

DVB-I: television without limits

DVB-I is an ongoing initiative to develop technical standards for delivering television services over IP, primarily meaning over-the-top, over the internet. As the work has recently moved from DVB's Commercial to its Technical Module, now is a good time to provide an update on progress.

DVB-I will stand alongside the existing DVB-T (terrestrial), DVB-S (satellite) and DVB-C (cable) broadcast standards and for users, the experience of accessing services should be the same regardless of which delivery channel is used. DVB-I deployments can be stand-alone, or broadcast and IP delivery can be combined to create a single hybrid offering. The latter would incorporate services delivered via both methods, making optimal use of the different characteristics of each channel. Benefits will also include:

- Services will be available to users who don't have access to broadcast television
- Services will be available on devices that don't include DVB tuners
- New services can be offered that would not be viable on a traditional broadcast platform

WHY DVB-I?

Of course, much of this is possible today using, for example, Android or iOS applications, but these provide a very different user experience to a traditional DVB receiver. While taking advantage of the internet as a distribution platform, DVB-I will allow the best features of broadcast television that have evolved over decades of television viewing – such as the integrated channel list, the content guide, and simple “lean back” channel

selection – to be brought in this new world. It will also bring the advantages of a standardized solution, with the scale and cost savings that offers. With DVB-I services, the user will not have to care, or even be aware, whether a service reaches them via broadcast or IP.

While DVB-I aims to offer equivalent functionality to broadcast, it will not be limited by the capabilities of broadcast. DVB-I will allow broadcasters to take advantage of the unique capabilities of IP delivery, both technically and commercially. This means that as well as linear television, video-on-demand will be supported. Broadcasters will also be able to offer different versions of a service, targeting different groups of users in a way that is not feasible with broadcast. Some examples of the kinds of service this will enable include the provision of accessibility options such as video with signing, or versions of content with special technical characteristics such as UHD resolution.

As mentioned above, another important feature that DVB-I will offer is the ability to deploy to receivers a single integrated service list including services available over both broadcast and IP. Many DVB-I receivers, such as TV sets, will include broadcast receivers, and some broadcasters are expected to deploy services in a hybrid manner. In such a model, some services are carried



over DVB-T, C or S, which may be the most efficient distribution method for the most-watched services, while more niche, “long tail” services are provided via IP. This can also be combined with the ability to offer different versions of services, meaning that, depending on a user's preferences and the technical capabilities of their receiver, a service might be delivered to them via either broadcast or IP in a transparent manner.

CREATING THE SPECS

DVB's process involves first developing commercial requirements, and secondly defining a standard technical solution that meets those requirements. The

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commercial requirements for DVB-I were approved by the DVB Steering Board in August 2018 (with a subsequent update in November). The Technical Module has started work on developing the technical specifications based on these requirements, and DVB is expecting to publish a first specification in the course of 2019.

For much of the functionality required by DVB-I, good technical standards are already available. Content delivery will use the DVB-DASH specification which is already deployed by many broadcasters, often in conjunction with HbbTV. DVB is in the process of adding a low latency mode to DVB-DASH, to better support linear television

services, and this will also be supported. In addition, the forthcoming DVB specification on Multicast Adaptive Bit Rate (mABR) will offer opportunities for broadcasters and network operators to work together to optimize delivery to large numbers of receivers simultaneously.

SERVICE LAYER

In terms of making DVB-I functionally equivalent to DVB-T, C and S, the major missing piece from a standards perspective is a service layer. This is used to signal the services and content that are available, meaning the information used by a TV set (or smartphone, tablet, app, etc.) to populate the channel list

and the electronic programme guide. Conceptually it is equivalent to the SI and PSI information carried in a broadcast MPEG-2 Transport Stream. This will probably involve the most significant technical choices for the DVB TM in writing the DVB-I specifications. Several existing technologies are candidates to be adopted and, if necessary, extended to fulfil the requirements.

One challenge that the TM will have to solve is how a receiver starts the process of service discovery and locates the service list. When a receiver is connected to a terrestrial or satellite antenna, it performs a channel scan to find what services are available over a set of well-defined frequencies. This kind of approach is not feasible with the internet, where even if a similar scan was possible, many thousands of services would potentially be found.

A solution is needed which will allow the receiver to locate services relevant to the user, possibly based on geographical location, language, genre, etc. One simple solution is to leave this to the market to solve. Another could be for a central authority in each country to provide a service list, and for receivers to be pre-provisioned with the URLs of those lists. However, such an authority may not be available in all countries, and this approach does not fit well with all deployment scenarios, especially those of a more open nature.

DVB is considering whether there are other possibilities that might avoid the need for country or broadcaster-specific solutions. At least, we need to avoid that the user has to enter a URL themselves.

GET INVOLVED!

Work on the technical specifications is now well under way in DVB, with many active contributors from across the industry. It is also likely that further requirements will emerge and be taken up by DVB in due course, and that new versions of the DVB-I specifications will be released. Some possibilities include further integration with broadcast services, or the use of DVB-I with 5G. The direction will, of course, be decided by DVB's Members, and interested readers are encouraged to participate in the work and to help shape the future of DVB-I.