GeoNet Design Goals and Requirements

GeoNet Workshop at ITST 2009
Lille France
22. October 2009

Dr. Wenhui Zhang

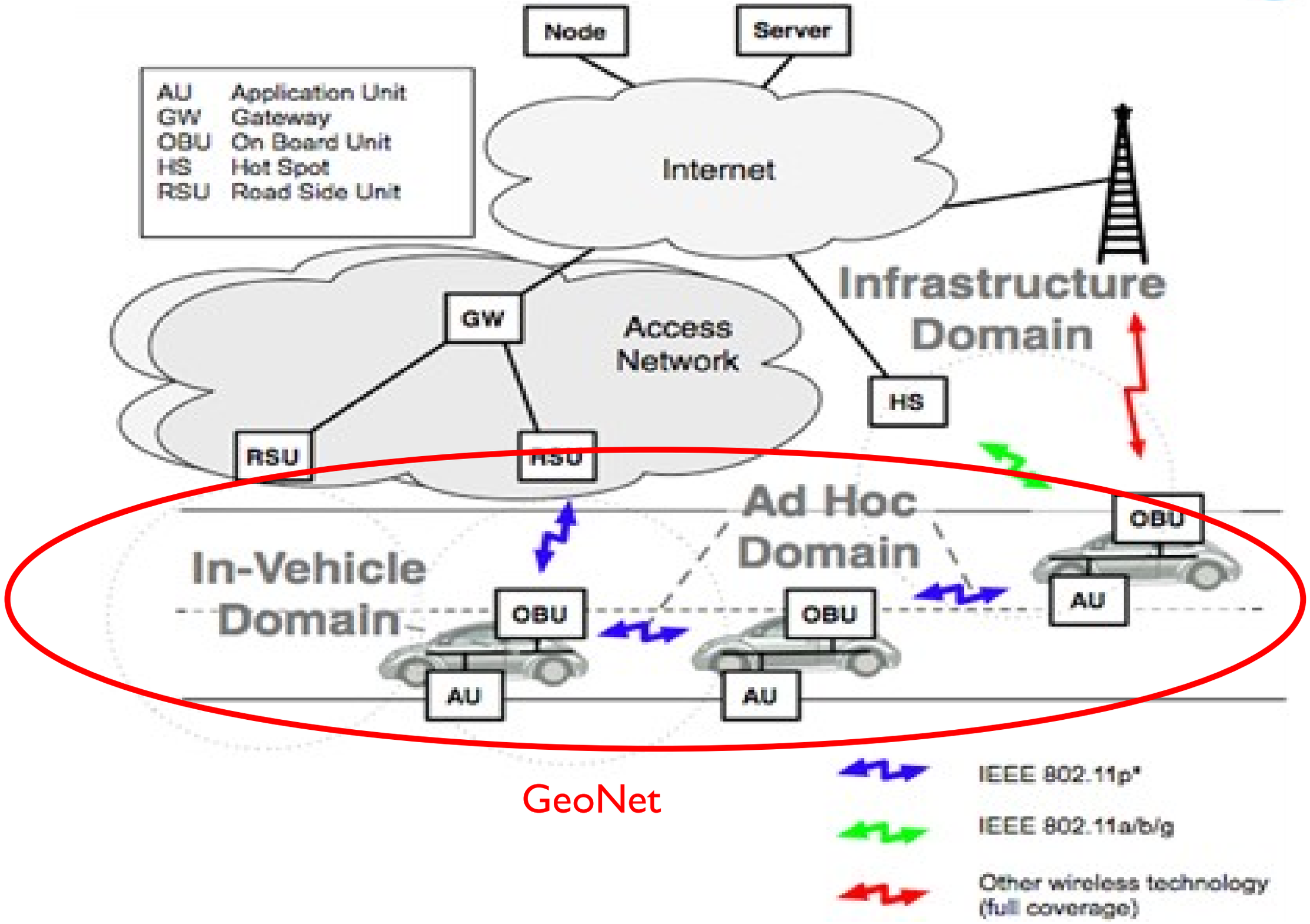
NEC Europe Ltd.

zhang@neclab.eu

Outline

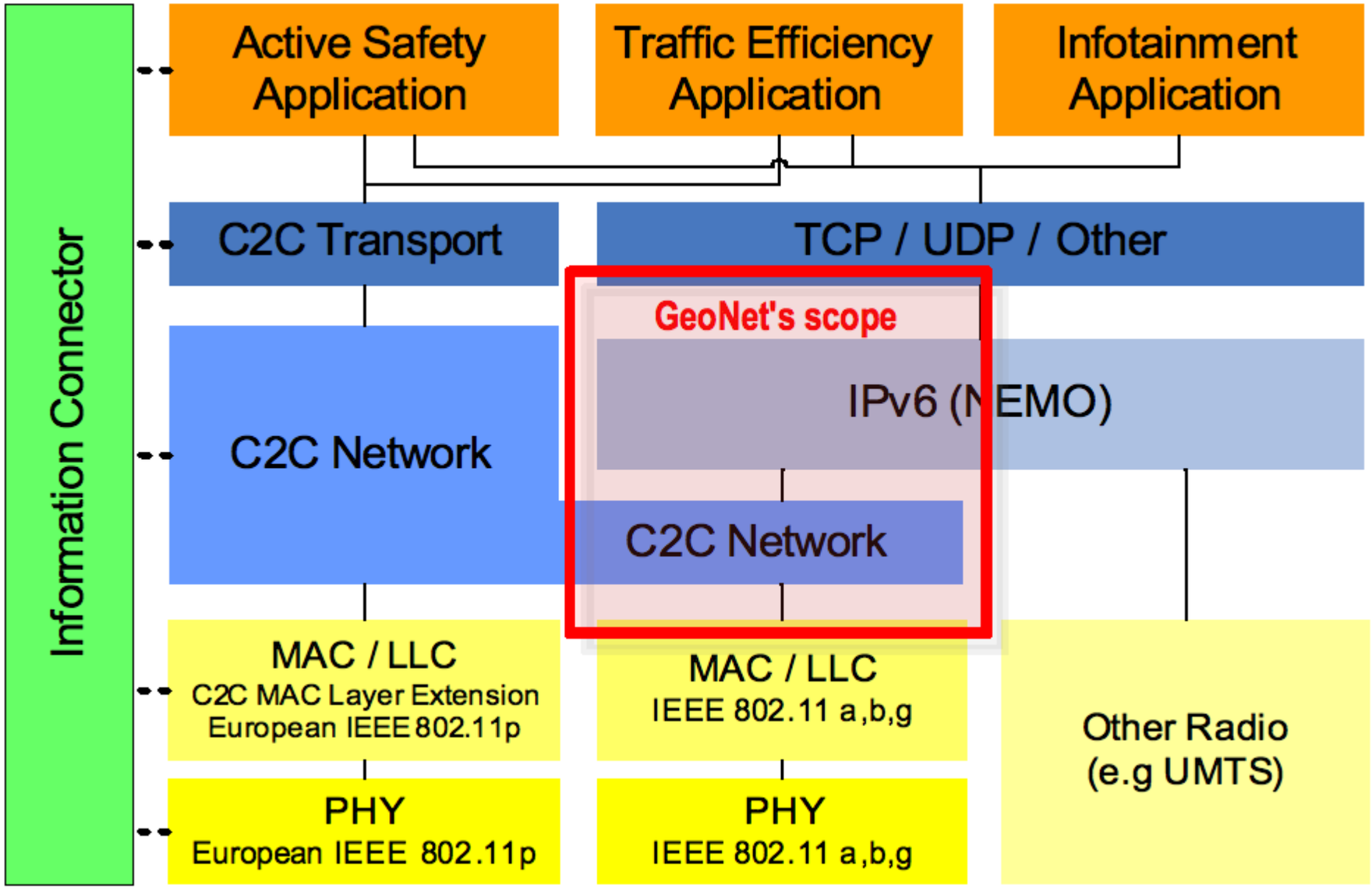
- Scope of GeoNet
- Communication scenarios
- Design goals
- Requirements

Scope of GeoNet: Overview



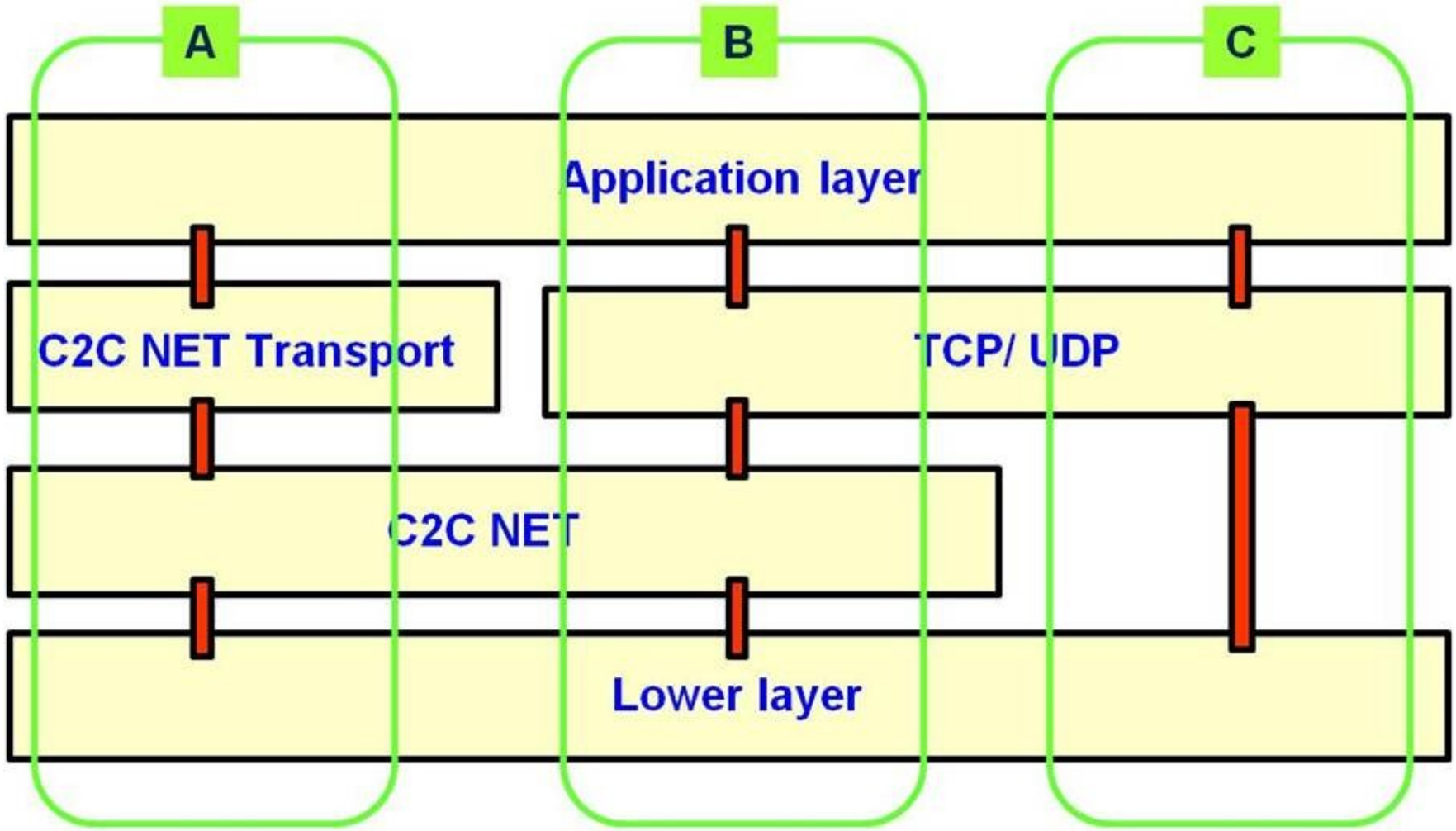
GeoNet

Scope of GeoNet in C2C-CC Arch.



Scope of GeoNet: Protocol Laying

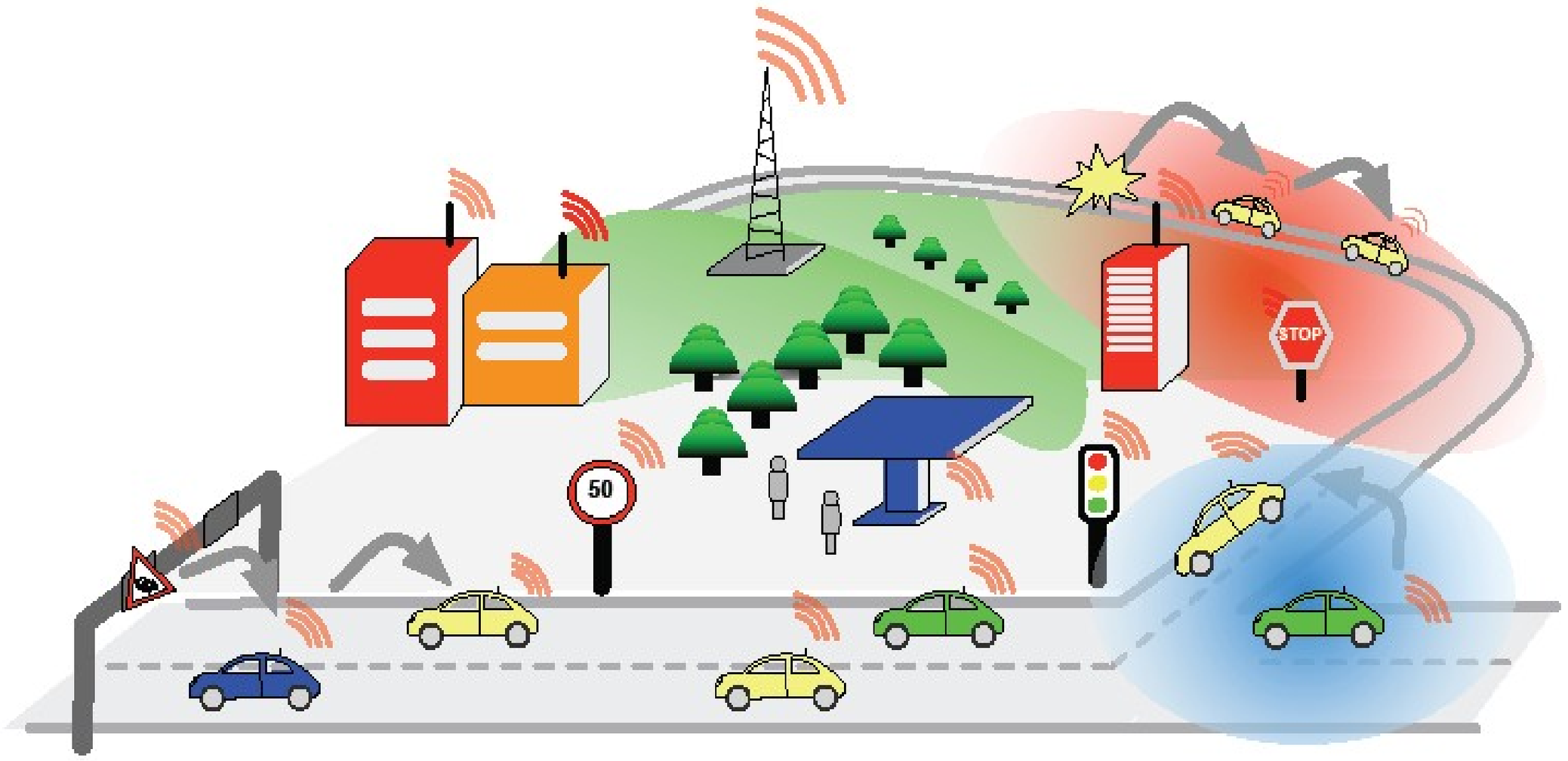
GeoNet approach: B



Main GeoNet approach

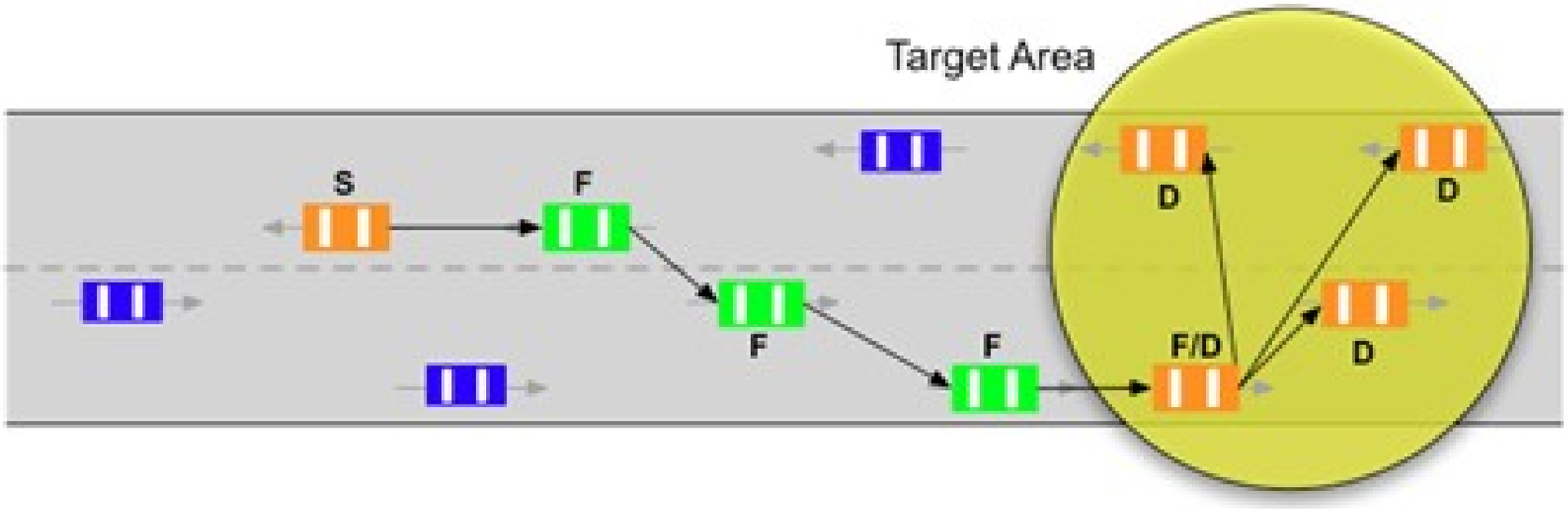
Communication Scenarios (1)

- Vehicle-to-Vehicle (V2V)
- Infrastructure-to-Vehicle (I2V)
- Vehicle-to-Infrastructure (V2I)



Communication Scenarios (2)

- Geo-Unicast: from one node to a single node
- Geo-Multicast: from one node to a set of nodes
- Geo-Anycast: from one node to any node in an area
- Geo-Broadcast: from one node to all nodes in an area



Geo-Broadcast towards target area

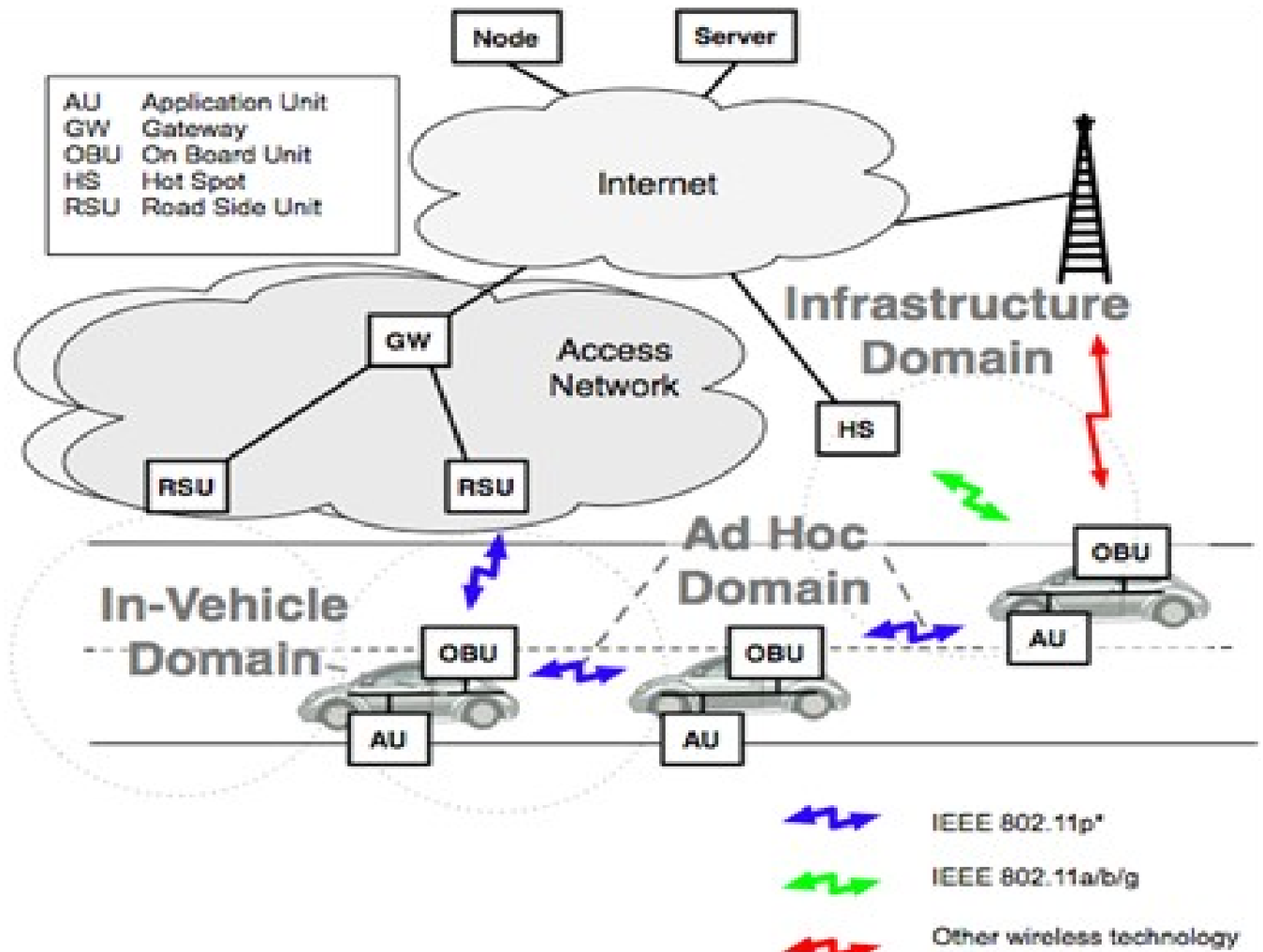
Design Goals

- IPv6 support
- Communication scenarios support
- Backward compatibility
- Security and privacy

Requirements: Architecture

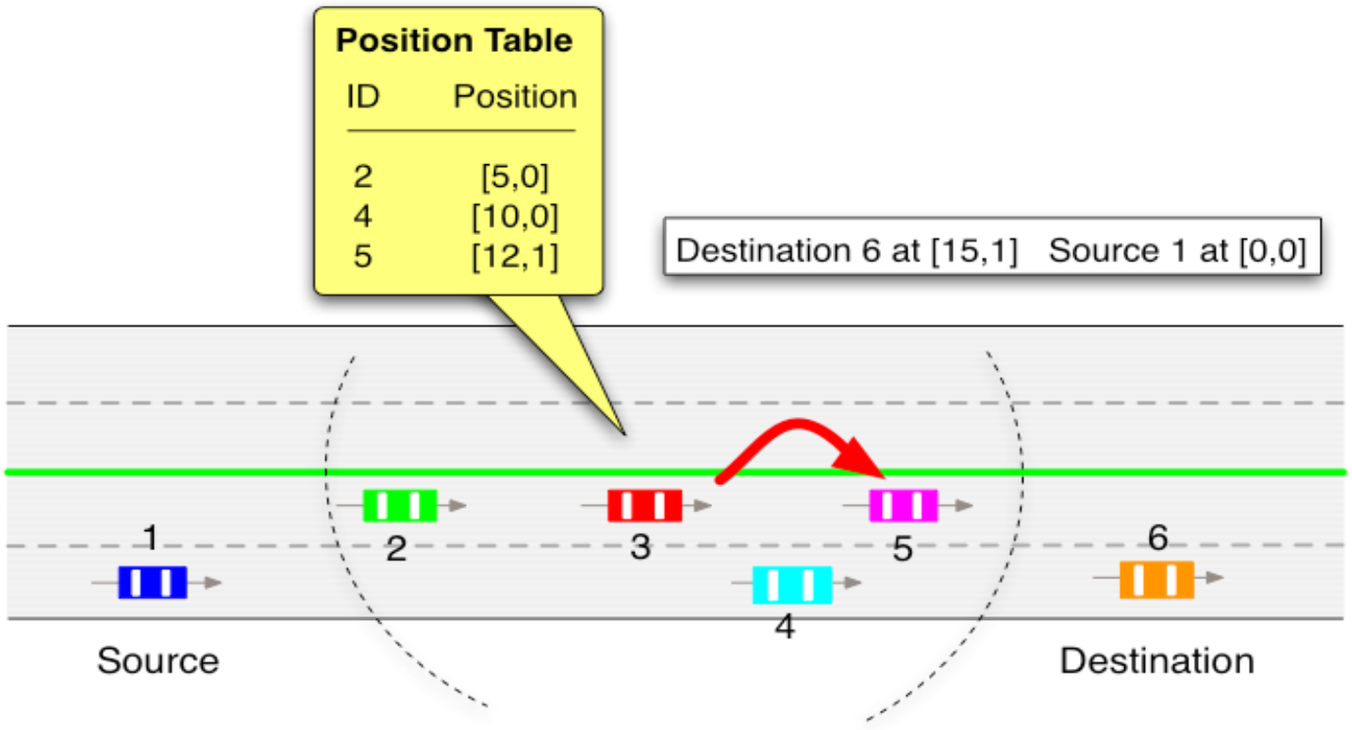
- **Typical in-vehicle network**
  - An On-Board Unit (OBU) as an IPv6 mobile router (MR)
  - A number of application units (AUs) as IPv6 nodes (MNNs)

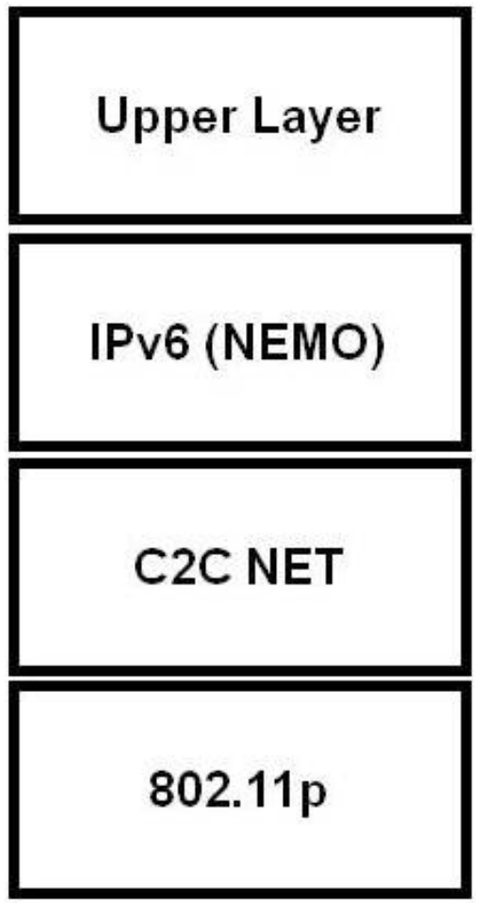
- **Typical roadside**
  - A Road-Side Unit (RSU) as an IPv6 mobile router (MR)
  - A number of application units (AUs) as IPv6 nodes (MNNs)



Requirements: Communication

- **Geographic addressing**
- **Geographic routing**
- **IPv6 geonetworking**
- **IPv6 support with backward compatibility**





Requirements: Others

- **Functional**
  - Internet access and mobility management
  - Prioritization of packets
  - Status information exchange and maintenance
  - Signalling
  - Message buffering
  - Congestion control
  - …
- **Performance**
  - Latency, reliability, efficiency, fairness, scalability

- **Security and privacy due to combination of IPv6 and geonetworking**
  - Privacy
  - Revealing geographic location from the IPv6 address
  - Secure binding between the IPv6 address C2C- NET layer identifier
  - IPv6 address spoofing