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2IMMERSE

D4.5 MotoGP Trial Evaluation Results

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Abstract

This document describes the evaluation of a multi-screen MotoGP experience designed to be watched at home. The prototype is based on the UK round of the 2017 MotoGP championship that took place at Silverstone race circuit. The content assets used to create the 'as live' experience were provided by Dorna Sports and are used under license by the project.

The 2-hour experience was evaluated by MotoGP fans in their homes using a small dedicated computer to act as the set top box that accessed a cloud based service based on a constellation of micro-services.

Ninety three user responses have been assessed through quantitative assessment of the experience accompanied by qualitative responses elicited through a guided interview procedure. These responses were also compared with log based data collated using google analytics.

Users' impression of the overall experience and their assessment of particular features in the experience have been evaluated.

We were encouraged by the responses.

A significant majority (about 70%) of the responses indicated a preference for the multi-screen presentation over the normal broadcast presentation.

There were many reasons cited as to why the multi-screen version was better but features that were repeatedly mentioned 'more interaction', 'additional camera views' and 'more information'.

Encouragingly, user feedback suggests that the multi-screen experiences that support personalisation also supports the goal of the commercial stakeholder for this work BT Sport who seek to develop TV services that enable users to "get to the heart of Sport". This brand goal is hard to measure but representative quotes such as:

- …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

appear consistent with the brand goal of helping viewers "get to the heart of sport".

Tentatively we conclude that the multi-screen experience developed here would be enjoyed and recommended by a significant majority of our target audience (viewers of MotoGP on TV). Analysis of the annotated responses suggest that the new features enabled in this multi-screen experience are consistent with the goal of BT Sport to create services that allow users to "get to the heart of sport".

Target audience

Anyone interested in building or learning about new multi-screen experiences.

Disclaimer

Impressum

Full project title: 2-IMMERSE
Title of the workpackage: WP4
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Editor: Doug Williams, BT
Workpackage Leader: Doug Williams, BT
Project Co-ordinator: Matt Scarth, BBC
Project Leader: Doug Williams, BT
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Executive Summary

This document describes the evaluation of a multi-screen MotoGP experience designed to be watched at home. The prototype is based on the UK round of the 2017 MotoGP championship that took place at Silverstone race circuit. The content assets used to create the 'as live' experience were provided by Dorna Sports and are used under license by the project.

The prototype service builds on the broadcast experience of watching MotoGP but delivers an experience to additional screens (tablets and phones) through which viewers can access different levels of personalization and different forms of presentation of the video data and graphics on both their personal device and the shared TV screen.

The prototype service uses the same base micro services infrastructure that was used to deliver the first 2-IMMERSE trial.

We sought to understand whether the multi-screen experience was deemed attractive by our triallists who were MotoGP fans. We assessed:

1. Users' responses to the overall experience
2. Whether users would recommend the experience to others
3. Users' responses to elements that have been enhanced for MotoGP such as:
    a. The joining experience
    b. The robustness of the system
    c. The overall design aesthetic of the experience so it is comparable with "normal TV"
    d. The ability to personalise the experience
    e. The utility of responsive design principles which allowed the system to adapt graphics layout to best suit the size of TV screen being used
    f. The utility of the 360 video as an additional video stream option
4. More generic insights that should be valuable for subsequent prototypes being developed in 2-IMMERSE.

The prototype MotoGP at home service became available in November 2017 and the evaluation took place between November 2017 and January 2018. The evaluation of the MotoGP At Home experience itself was carried out through household trials using the fully developed prototype. Overall we received assessments of the experience from 93 users.

Evaluations were based on questionnaires, qualitative semi-structured interviews with triallists and on analytics of measured use of the application recorded through instrumentation of the service.

The results are encouraging.

Triallists were strong advocates of the experience. In response to the question:

- "Would you recommend the multi-screen experience to others?" (Where 10 was "Strongly encourage" - 1 was "Advise not to"
    - Mode value of the responses was 10
    - Mean value of the responses was 7.21
    - Median value of the responses was 8.21
- 64% of triallists reported that the object based version 'helped me to follow the race better'.
- The highest spontaneous feature recall was for bike cams (with audio controls second)

The results appear to vindicate the strongly design-led development process and to suggest that our critical user base (MotoGP fans) would enjoy and advocate the multi-screen experience.

Encouragingly, user feedback suggests that the multi-screen experiences that support personalisation also supports the goal of the commercial stakeholder for this work BT Sport who seek to develop TV services that enable users to "get to the heart of Sport". This brand goal is hard to measure but representative quotes such as:

- *…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*

appear consistent with the brand goal of helping viewers "get to the heart of sport".

List of Authors

Doug Williams – BT

Maxine Glancy – BBC

Andy Gower - BT

Ian Kegel – BT

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1 Introduction

This document describes the evaluation of trial of The MotoGP at Home experience. This introduction explains the structure of this document.

Section 2 “Context” provides a brief description of the context within which this work takes place. There is a specific focus on how this work is positioned with respect to the wider 2-IMMERSE project. This includes a consideration of what previous trials have achieved and what we have learned from them.

Section 3 provides a brief explanation of the nature of the experience that is being evaluated, a much more complete description of experience and a video are available in other project deliverables, for example D4.4 “Prototype Service Descriptions Second Update” presents a thorough description of experience and D5.2 is a short video illustrating the experience as evaluated.

The goals for this work are describe in section 4 in which a number of evaluation objectives are listed.

Section 5 “Method Used for Evaluation” describes the form the trial takes, and provides a rationale for that trial design, explaining why we felt this trial design was a good method to achieve the objectives laid out in section 2.

Section 6 “Results” presents the findings from the trial and section 7 “Conclusions” provides summary findings together with recommendations for future work.

2 Context

As a reminder 2-IMMERSE is developing four prototype services. This deliverable describes the evaluation of the MotoGP at Home experience which is the second use case to be realised using the 2-IMMERSE platform.

Broadly, our goals are to have triallist users of our MotoGP at home service prototype to report a very positive experience. We also seek the same kind of positive affirming response from broadcasters and rights holders. Ideally we hope that such stakeholders will be so enthused that they seek to work to make such capabilities a part of alive service offering; achieving this is a long term goal.

2.1 Description of the MotoGP at Home Experience

Figure 1 provides a short pen picture of the MotoGP at home service innovation prototype. It is brief but remains accurate. The fundamentals of this concept have changed little through the project, though of course the specific details of the experience have changed or been better defined. The story of how the MotoGP prototype service use case was developed is reported in deliverable D3.3 'User Interaction Design: the development of generic components & features to inform MotoGP Service Trials, Production Tools, and Onboarding'. A more complete description of the service innovation prototype that was used in this evaluation is described in D4.4 'Prototype Service Descriptions – Second Update'. A description that, in terms of levels of detail, sits somewhere between that offered in D4.4, D3.3 and that in Figure 1 is available in section 3.

Watching MotoGP at Home

This service innovation will provide a viewer with a personalised experience that can be controlled to suit their interests and level of experience in the sport. It video and telemetry data to be displayed on a large screen TV and on smaller personal companion screen devices. The 'User Trials' will take place in a series of 'as live' broadcasts in multiple households and lab environments. Research insights will be captured from device/service instrumentation and qualitative questionnaires and interviews with triallists. A 'Production Trial' will be undertaken on site at Silverstone during the live race where the production tools will be tested. We will showcase the work in demos after the trials at selected industry and academic conferences and events.

The trial will focus on the Octo Great Britain MotoGP race held as Silverstone in late August 2017.

Owner: Andy Gower (BT) **Rights Originator**: Dorna Motor Sports

Figure 1 Short pen picture of the MotoGP service innovation prototype.

The MotoGP at Home experience is a prototype multi-screen TV service based on watching a filmed MotoGP race from Silverstone race circuit in the UK from September 2017.

The concept from the prototype service emerged during the set-up of the project and the details of the design and the capabilities it includes have been iteratively developed over the 22 months to the start of the trials which took place in November and December of 2017.

2.2 Key Trial Questions

The questions addressed by the trial include those posed by our broadcast partner, BT Sport. These questions are addressed through this evaluation of this as live experience. The trails enables us to:

- Evaluate users' responses to the overall experience
- Evaluate whether users would recommend the experience to others
- Evaluate users' responses to the new features listed above.
- Provide more generic insights that should be valuable for subsequent prototypes being developed in 2-IMMERSE.

The four multi-screen service prototypes use the valuable and complementary content forms of live theatre and sport. 'Theatre at Home' and 'Theatre in Schools', describe experiences based on filmed performances of Shakespearian productions produced by John Wyver, who works for project partner Illuminations, these are designed for audiences at home and in schools. This 'MotoGP at home' service prototype creates personalised sports-related experiences using coverage of the MotoGP developed by Dorna Sports and distributed in the UK by BT. The Football use-case aims to demonstrate the end-to-end production chain for live delivery of productions based on the object based delivery approach developed through 2-IMMERSE. The football use case will be based the 2018 Emirates FA Cup Final (the oldest and best known football knockout cup in the world) for which both BT and the BBC (both project partners in 2-IMMERSE) have distribution rights.

The four service prototypes are being evaluated during the 3-year project lifetime as can be seen from Figure 2.

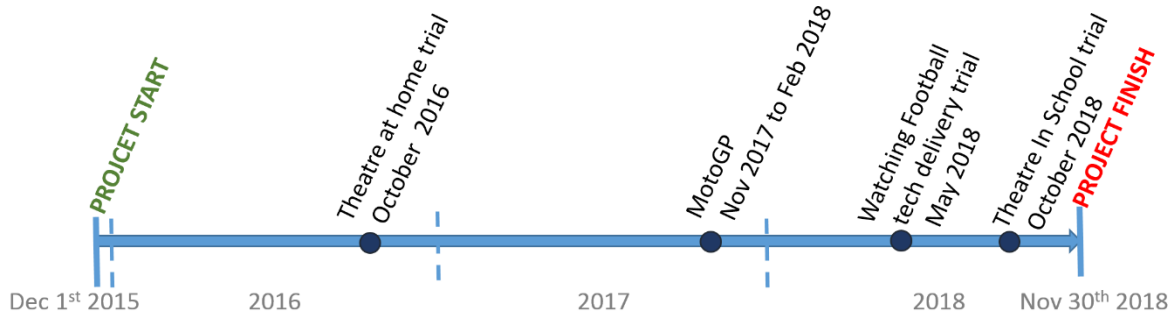


Figure 2 Timeline for the execution of the trials of the service innovation prototypes being developed in 2-IMMERSE

A description of the Theatre At Home Experience, which may be useful because many findings from that work have influenced the work done here, can be found in D4.3 'Prototype Services Descriptions - first update' and the evaluation report that yielded some of the challenges that are addressed within this work is D4.2 'Theatre trial evaluation results'.

2-IMMERSE seeks to define and demonstrate a scalable robust extensible and deployable micro-service platform that will support multi-screen entertainment experiences. The platform is based on a constellation of cloud based micro-services and seeks to use available standards and specifications.

The first use case (Theatre At Home) enabled us to define a set of core micro services that constitute the 2-IMMERSE platform and to define APIs that allow them to work together. These core APIs and micro service components are being re-used, and improved in this MotoGP use case.

Following the Theatre At Home evaluation, in order to help the project move towards its goal of developing a scalable, robust, extensible and deployable micro service that supports compelling experiences we have adopted some changes in process that were designed to address shortcomings of the approach identified in the Theatre At Home use case. Some of these are concerned with developing better usability and improving the aesthetics. Specifically we used a more design-led development process that included a more rigorous quality assurance test schedule during the development cycles.

In Table 1 we list a number of observations and findings from the Theatre At Home evaluation together with the response we adopted in this trial.

	Observation/finding from the Theatre At Home Trial	**Response in this trial**
1.	Theatre ritual was important to the participants (i.e., timing of features, notifications, interval, material available and layout –adopting the same order as cast list, and theatre programme-style layout).	There is no evidence we can find for MotoGP of rituals that make sense to repeat. So whilst this was an important line of thinking for theatre, we have not found parallel for MotoGP.
2.	The producer's view that the play should be on the shared TV screen and uncluttered was echoed by the participants (informing the balance of curation across the value chain).	We again centre the experience design on received wisdom from current production approaches to the presentation of track racing. We seek to use object based broadcasting approaches to recreate enhance and augment that form of presentation.
3.	Sharing the experience through video chat was a big hit with participants (as was texting, but the former was a bigger risk a priori and harder work to integrate).	The focus on sharing was a key part of the 'ritual' of theatre going. This feature could be enabled for MotoGP which is also better enjoyed in company, but in this case we choose to focus on other features.
4.	Choice is important when it comes to which feature is where (i.e., shared TV screen, companion screen) and for how long. A desire for adaptable and responsive options, to reflect the users' preferences and requirements, arose spontaneously throughout the trial, but based on a core experience defined by producers as a default.	We knew that the Theatre At Home trial offered limited forms of personalization and layout control. In MotoGP we provide the ability for users to select (or not select) multiple additional camera feeds which can appear on the main TV and on the personal companion screens as well as access data on sector etc. In addition we have also enabled responsive design features that allow the size of graphics to be changed – as a default to respond to the size of the main TV screen.
5.	Some user experience insights for multi-screen layout preferences emerged (confirming earlier studies – attention, distraction, notification, peer to peer vs broadcast messaging on tablet vs TV): - the companion was the place for referencing and controlling; - the shared TV was for shared features of primary interest –mainly the play (video-window), notifications, and socializing during the intervals; - the presence of other features such as the script and social media was negotiated.	We are keeping these insights in mind. The companion screen will remain predominantly a surface for control and reference and the TV will be used primarily for corralling the joint experience shared by viewers watching together – for example individual preferences of favourite riders can be selected as picture in picture selection on the main TV – a view that everyone will see, thus bringing experiences that may otherwise diverge, together. There will remain negotiation between viewers about some aspects of the layout on the main screen (both users can control independently the size and style of the leader-board for example. In this trial, by supporting more than one companion screen we also give each user

		autonomy over the layout on their companion screen.
6.	Participants wanted features within the experience to offer something beyond what they could use/access otherwise –e.g., 3rd party social media, content archives (e.g., IMDB, Wikipedia). The availability of a synchronised script, and a 'curated' selection of content, and the ability to socialise while watching live theatre was unique.	Access to real time timing data and the ability to select on board camera feeds from favourite riders are examples of features that are otherwise not available as a multi-screen synchronised experience (they are available in the app only experience from Dorna Sports)
7.	Participants did not consider Theatre at Home the same as going to the theatre. Instead it offered something different (a hybrid), that they had not experienced before, and about which they were broadly positive. They saw great potential in the concept, not only for theatre but also for other genres and formats; and as a means to reach-out to underserved – and potentially new - audiences.	The treatment we give for the MotoGP experience is designed to appeal to a broad range of viewers interested in MotoGP. They may consider it a hybrid between the MotoGP App and watching MotoGP on TV; we don't really mind how they perceive it; knowing that they like it is what matters and it is this that will be assessed.

Table 1 Listing a number of aesthetic, design and usability issues that were identified in the evaluation of Theatre At Home together with the response to those actions evident in this evaluation of MotoGP at home use case.

3 The Experience

The prototype service allows people within a single household to share the experience of watching a MotoGP race together. Figure 3 is a schematic showing two people one using a tablet and one using mobile phone as companion screen devices.

The race programme, shown on the shared TV, is a linear HD production that is segmented into three main sections which we call chapters which align to pre-race, race and post-race activities. These chapters are edited seamlessly together on the TV as a single programme. We call the pre-race chapter 'Inside MotoGP', the race chapter 'Watch Live', which shows the race and the post-race chapter which we call 'Race Review'. During each of these chapters, additional content, designed to enhance the experience of watching that part of the TV show, becomes available on the companion devices. Each Chapter has its own layout and specific modes of interaction.

In the current configuration, the set-top box is an Intel NUC (new unit of computing), which is a small form factor Intel based computer. A NUC does not have a keyboard or mouse. It connects to the TV using an HDMI cable and the Internet using either an Ethernet cable (connected to a local router) or via WiFi (to a local router). If connected via Ethernet cable the NUC also acts as a WiFi hotspot to which the companion devices connect. We have developed the platform to support both Android and iOS devices, prioritising Android. In the home evaluations, the project supplied a NUC, an Android tablet and an Android Phone.

The Internet connection used was the connection found at each household, we selected households partly based on the presence of fast internet connection. The experience lasts a little over 80 minutes in total, the race itself lasts a little over 40 minutes.

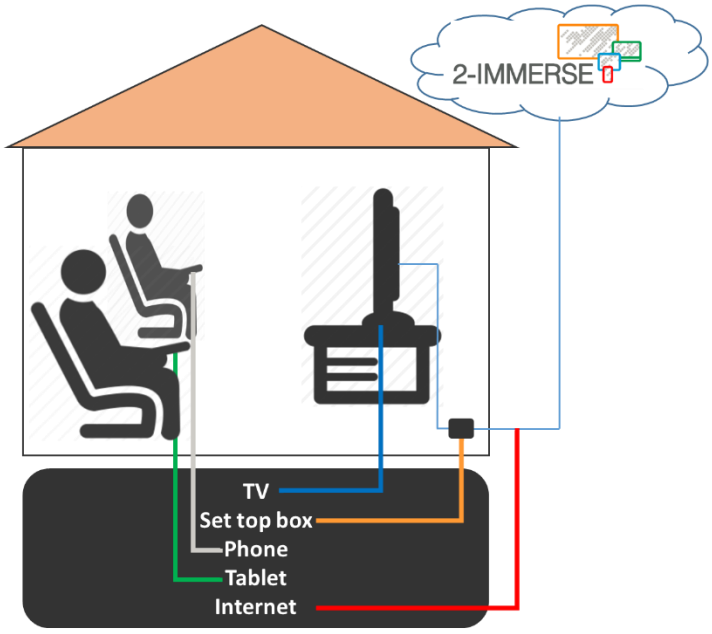


Figure 3 Schematic of the MotoGP at Home Experience highlighting the key technical elements.

As mentioned above, the content available on the companion screens is designed to complement that part of the TV programme. The companion screen becomes a control surface which is able to effect changes to the presentation on the main screen by invoking different content objects for presentation on the TV.

The text from here, to the end of section 3 is copied from D3.3 the deliverable that described the development of the user experience for the MotoGP at home experience. It provides enough information for the reader to understand the experience. The reader may also which to refer to a short video which shows the experience in operation https://www.youtube.com/watch?v=FZIhrnGzC4I

The following list outlines the key changes that were adopted so we could exploit new capabilities of the platform.

- The leader-board was changed to support responsive scaling with the ability to represent time/distance between riders.
- A picture in picture (PiP) capability was developed to explore the impact of multiple video streams and responsive layouts.
- New layouts were adopted for 32", 50" and 65" sized TVs.
- Full-screen replay transition graphic was developed to hide changes in video and graphics and provide consistency between broadcaster actioned and viewer action replays.

3.1 Companion screen layout for smartphones and tablets

The MotoGP experience needed to accommodate both tablets and smartphones as potential companion devices. Furthermore, the trail has been designed around two or more people in a household experiencing the prototype MotoGP service using both a tablet and smartphone device.

A simplified 'Main Menu' is provided on tablets and phones which enable the user to access chapters and configure key settings. The following controls are provided.

- Change Chapter – Inside MotoGP, Watch Live and Race Review
- TV Graphics scale – Large, Medium and Small
- TV Presentation – Novice, Fan, Standard
- TV Audio Balance – Ambient and Commentary volume
- Tablet Presentation - More Video, Mixed Video and Analysis, More Analysis
- Favourite Rider – Select from a list of riders

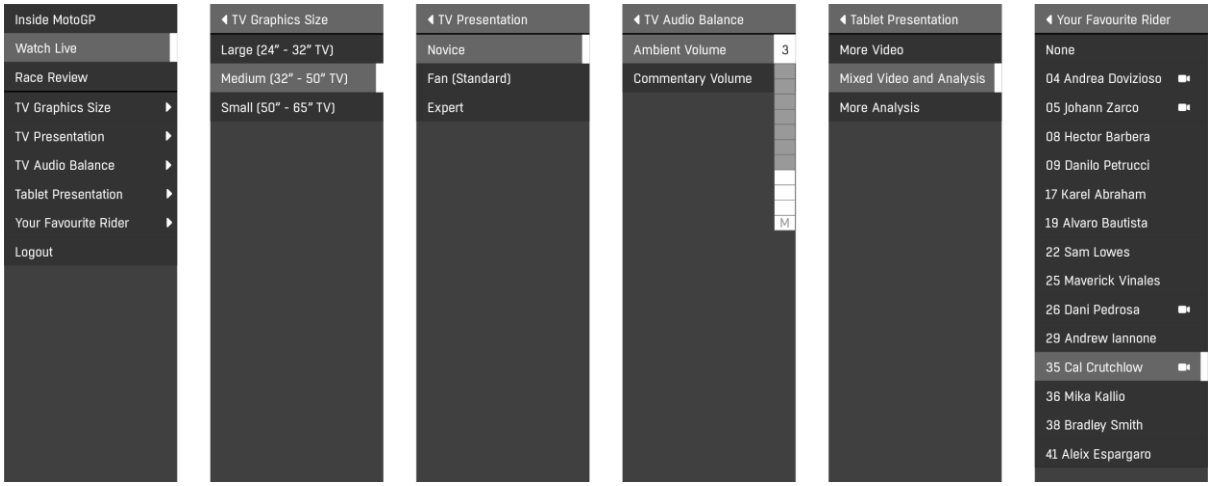


Figure 4 Main menu of the MotoGP at home service prototype

The MotoGP experience has been divided into 3 key Chapters which align to pre-race (Inside MotoGP), race (Watch Live) and post-race (Race Review) activities. Each Chapter has its own layout and specific modes of interaction.

3.1.1 Set Up Chapter

We developed wireframes for a Set Up chapter which outlines a process for new users to set-up a user profile. However, we decided not to implement this facility for the trial in favour of a 'prompt facility' which can be used by the broadcaster or content creator to direct the viewer towards an interaction, such

as setting the Experience Level or Screen Graphic scale. Prompts and associated alerts can be presented on both the TV and companion screen device to encourage and help facilitate interaction.

3.1.2 Inside MotoGP Chapter

Inside MotoGP provides access to a variety of short-form VoD materials which includes GUIDE videos, CATCHUP videos that introduce the Silverstone race circuit and interviews with key riders and TECHNICAL videos that outline the technical aspects of the bikes.

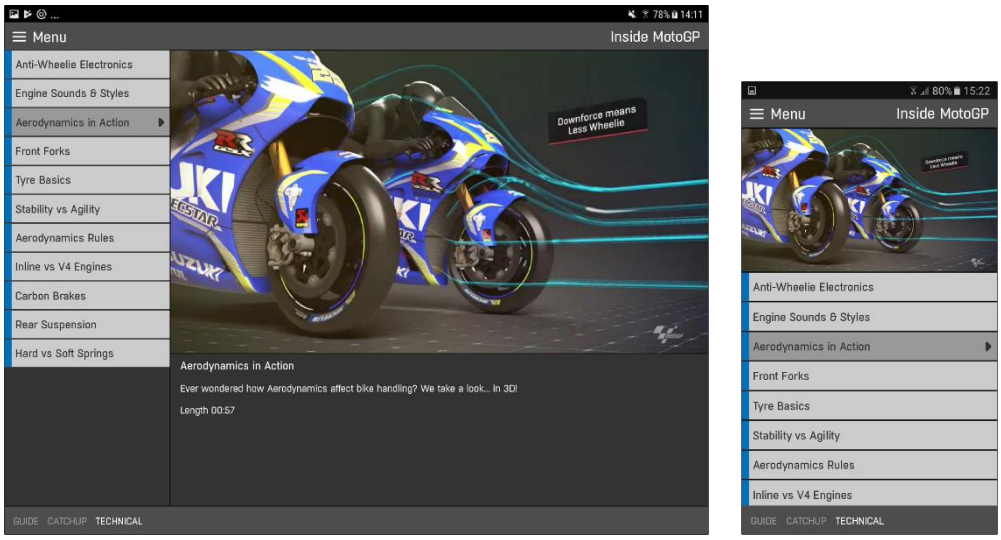


Figure 5 Tablet and Phone User Interface for Inside MotoGP

3.1.3 Watch Live Chapter

Watch Live provides a 'Leader-board Panel' with interactive rider cards, an 'Event Panel' which presents a timeline of key events that can be replayed and a 'View Panel' which controls the presentation of alternative cameras and timing data in a mosaic layout.

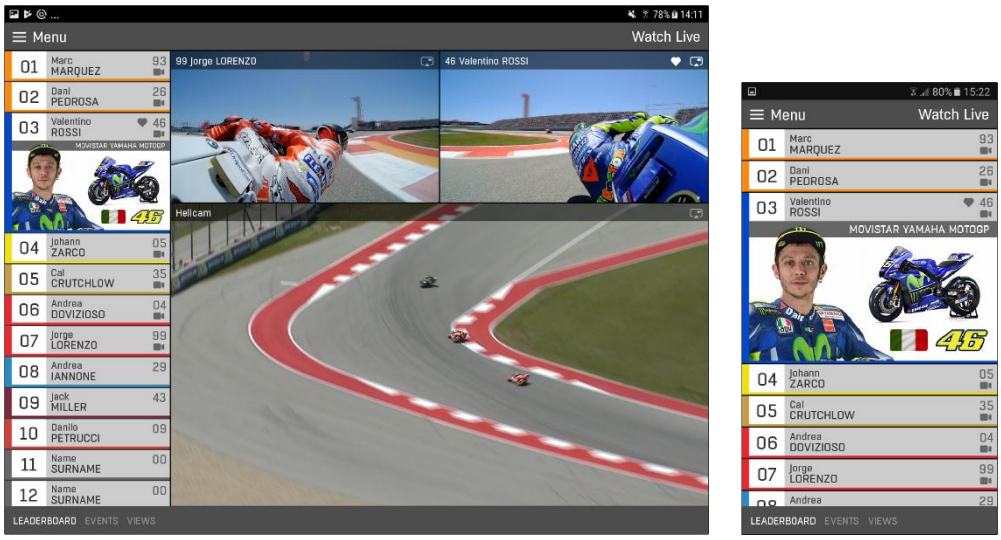


Figure 6 Tablet and Phone User Interface for Watch Live

3.1.4 Race Review Chapter

Race Review provides access to multiscreen replay facility that enables users to review the race events and watch selected replays presented on the companion screen device. We explored providing facilities that enable related replay event clips to also play on the TV, but as this functionality was already

provided in Watch Live, we felt it beneficial to trial different functionality in Race Review. Playback on the companion device also better suited the TV programme narrative, which focused on post-race replays and analysis.

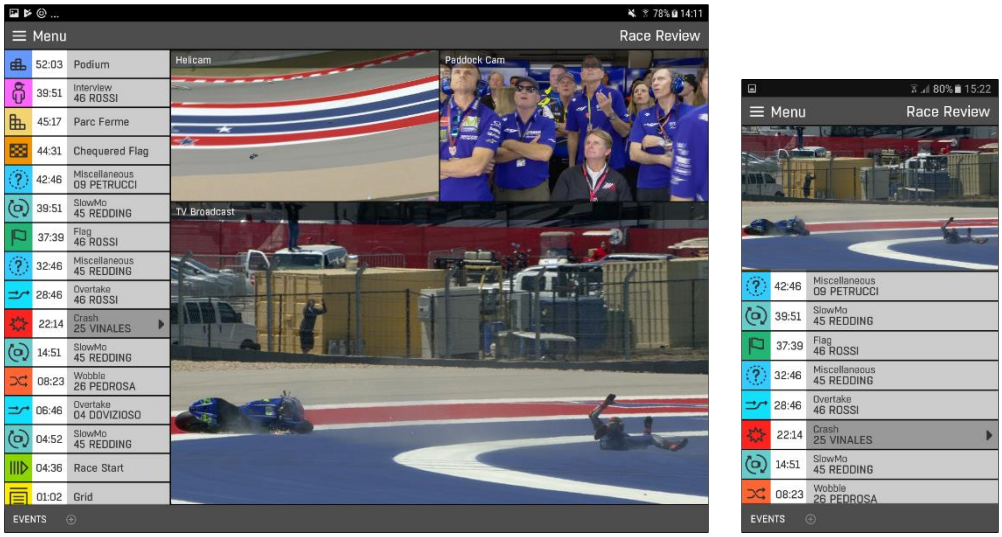


Figure 7 Tablet and Phone User Interface for Race Review

A complete wireframes for MotoGP Set Up, Inside MotoGP, Watch Live and the Race Review chapters described above can be found in Annex E.

4 Purpose of this Evaluation of the MotoGP at Home Service Prototype.

The *MotoGP at Home* service prototype trial has been designed to provide the project with an understanding of how audience engagement is impacted by the provision of live multiscreen sporting events within a home environment. More specifically we are looking to understand

1. Users' responses to the overall experience
2. Whether users would recommend the experience to others
3. Perceptions of the :
    a. The joining experience
    b. The robustness of the system
    c. The overall design aesthetic of the experience so it is comparable with "normal TV"
    d. The ability to personalise the experience
    e. The utility of responsive design principles which allowed the system to adapt graphics layout to best suit the size of TV screen being used
    f. The utility of the 360 video as an additional video stream option
4. Generic insights that should be valuable for subsequent prototypes being developed in 2-IMMERSE.
5. Provide confidence to industry with regard to ROI for future OBB content offerings i.e. understand impact on viewer engagement which could be translated to value.

5 Method Used for Evaluation

This evaluation seeks to conduct two enquiries, one relates the assessments of the platform and the other looked to evaluate the user experience.

5.1 Method for evaluating the technology platform

We seek, as we have stated before, to make a platform that is scalable, robust, extensible and deployable. The second enquiry is about the experience itself and for this we will seek responses from people that normally watch MotoGP on the TV and from media professionals involved in its creation and broadcast. The outline methods we use to make these evaluations are described below.

The method for evaluating the technology platform is limited. It is of the form known in industry as 'eating your own dog food' or in more positive slant, 'drinking your own champagne'. We have built a platform we should use it 'in anger' and will reflect on the extent to which it was 'fit for purpose' within this deliverable. However, we recognise that such an approach is very limited and highly subjective. Nevertheless we cannot help but offer some reflections on the extent to which the platform we have does what it should.

Because the reflective approach is limited we are developing more objective methods that will allow us to measure, in a more repeatable manner, the utility of the-platform for developers and as an artefact in itself. The details of that platform evaluation are being developed and reported through deliverables D2.4 and D2.5 which are deliverables describing the development of the platform.

5.2 Method for evaluating the user experience

Sometimes it's difficult to know where development ends and evaluation starts. The experience has, through the design and build process, been constantly evaluated and, in response to that evaluation, been relatedly modified. Some of that journey is described in D3.3; it includes the demonstration of canned demos, which allowed us to collect responses from potential users of such a service before all the relevant components of the distributed media applications were in place. It also included assessments, on a weekly basis, of the partially functioning prototype operating on the 2-IMMERSE micro-service platform.

This document refers to the formal home based evaluation procedure.

5.2.1 Method - Home user evaluation

We were keen to evaluate the experience through a highly situated experiment. That is, to have users evaluate the experience in the environment in which a proper service would run (i.e. their own homes). We wanted the user to have the best possible opportunity to relax into the experience and not to approach it as a technology trial.

Insights were sought through

- A pre-trial screening questionnaire
- A post-trial questionnaire
- Logs collected from the trial equipment
- Lab observations and interviews

We sought 100 evaluation responses from people using this experience at home. With the evaluation taking place as duos i.e. two people taking part in each test. This means we were aiming for about 50 tests. This evaluation is not of such scale that it could be regard as 'large scale' but we sought to conduct a trial that would prove, in the first instance that we could create an experience that could be trialled 50 times – this is, in itself, some kind of measure of robustness - and also to give us sufficient number of responses to be able to conduct slightly more meaningful analysis of the responses than is possible on very small scale trials.

Method for recruiting triallists	Triallists were recruited from two sources. We recruited 20 responses via an intranet news site within BT who were interested in trialling a new way of watching MotoGP. We also employed an external recruiting agency to find 80 responses from triallists who were interested in MotoGP and who had fast broadband. The external agency offered the project an independent objective view of the experience.
Scale	Target 100 responses
Task	Users were provided with equipment, two companion devices and a NUC (new unit of computing) and necessary cables with very basic instructions and invited to, at their leisure, try out the 'as live' MotoGP experience. Users were invited to: - connect the set top box to the TV - start the experience following simple instructions. - watch the MotoGP race across multiple screens Feedback from the users was collected as the equipment was recovered from their homes the following day. Logs of user interaction were automatically recorded.
Objective	At this stage the experience was expected to be stable, having completed numerous lab tests. However we anticipated the home based testing would include network and set up conditions that we had not encountered before. The purpose of this stage of the testing was to record how the prototype faired in realistic in-home conditions and also to collect user feedback on the nature of the experience itself. We sought to feedback on: - Ease of Use - Look and Feel - Multiscreen - Engagement In addition we sought user perspectives on the value/utility and ease of use of the experience as a whole and of specific features.
Evaluation methods	Questionnaires were used to probe: ease of use; look and feel; the value of multi-screen experience and the level of engagement it created. Questionnaires were conducted in-person with questions being filled out on an iPad. Logs of the user interactions were used to understand which features were used, typical user pathways through the experience and to attempt to enable correlation between reported and actual behaviour.

Table 2. Describing the nature of the home trials that took place to evaluate the MotoGP at Home experience.

5.2.2 Method - Home trials quotas and pre-requisites

Because the trials took place in people's homes and because our core question relates to viewers comparing the multi-screen experience of MotoGP to the existing single screen broadcast experience, there were some natural pre-requisites that we needed to make sure were true before we could recruit triallists. These pre requisites include:

1. They must already watch MotoGP on the TV
2. They must have a TV at home with an HDMI input

3. They must have fast broadband (>20Mb/s)

We screened possible participants against these criteria using screening questions (See Section 8).

In addition to force a mix in terms of age and gender, we recruited against the following quotas (assuming 80 respondents)

- Age 18-30 (at least 12 respondents at least 2 of whom are women)
- Age 31-40 (at least 12 respondents at least 2 of whom are women)
- Age 41-50 (at least 16 respondents at least 3 of whom are women)
- Age 51-60 (at least 16 respondents at least 3 of whom are women)
- Age >61 (at least 12 respondents at least 2 of whom are women)

Note these don't add up to 100%, nor 80 participants, each of these is minimum.

5.2.3 Method - The pre-trial questionnaire

The pre-trial questionnaire was a screening questionnaire (see section 8 for all the questions used in the screening questionnaire) used to select our required user mix. These questions were asked by the market researchers of their known panel of participants but without the panel knowing that the trial related to MotoGP. The screening questionnaire allowed us to focus on a user group with minimum quotas of age and gender mix whilst also ensuring all our triallists often watched MotoGP on the TV. To obscure the fact that the trial was about MotoGP the screening questionnaire asked users about a range of different sports on TV, asking which they watched.

5.2.4 Method - The post-trial questionnaire

The questionnaire that was completed by participants after the experience (usually the following day) was, like the pre-trial questionnaire, delivered online via Survey Monkey. The questionnaire included questions that probed themes around:

- Users' experience to watching the event in a different place.
- The feature set: their utility, their ease of use and the completeness of the feature set.
- Rituals and the users' reaction to the mirroring of real world rituals in the multi-screen experience.
- The use of multi-screen: users' thoughts about how they distributed their attention between the screens.
- The value that users ascribed to the fact that the experience was shared.
- The curation and placement of content: users' opinions about which screens should be deployed to display the different components of the experience.

The complete set of questions used in the post-trial questionnaire is included in section 9, which asks general questions about the experience, and in section 10 which details a number of questions specific to particular features of the experience.

5.2.5 Method - Logs collected from the trial equipment

Deliverable D2.4/D5.2 (Distributed Media Application Platform and Multi-Screen Experience Components: Description of Section Release) describes the logging and monitoring infrastructure which was implemented for the Theatre at Home trial, using the Elastic Stack instance provided within the Mantl platform. This infrastructure enables logs generated by all 2-IMMERSE services, as well as each Client Application (running on a TV emulator or companion device), to be time-stamped and aggregated using a single consistent logging format. Logs can be viewed, analysed and interpreted using the Kibana web application.

D2.4/D5.2 also describes plans to make use of Google Analytics as a complementary solution for logging of user interactions with DMApp Components.

While the primary purpose of the Elastic Stack as a logging infrastructure was to facilitate debugging of the 2-IMMERSE platform and investigation of problems encountered during tests and trial runs, it was also employed to extract data on aspects of how the platform was used during each trial run.

This data was extracted and analysed within the Kibana web application using a set of visualisations and dashboards which were defined specifically for the MotoGP at Home trial.

5.2.6 Method - Analysis of qualitative data

Apart from quantitative responses from the post-trial questionnaires we also collected qualitative data. The thematic analysis methodology of Braun and Clark [1] was used for the analysis of the qualitative data collected during the study.

The overall aim of the analysis is to capture, as a collection of 'themes', an understanding of what is really going on in the mass of qualitative-data captured in the open responses of the online questionnaire.

The coding scheme was inductively defined and refined as the coding proceeded, very much in the spirit of Grounded Theory's constant comparative method (Glaser)[2].

A starting point for the analytic process was a set of themes identified to group questions (referred to as the Established Themes). For example, ease of use, utility, individual features, etc.

Items of the online questionnaire and interview data were considered in turn, and compared to the emerging coding scheme, to find existing codes that apply, to refine the definition of previously generated codes, or to produce new codes as appropriate.

[1] Virginia Braun and Victoria Clarke. 2006. Using thematic analysis in psychology. Qualitative Research in Psychology 3, 2 (jan 2006), 77–101. DOI: http://dx.doi.org/10.1191/1478088706qp063oa

[2] Barney G. Glaser. 1965. The Constant Comparative Method of Qualitative Analysis. Social Problems 12, 4 (apr 1965), 436–445. DOI: http://dx.doi.org/10.2307/798843

6 Results

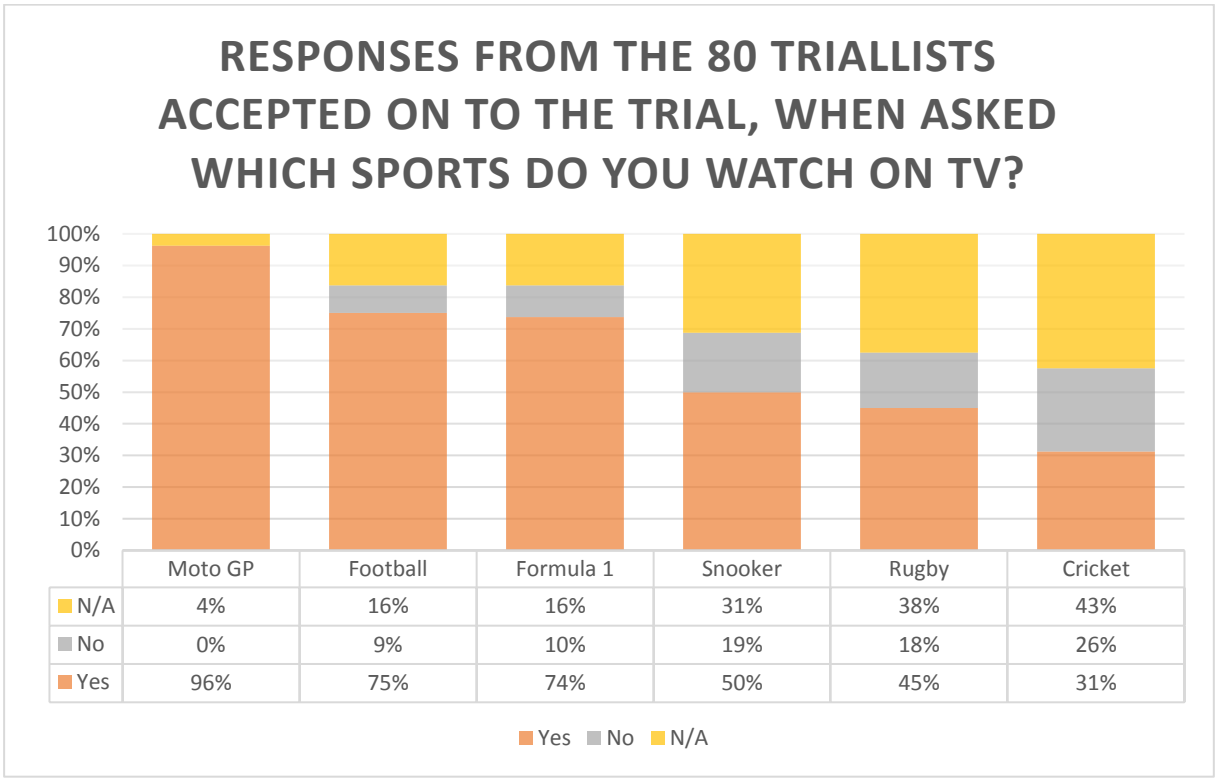
The results are presented in three sections. First we look at the cohort of users that acted as our triallists, then we look at the response the triallists gave to questions about the experience in general. The final two section look at responses to specific questions and to specific features.

6.1 Results - Overview of the cohort of users recruited as triallists

The trial was completed with over 80 response having been received.

We used questions in the screener questionnaire to select our triallists. The main purpose of the screener was to ensure our triallists had prior experience of, and interest in, watching MotoGP on the TV; this was masked amongst other question related to watching sport on TV. In addition we probed:

- Gender
- Age
- Device ownership
- Self-reported technical competence
- Broadband availability at home
- Ownerships of a TV with HDMI input.



	Moto GP	Football	Formula 1	Snooker	Rugby	Cricket
N/A	4%	16%	16%	31%	38%	43%
No	0%	9%	10%	19%	18%	26%
Yes	96%	75%	74%	50%	45%	31%

Figure 8 Screener question responses about watching Sport on TV.

Necessarily (by design), all our participants were chosen because they watch MotoGP on TV already. This chart records, for interest, the other sports they reported watching on TV. From questions categorised under the General Experience tab we also know a little about the degree to which our cohort already use mobile phones and apps to normally support their watching of MotoGP on TV.

	Do you use your phone to access additional information during the race?	If yes do you use the MotoGP App?	
Responses	84		
No	**83%**		
Yes	**17%**	**35%**	**Yes**
		63%	**No**
		14	Responses

Table 3 Reporting use of existing apps, amongst our cohort, to support current viewing of MotoGP on TV

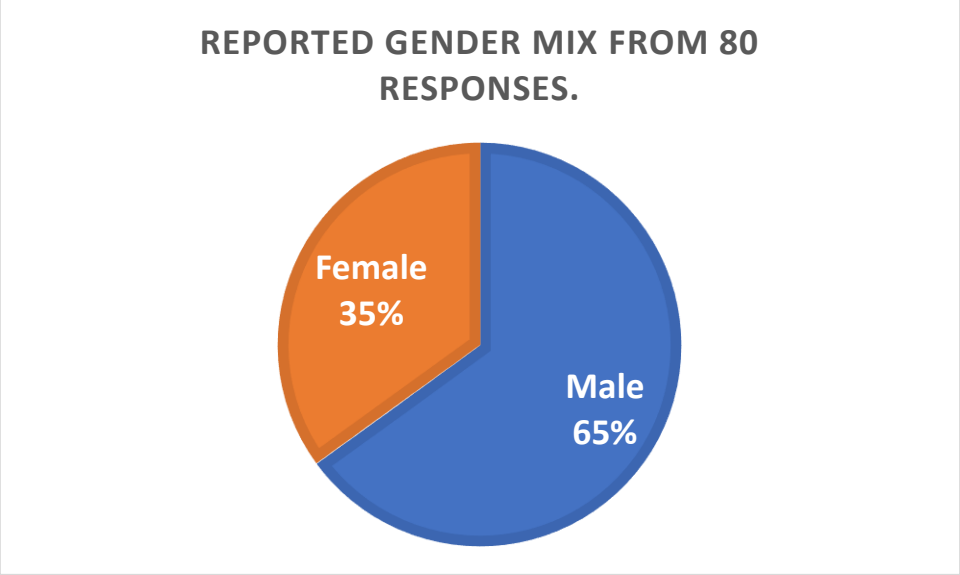


Figure 9 Reported gender mix for the selected triallists.

We were anxious to ensure that not all respondents were male. Not being sure of the overall mix of the audience that watches MotoGP on TV it is difficult to know whether our sample over represents or under represents females.

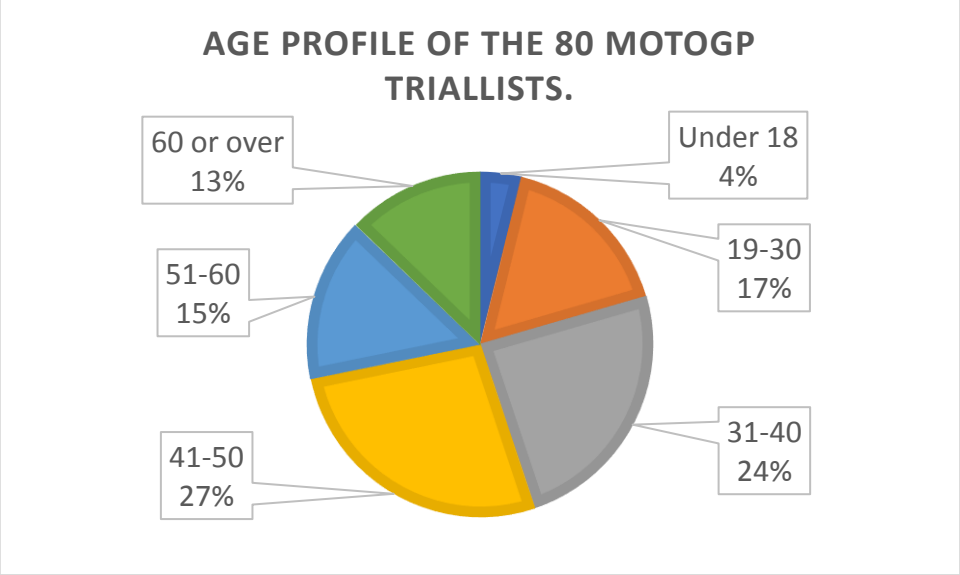


Figure 10 Age profile of the selected triallists

We requested minimum quotas against different age groups. The quota for over 61 year olds was missed marginally, all other quotas were met.

- Age 18-30; at least 12 respondents of 80 (15%) at least 2 of whom are women
- Age 31-40; at least 12 respondents of 80 (15%) at least 2 of whom are women
- Age 41-50; at least 16 respondents of 80 (20%) at least 3 of whom are women
- Age 51-60; at least 16 respondents of 80 (20%) at least 3 of whom are women
- Age >61; at least 12 respondents of 80 (16%) at least 2 of whom are women

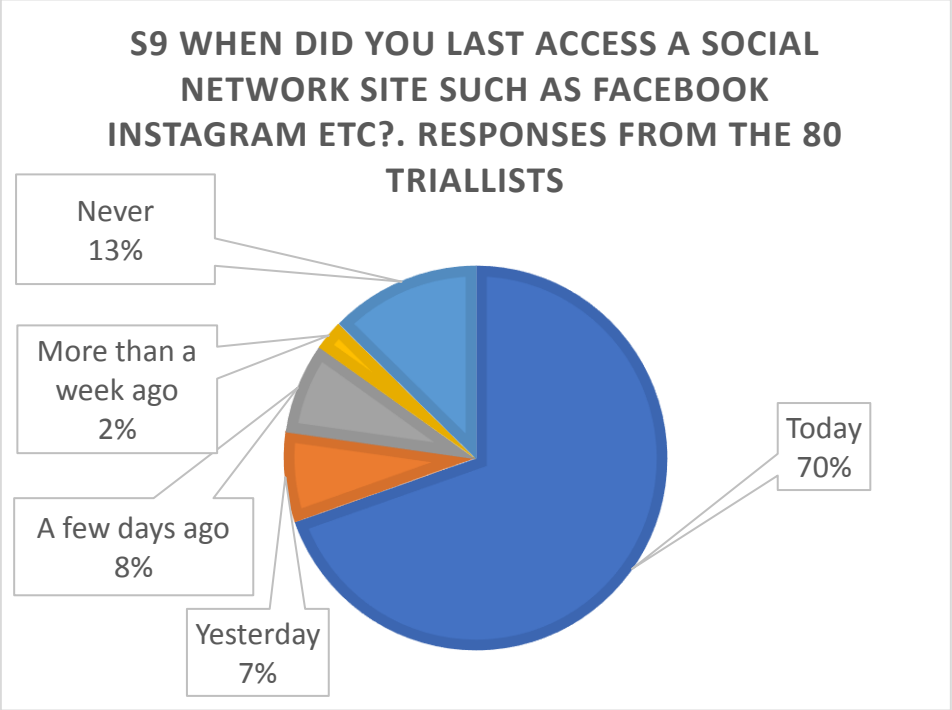


Figure 11 Response to questions about recent use of social networks.

The most recent report on 'Adults' media use and attitudes' from OFCOM, the UK communications regulator (OFCOM) reports that 46% of adults claim to have communicated using a social network service in the week prior to being asked. Likewise 76% of adult internet users in the survey reported having a social media account. In our cohort, 87% of our triallists access social media. The measures are not quite the same but it seems likely that our cohort are slightly overweight in people with a social media account compared to the whole UK adult population.

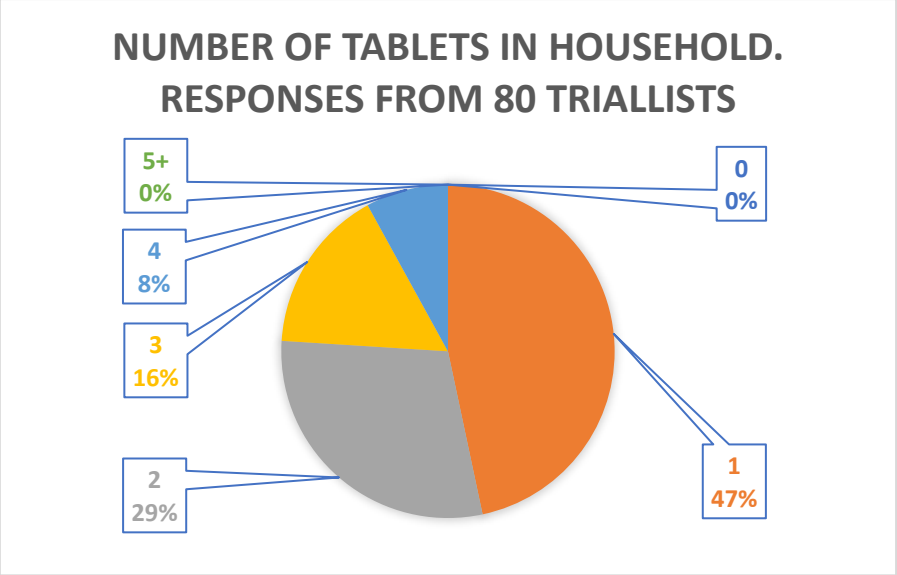


Figure 12 Responses to question about the number of TABLETS available in triallists households

OFCOM's report on UK adults' media use does not report number of tablets in a household but does report that 59% of adults use tablets to access the internet. In our cohort, all our households have tablets available, but having tablets in the household is not quite the same as an individual using a tablet to access the internet. In this regard our cohort is overweight in access to tablets compared to the whole UK population.

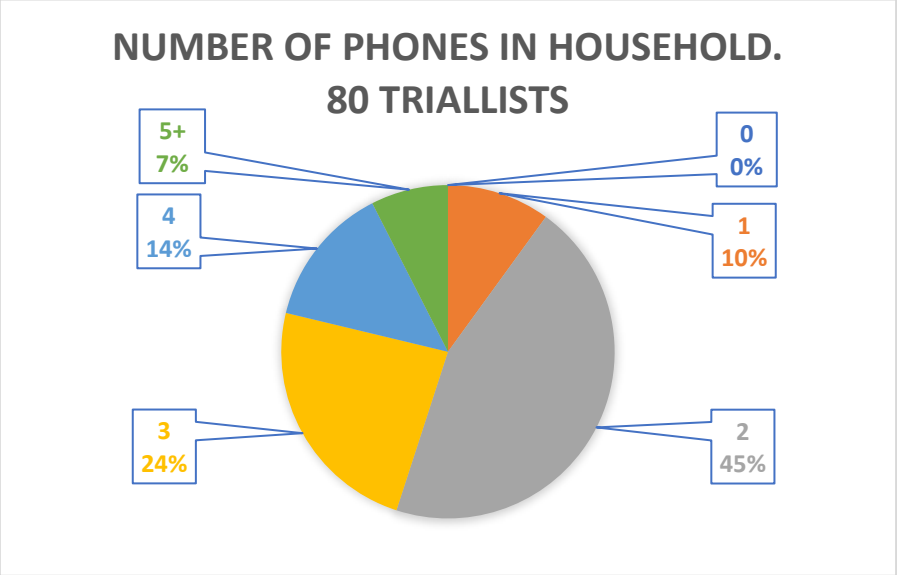


Figure 13 Responses to questions about the number of MOBILE PHONES present in triallists' household

Mobile phone ownership is near universal on a per person basis, so it's not surprising that all our triallists have at least one mobile phone in their households. Our cohort look to be representative of the population as a whole, with respect to mobile phone ownership. Given that 14% of UK households are singletons (Office For National Statistics) and that typically, people have one mobile phone each, the number of phones available in a household seems to be consistent with the suggestion that our cohort under represents singleton households.

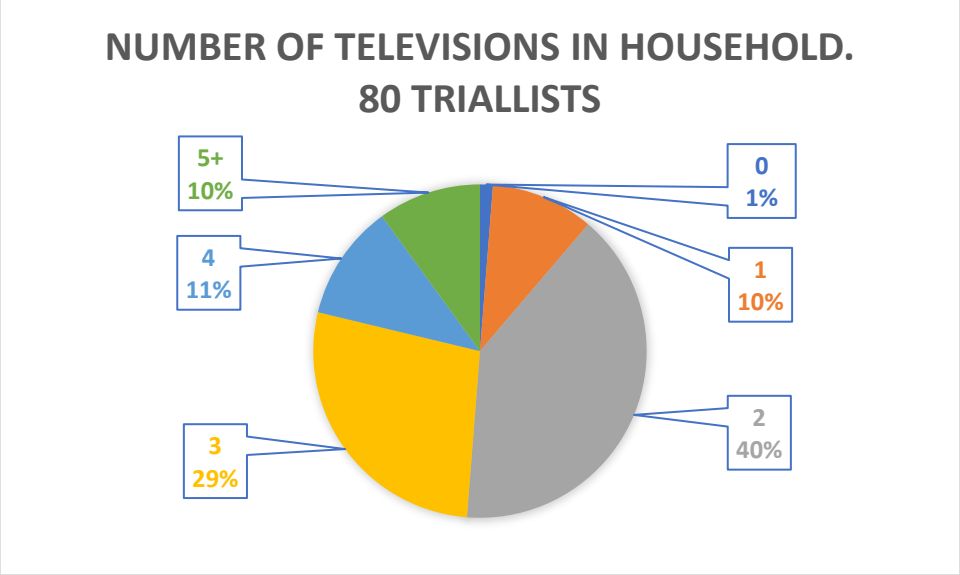


Figure 14 Responses to questions about the number of TELEVISIONS present in triallists' households.

BARB, the Broadcasters Audience Research Board, which monitors TV audiences for the purposes of calculating the value of ad spots, also report the number of TV's per household (BARB). Their data for the UK in late 2017, suggests that perhaps (though our sample is small and the statistical significance will be low), our cohort under represents households with only one TV and concomitantly over represents households with more than one TV in all categories.

TVs in household	BARB	This cohort
0	4%	1%
1	41%	10%
2	31%	40%
3	15%	29%
4	6%	11%
5 or more	3%	10%

Table 4 Number of TV's per household data from this study compared with that from BARB data.

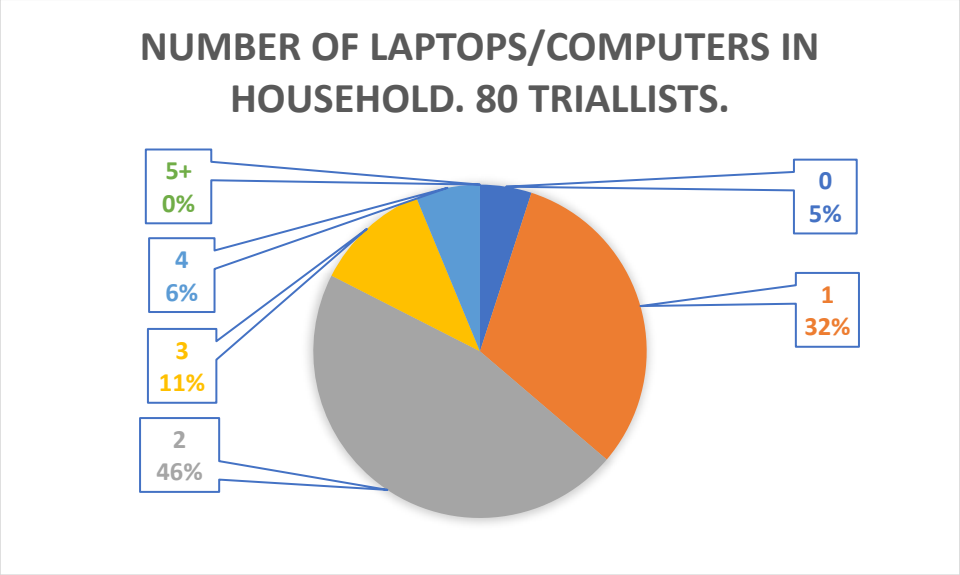


Figure 15 Responses to questions about the number of LAPTOPS/COMPUTERS present in triallists' households.

The Oxford Internet Institute has published data on the number of PCs per household, but this data goes back to 2013. Having said that computer ownership level are not changing rapidly at that time and have probably not changed dramatically since. In that report (Institute) it was reported that levels are quite similar to those reported by our small cohort though perhaps our cohort, subject to the caveat about small sample sizes, under represents 'no PC ownership' and over represents the other categories. The observation may be consistent with our cohort under-representing single-person households.

Number of Computers in the household	Oxford Internet Institute 2013	This cohort
0	24%	5%
1	37%	32%
2	21%	46%
3+	18%	17%

Table 5 Showing computer ownership levels reported for the cohort in this study compared with figures reported by the Oxford Internet Institute.

6.2 Results - General experience

The first questions in the post-trial questionnaire were about the experience in general. The full questions (with guidance notes to those asking the questions) is included in section 8 but below for ease of reference are truncated versions of the questions asked. Summary response represented as Box and Whisker charts are shown in Figure 16.

ID	Question	Answer format
GE1	How much did you enjoy the race? (N.B. This is just about the race – not the MotoGP experience.)	1-10 scale
GE2	How much did the fact that the trials was 'as live' rather than actually live impact on your engagement and interaction?	1-10 scale
GE3	How absorbed were you in the race?	1-10 scale
GE4	How quickly or slowly did time seem to pass?	1-10 scale
GE5	How easy did you find it to follow the race?	1-10 scale
GE6	Usually, do you use your phone to get extra information while watching MotoGP on the TV?	Yes or No
GE6b	Do you use the MotoGP App	Yes or No
GE6d	How did this version of MotoGP compare to how you usually watch MotoGP	Open text
GE6e	How much did having the extra information available on more than one screen enhance your experience?	1-10 scale
GE7	< How strongly> would you recommend watching MotoGP in this way to other people?	1-10 scale
GE9	How easy did you find it to make use of content presented across your TV/Phone/Tablet?	1-10 scale + open text
GE10	Would you like to have manual control over those decisions?	Yes or No

Table 6 Simplified version of "general Experience Questions

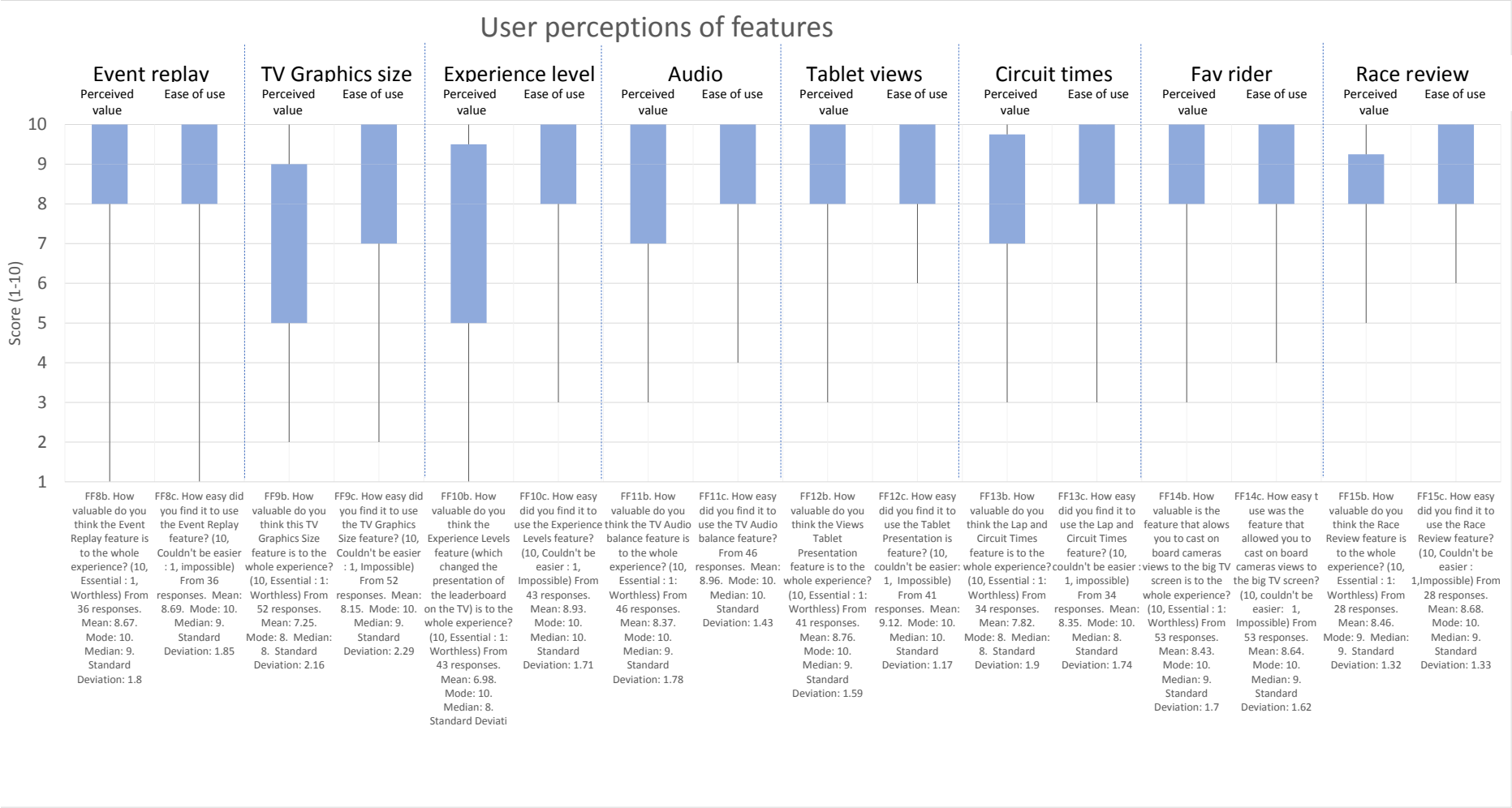


Figure 16 Summary 'Box and Whisker chart' for the General Experience Questions asked using a 1-10 scale for the response, where 10 is the most positive answers

The responses in Figure 16 are generally positive, though, as can be seen from the charts, in many cases all responses ranging from fully positive to 'as negative as can be' were all used. This is not unexpected, it would be surprising if changes and new concepts were universally adored. However we perceive these results as encouraging and 'in the right direction'.

Log data approximating to these same categories of Figure 16 is shown in Figure 17. Race Review and Event Replays are shaded differently as both record all Event Replays. Event Replays were available in Race Review and Watch Live chapters and which occurred in each chapter has not been resolved. Tablet views have recorded the most activity.

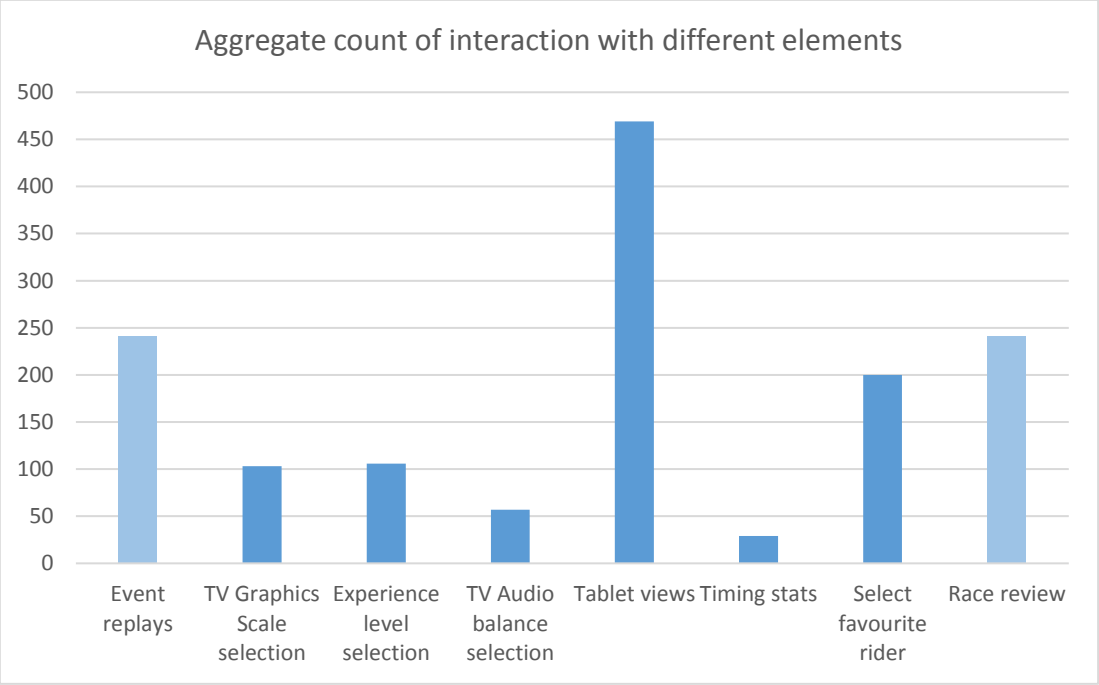


Figure 17 Count of interactions with the different elements approximating to those for which users were asked to provide assessment of value and ease of use.

We asked users (GE10) whether they would like more control over what content goes where. A clear majority of respondents told us they would like more control (see Table 7).

GE10. At the moment, and in most instances, the director chooses which information goes on which screen. Would you like to have manual control over those decisions? (i.e. what goes on the TV, what goes on the phone or the tablet. E.g., you could remove the leader board from the TV.)	
Yes	88%
No	12%

Table 7. Would the user like more control, over what's shown on the TV, phone or tablet?

6.3 Results - Question by question analysis

6.3.1 GE1 How much did you enjoy the race (the race itself not the experience)?

GE1	How much did you enjoy the race (the race itself not the experience)? (Not at all) 1 to 10 (Hugely)

Responses	Mean	Mode	Median
85	7.95	8	8

Sentiment	***Frequency***	***Verbatims***
Enjoyable	17	*I'd seen it before but it was a good race*
Uneventful / Boring	2	*Fantastic*
Unusual	4	*Rossi fan and he finished on the podium*
Not enough to do	1	*Liked the fact it was Silverstone and the result*
Too much going on	2	*Liked the interaction – can watch your own rider*
Interactive	9	*Exciting. Like the interactive*
Don't know	0	
Nothing	15	
Other	2	

Rationale

We asked this question as we were fearful that, should the race be a poor spectacle, regardless of the presentation it may have been uneventful, a procession, then this may colour the perception of the whole experience.

Analysis

The responses suggest this race was a good spectacle though it seems that some respondents were commenting on the experience and not the race. This is why the word 'interactive' featured as a key sentiment – it makes no sense to describe the race itself as interactive but the experience could be described as such. Interactive is thus offered as an unprompted description of the way the users will recall the experience.

6.3.2 GE2 How much did the fact that the experience was 'as live' rather than actually live impact on your engagement and interaction with the MotoGP experience?

GE2	How much did the fact that the experience was 'as live' rather than actually live impact on your engagement and interaction with the MotoGP experience? (Totally ruined it) 1 to 10 (No effect)

Responses	Mean	Mode	Median
85	8.05	10	9

Sentiment	***Frequency***	***Verbatims***
Distracting / difficulty following the race	10	***'****I don't always watch the race live.' (L13)*
Watching live is preferable	3	
Enjoyed the experience	8	*'I enjoyed the fact that it felt like it was live.' (L7)*
Watches recorded anyway	4	
Knowing the result would / did ruin/impact it	12	*'Just didn't make any difference as a fan of the sport.' (L15)*
Improved interest / enhanced the experience	6	
More interactive	10	*'I often watch recorded races, only knowing the results beforehand ruins things.' (L35)*
Different experience	3	
As Live' made no impact	20	*'No advert breaks, felt more immersive an experience.' (L35)*
Felt the same as live	3	
Focus on the device instead of the tablet	2	
MotoGP Fan	3	
Don't know	0	
Nothing	3	
Other	8	

Rationale

We asked this question to understand whether the as-live aspect of the experience had an impact on the viewers' perceptions in a way that may over-ride any nuanced assessment of the features or experience design.

Analysis

Respondents' comments and scores suggest that the fact the race was 'as live' rather than live did NOT have a significantly deleterious effect on the levels of engagement. Respondents were commenting on the experience and not the race; this is why 'interactive' and 'different' featured as a key sentiments.

6.3.3 GE3 How absorbed were you in the race?

GE3	How absorbed were you in the race? (Not at all) 1 to 10 (Totally)

Responses	Mean	Mode	Median
85	7.28	8	8

Sentiment	*Frequency*	*Verbatims*
Found it Distracting	20	
Disracted – General	1	*'Result did not help... Absorbed by the app at the start which distracted us a bit.'*
Distracted - Features	7	
Distracted - Technical Issues	3	*'Not being familiar with the system made it less so <<absorbing>>. Again, if I watched again it would be different.'*
Distracted - Using multiple devices	9	
Had an enhanced experience	25	*Think the interaction took away from the experience*
Enhanced Experience - Interesting	8	*Was watching it but kept looking in between screens at the tablet*
Enhanced Experience - General	4	
Enhanced Experience - Exciting	2	*'Because I felt I wasn't really watching much of the race, with all the other bits going on at the same time, it distracted me from the race.' (L18)*
Enhanced Experience - Interactive	11	
Other	28	*'The software wasn't working so distracted.' (L36)*
Enjoyed - Features Mentioned	6	
Interesting/enjoyable Race	9	*It was more interesting interacting with the race than just sitting watching it because I felt more involved*
Repeat use would/did improve concentration	5	
Knew the outcome	6	*I believe the different viewpoints made the experience more interesting to watch and for me created an involvement in the race.*
Race not Interesting	2	
		It was exciting with the interaction with my husband
		Because I had all the interactive features to get more involved.

Rationale

Questions about how absorbed respondents found themselves to be are measures of immersion, a desirable achievement.

Analysis

Scores given by the participants suggest that they were in general absorbed in the race (7.3 average, and a median score of 8). - Some respondents were able to mention specific features that improved how absorbed they became in the race.

Participants who gave negative scores (under 5) were initially distracted by the interactions or the tech not working. The idea that any distraction would be lessened with use came out a little more here; Knowing the outcome of the race affected some respondents' ability to become absorbed in the race.

Some participants commented that content displayed across multiple screens caused them to feel less focused and more distracted, as they had to keep aware of content on multiple screens which may have impacted their ability concentrate and follow the race.

6.3.4 GE4 How quickly or slowly did time seem to pass?

GE4	How quickly or slowly did time seem to pass? (Impossibly slowly) 1 to 10 (Really fast)

Responses	Mean	Mode	Median
85	7.38	10	7

Sentiment	***Frequency***	***Verbatims***
Time flew	25	*Faster (>6)*
Interaction Improved engagement/focus	18	*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.*
Always something to look at - improves focus	14	*I dont know, it just seemed to jump fast. I think maybe because there are other things to look at at the same time*
Enjoyed It	4	
Time did not go fast or slow (normal)	7	
Too much to do - lowered concentration	5	*More slowly (<5)*
Time was slow	2	*It didn't go too fast or too slow, it was distracting having the different experience, that I didn't watch much of the race.*
Technical Fault / Knew the outcome	3	*I don't know, maybe because I wasn't paying attention to start off with.*
		Was too much going on
		I was distracted by other things
		I would say that I felt it went quite slowly, as I found the different things on the device to be boring and quite complicated, it also confused me with the amount of things going on at one time.

Rationale

This question is probing immersion. Time passing quickly is an indication that users are immersed in an experience. Immersion is an objective we have for these multi-screen experiences.

Analysis

Mixed opinions but the mean score suggested most people felt time had gone quickly, a good thing.

The 64 participants who gave higher scores (6-10) commented that there was more going on, and the variety of interesting features occupied them. In general, the feeling is that time went quickly for most people and this appears to be linked to their level of engagement in using the app while watching.

The 5 participants who gave lower scores (1-4) associated their feedback to that fact they had seen the race before, or the technology seemed complicated to them, or crashed. Those that struggled / didn't like the concept are generally the ones for whom time seemed to slow.

6.3.5 GE5 How easy did you find it to follow the race?

GE5	How easy did you find it to follow the race? (Impossible) 1 to 10 (Couldn't have been easier)

Responses	Mean	Mode	Median
85	8.58	10	9

Sentiment	*Frequency*	*Verbatims*
Additional angles made it easier to follow	8	***Positive*** *'Because of the information on offer.' (L83) 'Just really easy lots of information on the pad.' (L66)* *'You've always got something to tell you where everyone is.' (L10)* *'See who was in the front and watch their camera.' (L67)* *'Because the lap time enabled me to keep track.' (L63)* *'You've got all your split times, and everything so it was easy - also because you can see where everyone is instantly. The leader board and the splits is the best thing on it by far. Without the leader-board you really couldn't tell otherwise.' (L8)* *'Having the ability to change the in-screen views enhanced the experience, and the leader-board kept pace across all riders throughout the race.'(L33* *'I went on the map, and it's basically a tracker. I actually preferred them. The helicam really shows how fast they go. As a customer I like that I decide what they're going to show.' (L8)* ***Negative*** *'Found it quite difficult to focus and enjoy the race, with having the other things going on, it seem to distract me.' (L18)* *'Well I did follow it to a certain degree but i was trying to figure out what to do with the app.' (L41)*
Leader-board helps you follow the race when looking at other things	6	
Easy to follow	33	
Selecting what to view improved concentration	7	
The app is distracting	11	
Felt involved in the race	4	
My knowledge of MotoGP helped me follow	2	
Concentration improves with use	0	
	0	
Don't Know	2	
Nothing	6	
Other	7	

Rationale

We asked this question as we hoped the format would enable to follow the race easily, at least as well they can as a single screen TV experience, perhaps better.,

Analysis

Participants found it easy to follow the race

Although some participants mentioned the app was a little distracting initially, 68 participants gave a score of 8-10, and gave the following reasons… many sources of information allow one to keep track of the race from many points of view, and the information comes in different forms, from leader-board data to onboard cameras, something to suit everyone.

6.3.6 GE5.2 Did the extra content (extra cameras, maps) help you follow the race better or did it get in the way?

Sentiment	*Frequency*	*Verbatims*
Followed Better	44	***Better*** *I went on the map, and it's basically a tracker. I actually preferred them. The helicam really shows how fast they go* *Didn't get in the way, made it more personal with the extra cameras* *As a customer I like the fact that I decided what to show.* *I liked the angles and the information on the riders, but found I got distracted from the race.* *Better, I liked that I could personalise it so I could follow it more closely.* *Yes definitely a lot better, it made it seem more like a video game in a way.* *Events helped for anything missed.* *Having the ability to change the in-screen views enhanced the experience, and the leader-board kept pace across all riders throughout the race.* *Better, especially following camera.*
Got in the way	25	***Got in the way*** *No gets in the way because you can't watch 2 at the same time.* *I felt it got in the way, because I couldn't seem to watch the actual race properly.* *14 off "I think it got in the way <<a bit, slightly>>*
Made no difference	2	*I liked the angles and the information on the riders, but found I got distracted from the race.*
Other	3	

Rationale

This question was asked to explore the role the extra content took in allowing participants to follow the race.

Analysis

There were more sentiments expressed suggesting the extra content helped rather than hindered following the race (44 cf 25), with a range of features being singled out as being useful in this regard, such as the helicam, the tracker, rider information, the extra cameras, the leader board, the events (if anything was missed). There were 5 sentiments expressed that highlighted the value around personalising the experience, not always with a specific feature mentioned just the enjoyment of being given control, though 2 mentioned in particular the ability to follow one rider (bike cam).

6.3.7 GE6 Usually, do you use your phone to get extra information while watching MotoGP on the TV?

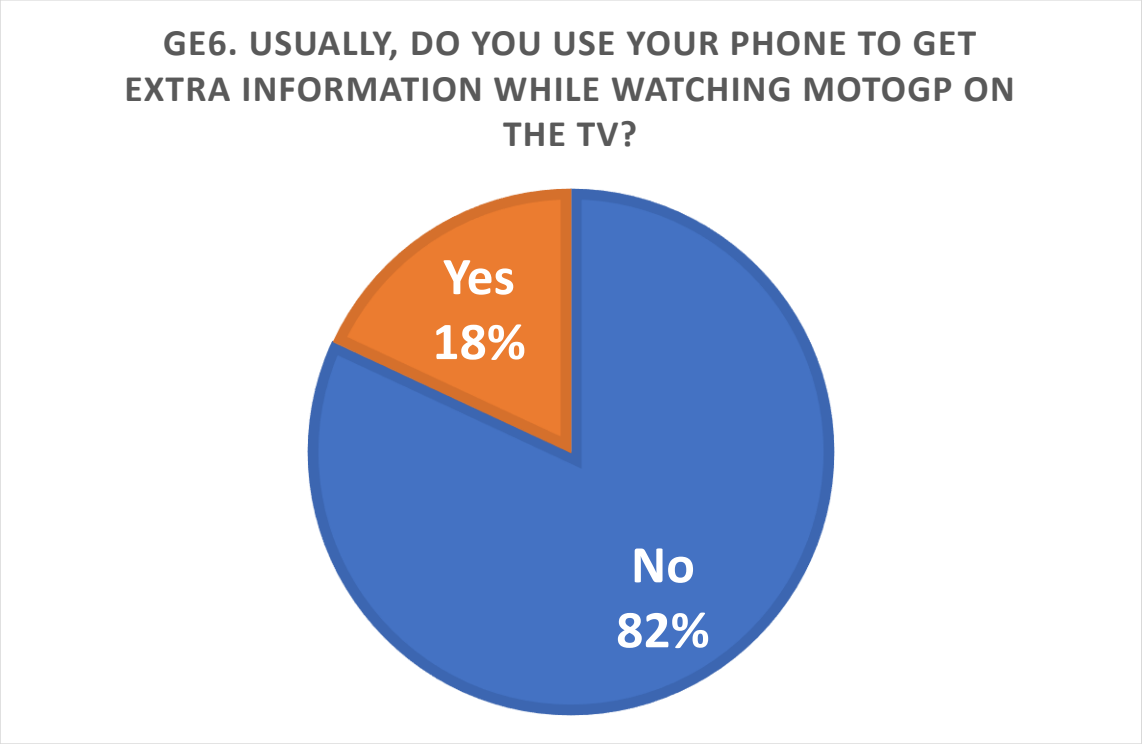


Figure 18 Pie chart showing how users say they usually access extra information while watching MotoGP on the TV

Rationale

This question was asked so that we could understand whether it was common for users to access additional information during the race using existing resources. If this behaviours is common then our offering has to be easier of preferable in some way. If it is uncommon our offering just has to be appealing and easy.

Analysis

Only 18% (15 of the 83 respondents) reported using their phone to get extra information related to MotoGP with the largest number of responses (35) reported just watching the race. Of those 15, only 5 reported using the MotoGP app available from DornaSports today.

This suggest that it is uncommon for MotoGP viewers to create for themselves an experience in which additional information is available to them. It's not clear if this is because the proposition:

- it is not an attractive proposition (although responses to this experience suggest that is not the case. – the general reports were positive)

- wouldn't really "work" as additional information would not be synchronised with the race and, since many broadcasts of the races are not live may - other MotoGP sources may spoil the race experience by revealing the outcome. One respondent specifically mentioned 'media blackout' as a deliberate ploy to remain ignorant of the result.

- as offered by Dorna Sports through their App is too expensive (a season pass is required to access the Dorna App).

6.3.8 GE6/GE6d How did this version of MotoGP compare to how you usually watch MotoGP?

GE6d	How did this version of MotoGP compare to how you usually watch MotoGP? Free text with follow up: 'What was worse?' and 'What was better?'

What was better?

Sentiment	***Frequency***	***Verbatims***
Camera Angles	14	*The views on the app where you can have your favourite riders rather than skipping to someone else. Or at a boring part of the race you can go to a bit elsewhere.* *A lot better. I think the main thing is the camera views and the leader-board.* *2x The cameras and the 360 were good,* *<<Different, interactive, additional>> cameras.*
Provision of information	13	*A lot better, the fact you can find out more about the specifics, you can get a better view and get more information* *Scan down check the rider times the play backs* *<<More, extra, immediate >> information*
Screen Control	7	*The fact that you can use the devices to look up details and that you can change the screen*
Focus on favourite riders	10	*I had the option to watch what I wanted* *Following a rider was great* *<follow, focus, choose, another>> rider*
Leader Board	2	
More interesting	5	
More Interaction	15	*Interactive <<features, elements, more(x2)>>*
Playbacks	5	
Unique Experience	3	
Better - general mention	4	

GE6d	How did this version of MotoGP compare to how you usually watch MotoGP? Free text with follow up: 'What was worse?' and 'What was better?'

What was worse?

Sentiment	*Frequency*	*Verbatims*
Couldn't Pause	1	
Features wouldn't work / it crashed	5	*It was distracting when it wasn't working. When you press some of the camera angles on the phone, it takes ages for it to come up on the screen - if at all.*
Normal viewing is better	2	
Felt Different	1	
Difficult Set-Up	1	
Missed the race (distraction)	16	*Too much/many <<information, to see, options>>* *That there was too much going on, couldn't focus on the race and the devices, quite confusing and complicated.*
Didn't like it	2	*Too much information. Would have liked an actual view of the track rather than a graphic.*
Too technical	1	
Too much information - difficult or confusing to follow	10	*Once I'm using it's fine. If I had one I wouldn't be playing with it as much.*

Rationale

This questions was seeking to get a relatively unprompted assessment of how the multi-screen experience compared to the traditional TV experience and to understand which features the respondents referred to when NOT prompted. Unprompted recall gives an indication of how respondents see the experience and illuminate what they see as important, distinctive and memorable. The unprompted recall might be surprising compared to the designers' intention, hopes and expectations.

Analysis

The additional cameras angles and the ability to follow a specific rider were identified here as things that make the experience better, with 14 and 10 mentions, along with the provision of information (13 mentions) and giving users control (7 mentions) , and increasing interactivity (15 mentions).

Fortunately few users reported specific crashes or errors but those that did (5 mentions) clearly found the experience worse. Distraction and too much information (cognitive overload) appear as criticisms.

One users note of "no pause button" (whilst not a common criticism) could be an easy fix for an as live production though a little more challenging for live experiences.

No single feature appears to make this experience attractive and for some distraction and cognitive overload make the experience less attractive than the normal TV experience.

6.3.9 GE7 Would you recommend watching MotoGP in this way to other people?

GE7	'Would you recommend watching MotoGP in this way to other people?' (Not advise anyone to watch it) 1 to 10 (Strongly recommend)

Responses	Mean	Mode	Median
85	7.21	10	8

Sentiment	*Frequency*	*Verbatims*
The features were recommended	6	***Positive***
Offers something different	2	*It gives each viewer an interactive experience specific to his or her needs*
The interactivity improved viewing experience	1 2	*Cause it made me feel involved while viewing*
Can see it applying to other sports	0	*More info more engaging can do it with friends.*
Viewing control	6	*Just that I felt it made a big improvement to my interest in the race*
It was annoying	1	*Easy to use and made watching motorsport much enjoyable*
I like it	7	*It keeps you more entertained and makes it better to watch*
Did not add to the experience	4	*More exciting than just sitting there watching it on TV as I felt more involved.*
More interesting	9	***Negative***
It was distracting	6	*I think for fans it would be distracting, however for occasional viewers it's a really fun way to watch. I would have liked more driver stats points and win information.*
It is new and enjoyable	2	*I wouldn't advise people to use this, as I think many other people would also find it to be too much of a distraction and be too complicated.*
Offers a group viewing experience	1	*If it had worked fully it would a great way to watch the race*
Needs improvement	5	*It's not perfect. It's more immersive.*
		Because it didn't particularly work effectively. That may have been the internet. The concept is great, but the technology needs to improve.

Rationale

"Would you recommend" is a well-known over-arching question that probes whether customers think a product or service was good. If respondents think a service is bad they would not recommend it and vice versa.

Analysis

The familiar (by now) negative comments regarding 'distraction' appear but 3 of the 5 comments coded 'needed improvement' were balanced with general enthusiasm for the concept. There were two specific comments about changes, one was to do with requesting 'more driver stats' the second to do with enabling more of the alternative pictures to go full screen on the TV. The first change could be easily accommodated; the second was effected to a degree for event replays (as was appreciated by this respondent), but a design decision was taken to limit the degree to which the main presentation could be swapped in and out at will in order to maintain narrative continuity offered in the main broadcast thread together with the commentary.

The positive comments hint at personalisation and the fact that, compared to the single screen experience, the experience is more engaging, entertaining, exciting, enjoyable and that it 'improves my interest in' motorsport.

6.3.10 GE8 If you wanted to talk to other people about it, how would you describe it?

GE8	If you wanted to talk to other people about it, how would you describe it? Free text responses subsequently coded

Sentiment	*Frequency*	*Verbatims*
Immersive App	4	*If you want to get as much information and interaction while watching a race its great*
Modern technology	9	
Interactive	30	*An enhanced experience not for everyone*
Informative	15	
Good	6	*I would just say it's worth getting. Really good for MotoGP.*
Up Close racing	2	*FutureTV.*
App with Extra Features	5	*Probably as "don't expect to watch it the same way again."*
Control your viewing	19	*The future.*
Group viewing experience	2	*Its like being one of the commentators, you have as many screens and information as they would.*
Distracting	8	
Not very Good	1	*It's alright. Worth it for the events. Wouldn't spend money on it.*
Interesting	5	
Great/better experience	5	*Confusing but maybe once you've played around you'd like it more.*
Confusing/difficult to use	5	
Don't know	2	*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!*
Nothing	1	*'I would describe it as being a new thing for MotoGP, that it was the latest technology, where you can watch a race on TV, whilst using a phone or iPad to find out more about the race (the riders, angles, etc). However it can be quite distracting and a bit confusing to use.' (L57)*
Other	16	

Rationale

This question was hoping to reveal, and to an extent did, expressions that go beyond the factual ('*it was interactive' 'it used iPads'* etc, though there were lots of those, and more towards about the way people perceive it more generally.

Analysis

With the risk of bias creeping in I think '*An enhanced experience but not for everyone'* and *"don't expect to watch <MotoGP> the same again*" are summaries that do not look unrepresentative and are encouraging.

As before, and in line with the '*not for everyone'* comment the potential of the experience to be confusing was also highlighted (5 mentions). It should be noted that viewers could have watched the race on TV with the companion screen switched off – which would have offered a similar experience to a normal broadcast. Trialists may well have felt obliged to look at all the content made available across multiple screens, which led to a feeling of being overwhelmed with choice, promoting confusion.

6.3.11 GE9 How easy did you find it to make use of the content presented across your TV/Phone/Tablet

GE9	How easy did you find it to make use of the content presented across your TV/Phone/Tablet (Impossible) 1 to 10 (It couldn't have been easier.)

Responses	Mean	Mode	Median
85	7.02	8	7

Sentiment	***Frequency***	***Verbatims***
It was distracting	11	***Found it Easy***
Took more attention while learning to use it	0	*Second nature I guess. / Just user friendly / Was easy*
Guides were useful	5	*Very user friendly / Very user friendly and intuitive*
Found it easy	26	*It was just straight forward to follow*
Some parts more distracting than others	0	***Distracting***
Directions were easy	1	*It Was Somewhat Distracting But Didn't Spoil The Overall Experience.*
Found it hard to use	5	*Playing with extras detracted from watching race - also I was learning so it took more attention*
It is complicated	1	***Getting to know it issues***
Set up was difficult	1	*I was a little distracted to start but only because I wasn't sure of the app capabilities.*
Ease of use improved over time	4	*Because it was simple and easy to use once it was set up, however setting it up was quite difficult and time consuming.*
Software didn't work properly	9	*The training was useful and experience of use helped.*
Tablet was easier than the phone	2	*Once the instructions are out of the way it's very simple.*
		Software issues
		A bit slow, less responsive / Not all elements were working
		The software wasn't working correctly / Some of the stuff didn't seem to load. / Did not always work, UI not intuitive / Few little blips
		When it was working smoothly it was good to flip between the two.

Rationale

Ease of use, or lack of it, can kill a potentially good idea. We wanted to understand at a high level how easy respondents found it to make use of the features that the experience offered.

Analysis

In terms of ease of use, the overall response is a solid 7/10 with a mode of 8. There were, we knew, software issues for some and these were 9 comments to this effect. Eleven comments were coded as relating to distraction though some noted this was exaggerated due to everything being new.

The positive comments were not that enlightening, but encouraging, as good design should just disappear.

6.3.12 GE9.2 How did you organize this [experiment] amongst yourselves?

GE9.2	How did you organize this amongst yourselves? Spoken responses recorded and subsequently coded

Sentiment	*Frequency*	*Verbatims*
Devices placed within both viewer's fields of vision	1	*Swapped and shared:* *Easily ..we Swopped Half Way Through!* *We took turns to do stuff* *Took in turns on tablet and phone*
Split it the decisions equally	10	
One was put 'in charge'	8	
Discussed the onscreen options	4	
Highlighted different features to one another	0	
Swapped and shared throughout	13	
Took a device each	32	

Rationale

The ability to control what was on a common screen (the TV) might, we feared, cause additional friction when the MotoGP was watched in pairs (or more). We hoped that normal social TV watching conventions, like those that dictate who has control of the TV remote and who is allowed to change channels, and when, would come into play. We hoped therefore that the new style would not be more contentious than normal TV viewing.

Analysis

Because we were not present during the tests we were intrigued to understand what the negotiation may look like. We wondered whether the distribution of functionalities across devices might be contentious or whether it would be easily managed. There is little here to suggest we have created a contention situation between co-present viewers.

6.3.13 GE9.3 Did you discuss what content to put on the TV screen, or was one person in charge?

GE9.3	Did you discuss what content to put on the TV screen, or was one person in charge? Spoken responses recorded subsequently coded

Sentiment	***Frequency***	***Verbatims***
One person was in charge	24	***Discussion*** *Not much, just the turning the volume of the ambience and commentator mainly, we both tried it. We didn't really know what else could be put on the TV.* *My husband was mostly in charge but we discussed the replays* *'My husband was more so in charge, however we did discuss it as well.' (L18)* *'Discussed what to have but had a lot of fun both trying things out.' (L52)*
We discussed it	29	
We each did our own thing	10	
We swapped over throughout	4	***No discussion*** *'We just did what we wanted.' (L8)* *'One person, we didn't discuss it but we both threw stuff up there.' (L29)* *'Just Watched What The Other User Did.' (L33)* *'Mutual, There Was No Discussion, Just Played Around, Came To Same Conclusions.' (L38)*

Rationale

We asked this question to get a richer picture about how the social negotiation was worked out. In the end the question was not too revealing.

Analysis

There were only two comments (shown) that described specifically the nature of the discussion/negotiation although 29 of the 85 respondents said they did discuss things.

6.4 Results - Feature Feedback

6.4.1 FF1 Unprompted recall. Please try and name or describe the three features or capabilities that contributed most to making this experience better than just watching the race on the TV.

FF1	Unprompted recall. Please try and name or describe the three features or capabilities that contributed most to making this experience better than just watching the race on the TV. Spoken responses written down and subsequently coded

Sentiment	***Frequency***
Bike/Rider cams	41
Audio Controls	24
Heli (cam)	22
Rider and technical Information	19
Favourite Rider (cam)	16
Replays /Events bar	15
Lap and Sector Times	13
Leader-board	11
PIP on the TV / Casting (Cam)	10
Multiscreen (Cam)	10
Viewing Control	10
360 Camera (Cam)	10
Extra Camera Views (general mention) (Cam)	9
Constant Current Rider positions (track graphic or Lap times?)	8
Different user levels (expert/novice…)	3
Highlights Reel	1
Ease of Use	1

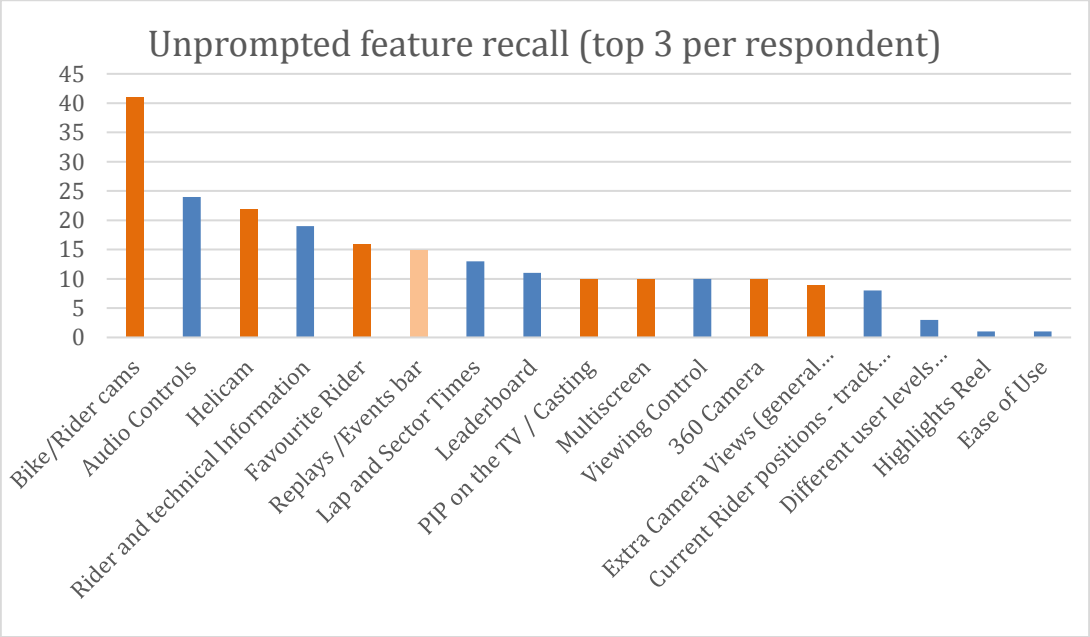


Figure 19 Unprompted feature recall count (top 3 per respondent)

Rationale

This question is checking for unprompted recall of the features and capabilities of the MotoGP at Home experience. The Interviewer invited the respondent to consider things that appeared on the TV or the tablets and phones that they contributed most to the experience. This unprompted recall is an interesting measure that can be used as proxy for the perceived value por particular features. In this study we have also asked questions about perceived value; the responses to those questions will be reported next.

Analysis

Video, then audio.

In the chart above, all the video features are coloured in orange with live video being darker than the light orange VoD based assets.

The single most memorable feature was the *rider cams* (41 mentions). But apart from the bike cams, which appeared a big hit, the next most mentioned feature was *audio control* (24 mentions).

The next most popular video feature was the *helicam* (22 unprompted mentions)

The *rider and technical information* available on the companion screens was the next most mentioned feature (19 mentions).

The ability to scale the size of the leader-board was counted (perhaps generously) under mentions of leader-board but still only accrued 11 unprompted mentions. Similarly the *Different user levels* feature was also less easily recalled (3 mentions).

6.4.2 FF2 Failures? Did you find anything that did NOT work – or that behaved in a completely different way to that which you expected

FF2	Failures? Did you find anything that did NOT work – or that behaved in a completely different way to that which you expected. Please ask the respondent to describe what happened that they thought was wrong. We will have a chance to discuss these in detail in the next section – when we look at each feature individually.

Comment	*Frequency*	*Verbatims*
Nothing	34	*"Yes, the app seemed to crash "*
Crashed	14	*"Not all elements were working so didn't get the full experience"*
Seemed laggy	9	*"It went off the tablet with about 10 laps left and didn't come back on"*
Didn't do everything I expected	8	*"Couldn't watch reviews as both the tablet and phone went off at about lap 9"*
Some features didn't work / stopped working	5	
Too distracting	3	
Set up was difficult	3	
Didn't use the phone as much	3	
Couldn't Unselect the events	3	
Don't know	2	
360 camera wouldn't work	2	
Couldn't pause / rewind / rewatch during the race	2	
Other	1	
Could only have 2 PIPs	0	

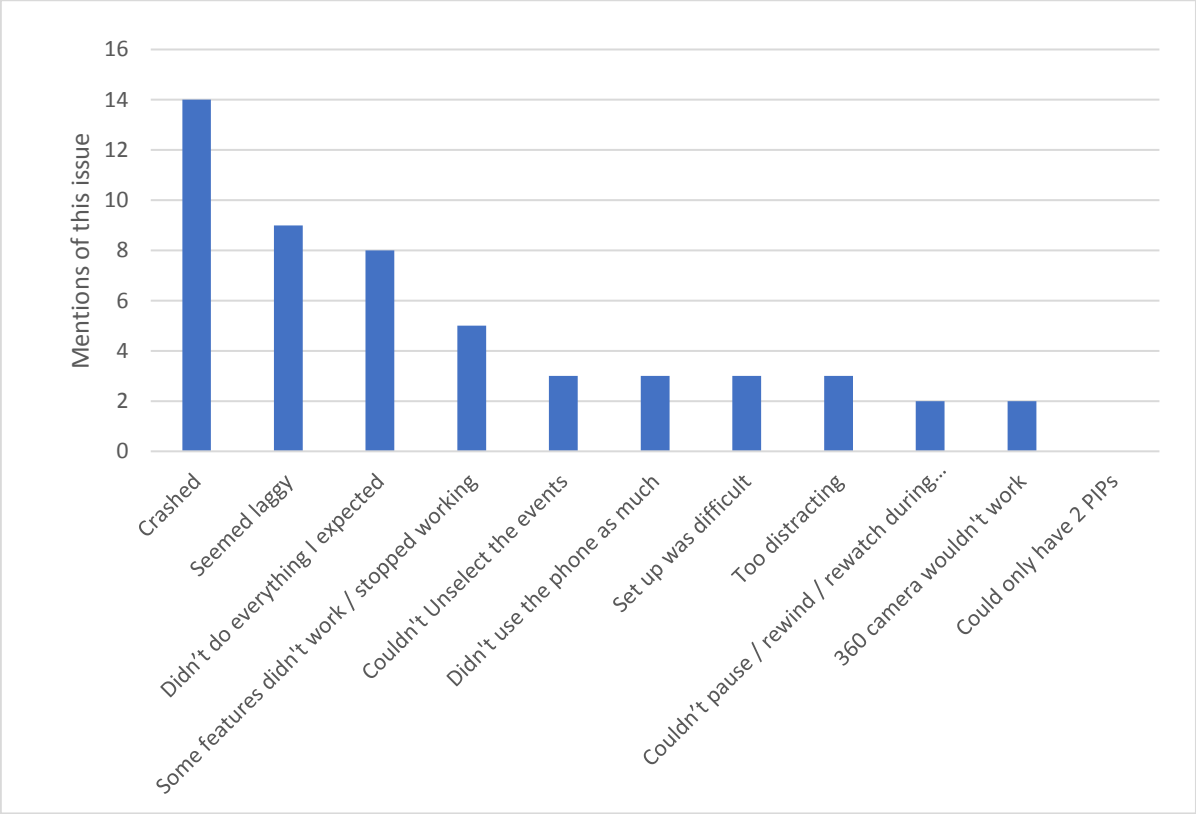


Figure 20 The frequency of occurrence relating to perceived failures.

Rationale

This question is checking to see whether respondents felt the experience failed in any way. As a service prototype we fully expected some failures, though it never stopped us being disappointed by them.

Analysis

Overall we were pleased that there were not too many crash/failure modes noted. This helped users to see the experience and judge that, rather than see the failures, and judge that.

We were aware of and not surprised by some crashes (14 were mentioned) these were often recovered by restarting the app.

Some of the observations relate to bugs we discovered related to a time out parameter which meant certain features disappeared for some users (this bug was addressed). *"It went off the tablet with about 10 laps left and didn't come back on"*

"Couldn't watch reviews as both the tablet and phone went off at about lap 9"

"Laggy" is a fair reflection of the responsiveness of some features, particularly the placing of PiP elements on the main screen and sometimes of highlighting additional videos in the view panel on the tablet. These feature did feel laggy taking a few seconds to arrive on the screen. The 360 video was often slow to appear and sometimes, if bandwidth was in any way limited (we felt the system needed 25Mb/s or more to operate smoothly), did not appear at the first time of asking and sometimes not at all.

The faults identified 'didn't use the phone much'; 'set up was difficult'; 'too distracting' are reflections on the design of the experience and not the utility of the platform so do not necessarily highlight a technical fault per se.

We have throughout the tests wondered 'how many concurrent video windows was too many'. We designed the system to accommodate one PiP for each vieweron the main screen. We wondered whether any users would identify this design choice as failure; they did not.

6.4.3 FF3 How easy did you find the set up process?

FF3	How easy did you find the set up process? [10 - Couldn't be easier; 1: Impossible] Supplementary: Were the instruction clear enough?; Did you find anything confusing?; How could we improve the process.

59 of a possible 85 responses	Mean	Rank (similar questions)	Mode	Median
Ease of use	6.87	13 of 13	10	8

Sentiment	***Frequency***	***Verbatims***
Easy	20	*"It was easy" / "It was seamless but I do have an understanding"*
Clear Instructions	4	*"basically a plug and go system"*
Difficulties with device Connectivity	7	*"just connected and did what it said on the instructions"*
Instructions lack Clarity	11	*"used to plugging in leads – very easy"*
No 4k Compatability	0	*Doesn't explain about the 4k tv not compatible*
Wi-Fi Problems	3	*Problem with tv being 4k*
Difficult/ complicated / Confusing	5	*The whole setting up process was confusing, trying to connect it to wifi, then trying to connect the devices to the tv, also using the phone with different experiences.*
		Yes couldn't connect wirelessly and didn't know why
		Instructions not clear enough confused with the two wifi sv
		The instructions didn't really explain the exact process. It would be simpler if it were as simple as Chromecast or Amazon Fire. Fewer cables
		Wasn't the easiest to set up, instructions were garbage

Rationale

Allowing users to initiate a multi-screen experience was judged by those in the project to be a key challenge. We wanted to understand whether the improvements we perceived we had made since the Theatre at Home demo would be rewarded by better feedback about the set up process.

Analysis

This question received the lowest scores, in terms of ease of use, of all the features for which we asked questions.

Having said that for some users it worked and with a mode of 10, most found it really easy. There were some specific issues for early triallists with 4kTVs, the small computers did not work with some 4k TVs at first – we had to upgrade the firmware to make this work.

The design had borrowed from existing connection procedures, like Chrome Cast and from captive portals for joining private WiFi connections and was broadly in line with the state of the art..

On reflection "*The instructions didn't explain the exact process"* may be fair criticism. The instructions worked but it was not necessarily stated what you were doing at each stage and perhaps they could have been more explicit.

This feature is one that the user would, in real live service, only have to get right once. So, like organising the self-tuning of a TV or connecting up an AV amp, it may be time consuming and not always 'seamless', but once done the user can forget it.

6.4.4 FF4 Feature feedback on the Inside MotoGP guide section

FF4	Inside MotoGP - Guide This presents a number of short videos explaining how to use the experience and where to get help. Value: 10 Essential – Worthless 1 Ease of use: 10 Couldn't be simpler – Impossible 1

59 responses from a possible 85	Mean	Rank (similar questions)	Mode	Median
Value	7.86	7	8	8
Ease of use	8.14	10	10	8

Sentiment	***Frequency***	***Verbatims***
Helpful	16	*Good to find out info before the race*
Necessary	3	*This bit was really useful to explain what to do, but I didnt pay attention to the first half hour (before the race) because I was watching the tutorials.*
Feature didn't work	2	
Easy to use / understand	4	*You could get sorted before the rac started and pick favourite riders first*
Don't Know	8	
Nothing	23	
Other	0	

Rationale

The per feature feedback questions are designed to give the designers an idea pof the utility and ease of use of each feature

Analysis

Not all triallists engaged with the Inside MotoGP section, 59 reported that they did so from a possible 85, but from those that did the strongest sentiment was that the feature was 'helpful'. This feature will not 'set the world on fire" but it is useful and good practice to have simple tutorials available.

However, it was noted during trial observations that there was an issue where the volume level of audio from the TV, negatively impacted the ability to follow guides (or any other video) shown on the companion screen

6.4.5 FF5 Inside MotoGP - CatchUp This presents a range of videos providing context for the race being covered.

FF5	Inside MotoGP – Technical CatchUp Value: 10 Essential – Worthless 1 Ease of use: 10 Couldn't have been easier – Impossible 1

59 responses of a possible 85	Mean	Rank (similar questions)	Mode	Median
Value	7.68	9 of 13	7	8
Ease of use	8.05	12 of 13	8	8

Sentiment	***Frequency***	***Verbatims***
Not coded – too few emergent themes		*Essential for the build up* *It was interesting to focus on key rivalries and teams* *Easy to use but not really needed* *Improvements* *Live championship standings would be good* *I think they had plenty of information, which was great.*

Rationale

The per feature feedback questions are designed to give the designers an idea pof the utility and ease of use of each feature

Analysis

Only 38 users claimed to have used this feature. It did not create very strong opinions but those that were expressed were broadly positive.

Contextual Provision - The inclusion of catch-up videos was made to highlight and promote content that could supplement the pre-race presentation shown on TV. It offered the broadcaster and content producer the chance to promote material that would not normally be viewed while watching the TV broadcast, thereby gaining addition value through higher content views.

Data logs also provide more information. About 620 video start events were logged (about 15 per household). For some of these we were able to identify start and stop actions and based on the time stamps recorded against these actions we were able to estimate the duration for which each video was played and to compare this with the duration of each clip. The data were not perfect; but after some data cleansing to remove nonsensical data we can (plot for 472 of the 620 video start stop pairings) the scatter plot shown in Figure 21. Clearly many videos were started and stopped and showed only a small fraction of the whole video. Some data logs report more than 100% an artefact of the way that the logging was completed creating systematic errors in the real timing.

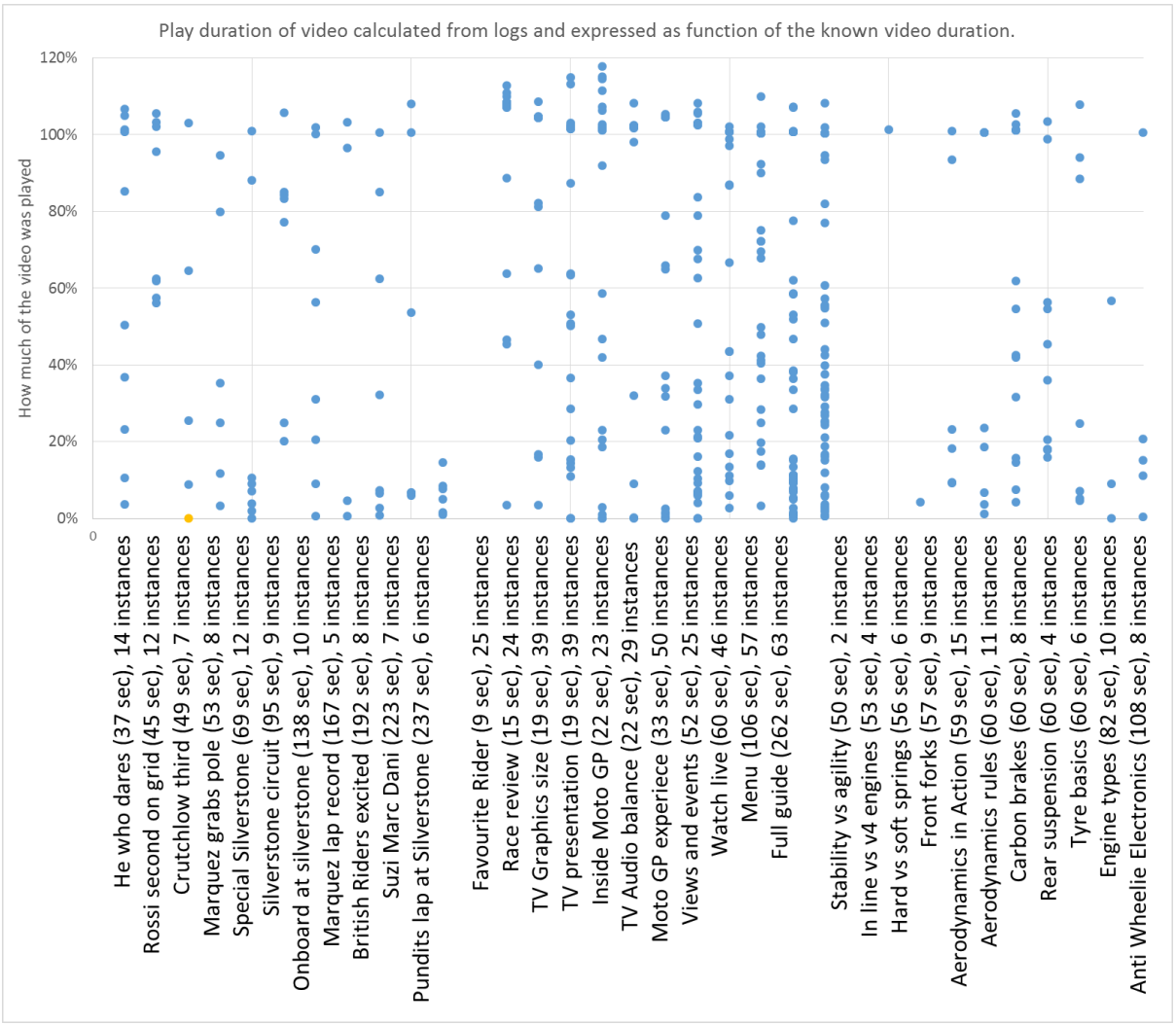


Figure 21 Scatter plot, with each dot being a video play event, showing how much of each video was played for 472 video play events.

The same data is plotted as a box and whisker plot in Figure 22. This shows that of the three main sections in the inside MotoGP chapter the videos that were watched more assiduously, or at least the videos that were watched more nearly to the end were the instructional videos showing how the experience could be navigated (having noted that, many of these videos were short with only two of the 11 being longer than one minute). The distribution of view durations for the guides, as illustrated in the box plots in Figure 22, shows that viewers were less likely to watch a large fraction of the longer videos. The Full Guide video for example, the middle quartiles span 17%-55% of the view duration whereas the 31 second long Watch Live the middle quartiles span 38% to 100%.

The tendency to not watch videos in their entirety is consistent with the idea that users were experimenting; trying things out to see what happened and not really seeking the information that the video contained. This is consistent with some of the comments such as “seemed OK only had a quick look” as noted in section 6.4.6

This behaviour may also highlight a conflict between watching the main pre-race presentation on the TV and watching supplementary content on a companion screen. We believe that we may have seen an increase in viewing this supplementary content, if we had included a TV commercial break in the broadcast during the pre-race presentation.

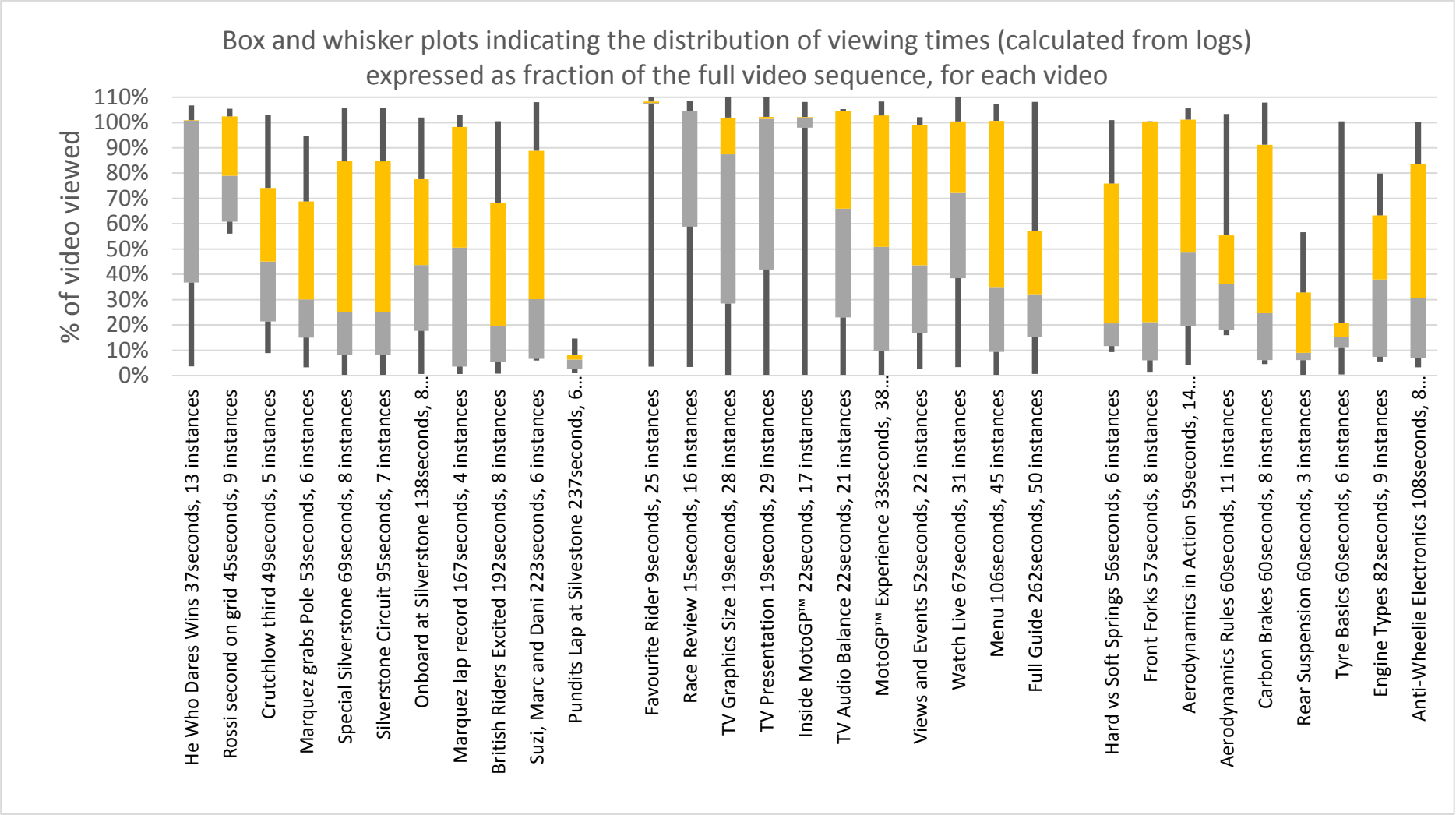


Figure 22 Box and whisker plot indicating for the three main elements of the Inside MotoGP chapter (CatchUp, Guide and Technical) the distribution of viewing times expressed as a fraction of the whole duration of each video.

6.4.6 FF6 Inside MotoGP - Technical - providing information as animations, video and text to help you understand what lies behind some of the more technical aspects of MotoGP

FF4	Inside MotoGP – technical Value: 10 Essential – Worthless 1 Ease of use: 10 Couldn't be simpler – Impossible 1

59 of a possible 85 responses	Mean	Rank (similar questions)	Mode	Median
Value	7.86	7 of 13	8	8
Ease of use	8.14	10 of 13	10	8

Sentiment	***Frequency***	***Verbatims***
Not coded – too few emergent themes		*Only had a quick look – seemed to have potential* *I believe was more useful to someone with little experience of MotoGP* *I love the view of the physics that make MotoGP work* *Easy to look at but only glanced at it*

Analysis

Again the technical feature appears to be "OK", welcome but not that exciting, another hygiene factor perhaps?

Contextual Provision - The inclusion of technical videos was to highlight and promote content that may be of interest to a broad range of viewers. It further offered the content provided a way to promote material that would not have normally been search for and found on a website or YouTube.

6.4.7 FF7 Watch live - Views - Leader-board

Spoken question: On the companion screen, you could select 'Leader-board' revealing an interactive leader board where you could "click on" different riders and then swipe left and right to reveal more information about each rider including their tyre configuration, team details and see lap time data as well as on board bike cams.

FF7	Watch live – Views – Leader-board Value: 10 Essential – Worthless 1 Ease of use: 10 Couldn't be simpler – Impossible 1

69 of a possible 85 responses	Mean	Rank (similar questions)	Mode	Median
Value	8.23	6 of 13	10	9
Ease of use	8.49	7 of 13	10	9

Sentiment	***Frequency***	***Verbatims***
Nothing	17	*Easy; Simple; Just easy; Really easy*
Easy to use	10	*Just enjoyed the added information like lap times*
Enjoyed the extra info	7	*Useful to view tyre options*
Helpful for keeping up (lap times etc.)	6	*The information was useful especially if drivers not so well known*
Liked that it was kept current throughout	5	*Really enjoyed this feature and enjoying experience with rider - understanding technical bits i.e., tyres etc.*
good feature	5	*Comparing riders next to one another on leader-board.*
Identified improvements	4	*Time Comparisons Per Lap etc*
Other	4	*Really relevant to the experiences.*
Didn't always work	3	*Perhaps add replays relating to specific riders you're viewing*
Didn't realise all it could do	3	*Different UI for the swipe?*
Didn't like it	3	*Could tutorials and pointers on first use have been helpful?*
Don't Know	0	

Analysis

The high average scores for ease of use (8.49/10) and value (8.23/10) suggest this feature was easy to use and valued. Some users found some issues ("didn't work"); this may be related to limited bandwidth for those users as the feature was always working as far as we can tell from the logs.

Others had ideas about other information that could be shown with one commenting "*Perhaps add replays relating to specific riders you're viewing" and "different UI for swipe".* Although this feature was outlined in the video guides, some users did miss the additional functions that could be accessed via swiping. In hindsight the UI design should have indicated this functionality using overlaid arrows or multi-panel dots to highlight additional available content..

Log recordings that show how many interactions with the leader-board took place in each household (as shown in Figure 23) show that majority of households (18 of the 28) completed more than 8 interactions. Some households (9 of the 28) appear to have only one interaction. It may be that the feature was not

valued – perhaps users got the leader board information from the TV screen (not the tablet), or perhaps they did not notice the interaction possibility. At least one user suggested a different interaction mechanism than the 'swipe' and at least one told us that they did not realise the leader-board was interactive. It is also possible that some users become too engrossed with other options and overlooked this set of options.

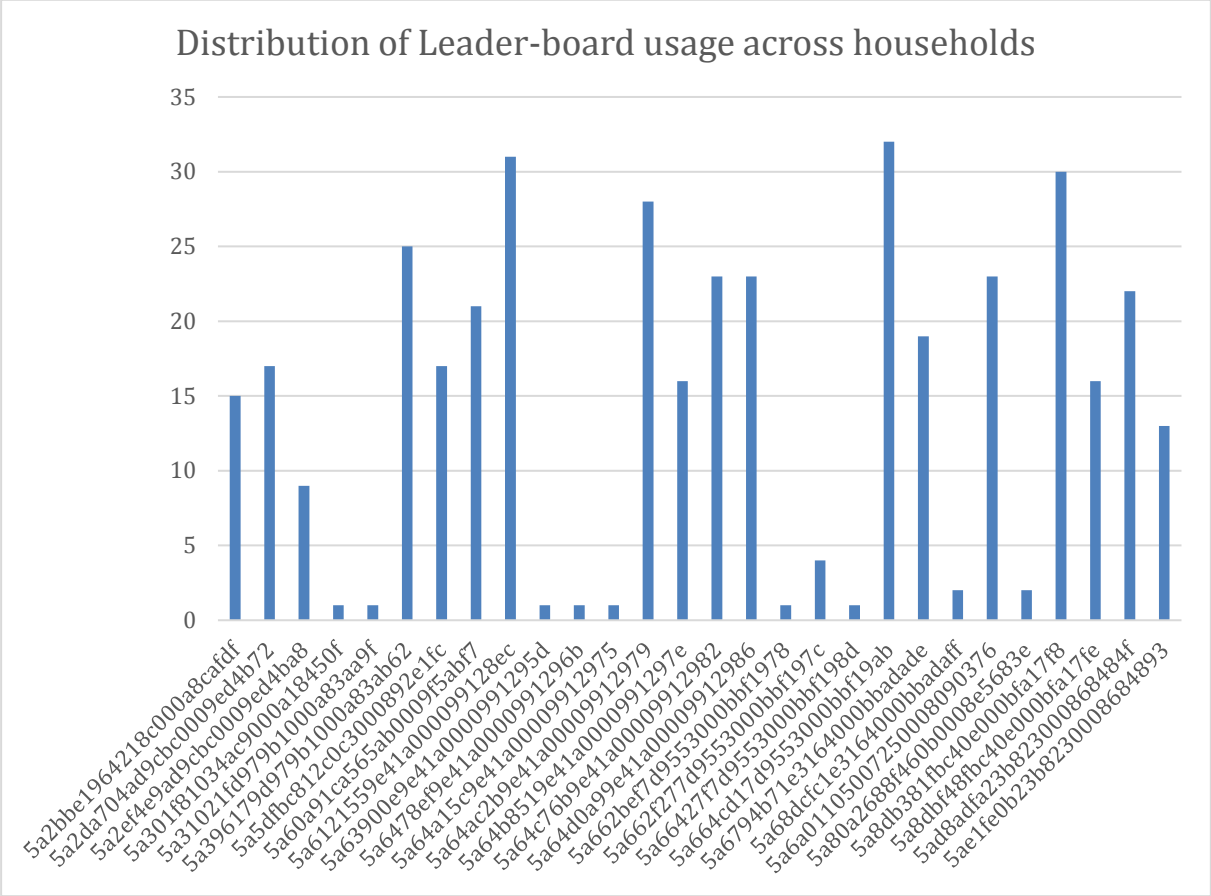


Figure 23 Showing the number of interactions with the leader-board that took place in each household.

Log data can also offer some insight into the popularity of different riders. It will be of no surprise to see that the Rossi video accessed via the interactive leader-board received more views than any other video and that Rossi videos were watched for longer than the videos of any other rider.

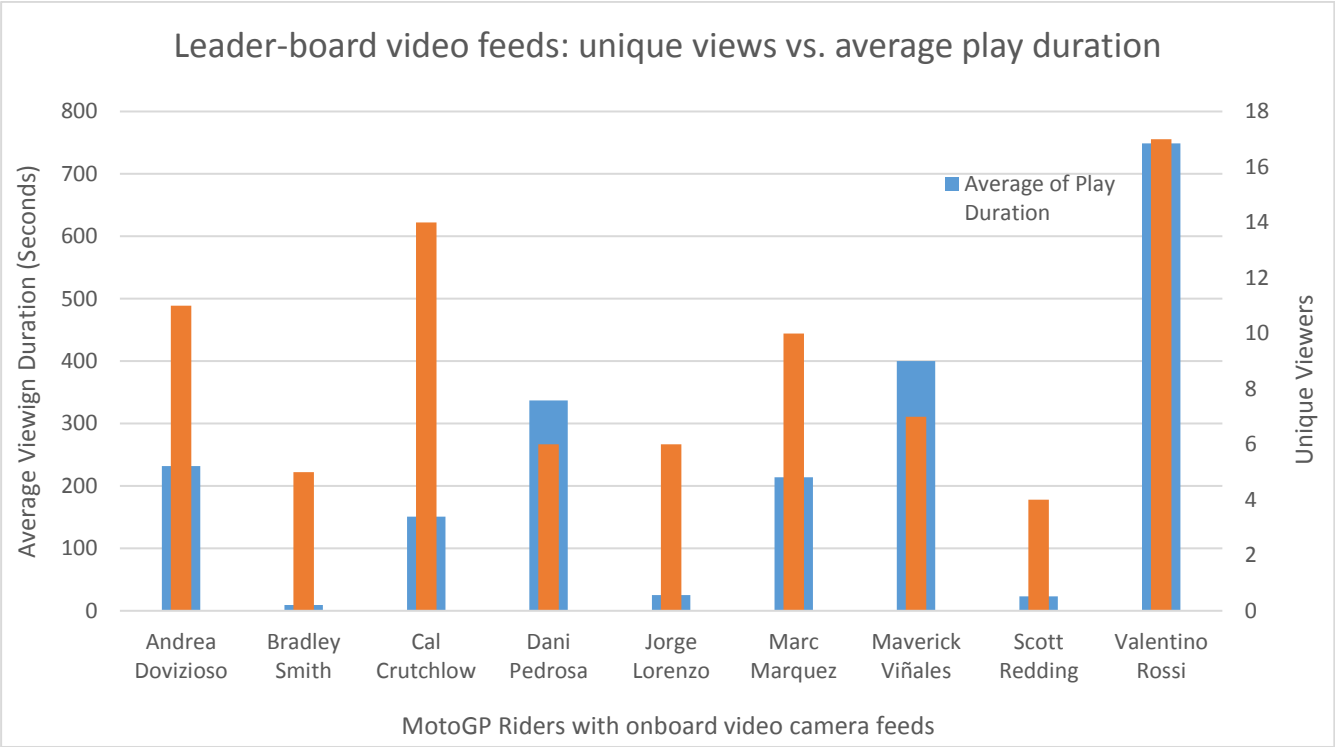


Figure 24 Showing the unique views (right hand scale) and the average video viewing duration (left hand scale) afforded to each of the selectable video streams in the leader-board

6.4.8 FF8 Watch Live - Events - Event replay

Spoken question: As the race progressed a growing list of events was populated on the companion screen showing some of the key incidents and spectacles of the race. Selecting one of these events, described using an icon with some text, on the companion screen resulted in the event appearing as a replay, shown picture in picture on the main TV screen, as well as being shown on your companion device.

FF8	Watch Live - Events - Event replay Value: 10 Essential – Worthless 1 Ease of use: 10 Couldn't be simpler – Impossible 1

59 of a possible 85 responses	Mean	Rank (similar questions)	Mode	Median
Value	8.67	2	10	9
Ease of use	8.69	4	10	9

Sentiment	***Frequency***	***Verbatims***
FF8 - Balance in Viewing Events cf Live race		*Took time out every so often to look at the interactive features*
Dipped in and out of both	7	*It seems normal, they would have shown those events anyway so it was nice to have control over that.*
Just when something of interest happened	6	*Wasn't difficult as one didn't distract me from the other, watched more of the race, but swapped from one to the other.*
Watched more of the race live	5	*Watch when my interest is peaked*
Didn't watch during the race	4	*If something good happened I went back to watch it.*
Watched events when race was quiet	3	*Watched events when a good one happened*
Other	3	*Didn't watch during live race*
Found it difficult to balance / distracting	1	**Critical observation***:*
Don't Know	1	*Selection was easy but I couldn't correct a wrong choice - I had to wait for it to complete*

Rationale

The per feature feedback questions are designed to give the designers an idea pof the utility and ease of use of each feature

Analysis

One of the aspects of the design we were curious to evaluate was whether having the optional replays, ones you could choose to see on the big screen, would interrupt the viewers' enjoyment of the main narrative of the live race and be a net negative feature. The response from this evaluation suggest this is not the case and shows that users are capable of negotiating and deciding whether (and when) to show a replay, so that is doesn't interfere with the live race narrative.

An observation made by one user '*Selection was easy but I couldn't correct a wrong choice - I had to wait for it to complete'* is a good one. Although the replay clips were typically less than 10 seconds, we recognise that a stop replay function would be a useful capability include. .

The user perceptions of the different features and elements of the experience can be augmented by log data. Users reported positively on the Event Replay function (which allowed highlighted events to be replayed both the Watch live chapter, when they were replayed on the big screen and the tablet, and in the race Review chapter when they were replayed on the tablet only. In aggregate, across all households, there were 429 recorded event replay triggers, equivalent to nearly 10 per household.

The log data can also reveal the relative popularity of the different events (determined by the number of times each event was triggered).

Figure 25 shows log data result showing the frequency with which the different event replays were selected. The events have been characterised as 'race event replays', (blue), 'interviews' (yellow), 'slow motion replays' (grey) and 'crashes' (orange). The most popular even (by numbers of time triggered) was the Marquez wobble. We can't be certain, but we believe the popularity of this event may be inflated by the fact that 1) it was one of the first events to appear in the race and 2) it is so short that it is actually quite difficult to see and we have observed people trigger this replay 2 or 3 times just so that they can 'spot' the wobble.

Race affecting events like engine failures and crashes appear, in general to be more popular to view as replays than interview features.

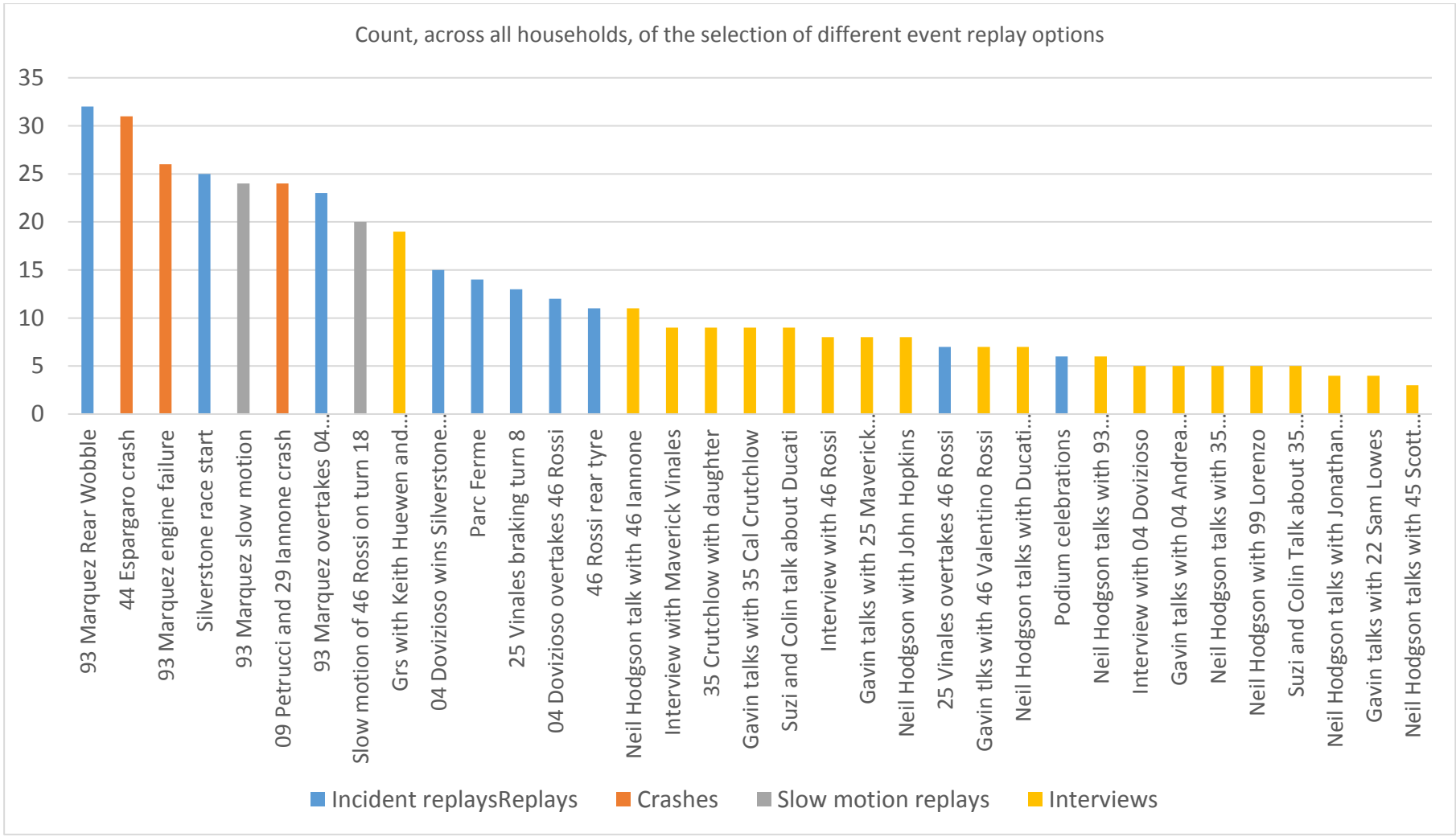


Figure 25 The number of times each event replay was selected (aggregate across all households)

6.4.9 FF9 Watch Live – Presentation - TV Graphics Size

Spoken question: During the race, you can choose to change the size of some of the graphics that appear on the TV to better suit the size the size of the TV on which the race is being shown.

FF4	Watch Live – Presentation – TV Graphics Size Value: 10 Essential – Worthless 1 Ease of use: 10 Couldn't be simpler – Impossible 1

59 of a possible 85 responses	Mean	Rank (similar questions)	Mode	Median
Value	7.25	11 of 13	8	8
Ease of use	8.15	9 of 13	10	9

Sentiment	***Frequency***	***Verbatims***
Not coded as it was difficult to identify common themes		*Because if you have it on your phone youd look at that instead.* *It was good, but I wouldnt miss it* *That is good for people with bad eyes or in a pub* *Wasn't really useful*

Rationale

The per feature feedback questions are designed to give the designers an idea pof the utility and ease of use of each feature

Analysis

This feature was one that, exploited the facility of rendering video and graphic elements on the client device to provide a responsive presentation. . It was appreciated by both BT Sport and Dorna Sports who currently fix a single representation based on a presumed average TV screen size. We feel this is a possible 'quick win' offering an immediate feature that content producers and broadcasters may feel creates a better and more flexible presentation without introducing too much interaction or disturbance to the standard broadcast narrative.

This was one of the features least valued by our users (11th of 13 in the rankings). As we didn't capture data on the size of TVs used in the trial, it may be the case that the default setting (optimised for 32" TVs) was the best setting for the majority of trialists, hence the low perceived utility value.

During the design process we considered delivering this capability automatically, using EDID signalling from the TV, about its size and resolution to select an optimal layout as defined by the content provider. However, we chose to offer this as a manual adjustment to highlight the feature, understand the viewer's preference for graphics size with respect to screen size and to accommodate viewers with differing accessibility needs. Users who responded to a question about this suggested they prefer a manual selection (16 of the 19 responses). However, we believe that this facility should perhaps determine the best layout automatically and allow user to change manually if they chose so to do. Once a configuration was selected, we imagined that this would then typically remain unchanged.

6.4.10 FF10 Watch Live – Presentation - Experience Levels

Spoken question: During the race, you can select different presentation styles which were designed to suit viewers with different experience levels. Selecting Novice, Standard or Expert modes affected the appearance of the leader board panel and PiP titles on big TV screen.

FF10	Watch Live – Presentation – Experience Levels Value: 10 Essential – Worthless 1 Ease of use: 10 Couldn't be simpler – Impossible 1

59 of a possible 85 responses	Mean	Rank (similar questions)	Mode	Median
Value	6.98	12 of 13	10	8
Ease of use	8.93	3 of 13	10	10

Sentiment	***Frequency***	***Verbatims***
Not coded as no strong/dominant themes emerged		*Fine, just not really a vital feature.* *Not a great feature.* *Couldn't really see what had actually changed* *Not really much difference*

Rationale

The per feature feedback questions are designed to give the designers an idea pof the utility and ease of use of each feature

Analysis

Somewhat like the TV Graphics Size feature this was one that many involved in the project thought was provided a good example of the personalisation capabilities offered by Object Based Broadcasting and client side rendering. Our viewers were not too enthusiastic about this feature; it's not that they did not value it (it scored a mean of 7 on a 1-10 scale) just that they liked it or appreciated it less than some of the other features. It may have been too subtle '*Couldn't really see what had actually changed'; 'Not really much difference'.* These comment may also be as a result of the trialists already being familiar with MotoGP. An audience of novice MotoGP viewers may very well have appreciated a more explanatory presentation offered by this facility.

The design team had wanted to further utilise this 'Experience Level' facility across other TV graphics and to also influence the presentation and layout of content on companion screen, but timescales and resources did not allow this.

6.4.11 FF11 Watch Live - TV Audio Balance

Spoken question: During the race, on your companion screen device you could affect the way the audio was presented, opting to choose different race commentaries and/or to independently vary the ambient noise (the sound recorded at the track, mostly the crowd and the engine noise) and the commentary. Did you use this feature?

FF11	Watch Live - TV Audio Balance Value: 10 Essential – Worthless 1 Ease of use: 10 Couldn't be simpler – Impossible 1

59 of a possible 85 responses	Mean	Rank (similar questions)	Mode	Median
Value	8.37	5 of 13	10	9
Ease of use	8.96	2 of 13	10	10

Sentiment	***Frequency***	***Verbatims***
Liked that the audio streams could be customised	14	*So that people can tailor the sound to themselves* *Can mute the commentary or bikes to listen easier*
No Comment	10	*I like to watch with no commentary*
Liked having the option	4	*Nice to not always have the commentary* *I did use this sometimes as the sound can distract from everything*
Good feature	4	
Useful	4	
Didn't see the use	4	*Audio from riders would be good.*
Improved focus	2	*Hearing bikers talk to pits would be good*
Other	2	*Team mics would be good*
Likes no commentary	0	

Rationale

The per feature feedback questions are designed to give the designers an idea pof the utility and ease of use of each feature

Analysis

It is easy to overlook audio and the role it plays in TV as many consider the TV as a purely visual medium. The project has sought to remain aware of the value of audio and to utilise the object based approach for audio where possible. We enabled users to change the relative volume mix of the ambient (bike noise) and commentary. The feature was valued (8.37 on a scale of 1-10) and easy to use (8.96 0n the same scale). It appears to be good example of a personalisation feature as there is no strong consensus about what is "better" some think the commentary could be ignored *I like to watch with no commentary* and there is known concern, especially for the hard of hearing, that ambient and background noise can obscure the dialogue/commentary making a story, or event, unintelligible.

Users also suggested that additional audio feeds may be interesting, such as the talk back between riders and the pits. We agree this would have been interesting to include but team / rider communication is not currently used in MotoGP. Alternative commentaries could have been provided, but we decided to offer a simple 2-channel option to evaluate this feature. .

6.4.12 FF12 Live – Views - Tablet Presentation

Spoken question: During the race, on the tablet, you could change what was shown on the tablet by adding bike cams, lap and circuit data or the circuit map showing the positions of the riders to be shown on the tablet. (Facilitators should point to the images below as a reference to help the users. Concentrate on the video & map features –as the table are covered in FF13.)

Supplementary: Was the balance of information right here, how did you juggle the camera views and maps on the tablet, with watching the race on TV?

FF12	Live – Views - Tablet Presentation Value: 10 Essential – Worthless 1 Ease of use: 10 Couldn't be simpler – Impossible 1

59 of a possible 85 responses	Mean	Rank (similar questions)	Mode	Median
Value	8.76	1	10	9
Ease of use	9.12	1	10	10

Sentiment	***Frequency***	***Verbatims***
The comments given in response to 'Why did you give it that score?' were difficult to code as while the comments were mostly positive, the aspects being commented upon were broad making it difficult to group them for coding. A few of those that did have a problem with this feature, commented on the software not seeming to work properly or being slow to respond. A couple of people also commented that they preferred to use the tablet over the phone as the screen was bigger. What is the right number of screens and tables to show on the tablet? 1 0 2 5 3 3 4 10 5 5 6 1 12 0 Fine as it is 5 25 1 Personal preference 2 no idea 4 blank 43 other 1		*+ve* *This was great. Most of my interaction was using the tablet. Lots of fun* *It was pretty cool. Nice to see all the screens together.* *That really improved the race for me* *Good to see all the riders in different positions* *-ve* *It didn't always happen straight away, which made it feel like it wasn't working.* *Some Camera Views Seem To Stick.* *No good as once I chose a rider I couldn't change to another one* *s many as the phone can display. Although more than three would be, I think* *3 on board with lap times was probably too much for me* *There's enough as more would make them too small for the tablet screen*

Rationale

The per feature feedback questions are designed to give the designers an idea pof the utility and ease of use of each feature

Analysis

Determining the right number of video windows and tables to show on the tablet screen is a balance. Too few additional screens/tables and users may feel frustrated, too many and each video (or table) becomes too small or may result in cognitive overload meaning users will and not be able to utilise the information being presented to them. The design decision was to limit the videos on the tablet to 4 + the timing data or 6 videos with no timing data.

Nearly all responses suggest this decision is about right. One user commented that bike cams from all riders should be available, whether they really felt 25 screen on the tablet was a good idea is a not clear.

The professed use and assessment of the view panel feature can be correlated with the data logs as shown in Figure 26. These data show that the view panel was opened, nearly always twice for each household in the trial, and that nearly all households selected and deselect multiple feed multiple times.

The lap and circuit time information was selectable on the views menu. In Figure 27 and Figure 28 we can see that the Companion stats view was selected about 30 times across the 44 households and that is was selected in 25 of the 44 households. In terms of its popularity-ranking it is "mid table".

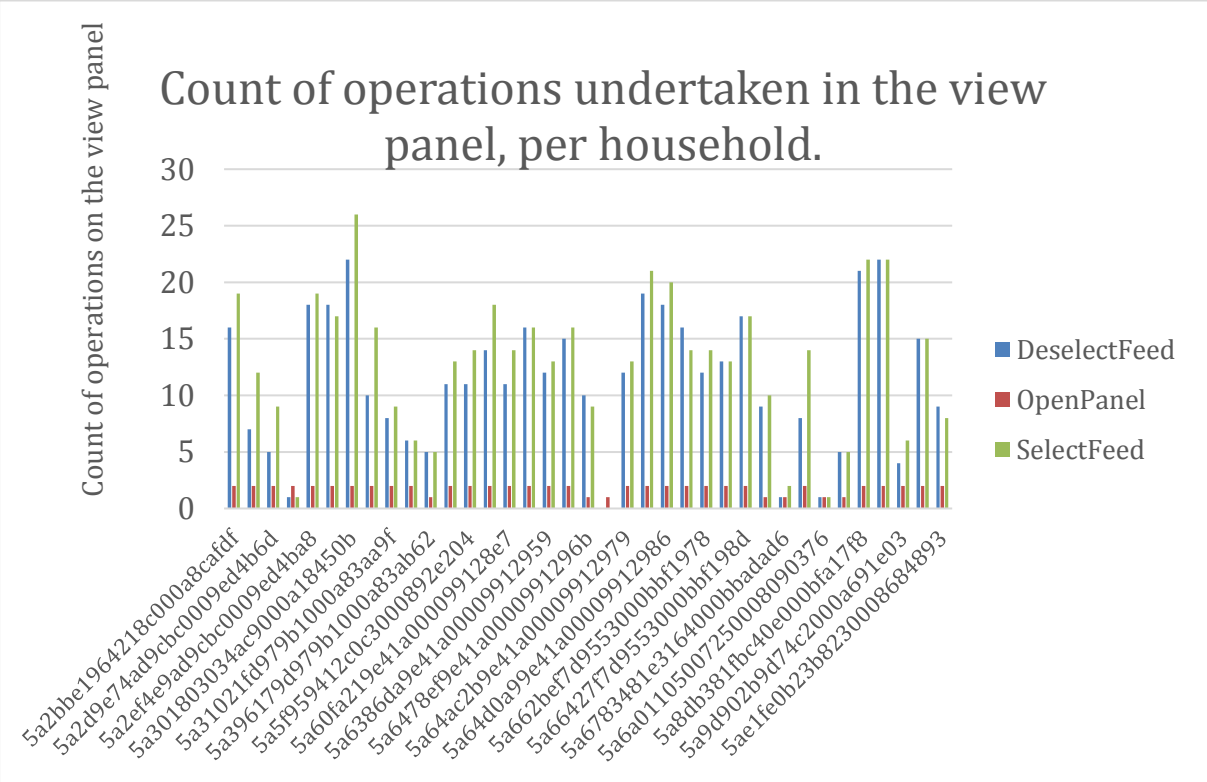


Figure 26 Showing the number of times, for each household (indicated by a hexadecimal string identifier), that the 'view' panel (which enabled user to affect the layout on the tablet) was opened and the number of times different video feeds were selected and deselected.

A measure of the relative popularity of the different view options can be divined through counting the total; number of time each option was selected across all households, this is shown in Figure 27

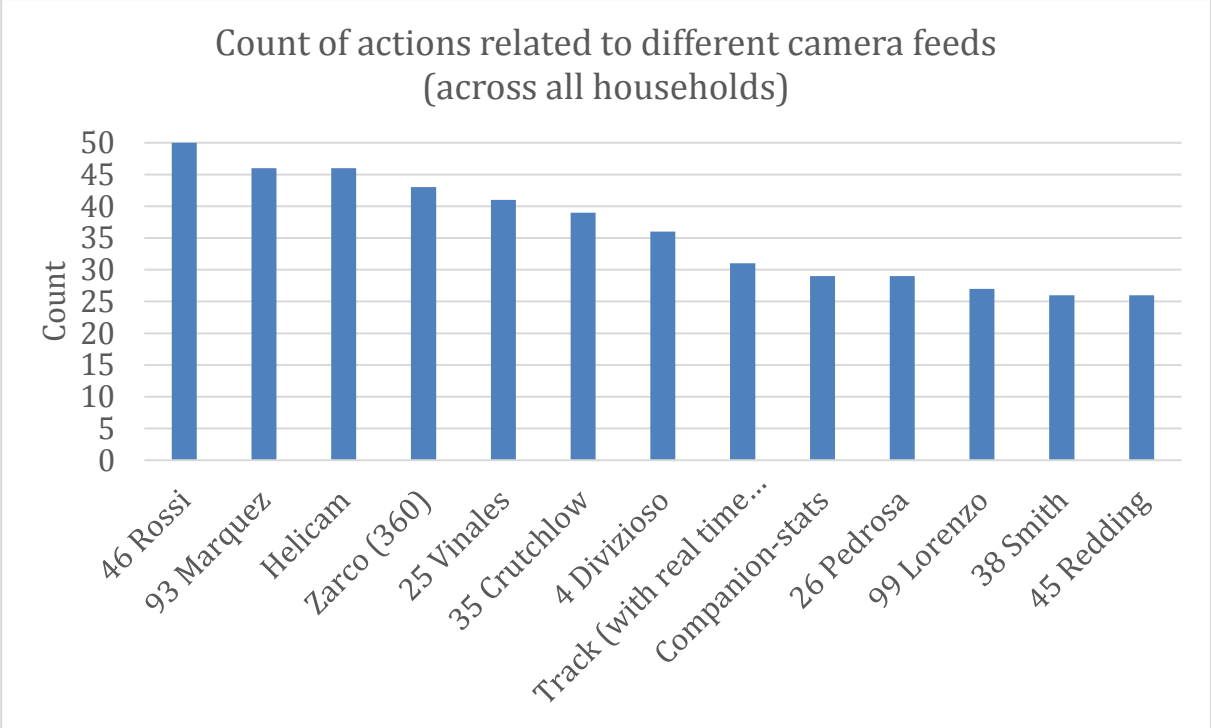


Figure 27 Total number of times that different camera selections were made on the view panel across all households

Figure 28 shows the number of households that selected a particular video. Both **Figure 27** and **Figure 28** are consistent with the (well known) popularity of Rossi. The data are useful but they do not give the full picture; it would have been good, for example, to understand which videos were selected for the longest period which would indicate the most popular media layouts on the tablet..

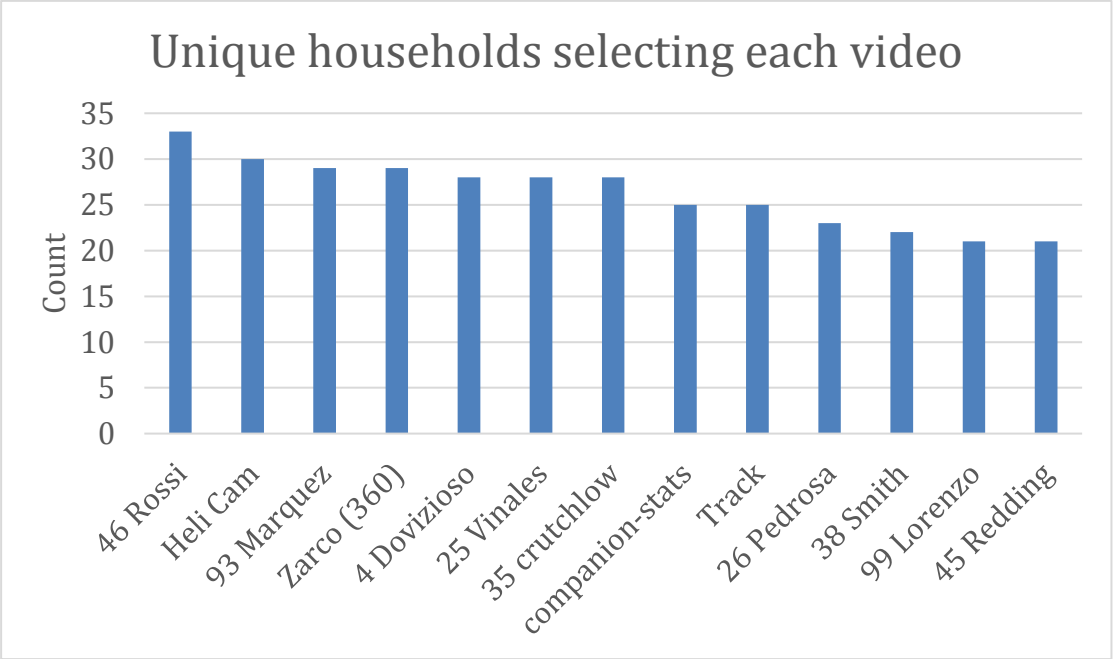


Figure 28 The number of households selecting each video.

6.4.13 FF13 Watch Live - Views - Lap and Circuit Times

Spoken question: During the race, you could choose for the leader board and circuit times to be shown. This allowed you to see the sector times of each rider during the race.

FF13	Watch Live – Views - Lap and Circuit Times Value: 10 Essential – Worthless 1 Ease of use: 10 Couldn't be simpler – Impossible 1

34 of a possible 85 responses	Mean	**Rank (similar questions)**	Mode	Median
Value	7.82	8 of 13	8	8
Ease of use	8.35	8 of 13	10	8

Sentiment	***Frequency***	***Verbatims***
FF13 - Comments		***+ve***
1 Useful for showing race progress	5	*As part of a composite view on the tablet. Nice to have them up all the time as they aren't always on the TV - you can confirm gaps are closing by looking down...*
2 Other - Positive	4	*gave a good view of how your favourite rider is progressing, or not.*
3 Other - Negative	2	*You can see who's where without it being on the screen*
FF13 - Information Balance		*Yes a great balance of information. I watched the race for 5/10 mins, then looked at the extras, like the data tables.*
1 Good Balance	21	*Balance was right. Used tablet for stats.*
2 Struggled to use	5	*Yes the information was just right. I just tried to look at both, but it was distracting.*
98 No Comment	0	*about the right amount*
99 Other - General	6	*No balance was right*
FF13 - Information Amount		*Enough for a novice*
1 About right	22	
2 Too much	4	***-ve***
3 Not enough	1	*Too much to do all at once*
97 Don't Know	1	
98 No Comment	3	

Rationale

The per feature feedback questions are designed to give the designers an idea pof the utility and ease of use of each feature

Analysis

The lap time information raked as the 8th most popular feature (i.e. relatively speaking, not that popular). Even so there were few (only 2) actively negative or critical comments and whilst some (5) reported that they struggled to use the feature 21 reported that the information balance was good and 22 reported that the amount of information was about right. It's not clear if there is anything wrong with this feature – just perhaps that it is not as important to viewers as other features.

6.4.14 FF14 Watch Live - 'Views' - Picture-in-Picture

Spoken question: During the race, in 'views', clicking on rider names on the leader board (on the phone & tablet) on your companion device enabled you to select additional camera views to be shown -picture in picture on the main TV (as well as being shown on the companion device). On the tablet you use the white 'casting' icon in the top right of the video windows. You could show an on board cameras on the big TV screen as well as on the companion screen device.

Supplementary: How did you decide what view to choose?

FF14	Watch Live – 'views' - Picture-in-Picture Value: 10 Essential – Worthless 1 Ease of use: 10 Couldn't be simpler – Impossible 1

53 of a possible 85 responses	Mean	Rank (similar questions)	Mode	Median
Value	8.43	4 of 13	10	9
Ease of use	8.64	6 of 13	10	9

Sentiment	***Frequency***	***Verbatims***
How did you decide what view to choose?		*We just followed favourite rider / We just discussed , we picked our favourites / Decided between ourselves*
Followed the favourite rider	6	*Just clicked randomly / Tested it to see what was interesting*
Discussed it amongst them	3	*Tried them all*
Great Feature	6	*[Didn't work properly] x3*
Played with the views throughout	7	*Essential for the product / This was one of the best bits, being able to control what was on the screen.*
Tech Fault	3	*Good feature but didn't feel much use for it*
Stuck with the race leader	1	
Did you use it a lot?		
Used it a lot throughout	12	*Constantly/ throughout / Yes a lot / More or less all the time / Quite a lot yes, several times*
Use it a few times	8	
Used it a couple of times / a little	5	*Fair mount, as and when / A few times*
Didn't use it a lot	8	*Used it for a short while image was not great*
Cam quality was bad	3	
Had something negative to say	2	*Not a lot, just a few times. I was worried that I would miss something if I started pressing buttons*

Rationale

The per feature feedback questions are designed to give the designers an idea pof the utility and ease of use of each feature

Analysis

The ability to select additional views for example bike cams and display them as a picture in picture on the main TV screen and or on the tablet was well liked. Three users did not experience this feature due to a system fault (possibly lack of bandwidth). Users did not find it difficult to decide which riders to select but the comments suggest there was quite a lot of experimentation going on. The feature was highly valued (ranked 4of 13 in terms of value) with only one user questioning the utility of the feature.

Users, in general, regard this feature as valuable, though the test did not probe the long term behaviour, i.e. how a user might use the feature if they were familiar with the capabilities and had access to them over several races.

One user avoided using the feature for fear of missing something and 3 users commented on the poor quality of the image – the PiP was sometimes poor quality depending which encode layer was chosen, that (in turn) was affected by the bandwidth available. It may be that the poor quality images were more likely when bandwidth was limited.

6.4.15 FF14d Watch Live - 'Views' - Picture-in-Picture (360 Camera)

Spoken question: Would you like to see more 360 video alongside standard TV camera views? …why?

FF14	Watch Live – 'views' - Picture-in-Picture Would you like to see more 360 video alongside standard TV camera views? …why?

53 of a possible 85 responses	Mean	Rank (similar questions)	Mode	Median
Value	8.43	4 of 13	10	9
Ease of use	8.64	6 of 13	10	9

Sentiment	***Frequency***	***Verbatims***
Yes	30	*+ve*
No	10	*Yes. If you've got a concert seeing audience reactions would be good.*
Maybe	3	*Yes, more interesting*
More Interesting	7	*Yes makes it more exciting*
Can see behind / different angles	8	*Yes so we can see what's coming up behind*
Found it difficult / hard to use	3	*Yes, it makes it more enjoyable to see all the different views*
Tech Fault	3	*Yes because it's a good way of seeing the races from a different angle.*
There are already enough	3	
Other - Positive	6	
No Comment	1	***-ve***
Other - General	2	*Seems too hard to use in a race. Maybe another genre, but not races.*
Don't know	2	*Not really. Normal cameras are already pointed in the right direction. With 360 you sometimes have to search. Too much goin on.*
		No. Too much, too overpowering

Rationale

The 360 camera is a Wow feature upon which users often comment. But when asked direcetly do they think it's useful and why?

Analysis

75% of our respondents said they'd like to see more 360 degree video. The most common reason given was that this view was "more" interesting and because you could see behind

Of the 25% negative comments some were due to technical issues. Of all the camera views that could be cast to the screen the 360 video was the least reliable requiring two or three attempts before it would appear on the main screen. The residing impression though ois that the users liked the 360 video

6.4.16 FF15 Race Review - Events

Spoken question: After the chequered flag, as the commentators review the race on the big screen, on the companion devices a list of events from the race is available and these can be selected to play on the companion device so you can see again some of the highlights and incidents from the race

FF15	**Value: 10 Essential – Worthless 1** **Ease of use: 10 Couldn't be simpler – Impossible 1**

59 responses from a possible 85	Mean	Rank (similar questions)	Mode	Median
Value	8.46	3 of 13	9	9
Ease of use	8.68	5 of 13	10	9

Sentiment	*Frequency*	*Verbatims*
FF15 - Comments		
Useful	7	*Handy to re-watch a couple of sequences from the race*
Best Feature	3	*Useful especially if the broadcast does not show the event again*
Offered Feedback for improvement	2	*Useful to catch up on bits missed, miss the "boring" commentary.*
Nice to review	3	
No Comment	8	*Wanted an unselect feature*
Other - General	5	*Would be nice to resize the picture*
FF15 - All or some		
Some	7	
All	3	
Most	2	
FF15 – Did you recommend any events to your watching companion?		
Yes	19	*Yes recommended the Marquez engine failure*
No	7	

Rationale

The per feature feedback questions are designed to give the designers an idea pof the utility and ease of use of each feature

Analysis

A relatively highly regarded feature (3rd of 13 in terms value) and highlighted by 3 users as the best feature.

A user comments that an unselect (stop replay) feature would have been useful, perhaps this could be implemented in real service.

19 of the 28 that used this feature prompted interaction between viewers, who offered suggestions on which clips to replay– which we regards as a positive thing.

7 Conclusions

Using a design-led process and content captured from the 2017 UK MotoGP race from Silverstone and used under license from Dorna Sports, we have developed and evaluated an as-live multi-screen experience for TV, tablet and phone.

The 2-hour experience was evaluated by MotoGP fans in their homes using a small dedicated computer to act as the set top box that accessed a cloud-based service hosting a constellation of micro-services.

Respondents were recruited using quota targets for age and gender. Ninety three user responses have been assessed through quantitative assessment of the experience accompanied by qualitative responses elicited through a guided interview procedure. These responses were also compared with log based data collated using google analytics.

We were encouraged by the responses.

When asked how the multi-screen version compared with the standard TV presentation of a race, we received 78 comments describing why it was a better experience and 39 comments as to why it was worse.

If we discount comments related to the platform failing, i.e. a crash which we can argue is due to the experimental nature of the platform, we can conclude that whilst the new multi-screen version was not universally favoured, a significant majority (about 70%) of the responses were positive.

Of the 78 positive comments 15 related to 'more interaction'; 14 to 'additional camera angles'; 13 to the 'more information' and 10 to the ability to focus on 'favourite riders'. Whilst it would be wrong to suggest that there is one 'must-have' feature, log records of feature usage, unprompted feature response, and these comments all suggest users value the provision of additional video feeds on TV and companion screens.

Of the 39 negative comments 16 related to the additional features causing "distraction" and 10 related to "too much information" and 5 to "feature failure and crashes". It may be that, for a minority of users, the multi-screen experience will always be subjectively "worse" than the TV experience but it is also plausible that some of the negative comments could be related to an unfamiliar system that users felt obliged to explore and investigate; such behaviours is likely to lead to being distracted. If the system were to be used week after week, some of the 'distraction' and 'information overload" effects may disappear as user come to know the system and to gravitate to their preferred views rather than exploring all the options. Likewise "feature failures and crashes" should be less of a problem for a mature system rather than a prototype. Further experimentation, through a longitudinal study, would be valuable in helping to understand how perceptions and behaviours evolved with long terms use.

Measures of immersion ('Did time pass quickly?' and 'How absorbed were you?") delivered mean scores of 7.28 and 7.38 respectively (on a 1-10 scale). The mean score for "how strongly would you recommend the service" was 7.21. It seems clear that some users would prefer a more passive experience – and that's fine – but a significant majority (about 70%) reported that the additional content made the race easier to follow.

We conclude that a majority of users (70%) were positive about the overall experience.

We assessed users' perceptions of the value and ease of use of features including:

- Event replay - As the race progressed a growing list of events was populated on the companion screen showing some of the key incidents and spectacles of the race. Selecting one of these events, described using an icon with some text, on the companion screen resulted in the event appearing as a replay, shown on the main TV screen with live pushed into a PiP, as well as alternative camera views being shown on the companion device.
- TV Graphics Size - During the race, the size of the graphics that appear on the TV can be scaled to better match the size the resolution of the TV.

- Experience Level - During the race, different presentation styles can be selected which were tailored to viewers with different experience levels. Selecting Novice, Fan or Expert modes affected the appearance of the leader board panel and PiP labels the TV screen.
- Audio balance - During the race, the way the audio is presented can be customised, enabling the viewer to independently vary the volume of the ambient background noise (the sound recorded at the track, mostly the crowd and the engine noise) and the presentation commentary provided by BT Sport.
- Tablet views - During the race, viewers can change what was shown on the tablet by selecting from rider bike cams, helicopter cam, timing data or a circuit map showing the positions of the riders.
- Leader-board - During the race, viewers can interact with the leader-board to see more details on specific riders including; rider and bike photo, on-board camera feed, timing data and bike tyre configuration..
- Favourite rider –Viewers can select their favourite rider from a list which adds that rider to top of the time data list.
- Race review - Race Review provides access to multi-screen replay facility that enables users to review the race events and interviews which are presented on the companion screen device.

We were encouraged by the evaluations of the utility (value) of all the features for which we assessed responses. The range of scores from the bottom of the second quartile to the top of the third quartile was, for 6 of the 8 features assessed, between 7 and 10. The reasons why two of the features (TV Graphics Size and Experience level) reported lower scores for value warrants further investigation. It is plausible that the value of TV Graphics size feature might be limited because, for some users any change in graphics size would lead to a subjectively worse presentation due to the size of their TV. Likewise the value of the 'experience level' may have suffered as the default presentation may have met the typical MotoGP fans' requirements well and any change would lead to a subjectively worse presentation.

The scores for ease of use were also very encouraging. The range of scores from the bottom of the second quartile to the top of the third quartile was for all features (except TV Graphics size) between 8 and 10. Following interviews we believe some users found the language used to describe the changes that would be effected for TV graphics size were ambiguous and confusing. The UI related to this feature would probably benefit from further work to understand and hopefully address this ambiguity. One option would be to make the graphics scale auto select so that it was more likely to offer the "best" graphics scale. An over-ride function could then be used to meet particular users' preferences for larger or smaller text and this choice larger or smaller text could then be offered without reference to the TV size for which the graphics scale would normally be best suited.

We also sought users' unprompted recollection of features. The synchronised bike and rider cams were the most cited features (41 mentions) followed by the audio controls (24 mentions) and the helicam (22 mentions). Whilst it would probably be wrong to suggest there is single "must have" feature, additional video feeds are easily recalled and valued by the users in this evaluation.

Tentatively we conclude that the multi-screen experience developed here would be enjoyed and recommended by a significant majority of our target audience (viewers of MotoGP on TV). Analysis of the annotated responses suggest that the new features enabled in this multi-screen experience are consistent with the goal of BT Sport to create services that allow users to "get closer to the heart of sport" and of Dorna Sports who hold the global rights to MotoGP and provide International Programme Feeds, multi-cam, data to national broadcasters and viewers across the globe.

Annex A **Asset encoding**

Whilst we consider a focus on layout and functionality to be the core elements that affect the user experience we, for completeness, report the video and audio coding parameters used in the experience in Table 8. The video fidelity and its impact on viewer perception was not the subject of this test.

	Encoding parameters
Audio:	48kHz, stereo, AAC
Video	1920x1080, 8Mbps 1280x720, 4Mbps 854x480, 2Mbps 640x360, 1Mbps 426x240, 700Kbps All video representations are encoded using the h.264 baseline profile at 25fps with a GOP length of 25 and yuv420p format. All DASH segments are 4 seconds in duration (audio & video).

Table 8 Encoding parameters used for the encoding of audio and video assets

Annex B **Recruitment text**

The advert that was posted on the BT Intranet set inviting volunteers is pasted below.

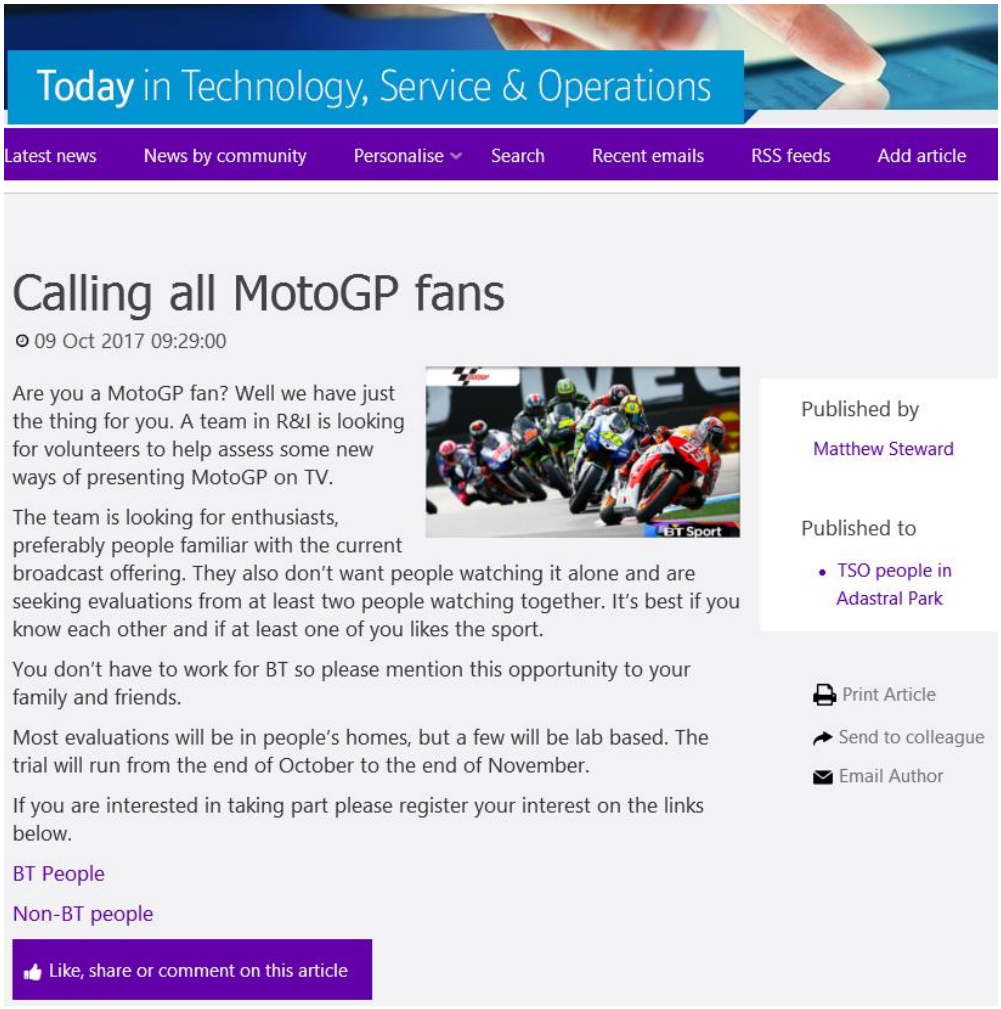


Figure 29 The advert placed on an Intranet site within BT focused on members of the organisation working on a particular campus – it addresses about 3000 people

Annex C **Consent and pre-trial questionnaire**

All participants in the **lab trials** are asked to complete an online pre-trial consent form which invited the respondents to read the following information and to provide consent as required

- *"I understand that this research is being conducted by the 2-IMMERSE project consortium, and the conducted research is part of the European research project 2-IMMERSE.*
- *I/we understand that my/our participation in this research study is voluntary.*
- *I/we may choose not to participate and may withdraw my/our consent to participate at any time.*
- *I/we voluntarily agree to use the provided software/apps and hardware relating to the MotoGP at Home experience, to participate in an online survey, and to discuss the research in a short informal interview.*
- *I/we understand that our participation in the study may be recorded, I give my consent for:*
    - *written notes to be taken throughout the experiment, and*
    - *audio recordings to be made during the interview at the end.*
- *I/we agree to the 2-IMMERSE project team using the contributions and information for their research purposes*
- *I understand that any audio recordings used based on my involvement will be for statistical/summary and research purposes only.*
- *I understand that the 2-IMMERSE project team will ensure that my personal details will not be associated with any contribution made in any recording.*
- *I understand that the 2-IMMERSE project team may make the results of this study publicly available, but no personal data relating to me nor any audio material involving me will be made publicly available.*
- *I understand that the 2-IMMERSE project team will not use my personal details for any purpose other than this study, nor will the 2-IMMERSE project team pass any personal details to any third party.*
- *I understand that, save as publicly announced by the 2-IMMERSE project team, any information relating to this study is confidential and that all information collected by the 2-IMMERSE project team concerning my participation in this study is confidential, and will be held securely in password protected files/folders in a secure location.*

I have read the description of the study and agree that I will participate on the terms set out above.

We are looking for people to take part in an in-home user experience of a new, immersive concept for the viewing of different sports.

This will involve me coming to your home to set up some equipment, you and a friend will then need to watch a sporting event using the equipment (this will take approx. 90 minutes) and then I will return to collect the equipment and conduct a short interview with you in which we will discuss your experience of the new concept (this will be approx. 15mins).

As a thank you for your time, you and your friend will be offered £40 cash, each.

8 Screening questions

S1	[Single Code] - **Which of the following sports do you watch on TV**	
	Football	
	Snooker	
	Cricket	
	Formula 1	
	MotoGP	
	Rugby	
S1a	[Single Code] - **Which description best applies to you.**	
	I watch just about all MotoGP races on a TV	
	I get to see some MotoGP races on the TV	
	I'm happy to watch MotoGP it if it is on the TV	
	I'm not that interested in watching MotoGP on TV at all	
S2	[Single Code] - **Thinking about your home: Do you have a flat screen HDTV that is less than 10 years old?**	
	Yes	Continue
	No	Thank & close
S3	[Single Code] - **Thinking about your TV, do you know if you use HDMI leads to connect devices like set-top boxes, blu-ray players, games consoles etc. to your TV**	
	Yes	
	I think so	
	I don't know	
	No I don't think it does	Thank & close
S4	[Single Code] - **Thinking about your home (not your mobile) do you have broadband and WiFi at home?**	
	Yes	
	No	Thank & close
S5	[Single Code] - **Thinking about your broadband connection, which best describes your broadband speed**	
	Less than 20Mb/s (megabits per second)	Thank & close
	More than >20Mb/s (megabits per second)	SKIP TO S7

	Don't know	ASK S6
S6	[Ask if S5 = Don't Know] [Single Code] - **OK. You don't know the speed of your broadband connection and that's not unusual. You may have fast broadband connection though.** Do any of the following look or sound similar to the broadband product you have at home?	
	BT Infinity Unlimited (52Mb/s) BT Infinity Fibre 2 (76Mb/s) John Lewis Fibre (38Mb/s) John Lewis Fibre Extra (76Mb/s) Plusnet Unlimited Fibre Broadband and Phone Line (38Mb/s) Plusnet Unlimited Fibre Broadband Extra (76Mb/s) Sky Fibre (38Mb/s) Sky Fibre unlimited (38Mb/s) Sky Fibre Max (76Mb/s) Talk Talk Faster Fibre Broadband (38Mb/s) Talk Talk Faster Fibre Large Broadband (76Mb/s) Virgin media Player TV Bundle with unlimited Superfast Fibre Broadband (100Mb/s) Virgin media VIVID 100 Unlimited Superfast (100Mb/s) Virgin Media VIVI 100 Unlimited Superfast Fibre Broadband Only (no phone) (100Mb/s) Virgin Media Full House TV / Movies / Sports bundle (100/200Mb/s) Vodafone Unlimited Fibre 38 (38Mb/s) Vodafone Unlimited Fibre 76 (76Mb/s) None of these	Thank & close
S7	**Gender**	
	Male	Check quota
	Female	Check quota
	Rather not say	
S8	**[Single Code] - Age**	
	Under 18	Thank & close
	19-30	Check quota
	31-40	Check quota
	41-50	Check quota
	51-60	Check quota

	>60	Check quota
S9	**[Single Code] - When did you last access a social network site such as Facebook Instagram etc?**	
	Today	
	Yesterday	
	A few days ago	
	About a week ago	
	More than week ago	
	Never	
S10	**How many of the following devices (do you own/are) in your household?**	
	Tablets (1 : 2 : 3 : 4 : 5+)	
	Phones (1 : 2 : 3 : 4 : 5+)	
	Televisions (1 : 2 : 3 : 4 : 5+)	
	Laptops/Computers (1 : 2 : 3 : 4 : 5+)	
S11	**How competent, on a scale of 1 to 10 where 10 is very competent and 1 is not at all competent do you consider yourself to be with technology/devices?**	
	Not very 1 2 3 4 5 6 7 8 9 10 Extremely	
S12	[Multicode] **- Would you consider yourself comfortable in doing the following things: (check all that apply)**	
	Connecting a TV to a set-top box	
	Connecting a computer to internet	
	Connecting a phone to a wireless speaker	
S13	**We are interested in how often you often watch television whilst using another device with a screen. How often do you this using this scale where 1 is never and 10 is always**	
	Never 1 2 3 4 5 6 7 8 9 10 Always	
S14	[Single Code] – **About Motorbike ownership/usage**	
	I own and/or regularly ride pillion on a motorbike	
	I used to own and/or regularly ride pillion on a motorbike	
	I have never owned nor regularly ridden pillion on a motorbike	

9 General Experience questions

These questions explore triallists' responses to the general experience

GE1	**On a scale of 1 to 10 where 1 is not at all and 10 is hugely, how much did you enjoy the race? (N.B. This is just about the race – not the MotoGP experience.)**
	Not at all 1 2 3 4 5 6 7 8 9 10 Hugely [Open Text] - Why did you select that rating? *Interviewer, please encourage the respondent to expand on their answer giving an explanation as to why they feel it had this sort of impact.*
GE2	**On a scale of 1 to 10 where 1 is 'no effect' and 10 is 'totally ruined it', how much did the fact that the trials was 'as live' rather than actually live impact on your engagement and interaction?**
	Not at all 1 2 3 4 5 6 7 8 9 10 Totally ruined it [Open Text] - Why did you select that rating? *Interviewer, please encourage the respondent to expand on their answer giving an explanation as to why they feel it had this sort of impact.*
GE3	**On a scale of 1 to 10 where 1 is not at all and 10 is totally, how absorbed were you in the race?**
	Not at all 1 2 3 4 5 6 7 8 9 10 Totally [Open Text] - Why did you select that rating? *Interviewer, please encourage the respondent to expand on their answer giving an explanation as to why they feel it had this sort of impact.*
GE4	**On a scale of 1 to 10 where 1 is 'impossibly slowly' and 10 is 'really fast', how quickly or slowly did time seem to pass?**
	Impossibly fast 1 2 3 4 5 6 7 8 9 10 Really Slowly [Open Text] - Why did you select that rating? *Interviewer, please encourage the respondent to expand on their answer giving an explanation as to why they feel it had this sort of impact.*

GE5	**On a scale of 1 to 10 where 1 is 'impossible' and 10 is 'it couldn't have been easier', how easy did you find it to follow the race?**
	Impossible 1 2 3 4 5 6 7 8 9 10 It couldn't have been easier [Open Text] - Why did you select that rating? *Interviewer, please encourage the respondent to expand on their answer giving an explanation as to why they feel it had this sort of impact.* [Open Text] - Did the extra content (extra cameras, maps) help you follow the race better or did it get in the way?
GE6	**Usually, do you use your phone to get extra information while watching MotoGP on the TV?**
	Yes or No
GE6b	**Do you use the MotoGP app?**
	Yes or No
GE6d	**How did this versions of MotoGP compare to how you usually watch MotoGP**
	[Open Text] - What was worse [Open Text] - What was better
GE6e	**So, how much did having the extra information available on more than one screen enhance your experience. ! is it added nothing or even made it worse and 10 is massive positive effect**
	Added nothing /made it worse 1 2 3 4 5 6 7 8 9 10 Massive positive effect
GE7	**Based on this experience, on a scale of 1 to 10 where 1 is "I would advise not to watch it" and 10 "I would strongly encourage people to watch it", would you recommend watching MotoGP in this way to other people.**
	Advise to not watch 1 2 3 4 5 6 7 8 9 10 Strongly encourage to watch [Open Text] - Why did you select that rating? *Interviewer, please encourage the respondent to expand on their answer giving an explanation as to why they feel it had this sort of impact.*
GE8	**If you wanted to talk to other people about it, how would you describe it?**

	[Open Text]
GE9	**On a scale of 1 to 10 where 1 is 'impossible' and 10 is 'it couldn't have been easier', how easy did you find it to make use of content presented across your TV/Phone/Tablet**
	Impossible 1 2 3 4 5 6 7 8 9 10 It couldn't have been easier [Open Text] - Why did you select that rating? [Open Text] - How did you organize that amongst yourselves? [Open Text] - Did you discuss what content to put on the TV screen, or was one person in charge?
GE10	**At the moment, the director chooses which information goes on which screen. Would you like to have manual control over those decisions?** **(i.e. what goes on the TV, what goes on the phone or tablet (e.g. you coiuld remove the leader board from the TV>)**
	Yes or No

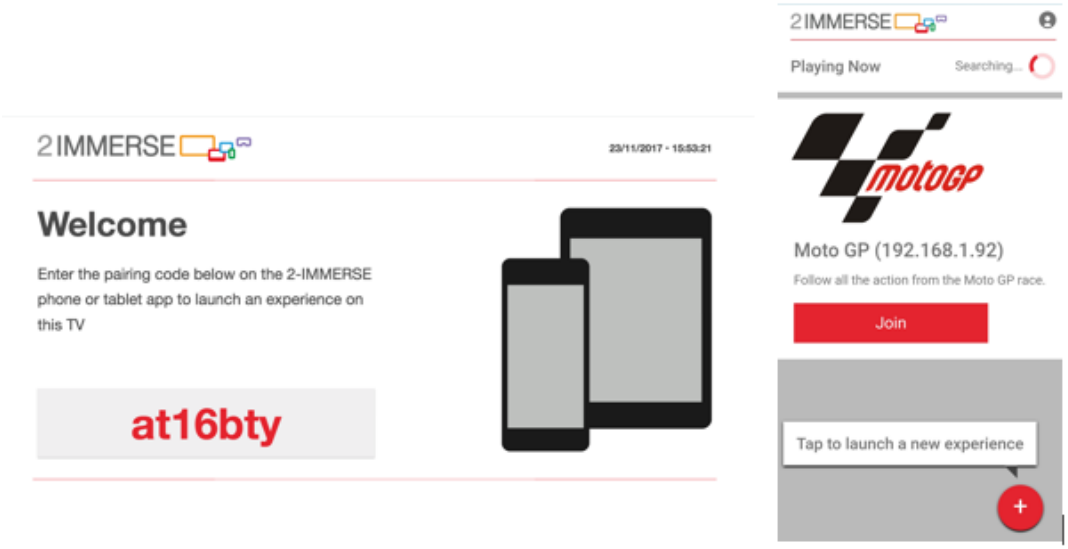
10 Feature Feedback

The second set of questions are 'Feature Feedback'

In the following questions we are trying to understand more about the value of the different features that you accessed via the companion screens.

FF1	**Unprompted recall** <This question is checking for unprompted recall of the features and capabilities of the MotoGp at Home experience> Please try and name or describe the three features or capabilities that contributed most to making this experience better than just watching the race on the TV. *Interviewer, don't prompt specifically, but invite the respondent to consider things that appeared on the TV or the tablets and phones that they thought were 'cool' or useful.*
	[Open Text] - Item 1 [Open Text] - Item 2 [Open Text] - Item 3
FF2	**Failures** <This question is checking to see whether respondents felt the experience failed in any way> Did you find anything that did NOT work – or that behaved in a completely different way to that which you expected. Please ask the respondent to describe what happened that they thought was wrong.
	[Open Text]

FF3	Joining the experience

	Before you could start the experience you had to connect up the devices and log in. 

Were you involved in this process	Yes	Not sure	No

If Yes: How easy did you find it to use this feature

1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

[Open Text] - Why did you select that rating?

[Open Text] - Where the instructions clear enough?

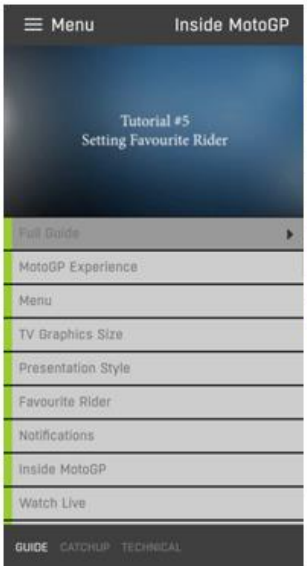
[Open Text] - Did you find anything confusing?

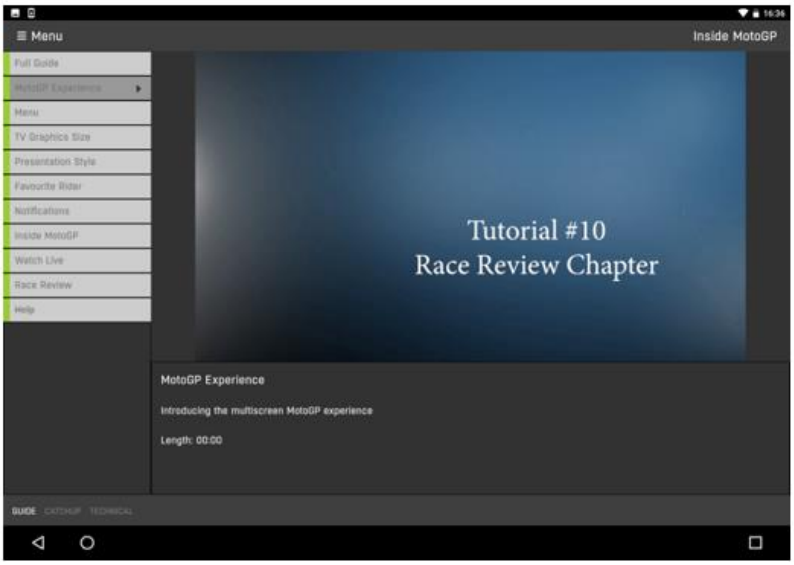
[Open Text] - How could we improve the process?

	Preamble You may have noticed that what appeared on the companion devices changed during the race. There were three distinct phases or chapters: Inside MotoGP (before the race) : Watch Live (during the race) : and race Review (after the race) I am going to show you the features available during each of these phases and I'd like you to tell me if you used these features, and if you did, I'd like you tell me about how much they contributed to the experience and how easy they were to use.

FF4	**Inside MotoGP - Guide**

	This presents a number of short videos explaining how to use the experience and where to get help





Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

If Yes: How easy did you find it to use this feature

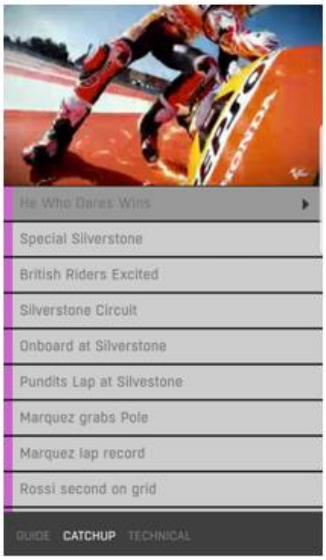
1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

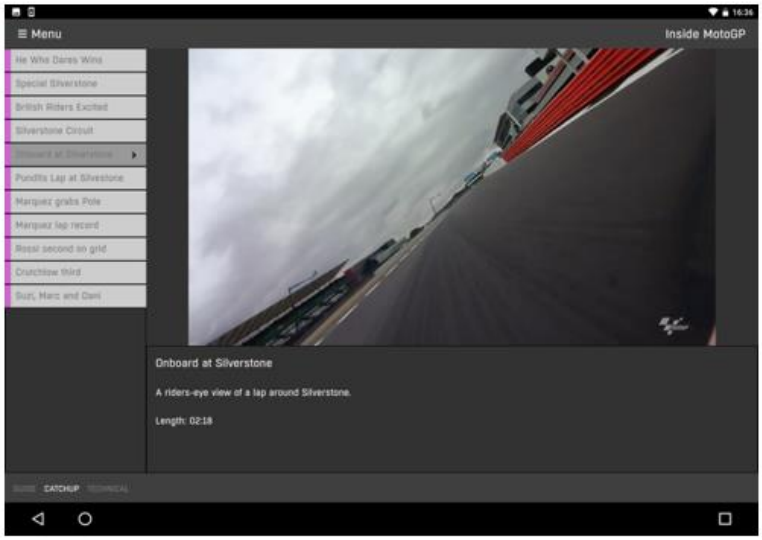
Comments

(Note down any spontaneous justifications they give while completing the scales above

[Open Text] - FF4b. Is there anything we should add to the guide to improve it?

FF4	**Inside MotoGP – Catch Up** This presents a range of videos providing context for the race being covered.





Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

If Yes: How easy did you find it to use this feature

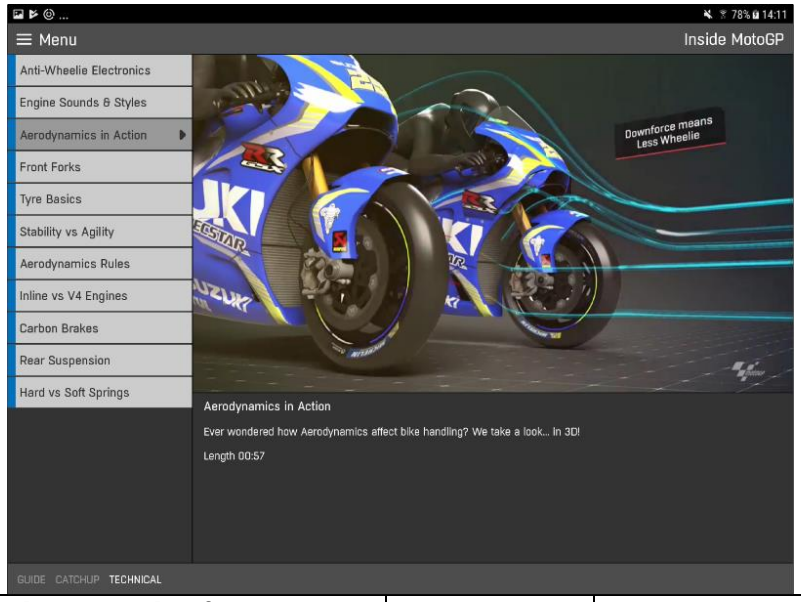
1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

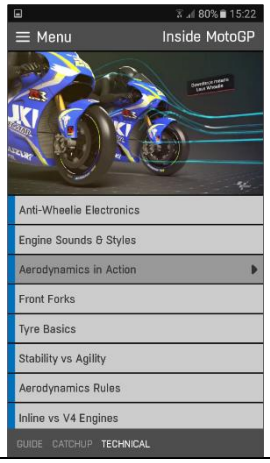
Comments ***(Note down any spontaneous justifications they give while completing the scales above)***

FF5. Is there any other information you'd like us to cover in these videos?

FF5	**Inside MotoGP – Technical** Technical – providing information as animations, video and text to help you understand what lies

	behind some of the more technical aspects of MotoGP





Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

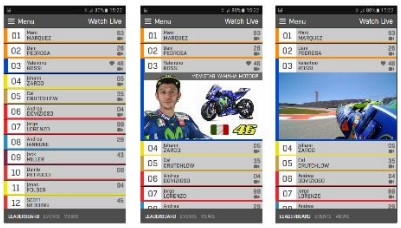
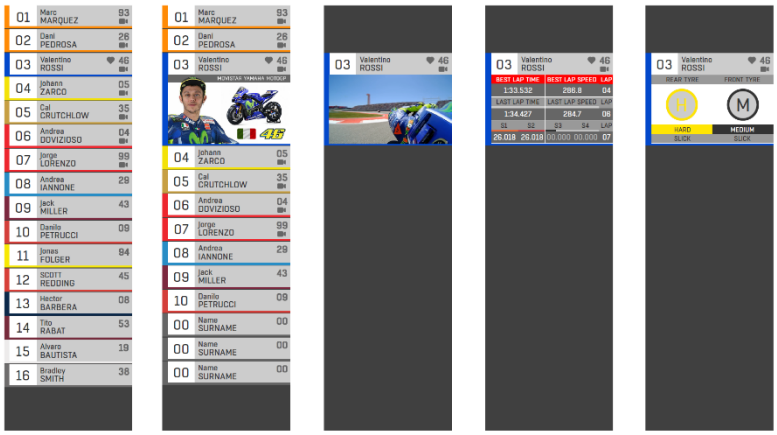
If Yes: How easy did you find it to use this feature

1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

Comments

Note down any spontaneous justifications they give while completing the scales above)

FF6	**Watch Live – Views - leader-board** On the companion screen, you could select 'Leader-board' revealing an interactive leader board

	where you could "click on" different riders and then swipe left and right to reveal more information about each rider including their tyre configuration, team details and see lap time data as well as on board bike cams.
	 **Phone**  **Tablet**

Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

If Yes: How easy did you find it to use this feature

1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

Comments

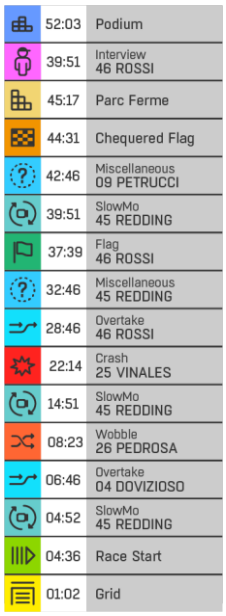
(Note down any spontaneous justifications they give while completing the scales above)

FF7. What did you like/dislike about the adaptable leader board?

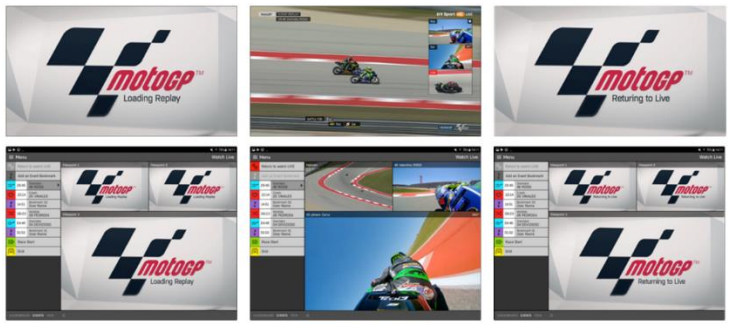
FF7. Do we need to make any changes to it?

FF8	**Watch Live - Events - Event replay** As the race progressed a growing list of events was populated on the companion screen showing some of the key incidents and spectacles of the race. Selecting one of these events, described

	using an icon with some text, on the companion screen resulted on the event appearing as a replay, shown picture in picture on the main TV screen, as well as being shown on your companion device.



TV Screen



Tablet

Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

If Yes: How easy did you find it to use this feature

1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

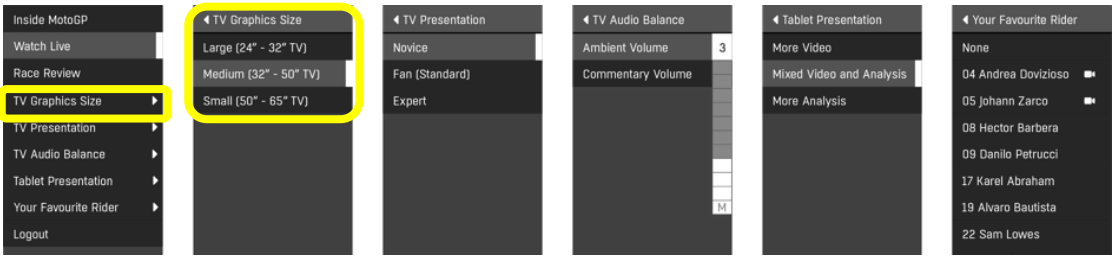
Comments - (Note down any spontaneous justifications they give while completing the scales above)

FF8. Are these the kind of events you are interested in? – if not, what should we include?

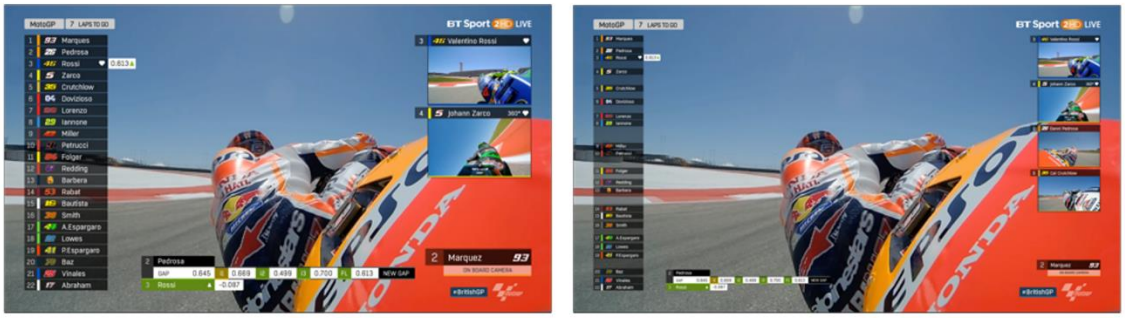
FF8. How did you balance out watching the events, with watching the live race?

FF8. Socially - How did you feel about watching replays on TV, when you are viewing the experience with other people?

FF9	**Watch Live – Presentation – TV Graphics Size** During the race, you can choose to change the size of some of the graphics that appear on the TV to better suit the size the size of the TV on which the race is being shown.



Responsive TV Expert Mode layout optimised for 32", 50" and 65" TVs



Responsive TV Novice Mode layout optimised for 32"and 65" TVs

Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

If Yes: How easy did you find it to use this feature

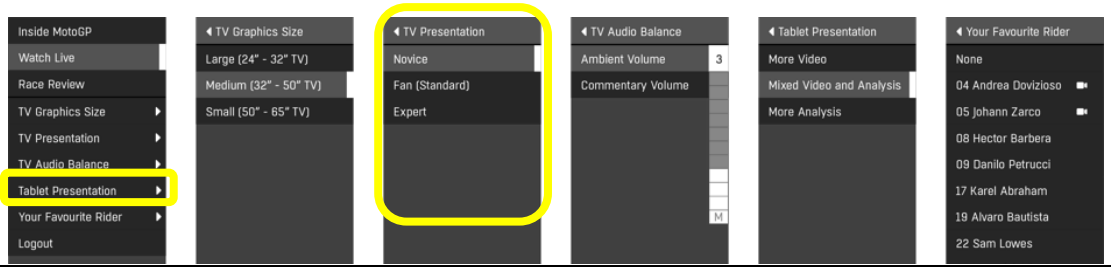
1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

Comments *(Note down any spontaneous justifications they give while completing the scales above)*

FF9. Would you want this to happen automatically, or would you prefer to do this manually?

FF10	**Watch Live – Presentation – Experience Levels** During the race, you can select different presentation styles which were designed to suit viewers with different experience levels. Selecting Novice, Standard or Expert modes affected the

	appearance of the leader board panel on the companion screen and the big TV screen.



Changing style of the leader board from:

Expert

Novice

Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

If Yes: How easy did you find it to use this feature

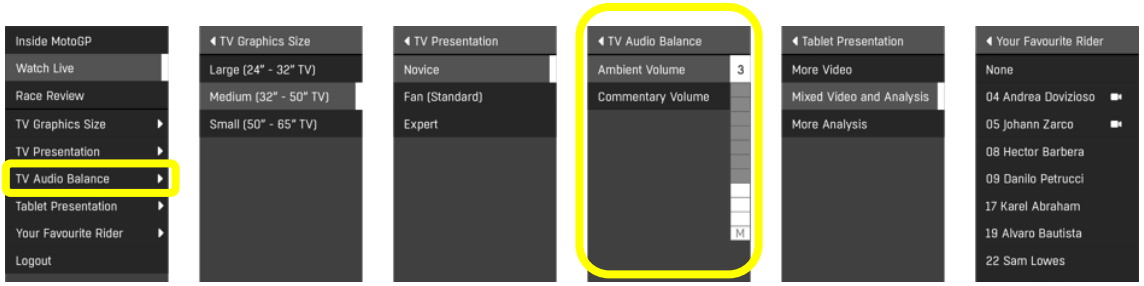
1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

Comments - *(Note down any spontaneous justifications they give)*

FF10. If this is a useful feature, how could we improve it?

FF10. Is this what you would expect from a 'personalised' experience?

FF11	**Watch Live – TV Audio Balance** During the race, on your companion screen device you could affect the way the audio was presented, opting to choose different race commentaries and/or to independently vary the ambient noise (the sound recorded at the track, mostly the crowd and the engine noise) and the commentary.



Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

If Yes: How easy did you find it to use this feature

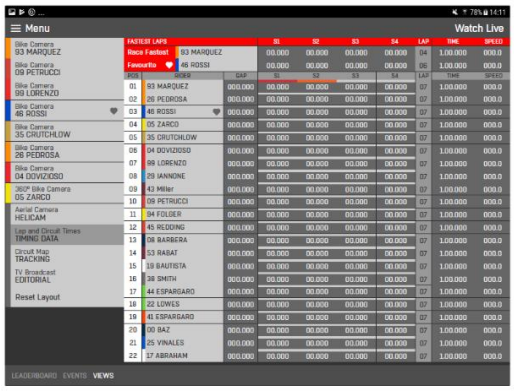
1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

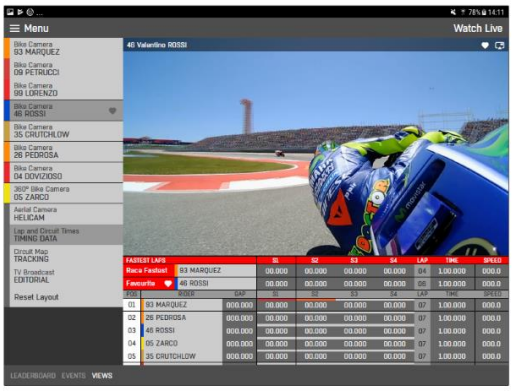
Comments - *(Note down any spontaneous justifications they give while completing the scales above)*

FF11. Are there particular audio commentaries you preferred, what's missing? what would you add?

(e.g., Formula 1 offers audio streams from the riders/team microphones.)

FF12	**Watch Live – Views – Tablet Presentation** During the race, on the tablet, you could change what was shown on the tablet by adding bike cams, lap and circuit data or the circuit map showing the positions of the riders to be shown on the tablet.





Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

If Yes: How easy did you find it to use this feature

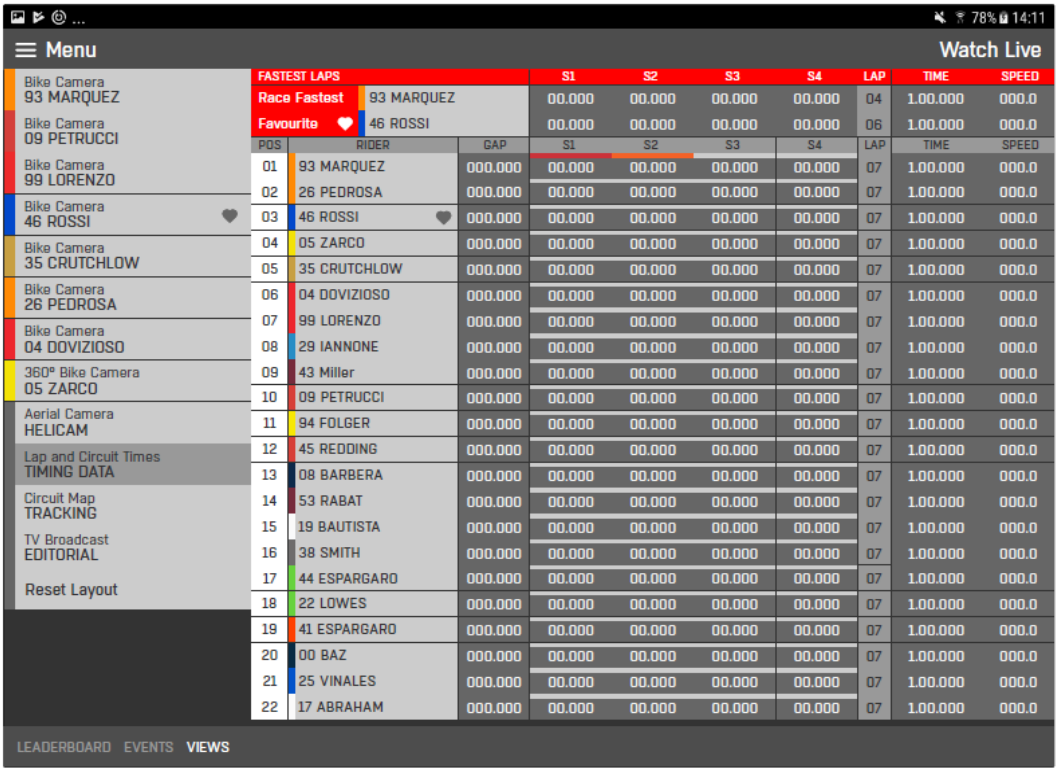
1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

Comments - *(Note down any spontaneous justifications they give while completing the scales above)*

FF12. Was the balance of information right here, how did you juggle the camera views and maps on the tablet, with watching the race on TV?

FF12. How many videos and data tables are too much?

FF13	**Watch Live – Views – Lap and Circuit Times** During the race, you could choose for the leader board and circuit times to be shown. This allowed you to see the sector times of each rider during the race.



Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

If Yes: How easy did you find it to use this feature

1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

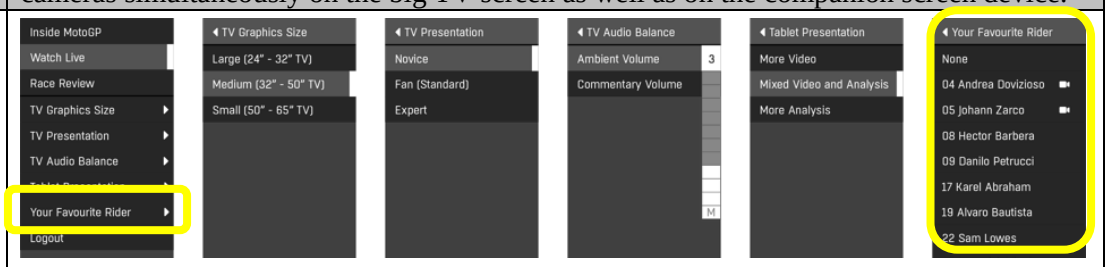
Comments - *(Note down any spontaneous justifications they give while completing the scales above)*

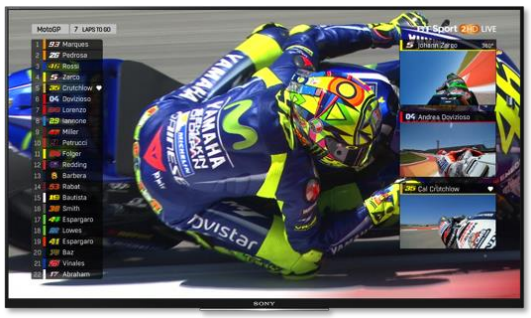
FF13. Was the balance of information right here, how did you juggle the data tables on the tablet, with watching the race on TV?

FF13. Was there too much information or not enough?

FF13	**Watch Live – Picture-in-Picture** During the race, clicking on rider names on the leader board on your companion device enabled you to select additional camera views to be shown, picture in picture on the main TV (as well as being shown on the companion device). You could show several on board

	cameras simultaneously on the big TV screen as well as on the companion screen device.





TV

Mobile

Tablet

Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

If Yes: How easy did you find it to use this feature

1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

Comments *(Note down any spontaneous justifications they give while completing the scales above)*

How did they decide what view to choose?

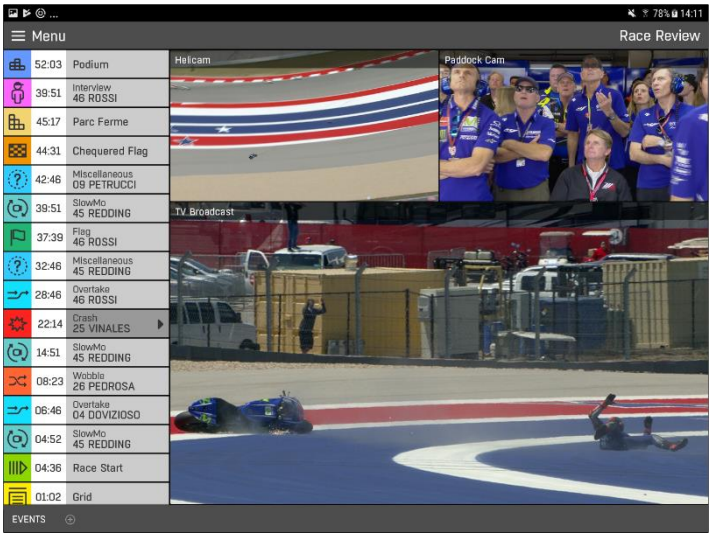
FF14d. Did you use the 360 camera view from the back of the bikes? Yes or No

FF14d. Did you use it a lot? …And if so how often?

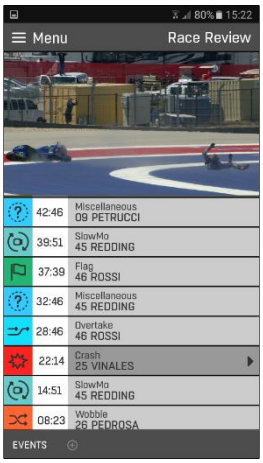
FF14d. How did you use it (did you scroll around the picture on your mobile phone/ or watch it on the TV screen)?

FF14. Would you like to see more 360 video alongside standard TV camera views? …why?

FF13	**Race review – Events** After the chequered flag, as the commentators review the race on the big screen, on the companion devices a list of events from the race is available and these can be selected to play on the companion device so you can see again some of the highlights and incidents from the race.



Tablet



Mobile

Did you use this feature?	Yes	Not sure	No

If Yes: How valuable do you think this feature is to the whole experience?

1	2	3	4	5	6	7	8	9	10
Worthless									Essential

If Yes: How easy did you find it to use this feature

1	2	3	4	5	6	7	8	9	10
Impossible									Couldn't be easier

Comments - *(Note down any spontaneous justifications they give while completing the scales above*

FF15. Did you play all or some of the events?

FF15. Did you recommend any of these to other people in the room?

11 Annex Planning

1. "Trial shape" purpose (see D4.5)
2. Printed material
    a. Naming of parts; NUC, HDMI cable, Tablet, phone, power supply, Ethernet cable
    b. Instructions for triallists, press the start button then follow the on screen instructions.
    c. Pictures showing the physical connections (Ethernet cable goes between the NUC and the HUB; NOT the TV and NUC)
    d. Contact details
3. The agenda for the training day (Friday
    a. What do we actually need to teach them?
        i. 15 mins Unpacking and connecting devices (physically)
        ii. 15 mins Connection options (WiFi and Ethernet) and when to use them
        iii. 5 mins Logging in process (how simple can we make this?)
            1. We create username password pairs
                a. Username: kit1-surname
                b. Password: kit1
                c. You need to tell us the surnames of your triallists and have surname for each recruiter too so we can create appropriate accounts
        iv. 90 mins Experience it
        v. 15 mins Complete questionnaire
        vi. 5 mins Explain the support lines
        vii. Formal handover and signing for the kit (Project to Acumen)
    b. Can we run two sessions on the day, in series, so some people can arrive later in the day?
4. Log-on requirements for the tablets set-up on the tablets, google accounts etc.
    a. Could use "restricted profile": this will limit which apps appear for a particular user - this should create opportunities to have all the tablets look identical.
    b. A Google account is not required as we don't need to access the Play store so no need to set that up.
    c. It may be sensible to use a 'swipe pattern' on the tablets' log on screens to secure access in case of loss or theft.
    d. It is sensible to set up "find my device" type services that are available on Samsung devices independent of the Google account in process. Trial kit owners (BT, BBC, Cisco) should set up appropriate accounts so that devices become findable.
5. How do we actually conduct the questionnaires
    a. Discuss with Max and Cassie
6. What are the questions in the questionnaire?
7. Set up required to ensure we get analytics
    a. Non-issue.
8. Support arrangements for home triallists
    a. First line: Acumen recruiters
    b. Second line: Cassie
    c. Third line: BT/BBC/Cisco

9. Support for Acumen recruiters
    a. First line Cassie
    b. Roly
10. Schedule for last date for:
    a. Wed 22nd Nov: Build set-up fixed for NUC / companion App
    b. Thu 23rd Nov: Build set-ups installed on the NUC and companion apps.
    c. Fri 24th Nov: Training day in London.
    d. Thu 30th Nov: Final QA of experience running on the production platform
    e. Thu 30th Nov: All content is available on the CDN (includes config. files for final QA, should also include the questionnaire questions if they are going on line…)