Ocean Blue Software
White Paper

Android, DVB, HbbTV; a Perfect Match?

Figure 1: Android - the smart choice for TV?

Android for TV, the best thing since sliced gingerbread or the next ice cream sandwich shaped bubble waiting to burst? Well, if what was on show at this year's IBC is anything to go by then many believe it to be future for smart TV and connected STBs. Silicon chip vendors and technology partners including MIPs, Sigma, Trident Microsystems, and Vixs were all proudly showing Android solutions. STB vendors including well-known names such as Echostar, Kaon, and some lesser-known vendors such as Webia Technologies, Netup-TV, Bonux, In-Media, and GeniaTech are all offering up Android powered boxes to the consumer.

Figure 2: Echostar HDX200 and GeniaTech Android IP STB Solutions

So is Android the best thing for TV, and what does it mean for traditional DVB services and existing connected TV standards such as HbbTV? Consider for a minute, what does Android really offer the consumer, or the TV/STB manufacturer? Is everything on show at IBC the result or a real market requirement, or more of a technology push from chip vendors and manufacturers seeking ways to

differentiate? With Android you can create an Appstore and have access to thousands of Android apps on the market.

Figure 3: Android APPs on TV

How many of those apps are written for TV?

The answer today is none; all available apps are either written for the tablet PC or mobile market. So you need to re-purpose Apps for the TV environment to account for the 10ft display and the use of a remote control as the means of interaction rather than a touch screen. This is exactly what Google is trying to encourage for its GoogleTV platform that is now integrated with Android, but so far progress is slow. What is more, most of the big name TV manufacturers and STB vendors already have connected solutions with Apps, so why switch to something else?

Next, take a close look at everything Android related that was on show at IBC and you will notice that practically all of the demonstrations were for IPTV, and not traditional broadcast reception. Why is this? Simple, Android is not designed for traditional TV; it comes from the Smartphone and tablet PC market where streaming video over IP is understood, but digital TV from an aerial, dish, or cable, is not. Indeed, look at some of the STB products and you will find they are powered by chips more commonly found in tablets or smartphones, and connecting a tuner proves to be somewhat problematic.
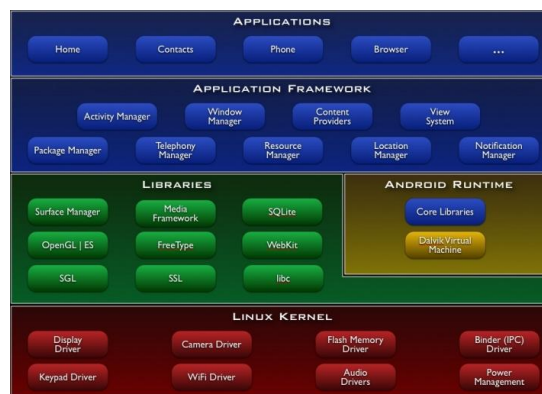

Figure 4: Android Architecture, no TV support by default

However, Android is open source and you can add support for broadcast reception. You can, and indeed people have, but there is not a standard Android profile supporting it. Adding the necessary media, and container formats to support DVB services (transport streams with either SD MPEG-2 or HD H264) is relatively straightforward to do. What is more, thanks to the media player architecture of Android (OpenCore, or Stagefright) DVB media format support can be implemented in a standardized manner. However adding support for devices such as tuners, smartcards, etc., in a

common way is more difficult. It can be done using Android's Java Native Interfaces (JNI), but without consensus amongst suppliers each implementation has the potential to be different.

The result is Android from chip vendor A supports digital TV, so does Android from STB vendor B, but maybe not quite in the same way. Accordingly, without a standardized TV profile for Android you cannot guarantee that Apps written to take advantage of the TV functionality on one platform will work on another, which is surely the point of having a solution such as Android.

What is HbbTV?

So it is possible to support DVB under Android, although there are currently pitfalls in doing so, but what about HbbTV? HbbTV, or Hybrid Broadband Broadcast TV to give it its full name. This is a pan-European standard for combining the best of broadcast TV with broadband services such as Catch-Up TV, Video-on-demand, and other interactive services. It is gaining significant market traction with deployments in Germany, trials starting in France, and other countries such Spain, and Holland committed to the standard. Most major TV and STB manufacturers have, or are launching compliant receivers, and there is little doubt that HbbTV will become the hybrid digital TV and IP standard of the future, in Europe at least.

What does Android mean for HbbTV?

The two systems don't compete, Android is a framework for providing downloadable multimedia applications, and HbbTV is a standard for providing interactive services, and IPTV. Hence, the two can quite happily co-exist, and it is possible to envisage an HbbTV Android App. As with DVB though, Android is not designed to support HbbTV, but again it could be modified to do so.

HbbTV combines DVB software, with a media player and a web browser for streaming and interactive services. Out of the tin Android offers both a media player and a browser, and once DVB support has been integrated you could be forgiven for thinking that you have everything needed to support HbbTV. However, HbbTV requires that the browser support a specific profile of CE-HTML as outlined by the Open IPTV Forum, and the Webkit browser employed by Android today is not compliant with this. The code is open source, and could be made compliant and there are manufacturers out there using Webkit on other platforms for HbbTV, but again any changes need to be implemented in a standardized way and supported by the Android community. Alternatively, another third party browser that does support HbbTV could be used. Similarly Android's media player requires updating to be fully HbbTV compliant, although many of the requirements are also needed for general DVB support (e.g. transport stream handling, H264 main and high profile support).

Figure 5 Logitech Google TV - where did it go wrong?

Copyright © Ocean Blue Software Ltd.

Where does GoogleTV fit into all of this?

GoogleTV is based on Android, has full support for TV functionality, and Google is driving the market to produce TV friendly Apps. So GoogleTV is the answer, and HbbTV becomes a GoogleTV app? There are several reasons why the answer to that question is no. Firstly, GoogleTV is not open source, only Google and a few select partners have access to this code base. Secondly, HbbTV is a standard open to all, and it is unlikely that members would appreciate the potential of having to defer to Google, if only indirectly, when it comes to defining the features and functions that are supported. What is more, so far GoogleTV has not been successful, with companies such as Logitech citing it as one of the main factors for their poor performance over the past 12 months. Factor in Google's recent acquisition of Motorola's Mobility division giving is an in house hardware group producing mobile phones, tablet PCs, and STBs, and you have to wonder if the future of Android is really going to be open, or is Google going to close source the best bits to become the next Apple? It is too early to say, and whatever happens it won't be overnight due to all the parties that have a stake in Android today but it is a something to consider; as HTC are rumored to be doing by considering having their own Smartphone OS.

Are Android, HbbTV and DVB the perfect partners?

The key word here is 'partners,' as clearly Android is not a substitute or replacement for standards such as DVB or HbbTV. Android provides a framework for downloadable multimedia applications, whereas standards such as DVB and HbbTV are all about delivering broadcast TV and interactive services to a platform. Today, there are no major barriers that prevent Android and DVB, or HbbTV, coexisting on a TV or STB, side by side. What is more, it is technically possible to modify Android to directly support DVB, or HbbTV, as applications. Even in this instance though, Android is still not replacing DVB, or HbbTV, just forming a closer partnership.

The key though is to marry Android and TV in a standardized manner, resulting in a common Android TV profile that is supported by the market. If this can be done the real potential for Android could be realized, bringing manufacturers a common software platform that makes it simple for 3rd party vendors such as Ocean Blue to develop truly re-useable DVB and HbbTV software modules for TV and STB. Similarly Application developers would be able author an App for brand A's TV with full confidence that it would also work on brand B's STB with no changes. Potentially, software integration tasks would become simplified, and development costs and the time to market for products reduced.

Back to our original question, "Android, HbbTV, DVB; a perfect match?" The jury is still out, but either way there will always be the requirement to support broadcast standards such as DVB and HbbTV, whether it is on an Android based platform, a linux based platform, or something else. Like many companies operating in this market space Ocean Blue is giving it careful consideration and is keen to contribute to any standardization process leading to the development and adoption of an Android TV profile.

About Ocean Blue Software

Ocean Blue Software, based in Bristol and Hong Kong, specialises in the development, distribution and support of world-class software solutions, which are incorporated into Digital TV consumer electronics products, present in the Digital Home. Ocean Blue middleware software products include DVB-T2, MHEG HD, HbbTV, Connected/Internet TV, Freeview compliant software products, CI Plus and Talking TV technology as examples.

Ocean Blue's software products stand out in terms of maturity, usability, operability and adherence to international digital broadcast standards, notably DVB and DTG.
For further information please visit: www.oceanbluesoftware.com