Hybrid Services:

Convergence of Broadcast and Broadband Delivered Content

Domestic take-up of both broadcast digital television and broadband connectivity has reached significant levels in many countries with continued growth forecast. This offers considerable potential for a market in 'hybrid devices' able to access and present content from any combination of these sources. However, many early hybrid devices are unable to offer the viewer 'hybrid services', that is services that are able to integrate content from more than one source into a single presentation.

A key factor in this is that the specification of these different delivery paths has emerged from different market sectors, with two consequences:

1. Limited industry expertise with a detailed knowledge of more than one market sector coupled with pressure to launch product has often resulted in the implemented support for a particular delivery path being completely independent of the implemented support for any other delivery path.
2. Different technologies have not only been adopted for the delivery path itself but have also become the norm for the encoding and presentation control of the content delivered over the path.

The result is that services exist in silos based around a particular delivery path.

When a hybrid device takes the form of a digital television device (such as a set-top box) extended to provide access to a broadband return path, this lack of convergence between delivery paths can be problematic from the perspectives of both the viewer and the service provider.

From the digital television viewer's perspective, the addition of a broadband return path alone is unlikely to fundamentally change the nature of any interaction. This is likely to remain a less engaged 'lean back' activity using a simple user input device (e.g. a remote control) whilst viewing a lower-resolution display at a distance. This can make the context switch between services tied to one or other delivery path difficult to execute and visually obvious.

From the service provider's perspective, the inability to use the optimal delivery path for each constituent part of a service requires services to be split into sub-services tied to a particular delivery path, resulting in a less seamless viewer experience. The alternative is inefficient use of delivery resources, resulting in increased costs.

A Broadcast video/audio from broadcast network

B Application acquired from carousel in broadcast network

C Menu item details acquired using HTTP over IP network

D Application acquired using HTTP over IP network

E Broadcast video/audio from multicast over IP network

The demonstration being shown at IBC 2006 illustrates the viewer experience that can be offered when content from both broadcast and broadband delivery paths is integrated into a single presentation. This is achieved using a 'hybrid receiver' able to simultaneously access and present audio, video and application data from both delivery paths.

The demonstration illustrates that it is not necessary for services to exist in 'silos' associated with each delivery path. Instead each constituent content item of a service may be delivered over the most appropriate path. The resulting 'hybrid services' are able to offer a more seamless, simpler to navigate environment.

The hybrid receiver and hybrid services forming the demonstration have been developed by BBC Research as part of ongoing work in this field. Strategy & Technology's RedKey MHEG-5 Engine (contact **sales@s-and-t.com** for further information) has been incorporated into the hybrid receiver to provide broadcaster control over the presentation of content. In this way this demonstration also shows that it is possible (and in fact relatively easy) for an MHEG Engine to be extended to provide support for a broadband return path.

Further information

Web: www.bbc.co.uk/rd/

Email: jeff.hunter@rd.bbc.co.uk
Tel: +44(0)1737 839500

BBC Research, Kingswood Warren, Tadworth, Surrey, KT20 6NP