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UTM expertise and Virtual Museum applications

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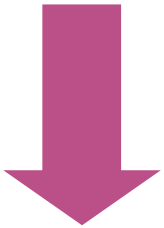
Main goals and areas of work

- Study techniques and develop tools and solutions to build context-aware and QoS-aware multimedia services in heterogeneous environments
  - A/V content analysis
  - Multimedia indexing, search and retrieval
  - Distributed service management and content adaptation decision
  - Ambient intelligence network support
  - Service delivery presentation



UMA - Universal Multimedia Access

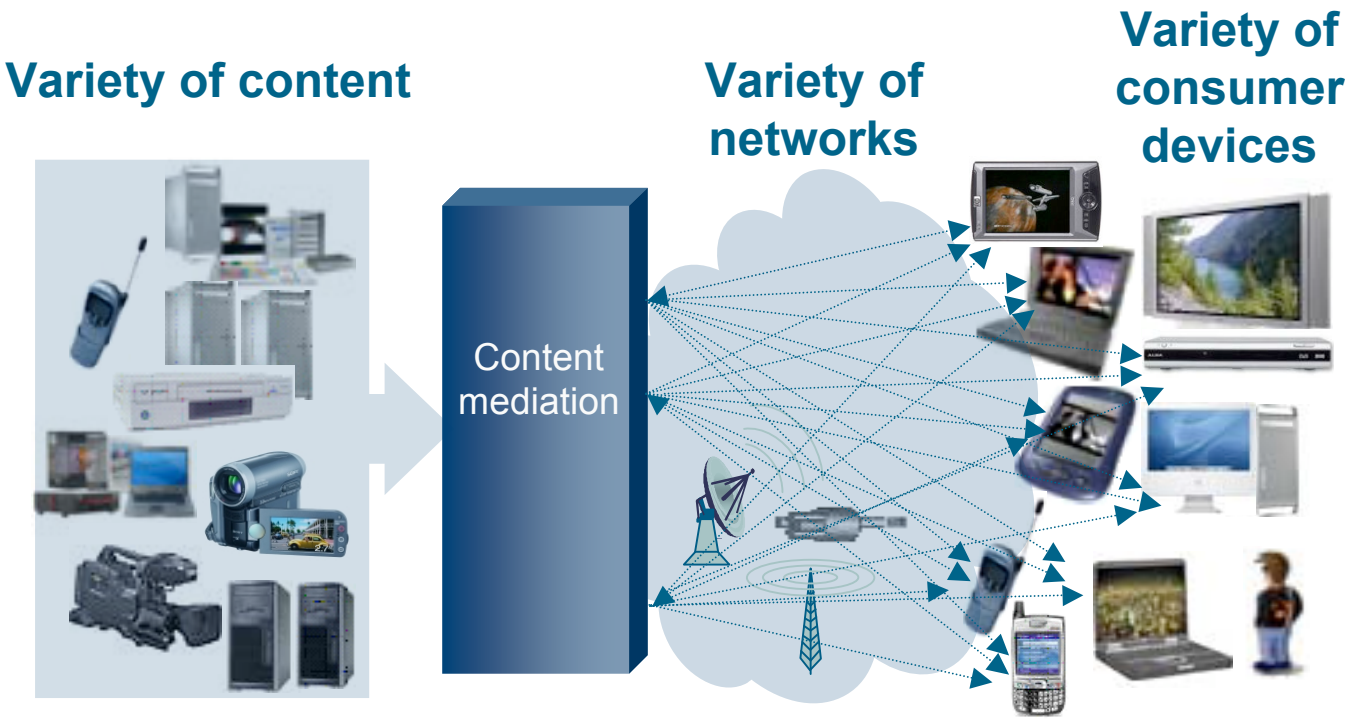
Universal Multimedia Access

"*Any citizen should be granted the possibility to access all human knowledge available in digital repositories all around the world, at any time and anywhere, in a friendly, efficient, reliable and personalised way and by using multiple networked devices*"

- Unrestricted access to multimedia content
- From any device
- Through any network
- Independently of the original content format
- With guarantees and efficiently
- Satisfying user preferences

Motivation

heterogeneity and convergence !



Approach

- Design and development of modular and distributed software for multimedia applications
  - Context-aware content adaptation
  - Extensive use of metadata
  - Service oriented and Middleware layers to enable interoperability
  - p2p paradigm to enable flexible and low-cost distribution
- New and soa network protocols for mobility, QoS guarantees, seamless connectivity
- Re-use of knowledge and experience gained previously
  - Initiated within the area of digital TV (encoding, transmission, IT-based post-production, archiving, annotation, mm analysis)

Evolution

A/V processing
- MPEG-2
  - A/V coding
  - Multiplexing & transmission

+ distributed technologies in TV environments
- CORBA, all-IP

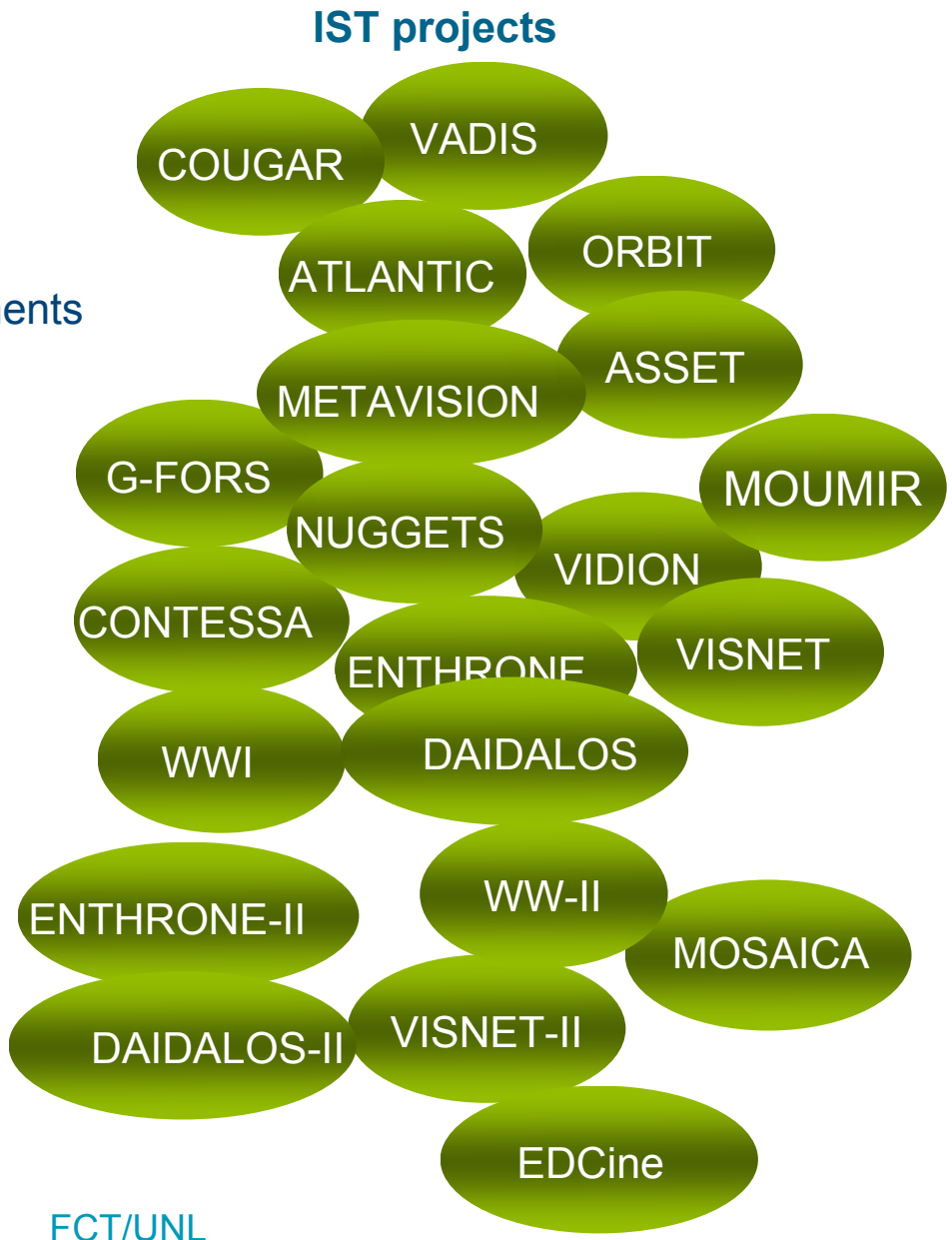
+ metadata, data models, data bases
- MPEG-7, MXF

+ interoperability, cross-media delivery
- MPEG-21 DIDL, DIA

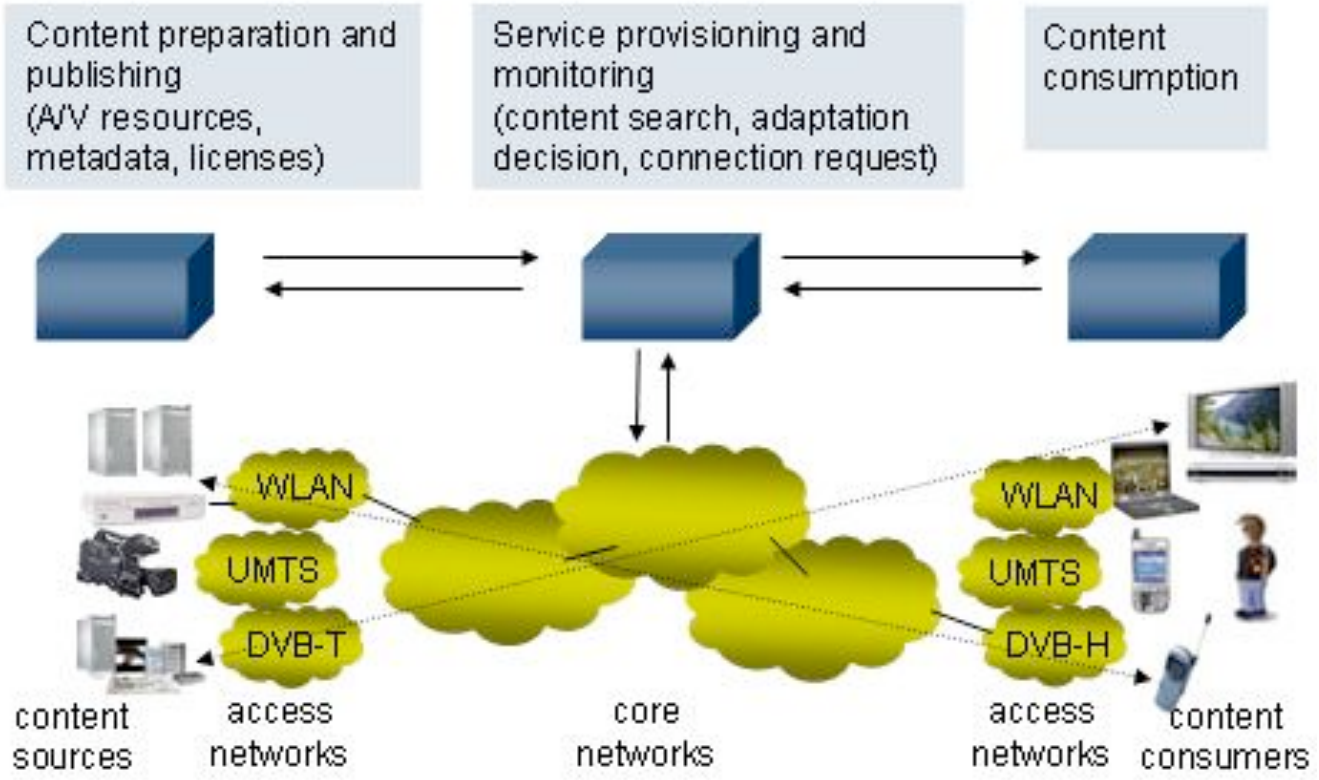
+ networking protocols
- mobility, internetworking
- seamless connectivity, QoS

UMA
AI

MPEG-21, MPEG-7, TVA
Metadata models (SMPTE, etc.)
Web Services technologies
p2p
NSIS, IEEE802.21, IEEE802.11e
New network QoS protocols

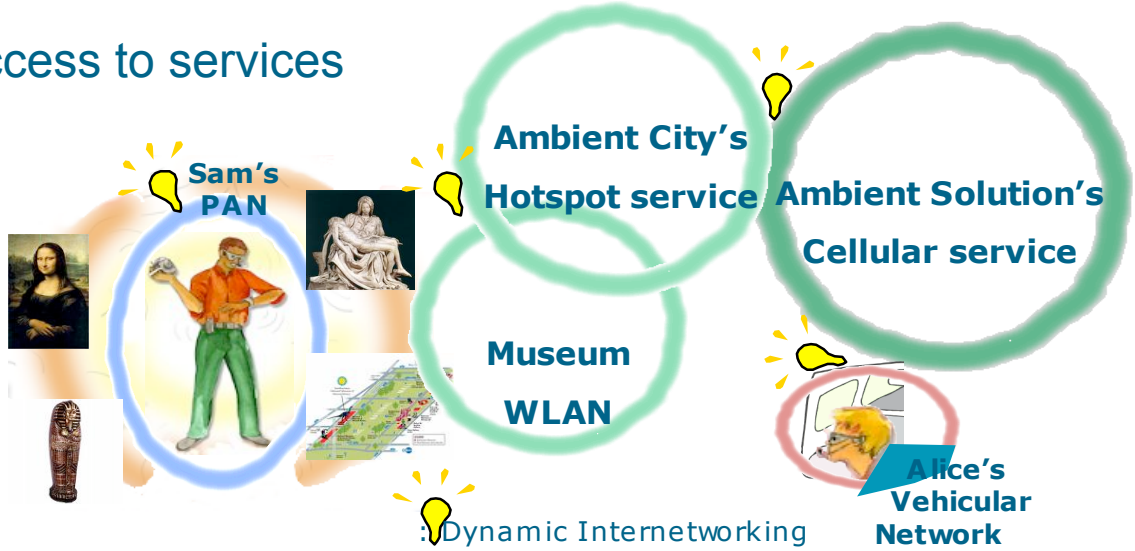


Context-aware multimedia delivery



Ambience Intelligence

- Automatic discovery of users and networks
- Self – configured and adaptable to users and to changes (environmental changes, failures, etc.)
- Supported by heterogeneous technologies (e.g., Bluetooth, WiFi, GSM, WiMax, 3G, etc.)
- Composed by heterogeneous devices (e.g., Computers, Mobile Phones, Digital Cameras, Augmented Reality Glasses, etc.)
- Enables ubiquitous access to services



Ambient Networks and Ambience Intelligence

- Automatic discovery of users and networks
- Self – configured and adaptable to users and to changes (environmental changes, failures, etc.)
- Supported by heterogeneous technologies (e.g., Bluetooth, WiFi, GSM, WiMax, 3G, etc.)
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Semantic search in P2P networks

- DHT (Distributed Hash Tables) are being used to build structured P2P systems
  - Allow efficient location of distributed documents through and exact match
    - indexes to files are distributed accross a network of peers
    - documents are identified by a hash key with an exact match lookup
  - But, not suitable to support **semantic search** based on proximity
- Solution: two-level architecture
  - Overly network adopting Service-oriented approach
  - Easy and efficient discovery of offered services
  - Common clients/ legacy systems should be able to use offered services

P2P content management subsystem

- Principles
  - search of digital objects using metadata and the access to services are functionally/logically separated from partitioning and distribution of the digital objects
  - search is based on the distribution of metadata associated to the digital objects into distributed data bases and on the use of the ontology alignment service
  - submission and storage of digital objects is handled as in common P2P structured (DHT) networks
  - being developed within the context of IST project MOSAICA

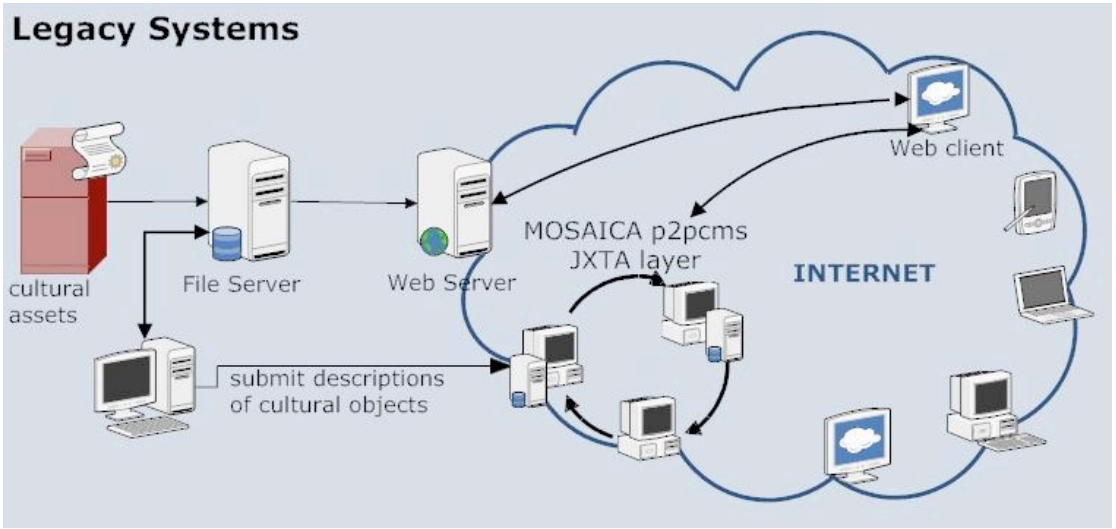
http://www.mosaica-project.eu/

MOSAICA's objectives

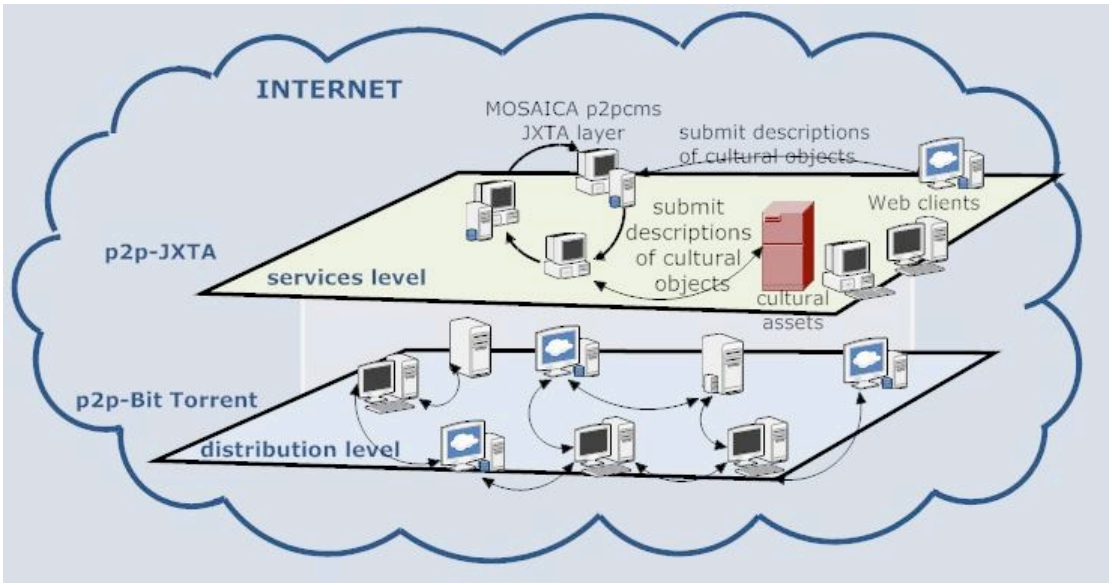
- Bridge between Culture and Education
  - Make culture fun – primarily for young
  - Promote cultural, religious and racial pluralism
- Enable the creation of Virtual Expeditions
  - An innovative approach to the creation of user experience :
    - As a new search and retrieval methodology
    - As a new consumption experience
  - Promote encountering cultural heritage as a contemporary, interactive, playful and entertaining experience
- To develop a complex multifunctional online system constructed from three functional layers, enabling
  - basic and advanced **semantic search and browsing within the cultural heritage domain**
  - users to **semantically annotate, upload and share** their own items, enriching the collection of cultural heritage and its preservation
  - presentation of **virtual expeditions** and fascinating stories

Using MOSAICA p2pcms

- Legacy systems or protected content - submitting descriptions only (Ex. Museums protected digital assets; broadcasters' archives)



- Submitting it all – descriptions + content (ex., museums' free content, private user at home)



UTM prespectives