Management for Electronic Traffic Regulations
METR

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CEN TC278/WG17 Urban ITS

CEN/TC 278 WG17 Urban ITS purpose and scope

- Act as coordination point for Urban ITS standards development, and be the harmonization and consensus forming group for Urban ITS and liaison with other European groups:
  - Other WGs of CEN TC278
  - Other CEN TCs
  - ETSI TC ITS
- Coordinate and support M/546 (Urban ITS Mandate)
- Act as leader of Project Teams to progress Urban ITS work items quickly
- Develop relevant Urban ITS documents that do not fall under other TC/WG scope and responsibilities
- Handle international coordination and harmonization (ISO, IEEE etc)

CEN TC278/WG17 Urban ITS project team overview

Blue=Complete Green=Ongoing Yellow=Just started

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 ?

CEN/TC 278
ITS standardization

A forest in New York

Urban Parking in Italy

Dynamic signs in Australia

CEN/TC 278
ITS standardization

Some latin countries

UK Challenges

More UK challenges

CEN/TC 278
ITS standardization

Not only motor vehicles

CVC 21200

Traffic Order Example UK (8 pages)

THE TAUNTON DEANE BOROUGH (WIVELISCOMBE) TRAFFIC REGULATION ORDER, 2001

The Taunton Deane Borough Council (hereinafter referred to as "the Council") pursuant to arrangements made under Section 101 of the Local Government Act 1972 with the County Council of Somerset in exercise of the powers of the said County Council under Sections 1(1), 2(1) and (2), 4 (1) and (2) and Part IV of Schedule 9 of the Road Traffic Regulation Act 19 and of all other enabling powers and after consultation with the Chief Officer of P accordance with Part III of Schedule 9 to the Act, hereby make the following Orde

(b) between the hours of 8.00 am to 6.00 pm in any of the lengths of road specified in Schedule 2 to this Order;

(c) between the hours of 8.00 am to 6.00 pm Monday to Saturday in any of the lengths of road specified in Schedule 3 to this Order.

"parking disc" means a device 125mm square local authority on or after 1st April, 2000 or orange, if issued before that date, and capable of showing the quarter hour period during which a period of waiting has begun.

High Street	(a) On the east side:-
	(i) from the junction with Cheapside northward for a distance of 79m;
	(ii) from a point 104m north of the junction with Cheapside northward to the junction with Silver Street;

Dated this 10th day of January, 2001

The COMMON SEAL of the)
TAUNTON DEANE BOROUGH COUNCIL)
was hereunto affixed in the presence of:-)

R I Taylor
Chief Solicitor

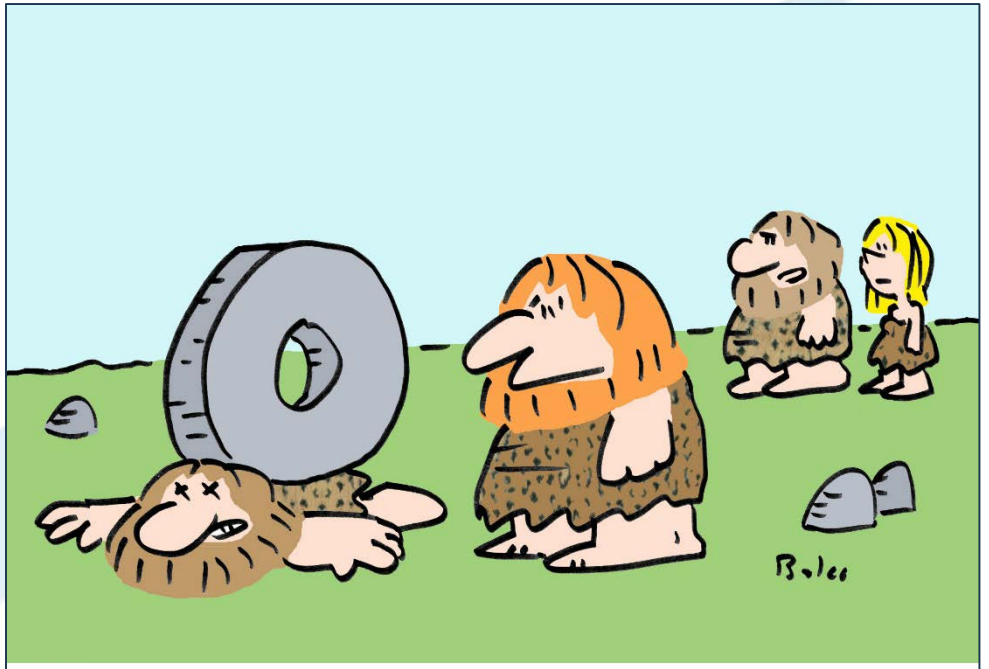
Challenge description

- Cities are increasingly forced to set local regulations to meet traffic problems
- These regulations are often temporary, or otherwise have time validity restrictions
- Regulations are usually geographically limited; sometimes down to lane level or parking bay level
- Dissemination and enforcement of regulations is difficult and costly today
  - temporary traffic signs, roadside billboards, newspaper notices, radio announcements, traffic police, parking wardens,…
  - Some cities have started using proprietary Apps for some of the dissemination
- This is a highly manual and very costly process
  - Hampers mobility
  - Not transparent for outside users- also a language barrier

Management for Electronic Traffic Regulations

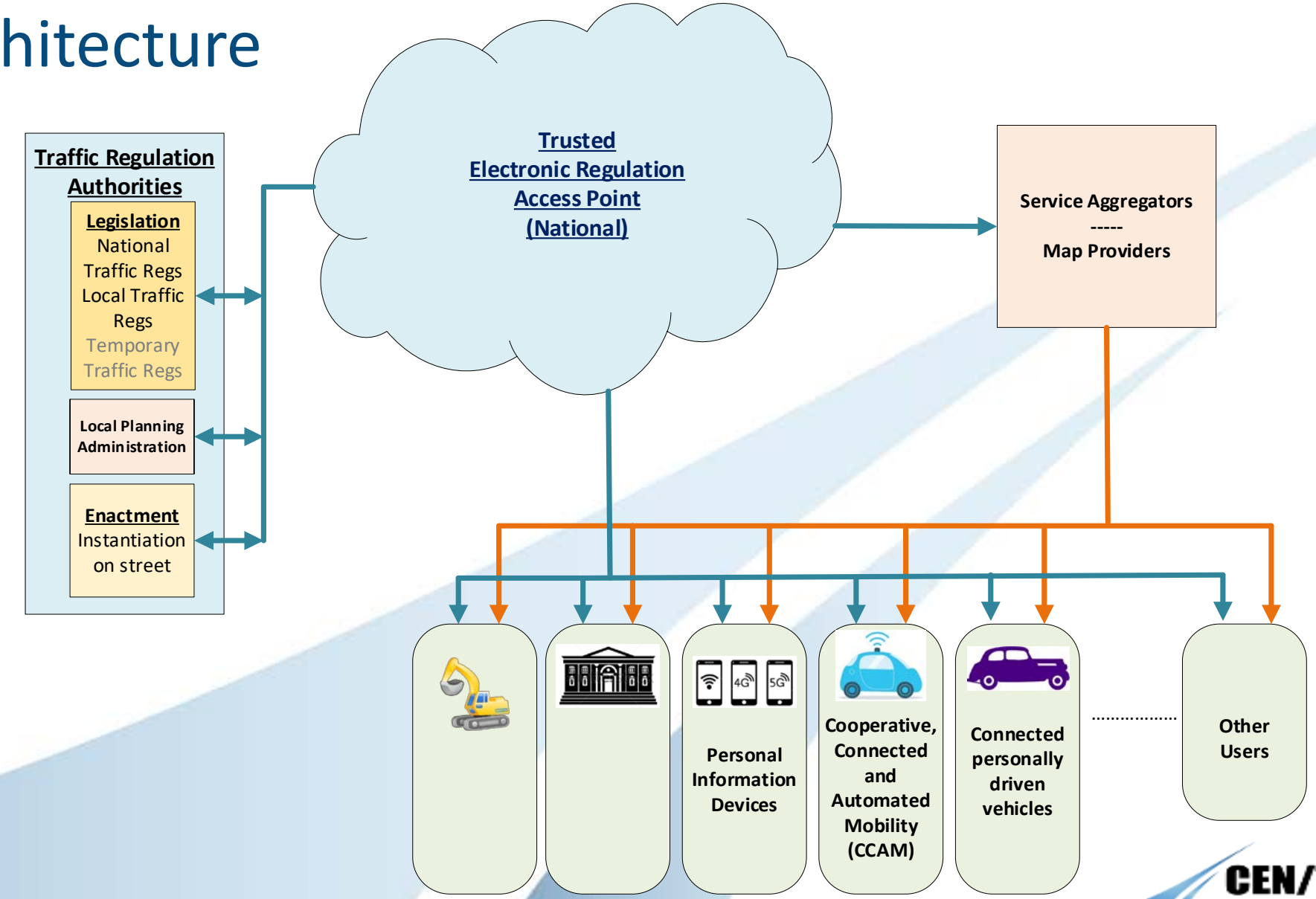
- Rules are time-and-place referenced
  - Similar to Local Dynamic Map
  - Multiple regulations may be combined in sets
- Many relevant standards already exist. → **Reuse**!
- Security is paramount: Integrity and Availability
- Role split:
  - Generate/maintain regulations
  - Aggregate/disseminate regulations
  - Use regulations

- **Note: even though this is mostly needed in cities, the standards are also applicable in non-urban context**



"What did I tell you? — It's time to invent traffic laws."

METR Architecture



CEN/TC 278 ITS standardization

Potential set of Work Items - 1

- This work includes the following elements:
  - **METR Architecture:** Overview, terminology, organizational framework, roles and interfaces. **New WI approved, editor Jonathan Harrod-Booth**
  - **METR Conformance**: Quality parameters, testing
  - **METR Generation**: Definition of interface for the regulatory body permitted to generate ETRs.
  - **METR Services:** The technical content of the regulation; data definitions and constraints per service. Typically developed as one standard per service. Many of these services are under development or already defined in DATEX II, TPEG, C-ITS,… although under a different service concept than METR, so re-use and integration with these services is strongly suggested.

Potential set of Work Items - 2

- **METR Operations:** Definition of operational constraints for METR cloud service, including storage and access to ETRs
- **METR Public Access:** Definition of interface including protocols, access rules, etc. Since METR per definition needs to be pan-European, this interface should be the same as, or co-located with, the ITS National Access Point
- **METR Security:** This service needs strong security support. Regulations need legal proof from the generating entity all the way to the end user, so that all main security features like confidentiality (privacy), integrity (trust) and availability (DoS) is present. This includes security services new to the ITS domain like non-repudiation. Luckily the PKI structure developed for C-ITS will work directly out of the box, so this work is mainly related to apply C-ITS security in the context of METR

Security

- Trustability is a major issue
  - Current messages either does not cover security, or proposes partial solutions that does not scale
- Full PKI is needed
  - Security should be based on the **C-ITS Platform Trust Model** , potentially extended with EU-US Harmonization to prepare global interoperability
- Full **end-to-end trust chain**
  - Controls for authority right to issue regulations
  - All regulations must have full certificates
    - Cert added by generator, flows through repository/aggregator, validated by end user
    - May need non-repudiation and other security tools not currently used in ITS

Considerations - 1

- METR can be seen to formalize existing data into regulations.
  It therefore crosses over/shares contents with:
  - TRANSMODEL (CEN TC278/WG3),
  - TPEG (CEN TC278/WG4 + ISO TC204/WG10)
  - TN-ITS (CEN TC278/WG7),
  - DATEX II (CEN TC278/WG8),
  - C-ITS (CEN TC278/WG16 + ETSI TC ITS)
- **Cooperation on how to re-use and extend on existing material is essential for success of METR**

Considerations - 2

- There is major work to be done on European/National level, since METR would have the legal standing of traffic signs and traffic regulations, and this needs careful study outside the scope of standardisation.
- METR is being developed by CEN TC278/WG17.
  Resources to progress METR quickly may partly come from EU Project Teams under the Urban ITS Mandate
- Noting that METR is a European Mandated work area, it is clear that there is an obvious global potential. Possible collaboration mechanisms should be explored

…Thank you for your attention

Some extra resources:

www.itsstandards.eu
www.urbanits.eu

Q FREE
knut.evensen@q-free.com

Management for Electronic Traffic Regulations
METR

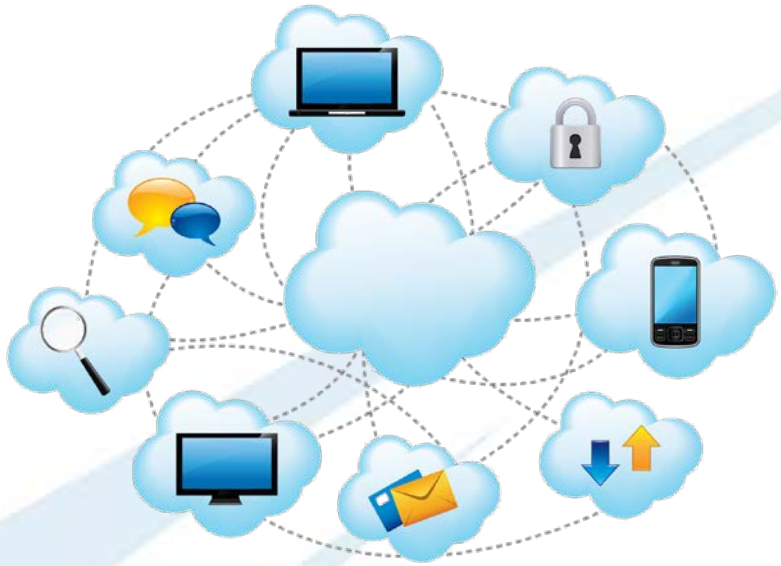
Extra slides

Generate/maintain Regulations

- Legal responsibilities and authorization schemes vary a lot between different countries, states and cities
  - Standardising architecture, roles, actors and procedures is not feasible. These must be set on a national/regional level
- Standard interface and security is sufficient
  - Will allow transparency between local actors
  - Will enable warning for conflicting regulations
  - Will allow a hierarchy of conflict resolution

CEN/TC 278
ITS standardization

Aggregate/disseminate regulations

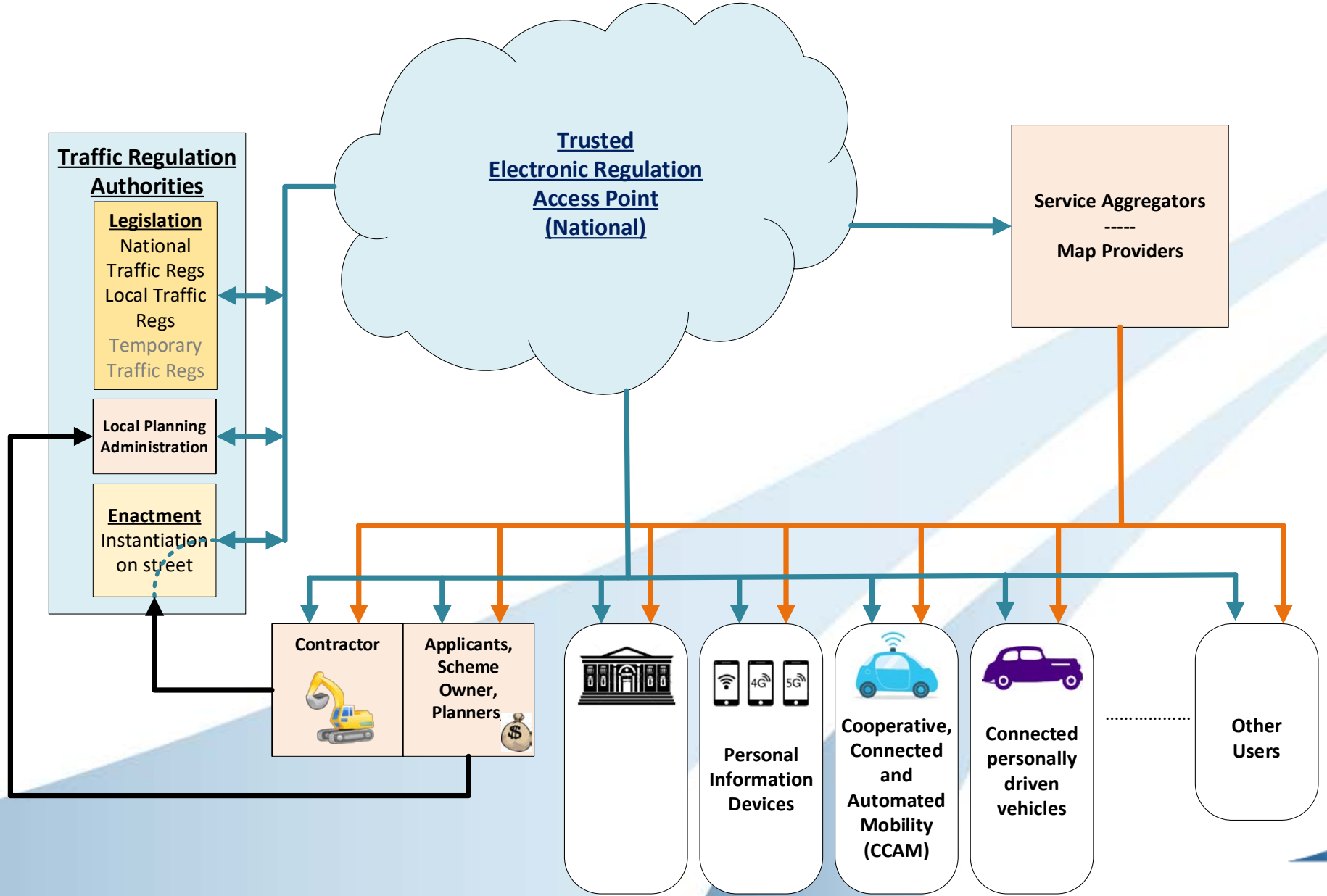


- Will work as a data base where a user can query combinations of regulations relevant for:
  - a location (area or part of roadway)
  - a specific period of time
  - a specific purpose (Parking, speed limit, overtaking, intersection right of way,…)
  - a specific vehicle class (Weight/height limit, goods delivery, emission zone, automated driving,…)
- Also possible to have aggregators that push relevant regulation to end users
  - Likely commercial operators (App providers and Map providers)
  - Need for new standardisation low at this point?

Use Regulations

- Different classes of (end) users
  - Smartphone apps for all modes: pedestrians, cyclists, passenger and drivers
  - Retrofit equipment in vehicles: Nav devices and full ITS Stations
  - Full vehicle integration where the vehicle will use data for a certain level of automation (CCAM)
  - Applicants for new regulations

Example UK progress

- On-going review by DfT (our ministry of transport) concerning the coordination and warning of utility and highway works – moving towards central national hub
- Cross government Open Data Strategy driving *digital by default* approach
- Current DfT review of *transport data across Local Authorities* with a strong sub-focus on the management of traffic regulations (moving, parking…)
- Industrial collaborations (parking industry re parking regulations)

Architecture for METR – typical feedback loops