MultimEDia transport for mobile Video Applications

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Michelle Wetterwald¹, Telemaco Melia², Carlos J. Bernardos³
¹EURECOM, ²Alcatel Lucent, ³UC3M
Outline

• Why do we need MEDIEVAL?
• The MEDIEVAL project
• The MEDIEVAL architecture
• Contributions to standards
Why do we need MEDIEVAL?

- **Video** is a major **challenge** for the future Internet

  ![Graph showing petabytes per month for different types of traffic](image)

  VoIP traffic forecasted to be 0.4% of all mobile data traffic in 2015.
  Source: Cisco VNI Mobile, 2011

- **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

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• evolutionary path for a truly video-for-all philosophy
The MEDIEVAL project

• 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 project details

• Project Coordinator
  – Dr. Telemaco Melia
  – Alcatel-Lucent Bell Labs France
  – Email: telemaco.melia@alcatel-lucent.com

• Project website: http://www.ict-medieval.eu/

• 9 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: INFSO-ICT-258053
Video Services

- Personal Broadcast
  - Each user (organization, private individual) can generate content
  - In general, relies on broadcast or multicast

- Mobile TV
  - Evolution of traditional TV to handhelds

- Video on Demand
  - The user selects a video and has it sent to his device

- Interactive Video
  - Interactive video chatting, integrates other media
MEDIEVAL Architecture

• Medieval architecture is divided into 4 subsystems
  – Video Service Control (WP2)
    • Links the applications and services to the underlying network delivery entities
  – Transport Optimization (WP5)
    • Provides optimized video traffic in the mobile operator's core network
  – Mobility Management (WP4)
    • Evolves today's mobile Internet architecture to more efficiently support growth of video services, based on flow mobility and DMM
  – Wireless Access (WP3)
    • Provides enhanced video delivery in the last (wireless) hop, mainly focusing on novel access techniques and technology abstraction

• Strong level of cross-layer interactions between the subsystems

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Physical View

LEGENDA

MAR: Mobility Access Router
PoA: Point of Access
MN: Mobile Node
ALTO: Application Layer Transport Optimization
LTE: Long Term Evolution
WLAN: Wireless LAN
mMAR: mobile MAR
CDN: Content Distribution Network
• Linked with WP3 and WP4
• 802.11aa Robust streaming of Audio Video Transport Streams
  – 802.11 Video Streams transport
  – assessment of draft standard (Groupcast)
• 802.21 Media Independent Handover Services
  – Video Support in heterogeneous networks
  – Already submitted 7 contributions
  – Contributions show the new concepts regarding mobility, configuration of interfaces and new video related extensions developed within MEDIEVAL
Contributions to standards - IETF

- Linked with WP4 and WP5
- Already submitted 16 contributions
- NETEXT
  - PMIPv6 extensions, including Logical Interface concept and flow base mobility (WG documents)
- MEXT
  - Distributed Mobility Management
- MultiMob
  - Multicast Mobility, including source Mobility
- ALTO
  - Mobile Content distribution network (new extensions to mobile Core)

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Contributions to standards - 3GPP

- Linked with WP5 (and other technical work packages)
- 3GPP SA2
  - Extending the mobile traffic management framework with application awareness (video) and congestion handling (→ SAPP, TDF, UPCON,...)
    - QoE-based traffic management concept
    - User plane traffic management targeting network congestion handling
  - Ongoing work for Rel. 11 and beyond
    - Discussion paper submitted to SA2#86 supporting UPCON SID
- 3GPP SA1 (other SDO?)
  - Splitting and merging IP video flows to increase the allocated bandwidth
  - Tight relation between Content adaptation and network events such as mobility and resource change
Conclusion

• MEDIEVAL aims at improving video traffic distribution over the Future Internet
• Results from research is pushed to standards
• MEDIEVAL consortium is active in several SDOs (IEEE, IETF, 3GPP)
• Concrete impacts on industrial and operator partners
  – workshops and demos
  – future product development
Thank you for your attention

http://www.ict-medieval.eu/
michelle.wetterwald@eurecom.fr
telemaco.melia@ALCATEL-LUCENT.COM

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