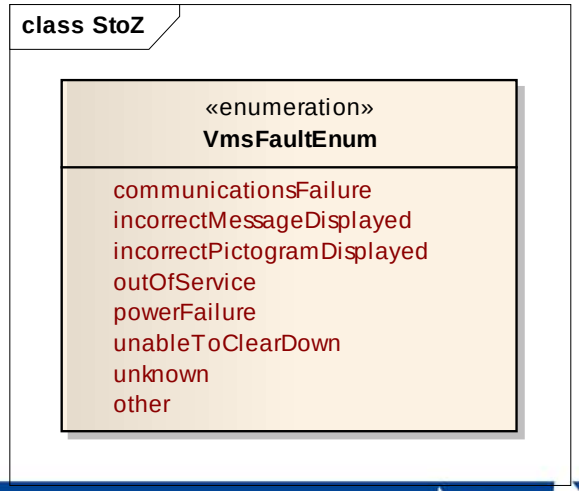
Static information

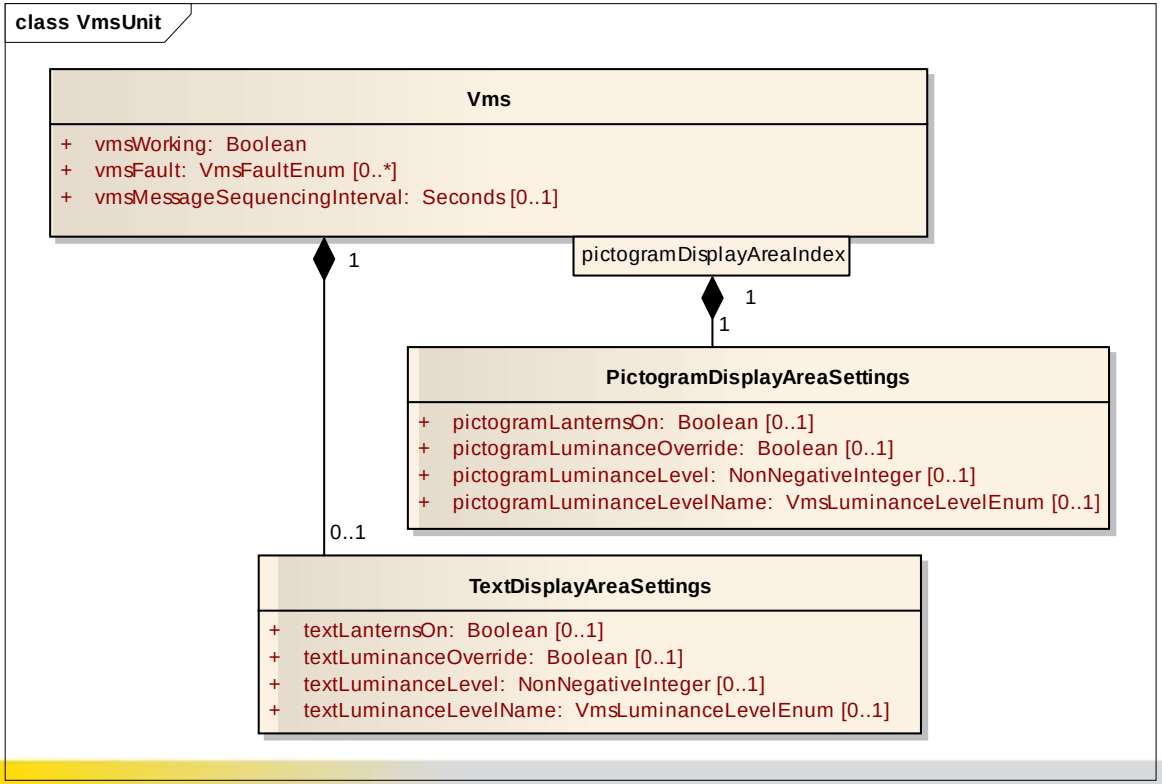
- Led / others
- Vendor / model

Dynamic information

- Working Configuration
- Failures
  - Main information on failures
  - Working or not



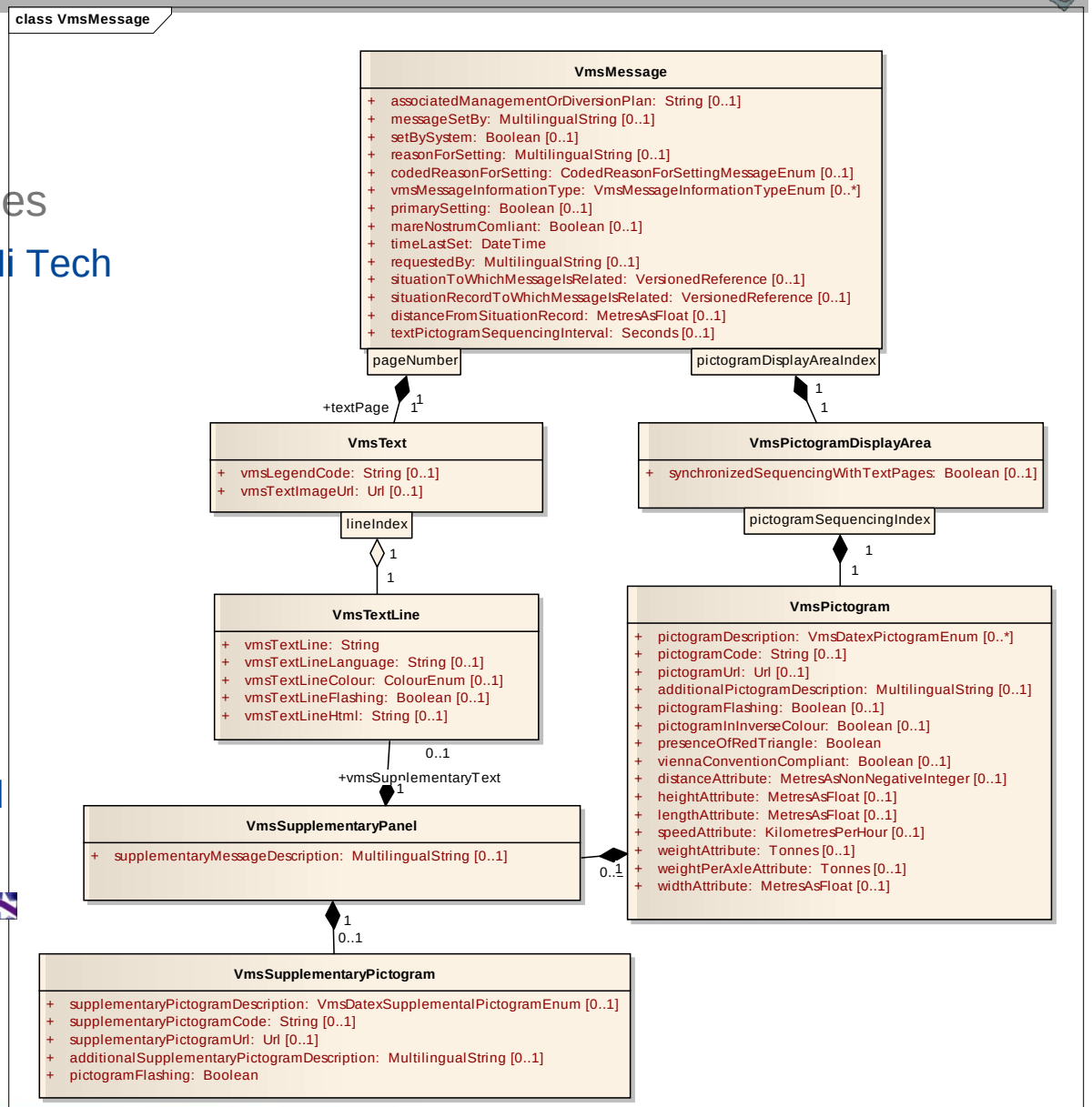




What does it display? Messages and Status

- **Multi paged Text**
  - Flashing text
  - Text line based attributes / languages
    - In text line attributes in HTML for Hi Tech
  - Graphical Text allowed
  - Variable Font Size

  and/or
- **Pictogram(s) displayed**
  - Multi-Pictograms allowed
  - Supplementary Panel Info
  - Semantic Information
    - Coded List Mare Nostrum checked
      - *Vienna Convention Compliance*
      - *Mare Nostrum Compliance*
  - Image delivered
    - image URL link to “see” the image



Conclusions

DATEX II version 2.0 RC2 allows for fully describing of VMS nowday technology, functionalities and status.

This model used to deliver VMS information to centres may be extended for:

- Managing data information to deliver proposal for setting messages
  - Reject / Approval of message plans to be implemented
    - *TMP results may be useful on this*

- Setting of VMS
  - As the model fully describes XML Schema could be used to deliver messages to VMS.
    - *More exchange are to be extended i.e.*
      - *Acknowledge messages from VMS*
      - *Full Session management*
      - *Fault notification from VMS*
    - *Extensions on DATEX II on this can be provided*
      - *outside of DATEX scope*

Fabrizio Paoletti

DATEX TG

Italy: Autostrade // Tech