Piloting an End-to-end Object-based Audio Broadcasting Chain

www.orpheus-audio.eu @ORPHEUS_AUDIO
TRADITIONAL BROADCASTING

1. The programme is made in the traditional way.

2. The programme is turned into a piece of linear media.

3. This is broadcast to everyone.

4. The same content is played back on all devices, resulting in compromises on some devices.

Design: BBC R&D
OBJECT BASED BROADCASTING

1. The programme is made in the traditional way.

2. The programme is turned into a collection of media objects along with some metadata to describe how it should be assembled. All of this data is broadcast to everyone.

3. The device inside the viewer’s home re-assembles the media objects according to the metadata.

4. The objects can be assembled differently (based on the original metadata). Optimising the experience depending on local factors relating to the device, environment and viewer.

Design: BBC R&D
Partners
research
companies
b com
Fraunhofer
IIS
ircam
Centre Pompidou
BR
IRT
TRINNOV AUDIO
MAGIX
BBC | R&D
EURESCOM
[^°] Elephantcandy
broadcasters

wb 02/2018
End-to-end chain

Creation
- Planning tools
- Non-linear story telling
- Interactivity

Production
- Capturing
- Editing and Mixing Hardware Software (DAW)
- Quality control

Representation & Archive
- Formats and interfaces
- Codecs

Content provision
- Hosting
- Efficient and economic distribution

Presentation
- Rendering
- Personalization
- Accessibility
- User interface
- Interactivity
- Quality of end user experience
EBU
OPERATING EUROVISION AND EURORADIO

TECH 3364

AUDIO DEFINITION MODEL

METADATA SPECIFICATION

Status: Version 1.0

Geneva
January 2014

professional production format

consumer delivery format

IMMERSED IN SOUND
object-based media enables . . .

Accessibility

Immersion

Personalisation

Interactivity
Accessibility

The commentary is not loud enough?
Or you just want to feel like being on the spot?

Object-based audio allows you to adjust foreground and background as you like it.

Football Match (BR)
object-based media enables . . .

Immersion

3D Sound is everywhere.
And everybody’s wearing headphones.

Object-based audio delivers
binaural sound
direct to your ears.
Making Radio a
3D experience.
The Art of Foley (BR)
object-based media enables . . .

Don’t have much time?
Want to be up-to-date?
Just want to focus on main things?

Object-based audio can deliver customized information.

Experience object-based audio (BR)
object-based media enables . . .

Look and listen around and make a choice yourself.

Object-based audio enables multi-layer and non-linear storytelling on the radio

The Mermaid’s Tears (BBC)
object-based media enables . . .

Look and listen around and make a choice yourself.

Object-based audio enables multi-layer and non-linear storytelling on the radio

The Mermaid’s Tears (BBC)
object-based demo productions

Foreground/background or prominence balance

Language selection

Interactive storytelling

Positioning of audio-objects

2 / 5.1 / 4 + 7+ 1 or binaural audio

Football Match (BR)

The Art of Foley (BR)

Experience object-based audio (BR)

The Mermaid’s Tears (BBC)

German Forest (FH IIS)
object-based demo productions

Channel bed: 5.1 or 7.1+4H

Transmitted objects: 1 to 3x4

Reproduced objects: 1 to 1x4

Data rate: 516 kbit/s for 7.1+4H

Chapter marks / POI / transcript . . .
User Experience

I want....

- immersive experience
  - "immersive“
    - >audio
      - to interact with the programme using my listening device

- context now
  - >>(meta)data
    - to go back to the start of the conversation / music
    - the BBC/BR to make more things that I enjoy
    - to hear the speech/music clearly in all environments

- interaction
  - >>usability
    - to find out more about this topic now.
    - my friend to listen to what I just heard and hear what he/she thinks about it
    - to listen to everything on/from a certain topic/person

- intelligibility
  - >>audio

- usability should be included

- context „more“
  - >>>(meta)data
    - to know who is speaking / ...what is playing
    - to know what they’re playing/ talking about when I join mid-way through

- Alternative language option / translation
  - to listen to everything on/from a certain topic/person

- to know who is speaking / ...what is playing

- to interact with the programme using my listening device

- to hear the speech/music clearly in all environments
I want an immersive audio experience now.

- Immersive experience

- Audio

- Interaction

- Usability

- Information

- Context now

- Context "more"

- Usability should be included

To hear the speech/music clearly in all environments.

Alternative language option / translation to know who is speaking / what is playing.

The BBC/BR to make more things that I enjoy.

My friend to listen to what I just heard to know what they're playing/talking about when I join mid-way through.

To find out more about this topic now.

To listen to everything on/from a certain topic/person.

To interact with the programme using my listening device.

To go back to the start of the conversation/music.
We run public end user tests in this open innovation lab in Nürnberg from Dec. 1 2017 until Feb. 28 2018.
User Experience
The setting @ JOSEPHS

SITUATION
DEVICE
FORMAT
SIMULATION

AUDIO
USABILITY
INFORMATION
EXPERIENCE

binaural
environmental
noise playback

surround
Quality of end user experience......
The setting @ JOSEPHS
what we have done . . .

Creation -> Production

ADM authoring

Representation & Archive

pre-processing

Content provision

MPEG-H encoding

Presentation

APP
... can now become

Object-Based Broadcasting Development Platform

Creation ➔ Production ➔ Representation & Archive ➔ Content provision ➔ Presentation

BROADCASTER

MAGIX
Sequola ADM
ADM authoring

Pre-processing

Fraunhofer IIS
MPEG-H
encoding

APP
Experience yourself!
Come and try the
app here in the lobby

Find us at
www.orpheus-audio.eu

Twitter:
ORPHEUS_AUDIO
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