aceMedia
Creating intelligent multimedia content

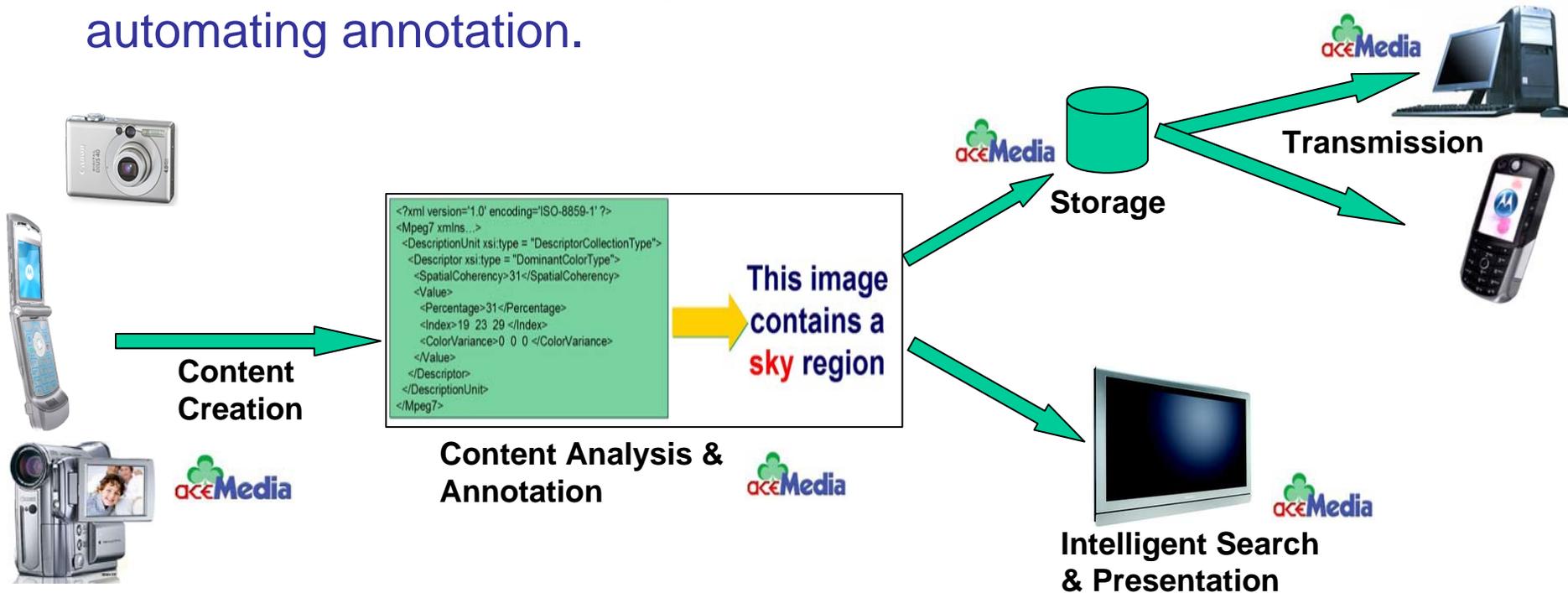*Adrian Matellanes*
Motorola Ltd.

The Figures Perspective

- FP6 Integrated Project
- 9 countries
- 45 staff (approx.)
- 6 industrial partners
  - *4 large*
  - *2 SMEs*
- 7 academic partners
  - *4 Universities*
  - *3 National Research Centres*

- Co-ordinator : Motorola Ltd
- Started : 1 Jan 2004
- Duration : 4 years
- Total Budget: 17M Euros

aceMedia vision

♦ aceMedia aims to discover and exploit knowledge inherent in multimedia content, making it more relevant for the user and automating annotation.

Content Creation

Content Analysis & Annotation

```
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<Mpeg7 xmlns...>
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        <ColorVariance>0  0  0 </ColorVariance>
      </Value>
    </Descriptor>
  </DescriptionUnit>
</Mpeg7>
```

This image contains a sky region

Storage

Transmission

Intelligent Search & Presentation

♦ aceMedia will implement a full content value chain which will enable content and knowledge creation, update, transmission, and manipulation & exploitation (through advance search and retrieval and intelligent content behaviour)

aceMedia's central concept: The ACE

the Autonomous Content Entity

♦ aceMedia's vision is materialized through the concept of the Autonomous Content Entity.
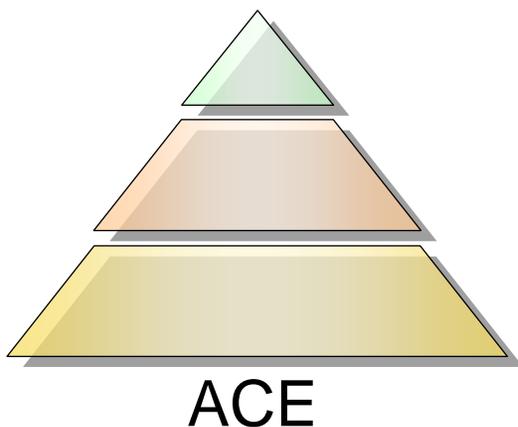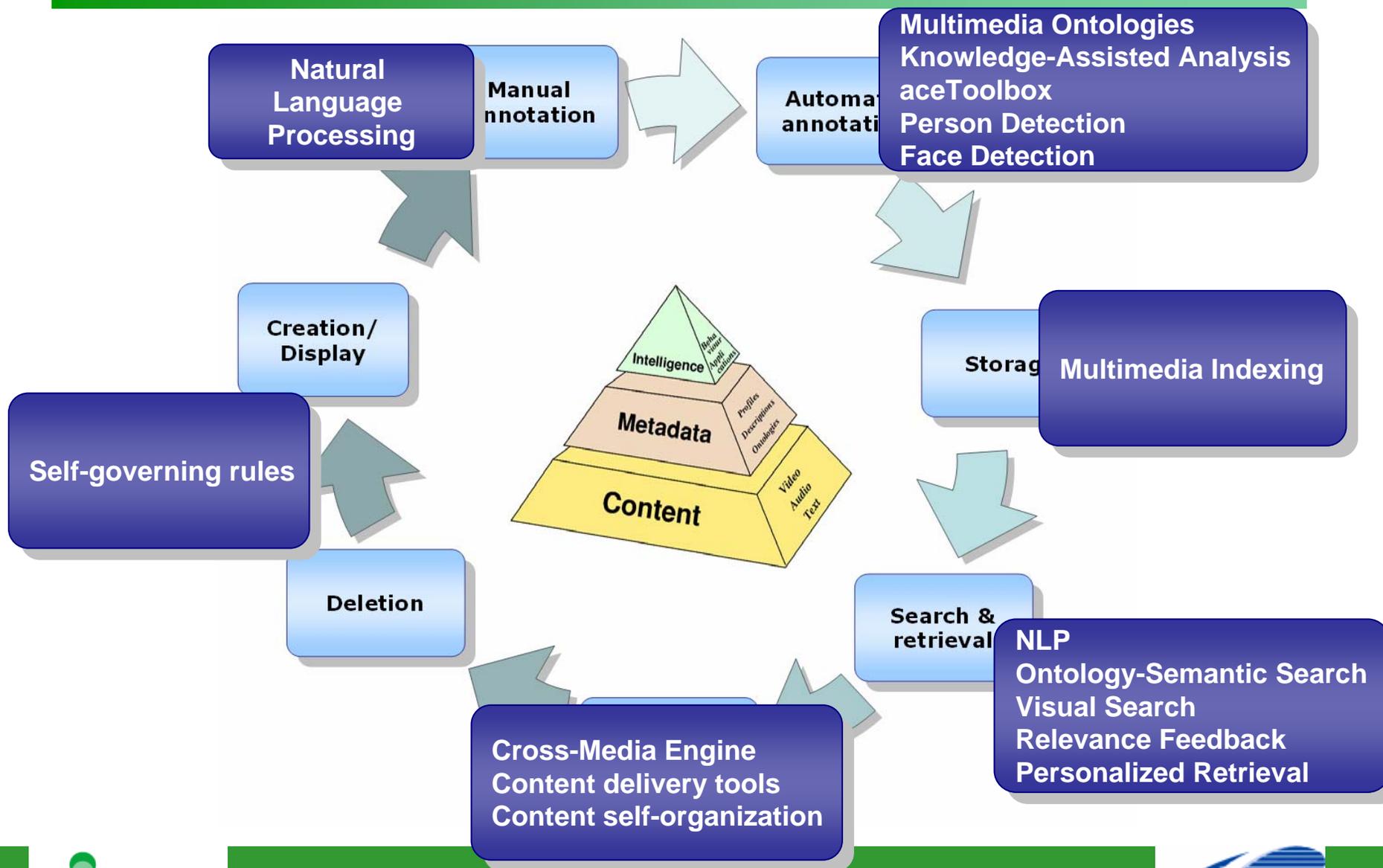
Intelligence Layer

Metadata Layer

Content Layer

ACE

Programmable layer, enabling the ACE to be self-sufficient, self-organizing, self-analysing

Knowledge-based Automatic Semantic analysis and annotation using ontologies for multimedia and Semantic Web technologies. Also scalable!

Scalable content for reuse in different devices, different situations and user needs.

ACE lifecycle

Natural Language Processing

Manual annotation

Automatic annotation

Multimedia Ontologies
Knowledge-Assisted Analysis
aceToolbox
Person Detection
Face Detection

Creation/ Display

Self-governing rules

Intelligence

Metadata

Content

Storage

Multimedia Indexing

Deletion

Search & retrieval

NLP
Ontology-Semantic Search
Visual Search
Relevance Feedback
Personalized Retrieval

Cross-Media Engine
Content delivery tools
Content self-organization

ACE update - typical annotation process

Empty

ACE

aceMedia content analysis

ACE

Manual Annotations

NLP processes manual annotations

If rich enough, then automatic selection of domain ontology

Visual Content Detector

Knowledge-Assisted Analysis using MM ontologies

Standing persons and faces detected. Learned faces recognized.

Person and Face detection and recognition

Content is classified: **indoor / outdoor natural / man-made**

Regions are labelled with concepts from the domain ontology

Multimedia Reasoning

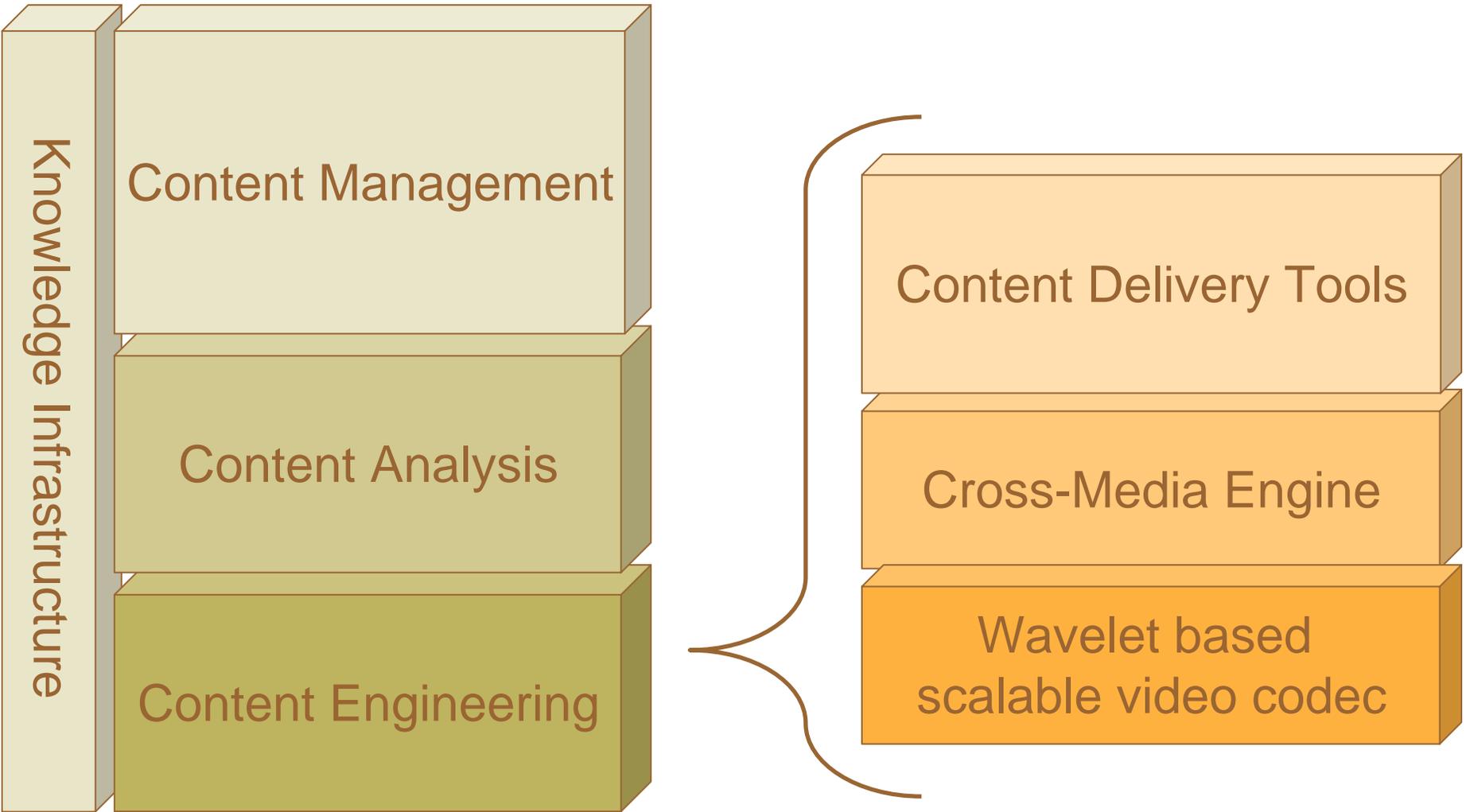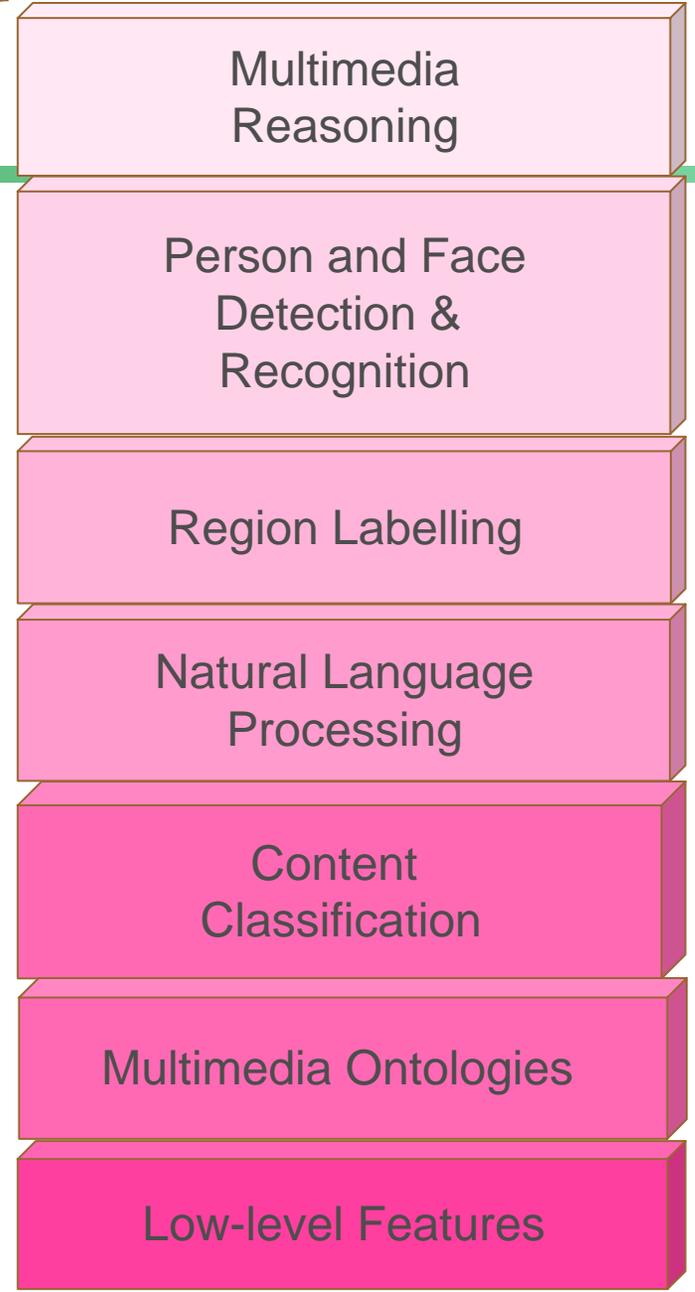Ambiguities removed. Regions merged. Final consistent semantic annotation

Manual Annotations

Automatic Semantic Annotations

aceMedia's structure

aceMedia structure

Knowledge Infrastructure

Content Management

Content Analysis

Content Engineering

Content Delivery Tools

Cross-Media Engine

Wavelet based scalable video codec

aceMedia structure

Knowledge Infrastructure

Content Management

Content Analysis

Content Engineering

Multimedia Reasoning

Person and Face Detection & Recognition

Region Labelling

Natural Language Processing

Content Classification

Multimedia Ontologies

Low-level Features

aceMedia structure

Knowledge Infrastructure

Content Management

Content Analysis

Content Engineering

Content Privacy Mgmt

Self-Organization

Personalized Browsing

Intelligent Search and Retrieval

aceMedia applications

aceMedia PC applications

Standalone

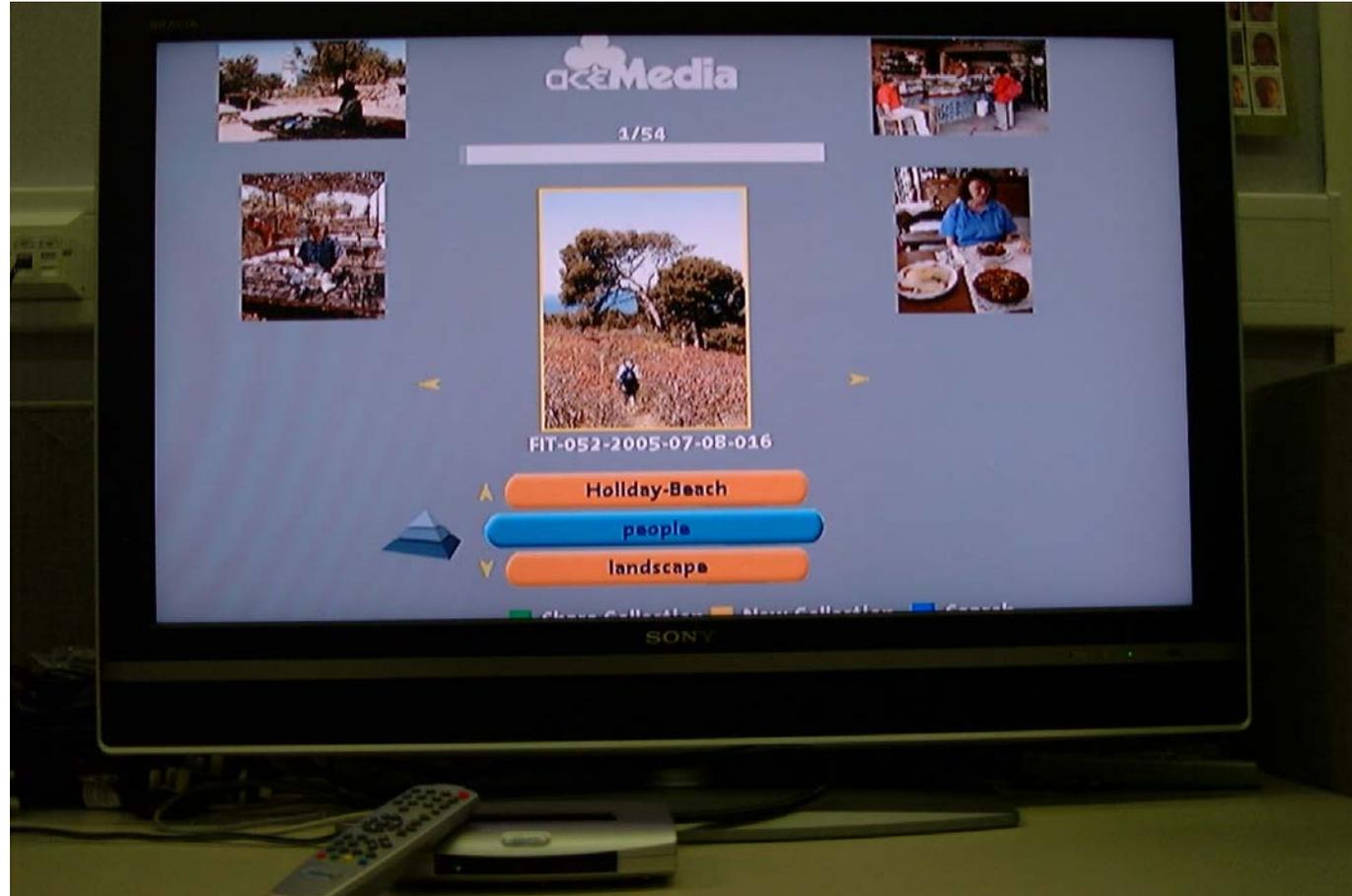**Web-based**
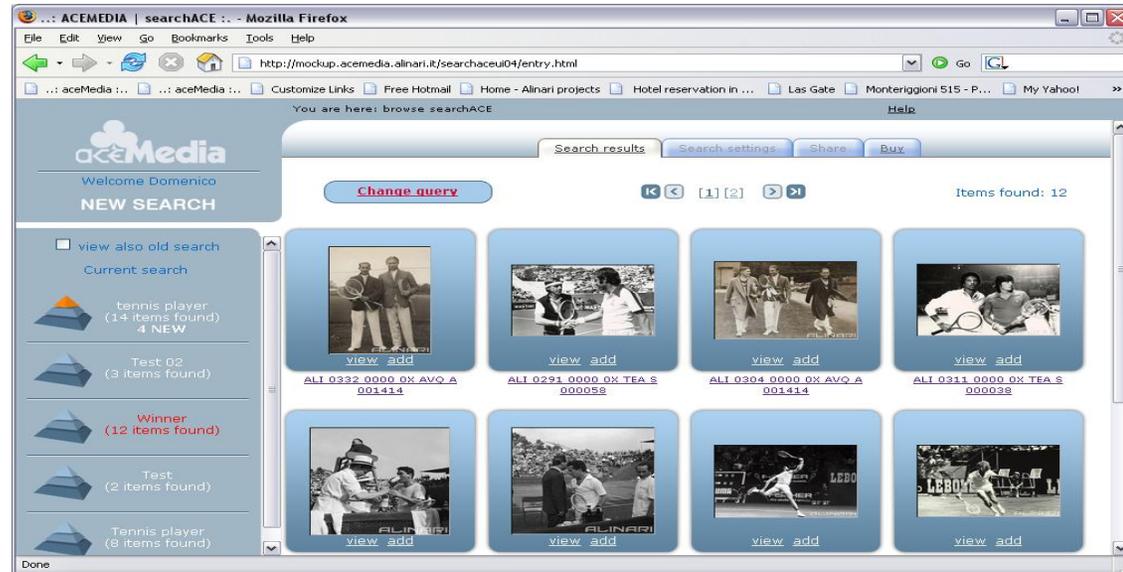
aceMedia applications (2)

aceMedia running on an IP set-top-box