iWedia S.A.

One Solution of TV API for Android OS

Android as a TV Operating System

We are witnessing a transformation of TV set from a device with pre-defined functions, from the time it was invented in the 30s of the last century, and as we currently know it, into a programmable device with functions that could easily be changed during exploitation. The improving technology driving these changes is the increasing processing power of SoCs intended for TV and the development of infrastructure for application distribution in the form of various application stores.

Currently the situation on the TV market shows that each of the Tier 1 manufacturers has their own application framework. Some typical examples of this are Samsung with Bada OS and SmartTV concept, and Philips with Net TV. Many European OEMs and ODMs develop their own solutions (Arçelik, Vestel).

The problem of this stratified market is in its potential for globalization, and hence overall success. Considering the large number of different technologies, the solutions will have a direct impact on the distribution of applications on different devices, and across multiple platforms and geographies.

On the other hand we have witnessed the success of Android on the mobile market, as a response to the Apple boom, aiming to unite in the fight for the market segment. In this action under the banner of Android, major competitors have joined forces: Samsung, LG and Sony (many other credited manufacturers such as HTC, Motorola, Acer, etc. are intentionally omitted here in the fore).

At this point, the biggest challenge for the Android Community is the ability to set the standard in the field of TV.

Here we have to look back to the trio listed as the leaders of the Android promotion in mobile telephony, as they cover more than 50% of the worldwide market share in the TV arena.

This is to point out that the Android (i.e. Google) approach is acceptable to the consumer electronics industry; donating the OS for exclusivity of access to end-devices (terminal) is obviously an acceptable business model.

Android force is recognized by many who are preparing for the moment when the concept is to consolidate; the recently held IBC has once more confirmed that the solutions on the basis of this concept are primarily "pushed" by the IC manufacturers: Trident, Marvell, MIPS. However, the vast majority of these solutions are a "side by side" approach i.e. the user is either watching TV with a standard TV experience, or he is in the so-called Android mode, accessing internet applications. These two worlds are not integrated and currently do not coexist on one platform. **There are no solutions in which one can launch a TV application from the Android user space** (a TV application on TV should be the same as the Dialer application on a mobile phone i.e. the **default** application, the basis of which begins and ends each use of the TV). Needless to say that there are no applications that use TV devices, such as tuner, analog inputs, data from the SI tables and other TV centric applications.


Dialer as a default application for Android mobile phone and TV application for TV set

Android on the TV will create vast new opportunities, similar to the ones that occurred in the software industry with the emergence of PC and Windows operating system. From that moment, a whole new segment of the industry related to the development and sale of business applications, which have dominated the software market, was created. Now a similar opportunity with the "Android OS in the living room" opens up – powered and networked device to install applications on. We should not squander this opportunity, but we should not forget that the "Trojan horse" to enter the living room is "TV functionality."

What is Android4TV?

Android4TV is an initiative for the standardization of the expansion of Android OS to support TV-centric devices, as well as dedicated TV peripherals such as A/V input device (SCART, HDMI, YPrPb, VGA, SPDI-F), output layout (PiP, PaP, Pat) and others coming with new widgets.

TV set is one of the biggest assets to all manufacturers - market proven DVB stack, which is definitely a complex and valuable IP, given the fragmented Pan–European market. **Android4TV is exactly the model to keep this capital by creating a placeholder for DVB-MW within the Android software structure**. This will be standardized in a way that besides the default TV application, any new applications developed in the future will be able to use this API.
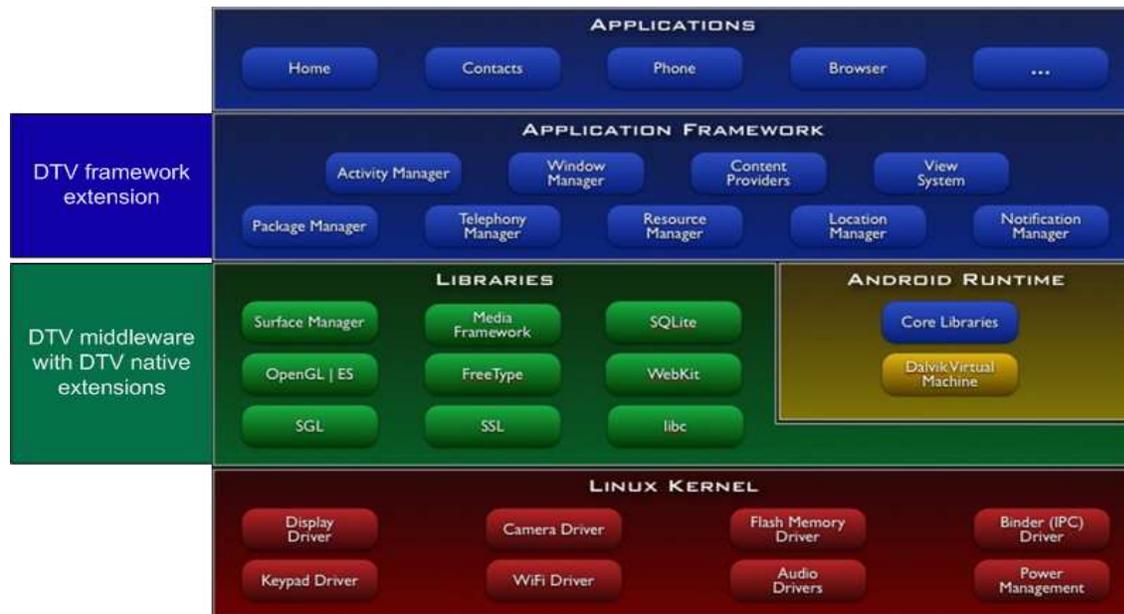
Architecture of the proposed Android4TV standardization model

The process of development and standardization of the API must comply with the following rules:

- Respect the rules of the Android community
- The Android4TV source code is donated to the open source community
- Parts of JNI to connect MW to be standardized and donated to open source
- Create first TV-centric applications which will be a model (template) for future development and deployment of TV applications

The essence of this process is that TV is still basically a device to watch programs broadcasted through either terrestrial, satellite or cable.

Elaborating on the concept of Android4TV API, we realized **two important segments that must be covered by the new standard**:

- Interactive service (MHEG, HbbTV)
- PayTV content

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The upcoming standard for interactive TV – HbbTV, is complementary to the proposed Android4TV concept, especially considering that the basis of HbbTV is an extension of HTML5 i.e. CE-HTML. **An integral part of Android is WebKit and its CE-HTML upgrade and support, which is something that iWedia has experience in and has market proven solutions.** Using the same principles, WebKit will be extended to support MHEG as the industry standard in many developed DVB markets (UK).

Digital television was a synonymous with PayTV for years, and was credited as the basis for its development. The driving factor was content distributed for a fee. As the major driving factor this market segment must be accounted for in the upcoming standardization. When discussing the Android4TV API, special attention will be paid to the definition of software architecture to handle PayTV content, i.e. support for CAS, by the use of CI + interface, and support to embedded CAS.

Finally, the support for VoD (Video on Demand) service is also presumed, although it has been more or less supported by the recently released Android versions (Ice Cream Sandwich).

Why we introduced Android4TV?

The Android4TV initiative comes from the acknowledged necessity to support the expansion of the Android OS; at the same time having recognized the size and complexity of the problem, we want it to be a **generally acceptable solution to both chip manufacturers and Tier 1 brands**. The initiative aims at TV functionality being supported in the same way that GPS-aided, GYRO, GPRS, touch screen and other hardware peripherals are used in mobile phones and tablets.

Partner Program

The Android4TV partner program is intended to be a two-step approach; in the first stage there will be partners that subsidize development, and in stage 2 there will be a wider program in order to distribute the results across consumer society. At the current moment the driving force behind it are Tier 1 chip vendors who plan to invest in order to reduce costs. The major issue they're facing today is support for a wide spectrum of customers, each requesting a different set of applications, with a significant part of the margins running off on customization services. **With the standardization of the application framework, there will be a reduced support effort and a leveraged investment**, while there will be one platform deployed to different customers. Some of

the top ten silicon vendors on the consumer market have shown incredible interest, and we expect the selection process to be closed soon. Besides the chip vendors, interested parties include: OpenTV, Cabot, and PayTV vendors, such as Nagra.

iWedia role and goals

iWedia takes the role of standardization process coordination, but with a clear focus on donating to the open source software community.

We invite all our interested partners to join us on the road to create a new generation of consumer devices.

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About iWedia

iWedia S.A. develops and markets software components and solutions for connected television devices and provides associated design-in services. The company proposes a comprehensive and evolving product portfolio, with a balance between broadcast and broadband-related assets. It includes software components for Internet connectivity (i.e. HbbTV), home networking (i.e. DLNA), interactivity (i.e. MHEG-5), and security (i.e. CI Plus). These components may be integrated altogether, on top of Linux or Android, in turnkey solutions for Digital Media Adapters, Set-Top Boxes, Personal Video Recorders, and connected integrated Digital TV sets.

For more information please visit www.iwedia.com