Who is part of geofencing? Actors: their roles and interactions in connected freight transport systems

Hannes Lindkvist (PhD Student)   hannes.lindkvist@chalmers.se

Frida Lind (Professor)   frida.lind@chalmers.se

Lisa Melander (Assistant Professor)   lisa.melander@chalmers.se

Chalmers University of Technology

Technology Management and Economics

Background

Geofencing (as ITS-service) is a novel technology in urban freight traffic management…

- Potential benefits for traffic safety & environment
- Dynamic management of traffic and road space
- Part of future introduction of automated vehicles

… however, low understanding of…

- Actors, relationships and interactions
- Governance structures → new actors & new roles
- Role development going from R&I to implementation

We aim to investigate the emerging actor roles and role dynamics in industrial networks of geofencing-applications for freight transport

2021-11-04

Geofencing in traffic management

Geofencing is a virtual fence that detects when a vehicle or mobile device enter or exit a geographical defined area and triggers some kind of action in or outside the vehicle

Mainly 3 identified areas of use:

- Control
- Inform
- Performance based

Study based on case study in Swedish context

- Semi-structured interviews

10-15 km/h   30 km/h   40 km/h

2021-11-04

Results

Similarities in view on

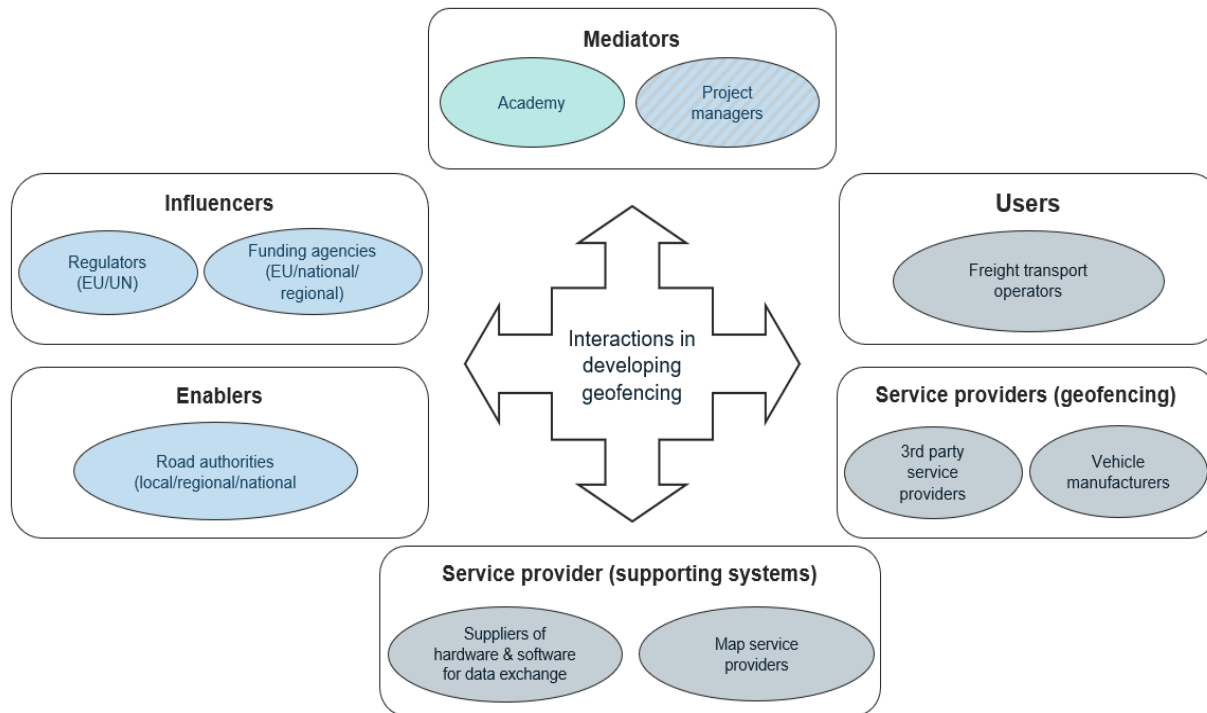- Value of technology

- Functionalities

Diverse view on roles and responsibilities among actors
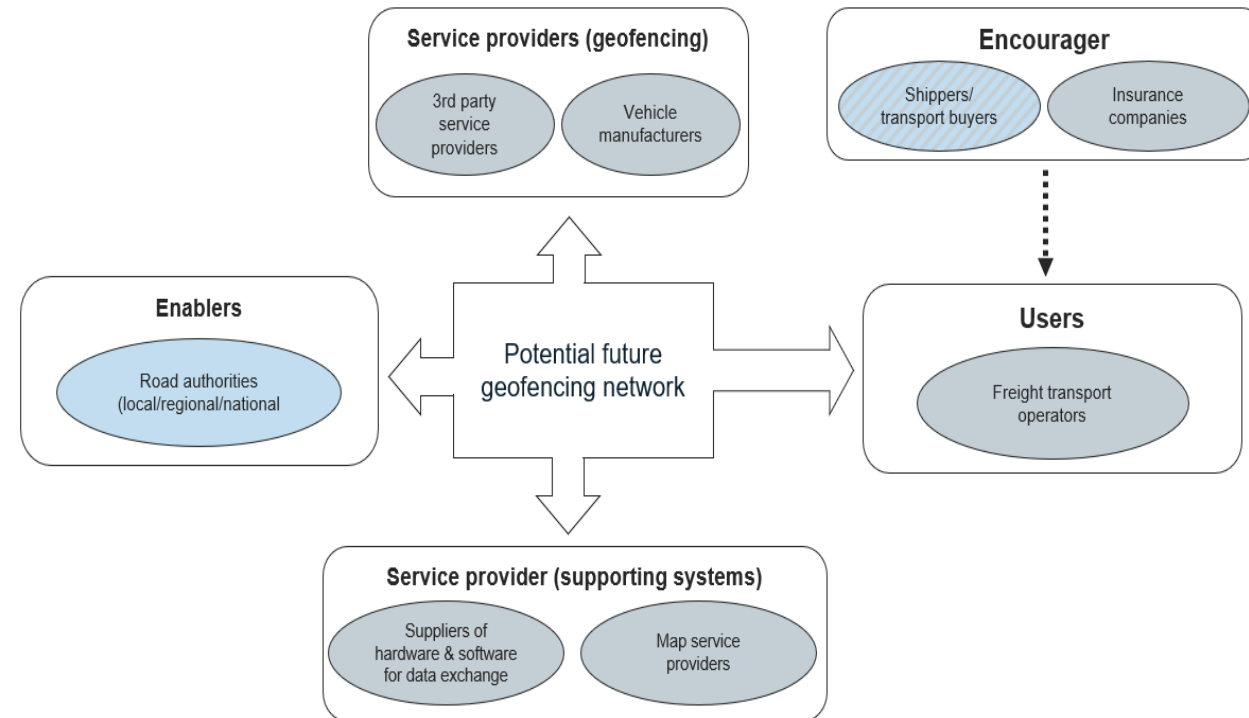
- Design of geofences

- Data sharing

Both difference and similarities in drivers

- Public and private motives

Current geofencing network

Mediators
- Academy
- Project managers

Influencers
- Regulators (EU/UN)
- Funding agencies (EU/national/regional)

Enablers
- Road authorities (local/regional/national)

Interactions in developing geofencing

Users
- Freight transport operators

Service providers (geofencing)
- 3rd party service providers
- Vehicle manufacturers

Service provider (supporting systems)
- Suppliers of hardware & software for data exchange
- Map service providers

Potential future geofencing network

Service providers (geofencing)
- 3rd party service providers
- Vehicle manufacturers

Encourager
- Shippers/transport buyers
- Insurance companies

Enablers
- Road authorities (local/regional/national

Potential future geofencing network

Users
- Freight transport operators

Service provider (supporting systems)
- Suppliers of hardware & software for data exchange
- Map service providers

Conclusions

- Many uncertainties affect role definition
  - Affected by expectations on own role and on other's roles

- Role development occurs in both horizontal and vertical organizational levels

- Different types of role changes going from development to implementation
  - Business-as-usual (no direct change)
  - Incremental changes (small step-wise role change)
  - Adapting (Adapt to surrounding network and roles other actors adopt)
  - Path-breaking (new actors, new roles, actor disappear)

- Increased complexity when actors take on multiple roles

- Further research
  - "Actors within actors"
  - Innovation procurement
  - User perspective

Thank you!

Hannes Lindkvist (PhD Student)   hannes.lindkvist@chalmers.se

Frida Lind (Professor)   frida.lind@chalmers.se

Lisa Melander (Assistant Professor)   lisa.melander@chalmers.se

Chalmers University of Technology
Technology Management and Economics