



Ambient Networks: A Network Control Layer for the Future Internet

Norbert Niebert, Ericsson Research
Ambient Networks Technical Manager

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Outline



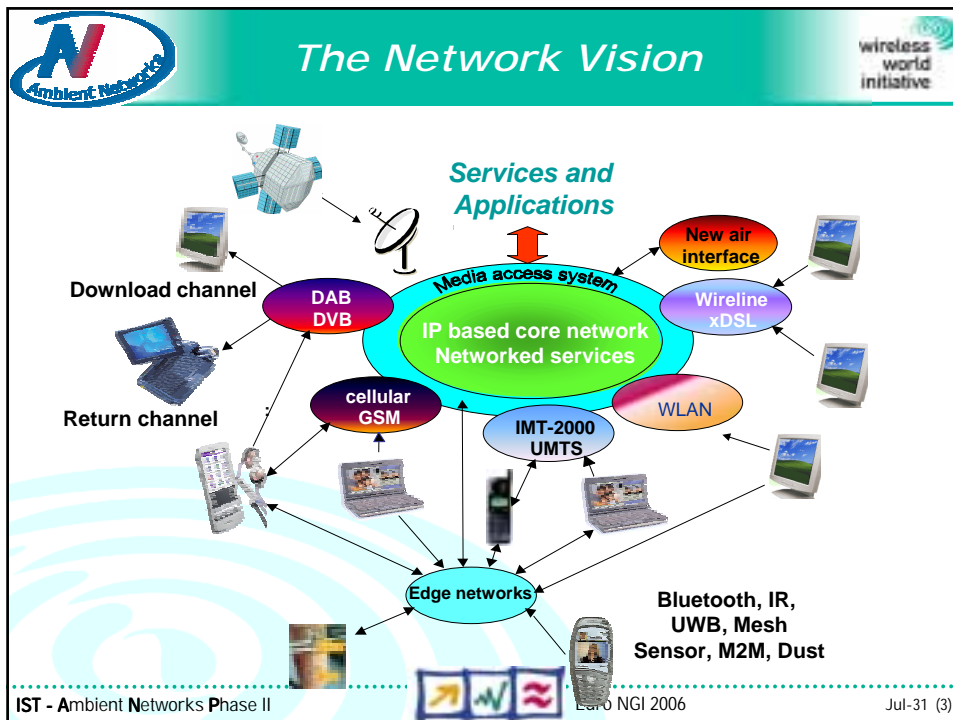
- **A Wireless World Network Vision**
- The Ambient Networks Concept
- Components of the Architecture
- Next Steps

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- Network Challenges in the Wireless World**
- 1. Activate** the networks surrounding the user!
 - 2. Create** a **secure** and **comfortable** wireless world for the users
 - 3. Empower** the players for **competition** and **co-operation**
 - 4. Support** for **heterogeneous** air-interface and service technologies
 - Seamless services
 - Ease the service provider role
 - 5. Modular** and **scalable** functionality
- The slide includes a photograph of a woman in a red top and blue pants jumping joyfully against a background of purple and blue concentric circles. Logos for Ambient Networks and wireless world initiative are present.
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Requirements posed on the AN Architecture

1. Heterogeneous Networks
2. Mobility
3. Composition
4. Security and Privacy
5. Backward Compatibility and Migration
6. Network Services and Interference
7. Quality of Service
8. Multi-Domain
9. Account
10. Context Communications
11. Extensibility of the Network Services Provided
12. Application Innovation and Usability


To be jointly considered within an open system concept

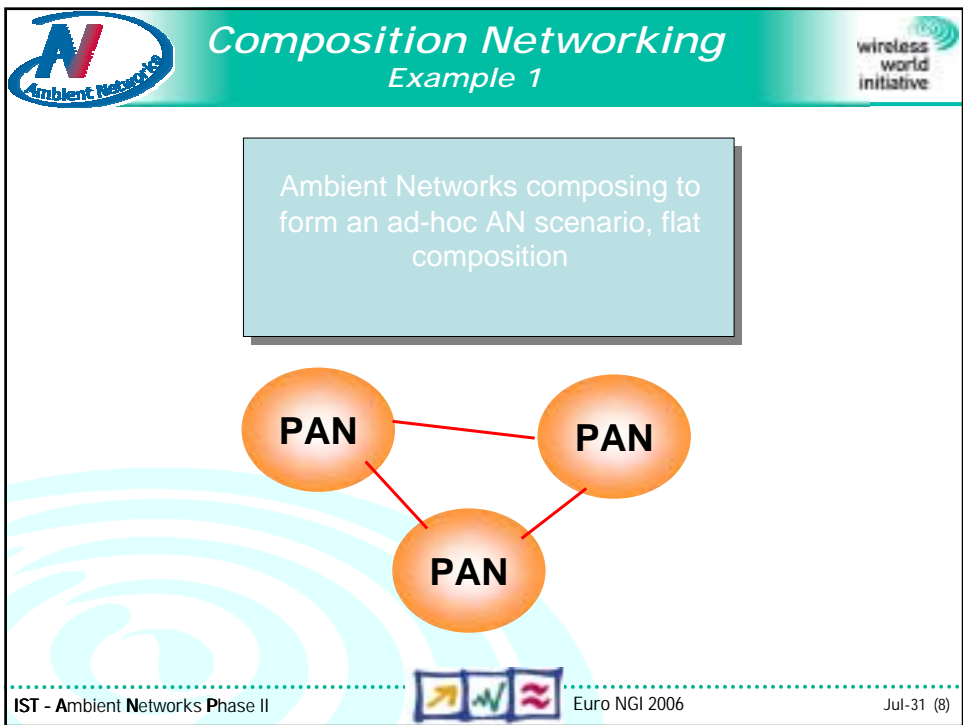
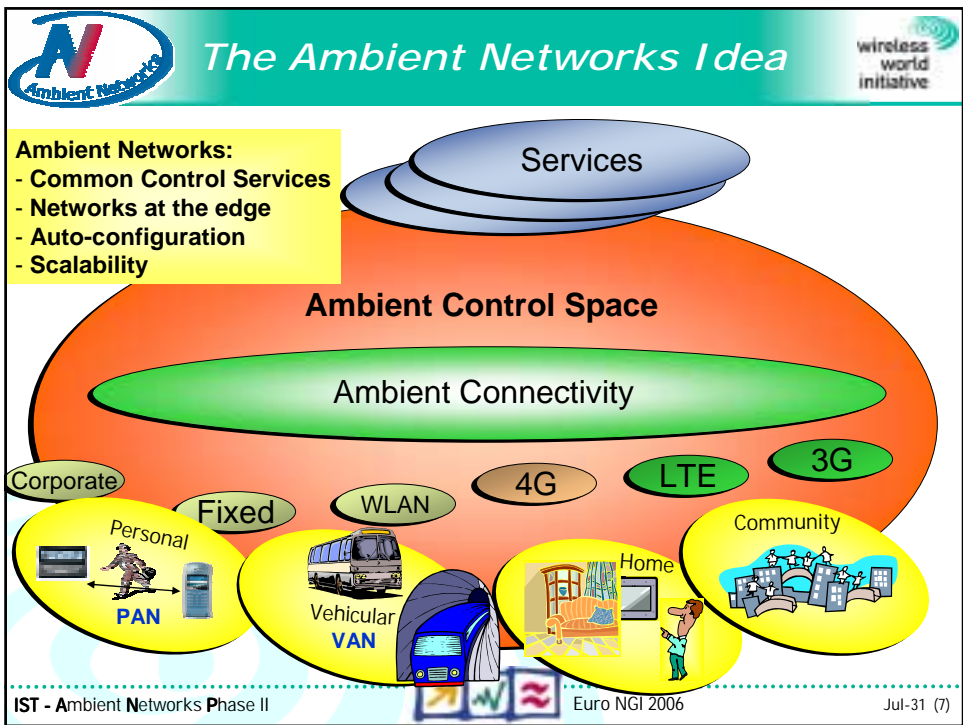
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Composition Networking
Example 2

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PANs compose with a moving network which provides connectivity to a cellular network

Train

PAN

PAN

Cell.

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Composition Networking
Example 3

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Operators use AN technology to hide different technologies or implementations

Service Network Operator

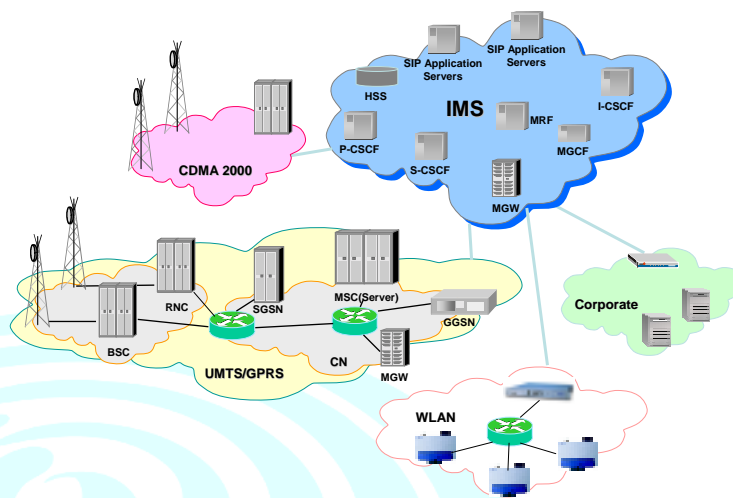
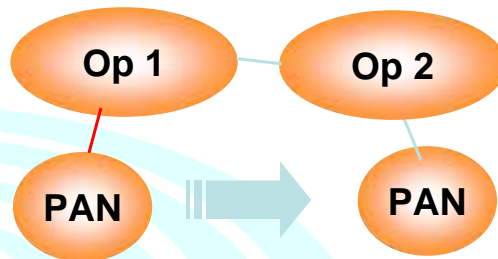
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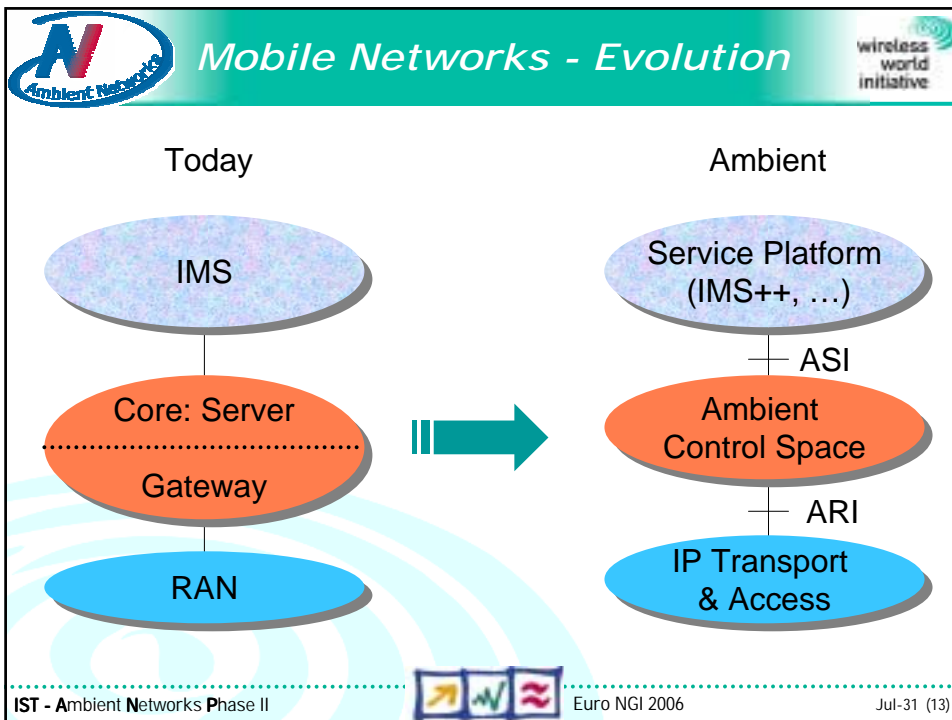
Access 1

Access 2

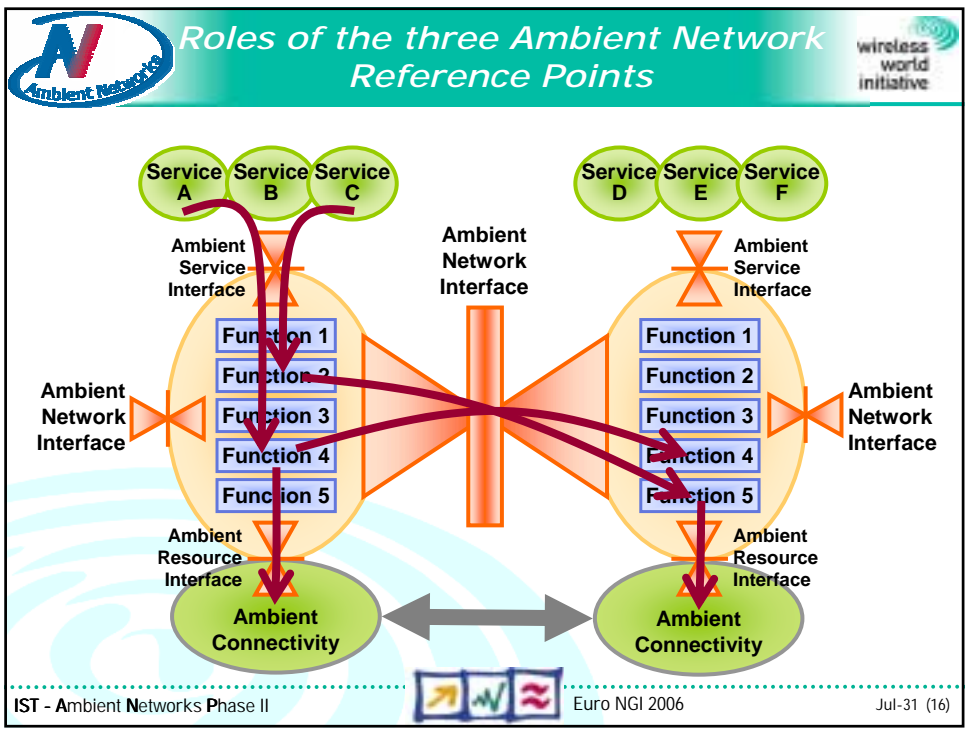
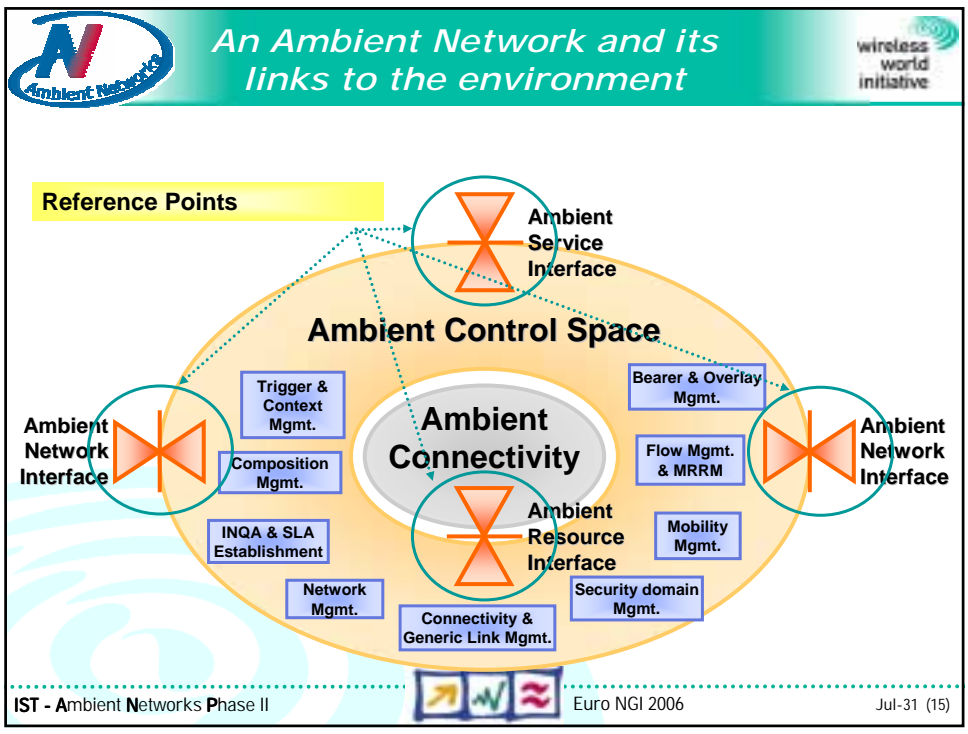
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Customers can roam into networks where operators have made no agreements before






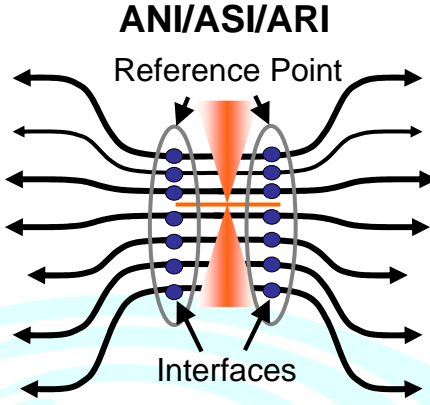
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Structure of the Reference Points






ANI/ASI/ARI
Reference Point

Interfaces


- The Reference Points support several interfaces in a modular fashion
- Mandatory interfaces ensure basic interworking between AN nodes and ANs
- Optional interfaces are negotiated during composition

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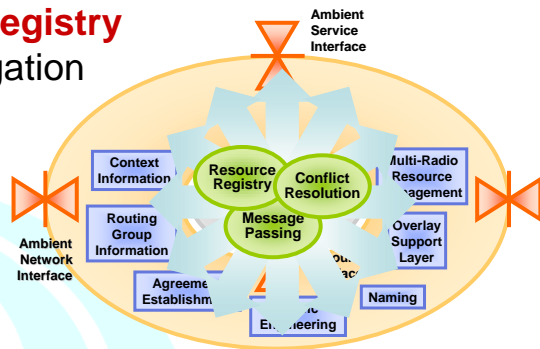
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Framework Functions



- Concurrently operating functions communicate through **messages**
- Logically centralized **registry** for information aggregation and dissemination
- **Conflict resolution** and consistency maintenance

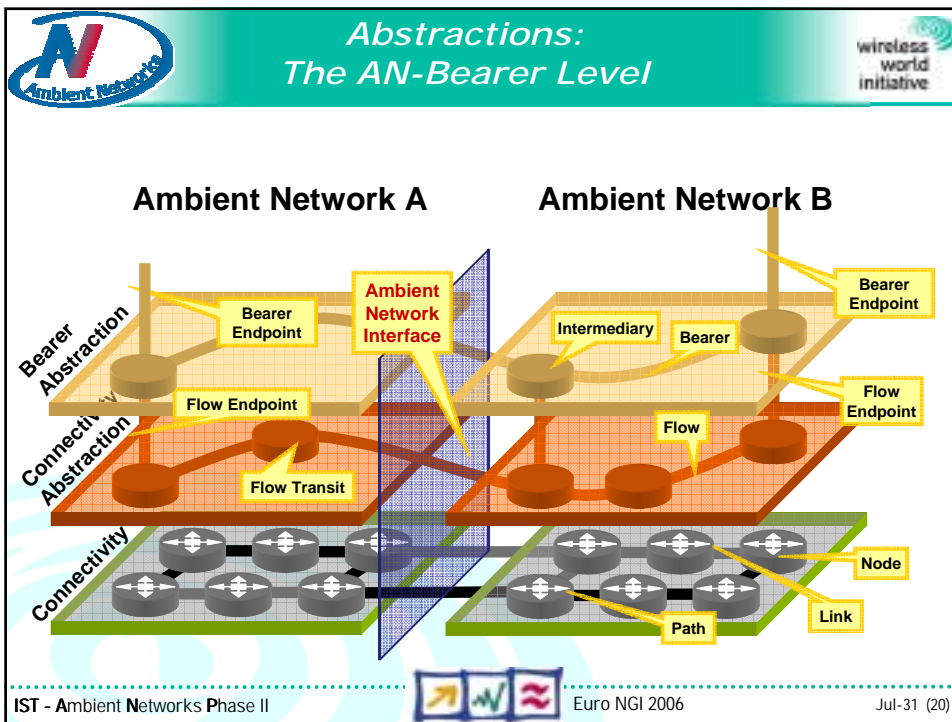
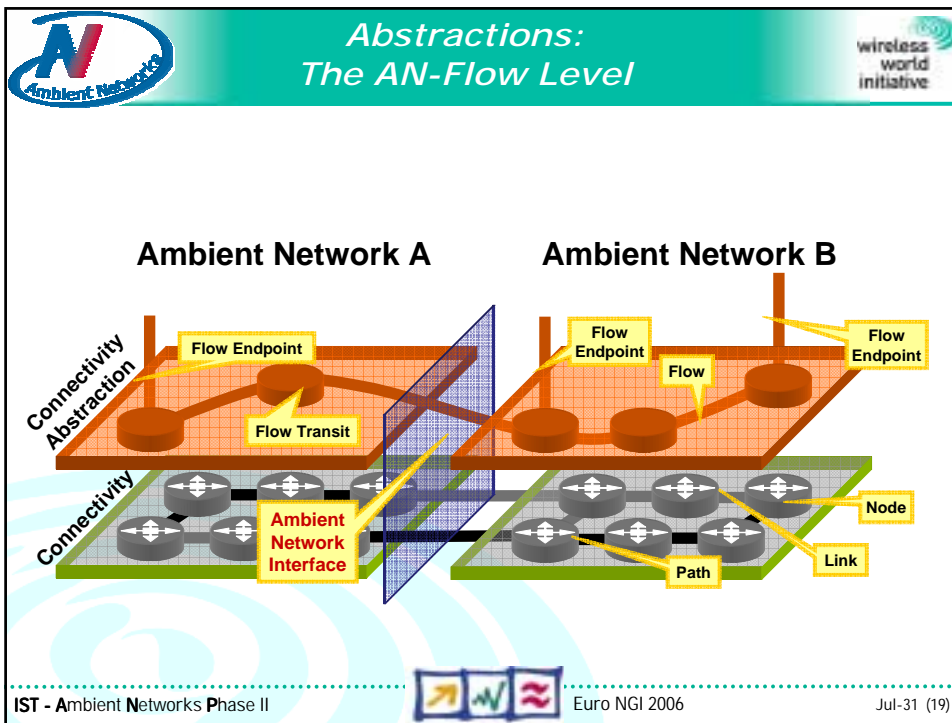


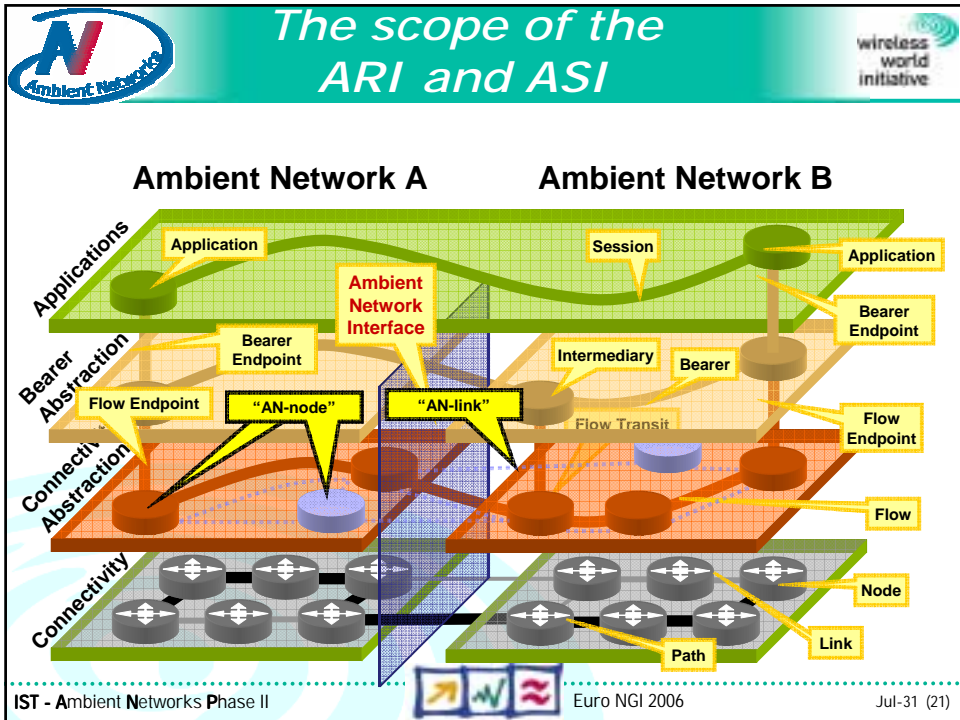
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*Work in Progress – AN Phase 2
(up to Dec. 2007)*



- Further refinement and specification of the Ambient Networks Architecture
- Definition of interfaces and protocols
 - Component interaction via nsis derivate and WebServices investigated
- Standardisation efforts (3GPP and IETF)
- Prototyping and simulations to integrate and validate the proposed functionality



Thank you for your attention! Questions?

www.ambient-networks.org

