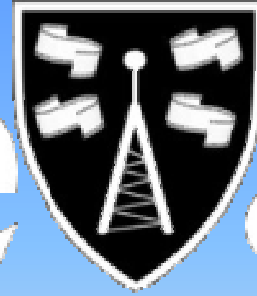


Medieval



MultimEDIA transport for mobile Video Applications

October 2010

MEDIEVAL consortium

Outline

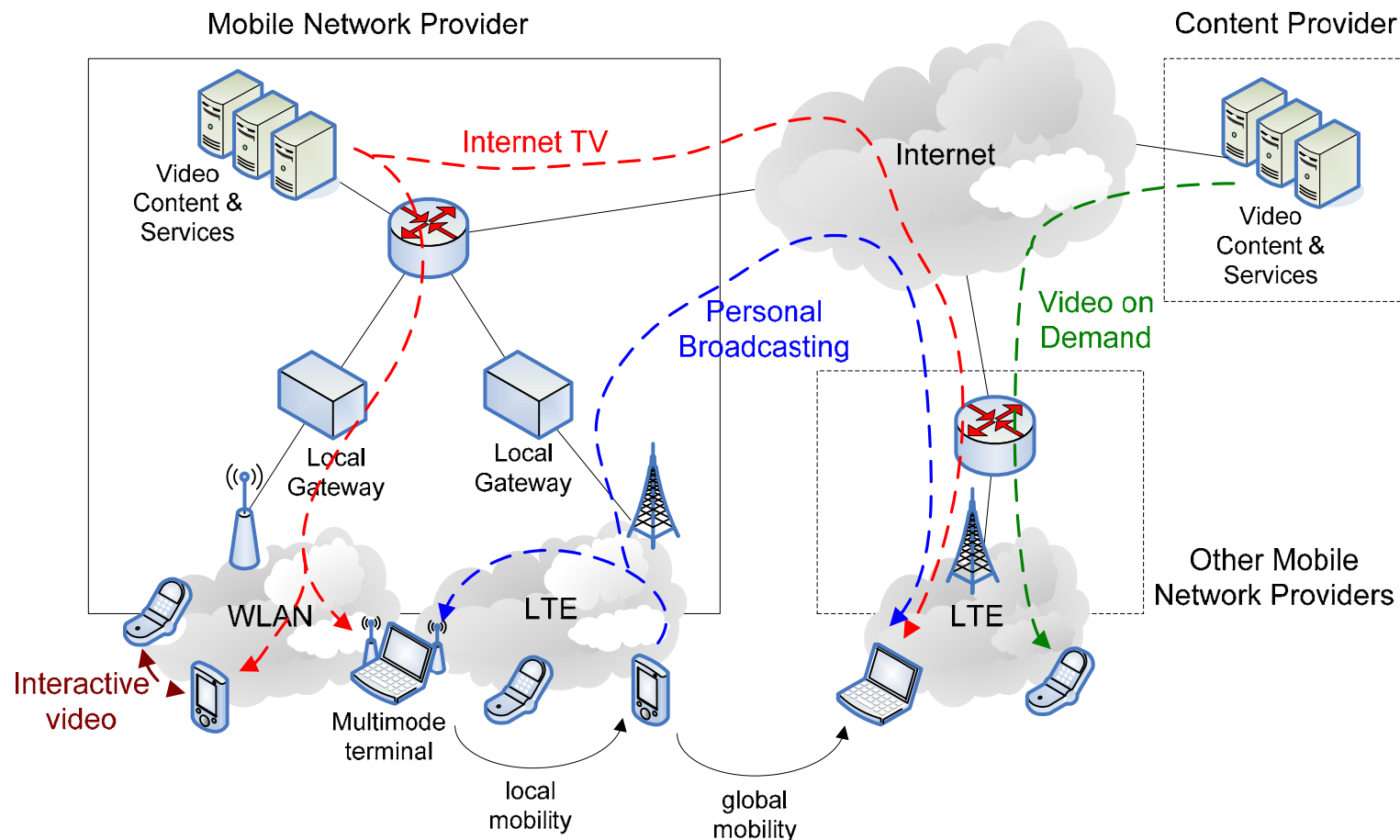
- Project motivation: Why do we need MEDIEVAL?
- MEDIEVAL main objectives
- MEDIEVAL at glance
- MEDIEVAL consortium
 - Role of MEDIEVAL partners
 - Partners key contributions
- Exploitation plans

Why do we need MEDIEVAL?

- **Video** is a major **challenge** for the future Internet
- Year 2012
 - Volume 20 times what it is today
 - Video foreseen to be 90% of total consumer traffic
- Current mobile Internet **IS NOT** designed for **video**
 - Today's architectures are very inefficient when handling video
 - Future Internet architecture should be tailored to efficiently support the requirements of this type of traffic
 - Specific **enhancements for video** should be introduced **at all layers** of the protocol stack where needed

Why do we need MEDIEVAL?

- Our vision: evolutionary path for a truly video-for-all philosophy



Why do we need MEDIEVAL?

- MEDIEVAL is an **operator-driven** project specifying and demonstrating a **mobile video** architecture with **cross-layer** mechanisms to provide high quality of experience to users

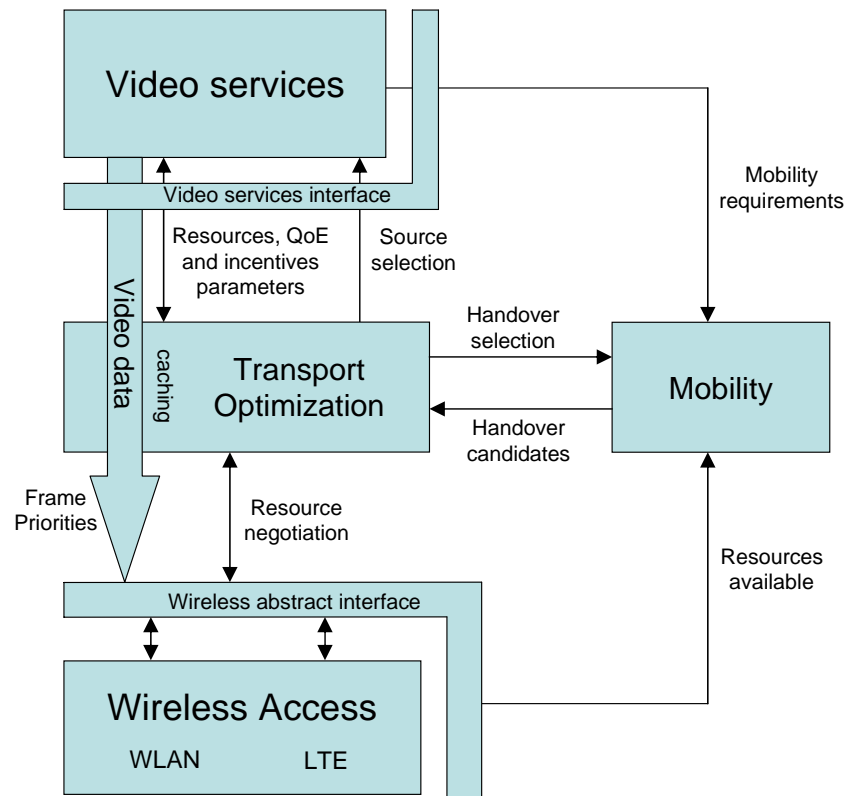


MEDIEVAL at glance

- Project Coordinator
 - Dr. Telemaco Melia
 - Alcatel-Lucent Bell Labs France
 - Email: telemaco.melia@alcatel-lucent.com
- Project website: <http://www.ict-medieval.eu/>
- 8 partners from 6 different countries
- Duration: July 2010 – June 2013
- Funding scheme: STREP
- Total Cost: €5,369,788m
- EC Contribution: €3,470,885m
- Contract Number: INFISO-ICT-258053

MEDIEVAL main objectives

- Our **aim**: to design a video transport architecture suitable for commercial deployment by mobile network operators



5 key issues:

- Interface between the **video services** and the underlying network mechanisms
- Enhanced **wireless access** to optimize video performance
- **Novel dynamic mobility architecture** adapted to video service requirements
- Optimization of the **video delivery**
- Support for **broadcast and multicast video services**

MEDIEVAL main objectives

- **Objective 1:**

“Design a global cross-layer network architecture suitable for future commercial deployment of video services by mobile operators”

– Tangible outcome:

- Input from the architecture design to relevant standardization activities (including at least SDO)
- Publication of the proposed architecture and its evaluation in at least one journal or conference paper in a prestigious scientific forum

MEDIEVAL main objectives

- Sub-objective 1.1

Traffic volume exchange will be quantitatively assessed and compared with what is attained by the current state-of-the-art techniques

- Sub-objective 1.2

Metrics to measure the quality perceived by the users will be defined and evaluated

- Sub-objective 1.3

Costs reduction due to the use of MEDIEVAL mechanisms will be also quantified through proper numerical models

MEDIEVAL main objectives

- **Objective 2:**

“Design of video specific algorithms and mechanisms at the different layers of the protocol stack”

- Tangible outcome:

- At least three standardization contributions to the IETF, the 3GPP and/or the IEEE
- At least three publications in prestigious scientific fora, describing the architectural concepts, algorithms, protocols and mobility mechanisms developed within MEDIEVAL

MEDIEVAL main objectives

- Sub-objective 2.1:
Design of a simplified and flatter mobility architecture adapted to video
- Sub-objective 2.2:
Design of an algorithm for video in WLAN to provide graceful degradation and improved reliability and jitter for video streams
- Sub-objective 2.3:
Design a solution for multicast and broadcast support in LTE-A
- Sub-objective 2.4:
Design a mechanism for reliable multicast support in WLAN
- Sub-objective 2.5:
Develop innovative solutions to allow reliable and adaptive content delivery

MEDIEVAL main objectives

- Sub-objective 2.6:
Develop a protocol for optimal multicast support in PMIP
- Sub-objective 2.7:
Design a P2P video streaming solution that relies on information provided by the network for optimal source selection
- Sub-objective 2.8:
Analysis of the suitability of jumbo packets in the design of a solution to improve the performance of video streaming
- Sub-objective 2.9:
Design video specific caching mechanism to optimize the performance of Video on Demand applications for wireless networks

MEDIEVAL main objectives

- **Objective 3:**

“Develop an Experimental Demonstrator to test and show MEDIEVAL’s key functionalities”

– Tangible outcome:

- Tests for at least 2/3 of the developed technologies will be designed and conducted in a standalone environment
- Integration of part of the overall functionality into the project’s demonstrator and evaluation of the performance of each of these functions (see next slide)

MEDIEVAL main objectives

- Sub-objective 3.1:
Design, implement and integrate in the test bed the MEDIEVAL mobility architecture
- Sub-objective 3.2:
Include WLAN and LTE into the integration platform
- Sub-objective 3.3:
Develop into the demonstrator native multicast support for *Internet TV*
- Sub-objective 3.4:
Integrate and evaluate the performance of P2P based services for *Personal Broadcasting* with network support
- Sub-objective 3.5:
Implement and evaluate the performance of *Video on Demand* services based on intelligent caching scheme in the test bed

MEDIEVAL consortium



Role of MEDIEVAL partners

- **Operators: TIS, DOCOMO, PTIN**
 - MEDIEVAL aims at optimizing mobile networks for massive Video delivery
 - Operators play a key role to enable video service both from business and network architecture point of view
- **Manufacturers: ALBLF, LIVEU**
 - Address the needs identified by the operators, drive the architecture design and algorithms/mechanisms in an efficient manner
- **Research Institutes & Universities: IT, UC3M, CFR, EURECOM**
 - Bring key technical expertise to the consortium in the different working areas

MEDIEVAL consortium



Partners key contributions

- Alcatel Lucent Bell-Labs France (ALBLF)



- Project coordinator
- Key contributions in Architecture design and standardization/dissemination, definition of the mobility architecture, Video Coding and test specifications

- Telecom Italia (TIS)



- WP4 leadership (Mobility)
- Key contributions in Mobile Architecture and Business cases definition, and cross work package interfaces

- Portugal Telecom Inovação (PTIN)



- WP2 leadership (Video Service Control)
- Key contributions in Service scenarios definition and architecture design and innovative video services deployment

- NTT DOCOMO Euro-Labs (DOCOMO)



- WP5 leadership (Transport Optimizations)
- Key contributions in Operator view to general architecture, efficient transport algorithms for mobile video and cross work package interfaces

MEDIEVAL consortium



Partners key contributions

- **LiveU (LIVEU)**
 - WP6 leadership (Integration and experimentation)
 - Key contributions in business cases, Forward Error Correction scheme, cross work package interfaces, and contribution to the incremental demonstrator
- **IT Aveiro (IT)**
 - Expertise on heterogeneous mobile multicast enabled architectures
 - Key contributions in the definition of the general architecture, Jumbo frames usage for video, Multicast mobility and contribution to the incremental demonstrator
- **Universidad Carlos III de Madrid (UC3M)**
 - WP1 leadership (System design and global issues)
 - Key contributions in Architecture Design, WLAN, Mobility architecture and IETF standardization and Overlay multicast
- **Consorzio Ferrara Ricerche (CFR)**
 - Expertise on wireless access and cross layer design
 - Key contributions in access optimization for LTE, cross layer optimization for transport and contribution to the incremental demonstrator
- **EURECOM**
 - WP3 leadership (Wireless Access)
 - Key contributions in Architecture Design, LTE and eMBMS, Multicast Mobility and hosting of the project testbed



Exploitation Plans

- **Key goal:** allow MEDIEVAL manufacturers and operators to effectively increase their business opportunities by offering innovative products
 - Operators aim at offering innovative services and have identified the need for new technology to deploy these services
 - MEDIEVAL will design the missing building blocks/mechanisms and test the functionalities
- MEDIEVAL will provide an **integrated video solution** that will be exploited by operators to offer innovative services to their customers
- The research conducted in MEDIEVAL will provide the manufacturers with the basis to strengthen their **mobile core and video products** yielding new and enhanced solutions with improved user performance
 - IPR generation
 - Dissemination of results in prestigious scientific fora
- Research institutes and academia partners will use MEDIEVAL results to enhance their curricula and to provide relevant topics for theses and dissertations, thereby helping train new generations of students
- The project will follow and **contribute to the main standardization bodies** such as 3GPP, IETF and IEEE, which have already detected the need for video enhancements