Intelligent Access (IA)

Experiences from Sweden 2020-01-22

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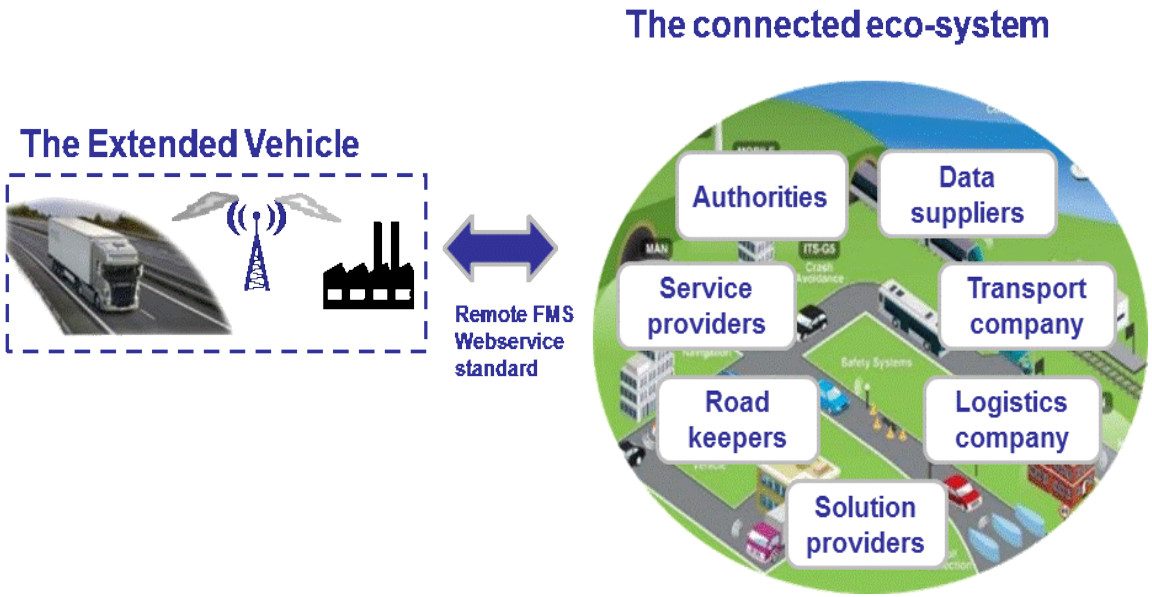

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Current compliance

- 20% (and increasing) overloaded > 5 %, WIM-Bridge
- 40% speeding, Radar Cameras
- 1-2% too wide or long

Especially HCT if driven outside the HCT roads

Purpose/benefits with IA

To prevent premature break down of the infrastructure by minimizing

- Driving outside the HCT network
- Overloads (gross and axel load)
- Illegal combinations or not approved vehicle modules
- Other rule regulations

Other proposed applications on the IA platform

- **Monitor**: vehicle trains > 64 ton/25.25 m, special permit over-sized vehicles, dangerous goods, cabotage, tachograph cheating
- Fulfil the **EU 96/53** mandate on monitoring weights of all heavy vehicles by 2021
- **Control** vehicles in ”time & space”:
  - City-logistics (bus lanes, environmental zones),
  - Geofencing
  - Platooning, automatic vehicles, electrical road systems (ERS)
- **Charge for road use** based on actual wear & congestion, for ERS use of electricity

Better matching load-vehicle-road -> higher road & vehicle efficiency by differentiated access based on e.g. weight, length, load type, engine, fuel, time, place, road condition and weather (SIAP)

IA Research

- 2012 Memo of Understanding between TCA and Swedish Transport Administration regarding IAP and PBS
- 2013-16 Test of the Australian IAP-system in Sweden
- 2016 Proposed specifications for Swedish IA called (ITK = IAP light to fit EU and SE laws)
- 2017-19 Three demonstrators of ITK based on proposed above
- International experiences:
  - Literature, expert interviews, conferences
  - Workshop at ITS Global Conference 2015-10-08
- Interviews with operators and drivers of HCT test vehicles.
- 17 use-cases for: driver, operator, enforcement,
  - Information flow maps
- Regulation & penalties similar to Fatigue and Overload regulations
- Dialog with telematics industry and other stakeholders
  - Workshops beginning and when draft proposal was ready

Proposed specifications for IA

Operator:

A. Register position every minute, weights accuracy < 5 %, ID of vehicle modules and save 1 year

B. Report quarterly to road authority positions and weights without IDs and time for statistics.

C. Weights on display in cabin for driver and police. Self control recommended for drivers and operators

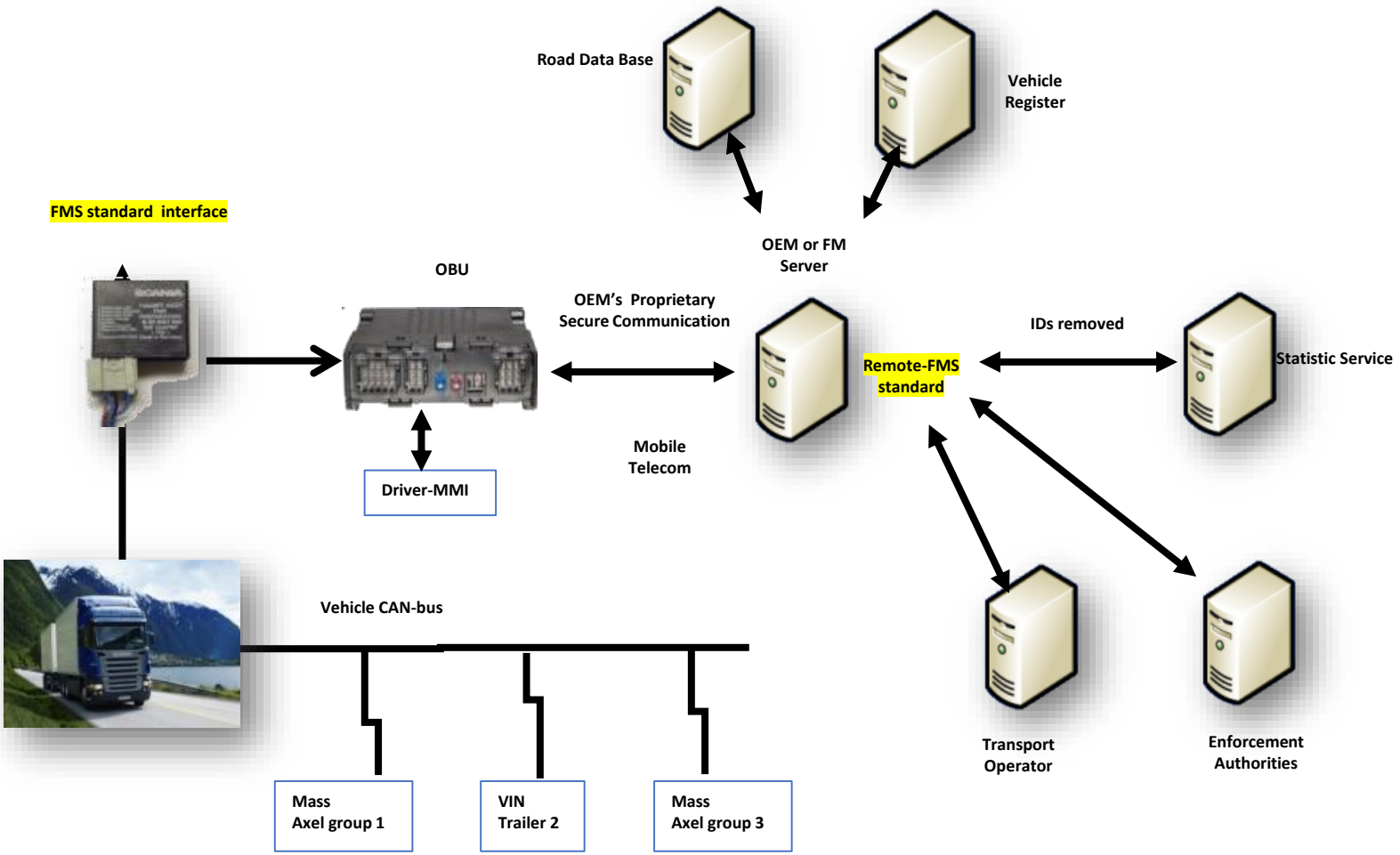
Authorities :

D. Statistical service to handle “B” data
- Planning of maintenance and upgrading of the infrastructure
- Degree of route and weight compliance

E. Enforcement.
- Police gets actual weight (Internet, DSCR).
- Transport Agency asks for both tachograph and ITK data when audit.
- Sanctions according to current regulations for overloads

IT architecture for IA

ACEA standardized protocols for communication with existing FM-system



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Suggested HCT access schemes

A. **New Road classes**: BK4 for 74 ton/25,25 m.

B. **Permanent permit**: PBS certified, ore transport, on dedicated roads.

C. **Time restricted permit**: Specific vehicles on specified roads. Research purpose, construction site, forest harvesting

D. **Situation specific permit or restriction:** Dynamically adapt to the specific conditions. Frozen road wintertime.

E. **Permit for one specific trip:** non-dividable goods, special transports like mobile cranes

Most of these require IA or similar

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Barriers & Drivers of IA. 1

Stakeholder	Barriers	Drivers
Transport Buyer	Higher transport prices since less cheating	Lower transport prices if more HCT due to IA Less risk for sanctions due to cheating operator
Operator	Buy IA serv. €20/month, Admin 1 h/week Higher cost when not overloads, take shortest route, speeding	Less risk for sanction for overloads Less accidents Always full loads Larger HCT network if lower safety factors for bridges
Driver	Time to key in data More difficult to cheat with the tachograph and speeding	Warning if noncompliance Not forced to break laws Fewer inspection stops Less risk for sanctions Can prove innocence if accident
Telematic Industry	Develop IA service	Sell IA and other services on the same platform
Vehicle Industry	Cost to adapt vehicle to IA On board axel weight system Not incriminate customers	Extended vehicle business model More competitive More export

Barriers & Drivers of IA. 2

Stakeholder	Barriers	Drivers
Polis	Inspections at road side: one more thing to check no budget	Inspections: Faster, Fewer, Risk based Do it at the same time as other inspections
Transport Agency	Requests IA & Tachograph data More work no budget	Automatic non-compliance reports in Australia Do it at the same time as other inspections
Vehicle Register	Develop & operate the database Problem with foreign vehicles	Assure all vehicles on road combinations are safe
Road Owner	Up to date maps with all restrictions on weight, length, speed, time, detour etc Develop & operate statistic analyses	Less infrastructure damage Lower safety factor for bridges allows for larger HCT network Statistics for maintenance Situation Specific Access
Society	Telecom infrastructure and services covering all locations	Level playing field. Fair Less accidents Platform for other reforms: - road pricing - environmental zones - geofencing
Government	Complicated. Risk not compliant with EU 96/53. Many against.	First step to a national Telematics Framework

Status IA juridical issues

Legal & institutional framework. Largest challenge. Not ready now

- GDPR: possible, actions needed to be taken anyway for all FM and Govermental systems. Operators own their data. Contracts needed for sharing data.
- IA fulfils the requirements of weight control EU 96/53 mandated by 2021
  - OK as input to risk based selection of vehicles for control
  - Later automatic sanctions will require certification and frequent calibration of on board weight sensors.
  - Data from FM server to police via mobile phone network i.s.o. short range radio
  - We can require on board weigh systems for Swedish vehicles but not for vehicles from countries relying on scales in the infrastructure for 96/53 monitoring.
- Current laws regarding overloads can be applied for sanctions
- Current laws regarding the responsibility when something goes wrong by accident or by purpose are sufficient

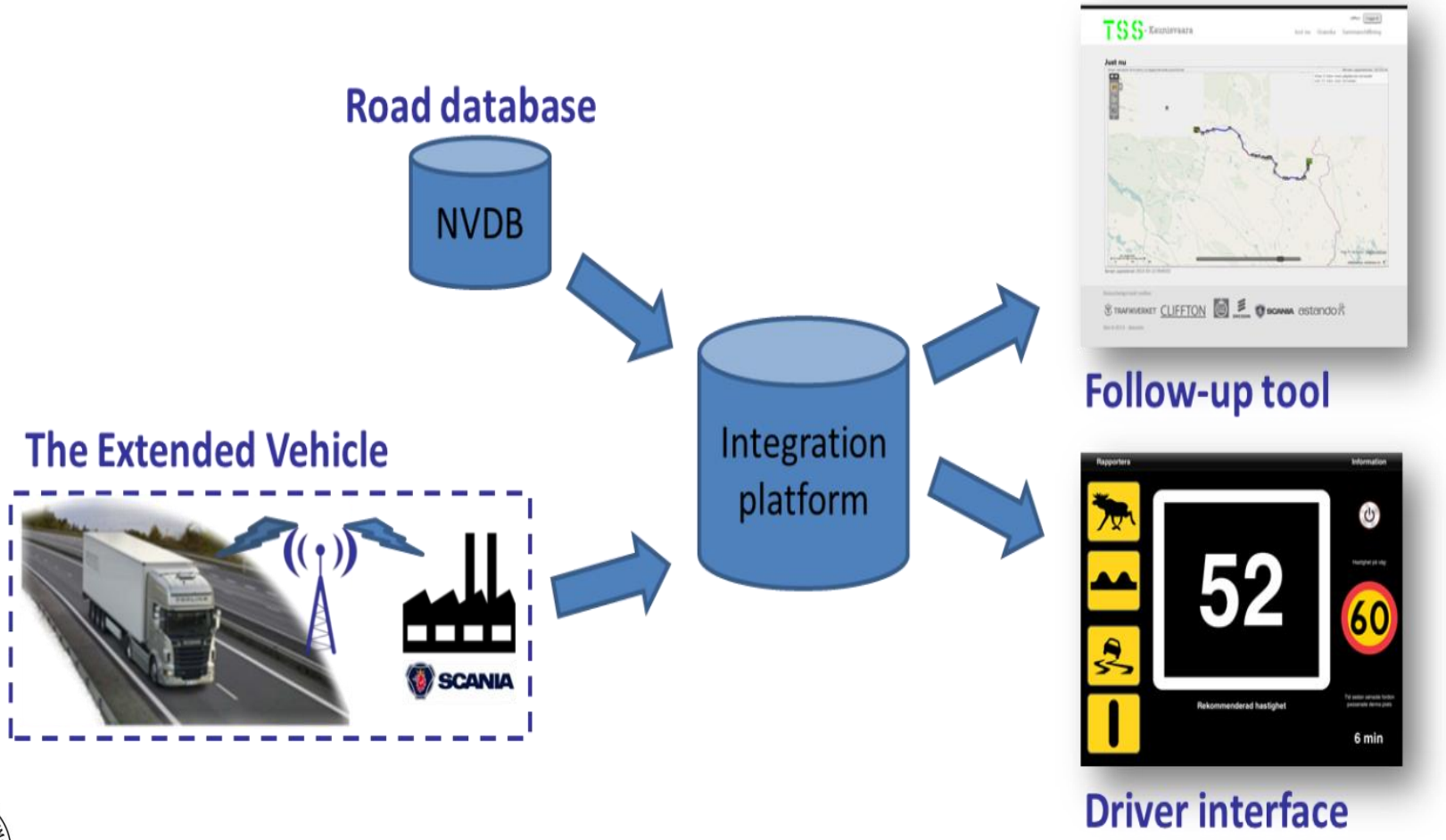
Most important issues

- Issues related to new 96/53, section 10d
  - How exact must OBW be to be used as a preselection of vehicles?
    - We think already installed equipment, like air suspensions should be enough
    - If not will this be much more expensive
  - We need to be able to require OBW-systems also for vehicles from countries relying on scales in the infrastructure for

Thanks for your attention!

Questions?

Case: ITS TSS Kaunisvaara



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