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Experiences and challenges with INSPIRE Transport Networks-related information in the ITS domain

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Research scope

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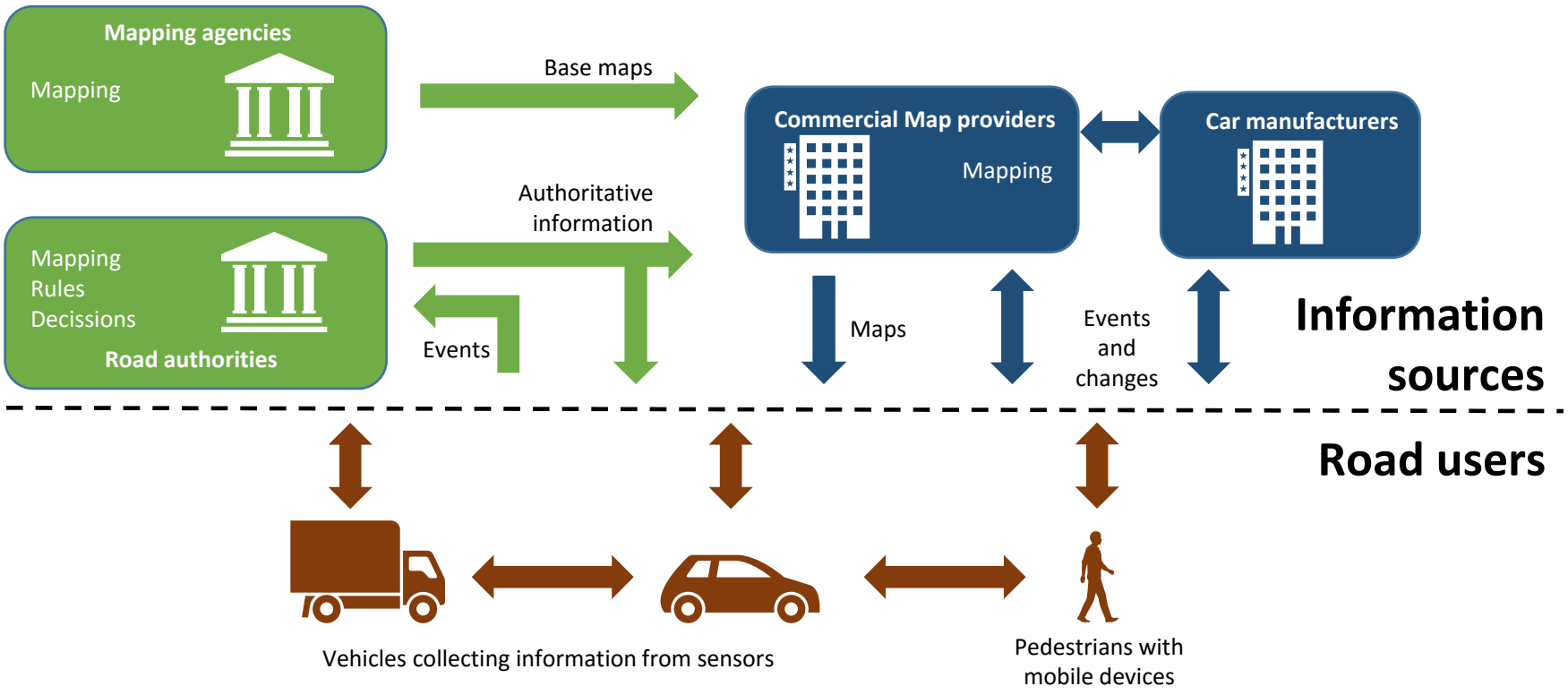

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Standardization actors

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	Domain		
Scope	**GIS**	**ITS**	**BIM**
Official International Standards	ISO/TC 211	ISO/TC 204	ISO/TC 59 SC 13
Official European Standards	CEN/TC 287	CEN/TC 278 ETSI TC ITS	
European regulations	INSPIRE		
Industry/consortiums	OGC	C2C-CC TomTom NDS	buildingSmart

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Information modelling approaches

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OBJECT MANAGEMENT GROUP®

UNIFIED MODELING LANGUAGE™

MODEL DRIVEN ARCHITECTURE®

ISO/TC 211

- MDA and one common UML Profile
  - ISO 19103 CSL
  - ISO 19109 Rules for Application Schema
  - ISO 19136 GML
- ISO/TC 211 Harmonized UML Model

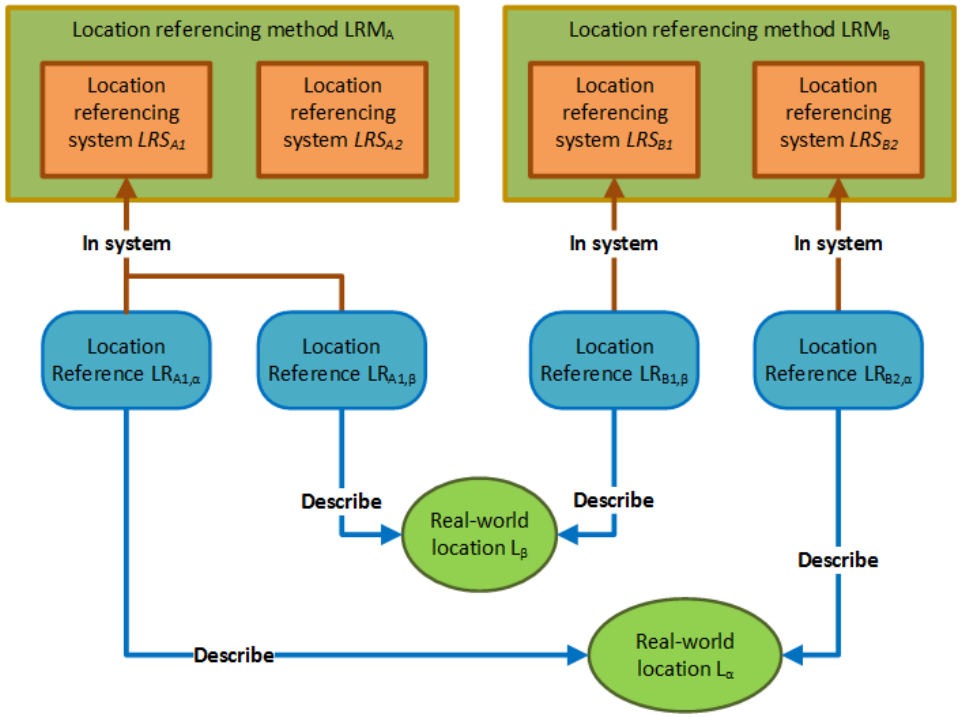
ISO/TC 204

- Several formal and unformal UML Profiles
  - ISO 21219 TPEG2 UML Profile
  - ISO 14825 and 20524 GDF
  - ISO 17572 Location Referencing
- No ISO/TC 204 Harmonized UML Model

CEN/TC 278

- No common UML profile
  - EN 16157 DATEX II UML Profile
- No CEN/TC 278 Harmonized UML Model
  - EN 16157 DATEX II UML Model
  - TN-ITS based on ISO19109

Location referencing



Geometry	•ISO 19107, ISO 19111, ISO 6709
By Identifier	•ISO 19112 •ISO 17572-2, e.g. RDS-TMC (ALERT-C)
Linear Referencing	•ISO 19148
Dynamic	•ISO 17572-3 (AGORA-C) •TomTom OpenLR
Lane-level	•ISO 17572-4

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European specifications

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INSPIRE Transport Networks	TN-ITS	EN 16157 DATEX II
• Linear Referencing	• Geometry • By Identifiers • Linear Referencing • AGORA-C • OpenLR	• Geometry • By Identifiers • Linear Referencing • ALERT-C • OpenLR

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Discussion

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Several actors

- Development in silos

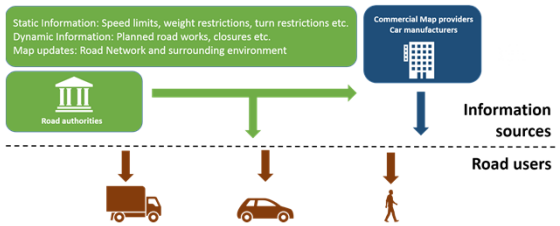
Information modelling principles

- Different use of UML
- Lack of harmonized models
- Different exchange formats
- Differences between models and implementation formats

Location referencing

- Different methods
- Transformation and accuracy

Authoritative data maintained in ISO/TC 211 based systems



Different services based on the same sources

- Example: TN-ITS and DATEX II

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Conclusions and research recommendations

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Closer collaboration between actors

Joint Task Force ISO TC 204 WG 3 and ISO/TC 211 WG 10

Common, harmonized UML models based on MDA

Transformation of UML Profiles

Common implementation formats derived from models

GML, JSON, GeoPackage

Linking models with Semantic Web technologies

Location referencing transformations and accuracy

Standards from other actors

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Thank you for listening!

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