



ENABLING EFFICIENT AND OPERATIONAL MOBILITY IN LARGE HETEROGENEOUS IP NETWORKS

# Enabling Efficient and Operational Mobility in Large Heterogeneous IP Networks



Project Overview



# The Project at a Glance

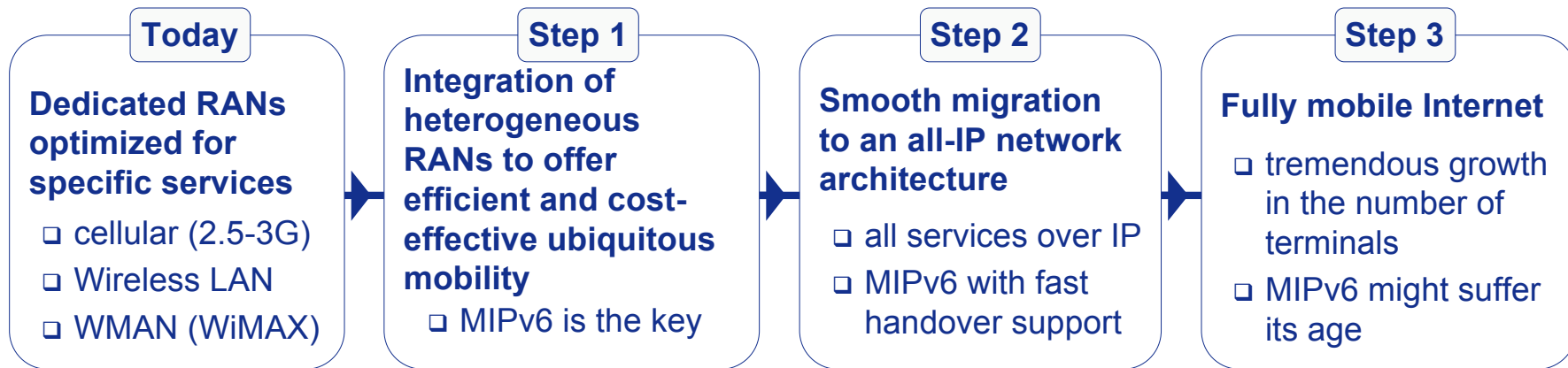
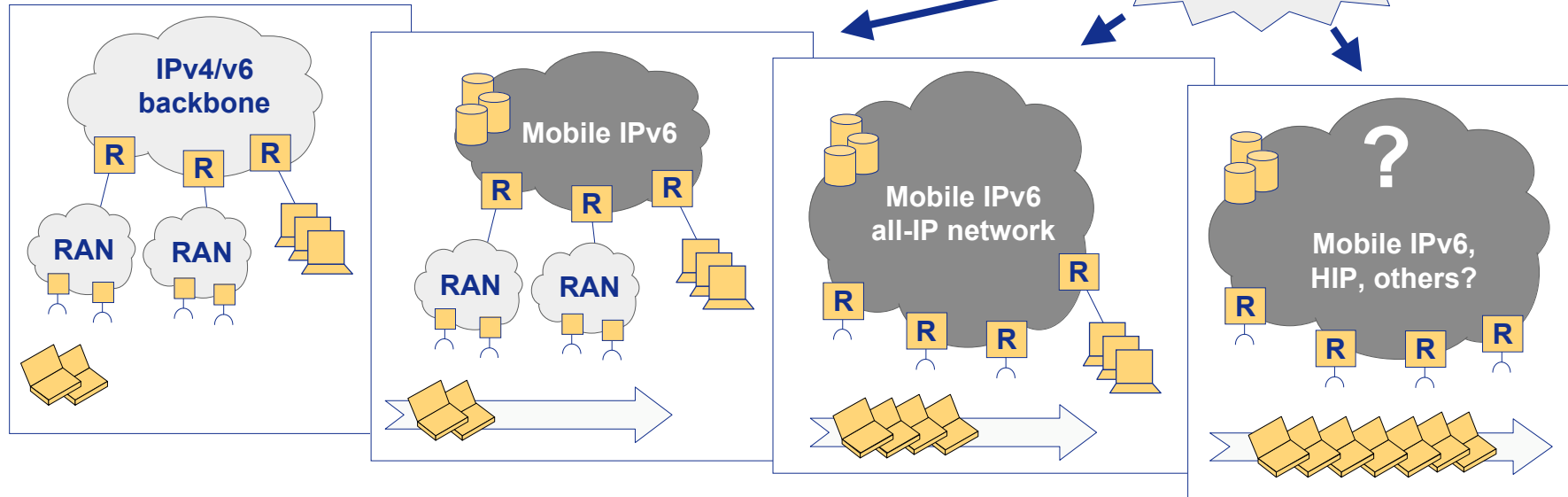
- Duration: 2 years
- Overall budget: 3.792 M€ (406 p.m.)
  - Total budget grant: 2.449 M€
- Project consortium:
  - Coordinator:
    - ❑ Telecom Italia (through Telecom Italia Lab, Italy)
  - Contractors:
    - ❑ Consultores Integrales en Telecomunicaciones, S.L. (Spain)
    - ❑ Georg-August-University of Goettingen (Germany)
    - ❑ Siemens AG (Germany)
    - ❑ University of Murcia (Spain)
    - ❑ Industrieanlagen-Betriebsgesellschaft mbH (Germany)
    - ❑ Waterford Institute of Technology (Ireland)
    - ❑ Brunel University (United Kingdom)
    - ❑ Shanghai R&D Centre of Huawei Technologies Co. Ltd (China)

# Project Goal

- Enable deployment of efficient and operational mobility as a service in large scale IPv6 network environments, taking into account also the transition from IPv4
  - Research and contribution to standardization fora (IETF, 3GPP, etc.)
  - Validation through laboratory experiments (prototypes, testing, etc.)
- Main areas of work
  - Enhancement of Mobile IPv6 to enable **transparent mobility in large operational networks with multiple administrative domains, heterogeneous accesses and a rapidly growing number of users**
  - Enrichment of the basic mobility service provided by Mobile IPv6 with a set of **“premium” features** (fast handover, QoS, etc.)
  - Analysis of goals and design principles for the **evolution beyond Mobile IPv6 in the long term**



# Long Term Vision



# Key Research Objectives (I)

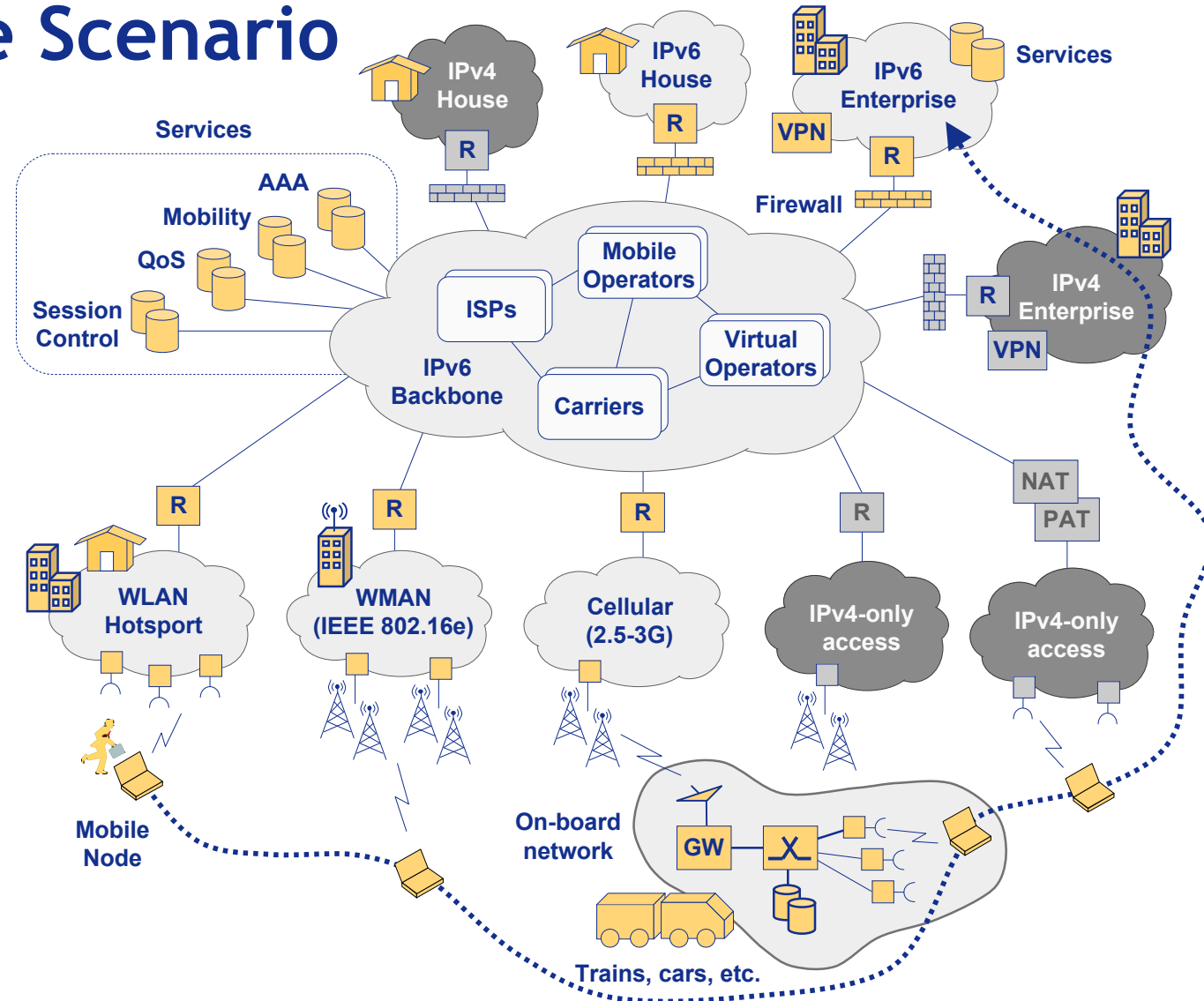
- Improvement of Mobile IPv6 scalability
  - Dynamic provisioning of configuration data on terminals and HAs
  - Load-sharing across HAs
- Improvement of reliability
  - Solutions for HA failover (no single point of failure)
- Control of mobility service
  - Service authorization based on a AAA infrastructure
- Enable offering of “premium” network features
  - On-demand and secure activation of fast handovers, QoS, etc.
- Integration of Mobile IPv6 in real-life environments
  - Coexistence with middle-boxes (firewalls, VPN concentrators, etc.)
  - Deployment of Mobile IPv6 in IPv4-only accesses

## Key Research Objectives (II)

- Analysis of protocols and architectures for long-term network evolution
  - **Scalability** to an incredibly high number of terminals
  - Optimized support for **terminals with very limited processing and storage capabilities** (e.g. sensors)
  - Deploying **Mobile IPv6 may not be enough in this scenario** and therefore possible long-term alternatives/enhancements must be carefully evaluated
    - Host Identity Protocol (HIP)
    - IKEv2 Mobility and Multihoming (MOBIKE)
    - NETwork based Localized Mobility Management (NETLMM)
    - Others



# Reference Scenario

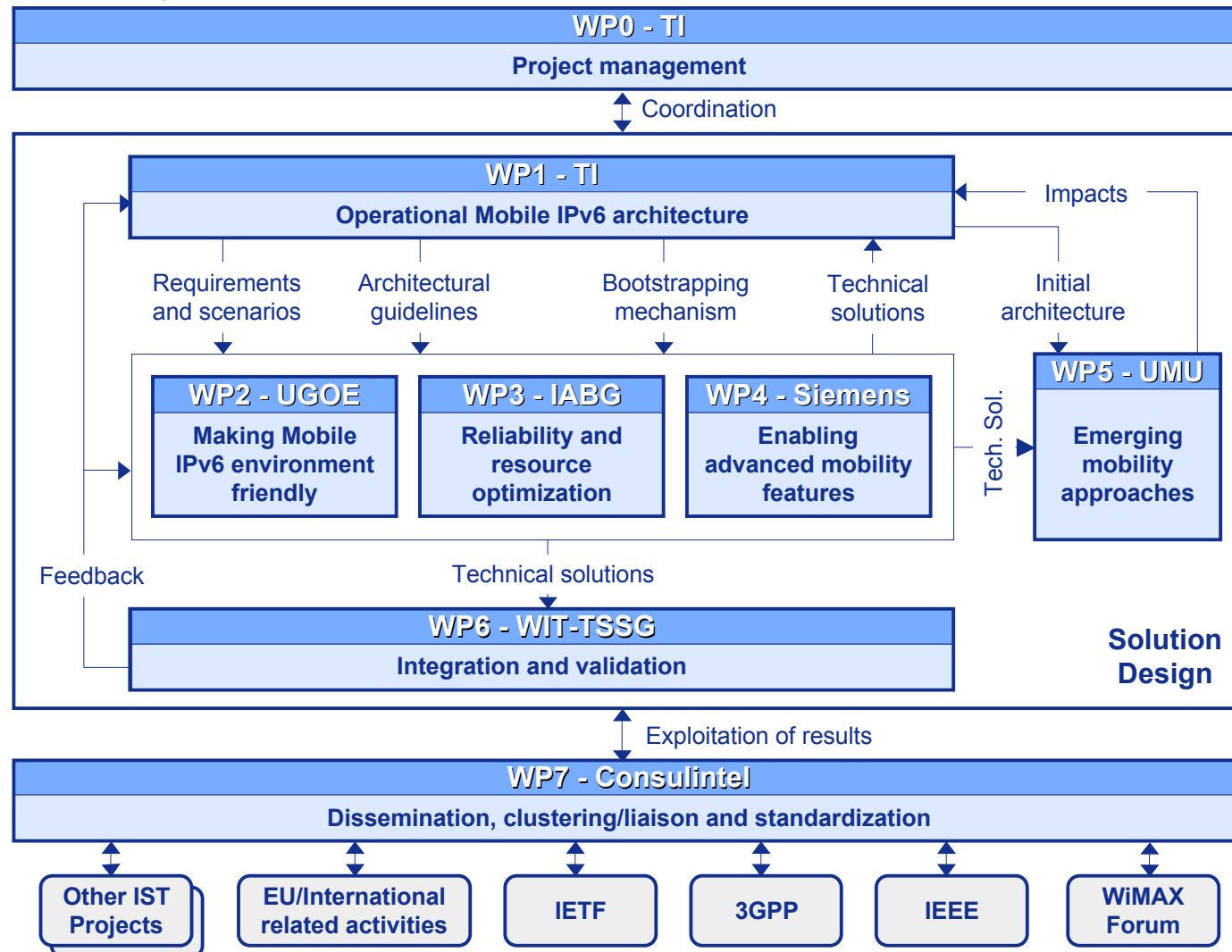


## Expected Impact

- Mobile IPv6 as it is today is not suitable to implement the ENABLE Reference Scenario
- ENABLE will fill the gaps working in close relation with the IETF, to ensure that the solutions developed by the project are in line with the architectural principles devised by the Internet community and can get possibly standardized
- The research in ENABLE will increase the ability to deploy a future-proof mobility infrastructure for the usage of demanding, future applications like pervasive peer-to-peer, audio/video conferencing over IP, emergency services, etc.
- ENABLE will also contribute to the development of a long-term vision towards the future fully mobile Internet, investigating on possible transition paths towards novel, and not yet fully understood, technologies



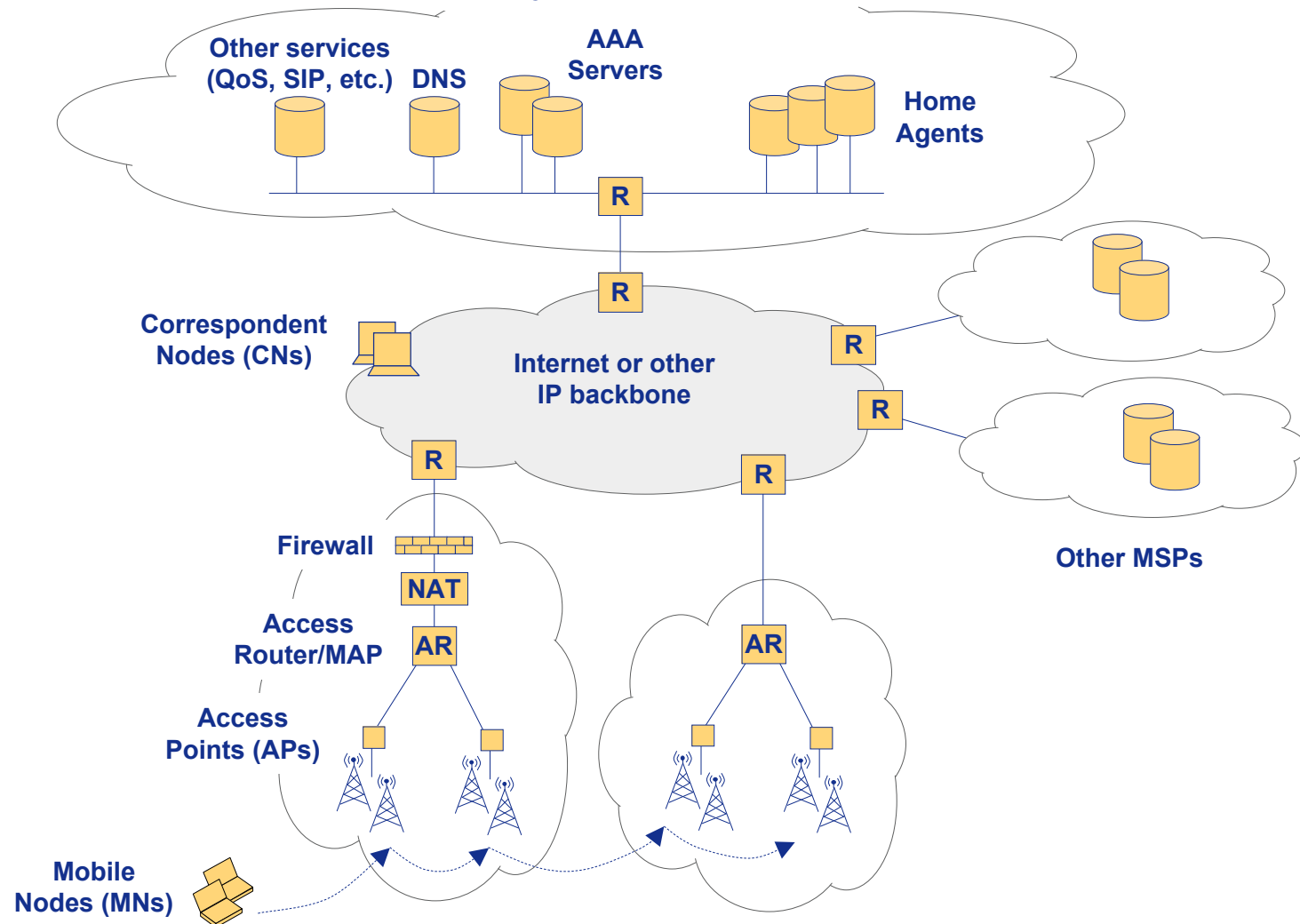
# Work Packages





# ENABLE System Architecture

Mobility Service Provider (MSP)



# Dissemination

- In order to publicize the project work, results and exploitation, several activities will be carried out:
  - Papers, journals and publications
  - Presentations in different events and conferences
  - Public trials and involvement of external users
  - Cooperation with other related activities
  - Standardization activities

# Contacting ENABLE

- Project web site:
  - <http://www.ist-enable.org>
- Project Coordinator:
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- Dissemination, Liaison and Standardization:
  - Jordi Palet (jordi.palet@consulintel.es)