SAVANT Final Workshop

SAVANT System
- Introduction and Overview -

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The SAVANT Project

- **IST Project co-funded by the EU**
  - 11 partners, 6 countries
  - April 2002 – November 2004
- **Goals**
  - Develop framework for interactive scalable rich media TV
  - Investigate synergies of broadcast and broadband IP networks

SAVANT Overview

- Motivation
- System Architecture
- Scalable Rich Media TV Services
- Broadcast-Broadband Network Cooperation
- Outlook to Next Talks

Motivation: Scalable TV Services

- Various types of portable and mobile multimedia-capable terminals available and widely used
  - Desire to use them to access TV services and additional content

TV

Tablet PC

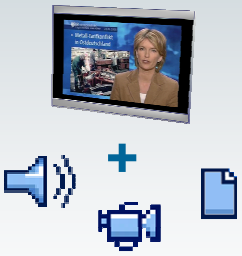
PDA

mobile phone

➔ Scalable services (metadata, content adaptation) required to support device heterogeneity

Motivation: Rich Media TV

- **Future TV programs offer more than just video**
  - Digital TV networks allow the transmission of arbitrary data
  - Digital terminal devices can process and render these
- **New benefits for the user**
  - Interactively request additional information (video streams, audio streams, HTML pages)
  - Improve accessibility for the handicapped (e.g., signer on demand)



➔ **Metadata (service descriptions) required to signal a rich media service**

Motivation: Broadcast and Broadband Co-operation

- **Enrich TV programs with supplementary AV content over broadband IP networks**

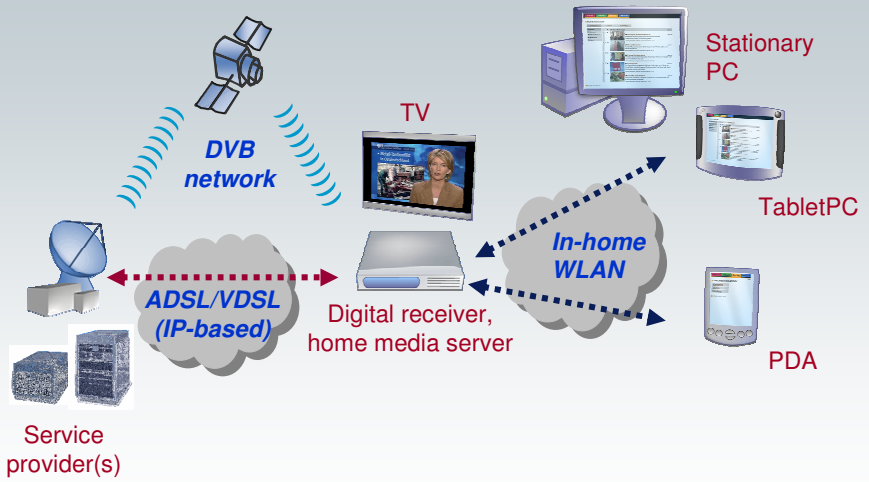
Live streaming over broadband IP: very peaky IP traffic, server overload

Personalized content over DVB: inefficient bandwidth use

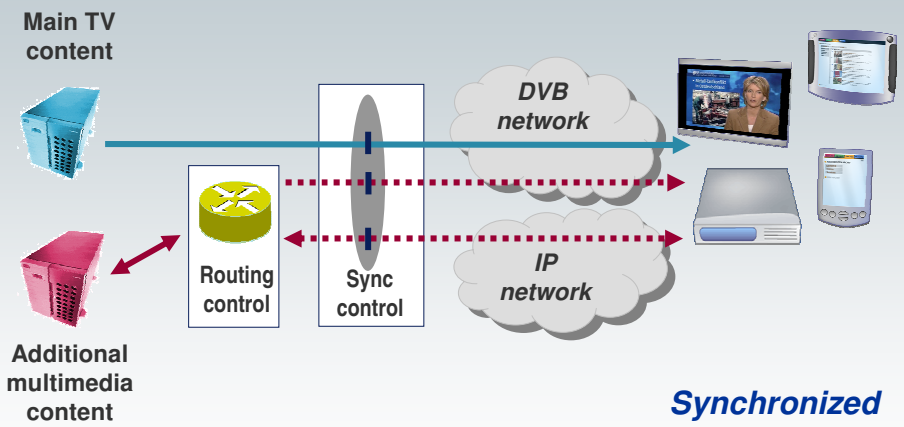
➔ **Use Smart routing to select the best-suited network**

➔ **Allow inter-network content synchronization**

System Architecture: Overview



System Architecture: Main Concepts



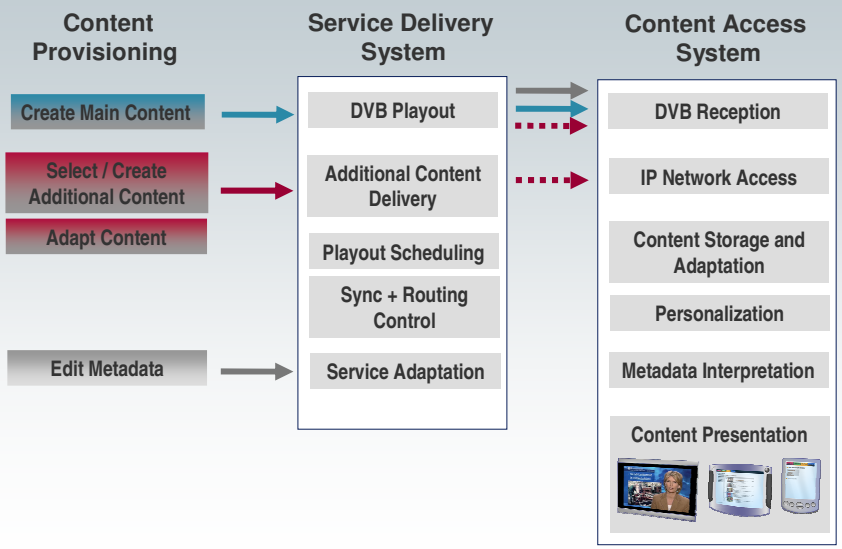
Scalable service

Smart routing

Synchronized delivery

Synchronized presentation, heterogeneous devices

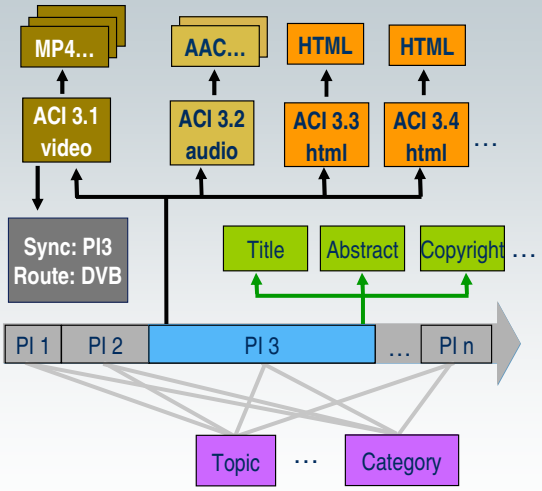
System Architecture: Components and Functions



Scalable Rich Media TV Service: Overview

- **Situation**
  - Users want additional information in TV services and access these using multimedia-capable devices in a personalized way
- **Challenge**
  - Provide a TV service which contains additional multimedia content
  - Support consumption by heterogeneous devices
- **SAVANT Solution**
  - Develop a system able to deliver and receive TV services enriched by additional multimedia content
  - Provide standard-conformant metadata to control delivery and presentation
  - Support device heterogeneity and personalized access by using a Home Media Server as media hub

Scalable Rich Media Service: Metadata Drive Delivery and Presentation



Media Items
representing the essences

Additional Content Items
associated with program items

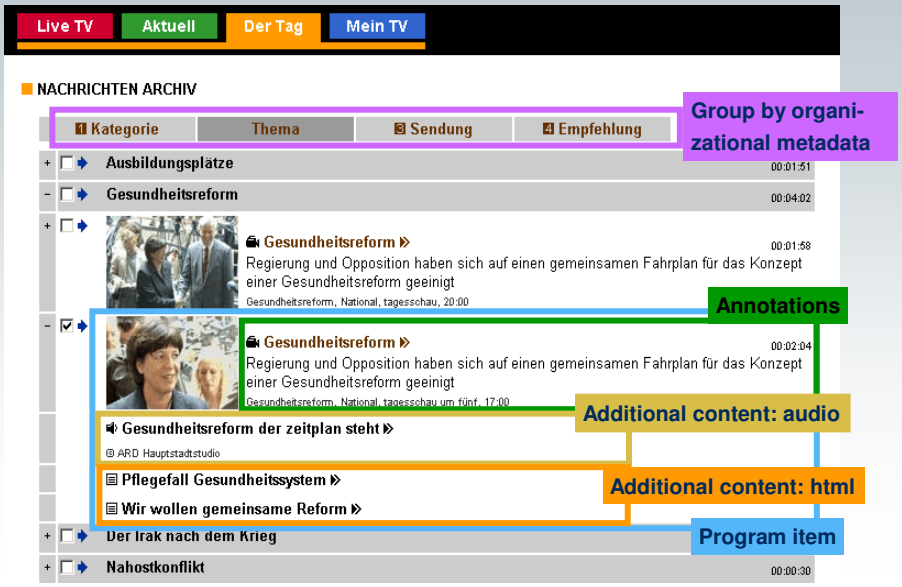
annotations
associated with program items

main MPEG2 content
- program timeline
- split into sequence of *program items*

organization metadata
structure and classify the program items

control data for delivery: synchronization, routing, etc.

Scalable Rich Media Service: Metadata presentation in the NewsManager UI



Scalable Rich Media TV Service: Content Access System

- **Home Media Server**
  - Built upon MHP middleware
  - Shows main MPEG-2 program on TV screen
  - Receives all service components via DVB or DSL
  - Gateway for additional content using standard web & video streaming components (with modifications)
  - Generates HTML-based navigation UI driven by the metadata

- **Client Devices (TabletPC, PDA, TV)**
  - Use off-the-shelf web browser and media player software to access the service
  - For display on TV, the Home Media Server is its own client

Broadcast + Broadband co-operation: Smart Routing

- **Situation**
  - Co-operating networks allow new hybrid content delivery models
- **Challenge**
  - Select best-suited delivery channel per media item
- **SAVANT Solution**
  - Make rule-based routing decision considering a number of factors
  - Propagate the decisions as metadata fragment updates through the whole chain

Broadcast + Broadband co-operation: Content synchronization

- **Situation**
  - Additional A/V content may be played out on a different network (IP) than the main content due to Smart Routing
  - Service provider may want to synchronize additional content with the main program‘s timeline (e.g., signer, additional camera angles)
- **Challenge**
  - Provide inter-network synchronization
- **SAVANT Solution**
  - Compensate fixed time delays at playout start in SDS
  - Compensate variable time delays in CAS during playout

Broadcast + Broadband co-operation: Synchronized content exapmple

Outlook
In-depth Talks on Selected SAVANT Aspects

- **The Perspective of Service Delivery**
  - Henk den Bok, NOB: *Broadcast and Broadband Synergy*
- **The Perspective of Metadata and Access Technology**
  - Patrick Wolf, Fraunhofer IPSI: *Foundations for Scalable Services*
- **The Perspective of Service Providers and Users**
  - Alexandra Pohl, RBB: *Interactive and Scalable Content*