



Statens vegvesen

"Hvilke data trenger EU fra NVDB" & "Hvorfor er fartsgrensene i bilen min feil"

Gjermund Jakobsen
Transportutvikling
Transport og samfunn
Januar 2024



Generated with AI · June 2024

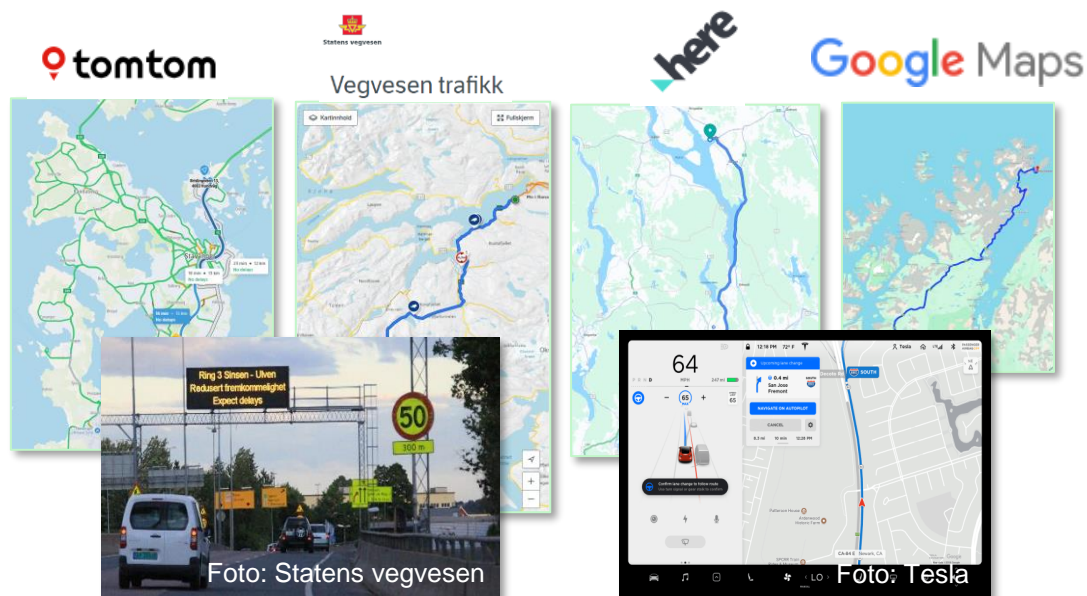
1. Hvilke data trenger EU fra NVDB

- RTTI-forordningen (EU) 2022/670
- Ikke fokus på selve regelverket men mer på verdien dette skal bidra med «Fortell hvorfor»
- Hvilke data er det snakk om og hvorfor er kvalitet så viktig
- Samarbeid offentlige og private aktører

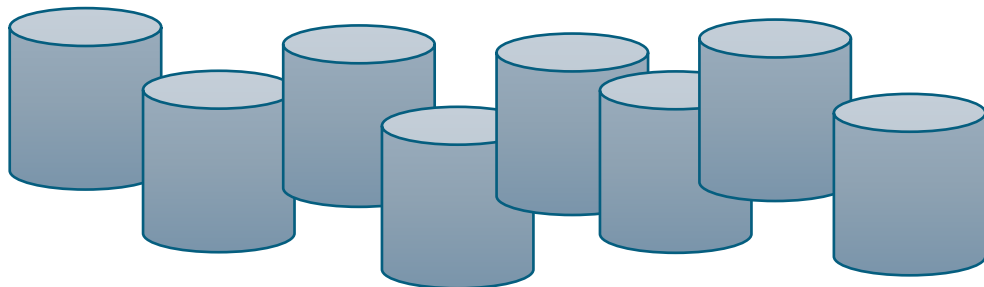
2. Hvorfor er fartsgrensene i bilen min feil

- ADAS og ISA
- Hvordan fungere det, eller hvorfor fungerer det ikke
- Hva er det vi som myndigheter kan bidra med
- Nasjonale data med kvalitet
- Vi er del av et stort økosystem

RTTI – Real-time traffic information services



TRANSPORTPORTAL.NO
Nasjonalt tilgangspunkt for veg- og transportdata



- **EU forordning under ITS-direktivet – gjelder ordrett i EU/EØS-området**
 - [\(EU\) 2015/962](#) – gjeldende norsk forskrift under ITS-loven
 - [\(EU\) 2022/670](#) – forventes inn i EØS-avtalen 7. februar – erstatter 2015/962 i forskriften
- **Tilgjengeliggjøring av veg- og trafikkdata for bruk i trafikkinformasjonstjenester**
 - typisk navigasjonstjenester på kart og i bil
 - data som allerede finnes i et maskinleselig format
 - ikke nødvendigvis gratis (men det kan ligge i annet regelverk, spesielt for offentlige data)
- **«På EU-plan»**
 - i standardiserte formater
 - gjennom et nasjonalt tilgangspunkt (NAP – transportportal.no i Norge)
 - for TEN-T (2015-forordning)
 - for alle offentlige veger (frister i 2025 og 2028)

Seks aktørgrupper skal tilgjengeliggjøre fire hovedkategorier av data

Spesielt relevant for NVDB og aktørene som bidrar

Datatyper	Vegmyndigheter	Vegoperatører	Bomselskaper	Lade- og drivstoff-interessenter	Innehavere av kjøretøy-genererte data	Tjeneste-leverandører
Veg-infrastrukturen	X	X	X	X		
Reguleringer og restriksjoner	X	X	X			
Status på vegnettet	X	X			X	X
Sanntids bruk av vegnettet	X	X		X	X	X

Vedlegget i ny RTTI lister 47 datatyper – to kategorier er merket spesielt viktige (crucial)

	Datatype i forordning (EU) 2015/962
	Ny datatype i forordning (EU) 2022/670

1. Datatyper om vei-infrastrukturen

(a)	road network links and their physical attributes:
i	geometry;
ii	road width;
iii	number of lanes;
iv	gradients;
v	junctions;
(b)	road classification;
(c)	location of tolling stations;
(d)	location of service areas and rest areas;
(e)	location of recharging points for electric vehicles and the conditions for their use;
(f)	location of compressed natural gas, liquefied natural gas, liquefied petroleum gas stations;
(g)	location of refuelling points and stations for all other fuel types;
(h)	location of delivery areas.

2. Viktige «crucial» datatyper om reguleringer og restriksjoner

(a)	static and dynamic traffic regulations, where applicable:
i	access conditions for tunnels;
ii	access conditions for bridges;
iii	permanent access restrictions;
iv	speed limits;
v	freight delivery regulations;
vi	overtaking bans on heavy goods vehicles;
vii	weight/length/width/height restrictions;
viii	one-way streets;
ix	boundaries of restrictions, prohibitions or obligations with zonal validity, current access status and conditions for circulation in regulated traffic zones;
x	direction of travel on reversible lanes;
(b)	traffic circulation plans.

3. Andre datatyper om reguleringer og restriksjoner

(a)	the location and identification of traffic signs reflecting traffic regulations and identifying dangers:
i	access conditions for tunnels;
ii	access conditions for bridges;
iii	permanent access restrictions;
iv	other traffic signs reflecting traffic regulations;
(b)	static and dynamic traffic regulations, where applicable, other than traffic regulations referred to in point (2);
(c)	identification of tolled roads, applicable fixed user charges and available payment methods (including retail channels and fulfilment methods);
(d)	variable road user charges and available payment methods, including retail channels and fulfilment methods.

4. Viktige «crucial» datatyper om status på veinettet

(a)	road closures;
(b)	lane closures;
(c)	roadworks;
(d)	temporary traffic management measures.

5. Andre datatyper om status på veinettet

(a)	bridge closures;
(b)	accidents and incidents;
(c)	poor road conditions;
(d)	weather conditions affecting road surface and visibility.

6. Datatyper om sanntids bruk av veinettet

(a)	traffic volume;
(b)	traffic speed;
(c)	location and length of traffic queues;
(d)	travel times;
(e)	waiting time at border crossings;
(f)	availability of delivery areas;
(g)	availability of recharging points and stations for electric vehicles;
(h)	availability of refuelling points and stations for alternative fuel types;
(i)	price of ad hoc recharging/refuelling.

Vedlegget merket sp

- Veigeometri
- Veibredde
- Antall kjørefelter
- Stigninger/fall
- Kryss
- Veiklassifisering
- Plassering av bomstasjoner
- Plassering av service-områder og rasteplasser
- Vilkår for innkjøring i tunneler
- Vilkår for innkjøring på broer
- Permanente atkomstbegrensninger
- Fartsgrenser
- Regler for godslevering
- Forbikjøringsforbud for tunge lastebiler
- Vekt/lengde/bredde/høyde-begrensninger
- Enveiskjøringer
- Andre skilt som angir trafikkregler

	Datatype i forordning (EU) 2015/9
	Ny datatype i forordning (EU) 202

1. Datatyper om vei-infrastrukturen

(a)	road network links and their physical attributes:	
	i	geometry;
	ii	road width;
	iii	number of lanes;
	iv	gradients;
	v	junctions;
(b)	road classification;	
(c)	location of tolling stations;	
(d)	location of service areas and rest areas;	
(e)	location of recharging points for electric vehicles and the conditions for their use;	
(f)	location of compressed natural gas, liquefied natural gas, liquefied petroleum gas stations;	
(g)	location of refuelling points and stations for all other fuel types;	
(h)	location of delivery areas.	

porier er

. Datatyper om sanntids ruk av veinettet

i)	traffic volume;
i)	traffic speed;
i)	location and length of traffic queues;
i)	travel times;
i)	waiting time at border crossings;
i)	availability of delivery areas;
i)	availability of recharging points and stations for electric vehicles;
i)	availability of refuelling points and stations for alternative fuel types;
i)	price of ad hoc recharging/refuelling.

Datatyper om veginfrastrukturen i ny RTTI

(a)	road network links and their physical attributes:	
	i	geometry;
	ii	road width;
	iii	number of lanes;
	iv	gradients;
	v	junctions;
(b)	road classification;	
(c)	location of tolling stations;	
(d)	location of service areas and rest areas;	
(e)	location of recharging points for electric vehicles and the conditions for their use;	
(f)	location of compressed natural gas, liquefied natural gas, liquefied petroleum gas stations;	
(g)	location of refuelling points and stations for all other fuel types;	
(h)	location of delivery areas.	

■ Datainnehaverne skal **tilgjengeliggjøre** data

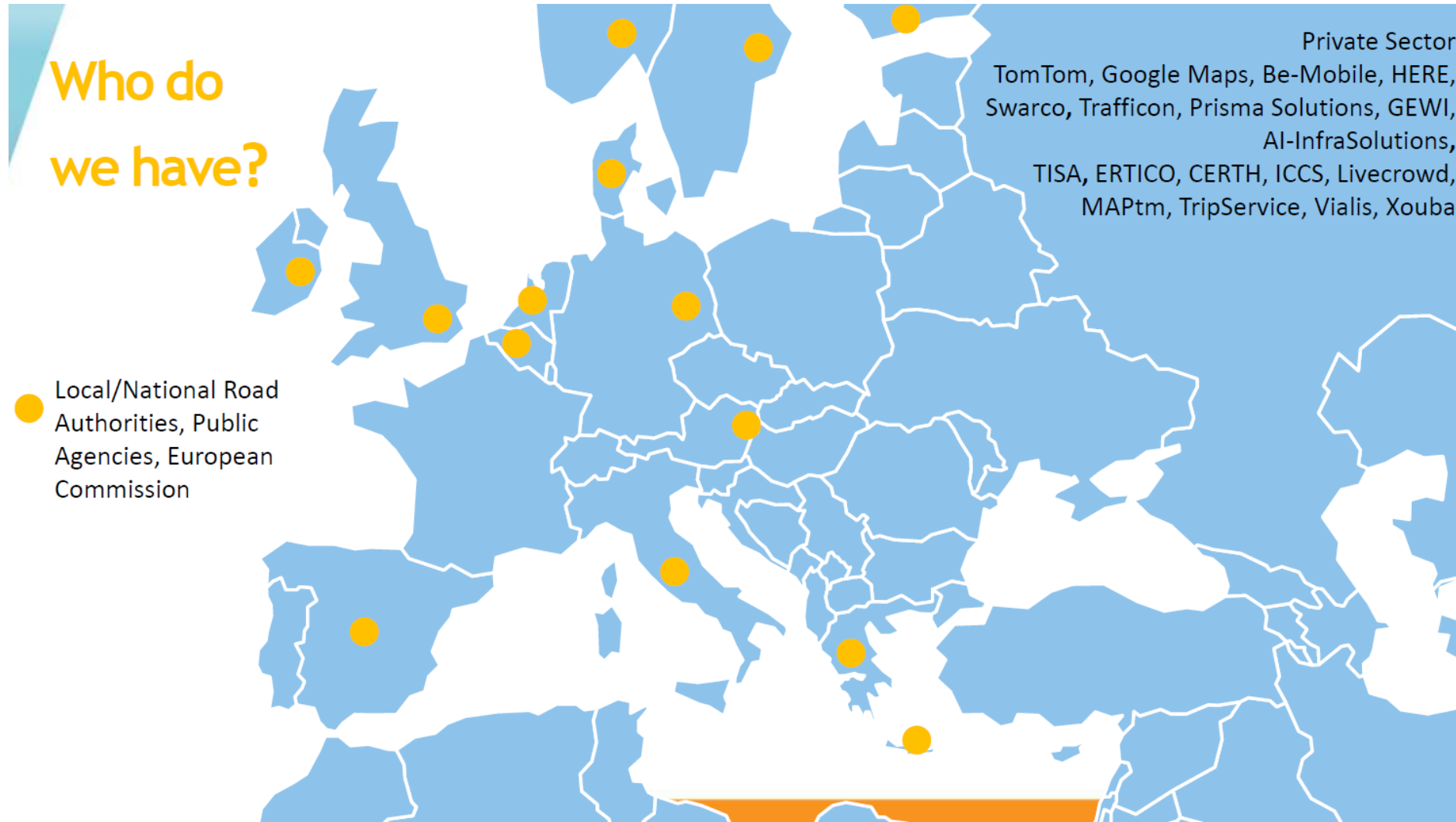
- på **standardformat**
- med **oppdateringer**, på forhånd der det er mulig
- med **metadata** som inneholder informasjon om datakvaliteten
- med **minimumskvalitet** som landene blir enige om
- **tidsnok** til at de kan brukes i sanntids trafikkinformasjonstjenester
- via et **nasjonalt tilgangspunkt**
- innen 1. januar 2025 for «**primary roads**»
- innen 1. januar 2028 for alle **offentlige veger**

■ **Tilbakekoblingssløyfe** for datakvalitet

- Databrukere skal samarbeide ved å melde unøyaktigheter tilbake til datainnehaver uten opphold
- Datainnehavere skal rette opp unøyaktighetene og gi ut oppdateringer innen rimelig tid
- Kartprodusenter og tjenesteleverandører skal påse at oppdateringene blir behandlet i tide for pålitelig og effektiv bruk i tjenestene

■ Dette krever samarbeid

Samarbeid offentlige og private aktører



Samarbeid offentlige og private aktører

Workshop Objective

In accordance with Article 5/6/7 Paragraph 2b, of RTTI, agree draft minimum quality requirement proposal for priority use cases:

10 Static Speed Limits



Road Works



Road Closures



TISA 5 star rating – forslag til kvalitetsstandard for data om fartsgrenser, vegarbeid og vegstengninger



EU RTTI 5-Star Rating

Follow up Workshop
Hybrid Brussels/Online
12th March 2024



Task Force led by TISA

SLe



General Requirements for NAP
Functionality and Static + Dynamic Data

Requirements for
Road Works Data



Requirements for
Static Speed Limit Data

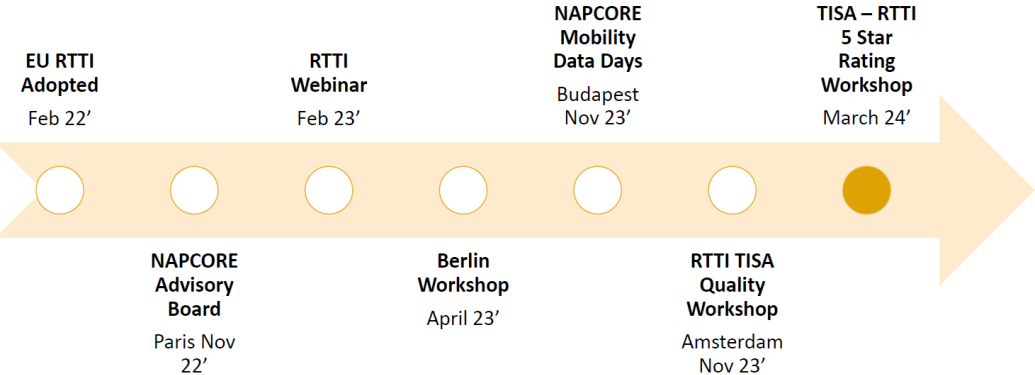
Requirements for
Road Closure Data



RTTI 5 Star Rating Scheme – Static Speed Limit

Static Data - Speed Limit	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
Terminology & Definition	Self-defined	Self-defined	According to EU ISA Regulation 'Applicable Speed Limit' DATEX-III / TN-ITS (Datex Part 14) (version widely used)	According to EU ISA Regulation 'Applicable Speed Limit' DATEX-III / TN-ITS (Datex Part 14) (version widely used)	According to EU ISA Regulation 'Applicable Speed Limit' DATEX-III / TN-ITS (Datex Part 14) (version widely used)
Data Format Used	Bespoke local format	Bespoke local format			
Use of Standard	Standard instructions only used as guide – ad hoc implementation used	Standard instructions only used as guide – ad hoc implementation used	Unified use of standard	Unified use of standard	Unified use of standard
Location Referencing	Basic GPS INSPIRE coordinates	Basic GPS INSPIRE coordinates	Preference for OpenLR over basic GPS INSPIRE coordinates	Preference for OpenLR over basic GPS INSPIRE coordinates	Preference for OpenLR over basic GPS INSPIRE coordinates
Linear Referencing	Polylines	Polylines	Polylines	Polylines	Polylines
Direction Defined FRC3-6	Not referenced	Not referenced	Referenced	Referenced	Referenced
Update Cycle	Quarterly	Monthly	Weekly	Daily	Daily
Timeliness	Max 3 months old	Max 1 month old	Max 1 week old	Max 1 day old	Max 1 day old
Pre-announcement	None	None	> 1 day ahead	> 1 week ahead	> 1 week ahead
FRC1-6 Accuracy Circular Error-Probable (CEP) Linear Travel Direction	<30m	<20m	<10m	<5m	<1m

Static Data - Speed Limit	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
FRC1-6 Correctness	>80%	>80%	>90%	>95%	>99%
FRC1-6 Completeness	>80%	>80%	>90%	>95%	>99%
Vehicle Classification	M1	M1 + N1 + N2	M1-3 and N1-3	M1-3 and N1-3	M1-3 and N1-3 Official speed limit for alternatively powered vehicles i.e. EV and unclassified e-bikes / cargo bikes / pedelecs
Speed limit type (as per definition in the ISA regulation, including road sign catalog)	Implicit and Explicit	Implicit and Explicit	Implicit and Explicit	Implicit and Explicit	Implicit + Explicit + Conditional



Introducing our RTTI 5 Star Rating Scheme

Purpose:

1. Give road authorities and road operators a helpful, practical and easy-to-use tool to **self-assess** the quality level of their traffic data.
2. Understand what minimum quality level ITS Service Providers require to use public traffic data
 - this in turn should **increase the use** of traffic data from Road Authorities and Road Operators by ITS Service Providers
 - which in turn should provide road users with more accurate and complete traffic information that can help reduce congestion, travel times and emissions on Europe's road network


Content:

- **Part 1 - RTTI Data Useability**
 - NAP Functionality
 - Static Data (Traffic Regulation/Restriction & Infrastructure Data)
 - Dynamic Data (State of the Network & Real-Time Use of Network)
- **Part 2 - RTTI Data Processing Ingest**

General framework and **use case specific** framework (i.e. speed limits, road works, road closures).




























RTTI 5 Star Rating Scheme – Static Speed Limit

Static Data - Speed Limit					
Terminology & Definition	Self-defined	Self-defined	According to EU ISA Regulation 'Applicable Speed Limit'	According to EU ISA Regulation 'Applicable Speed Limit'	According to EU ISA Regulation 'Applicable Speed Limit'
Data Format Used	Bespoke local format	Bespoke local format	TN-ITS	TN-ITS	TN-ITS
Use of Standard	Standard instructions only used as guide – ad hoc implementation used	Standard instructions only used as guide – ad hoc implementation used	Unified use of standard	Unified use of standard	Unified use of standard
Location Referencing	Basic GPS INSPIRE coordinates	Basic GPS INSPIRE coordinates	Preference for OpenLR over basic GPS INSPIRE coordinates	Preference for OpenLR over basic GPS INSPIRE coordinates	Preference for OpenLR over basic GPS INSPIRE coordinates
Linear Referencing	Polylines	Polylines	Polylines	Polylines	Polylines
Direction Defined FRC3-6	Not referenced	Not referenced	Referenced	Referenced	Referenced
Update Cycle	Quarterly	Monthly	Weekly	Daily	Daily
Timeliness Rate	Max 3 months old	Max 1 month old	Max 1 week old	Max 1 day old	Data available before speed limit change – pre warning
FRC1-6 Accuracy	<30m	<20m	<10m	<5m	<1m
FRC1-6 Correctness	>80%	>80%	>90%	>95%	>99%
FRC1-6 Completeness	>80%	>80%	>90%	>95%	>99%

RTTI 5 Star Rating Scheme – NAP Functionality

RTTI Data
Useability

Part 1a
NAP
Functionality

	    	    	    	    	    
Language	Local Language	Local Language	Local Language + English	Local Language + English	Local Language + English
Search	<15 Minutes Search Time	<10 Minutes Search Time	<5 Minutes Search Time	<3 Minutes Search Time	<1 Minute Search Time
Metadata and Harmonized Data Terminology	Use of Metadata Catalogue	Use of Metadata Catalogue	Use of DCAT-AP based Common Metadata Catalogue	Use of DCAT-AP based Common Metadata Catalogue	Use of DCAT-AP based Common Metadata Catalogue
Service Provider Registration Process	Performed by Service Provider	Performed by Service Provider	Performed by NAP on SP behalf based on Standardized Template (i.e. TISA)	Performed by NAP on SP behalf based on Standardized Template (i.e. TISA)	Performed by NAP on SP behalf based on Standardized Template (i.e. TISA)
Grouping/ Consolidation of Individual RTTI Data Feeds	OSM FRC 1+2 (Motorway + Trunk) Motorway = A restricted access major divided highway, normally with 2 or more running lanes plus emergency hard shoulder. Trunk = The most important roads in a country's system that aren't motorways.	OSM FRC 1-3 (Motorway+Trunk+Primary) Primary = The next most important roads in a country's system (often link larger towns.)	OSM FRC 1-4 (Motorway+Trunk+Primary+Secondary) Secondary = The next most important roads in a country's system. (Often link towns.)	OSM FRC 1-5 (Motorway+Trunk+Primary+Secondary+Tertiary) Tertiary = The next most important roads in a country's system. (Often link smaller towns and villages)	OSM FRC 1-6 (Motorway+Trunk+Primary+Secondary+Tertiary+Residential) Residential = Roads which serve as an access to housing, without function of connecting settlements. Often lined with housing.

RTTI Task Force – samarbeid mellom myndighetene

Why a RTTI task force?

In NAPCORE the NAP's are aligning. Within the Advisory Board of NAPCORE the private service providers TomTom, Google, Be-mobile and Here have joined forces. The alignment of member states / road authorities is currently missing. Their alignment is needed to complete the data value chain: from defining use cases, providing data, data being made accessible and findable via the NAP, to data being incorporated in end services of service providers towards road users.



The alignment between member states / road authorities is useful for harmonization on:

- The key use cases
- Data formats
- Data quality
- Creating a feedback loop
- Implementing the mandate of the revised RTTI DR.
- Providing a common member states / road authorities perspective to industry proposals.



Statens vegvesen

"Hvorfor er fartsgrensene i bilen min feil« Intelligent Speed Assistance (ISA)



Generated with AI · June 2024

Avanserte førerstøttesystemer (ADAS)

- ADAS står for Advanced Driver Assistance Systems, og er «samlekategorien» for en rekke ulike teknologier som skal hjelpe sjåføren. ADAS bruker teknologi som radar, lidar, kameraer og en rekke andre sensorer.
- Noen eksempler på førerstøttesystemer:
 - automatisk fartstilpasning (ISA)
 - automatisk avstandsregulering med automatisk nødbrems
 - varsling for myke trafikanter med automatisk nødbrems
 - feltskiftevarsler/kjørefeltholder
 - alkolås/ruslås
 - Ryggekamera
 - Parkeringssensorer
 - Nightvision-kamera
 - Head-up display
 - Navigasjonssystem
 - Regnsensor
 - Antiskrens (ESC)
 - Blokkeringsfrie bremses (ABS)

Hva er ISA?

- ISA er en førerstøttefunksjon som kan bidra til å unngå utilsiktede fartsoverskridelser (informasjon, advarsel og kontroll)
- Fra 7. juli 2024 er ISA obligatorisk på alle biler, lastebiler og busser som blir registrert, men allerede fra 6. juli 2022 ble det standard på nye modeller [eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=PI_COM:Ares\(2021\)2243084](https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=PI_COM:Ares(2021)2243084)

(1) the haptic feedback system which relies on the pedal restoring force:

- Driver's foot will be gently pushed back in case of over-speed. It will help to reduce driving speed and can be overridden by the driver.

(2) the speed control system which relies on engine management:

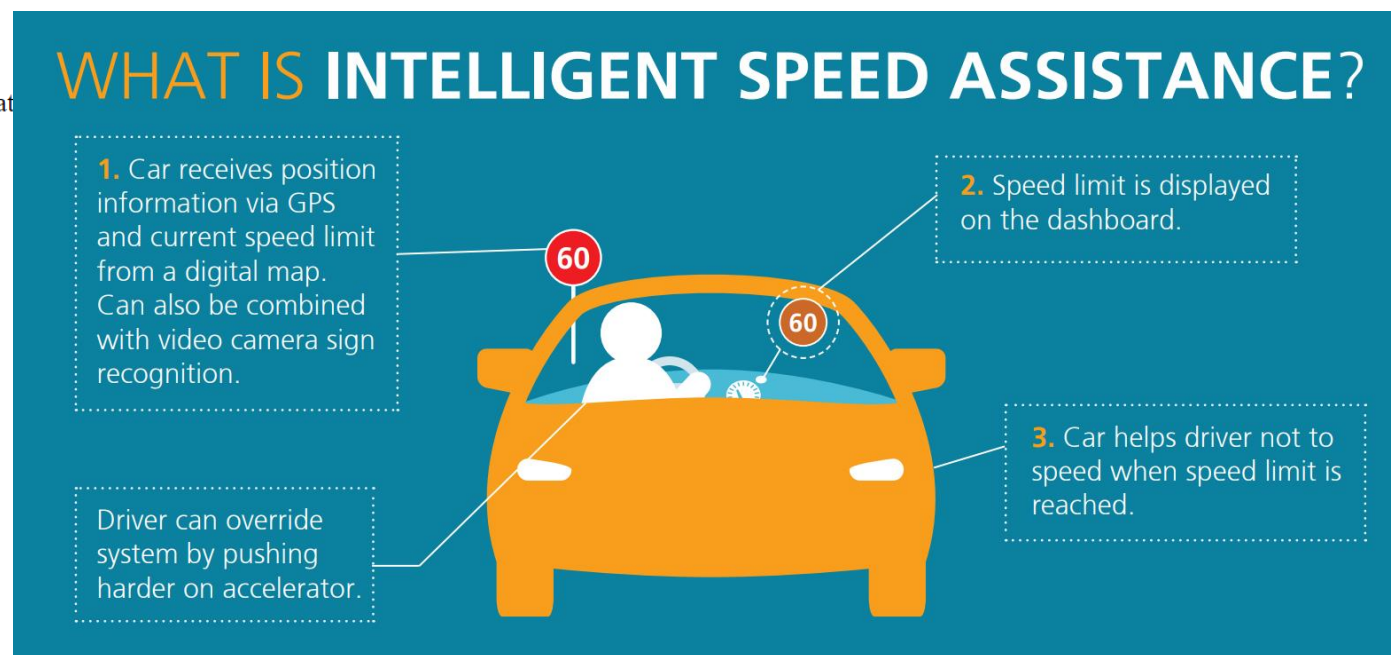
- Automatic reduction of the propulsion power independent of the position of driver's feet on the pedal, but that can also be overridden by the driver easily.

(3) the cascaded acoustic warning:

- 1st step: flash an optical signal
- 2nd step: after several seconds, if no reaction from the driver, the acoustic warning will be activated
- If the driver ignores this combined feedback, both warnings will be timed-out.

(4) the cascaded vibration warning

- 1st step: flash an optical signal
- 2nd step: after several seconds, if no reaction from the driver, pedal will vibrate
- If the driver ignores this combined feedback, both warnings will be timed-out.



Hvorfor ISA?

ISA COULD CUT **COLLISIONS** BY **30%**
AND **DEATHS** BY **20%**



Cars fitted with ISA
could **reduce CO2**
emissions by **8%**



EuroNCAP awards
extra points to
cars fitted with ISA



78% of road users
64% of car drivers
say they support in-vehicle
speed limiters (SATRE 2012)

We're asking the EU to require carmakers to fit overridable ISA in all cars.

Fit #SafetyAsStandard

Find out more at: www.etsc.eu



 [europeantransportsafetycouncil](https://www.facebook.com/europeantransportsafetycouncil)

 [@etsc_eu](https://twitter.com/etsc_eu)

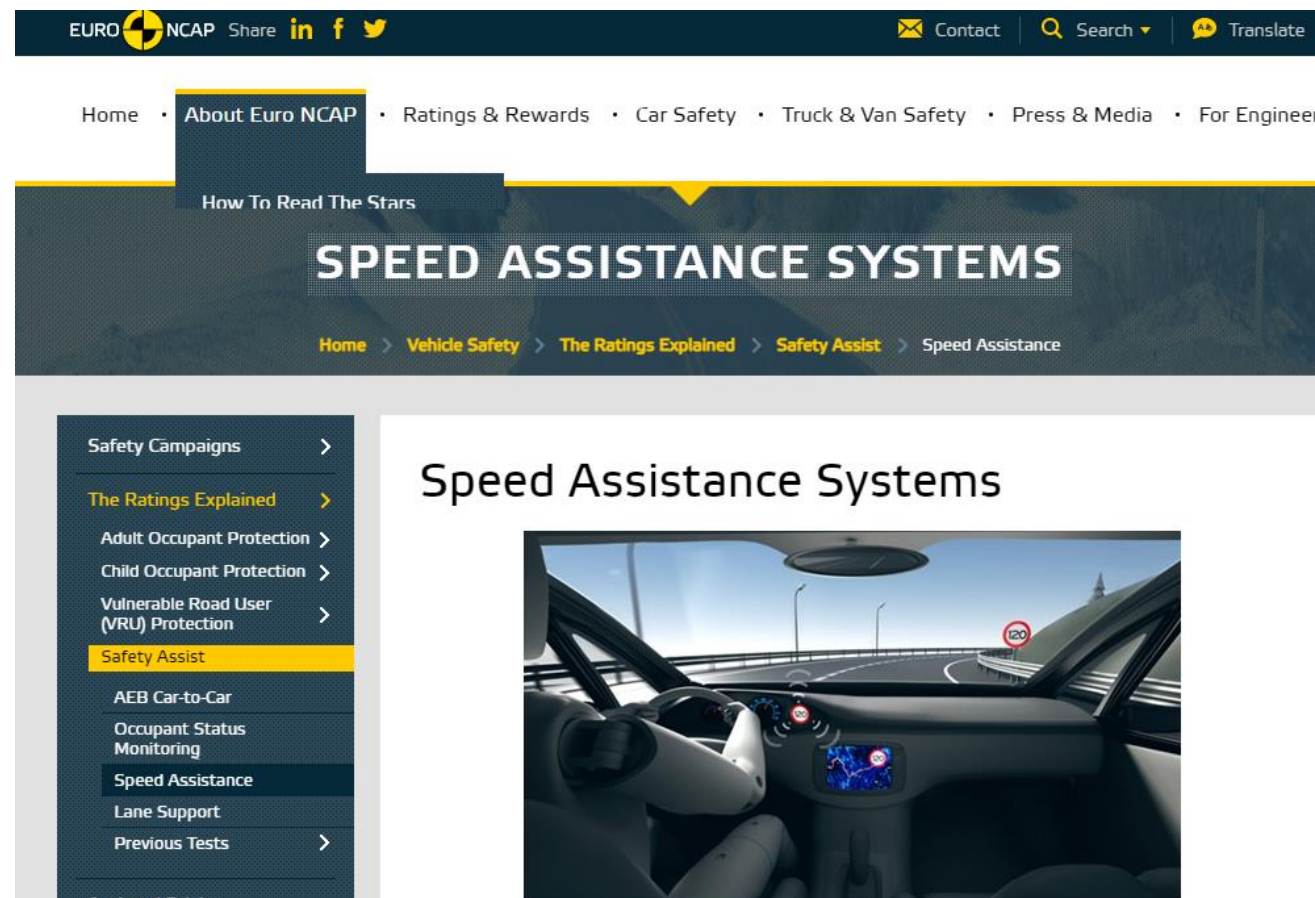
Icons © Hadi Davodpour, Mateo Zlatar, Arthur Shlain from The Noun Project

Euro NCAP WG SAS

- Euro NCAP vurderer ulike funksjoner til Speed Assist Systems:
 - informere sjåføren om gjeldende fartsgrense
 - advare sjåføren når bilens hastighet er over den innstilte hastighetsterskelen
 - aktivt hindrer bilen i å overskride eller opprettholde den innstilte hastigheten
- «EURO NCAP PROMOTES INSTALLATION OF SPEED ASSISTANCE SYSTEMS THAT SUPPORT DRIVERS TO CONTROL THEIR SPEED.»
- Arbeidsgruppens hovedformål er å sørge for at førerstøttesystemer med fokus på fart er gode og blir testet på rett måte.



Euro NCAP Working Group on
Speed Assist Systems (SAS)



Kilde: [Euro NCAP | Speed Assistance Systems](#)

Hvordan kan et ISA-system kan fungere og se ut



ISA sammen med adaptiv fartsholder

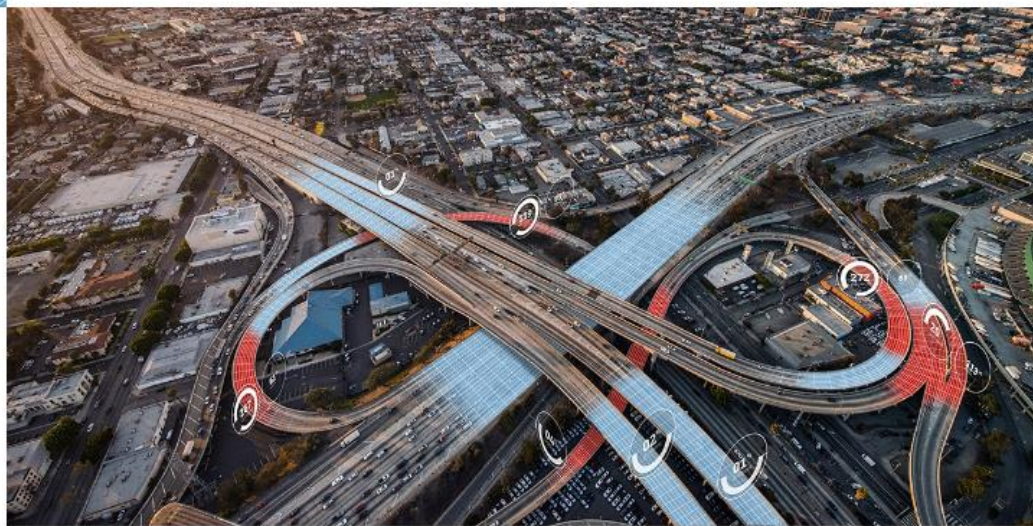


Traffic sign recognition and intelligent speed control

An on-board camera recognizes speed limit signs. Data is verified by TomTom ADAS Map data, or provided directly if the camera fails. The speed is advised to the driver, and adaptive cruise control can automatically reset to the new speed limit.

Adaptive cruise control

Vehicle speed automatically adjusts to keep a safe distance from the vehicle ahead. Building on intelligent speed control, a fusion of digital map speed limits and camera-based data is used to regulate speed in relation to speed limits.



Eksempel på aktiv ISA

- **BMW Highway Assistant (Level 2):** greater comfort on long journeys.
 - Hands off, 130 km/t, Motorvei
- **BMW Personal Pilot (Level 3):** allowing other in-car activities in traffic jams
 - Bilen tar ansvar, 60km/t, Motorvei
- **BMW har ingen planer om Level 4 på vei, kun parkeringshus**
- [Road to autonomous driving: BMW is the first car manufacturer to receive approval for the combination of Level 2 and Level 3. \(bmwgroup.com\)](#)
- [HERE HD Live Map powers BMW Personal Pilot Level 3 highly automated driving function | HERE](#)





Hvorfor er kartdata viktig?

Percentage of Vehicles passing the EURO NCAP Speed Limit testing

Vehicles Camera + map v/s Vehicle camera only

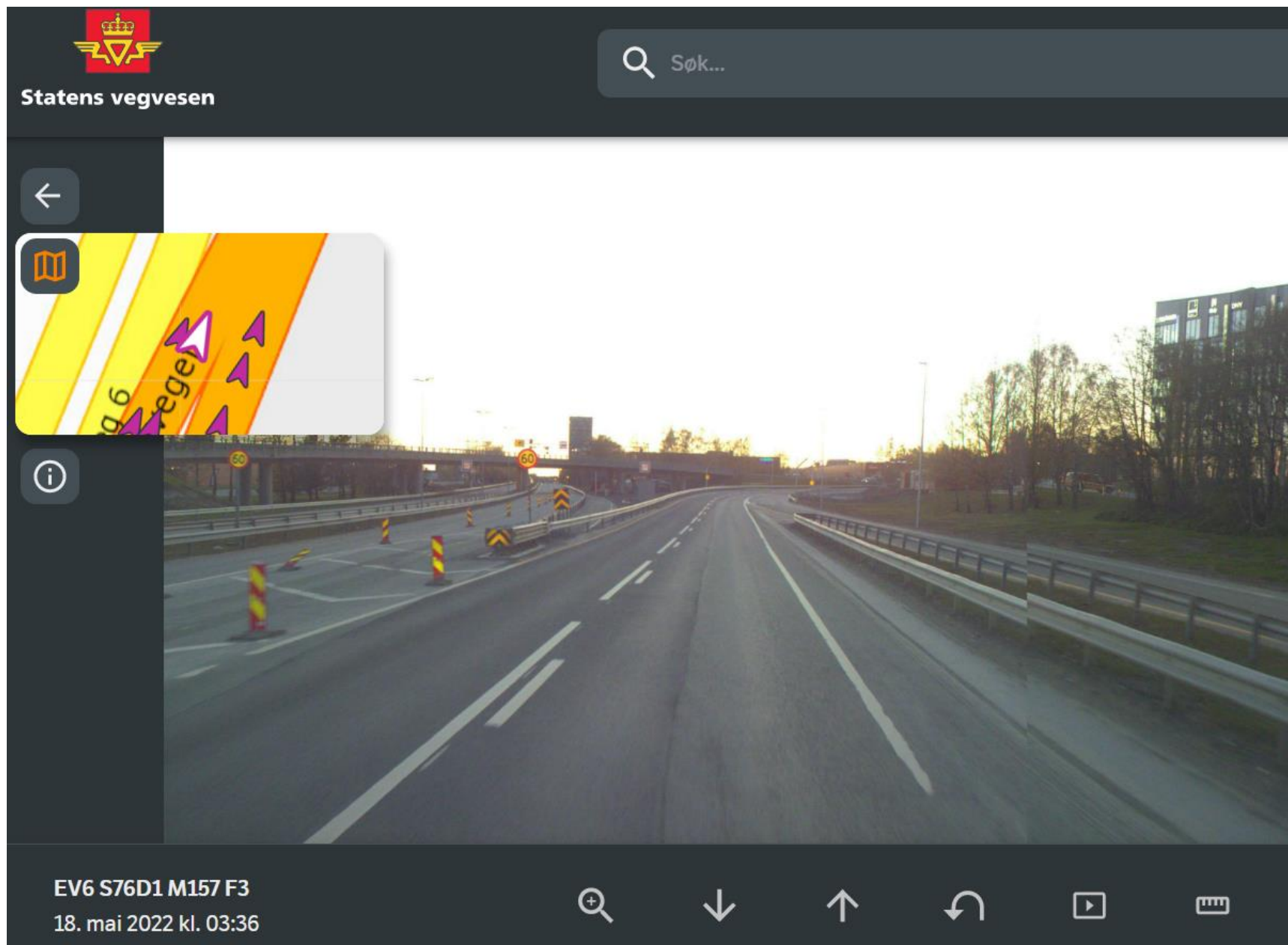
								
Solution	Rain	Snow	Distance	Time	Arrows	Implicit Highway	Implicit City	Implicit Residence
Sample of Vehicles passing the Speed Limit recognition test using camera + HERE maps	100%	75%	75%	100%	80%	100%	100%	100%
Sample of Vehicles passing the Speed Limit recognition test using camera only	40%	60%	80%	0%	80%	0%	0%	20%

Pilot Y – ISA

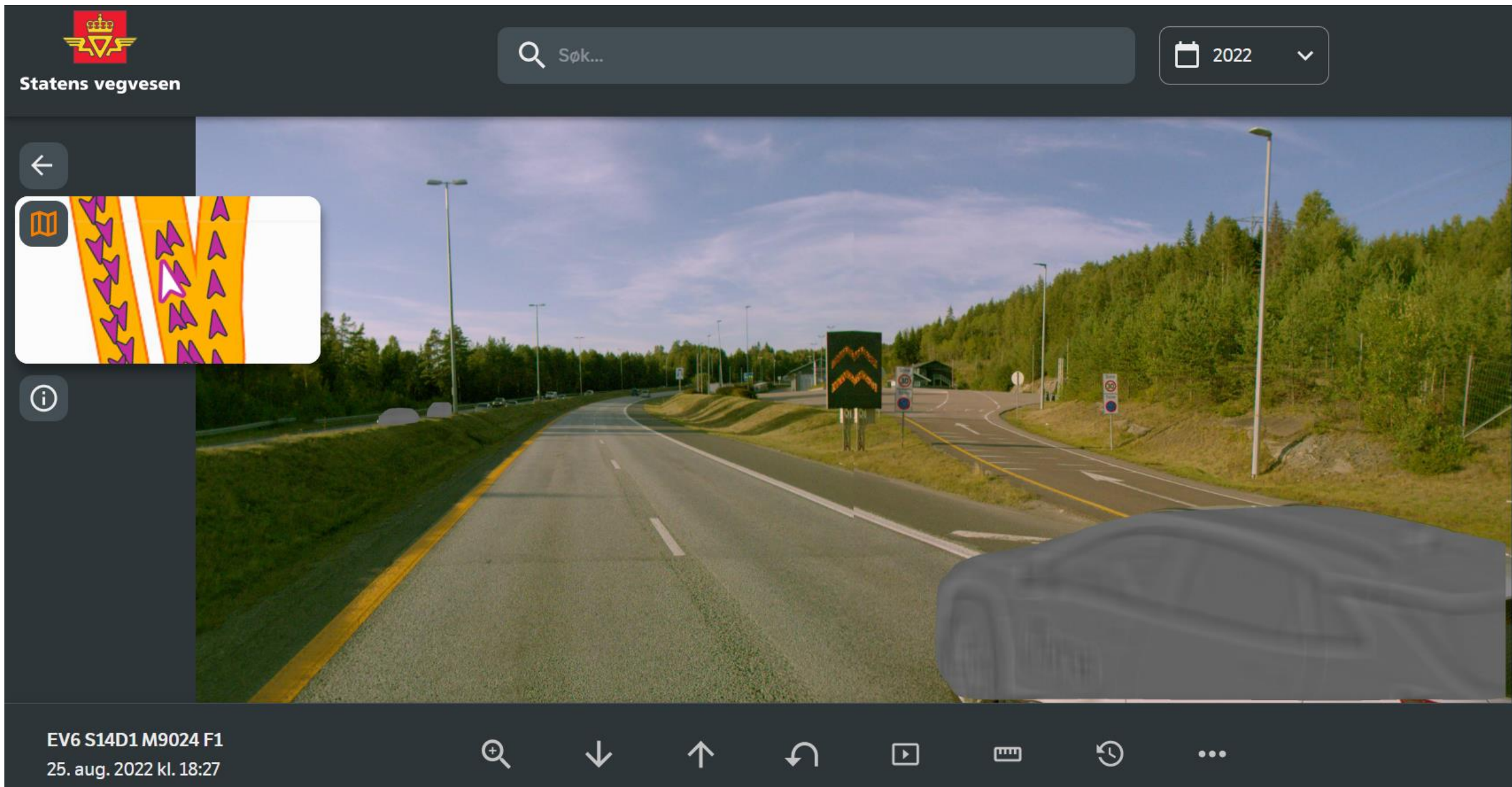
Hvordan kan den fysiske og digitale infrastrukturen bedres for å tjene som en pålitelig og oppdatert kilde for fartsgrenser?



Men hvor godt fungerer ISA-systemene?



Men hvor godt fungerer ISA-systemene?



Aktuelle feilsituasjoner Pilot Y

- Feil knyttet til ISA kartdata
 - Feil angitt fartsgrense eller feil stedfesting.
 - Feil som har oppstått i konvertering av ISA kartdata fra kartleverandørens datasett.
 - Feil pga manglende oppdateringer.
- Feil knyttet til kamera for skiltgjenkjenning.
 - Leser feil skilt (gjørne skilt som er litt på siden av vegen så som på avkjøringsramper og avkjørsler).
 - Problemer med særskilt fartsgrense opphører (implisitte fartsgrenser).
- Skilting av vegarbeid kan skape feilsituasjoner.
 - Uheldig plassering.
 - Skilt som er vanskelig å lese pga slitasje.
 - Skilt som er snudd til siden (men ikke tilstrekkelig vridt) for å formidle at skiltet ikke skal leses.
- Posisjoneringsnøyaktighet.
 - Tunneler, fjell og høye bygninger resulterer i ingen eller periodisk dårlig stedfesting av kjøretøyets posisjon basert på GNSS.
- Utfordringer med variable skilt.
 - Leser andre skilt som fartsgrenseskilt.
 - Får skarp hvitt lys.
 - Frekvensen på oppdatering av skilt innhold.
- Skitne sensorer, krevende værforhold som påvirker sikt inkludert vinterforhold.
 - Ikke del av dette prosjektet.

Her setter bilen opp farten til 100 km/t i 80-sonen: – Ga plutselig bare på av seg selv

Bilføreren ble litt redd første gang han opplevde at bilen råkjørte av seg selv på E39.



Kilde: [Her setter bilen opp farten til 100 km/t i 80-sonen: – Ga plutselig bare på av seg selv - adressa.no](https://adressa.no/nyheter/transport/2023/05/10/her-setter-bilen-opp-farten-til-100-km-t-i-80-sonen-ga-plutselig-bare-pa-av-seg-selv/)

Data fra Nasjonal vegdatabank (NVDB)

- NVDB er en av flere kilder
- Fokus på kvalitetsheving av data relatert til fartsgrenser

100 000 km vei
10 000 km riksvei
40 000 km fylkesvei
50 000 km kommunal vei

Over 1 million skilt
Minst 120 000 fartskilt



Globale kartleverandører



Tier 1



BOSCH

Eksempel fra Google «How AI helps identify speed limits around the world»

- [To map the world](#), we rely on data from **many sources**; the same is true for how we understand speed limits. One important source is **authoritative data from local governments** that helps us know what the default speed limits are for different types of roads when there is no signage.
- Cars' built-in cameras and sensors can help car manufacturers capture some of the required speed limits. But there are similar challenges that make speed limit signs hard to detect like inclement weather, physical barriers and poor sign placement. So while vehicle sensors are a critical component — and will even help keep Maps updated for everyone — our data plays a big part in completing the picture for automakers. In fact, the ISA feature in Volvo's EX30 just passed the EU's GSR certification by using our speed limit data. This means that the EX30 can reliably display the legal speed limit, even when there aren't clear signs on the road.

MAPS

How AI and imagery keep speed limits on Google Maps updated

Oct 16, 2023
4 min read

Here's how AI and imagery help us identify speed limits, and how we use speed limit information to build more helpful products.



Siddharth Shashidharan
Product Manager, Google Maps

Share



Summary: Map making process

4 Publish

Annually, ~10% of the road network is subject to real world changes. Not only from new roads to a changed speed limit, but also the creation of new speed bumps, pedestrian crossings and changes to intersections (becoming roundabouts or installing traffic lights).

Depending on the data used, the platform in the vehicle and the format (i.e. raw map data vs connected services), changes are available at different intervals

3 Process

Data is ingested and processed through a combination of automated and manual methods.

Map data is updated continuously, millions of changes get implemented around the world on a daily basis.

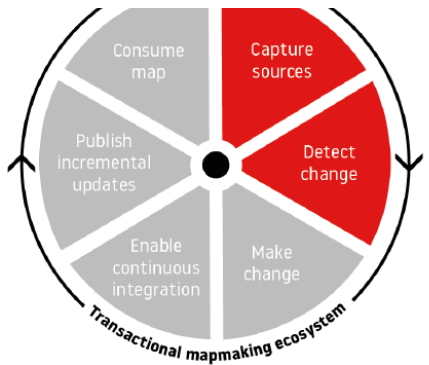
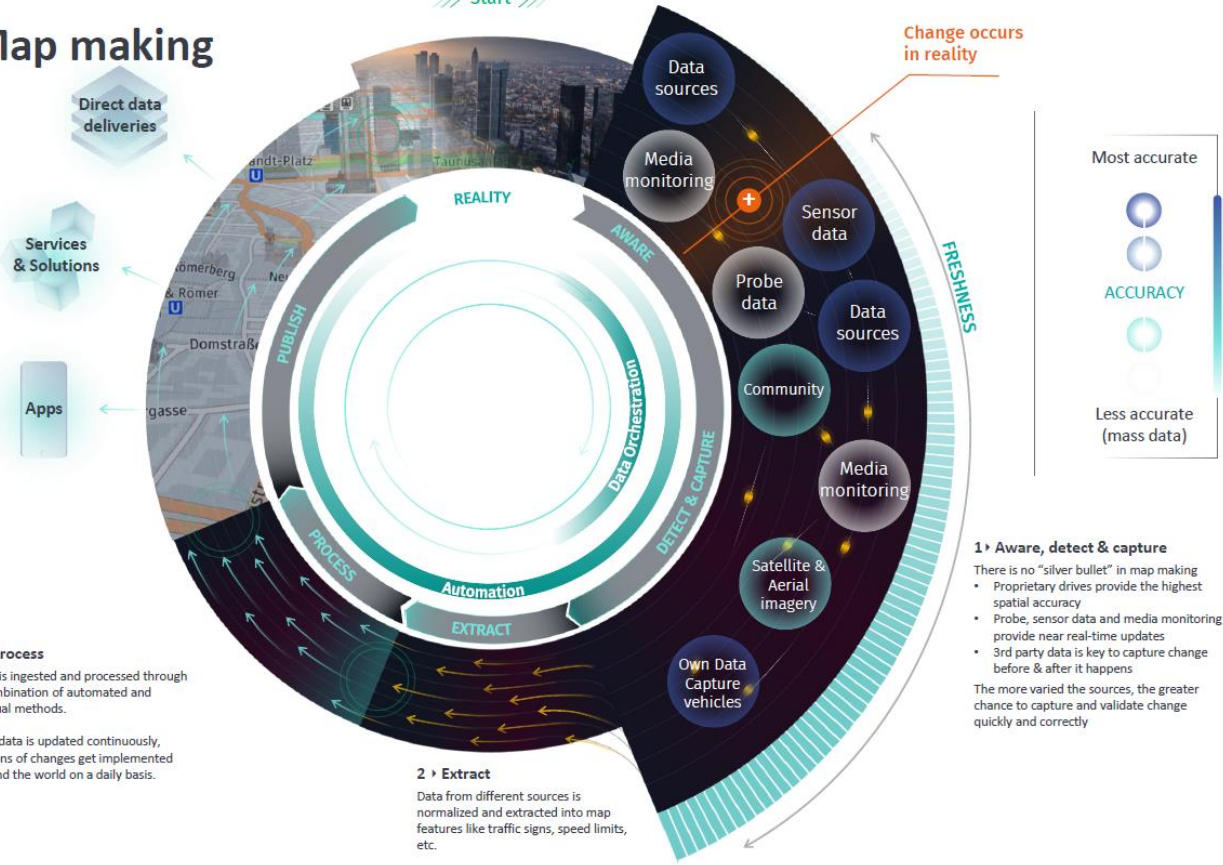
2 Extract

Data from different sources is normalized and extracted into map features like traffic signs, speed limits, etc.

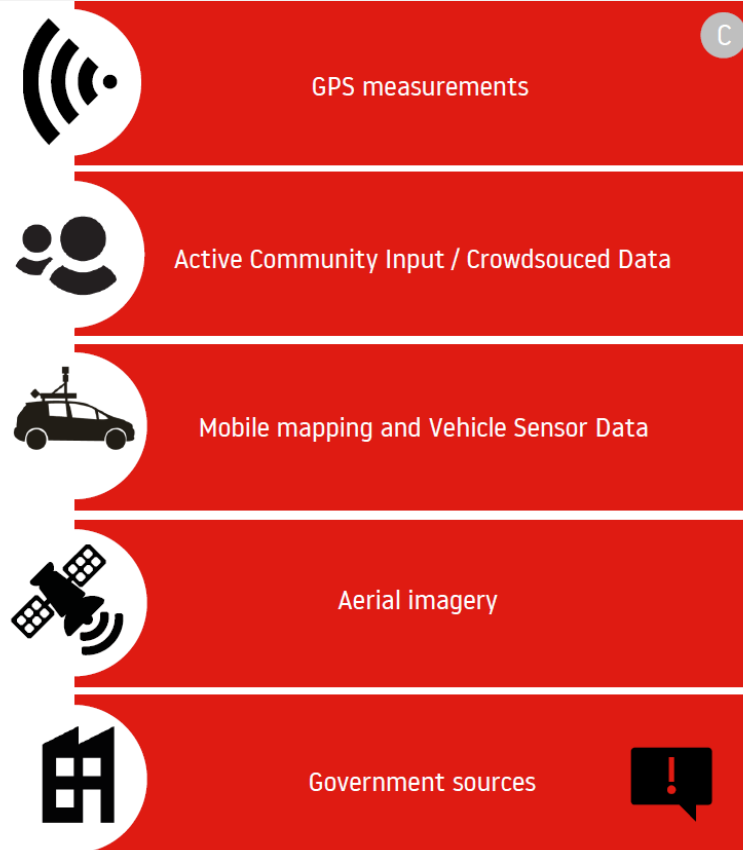
1 Aware, detect & capture

- There is no "silver bullet" in map making
- Proprietary drives provide the highest spatial accuracy
 - Probe, sensor data and media monitoring provide near real-time updates
 - 3rd party data is key to capture change before & after it happens

The more varied the sources, the greater chance to capture and validate change quickly and correctly



Kilder: [HERE Technologies | The world's #1 location platform](#)
[TomTom — Maps and Location Technology](#)



Summary: Map making process

4 ▶ Publish

Annually, ~10% of the road network is subject to real world changes. Not only from new roads to a changed speed limit, but also the creation of new speed bumps, pedestrian crossings and changes to intersections (becoming roundabouts or installing traffic lights).

Depending on the data used, the platform in the vehicle and the format (i.e. raw map data vs connected services), changes are available at different intervals



3 ▶ Process

Data is ingested and processed through a combination of automated and manual methods.

Map data is updated continuously, millions of changes get implemented around the world on a daily basis.

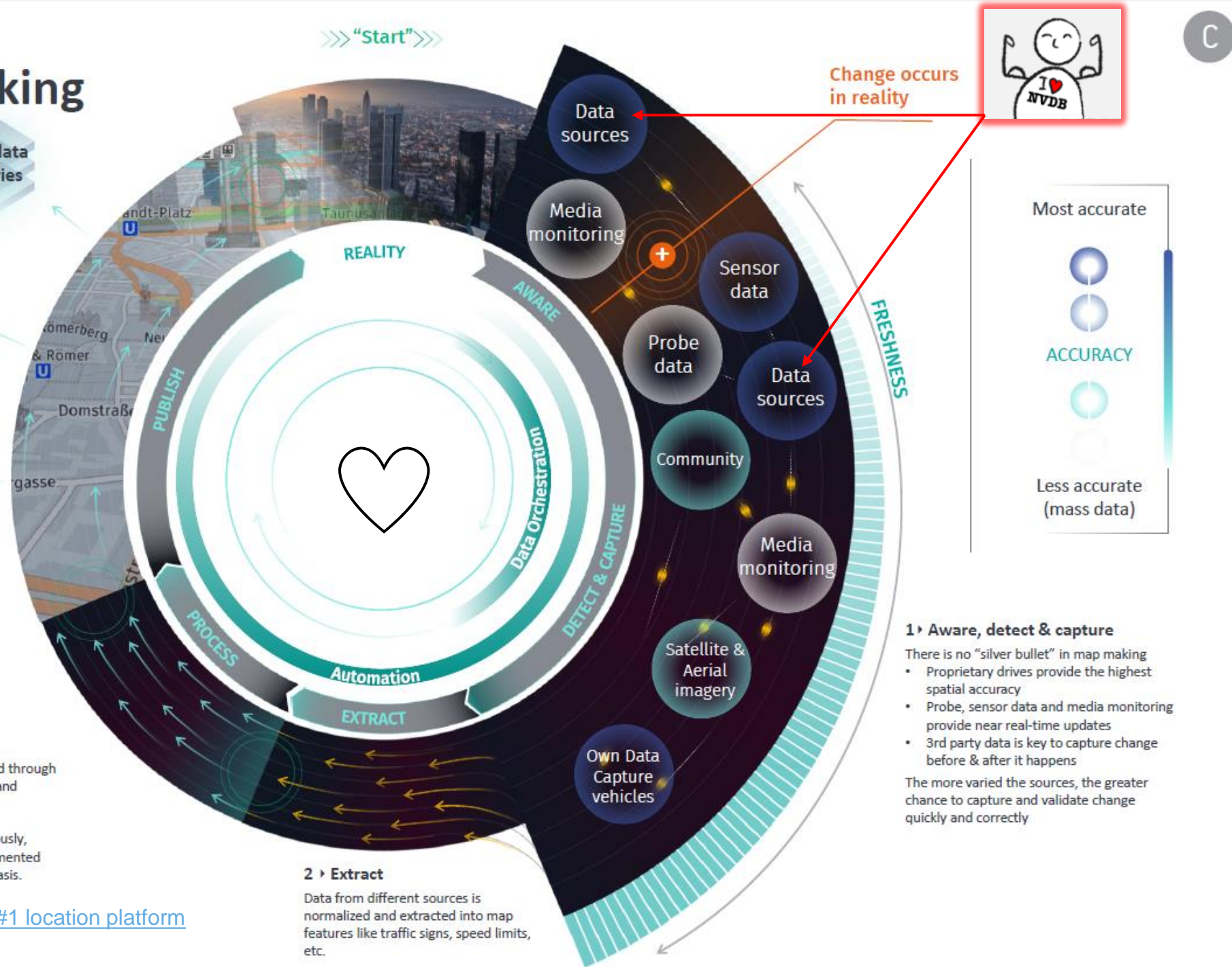
2 ▶ Extract

Data from different sources is normalized and extracted into map features like traffic signs, speed limits, etc.

1 ▶ Aware, detect & capture

- There is no "silver bullet" in map making
- Proprietary drives provide the highest spatial accuracy
 - Probe, sensor data and media monitoring provide near real-time updates
 - 3rd party data is key to capture change before & after it happens

The more varied the sources, the greater chance to capture and validate change quickly and correctly



Det er mange muligheter og utfordringer

Kan ISA og andre førerstøttesystemer bli like viktige som blokkeringsfrie bremses (ABS) og antiskrens (ESC)?

- [50 years of ABS | Vehicle Dynamics International](#)
- [The charming story of electronic stability control | Vehicle Dynamics International](#)

Derfor viser navigasjonssystemet i bilen din feil | Statens vegvesen





Statens vegvesen