TPEG-Project
Final Workshop

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1. About us
2. TPEG transmission chain
3. Message generation with GEWI-System
4. TPEG-Infrastructure by BMT
5. DAB-Transmission
6. Conclusions
Who is BMT?

Overview

Message generation

TPEG on air

Tests service in Bavaria

Conclusions

Bayerischer Rundfunk

50 %

Bayerische Landeszentrale für neue Medien

50 %

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BMT's activities

Development and service for:

- Digital Radio/Data-Services
- DVB-T / DVB-S
- Traffic telematics
- MHP Applications
- M-Commerce/mobilephone shopping
- Studio- und Broadcast technology

... wir bringen Sie zum Digitalen Rundfunk!
System overview I

Overview

Message generation

TPEG on air

Testservice in Bavaria

Conclusions

DAB transmission

DAB receiver

TPEG on air

TPEG on air

TPEG Binary

0101011001
0010101011
1011010101
TPEG Binary

0101011001
0010101011
1011010101
TPEG Binary

GEWI TIC

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TIC Software Architecture

Organization Unit 1

TIC Editor 1 • • • TIC Editor n

TCP/IP Socket

TIC Server

Receiving

Module 1 (TIC XML)

Converter (TIC)

Converter (Customized)

Module 2 (TIC XML)

Processing

TIC Info Service
TIC Report Service
TIC Sensor Service
TIC Map Service
TIC Statistic Service
TIC Quality Monitor Service
TIC System Message Service

Distributing

Module 1 (TIC XML)

Converter (TIC)

Converter (Customized)

Module 2 (TIC XML)

File SQL Server 2000 IIS Recovery Data (TIC XML) Registry TIC Data Wizard TIC Admin

SQL HTTP

Data

BMT © activities

on air

TPEG

Overview Message generation Tests service in Bavaria

Conclusions

BMT © activities
System overview II

TPEG on air - System

Overview

Message generation

Testservice in Bavaria

Conclusions

Serviceprovider A
TPEG ml-RTM

TPEG binary converter

Serviceprovider B
Service 1
TPEG-ml-RTM
Service 2
TPEG- ml-PTI

TPEG binary converter

Serviceprovider C
TPEG binary

TPEG binary converter

TPEG Servicemultiplexer

TPEG PTI / RTM Servicemultiplexer

TPEG – Multiplexer

DAB

Internet

...
Formats and Parameters

tpegML as data import format
TPEG binary for data broadcast
Various parameters for TPEG-Multiplexing
- TPEG-service component frame generation
- TPEG-service multiplex
- TPEG-transport multiplex

Transmission over DAB (TDC) / Internet / ...
Adaption layer delivers TPEG cycle in device
TPEG binary to tpegML decoder
End user application based on tpegML
Plugin-interface for applications
Transmission

- Stream generator plugins for various bearers
- Transmission over DIGITAL RADIO (DAB)
  - Transparent data channel - TDC stream mode / packet mode / X-PAD
  - Multi Media Data Server (MMDS)
  - DAB-Multiplexer
  - DAB-Transmitter
  - Test service is on air right now
- Transmission over Internet
  - Will be available shortly

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Live Test Broadcast in Bavaria

- Area: Bavaria
- DAB Channel 12 D
- packet mode service
- TPEG-RTM and SNI
- Startdate: 15.11.2003
- Stopdate: 15.12.2003
- Partners:
  - Message generation: GEWI
  - TPEG-Stream generation: BMT
  - DAB transmission capacity: BDR
- Feedback welcome!

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Conclusions

- Results of the TPEG-Project are a solid base
- BMT offers TPEG transmission infrastructure
- TPEG evaluation site shortly available at www.digitaltraffic.de
- Further interface specifications/guidelines could ensure compatibility of TPEG-products
- Need for independent TPEG-test and evaluation suite to ensure „TPEG-quality“
- BMT will continue TPEG-work in the TPEG-Forum Implementation Task Force (ITF)
www.bmt-online.de

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Thank you!

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tpegML as data exchange format:
- specified (DTD)
- can be mapped to TPEG-binary format
- verification of data-structure is possible
- xml is an industry standard technology
  - many tools available
  - well-known by IT-staff
\textbf{<tpegML/> to binary conversion}

- conversion is done on application level
- xml input is validated with the dtds
- rtmML application is implemented
- further applications will follow
- open interfaces should be specified - guidelines
- bandwidth related parameter:
  - number of used levels of encoding
... or why we don't broadcast tpegML:

- bandwidth has its price -> efficient binary format
- bearer-independent service and network information including linking
- synchronization and error recognition
- modular structure of stream
TPEG multiplex parameters

- TPEG-service component frame generation
  - application components per frame
  - framesize of service components
- TPEG-service multiplex
  - framesize of service frame (transport frame)
  - number of applications
  - frequency of service components
- TPEG-transport multiplex
  - frequency of stream directory
  - bandwidth-dependent multiplex for service providers