

# HIDENETS -- Highly DEpendable ip-based NETworks and Services

## Dependability Architecture

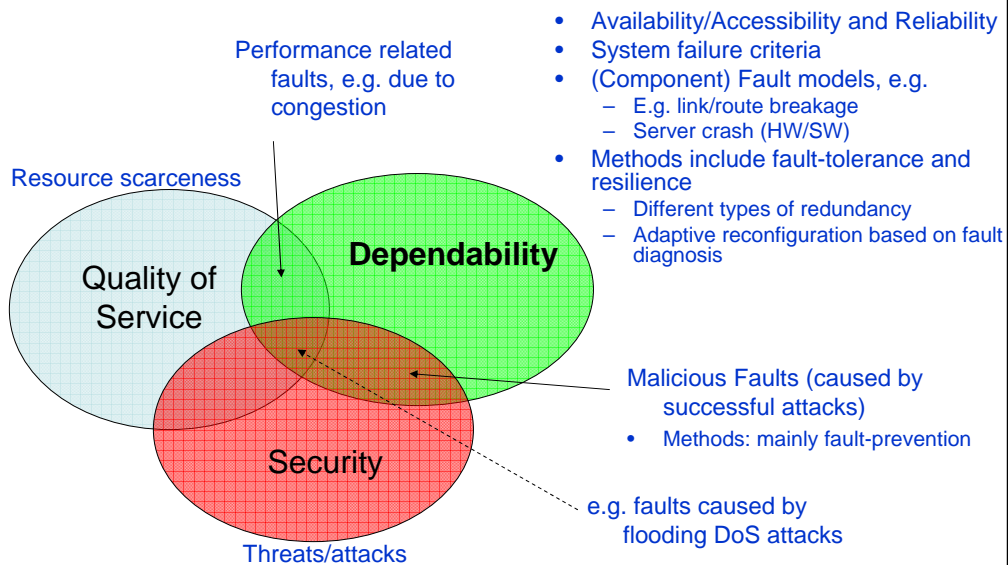


**HIDENETS Consortium**

Represented by  
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Aalborg University



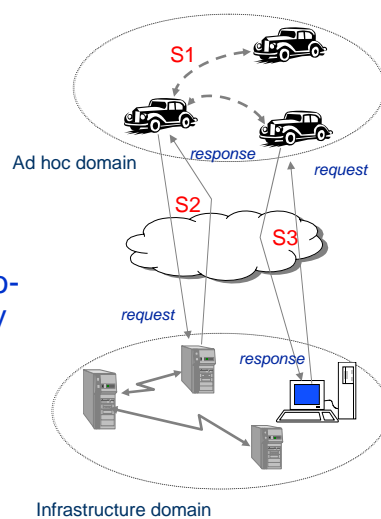
## Dependability - QoS - Security



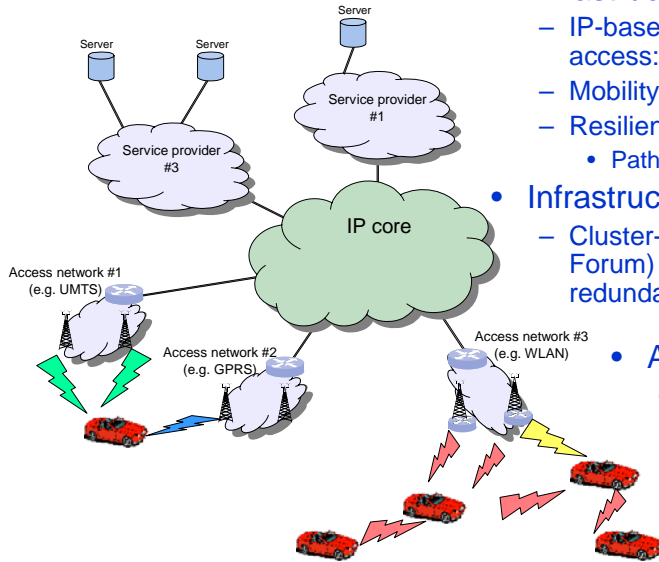
For more complete taxonomy, see Avizienis, Laprie, Randell, Landwehr: IEEE Trans. Dep. Computing, 2004.

- **Basic Data**
  - EU FP6 Specific Targeted Research Project (STREP)
  - Duration: January 2006 – Dec. 2008 (3 years)
  - Consortium: 9 partners from 8 European Countries
  - Supported by Advisory Board: 6 members (two from C2C CC)
  
- **Goal: Develop and analyze end-to-end resilience solutions**
  - for scalable distributed applications and mobility aware services
  - in ubiquitous communication scenarios
    - Use-case: car2car communication with server-based infrastructure
  - assuming highly dynamic, unreliable communication infrastructures
  
- **Planned results:**
  - architectural and design solutions, tools for development and analysis
  - for end-to-end system level resilience and dependability
  - based on standard off-the-shelf components
  - in wireless communication networks and infrastructures

- **Challenges/properties of HIDENETS service provisioning**
    - Dynamically changing communication characteristics in ad-hoc domain and in connection to infra-structure services
    - Off-the-shelf, standard systems and components in both domains
    - Services with high dependability and scalability requirements
- Selected use-cases of ad-hoc car-to-car communication with connectivity to infra-structure services
- Platooning
  - Assisted Transportation
  - Car Accident
  - Infotainment
- [and more, see Deliverable 1.1 on public web-page]

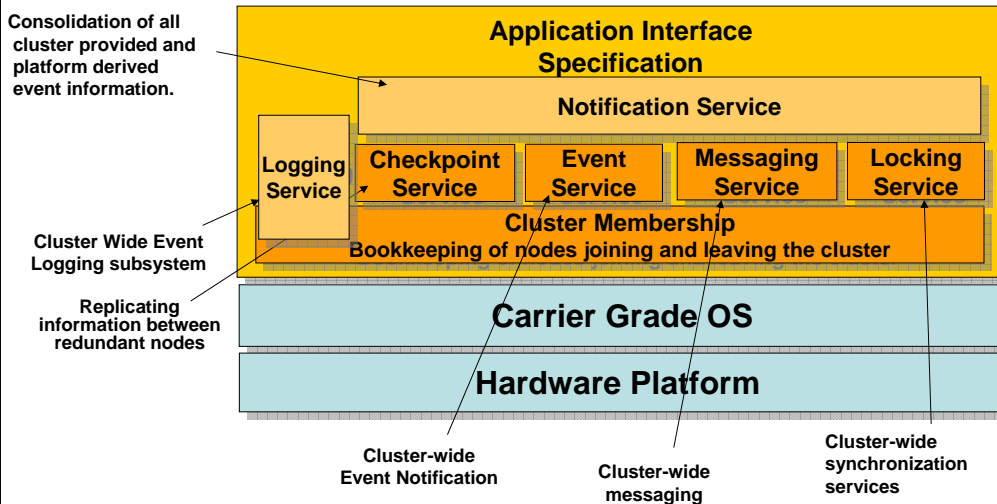


## Network Scenario

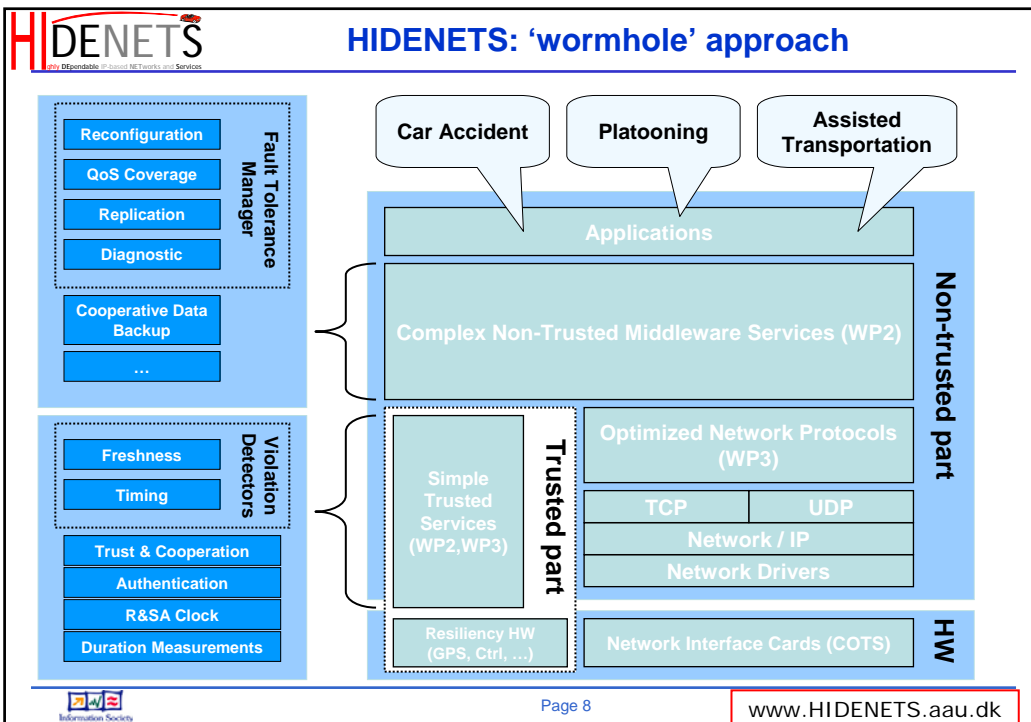
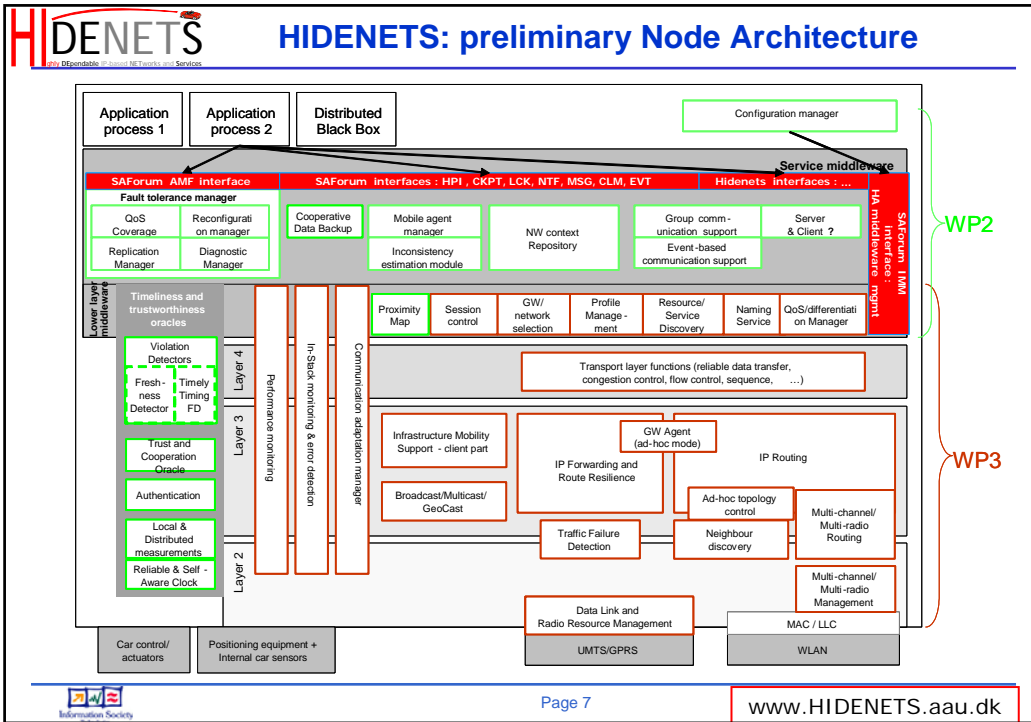


- Infrastructure Connectivity
  - IP-based core with heterogeneous access: Cellular, WLAN, etc.
  - Mobility (and QoS) support
  - Resilience through
    - Path Redundancy/Multi-homing
- Infrastructure services
  - Cluster-based architecture (SA Forum) and/or distributed redundancy (RSerPool)
- Ad-hoc domain
  - Resilience via Communication Protocols (L2-4) and service middleware (see later)

## SA Forum: Cluster Architecture



- Approach in HIDENETS
  - Basis for infrastructure service solutions
  - Reuse of interface specifications when possible also in ad-hoc domain



# HIDENETS: 'wormhole' communication

- Wormhole communication in ad-hoc domain
  - Dedicated interfaces and frequency channels (if available)
  - Less dynamic topologies, e.g. via increased transmission power [→requires small traffic volumes]
- ... in infrastructure network
  - Ideally also physically separated, but likely only logically in most cases

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www.HIDENETS.aau.dk

# HIDENETS Outlook

## Structuring of Work

<b>WP1</b> Use cases & Reference model					
Application	<b>WP2</b> Resilient architecture & middleware	<b>WP3</b> Resilient communication	<b>WP4</b> Quantitative evaluation	<b>WP5</b> Design methodologies & Testing	<b>WP6</b> Experimental prototype
Middleware					
L5: Session Control: SIP, .					
L4: Transport: TCP, UDP, RTP/UDP					
L3: Network Layer: IP					
L2: MAC/LLC					
L1: Physical layer					
<b>WP7</b> Dissemination					
<b>WP8</b> Management					

*Note:*  
 This slide-set contains work in progress.  
 Pls. refer to web-page [www.HIDENETS.aau.dk](http://www.HIDENETS.aau.dk) for latest status, including technical deliverables (updates of deliverables on web-page in particular will occur in Jan 07 and Jan 08!)

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