

# DANAE

Dynamic and Distributed Adaptation of scalable  
multimedia coNtEnt in a context-Aware Environment

**Bruxelles, March 12<sup>th</sup> 2004**

N<sup>2</sup>MC Meeting

France Telecom R&D	FTRD	Coordinator	France
Groupe des Ecoles de Telecommunication	ENST	Partner	France
Institut National de Recherche en Informatique et en Automatique	INRIA	Partner	France
Imperial College London	ICL	Partner	United Kingdom
Interuniversity MicroElectronics Center	IMEC	Partner	Belgium
MUSEON	MUSEON	Partner	The Netherlands
RWTH Aachen	RWTH	Partner	Germany
Siemens Aktiengesellschaft	SIEMENS	Partner	Germany
T-Systems Nova GmbH	TSN	Partner	Germany
Universite de Geneve	UNIGE	Partner	Switzerland
University Klagenfurt	UNIKLU	Partner	Austria

## → **In a nutshell**

- Global vision
- Objectives
- Partnership

## → **Project presentation**

- Architecture
- Workpackage structure
- Workpackages

## → **Conclusion**

# Danae **In a nutshell...**

## **→ In a nutshell**

- Global vision
- Objectives
- Partnership

## → **Tremendous growth of multimedia services**

- ④ The multimedia market is now reaching maturity
- ④ Strong focus on the multimedia market by all actors

## → **Current pitfalls/challenges**

- ④ Heterogeneous environment
- ④ No DRM framework
- ④ No context-awareness

## → Advanced MPEG-21 Chain

- ④ DIA (Digital Item Adaptation)
- ④ Context-aware, dynamic & distributed adaptation schemes
- ④ DRM support

## → Scalable codecs

- ④ Wavelet-based video codec
- ④ Error-resilience
- ④ Enhancement to existing media codecs
- ④ Tools and metadata for the media adaptation

# Danae Partnership

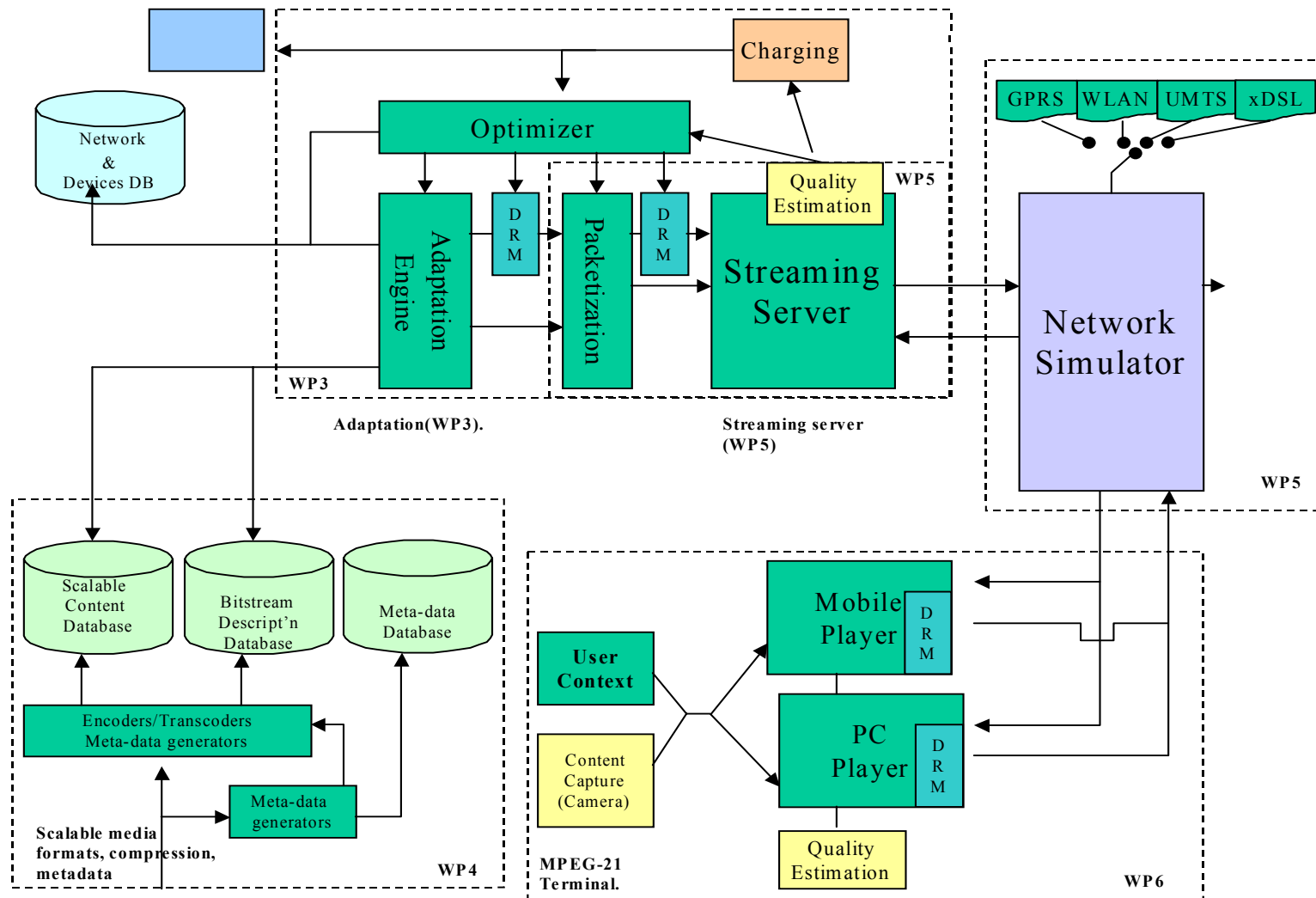
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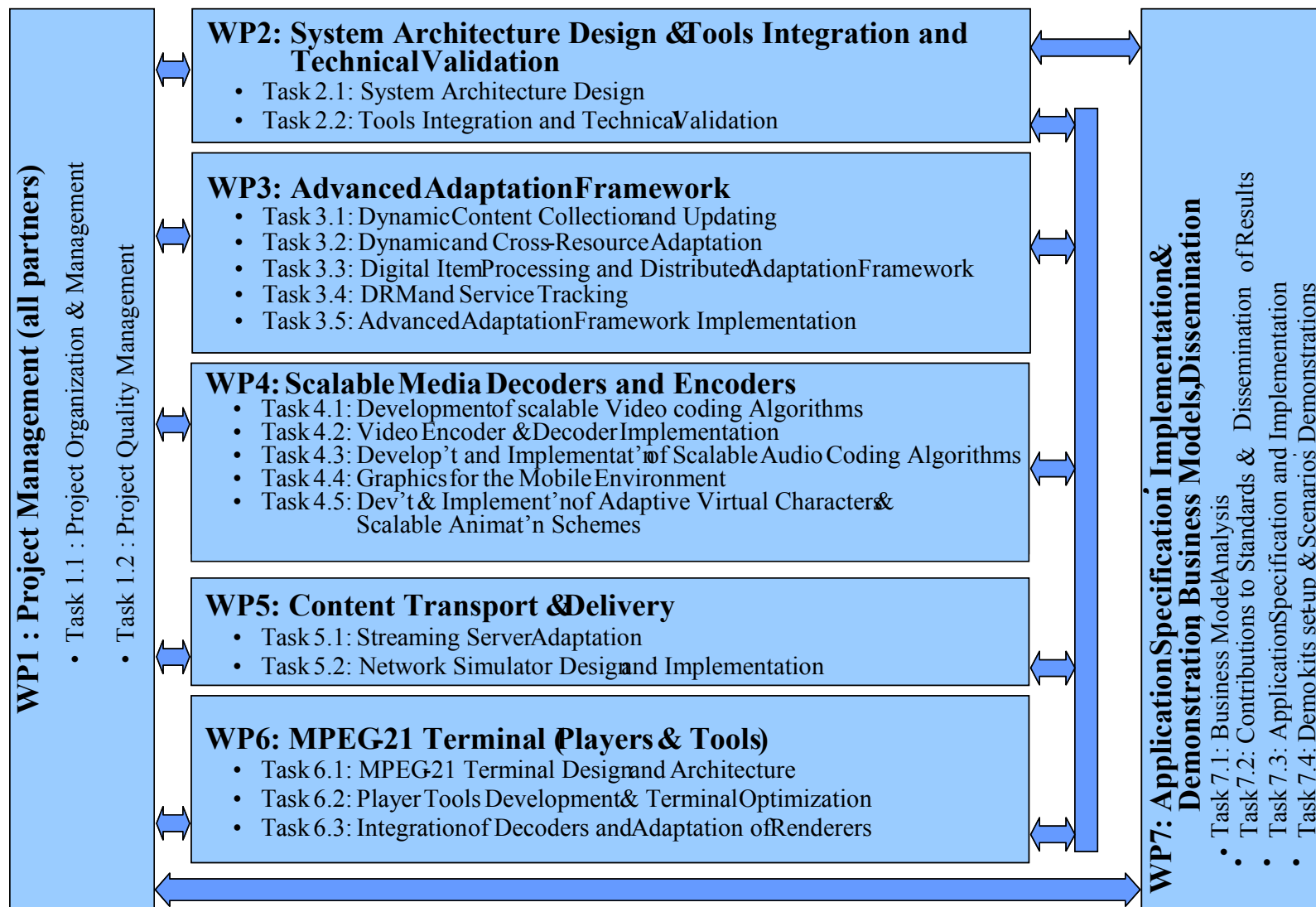
## → **Project presentation**

- Overview : block diagram
- Workpackage structure
- Workpackages

# Danae Block diagram



# Danae WP Structure



# **WP2 : Architecture & Integration**

- ➔ **Define the overall architecture**
- ➔ **Integrate on the same platform all sub-modules**
- ➔ **Technical validation of the tools and of the end-to-end system.**

# **WP3 : Advanced Adaptation Framework**

To research, develop and implement novel technologies, within a multimedia adaptation framework, that :

- enable static, dynamic, semantic and cross-resource adaptation to a user's context
- enable multi-step, distributed adaptations
- enhance the efficiency of the adaptation decision making and application process
- support MPEG-21 Digital Item Processing
- investigate the use of DRM tools for expressing the imposed restrictions on the possible adaptations
- enable the adaptation of encrypted resources
- provides a service tracking mechanism for interfacing a charging system

## → **Novelties**

- ④ Automatic, codec-agnostic adaptation of multimedia resources
- ④ Integration of DRM aspects in the adaptation framework
- ④ Cross-resource adaptation decision making
- ④ Interoperable distribution of adaptation steps among peers
- ④ Integration of service tracking aspects in the adaptation framework

## → **Standardization:**

- ④ MPEG-21 tools (DIA, REL, RDD, DIDL) will be used and extended when appropriate
- ④ MPEG-21 Digital Item Processing (DIP) standard is in its initial steps. DANAЕ partners are already actively participating there
- ④ MPEG-21 Architecture and File Format are still at an early stage of discussion. DANAЕ will tackle some issues directly related to these two activities

# **WP4 : Scalable media Encoders & Decoders (1)**

## ➔ **New video codec to be developed**

- Fully scalable at bitstream level
- High coding efficiency
- Flexible adaptation to networks, terminals and users

## ➔ **In line with MPEG activities**

- Participate in CfP
- Plan to contribute reference software

# **WP4 : Scalable media Encoders & Decoders (2)**

- **Codecs for other media content (audio, graphics, characters) evolve from existing solutions**
- **Adaptation and error resilience for all types of networks**
- **Support for MPEG-21 terminals**
- **Scaling and translation of formats for low-complexity devices**

# **WP5 : Content transport and delivery**

## **→ Task 5.1: To provide mechanisms for the streaming of scalable content over a multitude of error-prone networks**

- ④ Development of a streaming server based on ISMA standard including implementation of protection mechanisms such as FEC, re-transmission, JSCC techniques
- ④ Investigation and development of scheduling and packetization techniques as well as means for quality feedback and support for distributed adaptation architectures and live encoding

## **→ Task 5.2: Network simulator**

### **→ To provide a simulation set-up which allows for a real-time simulation of essential network behavior**

- ④ Means to simulate different network scenarios
- ④ Gather experience from simulation experiments which will be fed back to the development of DANAЕ tools
- ④ Contribution to standardization (MPEG-21 test bed)

# **WP6 : MPEG-21 terminal (player and tools)**

- ➔ **Define and design an advanced MPEG-21 terminal architecture supporting :**
  - Consumption of Digital Items
  - Generic DRM capable terminal (IPMP)
  - Scalable 2D, 3D and audio visual content
  - Digital Item Processing
  
- ➔ **Player tools development and optimization**
  
- ➔ **Integration of decoders and adaptation of renderers**

- To analyse current and emerging business models in terms of the impact of scalable, adaptive and context aware multimedia services.**
- To ensure that DANAЕ technology advances are contributed to appropriate international standards bodies.**
- To oversee the dissemination of DANAЕ results online and via appropriate forums, including the demonstration of the DANAЕ application (or parts of it) at appropriate events (e.g. IBC, IST, etc.).**
- To specify and implement the DANAЕ demonstration application. The application will provide scope for the demonstration of all of the DANAЕ technology in several scenarios.**
- To set-up the demonstrations (demonstration kits, scenarios) and make demonstrations.**

- ➔ **Focus on MPEG-21 (DIA)**
- ➔ **Focus on media codecs**
- ➔ **Complementarity with other projects**
  - ⌚ TIRAMISU
  - ⌚ WCAM

# Danae **Conclusion**

➔ **Thank you**

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