Connected Cars need Connectivity

The promise of truly connected cars rests not just on connectivity, but on the exchange of data between the car and other devices

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Matt Jones
President GENIVI Alliance

GENIVI Development Platform

The GENIVI Focus:
In-Vehicle Infotainment (IVI) and Car Connectivity

Software that performs features like…

Hands-free Telephone

Driver Assistance Alerts

Navigation and Points of Interest

Connection to Internet-based services

Email and Text

Entertainment

Car Information

What makes a car go… software

- *"It would be easy to say the modern car is a computer on wheels, but it is more like 30 or more computers on wheels."*

  Bruce Emaus, chairman of SAE International's Standard Committee

- Some cars have more lines of software code than jet fighter airplanes; some have nearly twice the number of lines as make up the entire logic behind Facebook
- Car software extends your mobile device, your office, your home entertainment, and your **entire digital life** to the car

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Three Challenges of Automakers

- Increase speed and decrease cost of developing IVI products
  - Mobile devices release in 18 months; Cars in 3-5 years
  - Drivers expect just released smartphones and apps work in the car
  - Over 100 million lines of code in a high-end IVI product … and growing
- Supplement existing IVI offerings with innovative approaches
  - Automotive ecosystem has been largely self-contained and very proprietary
  - Platform and tooling for experimentation and rapid prototyping are missing
- Take full advantage of the connected car opportunity
  - No technology platform for car-to-*anything* communication
  - Assisting drivers with cloud-based information has huge potential

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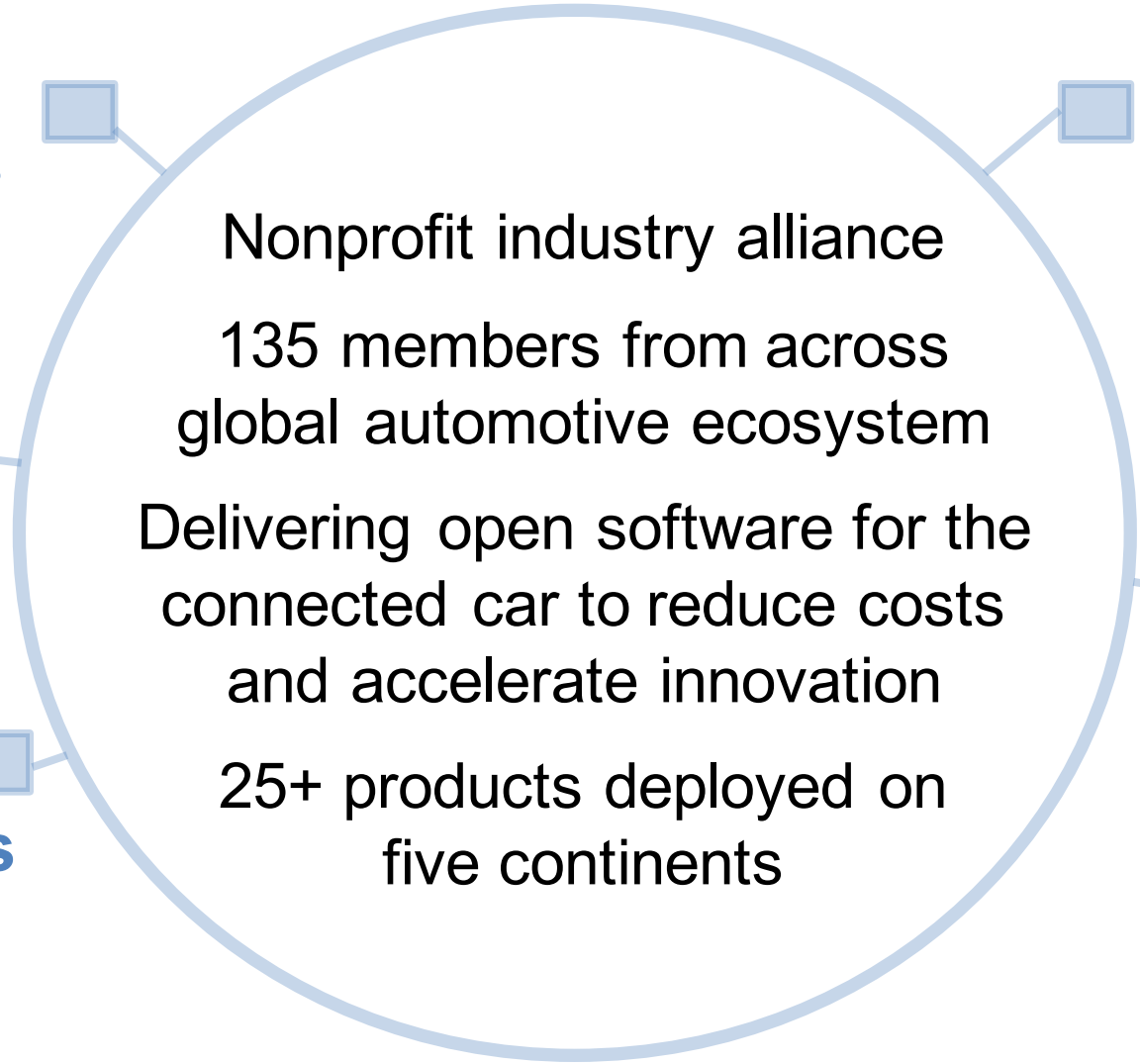
An Open, IVI Community



Automakers and Suppliers

Start-ups and Academia

Hardware and Silicon Suppliers

Operating System Vendors and Integration Providers

Independent Software Vendors and Specialty Software Providers

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Focused on Responding to Consumers

Provides standard open source architectures, tools and software

Supports business model evolution and networking to facilitate innovation

Allows flexible definition of IVI systems that fit customers' latest needs

Allows reuse of software and re-deployment of solutions, with no royalty fees

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Connected Car:
A foundation for innovation

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Consumers expect a connected lifestyle

- Cars are just another participant in their digital life
  - Everything they can do on a smartphone, they should be able to do in a car…plus more
- Cars are becoming active participants in a peer-to-peer network consisting of…
  - Smart homes
  - Smart cities
  - Smart infrastructure
  - Other smart vehicles

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But standards and a car connectivity software platform are missing

- Homes, cities and cars speak different “languages”
- Current automotive standards primarily aimed at safety
- Intelligent transportation solutions are unique to a region
- Solutions from different automakers may not interoperate
- Cellular connectivity does not scale
- Concerns over car security in a connected world

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Connected Car:
A vision for the future

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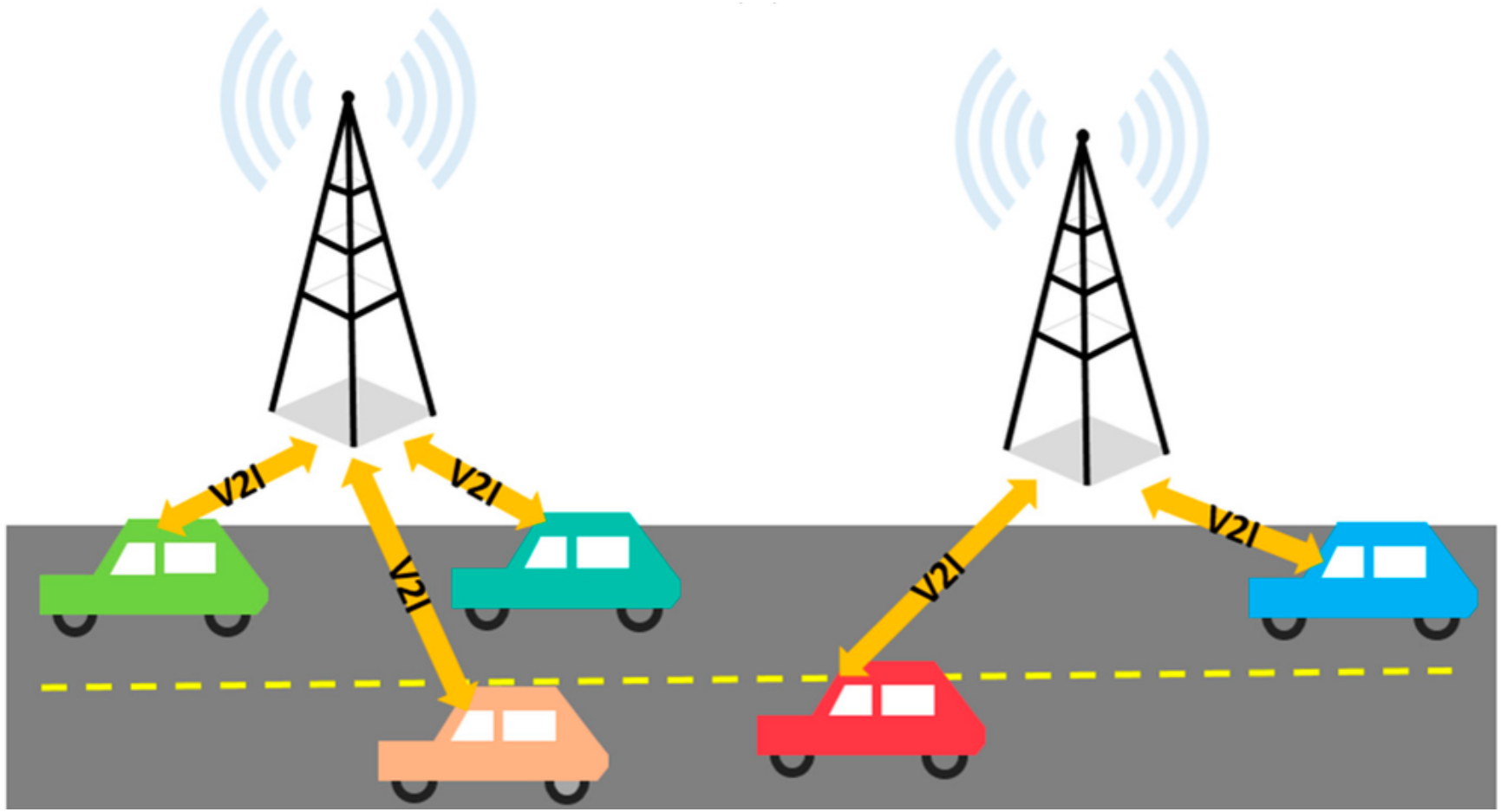
V2I



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V2V

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V2I + V2V

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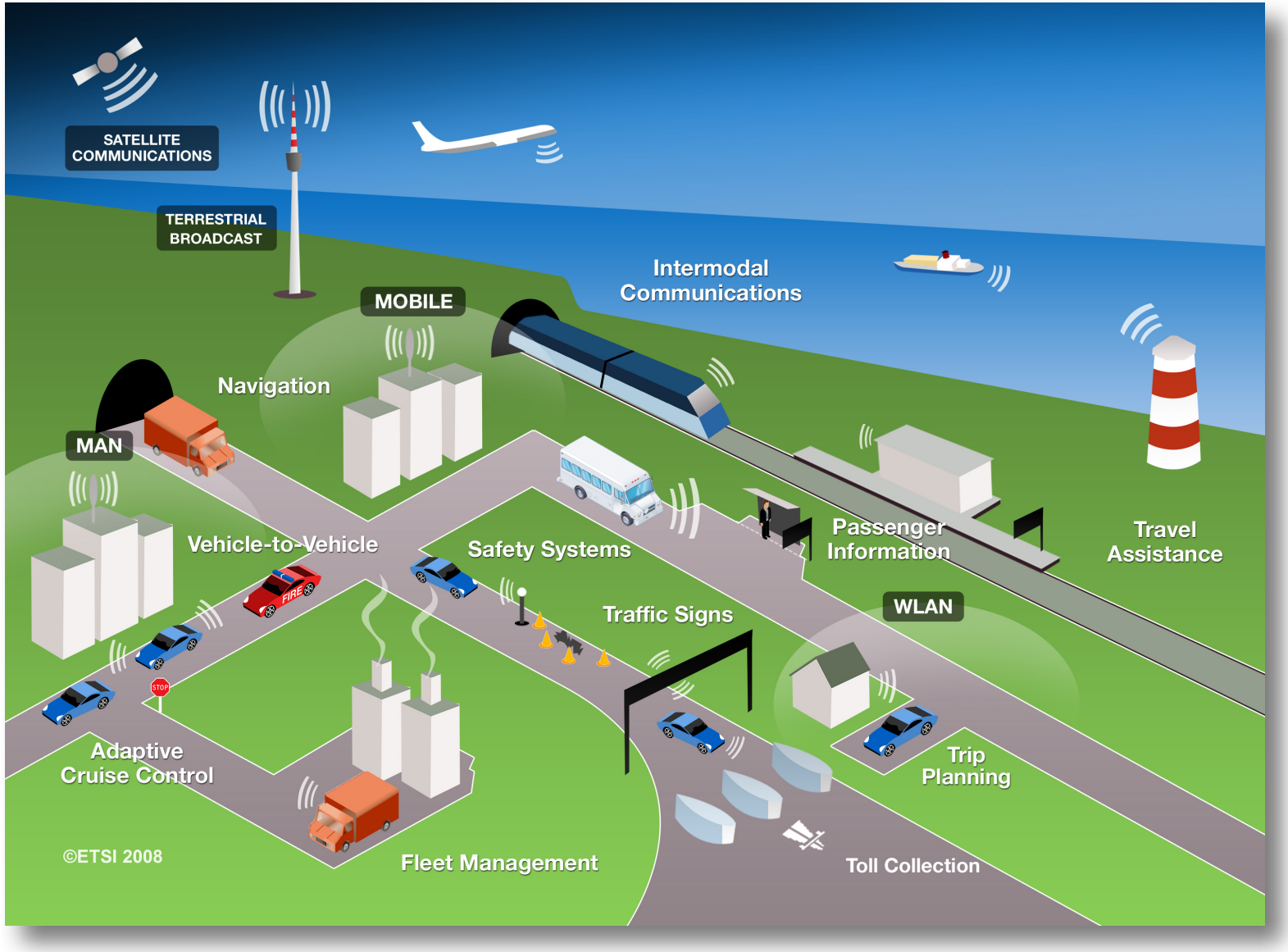
Smart Cities



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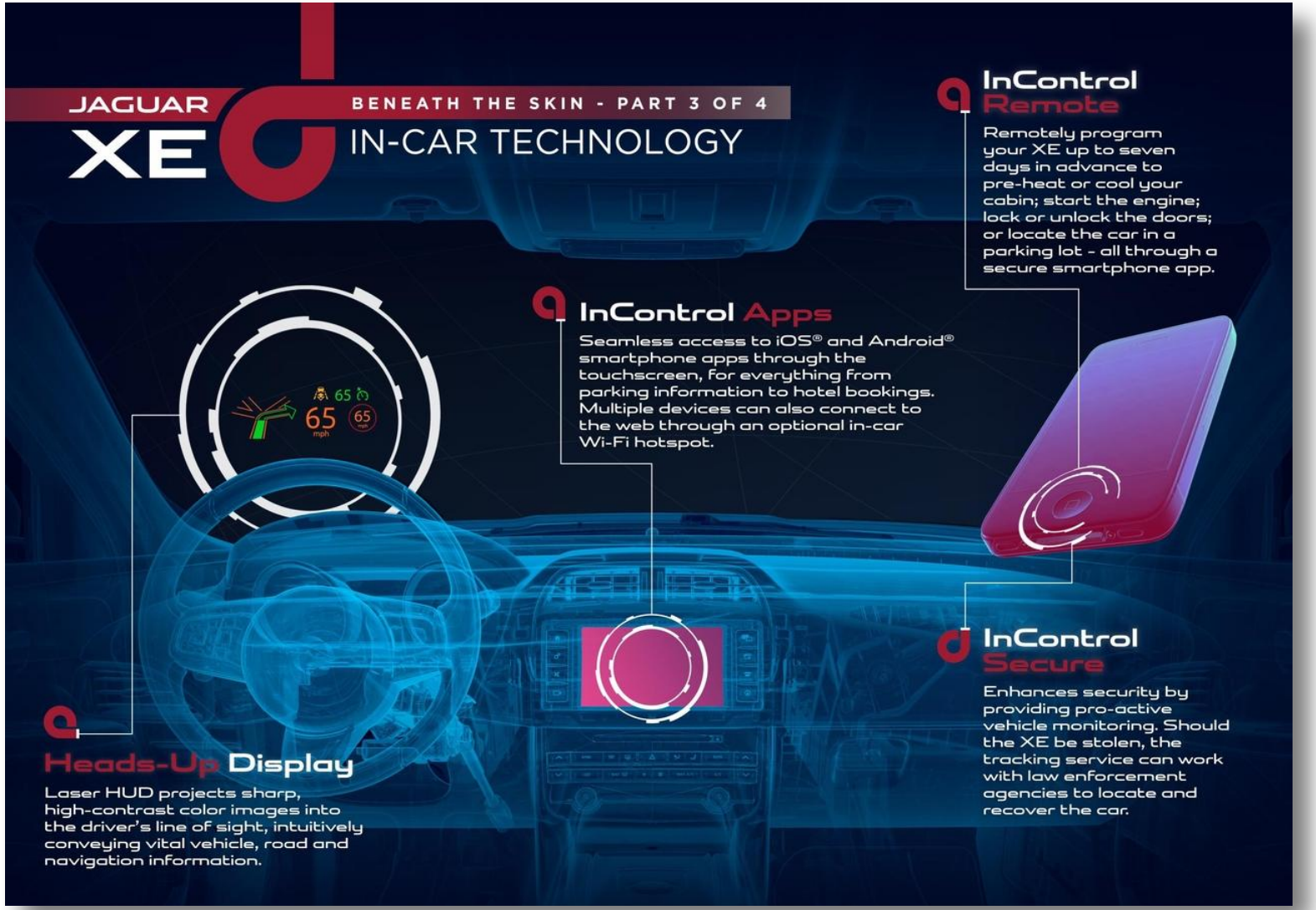
Today's Use Cases



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Remote Vehicle Interactions project:
The base for future use cases

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An open infotainment and connectivity platform for the transportation industry - Remote Vehicle Interaction (RVI)

Platform

Specify, Standardize, and Implement Core connectivity protocols and services between the IVI system and remote entities.

Open

Use proven open source technologies to ensure that all protocols and services can be implemented securely and robustly.

Collaborative

Work with existing organizations (OCF, OMA, IEEE, etc) to ensure broad adoption and acceptance, and to avoid duplication and competition.

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Rapidly delivering Remote Vehicle Interaction

- Proofs of concept (code) complete for:
  - Car control (e.g. temperature) from smartphone
  - Transferring car data to the cloud (big data uses)
  - Software updates over the air (SOTA)
- Integrated into GENIVI Development Platform(GDP)
- Yesterday: Demonstration of connecting a car and a home (with Open Connectivity Foundation)
- Exploring other “smart connections” (cities, vehicles, etc.)

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GENIVI Platform Accelerates Innovation

GENIVI Development Platform

Remote Vehicle Interaction (RVI)

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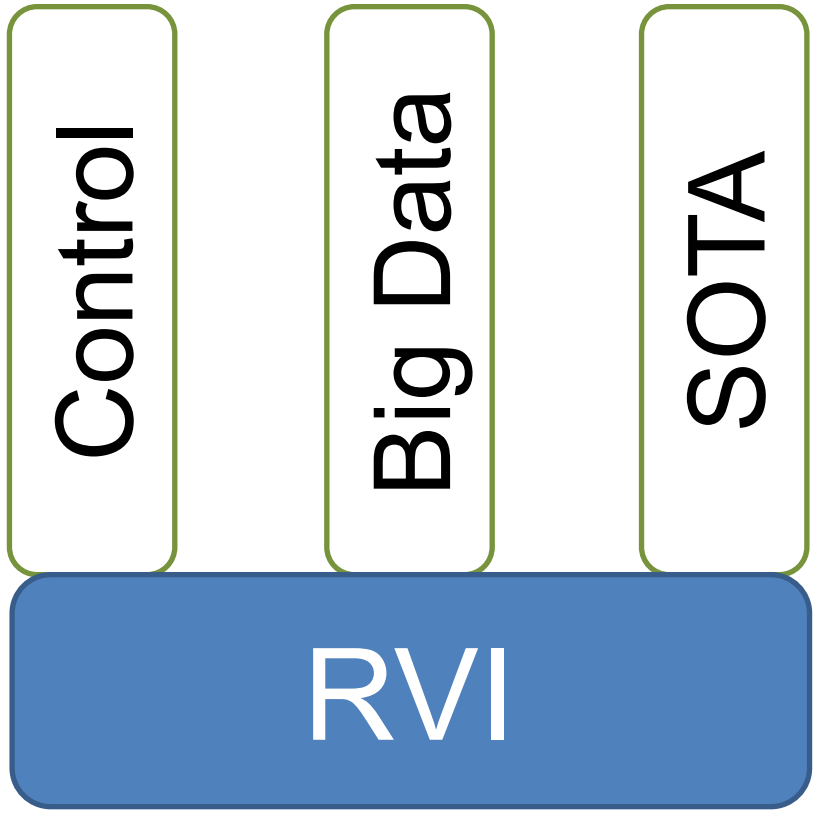
GENIVI RVI reference

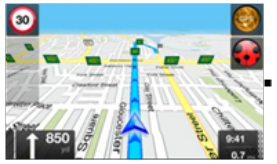


RVI / OCF Demo

RVI

IoTivity

Car HVAC



Car navigation

Car door lock

GENIVI Head Unit

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Window sensor

TV

RVI – IoTivity Bridge

Cleaner Robot

Gear S2 app

Bulb

OPEN FOUNDATION™

Inter-Alliance Liaisons

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GENIVI Security Group

- Growing, and expanding the scope rapidly:

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Accelerating the development:
The power of membership

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How can we accelerate?

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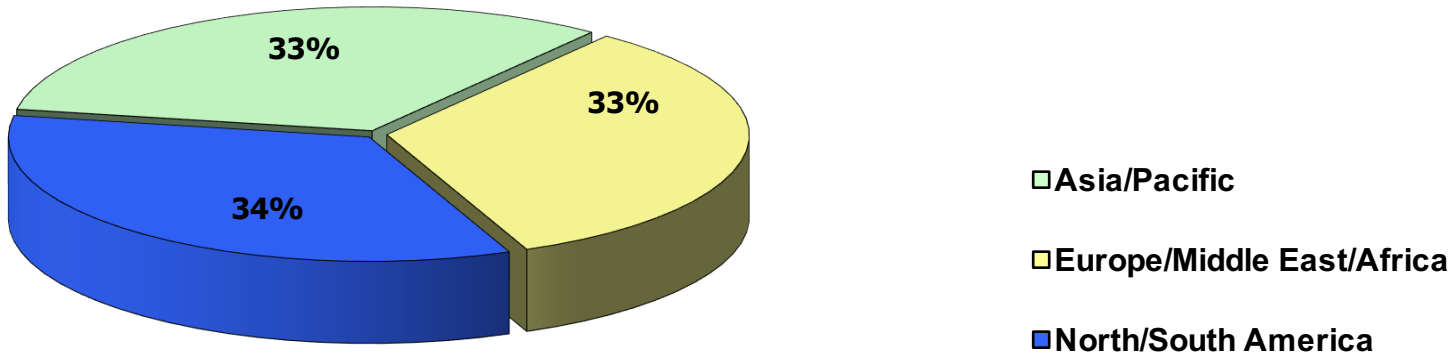
GENIVI Member Geography

Region	March 31, 2016
Asia/Pacific	44 (33%)
Europe/Middle East/Africa	45 (33%)
North/South America	46 (34%)
Total Member Companies	135



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How to get involved

- **Technical:**
  - Engage with the Expert Groups within GENIVI
  - Contribute code
  - Build future concepts on the common platform

- **Business:**
  - Discuss future needs with customers and partners
  - Contribute use cases to the Expert Group
  - Encourage others to join GENIVI

We can learn a lot from each other!

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Thank you!