display subtitles to provide a personal experience across different platforms and devices. This has resulted in an approach that we are calling “Responsive Subtitles”, building on the techniques of responsive web design. In this approach the subtitle blocks are formed and resized to fit the space available so that the size and type of font can be changed without covering too much of the video image. Our demonstration shows subtitles being formatted on the fly into different length blocks to fit different devices and font sizes, all from the same subtitle source, in a manner that is possible with an object based approach to broadcasting.

We are also publishing two papers on subtitles at IBC2015. James Sandford’s paper “The Impact of Subtitle Display Rate on Enjoyment Under Normal Television Viewing Conditions” which is published in “The Best of IET & IBC 2015-16” reports on research indicating that word rate is not an issue for good quality subtitles. We are also publishing an overview of our research in our paper “Understanding the Diverse Needs of Subtitle Users in a Rapidly Evolving Media Landscape” which will be presented as part of the IBC2015 Conference at 13:45 on the 13th September in the Emerald room.

Connected Studio develop programmes to facilitate and implement innovation in BBC Online content, working with teams from across the BBC, as well as independent digital and creative agencies. The process has many stages, from devising workshops and creative sessions to guide people through the idea generation process, through matching BBC teams with appropriate external experts and agencies to help develop their concepts and on to supporting successful projects into the piloting phase and appearing on BBC Taster.

BBC Taster is the audience-facing test website that hosts experimental content for the BBC, including pilots that come through the Connected Studio process. BBC Taster is a platform for ideas and concepts to be delivered quickly in front of audiences, where they can be rated, shared and receive feedback to help judge whether they are ideas that could be developed further or rolled out across the BBC.

Connected Studio and BBC Taster together provide the inspiration, support and platform to help keep the BBC at the cutting edge of online innovation, and a world leader at delivering engaging broadcast experiences.

For more information visit bbc.co.uk/rd Email: info.rd@bbc.co.uk Tweet us @BBCRD or contact us via facebook.com/BBCResearchAndDevelopment

Plan for the future not the present

IP STUDIO, VENUE EXPLORER, RESPONSIVE SUBTITLES, BBC TASTER

BBC Research & Development plays a key role in shaping the future of media technology by developing and licensing prototypes of systems to bring new and improved forms of content to our audiences. It also influences international standards. BBC R&D advises the corporation on what is coming in the future: what it needs to be involved in and influencing, what the winning and losing technologies are likely to be and what do we need to lead, follow or ignore.

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IP Studio: production entirely on IP networks

BBC R&D is building a model for end-to-end broadcasting using IP – the technology that drives the Internet – that frees us from the constraints of existing studio technology, and prepares us for an “Internet First” world to deliver new forms of immersive and interactive content for our next generation of services.

IP networks are likely to be commonplace in new production facilities and visitors to IBC 2015 can see a number of platforms. Unfortunately, these competing approaches are often proprietary and/or simply provide direct replacements for traditional links such as SDI, so fail to take full advantage of IP’s flexibility.

Our approach treats video, audio and data streams as separate objects, with information about the part of the scene that they are looking at. Audio and data are sent as separate objects, with information about the part of the scene that they refer to, allowing them to be composed based on the user’s selection and preferences.

Automation has always been important in our industry, and the possibility of setting up production facilities on demand over the network makes it even more essential. We have developed a web-friendly framework for discovery, control and monitoring of devices: this enables remote production, where teams can work in the most appropriate location, accessing facilities that might be located in a data centre.

Venue Explorer

Venue Explorer is a prototype system that provides a personalised and interactive way of experiencing a large event. A web application lets viewers explore an ultra-high-definition panoramic video, giving them the same freedom to look around that someone sitting in the best seat in the audience would have. Data overlays provide additional information about the scene, and the audio can be automatically re-mixed to suit the selected view.

Responsive Subtitles

Responsive Subtitles are a new kind of interactive content experience involving the delivery of multiple video, audio and data streams. It is helping shape our thinking on the way in which object-based content production may evolve, building upon concepts enabled by the IP Studio.

In order to understand how subtitles could best be displayed on new platforms and devices we went back to look at the various sets of guidelines for subtitling on television. We reviewed the research behind these guidelines and realised that the guidelines were based on the technical constraints of the original Teletext system and on industry practice as much as on user research.

We therefore decided to improve our understanding of how audiences use subtitles through surveys and audience feedback. From these results we were able to run user tests that replicate normal viewing conditions. We were also able to use realistic video with audio and subtitles, either drawn from the BBC programme archive or specially commissioned by production colleagues. Additionally we used an external agency to recruit test participants who used subtitles on a daily basis, giving us a representative cross section of the audience. Through this user research we are now beginning to understand how our audiences use subtitles in different ways and have differing preferences for subtitle size and position, depending on their sensory and linguistic needs.

We promote open standards for IP production, through contributions to the EBU/VSF/SMPTE Joint Task Force on Networked Media, and practical collaboration with manufacturers on interoperability based on our model. This is being formalised in a project of the Advanced Media Workflow Association that is being launched at IBC 2015.

Our work has looked at how to move subtitles on a daily basis, giving us a representative cross section of the audience. Through this user research we are now beginning to understand how this is possible to format and