



# **Outcome of Research Activities towards ITS Systems Respecting Privacy**

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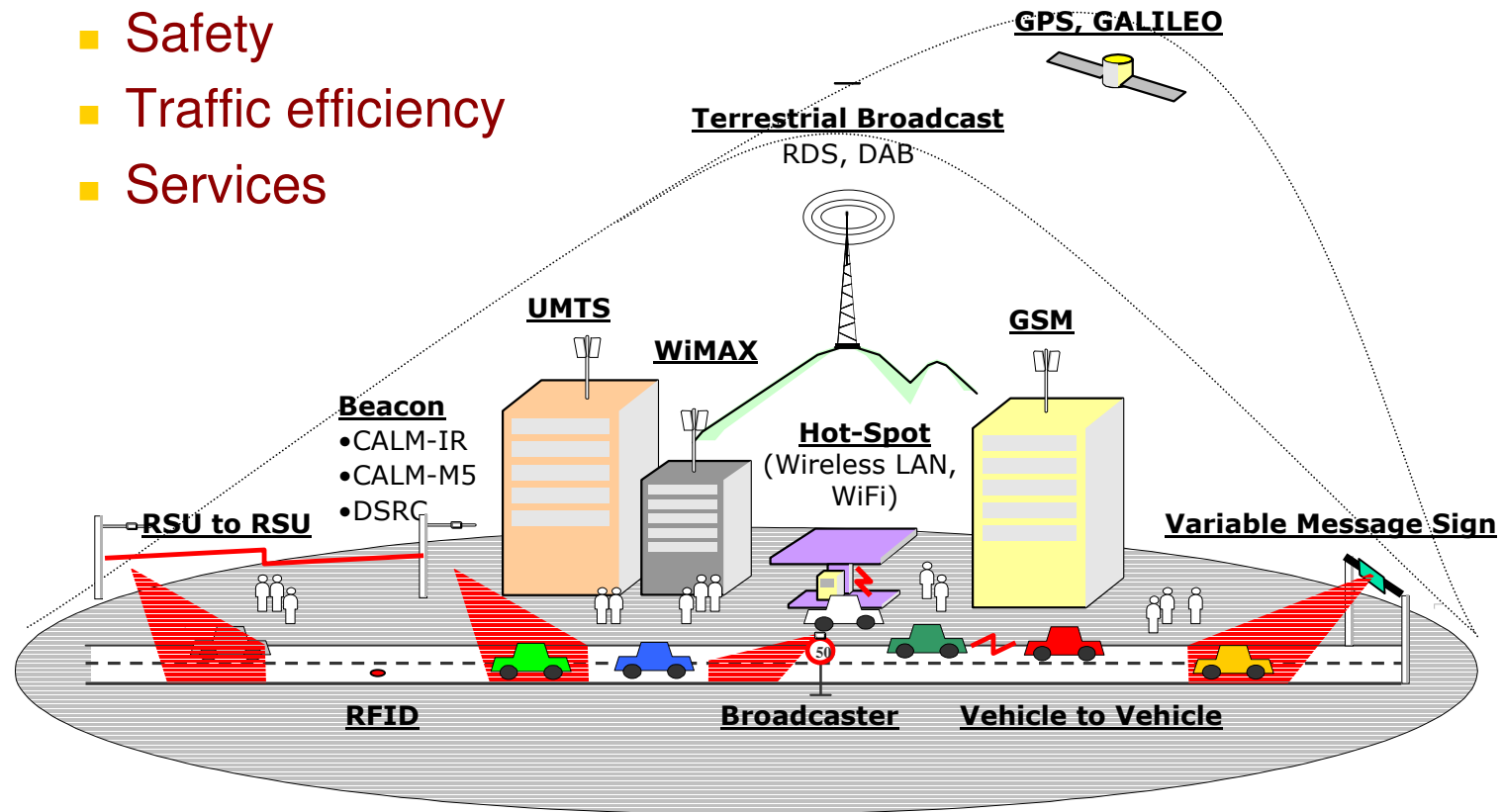
**ITS world congress, Stockholm  
23 September 2009  
Antonio Kung, Trialog**



- Context
- Relevant projects
  - Security aspects
  - Data protection aspects
- Map

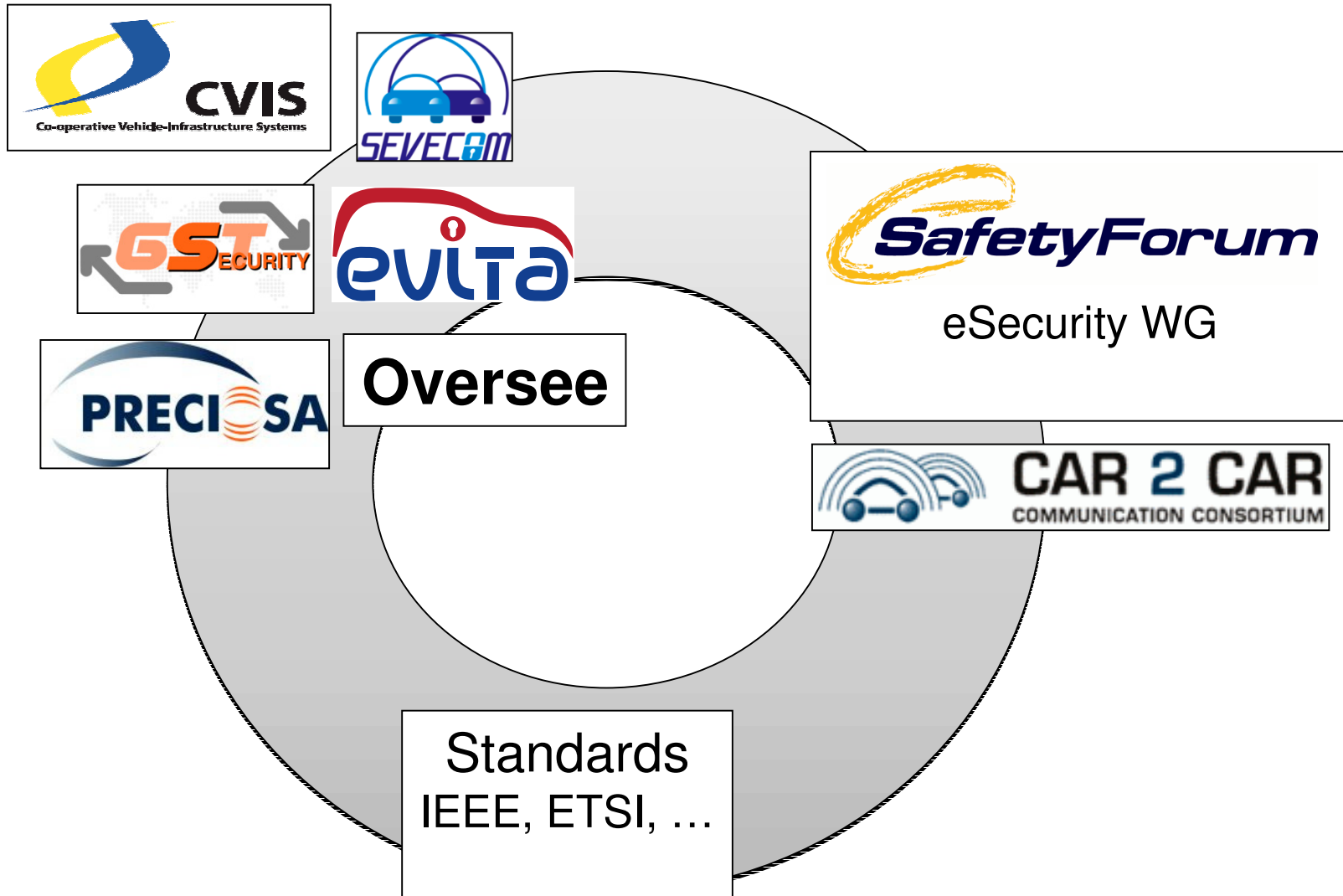
# Context

- ITS applications
  - Telematics (e.g. GSM)
  - Cooperative systems (i.e. V2V/V2I)
    - Safety
    - Traffic efficiency
    - Services



Courtesy CVIS  
Slide 3

# Map of Relevant Projects



- GST-Sec

- 2004 – 2007
- Trialog, BMW, Daimler, Renault, TU Munich, KU Leuven



- Outcome

- Open system for telematics applications
- Business security at stake

- CVIS

- 2006 – 2010
- Ertico, Trialog, Technolution, Ygomi, ....



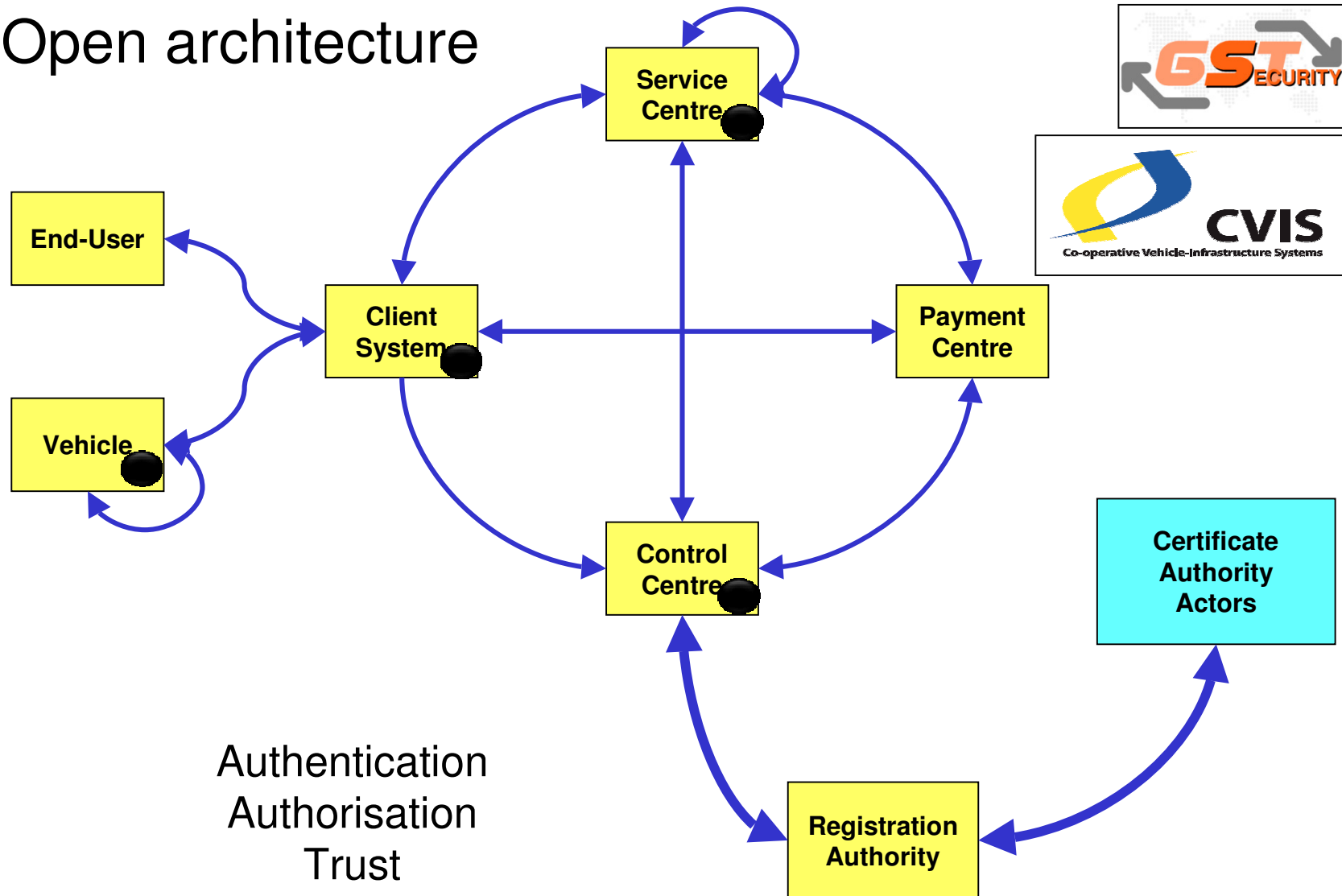
- Outcome

- Open system for cooperative systems
- Business security at stake

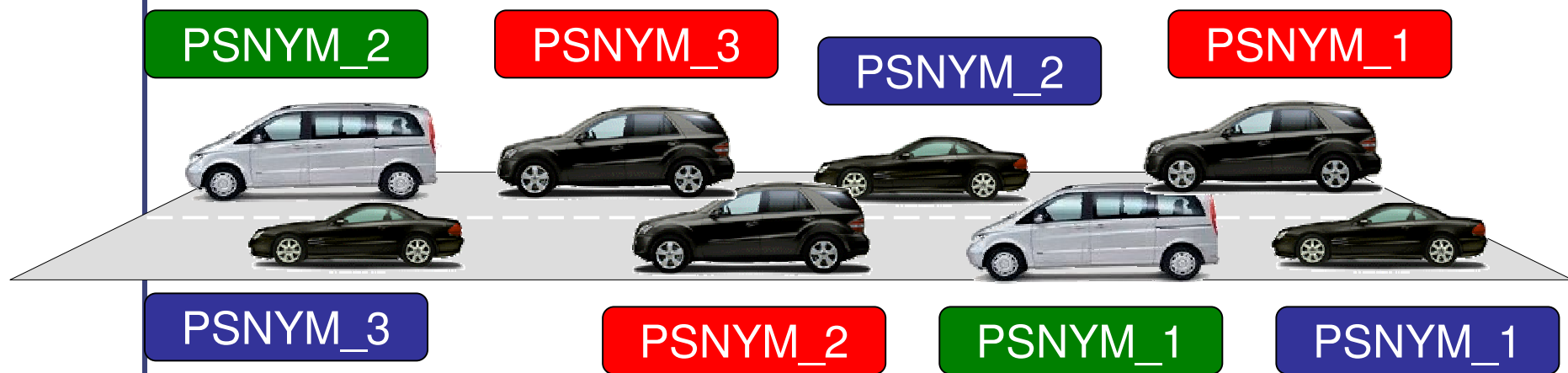
# Outcome: Business Security



- Open architecture



- SeVeCom (Secure Vehicle Communication)
  - 2006-2009
  - Trialog, Daimler, CRF, Bosch, U.Ulm, EPFL
- Outcome: protect the pipe in V2V/V2I
  - Authentication
    - Elliptic Curve – EC-DSA
  - Anonymity of communication
    - Pseudonyms



- Demonstration at the European commission booth
- ICT results



The screenshot shows a web browser displaying the CORDIS ICT Results website. The URL is <http://cordis.europa.eu/ictresults/index.cfm?section=news&tpl=article&BrowsingType=Features&ID=90862>. The page title is "ICT Results ... Results that lead the way". The main content area features the article "On the road to secure car-to-car communications" under the "Features" section. The article text describes a European research project aimed at keeping car-to-car data transmissions private and secure from malicious hackers. It includes a photograph of a multi-car pile-up. The article also mentions that a communications system mounted on a car had connected with one on a lorry, and that the extra fraction of a second's braking before a car took over made all the difference, preventing a multi-car pile-up. The article concludes by stating that ICT is driving forward a new era of more efficient and safer road travel for European citizens, and that vehicle-to-vehicle and vehicle-to-infrastructure communication will make roads safer still. A sidebar on the left contains links to "ICT Results", "Features & Publications", "Press Desk", "Investors Room", "Help & Links", and "ICT Results for You". A "High-impact ICT research" banner is also visible. The right sidebar includes an "Advanced search" section, an "e-Bulletin" section with a "Register" button, an "RSS" section with an "RSS FEED" button, and a "Related Articles" section listing "Inter-vehicle communications may save..." and "SPECIAL: Home, James - public transpo...". The bottom of the page shows a Windows taskbar with various open applications, including "SIS46 Privacy...", "C:\Users\anto...", "5 Microsoft...", "ICT Results - O...", "04 ITS Stockho...", "ICT results - T...", and "ICT Results.pdf...".



# EVITA: Expected Outcome



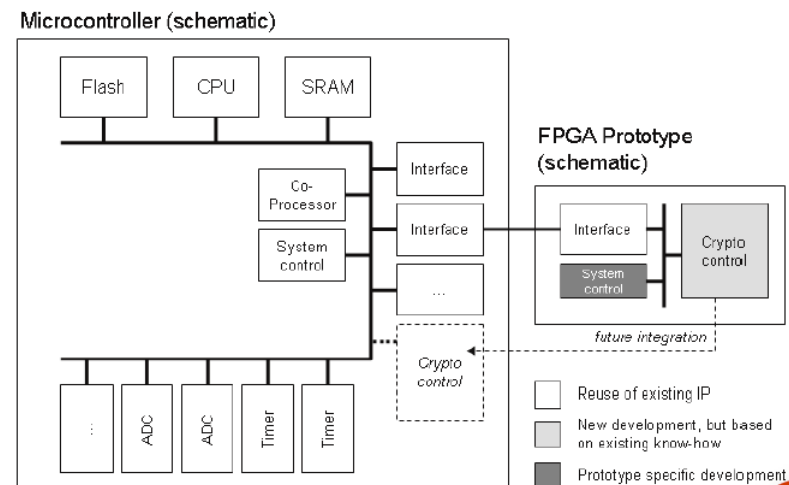
## ■ E-safety Vehicle Intrusion-protected Applications



- 2008-2010
- BMW Bosch, Continental, EURECOM, escrypt, TELECOM ParisTech, IMC, Infineon AG, KU Leuven, Fujitsu, MIRA, TRIALOG.

## ■ Expected outcome

- Security models and formal validation of security
- Hardware support
  - EVITA light (sensor)
  - EVITA medium (ECU)
  - EVITA full (V2X)



# Oversee: Expected Outcome

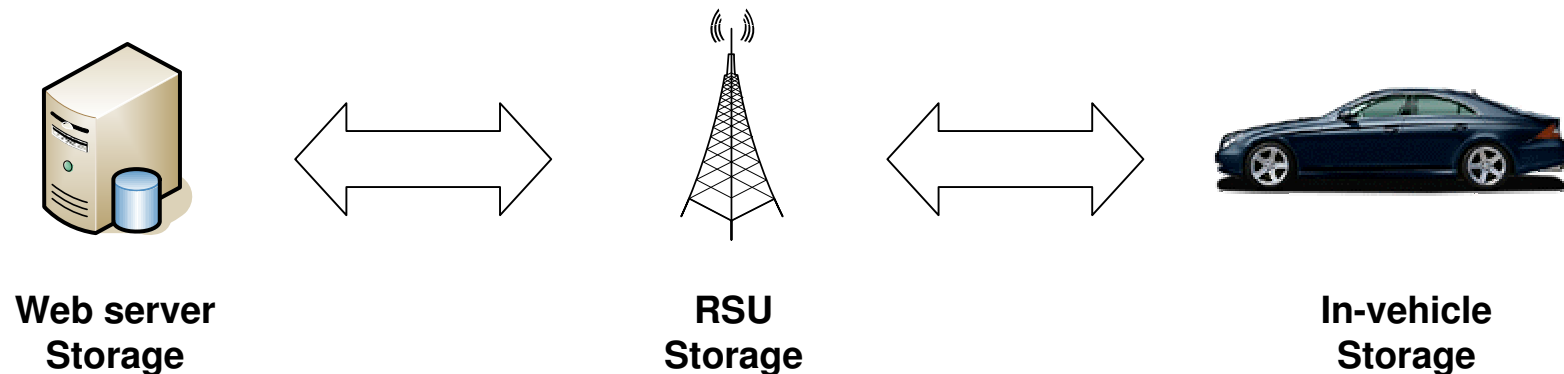


- Open **VE**hicular **R SE**cure platform (Under negotiation)
  - 2010-2012
  - escrypt, Fraunhofer, Trialog, TU Berlin, UP Valencia, U. Siegen, VW
- Expected outcome
  - Platform for multiple independent applications for V2X applications
    - Strong level of isolation
    - Open source hypervisor based

# PRECIOSA: Expected Outcome



- **PR**ivacy **E**nabled **C**apability **I**n co-**O**perative systems and **S**afety **A**pplications
  - 2008 – 2010
  - Trialog, PTV, Oracle, U.Ulm, Humboldt U.
- Expected outcome 1
  - Privacy verifiable architecture
  - Policy based management of data

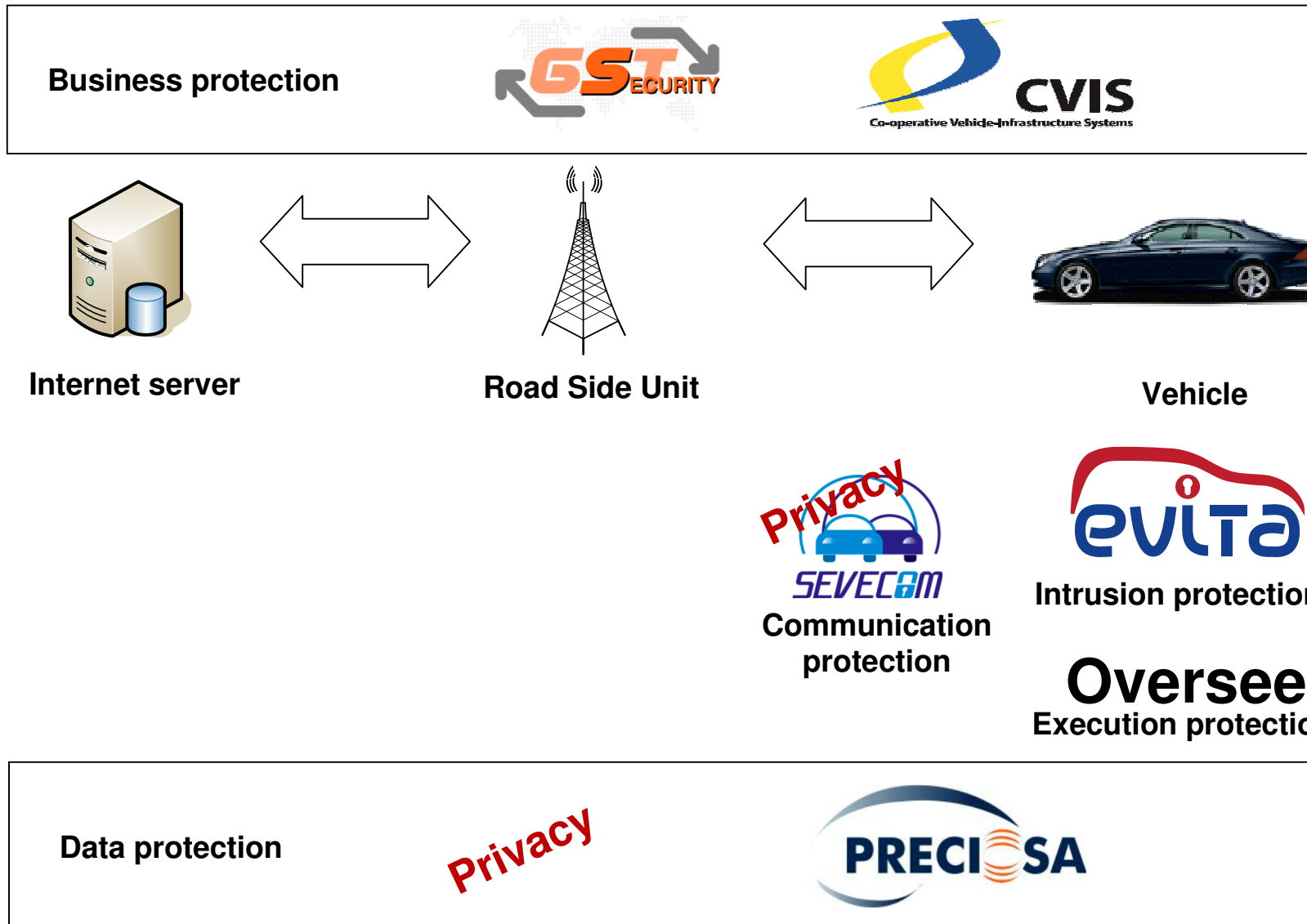


# PRECIOSA: Expected Outcome



- Expected outcome 2
  - Guidelines for privacy aware applications
    - User policies
    - Matching service provider (AKA Data controller) policies
    - Using PRECIOUSA policy management capabilities

# Overall Picture





**Thank you**

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**[www.preciosa-project.org](http://www.preciosa-project.org)**

