

# Hybrid Communication

## *An initial discussion*

An initiative by Paul Spaanderman

# Hybrid Communication Initiatives

*With Interoperability focused:*

*EU commission MOVE: ITS-deployment platform*

*EU commission project: INTERCOR*

*Car2Car Communication Consortium*

*DITCM Architecture & Interoperability Table*

# Hybrid Communication

## In this presentation?

- *EU commission Intro*
- *EU + Dutch activities*
- *Car2 Car Communication Consortium*
- *Background*
- *Concept*
- *An early view*
- *Overall*

# EU Commission

Where does Hybrid Communication come from?



## *Commission Policy:*

ITS means applying Information and Communication Technologies (ICT) to the transport sector. **ITS services and applications can create clear benefits** in terms of transport **efficiency, sustainability, accessibility, safety** and security, whilst contributing to the EU Internal Market and competitiveness objectives.

## *Commission perspective:*

To take full advantage of the benefits that ICT based systems and applications can bring to the transport sector it is **necessary to ensure interoperability and continuity of the services among the different systems throughout Europe**. The existence of common European standards and technical specifications is paramount to ensure the interoperability of ITS services and applications as well as to accelerate their introduction and impact. International cooperation aiming at global harmonisation is relevant in this area.

# Hybrid Communication

## At Car2Car

### *Car2Car Communication Consortium Statement*

#### Deployment of V2X services based on ITS-G5

In the light of recent developments in the project landscape for automated driving, the CAR 2 CAR Communication Consortium seeks to deploy wireless Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) communication based on the ITS-G5 standard (IEEE 802.11p). The vehicle manufacturers unabatedly see ITS-G5 as essential cornerstone towards safe connected automated driving, and strongly support the recommendation developed by the European Commission's C-ITS Deployment Platform to use this system for short range communication in the 5.9 GHz band. The CAR 2 CAR Communication Consortiums continues to support the European Commission in bringing C-ITS into the market.

More details: <https://www.car-2-car.org/index.php?id=214>

# Hybrid Communication

## At Car2Car

*OEM's will realize ITS applications independently based common optimum business-technology approaches, in which business arguments are leading and communication technology is not differentiating.*

*There is interest in "Hybrid Communication" based on the expected growth of available robust data and services enabling the OEM's to increase traffic safety and support improvement traffic efficiency. Expectation of "Hybrid Communication" are currently being developed.*

# **Hybrid Communication**

## **At Car2Car**

*Organized:*

*In the Architecture WG at C2C-CC:*

*Sub-Working Group on Hybrid Communication initiated.*

*Initial discussion took place before the summer of 2016.*

*Working installed. Participation of Car-OEMs, SME and research is established.*

*Further discussion based on following presentation agreed.*

# Hybrid Communication

## Background

*The term “**Hybrid Communication**” was first introduced in the Dutch standardisation report from 2014 realized by MAPtm and PaulsConsultancy, and commissioned by Rijkswaterstaat.*

*It was introduced to bring the **attention** of all the consequences of using several communication protocols for the information exchange of similar data. One which supports all stakeholders and allows qualitatively and correct interpretation of the information.*

*The term got momentum when used as aspect of attention at the EU commission initiative **ITS-deployment platform**, based on initiative of Connecting Mobility (NL) and is an element of the declaration of Amsterdam.*



# Hybrid Communication

## Concept (for discussion)

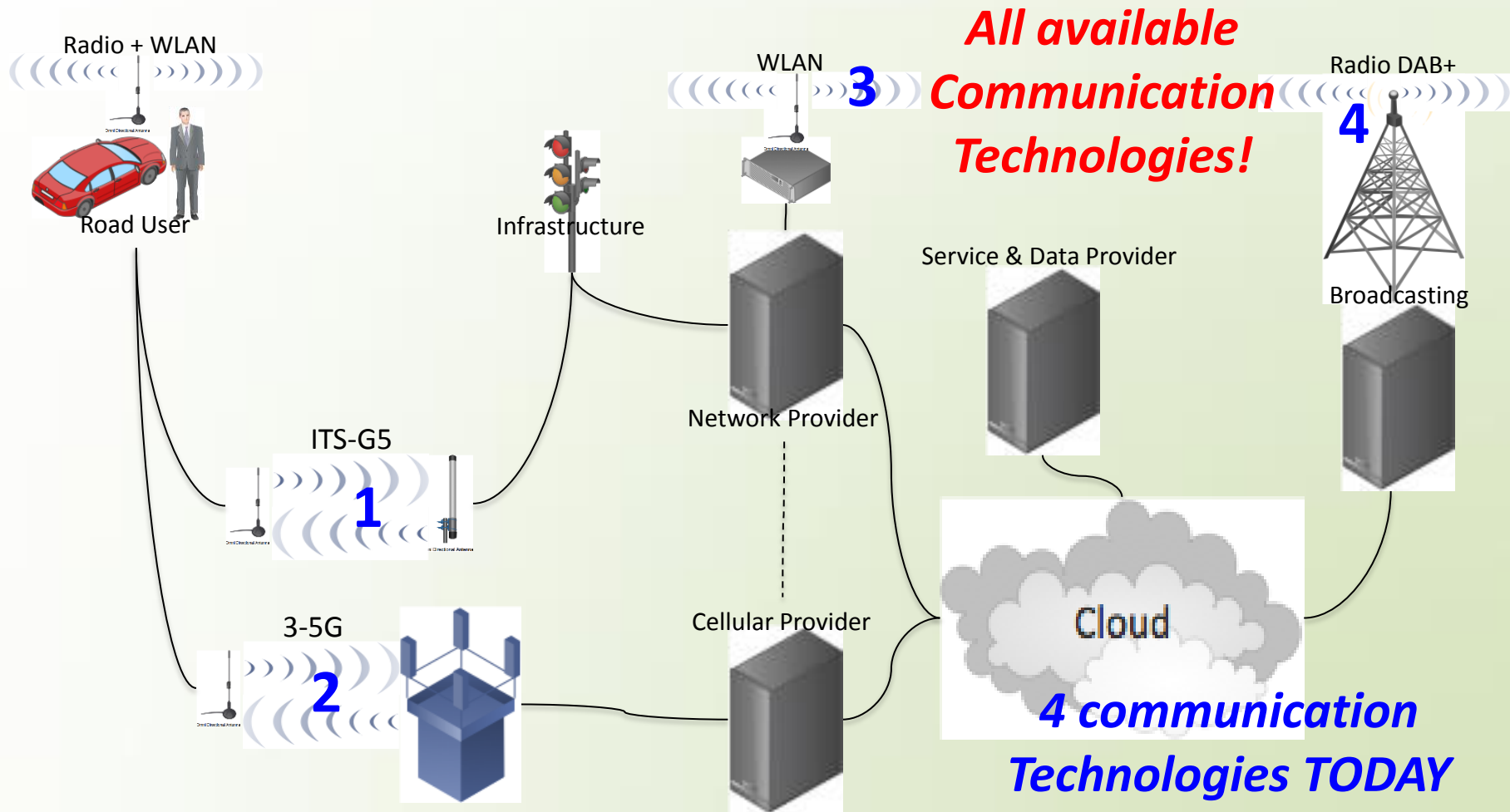
### Hybrid Communication concepts

- will make simultaneously use of more than one communication protocol
- It is envisioned to support concurrent operation of multiple ITS connected, cooperative and automated applications as well as ITS related facility services
- All in the same system/environment and delivered by various stakeholders.

**Hybrid Communication** especially focus on the data exchange and its functional and communication requirements to support these applications by making use of various data services. Data services which may be operated/developed/owned by a single or different stakeholders.

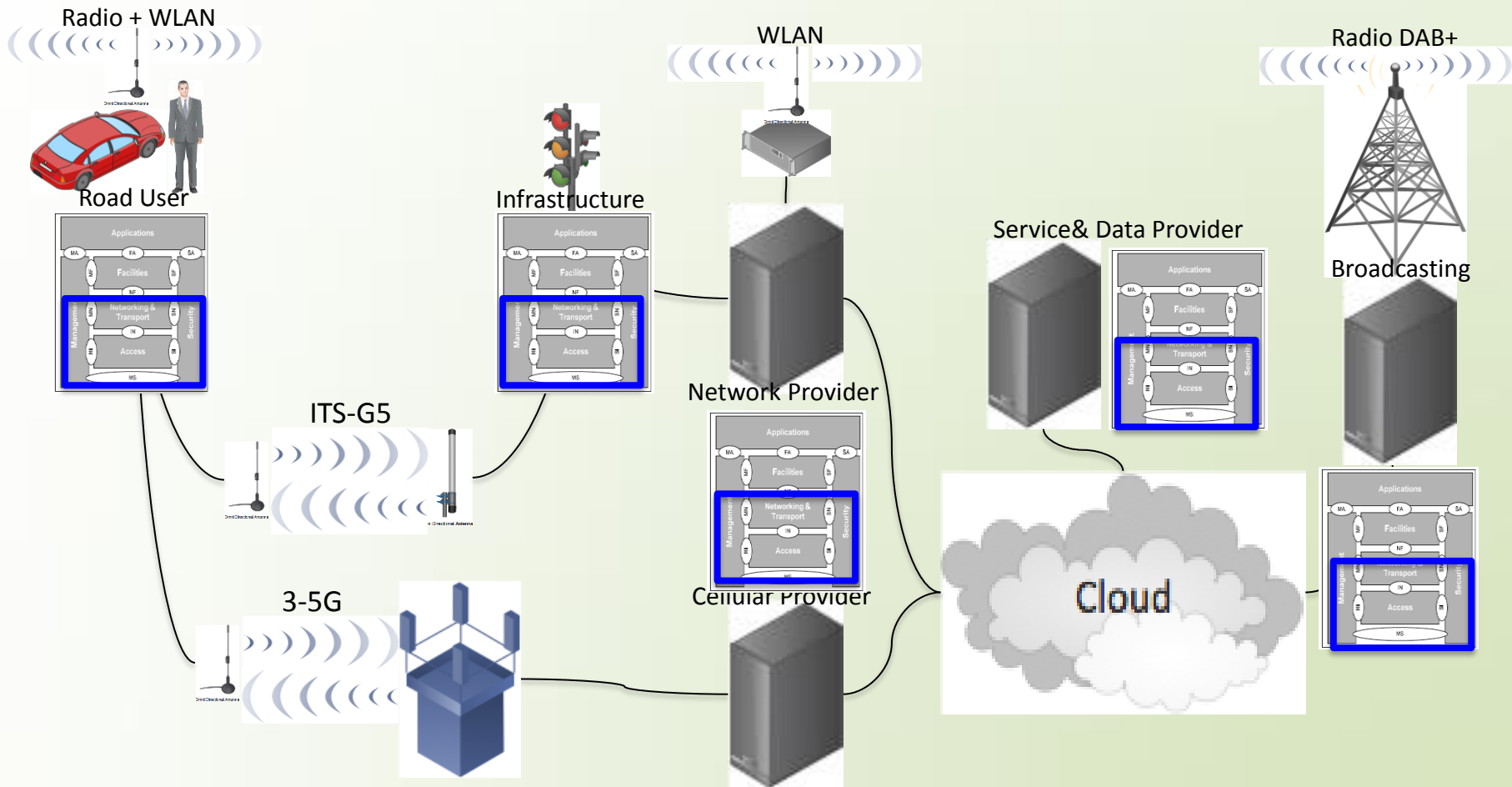
Such data exchange, applications and services should be able to be realized interoperability in a ITS systems operated/owned by the same or another stakeholders.

# Hybrid Communication Environment (technical architectural view)



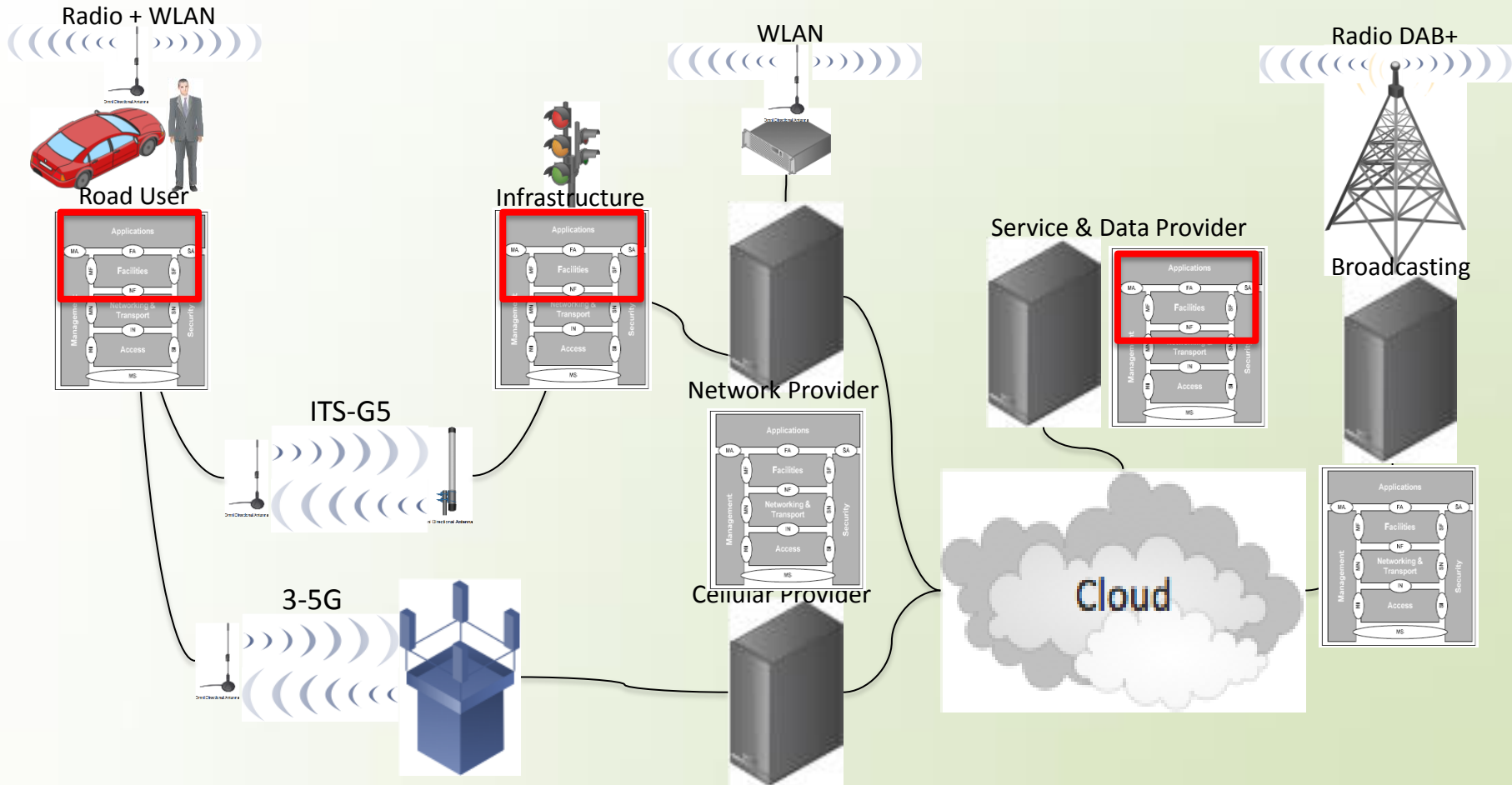
# Hybrid Communication

*At the Communication Level.*



# Hybrid Communication

*At the Functional Level.*



# Hybrid Communication

## *Summary*

### Hybrid Communication

- Is one of the conceptual elements creating resilience in the ITS system, it accommodates adoption to different traffic circumstances (Highway and Urban) for automated transportation, travel efficiency and pedestrian safety in a cleaner and safer environment.
- Functionally Hybrid Communication should deliver increased information (data) availability and service consistency. It should result in clearness about data relevance and realize high data quality, reliability, integrity and communication robustness for ITS use cases.

# Hybrid Communication

Thank you:

Paul Spaanderman  
ps@paulsconsultancy.com