



ICT Infrastructure for Smart Cities: Curitiba, Brazil

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At present, ONLab works on the following research areas:

- Optical Core and Access Networks Design Control and Provisioning
- 5G Transport Networks
- Optical Datacenter Networks and Interconnects
- Smart Cities
- Network Energy and Cost Efficiency

This research is part of a project aimed at sustainable technological solutions for the improvement of urban infrastructure in Curitiba, involving Swedish and Brazilian stakeholders.

IN COOPERATION WITH:



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The importance of connectivity in cities

- Once high capacity broadband infrastructure is in place, it will be possible to develop a number of applications to improve the quality of life of the citizens.



Application in Sweden and Brazil

- Access to broadband connectivity is considered as a commodity nowadays
- End users are expecting to be able to have access to high bandwidth services regardless of their locations and mobility conditions
- Need for very high capacity wireless broadband connectivity
- In Sweden the ubiquitous wireless broadband connectivity is quite advanced
- Brazil can follow closely if the right steps are taken
- In the Smart City Concepts in Curitiba project: ICT focus on efficient ways to deploy and manage an ICT infrastructure able to answer this need

Future scenarios for Curitiba

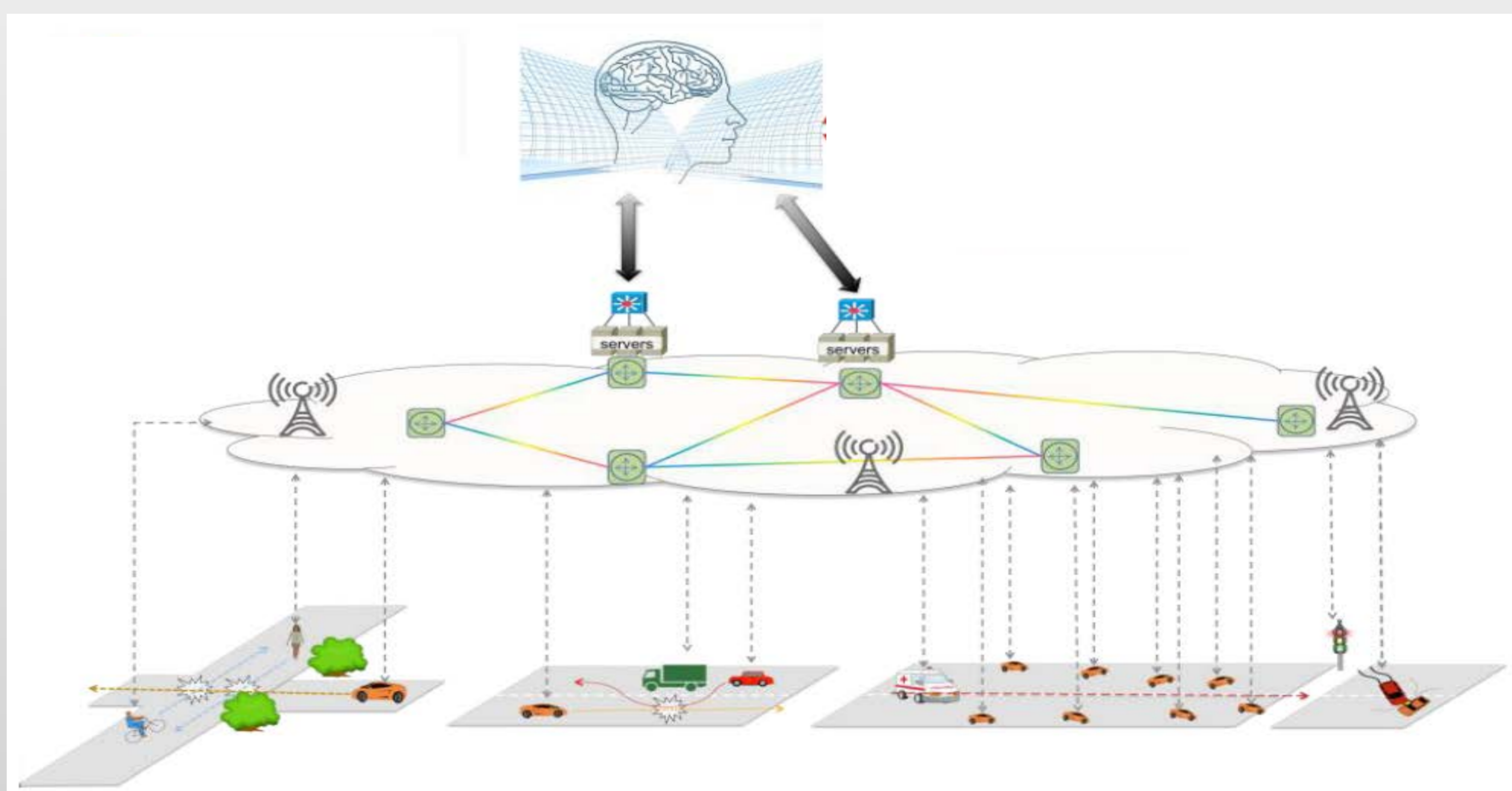
- Example: Smart networked systems for road traffic:
 - Optimized and cognitive decision-making system
 - Runs virtually everywhere to detect and prevent accidents
 - Build on ICT infrastructure
 - Support of the most stringent requirements: Reaction time and robustness
- The involved systems consist of:
 - Networked road users (vehicles and pedestrians)
 - Smart decision making systems controlling the situation on the road

Functional principle of ICT system for road traffic

General framework

- Providing powerful computing and communication resources on the fly
- Designing fast, intelligent and robust decision-making methods
- Building a common artificial intelligence-based information and communication system platform

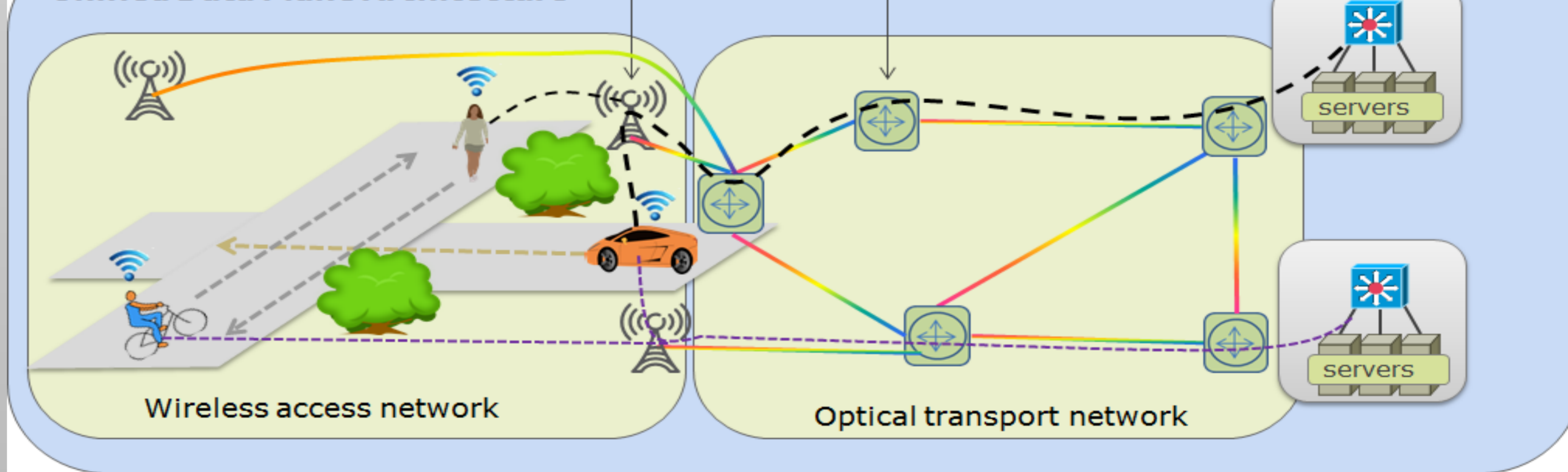
Unified control plane and data plane architecture design



Unified Control Plane Architecture

- Smart routing and resource allocation
- Fast and reliable connection setup
- Integration of wireless and wired segments

Unified Data Plane Architecture



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