

Up-scaling C-ITS

Compass4D webinar

Knowledge, products, systems
based on experience

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dynniq energising
mobility

Compass4D activities & goals



- C-ITS R&D and pre-deployment initiatives
- Helmond, Copenhagen, Bordeaux
- Piloted services
 - Energy Efficient Intersection Service (EEIS)
 - Road Hazard Warning
- Deployment readiness
- Business cases
- Interoperability
- Public awareness

First pilot in Copenhagen with 11p priority



Installation figures

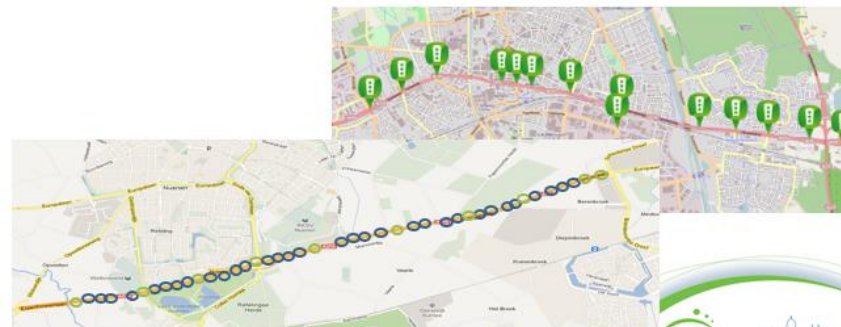
21	Cooperative Road Side Units G5/11p
5	Traffic Controller upgrades
86	Buses with cooperative G5/11p OBU's
5	Trucks with cooperative G5/11p OBU's
9	Electric cooperative vehicles with OBU
Detection for dynamic road hazard warning	

Partners and stakeholders

City of Copenhagen
Dynniq DK
Mermaid (bus systems)
Movia (bus company)
Arriva (bus operator)

C-ITS in Helmond

- 802.11p-stations on Helmond urban roads: 19
- 802.11p-stations on A270 inter-urban roads: 11
- 802.11p-stations on Eindhoven urban roads: 5
- Fleet: trucks [7], busses [4], emergency vehicles [4], hybrid/EV [25]



ITS in your pocket

Proven solutions driving user services



Compass4D results



✓ Operational services

- EEIS in Helmond and Copenhagen
- Extra routes and users

✓ Benefits and impacts

- Heavy vehicles energy savings 5-10%
- Green priority time savings up to 10%

✓ Network of European stakeholders

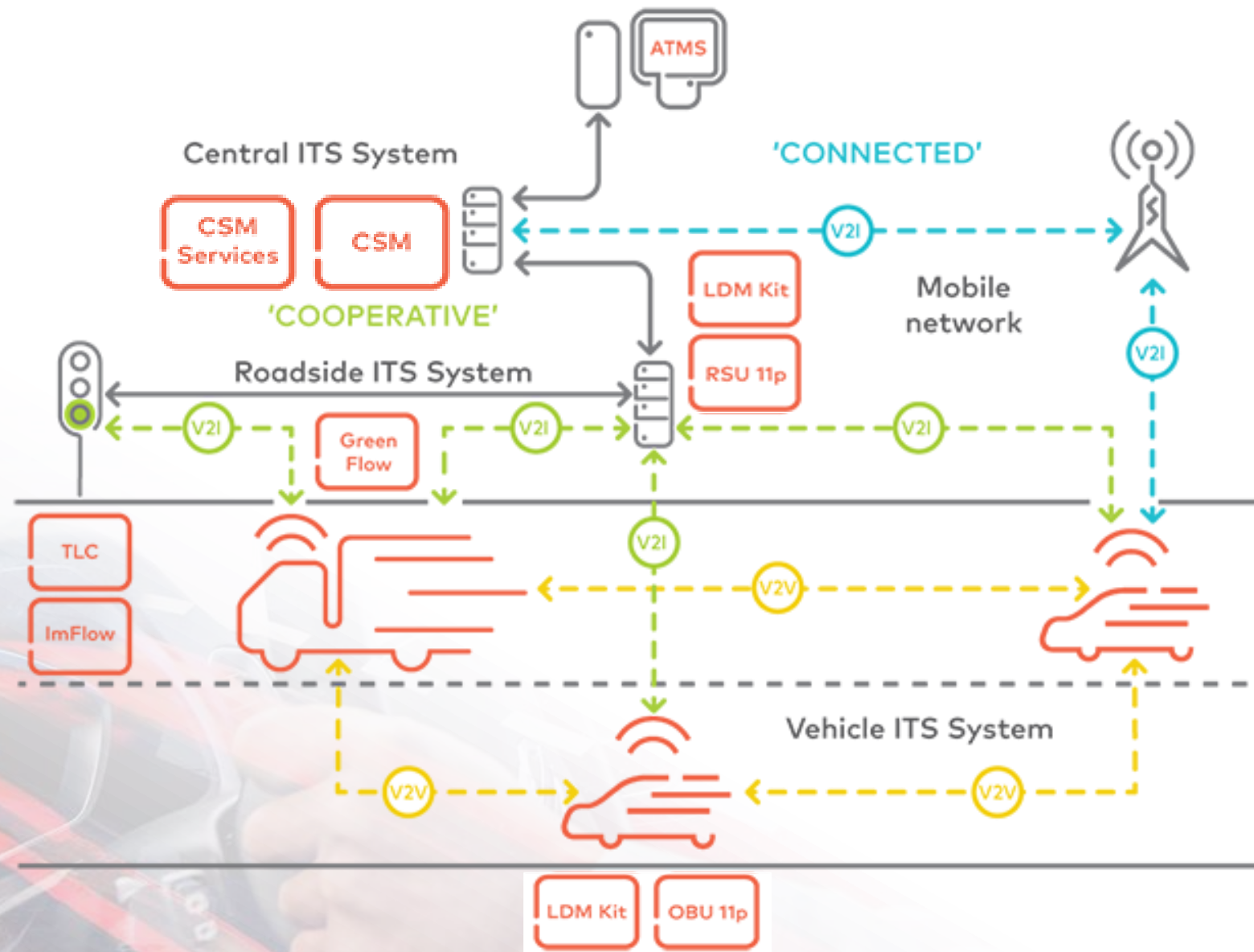
- Ambassadors of Compass4D
- Partners in further C-ITS deployment

Emissions (in gCO ₂)				
City	Type	Baseline Operation	Functional Operation	% Reduction
Bordeaux	Light	162	146	-9.88%
	Heavy	928	907	-2.26%
Copenhagen ^a	Bus	5287	4901	-7.30%
Helmond	Heavy	412	396	-3.88%
	Bus	670	674	0.60%
Newcastle	Heavy	574	563	-1.92%
Vigo	Light	114	114	0.00%
	Bus	651	646	-0.77%

Time (in seconds)				
City	Type	Baseline Operation	Functional Operation	% Reduction
Bordeaux	Light	76.7	74	-3.52%
	Heavy	84.2	78.8	-6.41%
Copenhagen ^a	Bus	875	786	-10.17%
Helmond	Heavy	48.5	46.7	-3.71%
	Bus	35.8	40.5	13.13%
Newcastle	Heavy	47.7	47.4	-0.63%
Vigo	Light	63.8	61.3	-3.92%
	Bus	119	119	0.00%



C-ITS ecosystem

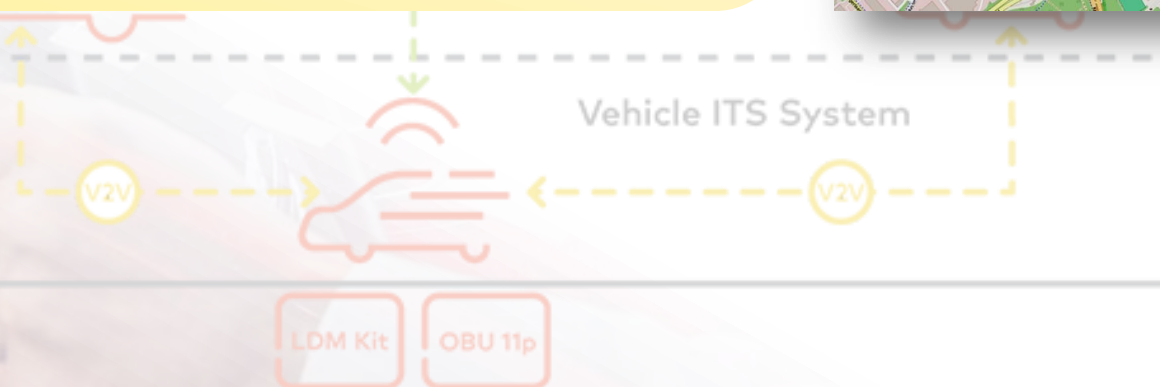


C-ITS ecosystem



Cooperative Services Module (CSM)

- Interaction between Traffic Management centre and cooperative users
- Integration of C-ITS services in TMC environment and operations
- Facilitate operators informing travelers on road conditions and incidents
- Supports both cellular (3G/4G) or WiFi-p communication technology

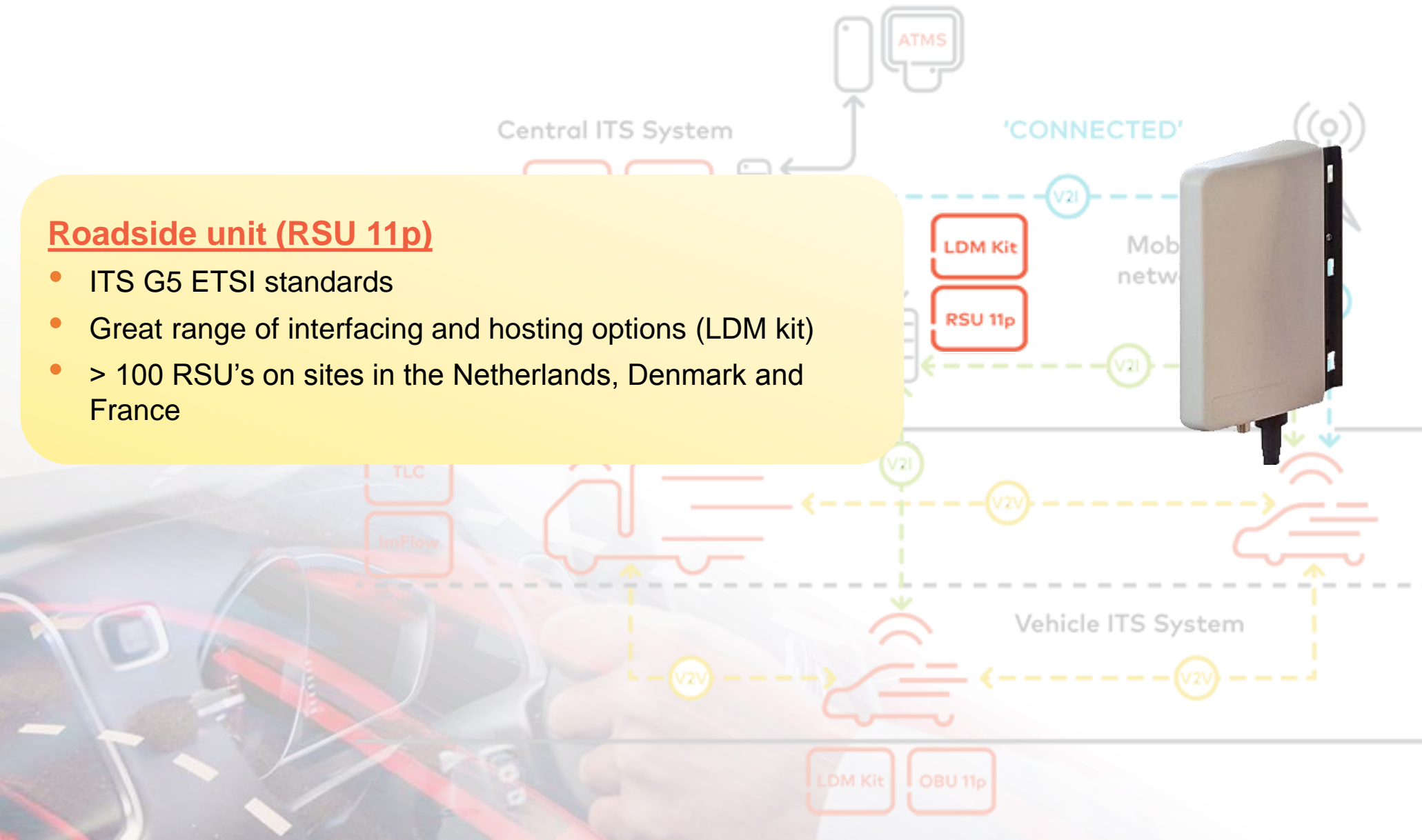


C-ITS ecosystem

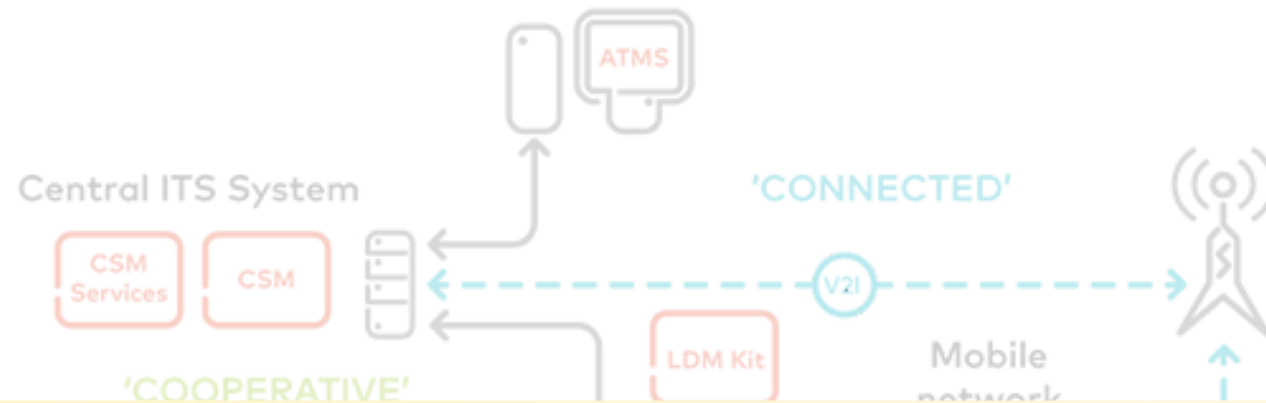


Roadside unit (RSU 11p)

- ITS G5 ETSI standards
- Great range of interfacing and hosting options (LDM kit)
- > 100 RSU's on sites in the Netherlands, Denmark and France



C-ITS ecosystem



On-board unit (OBU 11p)

- Developed for logistics and fleet vehicles.
- Interacts with legacy fleet management systems and separate devices for HMI (smartphones)
- > 150 OBU's installed in freight, emergency and public transport vehicles in the Netherlands, Denmark and France.



In-vehicle services

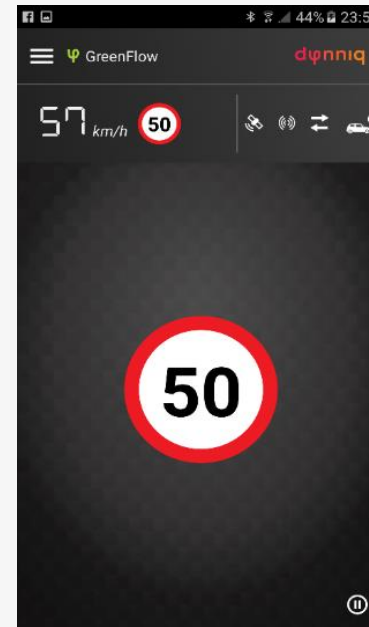


GreenFlow services

- GLOSA
- Time-to-red
- Time-to-green
- Speed advice
- Green priority (“super users”)
- Road works warning



GLOSA
Time-to-red
Speed advice



Speed limit violation
GLOSA switched off



GLOSA
Time-to-green



GLOSA
HGV priority (right)

New services



Use case	GreenFlow 1.5	GreenFlow 2.0 (2016)
Road works warning	✓	✓
Approaching emergency vehicle	✓	✓
Slow or stationary vehicle	N	N
Hazardous locations notifications	N	✓
Traffic Jam ahead	N	✓
In-vehicle signage	N	✓
In-vehicle speed limits	✓	✓
Probe vehicle data	N	✓
GLOSA	✓	✓
Dilemma zone	N	✓
Slow traffic safety	N	✓
Public Transport priority	✓	✓



Smart mobility services



Fleet managers: GreenFlow service

- GLOSA + Green priority (conditional or absolute according to local policy)
- Freight companies, Public transport, Emergency vehicles
- Dynniq GreenFlow App or integrated in 3rd party platforms



Service Providers: Traffic light information services

- In-vehicle service providers, navigation or content provider
- TLC added value data for specific use(rs)
- Road side or cloud based delivery based on ETSI messages: Spat, MAP, DENM



Traffic managers: Cooperative traffic management services

- Supporting interaction with stakeholders: Service providers, Fleet managers, etc.
- Configuring TM system to support C-ITS services



Stepwise market roll out

Piloting services with launching customers

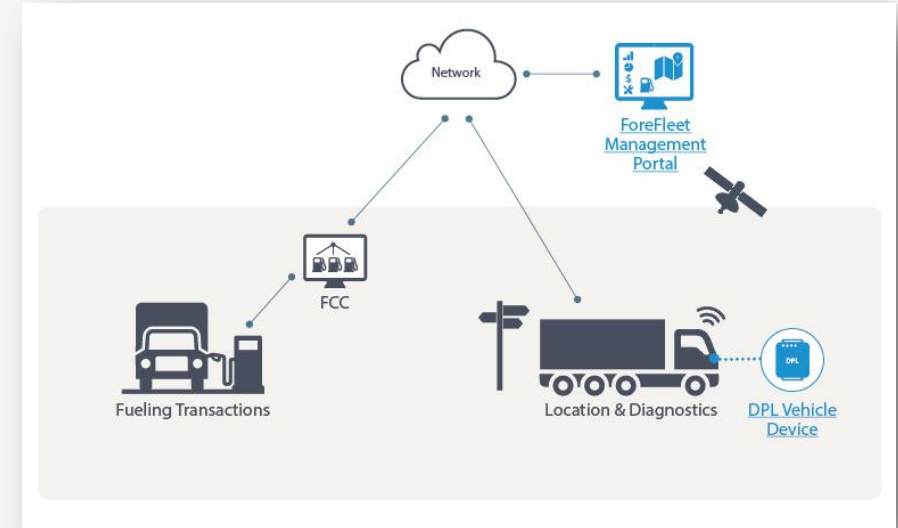
- Exploring Win Win business cases
- Integration with existing systems and processes
- Up scaling Compass4d results: new cities + new users

Cooperating in the value chain

- Technology, Data and Service providers
- Co-creation of (new) services

Governmental initiatives

- C-ITS and Smart Mobility innovation programs
- Co-creation of Traffic Management 2.0
- The Netherlands, UK and France



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Dynniq Smart Mobility

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dynniq