DTVKit

RDK VS AOSP

IS IT STILL POSSIBLE TO OWN THE SET-TOP BOX EXPERIENCE?

WHAT TO EXPECT FROM THIS WHITE PAPER

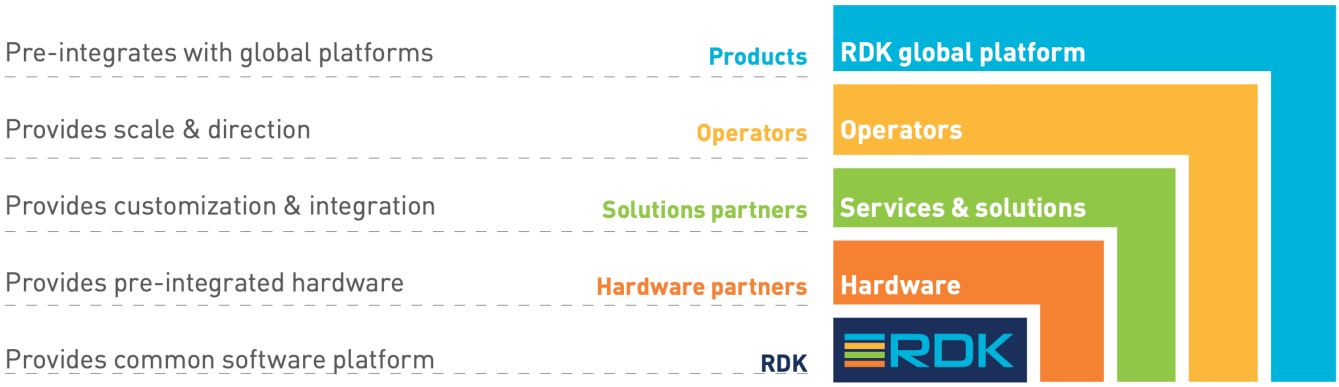
This paper looks at the software ecosystem options available to operators for a new generation of products. It highlights the shift in emphasis, and points to the pivotal role that RDK has recently played in re-igniting competition in the world of CPE. Among many industry reports looking at the growth of the Android TV platform, DTVKit estimated that 80% of operators were considering Android in 2020 as their platform of choice. This level of adoption had serious implications for manufacturers and SoC vendors, as the unintended consequence was that the Android ecosystem started to monopolise the market.

WHAT IS RDK?

RDK is an open-source platform for the connected home that standardises the core functions of broadband, video, and IoT connected devices. It enables service providers to manage their devices, control their business models, and customise their apps, UI's, and data analytics, improving the customer experience and driving business results.

The RDK community has demonstrated annual growth, reaching over 500 technology companies who are collectively making code contributions and downloading software components more than seven million times per month.

THE RDK ECOSYSTEM



80 million

The RDK software powers over 80 million devices deployed by service providers globally.

(figures from Q2 2021)

WHAT IS ANDROID AOSP?

Android was initially developed as a mobile operating system, based on the Linux kernel, targeted at mobile devices including smartphones and tablets. Developed by Google, its source code was made public through the Android Open-Source Project (AOSP). Rethink Technology Research estimates that by 2026, 236M devices could be using a version of the Android OS family and roughly 50% of those are likely to be AOSP.* All Android TV devices provide access to premium streaming services including Netflix, Amazon Prime Video, Disney+ and more. However, operators using AOSP must have their own commercial relationships with these global OTT players.

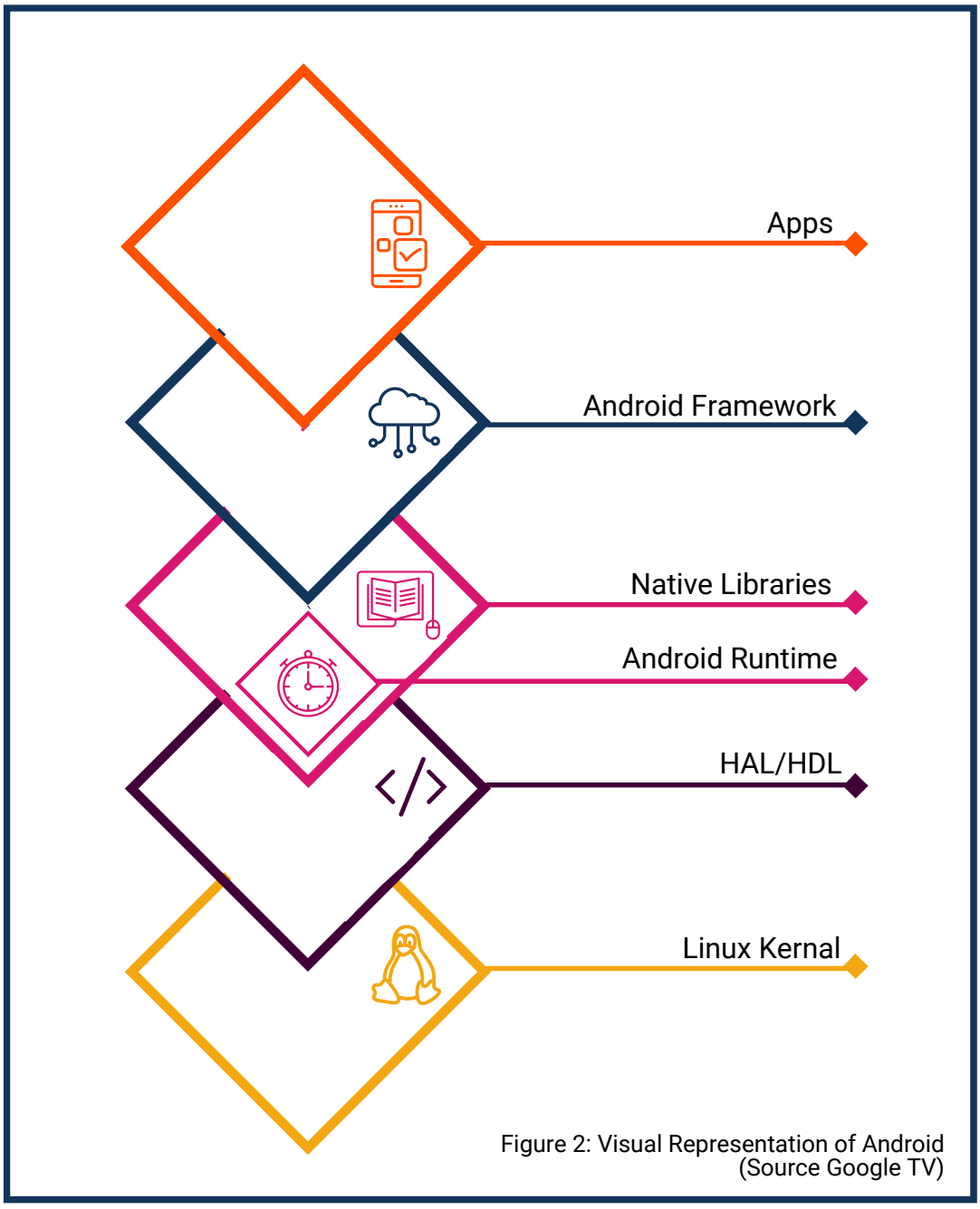


Figure 2: Visual Representation of Android (Source Google TV)

* https://rethinkresearch.biz/articles/android-tv-sweeps-new-set-tops-outside-huaweis-sphere-says-rethink-tv/

WHAT DOES IT MEAN FOR OPERATORS?

Operators are looking for compelling consumer experiences to drive customer growth and the average revenue per customer (ARPU). Operator business models have continually evolved, from delivering pure video services, to fixed landlines, broadband, fibre, mobile phones, and now into the smart home. Innovations that excited the market five years ago, like global OTT players, have already become must-have hygiene factors. Despite the pace of change, the product user experience remains key to enabling operators to differentiate from their competitors.

Operators treat CPE hardware as a commodity, but crucially they still want their own look and feel. Operators face a binary choice; to take the vanilla rails-style implementation or adopt a more customer-centric approach, owning and controlling more of the user experience. The product experience drives the customer attachment rate. The commercial equation balances the business choice, between sunk costs for product development versus the benefits and returns from an increased attachment rate resulting from a custom UX. The driving force is about reusing the different technology stacks, while empowering the operator to compete. Ecosystems drive the time-to-market conversations for operators who can choose to invest in more services, encouraging better engagement, and creating sticky business models, or leverage a basic Android product and the inherent constraints.

Custom hardware, middleware, and application frameworks cost more. A simple Android TV port quickly evolves into a highly complex engineering project, with the operators' technical teams stuck between the commercial terms from Google and the business requirements from the operator. The ability to customise a product quickly and get to market becomes the singular focus.

KEY STEPS IN THE AOSP EVOLUTION

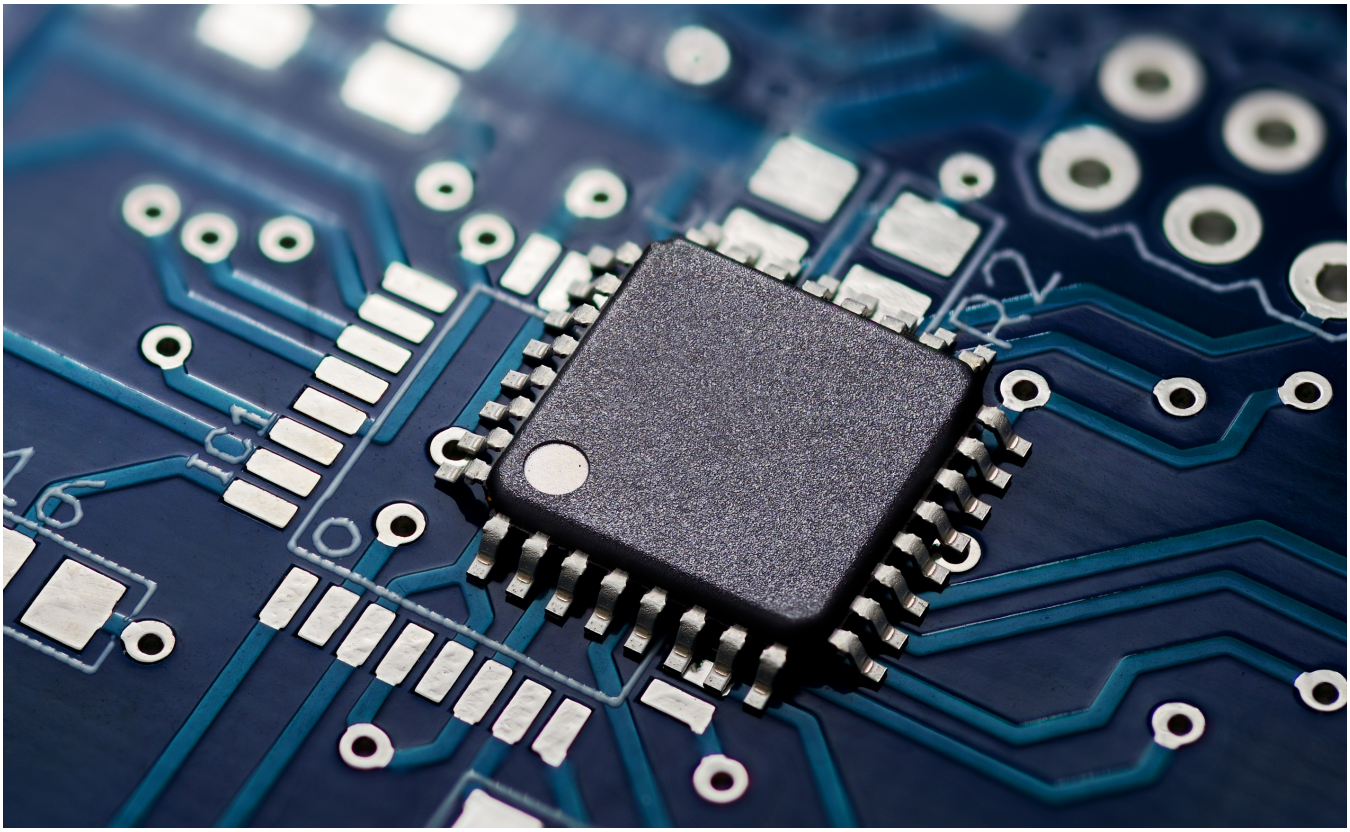
To understand Google’s current dominance, it's important to begin by taking a close look at the history and critical chain of events. Initially, operators were lured to AOSP because the proprietary OTT applications in the App store were easy to port. But the ecosystem generated a problem for the global OTT players in their ability to scale their testing and certification regimes, in line with the demand and the annual Android release cycle. The commercial terms to adopt the technologies and the obligations to update them had serious unintended consequences for industry players, as test capacity became the bottleneck. Google’s answer to this problem was Android TV, a stack in which they took considerably more control, providing less scope for changes, offset by the crucial access to pre-certified OTT content. Android TV growth happened as operators realised that providing the global OTT content alongside their locally curated content was an essential step to reduce the decline in the pay TV market.

Subsequently, Google forced many manufacturing partners using AOSP to access the leading OTT applications using the Android TV profile which has more commercial constraints on operator innovation. The more customisation operators needed, the harder it was to maintain the product, as each release cycle required more effort to support the customisations, re-integrating, and re-testing. As operators locked into the Google Android TV ecosystem, they were forced to abandon their AOSP roots, and most of their R&D resources were consumed maintaining their specific points of customisation, rather than innovating on new features that were important to their own business.

Android TV was a great vehicle, if the features operators wanted aligned with the Google Android TV roadmap. But this was often not the case.

Today, Google is pushing operators into the relaunched Google TV platform, removing even more control from the operators. With AOSP no longer a viable route for partners, operators are looking for other alternatives.

THE LAW OF UNINTENDED CONSEQUENCES



By 2020, Android's dominance in both CPE products shipped, and new projects being created presented operators with fewer and fewer options. As the global supply chain crisis started to bite, manufacturers and SoC companies struggled with the same problem but for different reasons.

Manufacturers pitching for operator business encountered difficulties if they didn't have the scale.

SoC companies had the same challenge as the OTT companies. The support burden was simply too high to sustain because every project had unique software requirements.

Manufacturers and SOC companies had virtually no choice but to embrace the Android TV platform, as it was one of the only video solutions at a viable price point for the operators' business.

RDK-V (video) was the exception, offering another choice that restored competition to the market.

WHY IS RDK DIFFERENT AND WHAT PROBLEMS DOES IT SOLVE?

OPEN SOURCE

The RDK platform is open source, making it a true community of partners to collaborate, differentiate, and innovate their products without any of the restrictive commercial terms mandated by the Google ecosystem. RDK gives operators control, so their software teams spend less time maintaining code and more time delivering new product features. The ground-up design means that the code base is clean and does not suffer from bloating.

VIDEO ACCELERATOR

RDK has recently launched a Video Accelerator (VA) programme, designed for faster deployment of set-top boxes. The program allows operators to select their OEM, SoC, and remote control. The box then comes pre-loaded with the latest RDK software, an app store, and a customizable UI. Many premium OTT services are pre-integrated as well, but the operator must have their own commercial terms in place with the app providers.

USER EXPERIENCE

Both Android AOSP and RDK come with the basic user experience, and work with a pre-built DVB Stack from DTVKit. While consumers love the familiarity of rails and application tiles for discovery (popularised by Netflix and Android), operators don't want to offer the same experience as their competitors.

Globally, there are middleware companies offering off-the-shelf and custom integrations to suit the needs of most operators. RDK is easily customisable for operators who prefer a closer, more tactile relationship with their consumers. And unlike Android and Google TV, operators can develop their own consumer-facing applications in RDK and AOSP. RDK supports the java-based Lightning™ development language for creating apps and UI.

TV APPS

Android comes with the Google Play app store, whilst RDK comes with the TV App store built-in, or operators can choose different store providers. The store supports all major content partners that are not hard coded into the VA platform, and if there's a specific application missing for your market needs, it can easily be ported.

CONTENT PROTECTION

Operators engage in comprehensive rights contracts to bring their consumers the best content. These contracts come with obligations to ensure that content is not pirated from the platform as assets are delivered across the broadband or broadcast networks. DRM is used to protect streamed content, and the Conditional Access System (CAS) is used for securing broadcast services, although the line between the two is becoming blurred. AOSP can support various DRMs/CAS, but they are not available out-of-the-box. Each needs to be integrated and certified with the platform.

RDK is slightly better with its Open Content Decryption Module (OCDM) approach to providing a standardised interface for DRM and CAS. RDK's VA programme includes OCDM, enabling leading OTT operator ports. More companies are working with RDK to promote pre-integration for various DRMs/CAS, considerably reducing the effort required for the certification process.

SUPPORT & MAINTENANCE

Operators strive for platform stability, performance, and responsive design, thereby reducing the customer support burden. RDK-V was developed from the ground up as a platform for set-top boxes and digital TVs and was designed by operators for operators. Customer-centric features like TR69 and XCONF enable operators to integrate best practices into their business systems, using award-winning techniques to keep the CPE in the consumer's home.

TARGETED ADVERTISING

Targeted advertising and accurate video slicing are becoming mandatory features in most markets. Platforms and channels seek to maximise the revenue while delivering content consumers value. RDK supports commonly used standards out-of-the-box, where Android needs additional work.

DVB

While the operator focus is content and services, consumers still return to linear TV for that unconsidered channel surfing experience. RDK can be built with a DVB stack and has the APIs in place to allow easy integration to the operators preferred DVB solution. The DTVKit stack is available directly from DTVKit or via RDK. DTVKit is deployed globally at scale in hundreds of millions of devices. It’s available on all significant SoC platforms for deployment on RDK, Android, and Linux.

BUSINESS CASE

The ROI drives the economics for operators, with development typically repaying costs for the first few years of the product life. RDK offers an advantage in that operators have the freedom to develop their TV Applications and maintain them on their terms. Many of the Android ports come with significant maintenance overheads, committing operators to support their products on Google’s terms rather than those of their consumers. The reality of this business case has ignited the operators' interest in RDK.

TIME TO MARKET

Time to market has always been the operators’ main economic challenge. RDK's answer to this is the VA program, designed to enable operators to quickly and efficiently bring RDK based set-top boxes to market. The VA program includes several pre-approved designs from a range of manufacturers, all of which are pre-integrated with TV App Store, premium video streaming services, DRM/CAS, and a reference UI/Launcher that can be easily customised. This is backed up by RDKs extensive testing regime to ensure the quality and robustness of their releases.

Operators globally are becoming more consumer-centric, moving further into the lives and homes of their customers. RDK has been designed to work with the shift in services from pay-tv to broadband, fibre, OTT, and smart homes. Additional RDK profiles are based on the same principles as RDK-V: RDK-B (Broadband) is designed for routers and gateways, and RDK-C was developed for IP cameras.

RDK RESTORES COMPETITION

The choices operators face, along with the overwhelming resource offered by RDK, finally provide the market competition, enabling operators to choose their commercial destiny. The RDK community is steadily growing, and more operators are building a successful business from the open-source project.

WANT TO SEE HOW DTVKIT CAN BENEFIT YOUR BUSINESS?

DTVKit's philosophy is to shape the future of the digital TV industry by enabling the joint development of a shared pool of DVB software components. Our story began back in 2013 and since then we have continued to grow our member community. We have an ongoing commitment to enhancing our software components to provide members with access to the latest software.

Contact us today
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