
TPEG

on air

TPEG-Project Final Workshop

Munich - 26 November 2003

Martin Dreher
Bayerische Medien Technik GmbH

Agenda



TPEG

on air



Overview

Message
generation

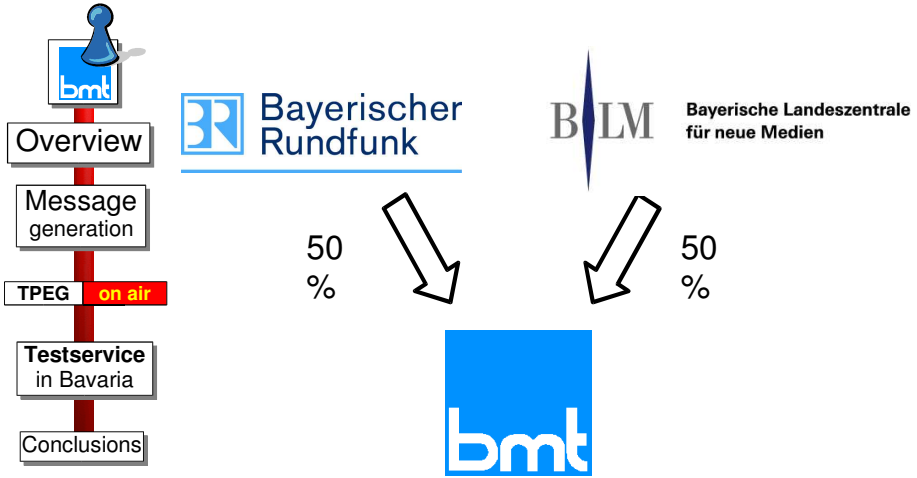
TPEG on air

Testservice
in Bavaria

Conclusions

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?



BMT's activities



Overview

Message
generation

TPEG **on air**

Testservice
in Bavaria

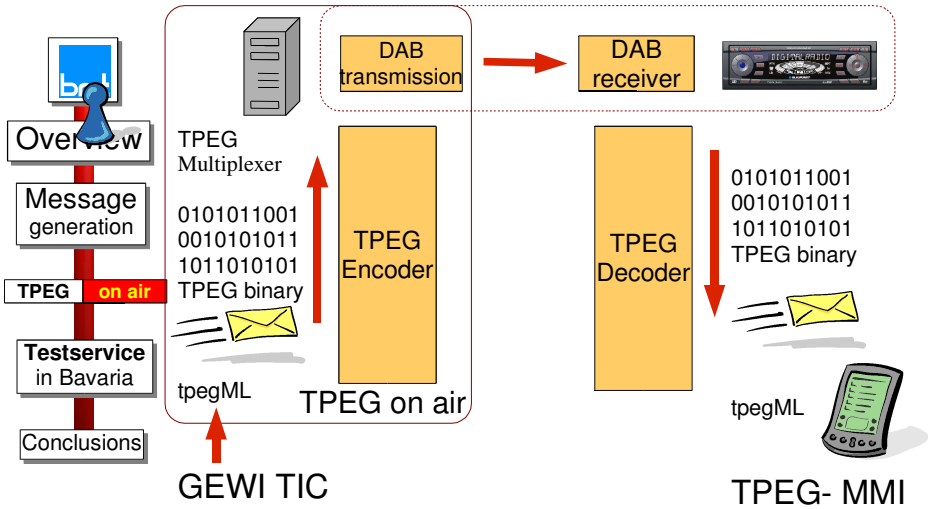
Conclusions

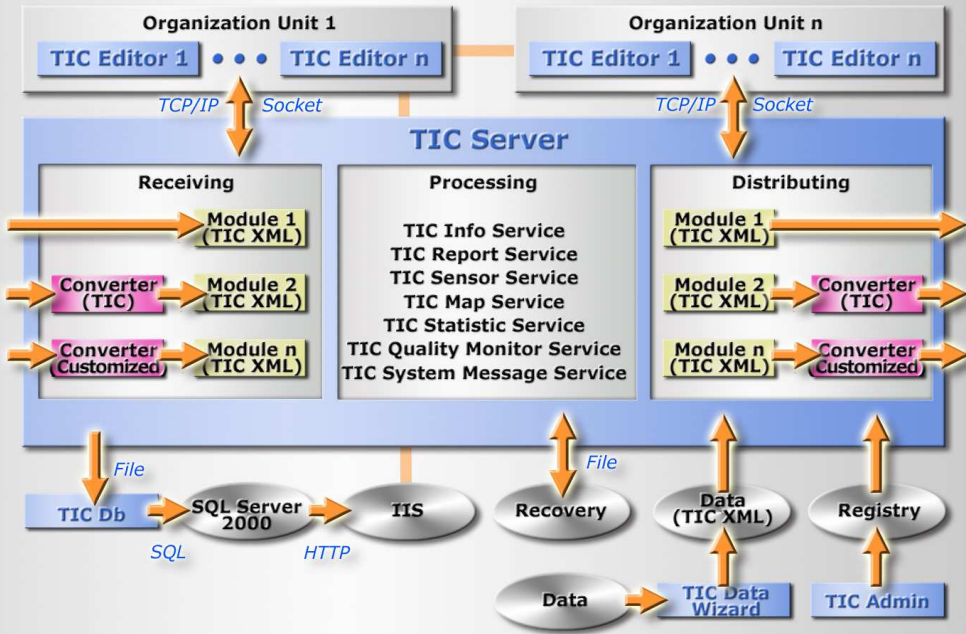
... wir bringen Sie zum Digitalen Rundfunk !

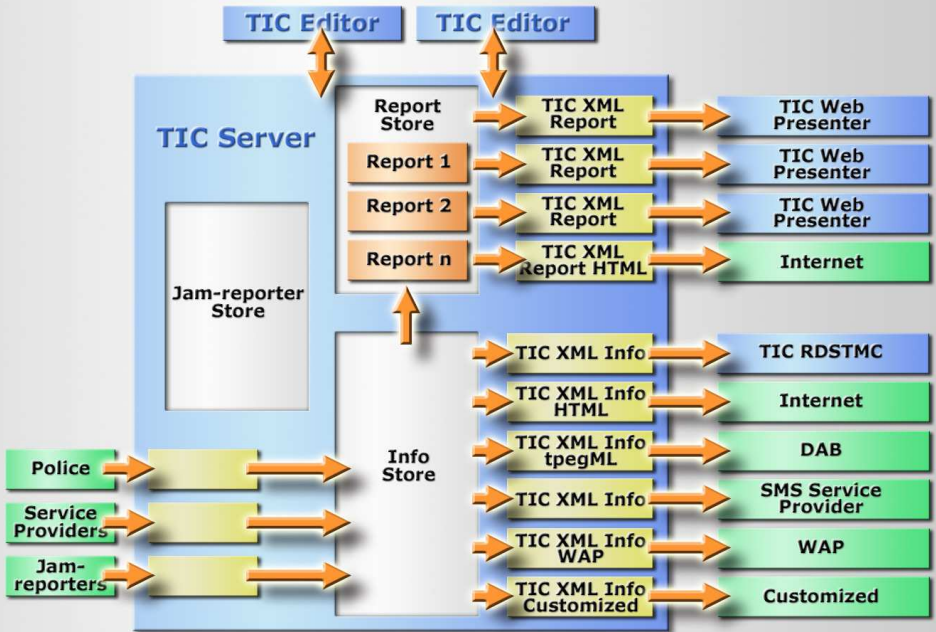
Development and service for:

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

System overview I



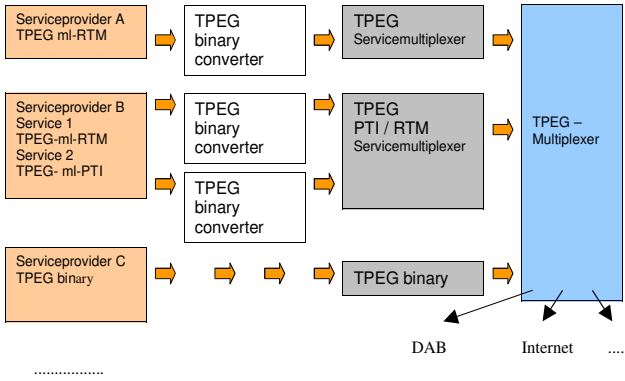




System overview II

TPEG on air - System

- Overview
- Message generation
- TPEG on air**
- Testservice in Bavaria
- Conclusions



Formats and Parameters



Overview

Message
generation

TPEG **on air**

Testservice
in Bavaria

Conclusions

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



Overview

Message
generation

TPEG **on air**

Testservice
in Bavaria

Conclusions

- 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

Live Test Broadcast in Bavaria



Overview

Message
generation

TPEG **on air**

Test service
in Bavaria

Conclusions



- 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!

Conclusions



Overview

Message
generation

TPEG **on air**

Testservice
in Bavaria

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)

For further information...



Overview

Message
generation

TPEG **on air**

Testservice
in Bavaria

Conclusions



www.bmt-online.de

Martin Dreher
Projektleiter Verkehrstelematik



Bayerische Medien Technik GmbH
Pfälzer-Wald-Str. 32
D-81539 München

Tel.: 0049 89 / 451 15- 132 Fax: - 199
Email: martin.dreher@bmt-online.de

Thank you !

<mpegML/>



Overview

Message
generation

TPEG **on air**

Testservice
in Bavaria

Conclusions

mpegML 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

<mpegML/> to binary conversion



Overview

Message
generation

TPEG **on air**

Testservice
in Bavaria

Conclusions

- 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

TPEG binary 0010100111011010



Overview

Message
generation

TPEG **on air**

Testservice
in Bavaria

Conclusions

... 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



Overview

Message
generation

TPEG **on air**

Testservice
in Bavaria

Conclusions

- ◆ 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**