1st Public Workshop
IP Daidalos

Service Provisioning Platfrom and QoS Support

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Service Provisioning Platform & QoS

- Service Provisioning Platform
  - Create and validate a platform, integrating QoS, Mobility, Security, A4C and basic multimedia support in a B3G environment, that is suitable for advanced services provisioning, considering:
    - Intra and inter domain scopes
    - Unicast, multicast and broadcast scenarios
    - Using heterogeneous access networks viewed at the IP layer
- QoS
  - Specify and implement the entities and the functions that will enable the end to end control of network resources, using and providing interfaces to external entities for complementary functions (e.g. authorizations, SLA verification)

SPP: Functional areas (1)

- Quality of Service
  - Negotiation of network resources at IP level, for both legacy and multimedia services
  - Guaranteeing mobility and resources renegotiation
  - Dynamically adapting to network conditions

- Security
  - Designing a Key Management infrastructure to support Daidalos Security Architecture
  - Provide an advanced/flexible access control mechanism to be used in a heterogeneous and mobile environment
  - Provide advanced security services to mobile users in conjunction with A4C

SPP: Functional areas (2)

- A4C (AAA+Auditing+Charging)
  - Provide A4C for future generation multi-network and multi-service provider networks
  - Prototype accounting and charging mechanisms
  - Provide access control for broadcast/multicast services

- Multimedia Services Provisioning
  - Provide a platform for dynamic multimedia service provisioning
  - Provide support for content delivery, caching and adaptive content adaptation
  - Provide Service Discovery

SPP: Framework (1)

- Home environment for the user with respect to (possibly split by different adm. domains):
  - Identity & Security
  - Authentication & authorization
  - Accounting, Charging & Auditing
  - Multimedia basic services provisioning
  - Mobility

- Network segments
  - Core Network
  - Access Network
  - Access Technologies (Last hop to mobile terminal / moving network)
  - Mobile Terminal

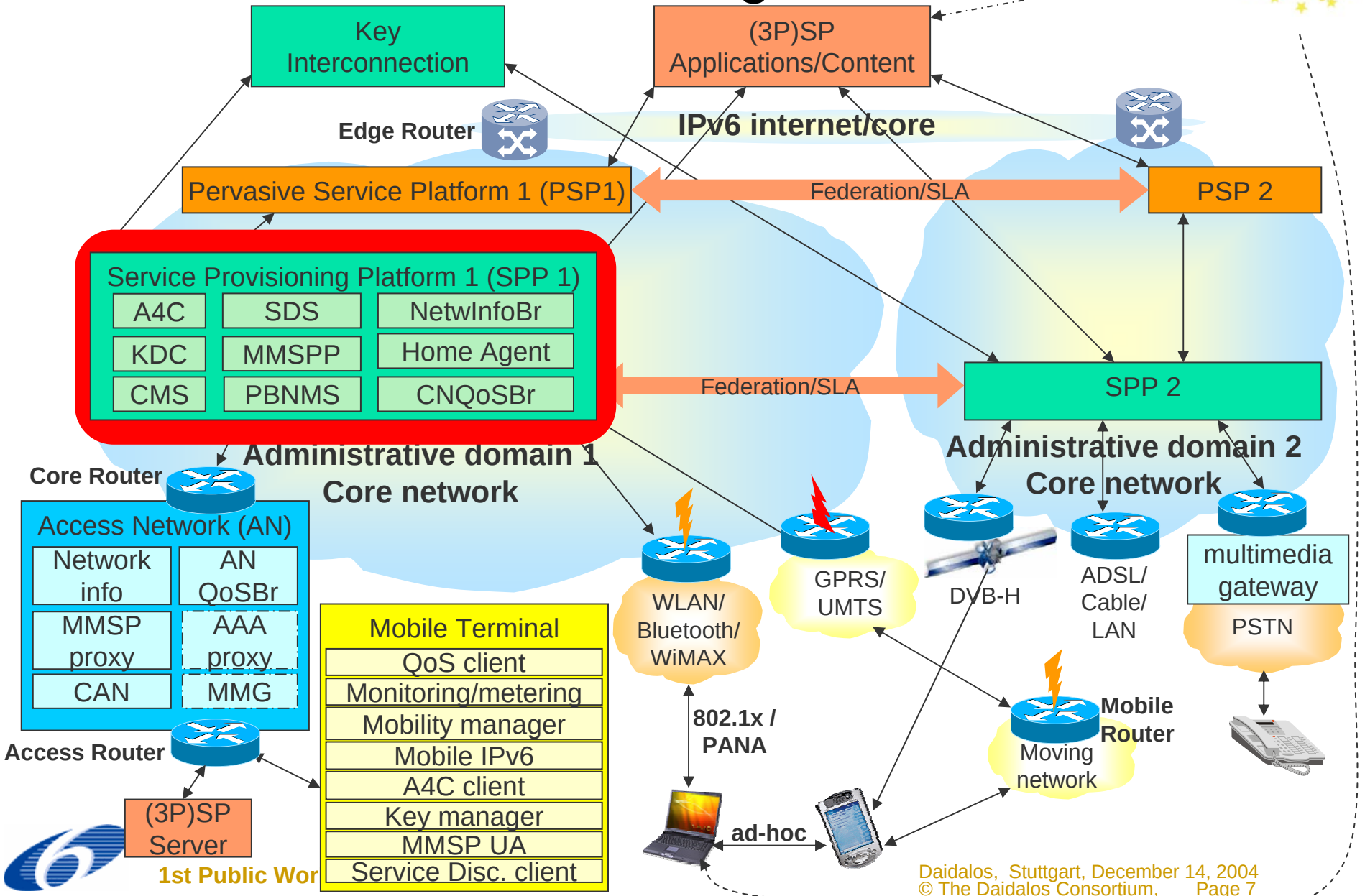
- Different routers between segments
  - Edge router (between administrative domains)
  - Core router (between core and access networks)
  - Access Router (between access network and mobile terminals)

SPP: Framework (2)

- Hierarchies and federation
  - Administrative domain is composed of Core Network, Access Networks and technologies
  - Service Provisioning Platform provides its services to:
    - Pervasive Service Platform
    - (3rd party) application/content providers
  - To enable end-to-end QoS (3P)SPs need to be hosted in Access Network called Application Garden
  - Federation between SPPs to provide transparent access and roaming (when MT moves to other domain, home SPP services should still work for MT, (3P)SPs and PSP)

Services and Network Management & Provision

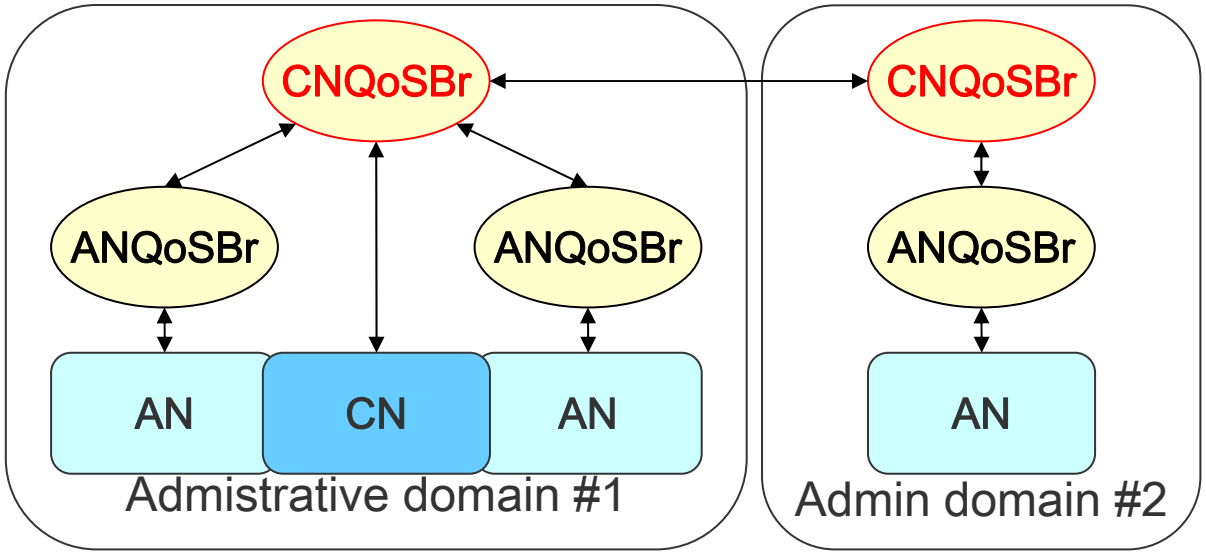
→ SPP in Architecture diagram



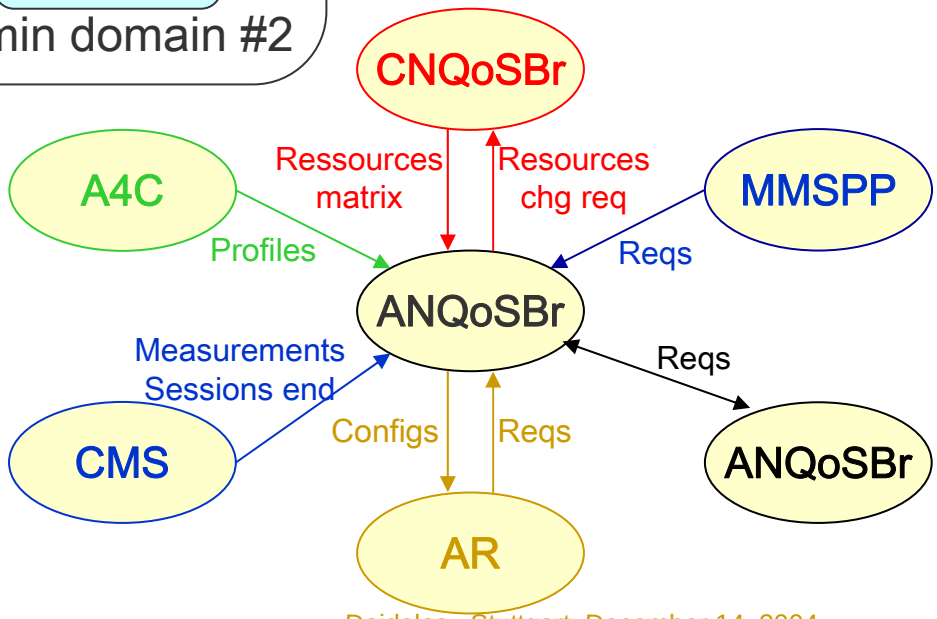
QoS Requirements

- Support for heterogeneous networks
- IP-based communication with different types of applications and protocols
  - support of legacy and multimedia applications
- Resource negotiation at IP level and integration with layer 2 mapping mechanisms
- Integrated support of multiple QoS service models, according to the overall network configuration (defined by operator policies)
- Support of seamless mobility
  - Intra- and inter-domain, terminal, user and session mobility.
- Support for resource renegotiation, dynamically adapting to network conditions and users requirements
- Support of multicast services and broadcast networks

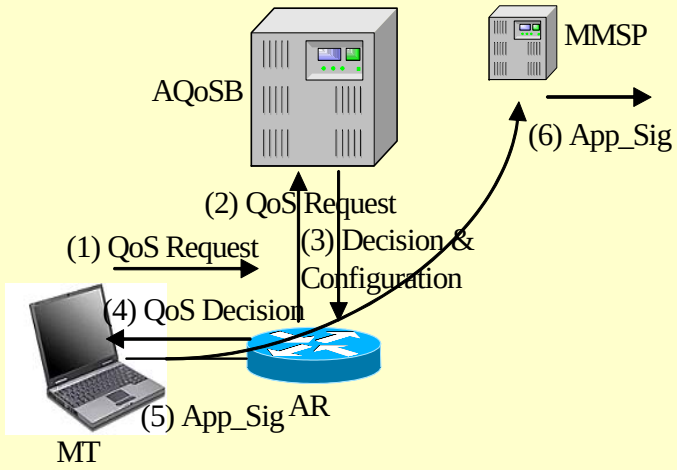
QoS: End-to-end control



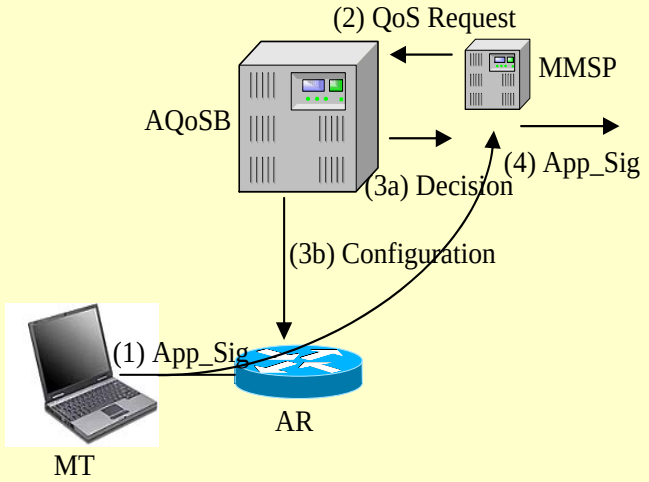
Parameters	Class 0 Conversational	Class 1 Transactional	Class 2 Streaming	Class 3 Best Effort
Delay	150 ms	400 ms	1s	unspecified
Jitter	50 ms	50 ms	unspecified	unspecified
Packet loss	1×10^{-3}	1×10^{-3}	1×10^{-3}	unspecified
Designed for:	Interactive voice and video	Transaction data, interactive	short transactions, video streaming	Legacy applications, low cost services



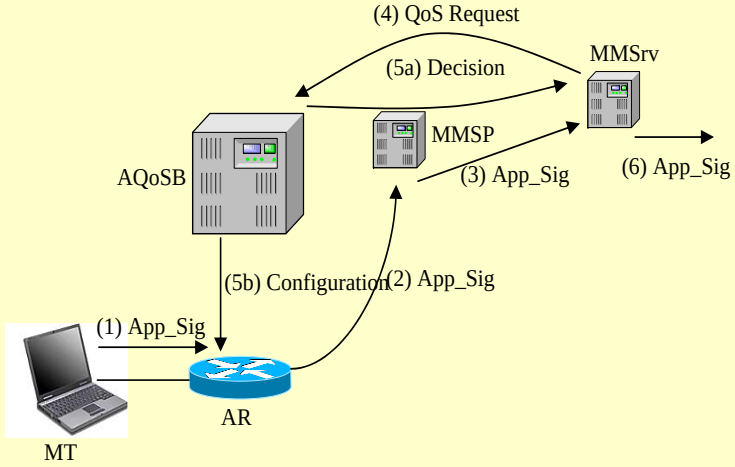
QoS Signalling strategies



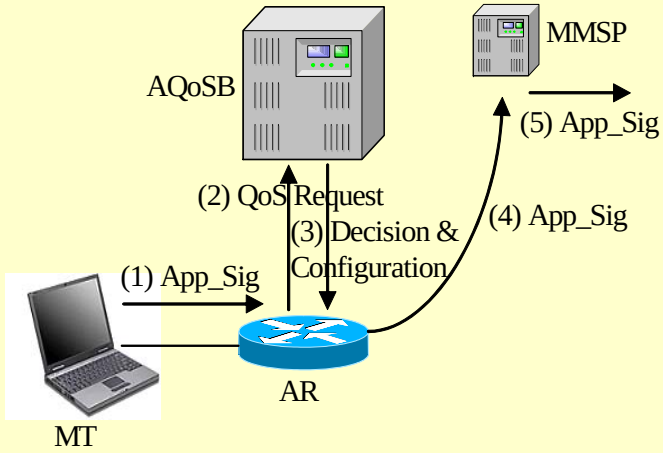
1. Terminal issuing QoS requests



2. MMSP Proxy (MMSP) issuing QoS requests

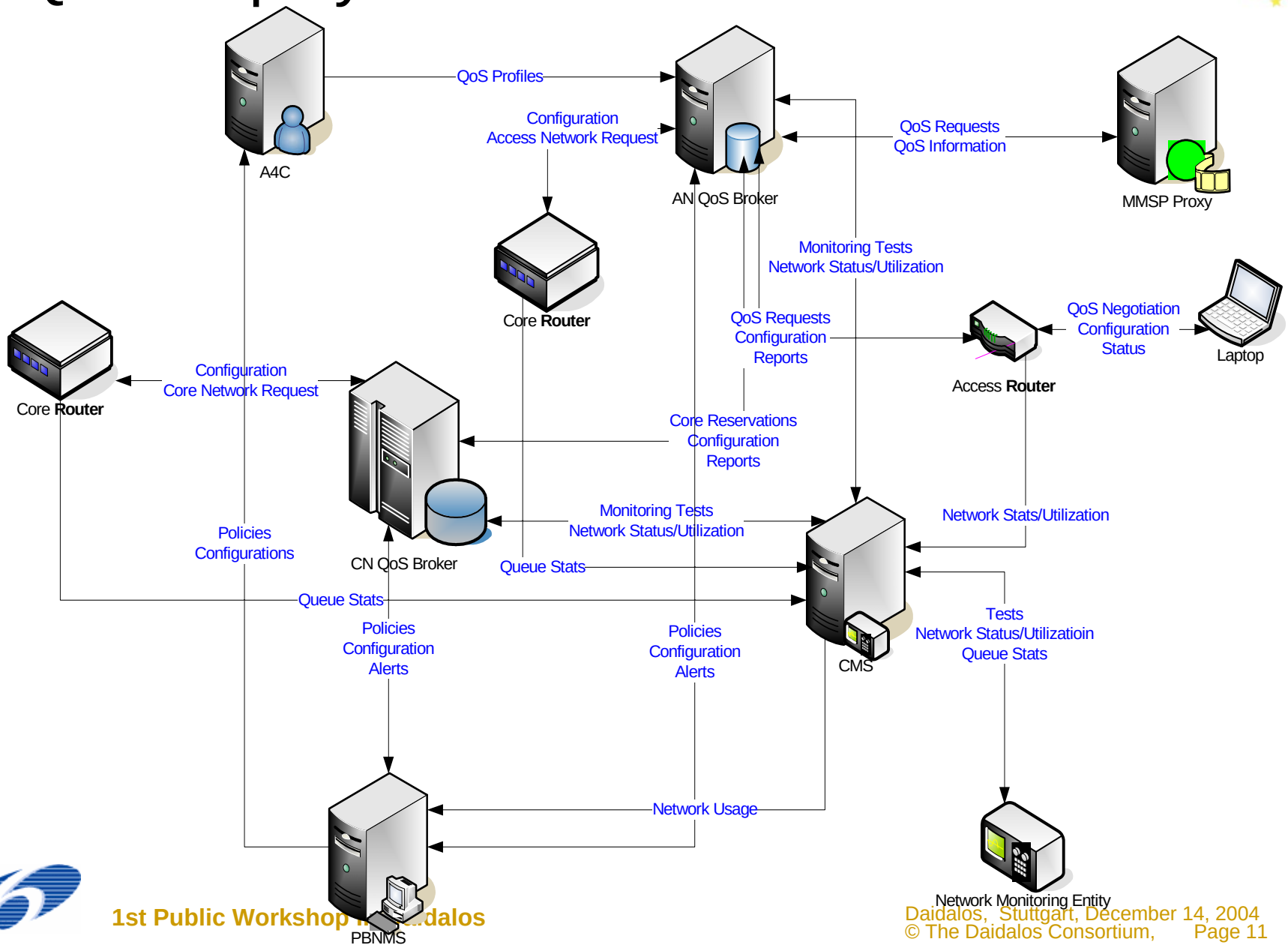


3. Application server issuing QoS requests

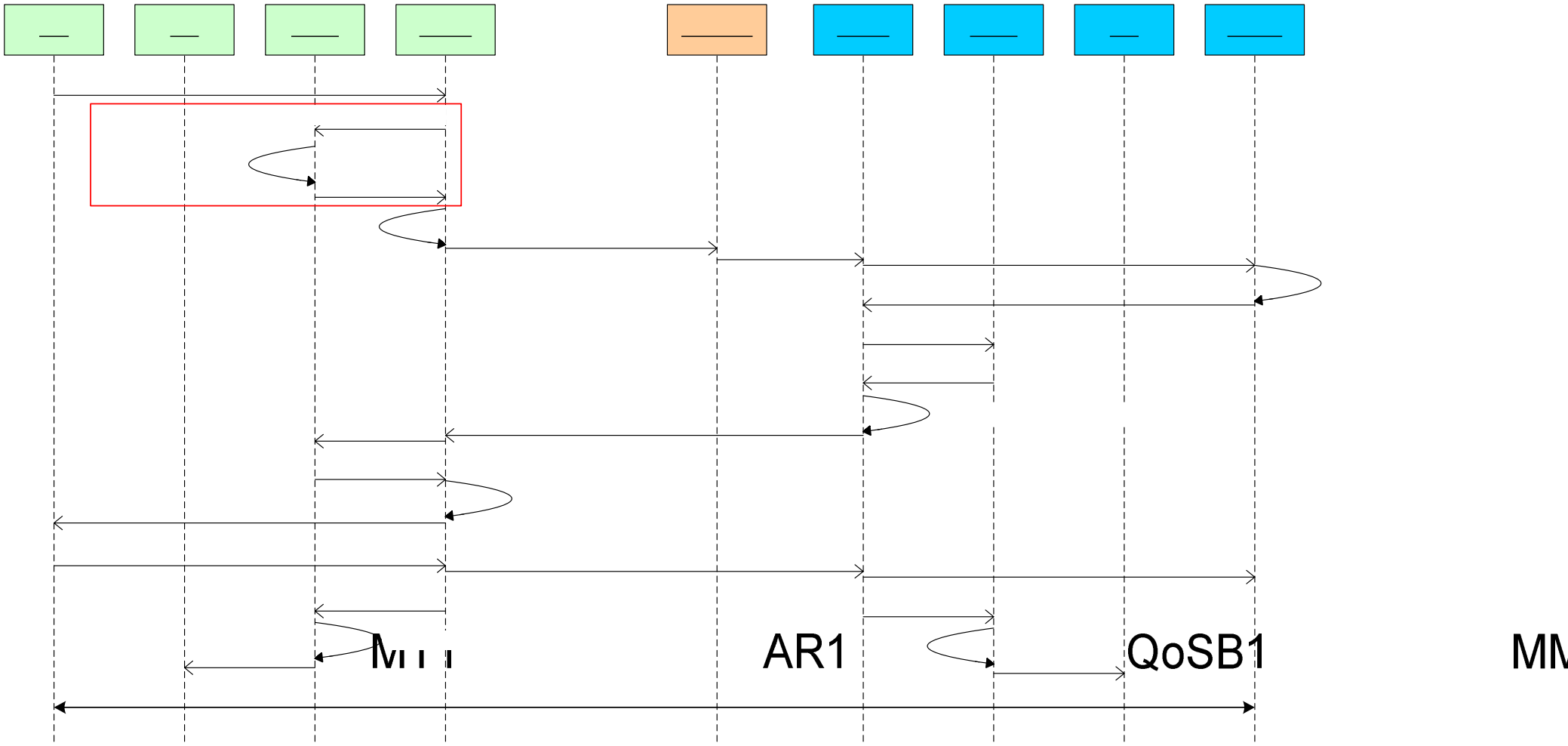


4. Access Router, through ARM issuing QoS requests

QoS Deployment



Example QoS MSC: Session Initiation – MMSP issuing QoS requests



Resources? Profile

→ Summary

- SPP almost completely specified
  - Inter-actions betweens entities resulted more complex than initially planned
  - Still open issues (pre-paid for legacy services, etc.)
- Adopted solutions cover a wide range of potential application scenarios
  - There is not a single solution to cover of the possible resources request scenarios
- QoS resources management is more then just adopting and implement a pure QoS framework
  - It deals with A4C, profiles and context, complementary functions (measurements, reconfigurations, etc.)