



## WHITEPAPER

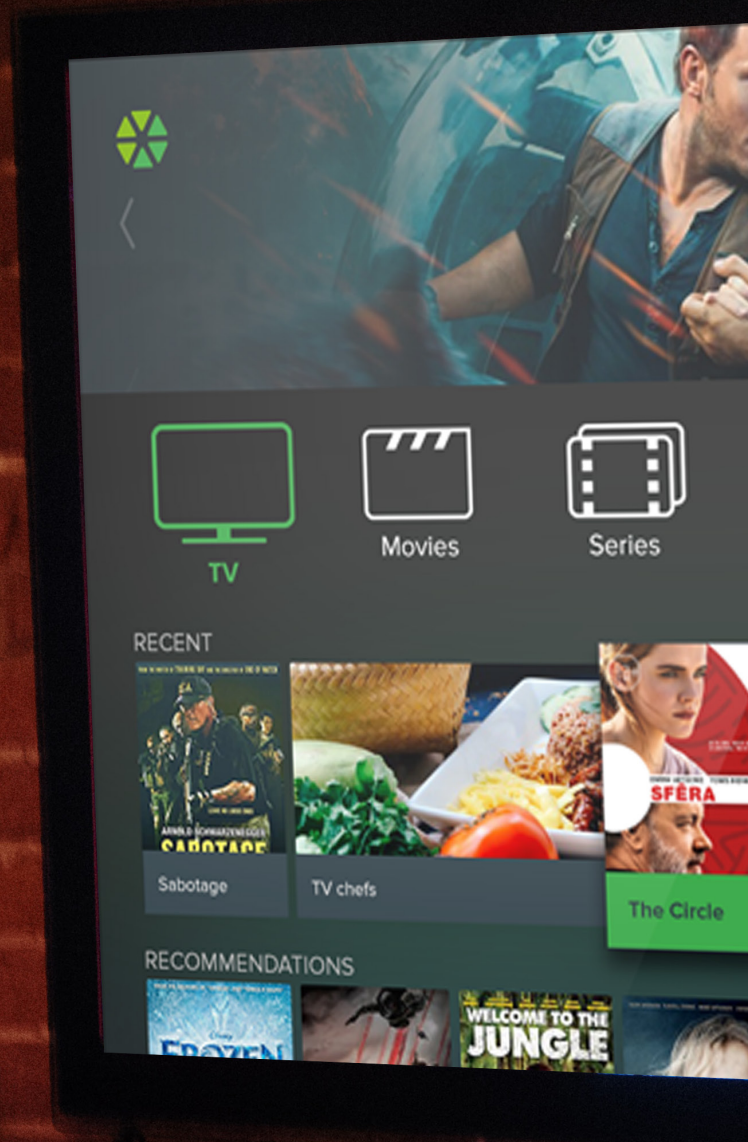
# The challenges and benefits operators must consider when migrating to a cutting-edge multiscreen video service





Experience has shown us that it is as important to consider the implications for your business as it is for delivering best in class for your customers, when selecting the right platform; one does not exceed the other. Selecting a partner with the experience to challenge your thinking, explain the options and guide you, is equally vital for good outcomes.

Igor Rummyantsev, CTO,  
SmartLabs





*Far from being 'the future', delivery of TV over broadband is the current expectation for millions of viewers. Whether broadcast (multicast), time-shifted or video on demand (VOD), the aggregate US audience for IPTV services is larger than the country's population. This gives operators greater opportunities to differentiate and build subscriber loyalty with aggregated video services. This white paper has been created to help clarify what can be a confusing landscape for operators.*

**A**ny service provider migrating to a new platform needs to keep one thing in mind: the customer. Migration is a disruptive process, but this should never be obvious from the outside. As far as the customer is concerned, things can only – will only – get better.

To deliver on this promise, operators need to do two things. First, identify what the customer wants, and second, formulate a roadmap that satisfies those desires while meeting the needs of the business, both now and in the future. In this industry, that can be done by developing both a technical spec and an outline of the customer experience against which it can be compared.

At a time when telecoms and media is undergoing rapid and fundamental evolution, the opportunity for operators to implement change – and the imperative to do so as their customers' expectations become more demanding – has never been greater. Yet, care must be taken not merely to satisfy the needs of today, but to keep an eye on the future.

The app economy notwithstanding, most subscribers still rely on set top boxes which, despite falling manufacturing costs, require significant investment in design and provisioning. It's therefore important to roll out a platform that will last at least five years and, if possible, double that or longer, to offset the initial investment.

This needs to be introduced while simultaneously managing an existing legacy estate and meeting an obligation to maintain the customer experience on that infrastructure to reduce churn. It is essential that any operator migrating its existing customer base remains mindful of the tendency for long-standing subscribers to feel that they are somehow being short changed when newcomers are issued cutting-edge hardware and services. Rationalisation and simplification can help, allowing operators to fix the most serious pain points while prioritising issues that affect the largest number of existing customers.

Operator experiences will vary enormously as they work their way through the process. Smaller players may need to innovate, using over the top services to counter the larger content offerings of tier one rivals. Larger players, mindful of the value in their more extensive data sets, might be reluctant to share metrics with platform developers. In either instance, an implementation partner must be able to navigate the technology and understand how to manage the ongoing customer experience.

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## The STB landscape

We enter the 2020s with the industry facing transition, but one thing that hasn't changed is reliance on the set top box (STB). Here, we find solutions are consolidating around open Linux solutions and Android-based alternatives.

Operators must be mindful, when settling on a platform, of the impact that the choice will have on their consumer base, engineering and service delivery. Get it wrong, and that subscriber base, as well as the business that the base underpins, can disappear almost overnight.

Fortunately, phased transitions are possible and, indeed, advisory, but running a dual service while evolving impacts both service and cost. Matching the needs of the business to its technical implementation – an area in which SmartLabs has strong ancestry – is project critical.

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## Architectures for a diverse audience

Demand for new content is on an upward trajectory and providers need to be sure they can keep up – either by originating their own material or providing access to supplementary services. Their ability to do so will depend, to some extent, on their choice of platform which, in turn, will impact both subscriber growth and churn.

While core features, such as Video on Demand (VOD) and searchable Electronic Program Guides (EPG) aren't platform dependent, the same can't be said of services like YouTube, or the ability to lock out competing operators. At this level, choosing between Android TV, Android Open Source Project or Linux can have a fundamental impact on the operator's headline offering.

### Android TV

Stock Android TV gives viewers access to all they need. This includes access to the operator's negotiated channel line-up, a full suite of Google apps and access to both the Play Store and YouTube. Operators can go from cold start to launch in between six and nine months and add their own over the top (OTT) services, but





can't brand or customise the interface or adapt the menus. Most contentious of these, from a provider's point of view, is the presence of the Play Store, through which subscribers can access content from rival providers.

Behind the scenes, Android TV streams metrics back to Google – something to which both operators and subscribers will need to agree. STBs will need to be updated four times a year, in sync with Google's release schedule, which, over time, will lead to STB obsolescence when firmware demands exceed the hardware's specifications. Alongside this, service providers will need to negotiate their own content deals, make sure the offering is secure and build the back-end to provide billing, customer care services and more.

### **Android TV Operator Tier**

Providers that select Android TV Operator Tier enjoy all the benefits mentioned above but with the option to customise. They can brand and modify the interface (creating a custom launcher) but a limited set of Google guidelines still need to be followed. The ability to customise menus lets operators promote unique OTT services and place their own content in the most prominent UI windows to foster brand loyalty. Premium offerings like live sport and early access to recent

films show that, for many subscribers, range is more important than price so, for operators selling primarily on the strength of their line-up, Android TV Operator Tier is a logical proposition. However, signing up for Android TV Operator Tier, obliges operators to retain the Google Play Store in a prominent position with its contents intact, including access to rival operators' services. Moreover, use requires certification, and that isn't a given – even for some tier one operators. For those who fail to qualify, the choice is to work within the confines of stock Android TV, or opt instead for Linux or Android Open Source Project (AOSP).

### **Linux**

Once the only practical option, Linux powers a lot of legacy hardware and remains a popular choice for operators who prefer to retain jurisdiction over their platform. Running Linux gives them control over interface, branding and start-up routine, the ability to lock out competitor content and to keep their viewer metrics private. However, operators will need to negotiate with third-party content providers if customer research reveals that their inclusion is key to growing and retaining the subscriber base, since customers won't be able to install those providers' apps themselves. Implementation typically takes around six months.

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## The hidden costs of Android TV

Both Android TV and Android TV Operator Tier are free at the point of implementation. They are also well supported and ready to use out of the box – but that doesn't necessarily mean they are cheap.

Operators launching on either platform today will need to ensure their boxes conform to a limited specification which, for those who already have a significant but incompatible inventory in customers' homes, could make a Google solution financially untenable. Linux is less prescriptive, meaning integrators like SmartLabs can tailor the solution to incorporate legacy boxes so that operators can sweat their existing fleet of STBs. Software customisation costs may be higher, but the overall cost of implementation is likely to be lower.

### RDK

The Royalty-free reference Design Kit (RDK) is a base-level, Linux-based STB operating system designed to simplify the process of building an overlying UI. Anyone with web design skills could use it to deliver a customised and branded STB experience.

However, beyond the interface, operators need to develop their own apps and services as RDK lacks a native app store. Further, there is no guarantee that third-party operators including Netflix and Disney+ would agree to inclusion on an RDK-based STB – particularly if not developed by a tier-one operator.

When considering RDK, it is important to look beyond the low cost of acquiring the technology and building hardware on which to run it. Alongside these, operators must consider the additional effort required to develop a polished product on which they are happy to place their own branding.

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## Tier 1 vs Tier 2 operators

Operators are under pressure to maintain control of the television. As such, there is an incentive to offer the widest range of services through a unified interface, which remains within their domain. For tier 1 operators who generate their own content as well as carrying third party channels, either version of Android TV is the simplest means of achieving this – but what of those operating on tier 2?

For them, Linux or AOSP are the most compelling propositions, allowing them to roll out a fully customised STB that plays to their own strengths while reducing the prominence of rival services – or excluding them entirely. This allows them to retain subscribers' attention for longer.

In an effort to differentiate themselves, some operators have gone further, and experimented with breaking apart their channel packages so that customers can devise their own mix. It hasn't been entirely successful, and most are moving back towards a super aggregator model, selling defined bundles while applying their own differentiating services OTT.

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## Profile: PrimeTel

PrimeTel PLC partnered with SmartLabs to upgrade its traditional IPTV service to an AOSP-based service. It needed to deliver DVB-T with interactive services over the Internet. SmartLabs deployed its SmartTUBE SDP Service Delivery Platform and SmartSPY monitoring solution, with security and content encoding systems fully integrated. It also designed the required SML-303 Hybrid STBs to support DVB-T/IP.

One of the key appeals of working with SmartLabs was the latter's extensive experience in creating, developing and supporting complex interactive television projects in Europe, which would allow PrimeTel to significantly strengthen its position in the Cyprus pay TV market.



A man and a woman are sitting closely together on a couch, looking at a laptop screen. The woman is leaning her head on the man's shoulder. They are both looking at the screen with interest. The man has a beard and is wearing a light-colored t-shirt. The woman is wearing a light blue sweater over a white shirt. The background is dark and out of focus.

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## AOSP

A fourth option, AOSP, or Android Open Source Project, does not give an operator access to the full range of Google features that are made available with the Android TV, but does give access to the Android operating system without requiring the signing of any Google agreements. The effort required to implement an AOSP solution is very similar to a Linux solution.

One benefit in the AOSP environment is that Android applications may be more easily included as part of the service. However, the operator is not able to offer access to the Google Play Store so app management becomes the responsibility of the operator and the app owner. It should also be noted that Premium app providers such as Google for YouTube and Netflix will not typically allow their applications to be included in an AOSP solution.

Swisscom chose AOSP when migrating its IPTV service and subsequently made its implementation available for other providers to build on. Facilitating catch-up and programme restart,

operators' own linear channels and VOD, it lacks access to third party services like Netflix – for which its subscribers can use apps on external devices – but keeps control and metrics in house.

Recognising that the IPTV landscape is in a constant state of flux, Swisscom made a decision to stop chasing every innovation and incorporating each new service and decided to build an omnichannel offering with capacity for providers that have yet to launch. This may not be viable for operators who lack the market presence of a national operator but, for Swisscom and anyone else ducking out of the race to keep their customers' eyes on a single screen, it makes a lot of sense.

When choosing between Linux, Android TV and AOSP, ask yourself how well you understand your customer base, and how comfortable you are providing what Google wants in return for satisfying those needs in a single STB. Deciding on the most appropriate platform requires that you find a balance between them.



## The end of the STB?

We are seeing significant growth in the use of smart TVs which, since 2015, have incorporated significant processing power and onboard technology. These are now finding new roles in kitchens and bedrooms as families upgrade the home's primary screen which, in most cases, remains connected to a more flexible STB.

For operators, there are several benefits to maintaining the STB-centric model, not least of which is the fact it establishes a known platform, reducing support costs and allowing them to tailor the back-end offering to match. Delivering an all-in-one solution, with branded STBs serving content that is branded to match, gives subscribers a sense of ownership as they identify with the provider – as well as the benefit of a simpler onboarding experience.

From a subscriber perspective, signing up with a single service provider immediately gives them access to a broader range of channels and video on demand. Trying to replicate this experience without a STB would require the installation of multiple apps, each of which needs to be updated at different times, and can cost considerably more.

If your legacy boxes are 100% Linux based, a new platform should support roll-out to your existing infrastructure, with the middleware vendor delivering your chosen UI to each legacy device.

## Customer migration

STB standardisation means costs are continuing to fall. However, operators migrating to Android TV or Linux should focus on customer retention, rather than cost savings. A phased transition, ideally targeting new subscribers, is a logical starting point, but could leave long-standing customers feeling short-changed. Should this increase churn, the roll-out may need to be accelerated until the operator reaches the point where maintaining a small inventory of legacy hardware becomes uneconomic to the point of writing it off.

Depending on the age of the legacy hardware, it may be possible to upgrade some boxes across the network, but others will require an engineer visit or wholesale replacement where the specification fails to meet the revised firmware's requirements.

### Server-side migration

Whichever technology is chosen to host the migrated system, most existing back-end content, including video libraries, metadata and EPGs, can be directly integrated through the use of APIs. Going forward, users who become accustomed to the more advanced platform are likely to make more ambitious demands of the operator.

If once-linear channels are enabled for on-demand access, there is an expectation that they be searchable, requiring enhanced EPG listings including cast and crew credits, synopses and more. However, this is one of several considerations that operators fail to examine, and it highlights the importance of developing a thorough roadmap in advance of any roll-out, in consultation with the migration partner.





## The road ahead

TV viewing has changed beyond recognition over the last 80 years. From a single, black and white channel, through the introduction of colour to HD and, today, 8K; from linear viewing to apps and VOD, and finally the emergence of catch-up, restart and network PVR... the shift to multichannel IPTV is just the latest chapter, and one that subscribers are keen to access.

Its arrival is perfectly timed, with capacity growing in line with customer expectations. We are now at the point where subscribers' demands can only be met through widespread migration of IPTV 1.0-level services to multi-screen offerings with support for STB-, smart TV-, PC- and app-based distribution. Where early IPTV implementations were often used as incentives to sell broadband deals, IPTV is now both the norm – and the headline product, and it is through unique bolt-ons that providers will differentiate in a crowded market.

It is unlikely this will change with the broader adoption of 5G services. In much of the world, home broadband is already good enough to accommodate the multiple live streams required to support families' viewing habits. As well as choosing the right partner to navigate what can be a confusing landscape, operators' focus must therefore be on choosing and developing a platform that facilitates those add-ons, while keeping in mind that it is possible to introduce a market-leading offering while maintaining control of their data and screen space.

## Frequently asked questions

### What is my OTT challenge?

OTT (Over The Top services) is a new field that operators can take advantage of where they do not have control over the network. Selecting a feature-rich, reliable tool to manage the quality of their service and retain subscribers is key. It is also important to acknowledge that the behaviour of an OTT service platform is completely different from IPTV in a managed network. It is essential that operators plan for this so that they can launch and maintain a superior service to their subscribers.

### What consideration should I give to Smart TV and other devices?

Smart TV use is growing, and Samsung, LG, and other Android TV-based manufacturers will continue to develop screens. The user experience will be the same as for a traditional STB.

### Which DRM should I opt for?

If you want multiscreen, then opt for Google Widevine plus Microsoft Playready.



# What are my options if I use STBs?

Platform	Benefits	Considerations
<b>Linux</b>	<ul style="list-style-type: none"> <li>Cheaper and easy to roll-out to market</li> <li>YouTube is available with official certification</li> <li>Other content providers are possible, even for small service providers through direct content contract or content distributors.</li> <li>Optimized memory and CPU requirements</li> <li>Full control of STB software from manufacturer, with the possibility to implement custom features, and optimize performance and video playback</li> </ul>	<ul style="list-style-type: none"> <li>Greater dependency on middleware and STB vendors</li> <li>Fewer third party apps</li> <li>Netflix is almost impossible to certify</li> </ul>
<b>AOSP</b>	<ul style="list-style-type: none"> <li>Most third-party apps are available, which enables wide subscriber choice</li> <li>Allows operator to cherry pick applications and use its own analogue of Google Play Store.</li> <li>Almost full control of STB software and the possibility to use IR remotes only, which are cheaper than Bluetooth ones</li> <li>No requirements to use the latest System on a Chip and Android version, which makes it more affordable</li> </ul>	<ul style="list-style-type: none"> <li>Netflix is not available</li> <li>A lot of cheap STBs in the market do not fit operator requirements</li> <li>Requires a management platform for system software and application upgrades</li> <li>Not all functions of IPTV, like multicast streams, are supported out of the box and require additional development.</li> <li>Voice search and Chromecast functionality is not a part of AOSP and require additional software to implement</li> </ul>
<b>Android TV Operator Tier</b>	<ul style="list-style-type: none"> <li>Official Google Playstore, YouTube, Widevine and Playready support is included in the platform</li> <li>Certification process includes tens of thousands of tests to ensure the user experience is verified and the product meets Google's quality standards in terms of UI performance, video playback, stability and security</li> <li>Integrated voice search</li> <li>Chromecast functionality</li> </ul>	<ul style="list-style-type: none"> <li>Google only supports big projects. Each project is bespoke, long and has a large certification process with a lot of participants</li> <li>Major software upgrades require additional certification of the whole product, so if you have three STB suppliers you have to recertify all of them</li> <li>ATV product includes STB itself, and all installed software. STB vendor, UI supplier and operator are three parties participating in the certification together, which makes it difficult to change device manufacturer or have several STB suppliers</li> <li>Additional certification required for Netflix</li> <li>Less control of STB software, a lot of restrictions from Google.</li> <li>Play Store is obligatory with no restriction over access to competitors' apps</li> <li>ATV STB must use latest hardware, because Google makes hardware requirements higher every year. Vendors must upgrade to a newest version of Android each year for 3 years after launch. This makes ATV boxes more expensive than AOSP with which it is possible to use less expansive hardware and earlier versions of Android OS</li> <li>Integrated voice search requires more expensive Bluetooth RCU</li> </ul>



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# About SmartLabs

SmartLabs is a leading provider of software solutions that drive multi-screen, multi-networks for the interactive TV sector. It is also a manufacturer of feature-rich STBs with award-winning designs.

SmartLabs' solutions deliver content services to over six million subscribers around the globe on multiple devices from set-top boxes to mobile phones. Its client base includes O2, Rostelecom, baltcom, primetel and OptiTV to name a few. SmartLabs partners with 25 IPTV market leaders including Apple, Microsoft, Google, Samsung and LG. It has offices in Berlin, London, Auckland, Toronto, Moscow and St Petersburg and has over 10+ years' experience creating innovative solutions for the interactive TV market.

**smartlabs.tv**

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