Why the Future of Media Distribution May be Object Based.

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Co funded by the European Commission
The usual debate

Distribution  Broadcast vs OTT
Schedule      Live vs on demand
Commercial   PSB vs subscription
Regulation   Heavy vs very light
The usual debate

Distribution: Broadcast vs OTT
Schedule: Live vs on demand
Commercial: PSB vs subscription
Regulation: Heavy vs very light

CREATIVE: Normal vs personalised TV
1. Make programme using media objects
   - The programme is made in the traditional way.

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

3. Broadcast...
   - This is broadcast to everyone.

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

traditional production and delivery
Make programme, using media objects

The programme is made in the traditional way.

Add metadata to the media objects

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.

object based production and delivery
Make programme, using media objects

The programme is made in the traditional way.

Add metadata to the media objects

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.

Deliver the objects and assemble

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

object based production and delivery
Make programme, using media objects

1

The programme is made in the traditional way.

Add metadata to the media objects

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.

Deliver the objects and assemble

3

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

Programme may appear differently on different devices

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.

object based production and delivery
The same for everyone or personalised
Object based broadcasting – benefits

Responsive design: adapting to the capabilities of the client technology
- How many screens, screen size etc.
- Audio rendering
- Graphics size
- Stream bandwidth

User preferences: responding to expressed preferences of the viewer.
- Audio selection (alternative commentary)
- Novice : Fan : Expert settings
- Replays on the main screen

Augmenting: adding to the base presentation by selecting auxiliary content
- Text (scripts, subtitling)
- Graphics
- Replays
- PiPs
- Virtual graphics

Interacting: allowing opportunities for viewer interaction with services and with each other
- Gaming/gambling
- Text chat
- Audio chat
- Video chat
- Impulse purchasing
BT R&I and Object Based Broadcasting.

Opportunity
• Customisable TV programming
• Make BTTV and BT Sport more distinctive.

Vehicle
• Funded under an EU Collaborative called 2-IMMERSE (see partner list opposite)

Purpose
• Developing compelling programming examples
• Develop useful software components

Challenges
• Make sure it builds on, and does not obscure or undermine, what’s good about TV
• Robust technical delivery
• Production tools to facilitate new work flows
The trial
- In home trials, in ~50 households; duos.
- An evaluation of the user experience
- Used market research agency: Acumen Fieldwork to recruit ~100 users who already watch MotoGP
- Qualitative and quantitative feedback via in person questionnaire
- User interactions logged through Google analytics

Overall experience
**Immersion**
- Absorption
- How quickly did time pass
- Would you recommend?

**Features**
- Spontaneous recall
- Utility and ease of use

The experience
- An as-live demo based on the 2017 UK MotoGP race from Silverstone
- Experience over multiple screens
- Presented via a home made STB (a ‘NUC’) with supplied Android tablets and mobile phones.
MotoGP at home demo video
https://www.youtube.com/watch?v=FZIhrnGzC4I
Evaluation method and summary

• Overall experience (Quant.)
  • Engagement
  • Immersion

• Spontaneous feature recall

• Feature evaluation (Quant.)
  • Utility
  • Ease of use

• Feature evaluation (Qual. Comments)
  • Coded to identify recurring themes
  • Quotes selected to represent most common themes
Evaluation method and summary

- Overall experience (Quant.)
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Bouquets

…it gives each viewer an interactive experience specific to her needs

…it made me feel involved while viewing

...[you have] more info more engaging can do it with friends.

...[I] just that I felt it made a big improvement to my interest in the race

...it’s more exciting than ..watching it on TV ... I felt more involved.

...it keeps you more entertained and makes it better to watch

Brickbats

It’s alright. Worth it for the events. Wouldn't spend money on it.

Confusing but maybe once you’ve played around you’d like it more.

Hinders actually watching the race but potentially with tweaks to how much control there is it would be an amazing addition to sport. The 360 Camera was spot on!
Evaluation method and summary

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  - Engagement
  - Immersion

- Spontaneous feature recall

- Feature evaluation (Quant.)
  - Utility
  - Ease of use

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### Did extra content help you to follow the race?

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes – it made it easier</td>
<td>44</td>
</tr>
<tr>
<td>No – it made it harder</td>
<td>25</td>
</tr>
</tbody>
</table>

### What made it better?

<table>
<thead>
<tr>
<th>Feature</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>More Interaction</td>
<td>15</td>
</tr>
<tr>
<td>Camera Angles</td>
<td>14</td>
</tr>
<tr>
<td>Provision of information</td>
<td>13</td>
</tr>
<tr>
<td>Focus on favourite riders</td>
<td>10</td>
</tr>
<tr>
<td>Screen Control</td>
<td>7</td>
</tr>
<tr>
<td>More interesting</td>
<td>5</td>
</tr>
<tr>
<td>Playbacks</td>
<td>5</td>
</tr>
<tr>
<td>Better - general mention</td>
<td>4</td>
</tr>
<tr>
<td>Unique Experience</td>
<td>3</td>
</tr>
<tr>
<td>Leader Board</td>
<td>2</td>
</tr>
</tbody>
</table>

### What made it worse?

<table>
<thead>
<tr>
<th>Reason</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missed the race (distraction)</td>
<td>16</td>
</tr>
<tr>
<td>Too much info - confusing</td>
<td>10</td>
</tr>
<tr>
<td>Wouldn’t work /crashed</td>
<td>5</td>
</tr>
<tr>
<td>Didn’t like it</td>
<td>2</td>
</tr>
<tr>
<td>Normal viewing is better</td>
<td>2</td>
</tr>
<tr>
<td>Too technical</td>
<td>1</td>
</tr>
<tr>
<td>Difficult Set-Up</td>
<td>1</td>
</tr>
<tr>
<td>Felt Different</td>
<td>1</td>
</tr>
<tr>
<td>Couldn’t Pause</td>
<td>1</td>
</tr>
</tbody>
</table>
MotoGP evaluation - overall experience responses

GE7. Based on this experience, would you recommend watching MotoGP in this way to other people. (1, I would advise not to watch it : 10, I would strongly encourage people to watch it.)


An enhanced experience but not for everyone’
‘don’t expect to watch <MotoGP> the same again’.

I didn’t expect the time to go as quickly as it did, I think because it kept me interested and the fact you’re involved, I found the time went quickly.
MotoGP evaluation - feature feedback

Unprompted feature recall (top 3 per respondent)

- Bike cams the most commonly recalled feature
- Audio controls (commentary and ambient 2nd)

“A lot better. I think the main thing is the camera views and the leaderboard.”
MotoGP evaluation - feature feedback

Overall – feature feedback scores are very positive.

TV Graphics – we did not know the TV sizes of the viewers. It’s possible the defaults was always “best” in which case the choice to change graphics size would not improve the experience.

Experience Level – most of our viewers were experts. They may not have appreciated the option to dumb the content down.
Summary

An evaluation of a multi screen object based experience based on the 2017 UK MotoGP race at Silverstone has been completed with close to 100 viewers.

Results are encouraging.

- 64% of triallists reported that the object based version ‘helped me to follow the race better’.
- Highest spontaneous feature recall was for bike cams (with audio controls second)
- Triallists were strong advocates of the experience:
  - “Would you recommend the multi screen experience to others?” (10 Strongly encourage - 1. Advise not to)
    - Mean 7.21
    - Median 8

Detractors identified ‘distraction’ as a key issue but accepted that this may be due to the novelty of the experience and needing to learn the controls and features.

Representative phrases of common sentiments included:

- “Increased engagement”
- “Made me feel more involved”
- “More exciting than watching it on TV”
- “Big improvement to my interest in the race”
- “More entertained”
- “Better to watch”

Object based broadcasting: helping viewers get to the heart of their sport.
The usual debate

Distribution  Broadcast vs OTT
Schedule  Live vs on demand
Commercial  PSB vs subscription
Regulation  Heavy vs very light

CREATIVE  Normal vs personalised TV
The End

Full results of the evaluations can be obtained from: doug.williams@bt.com

More technical details about the platform can be obtained from: ian.c.kegel@bt.com

For more information about the design of the experience contact: andrew.p.gower@bt.com