ADASIS and SENSORIS

Jean-Charles Pandazis, ERTICO - ITS Europe

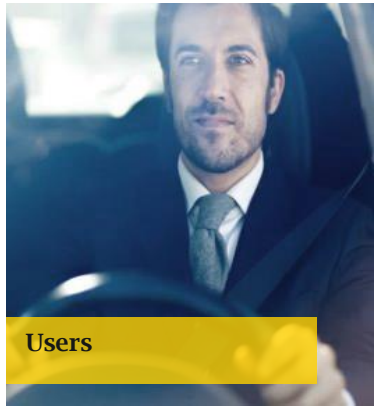
SIP-adus workshop, dynamic map (DM) session

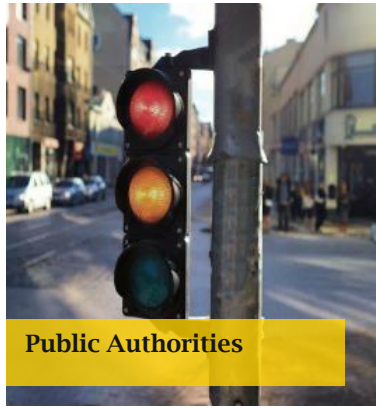
Tokyo, 11 November 2020 (online meeting)

Content

- ERTICO in two words
- Innovation platforms for Smart Mobility deployment
- Update on ADASIS
- Update on SENSORIS

ERTICO is bringing together 8 mobility sectors to make **mobility cleaner, safer and more efficient.**





ERTICO Partners

MOBILE NETWORK OPERATORS

T · · ERICSSON TIM

PUBLIC AUTHORITIES

NATIONAL

Department for Transport · GDDKiA · IMT · Norwegian Public Roads Administration · TRAFICOM · WDR

REGIONAL

Flanders State of the Art · Transport for West Midlands

CITY

Berlin · City of Copenhagen · Glasgow · Hamburg · Strasbourg.eu · RTA · The City of Tampere · City of Thessaloniki · toulouse métropole · Municipality of Trikala · Concello de Vigo

RESEARCH

Aalborg University · Aristotle University of Thessaloniki · CATAPULT · CATAPULT · CERTH · CHALMERS · CTAG · DTU Technical University of Denmark · ICOOR · Université Gustave Eiffel · LINKS · ITS University Northern Europe · list research · LIST · MIRA · Newcastle University · Okan University · Politecnico di Bari · TNO innovation for life · Institut VEDECOM · vicomtech · VTT · RE:Lab

SERVICE PROVIDERS

AKKA · Allianz · Atos · BEMOBILE · DEKRA · dots. · here · IBM · Applus IDIADA · NeoGLS · PLUSERVICE.NET · PTV GROUP the mind of movement · SWECO · teamnet · Technolution · TomTom · VVA Valent Viari & Associati Economics & Policy · PIONIRA NV

SUPPLIERS

AISIN AW · BlackBerry · BRIDGESTONE · Continental · DENSO · HUAWEI · Mitsubishi Electric Changes for the Better · NXP · Panasonic · ubiwhere · QUALCOMM · Valeo

TRAFFIC AND TRANSPORT INDUSTRY

ASFA · dynniq · indra · kapsch · MICHELIN · SIEMENS · swarco · TX LOGISTIK

USERS

Automobile Club d'Italia · FIA · RACC

VEHICLE MANUFACTURERS

ACEA · BMW · FCA · FORD OTOSAN · GROUPE RENAULT · HONDA · TOYOTA · VOLVO · VOLVO · VOLKSWAGEN

4 focus areas of mobility

CONNECTED AND AUTOMATED DRIVING

Accelerating automation and connectivity for safer and smarter mobility

CLEAN MOBILITY

Reducing environmental impact

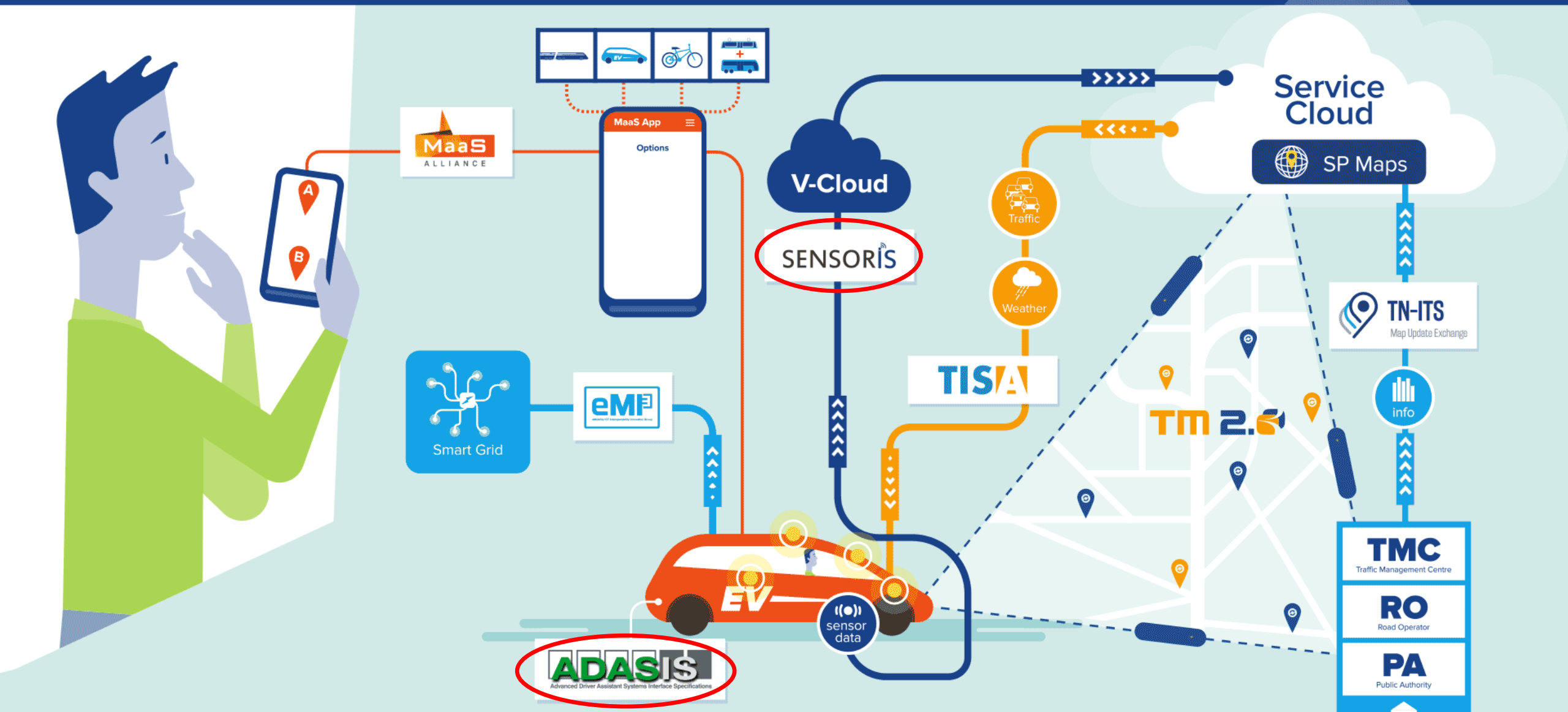
URBAN MOBILITY

Delivering seamless mobility for all

TRANSPORT AND LOGISTICS

Creating the digital infrastructure for freight transport and logistics operations

SMART MOBILITY DEPLOYMENT BY ERTICO PARTNERSHIP

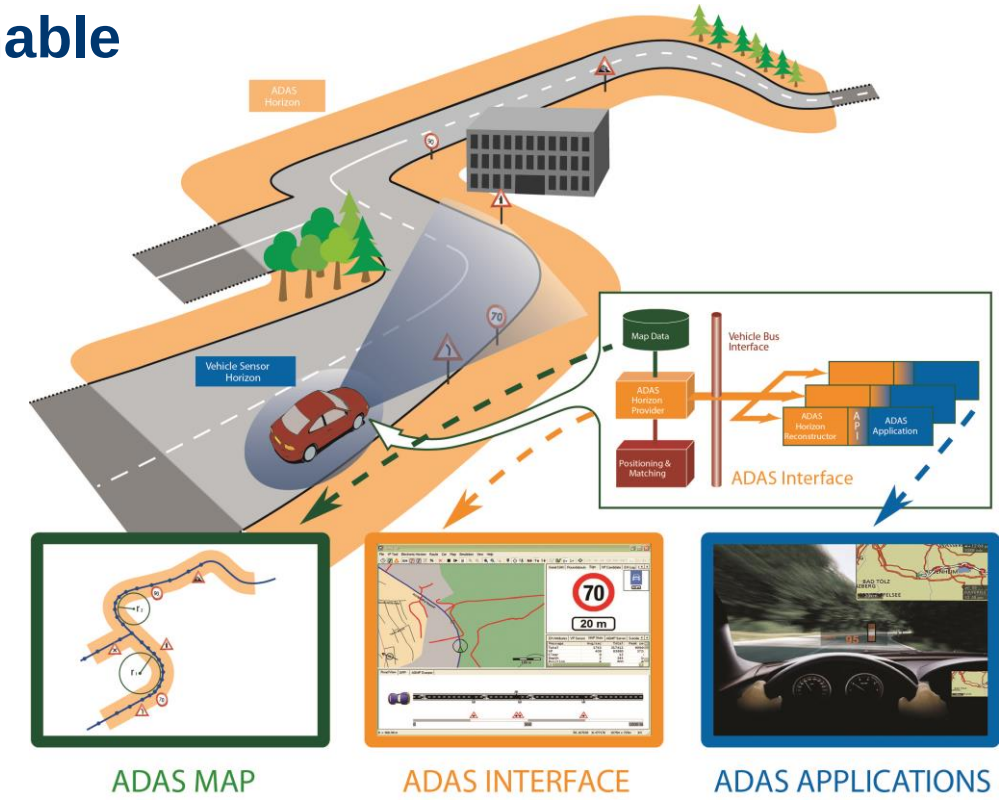


ERTICO
ITS EUROPE

Update on ADASIS activities towards autonomous driving
Quick overview

- **Initiated by Navtech, Constituted 2002 by ERTICO industrial partners**
- ADASIS v1 in 2005, tested & validated in EU project MAPS&ADAS until 2007
- **ADASIS v2 in 2010 enabled first predictive applications on the road in 2012**
- Since May 2018 is a Non-Profit International Association
- **End 2018 ADASIS v3.1 is released internally to enable Automated Driving, public release 10/2020**
- End 2020: ADASIS v3.2 to be released internally
- Reference implementation developed and available for ADASIS members only

ADASIS horizon addresses all major future mobility trends: connected, electrified and automated



ADASIS AISBL membership (58)

Vehicle manufacturers (12)	ADAS manufacturers (16)	Navigation system manufacturers (17)	Map & data providers (13)
BMW	Aptiv (former Delphi)	AISIN AW	AutoNavi (Alibaba Group)
Daimler	Continental Automotive	ALPINE ELECTRONICS	Baidu
Ford Forschungszentrum Aachen	CTAG	Banma Network Technology	DeepMap (2020)
Honda	DENSO	Bosch SoftTec	eMapgo
Hyundai Mnsoft	Elektrobit Automotive	CarLink Software Co.	Heading Data Intelligence (2020)
Nissan Motor Co.	Hitachi Automotive Systems	EnGis	HERE
Opel Automobile	Huawei	Garmin	Kuandeng
Renault	Huizhou Desay SV Automotive	Harman/Becker Automotive	MOMENTA
Toyota Motor Europe	IVIS Inc (2019)	LG Electronics	NavInfo
Volkswagen	Knorr-Bremse	Mappers Co.	Tencent
Volvo Car	MAGNA	Mitsubishi Electric Automotive	TomTom
Volvo Group Trucks Technology	Mando (2020)	MXNavi	Ways 1
	Valeo Comfort and Driving Assistance	Neusoft	Zenrin
	Visteon	NNG	
	Zenuity	Panasonic Automotive	
	ZF	TeleNav	
10 Japanese members		Veoneer (Autoliv)	
New members in 2020			

Examples: Product applications based on ADASIS

Advanced Driver Assistant Applications

Driver assistance

- Display of dynamic speed signs
- Warning for end of traffic jam tailback
- Hazard spot warning (e.g. slippery road)

(Hybrid) Electric vehicles

- Precise range estimation for electric vehicles
- Battery management for (hybrid) electric vehicles
- Driving strategy for hybrid vehicles

Intelligent ACC

- Calculation of optimal speed on country roads based on topography, curves, speed limits and up to dynamic information

Highly automated driving

- Detailed lane model
- Provision of 3D objects for localization
- NDS Auto Drive & ADASIS V3 support

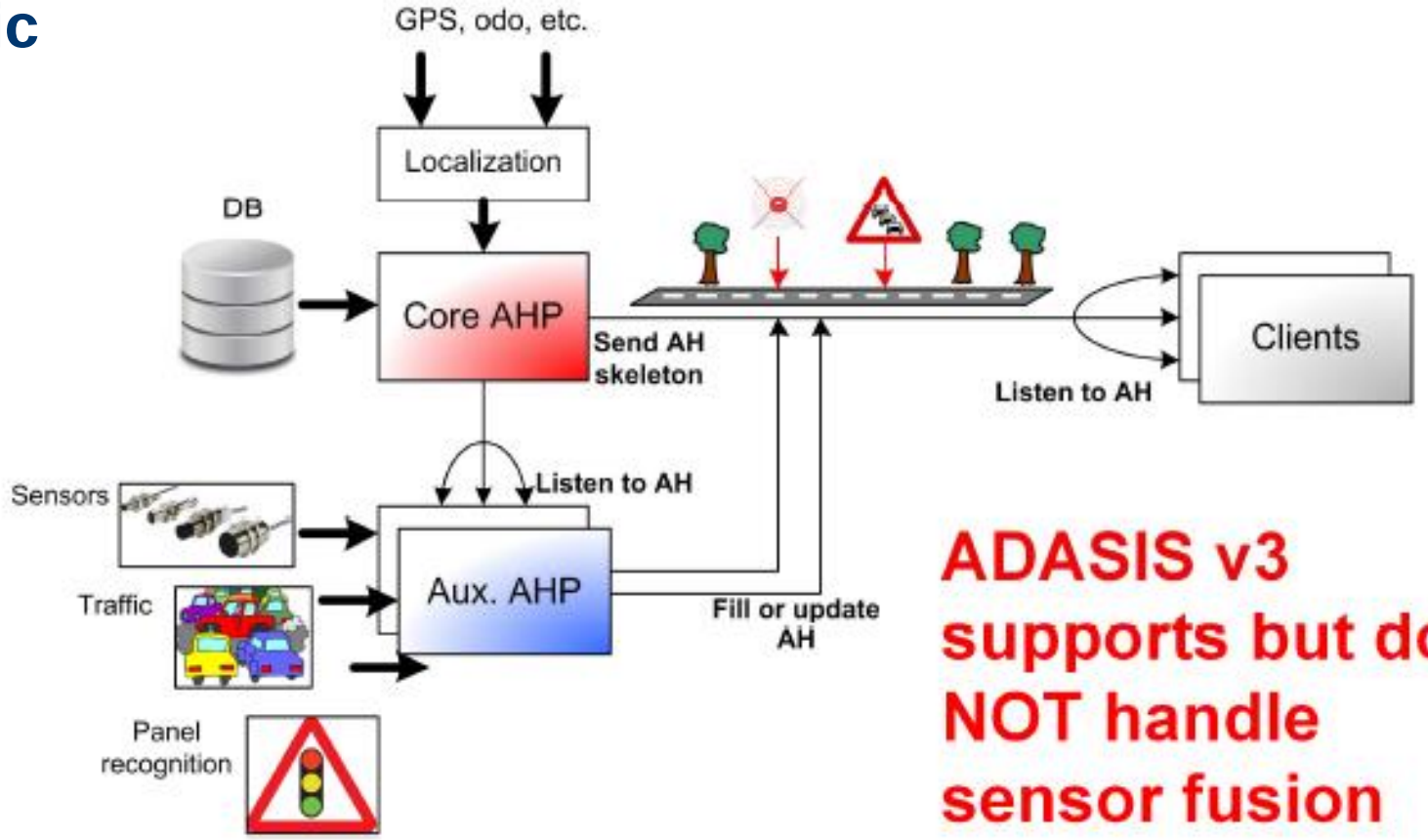
v3 architecture

ADASIS v3 supports progressive development of future autonomous vehicles

ADASIS v3 brings flexibility thanks to **multiple AH providers architecture**

ADASIS v3 must be **agnostic** about automated vehicle architecture

ADASIS v3 brings flexibility thanks to multiple AH providers architecture



ADASIS v3 supports but does NOT handle sensor fusion

What is new in v3 ?

New features part of v3.2:

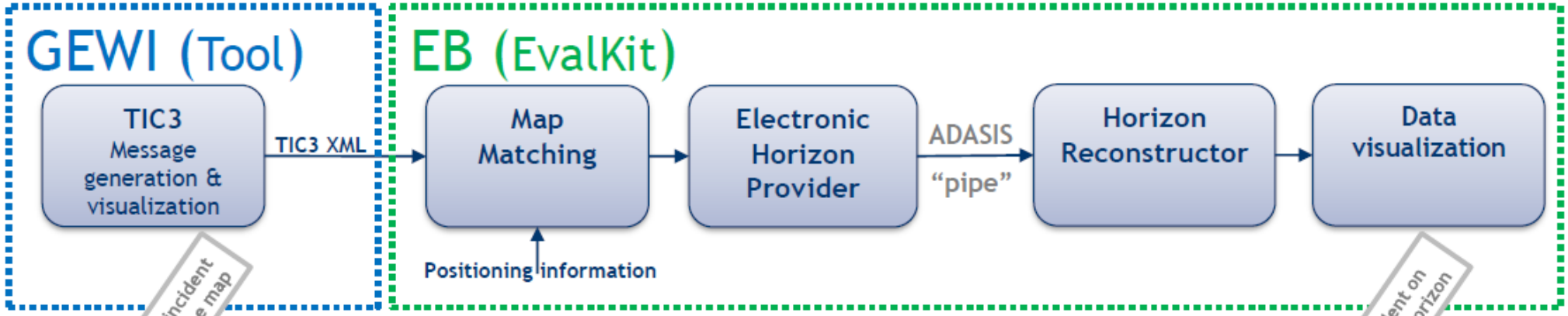
- Extended list of traffic signs (from NDS 2.5.3) in v3.2 reference document
- Special traffic light profile:
  - describing 3D object
  - including road attribute + including light phases (worldwide)
- Localization objects: obstacles, traffic sign face
- Connecting paths: bring network description into ADASIS v3 model (car centric)
- Fully defined Application API
- Finalised, robust and really good specification document

v3.2 ready to be used by autonomous-driving-software developers

Liaison activities

ITS World Congresses (Singapore October 2019):

- **ADASIS stand + demo on TISA stand**



Location reference:
OpenLR (Line location type)

Traffic event details to be transmitted:
TMC / Event code (just some of many)
Lane closed/open,
Lane specific speed restrictions,
Lane width information

Liaison activities

ITS World Congresses (Singapore October 2019):

- ADASIS stand + demo on TISA stand
- Organisation of a Special Interest Session:
  "Challenge of integrating Automated Vehicles into the digital infrastructure"

ADASIS meeting in Japan in November 2019:

- Initiate cooperation with ITS Japan & presentation to Japanese industry
- participation to SIP-adus conference and workshop

SIP-adus FOT

- Cooperation letter signed for the use of ADASIS v3.x
- ADASIS v3.1.0 delivered + by end 2020 v3.2 will be delivered (when ready)

Specification - Roll out plan

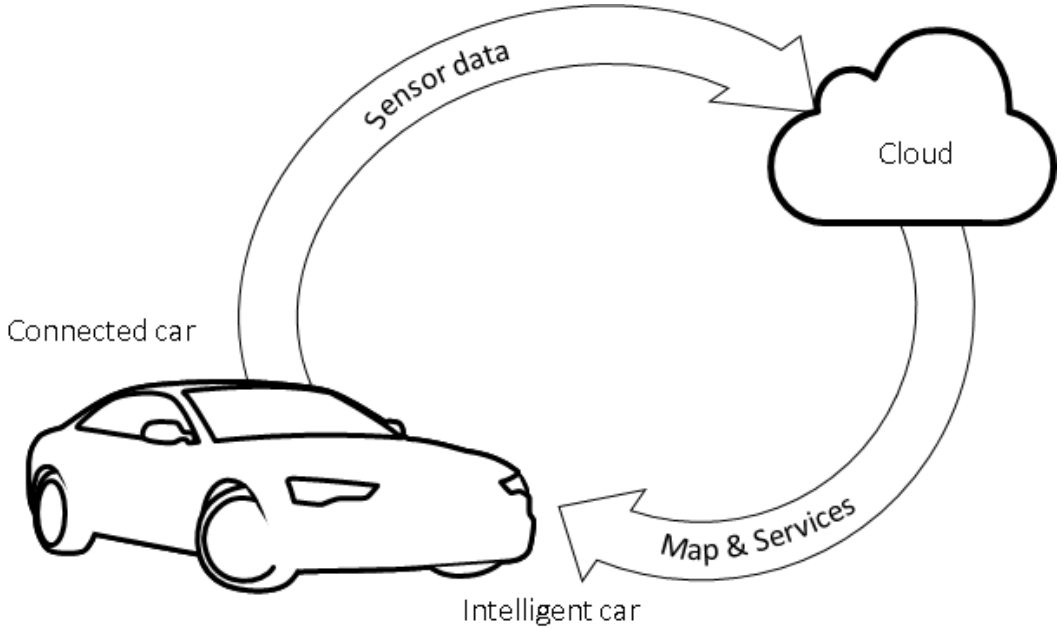
- **ADASIS v3.1.0 public release 10/2020**
- **ADASIS v3.2.0**
  - **internal review phase until end 11/2020**
  - **internal release planned 12/2020**
  - ***public release planned 12/2021***
- **Reference implementation update to v3.2 (ADASIS members only)**
- **Next updates plan to contain in priority:**
  - **Low-Level Protocol implementation (to be part of v3.3), e.g. serialisation using Ethernet**

SENSOR ingestion **I**nterface **S**pecification

SENSORIS

Automated vehicles need to be connected, have access to and share data with other vehicles and infrastructure.

SENSORIS specify the interface for exchanging information between in-vehicle sensors and dedicated cloud as well as between clouds



Main steps:

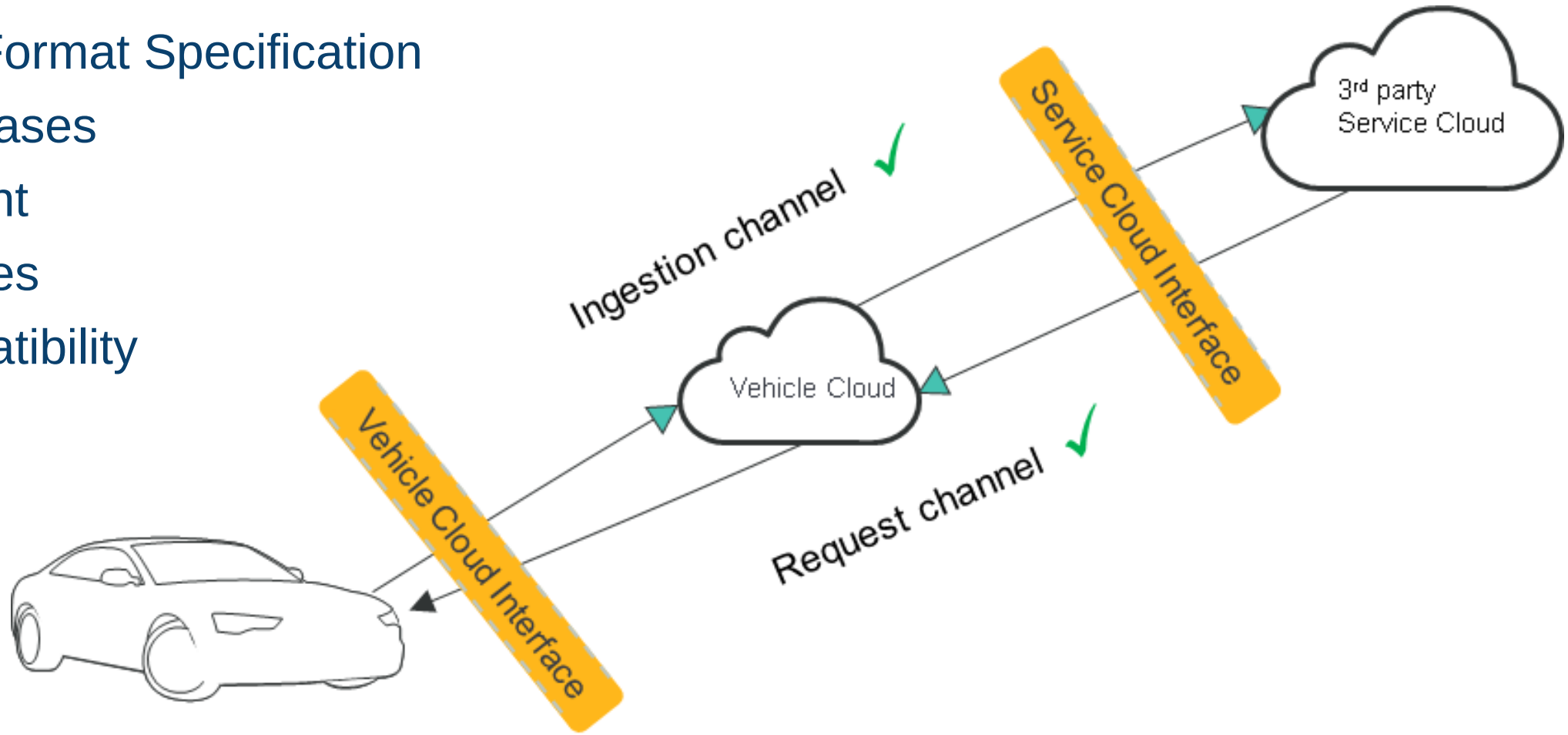
- 06/2015: First specifications released by HERE
- 06/2016: SENSORIS platform created & coordinated by ERTICO with major industrial stakeholders
- 12/2017: First draft of new specifications ready
- **06/2018: v1.1.0 specifications** as de-facto industrial standard (public release July 2019)
- **06/2019: Request channel** specification released internally (public release July 2020)
- 2020: start discussion with CEN/ISO

SENSORIS : 37 members

ADAS manufacturers (9)	AISIN AW	**Navigation System Suppliers (9)**	Elektrobit Automotive GmbH
	Continental Automotive GmbH		EnGis Technologies
	DENSO		Hyundai Mnsoft
	Huawei		Mappers Co.
	LG Electronics		MXNavi
	Robert Bosch Car Multimedia GmbH		Neusoft
	Knorr-Bremse		NNG
	Valeo Comfort and Driving Assistance		PIONEER Co.
	ZF		Telenav
Vehicle manufacturers (6)	Audi	**Location content & Service providers (8)**	AutoNavi Software Co. Ltd.
	BMW AG		Baidu
	Daimler AG		HERE Global B.V.
	Nissan		Kuandeng
	Renault SA (New 2020)		NavInfo Co.Ltd.
	Volvo Car		TomTom International B.V.
			U1GIS Co. Ltd. (New 2020)
Telecom & Cloud Infrasrtucture Providers (3)	IBM		Zenrin
	Tencent		
	Ways 1 Inc		
Other (2)	CTAG		5 japanese members
	ICCS		New in 2020

SENSORIS in a nutshell

- Data Format Specification
- Use Cases
- Content
- Updates
- Compatibility

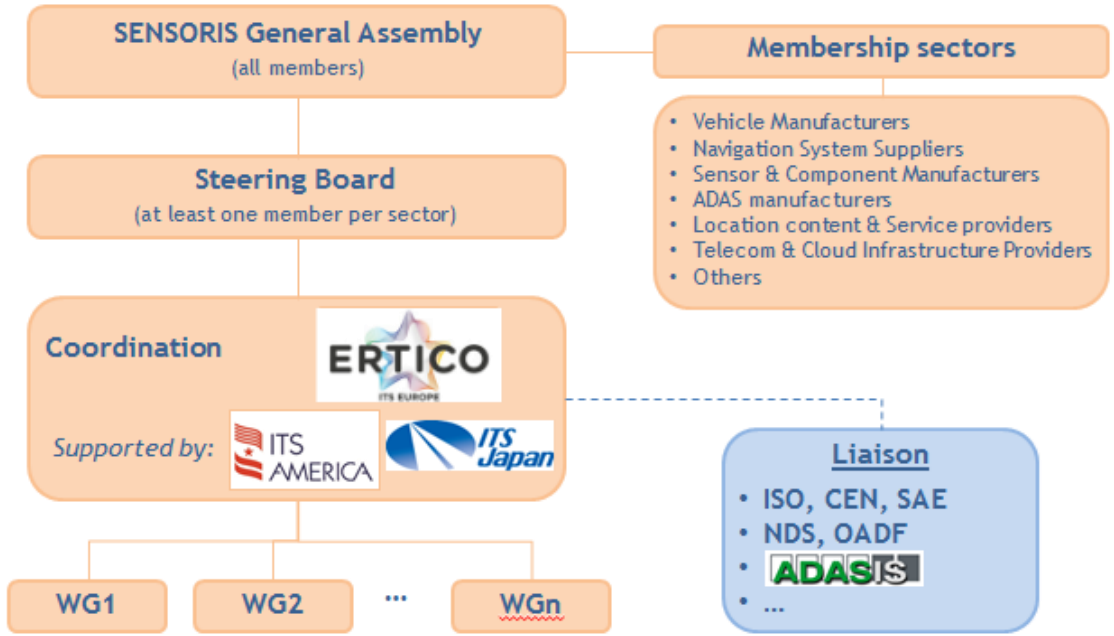


SENSORIS status

- **New Release**
  - V1.2.0 released internally (June 2020) – including 9 change requests
- **Public Release**
  - V1.1.1 released externally (July 2020) – including 4 change requests with relevant bug fixes
  - License CC BY-ND 4.0
  - Link to the release: HERE
- **3 Change Requests in Progress in Implementation review**
  - New vehicle status information (screen wiper, e-call, vehicle light)

SENSORIS status

- **Organisation**
  - New Steering Board elected with 8 members
  - New SB co-chairmen elected
    - Christian HEYNE from HERE Technology
    - Andras CSEPINSZKY from NNG
  - New Task Forces created
- **Liaisons - contacts**
  - CEN and ISO
  - OADF and its member organisations
  - Industry consortia – de-facto standards
- **Contribution to European initiatives**
  - European Data Task Force
  - Futur EU regulation on Data Access



Next steps

- **Preparing v2 release (probably 2021)**
  - New major release planned
- **Looking towards an international standardization of SENSORIS**
  - CEN TC278 and ISO TC204 are in the loop – NWIP created for CEN
  - Other organisations may be also relevant for SENSORIS
- **Driving towards harmonization across data standards**
  - Question: Should this be a OADF thing?
  - Answer: if it is related to maps for connected and automated driving then: yes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