

Corporate & Products Introduction

July 2019

History

1996
Company foundation
iWedia 1.0 in France

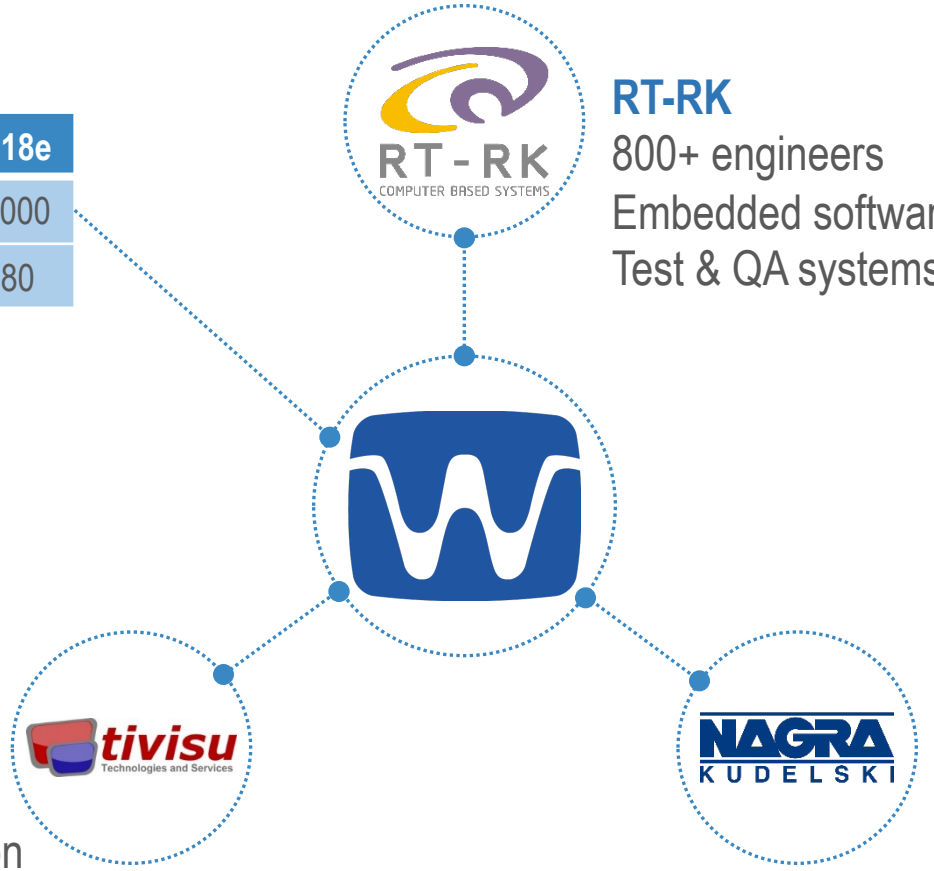
2009
Cooperation RT-RK and
NAGRA Kudelski Group

2010
SmarDTV acquiring iWedia
Cooperation with leading
CAS/DRM systems

2011
Relaunch of iWedia
2.0

Corporate Structure

k EUR	2015	2016	2017	2018e
Revenue	5900	7400	7800	11000
# Engineers	120	140	160	180



RT-RK
800+ engineers
Embedded software + Android TV experts
Test & QA systems

tivisu
Sales & Distribution
Biz Development

Kudelski Group Digital TV Division
NAGRA/Conax (CAS, SDP)
SmarDTV (STBs, CAMs)

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Locations

- Headquarters
  - Lausanne
- R&D Centers
  - Belgrade
  - Novi Sad
- Sales Offices
  - Bangkok
  - Frankfurt
  - Freiburg
  - La Ciotat
  - Sao Paulo



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iWedia at a glance

- iWedia provides the entire IP portfolio and SI services for connected consumer appliances:
  - Software IP for licensing
  - Complete feature coverage of TV and STB
  - System Integration
  - Certification Support
  - Services at competitive cost
  - Scale of resources
  - “One stop shop”
- Unique strong competence in Android and IPTV
- > 30M TV/STBs in the field

“Teatro” turnkey SW solutions



Customers & Partners: strong presence in IPTV world



RTOS Turnkey Software Solution



- A complete software solution for broadcast only (one-way) Pay TV zappers
- Built around CoMedia DTV software stack closely merged with Maestro – a WYSIWYG toolkit for STB UI and app development

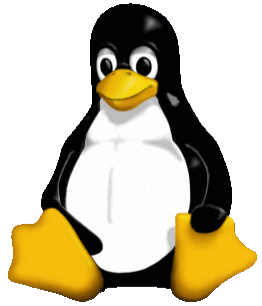
Highlights

- Highly optimized to cope with limited resources (CPU and memory configuration) terminals and is hence the ideal choice for low-end devices targeting emerging markets
- Has been deployed over various networks (terrestrial, cable and satellite) in millions of units and field proven in more than 20 countries
- STB UI / app is easy to customize thanks to Maestro
- Supports a variety of options: PVR / TSB, MHEG-5, CI Plus
- Available on a wide range of SoCs and can be easily ported on a new STB design or on a new SoC as CoMedia relies on an Hardware Abstraction Layer (CHAL)
- Pre integrated with major CAS and compliant with their software architecture requirements

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Linux Turnkey Software Solution

- A Linux-based STB software solution targeted at mid-end connected Pay TV STB
- It embeds a Web browser which is leveraged to allow for an easy customization of the TV UI / app as it is developed with Web technologies (HTML, DOM, CSS, JavaScript)
- It is built around Comedia, a robust, reliable, and field proven DTV software stack that has been deployed within millions of STBs



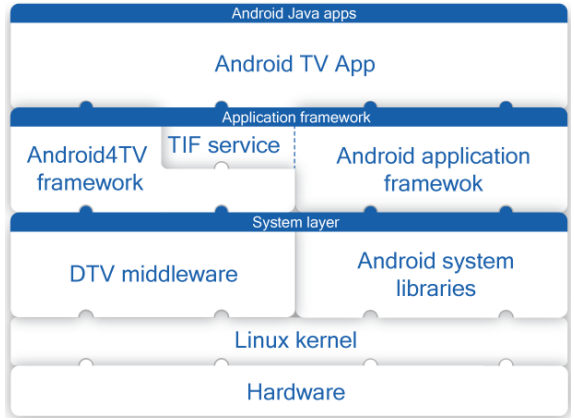
Highlights

- Ideal solution for Pay TV services providers wishing to mix their legacy broadcast TV services with Web-based OTT and IPTV video services
- TV UI / app easy to customize as the app is a regular Web app
- Easy to port as Comedia relies on an Hardware Abstraction Layer (HAL)
- Pre-integrated with major Service Delivery Platforms (SDP) and Content Delivery Networks (CDN)
- Pre-integrated with main CAS and DRM systems and compliant with their software architecture requirements
- Wide range of options: Personal Video Recorder and Time Shift Buffer (PVR / TSB), TR-069 / TR-135 client, DLNA player and renderer, DTCP-IP sink, DVB>IP client, MHEG-5 engine, HbbTV / CE-HTML browser, CI Plus host software



Android TV Turnkey Software Solution

- A STB software solution targeted at Pay TV STB running Android TV
- Based on iWedia's ANDROID4TV framework which extends Android TV with broadcast and multicast Pay TV functionalities implemented as input modules within the Android TV Input Framework (TIF)



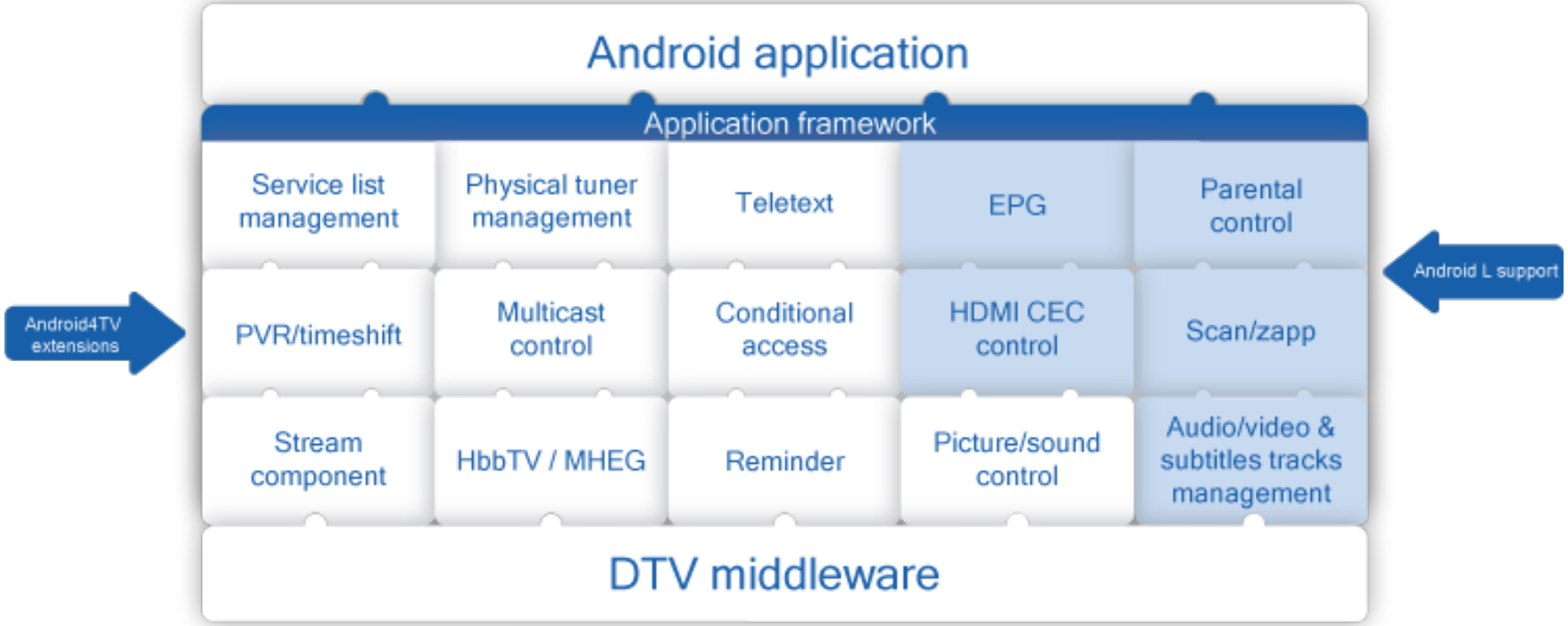
Highlights

- Ideal solution for Pay TV services providers smoothly mixing managed IPTV, OTT TV, and broadcast TV services with Android applications and widgets
- Integrated within the Android TV Input Framework (TIF)
- Works with Android Open Source (AOSP) possibly enhanced with the Google TV Services (GTVS)
- TV UI / app easy to customize as the app is a regular Android TV / Java app (or a regular Web app)
- Easy to port as CoMedia relies on an Hardware Abstraction Layer (HAL)
- Pre-integrated with major Service Delivery Platforms (SDP) and Content Delivery Networks (CDN)
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ANDROID4TV

- Complementary extension to TV input Framework (TIF)
- Committed to follow Google roadmap
- Providing features crucial for pay TV operator use case
- Open API approach enables operator to have full control of own platform



Software Components – Standalone Licensable Stacks

- Comedia broadcast stack (DVB, ATSC 1.0, ATSC 3.0(1), ISDB-T, DTMB)
- TV browser based on Blink for both Linux and Android
  - ✓ HbbTV 2.0.2, CEB, Portals, Open WWW
  - ✓ ATSC 3.0; Hybridcast (1)
  - ✓ Youtube
- CI Plus host software and browser – 1.4.2 compliant
- DLNA – DMC, DMR and DMS device classes – and DTCP-IP – source and sink
- TR-069 client
- Adaptive Bit Rate (ABR) clients – HLS and MPEG DASH optimized for Live TV
- UI / UX / Apps – Linux HTML and Android Java apps

- Flexible licensing schemes (to OEM or SoC vendor, binary or source, royalty … buy-out)

(1) roadmap

CPE System Integration

- Highly experienced and successful CPE system integrator for multi-vendor projects
- Leadership and communication skills to manage complex multi-vendor integration projects
- Full responsibility for STB system integration

- Internal QA processes
- Weekly QA cycles with detailed reports and statistics
- BBT
  - Automated test execution system
- Intent+
  - Web based tool for test plan, test suite and test cases creation with more than 1500 test cases (automatic, semi-automatic and manual) already existing for Android based STB
  - Automatic test reports and statistics generation
  - Interfaced with the bug tracking system used by the project (Redmine, Bugzilla, Jira)
  - Test execution via BBT

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Strategy & Roadmap

- Teatro-3.0:
  - Migrating to Blink browsing engine to provide top of the line HTML5 and CSS3 support
  - Development of full blown HTML-5 based UI/UX and apps for hybrid STBs
  - YouTube, Netflix, and other major OTT services integration
  - Conax certification
- Teatro-3.5:
  - Fully committed to follow Android evolution
  - UI/UX and app development
  - Nagra, Conax and Irdeto certification
- Software Components:
  - HbbTV 2.0.1 and CI Plus 1.4 official certification
  - ATSC 3.0



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iWedia's Benefits to Operators

- Strong embedded STB software expertise and CPE System Integration know-how including Android and security bring time-2-market and hassle-free product launch
- Market proven IPs to support broadcast, IPTV and OTT delivery
- Products pre integrated with the relevant solutions in the ecosystem
- Solid product roadmap to ensure a future-proof solution
- Commitment to follow Android evolution
- Use of RT-RK's testing tools (Intent+ and BBT) for VTP creation and QA
- ANDROID4TV open sourced to provide flexibility
- Strong references in Android TV based STBs since 2012
- Scalable engineering team of highly skilled Android and DTV professionals
  - On-site presence of engineering team to enable fast integration into operator's network

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Licensable Blocks out of Teatro-3

- The layered and modular architecture of Teatro-3 allows potential separate licensing separately of constituting building blocks

OTT
- Unicast IP
- Live TV
- VoD and CUP
- DRM integration
- ABR clients

IPTV
- Multicast IP
- Live TV
- VoD and CUP
- CAS integration
- FCC/RET
- Virtual IP tuner

Common Framework
UI / app, system, media player, web browser

Broadcast
- Live TV
- DVB-C/S/T
- HbbTV
- CAS integration
- CI Plus

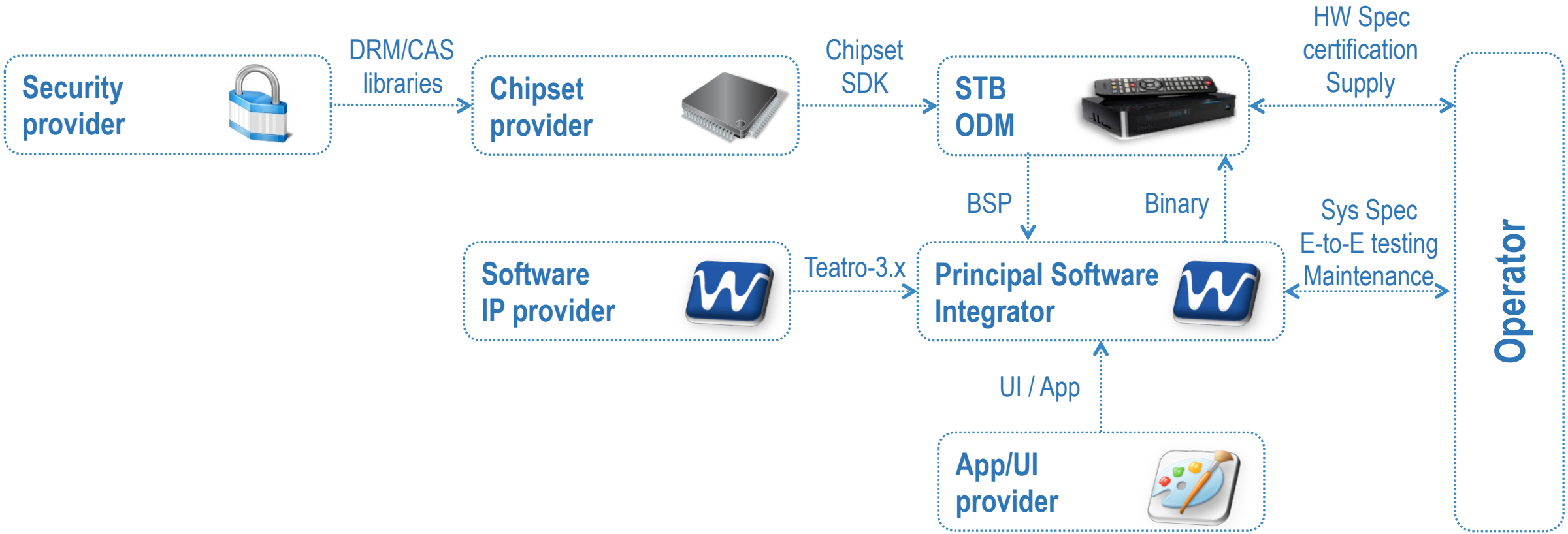
Networking and services
- TR-069 / TR-135 client
- DLNA and DVB>IP client / server
- DTCP-IP source / sink
- PVR / TSB





For both Android and Linux devices

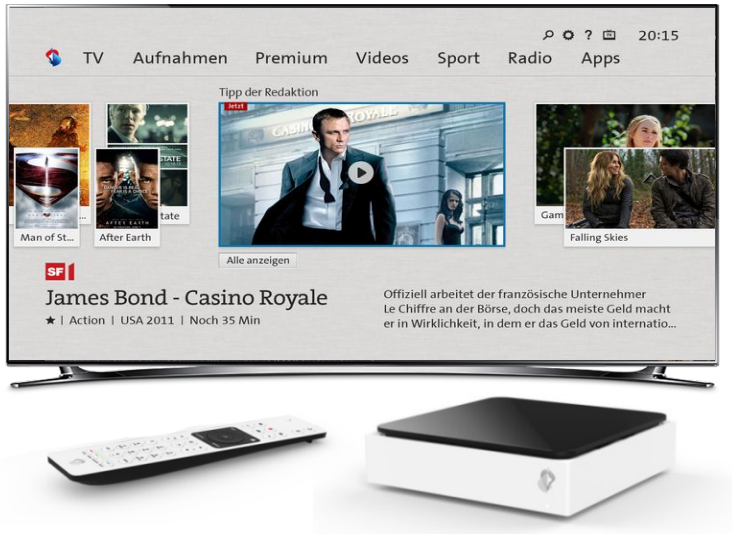
CPE Software Integration: Stakeholders and Workflow



Case Study – Swisscom

Swisscom TV 2.0 Android (AOSP) IPTV + OTT STB

- What iWedia is providing?
- ANDROID4TV Pay TV extension embedding market-proven CoMedia DTV stack for IPTV support
- CPE System Integration with Swisscom Service Delivery Platform and 3rd party solutions (Marvell SDK, Vestel BSP, Nokia Velocix Broadcast Optimizer – FCC/RET, Verimatrix CAS and DRM, Fabrix network PVR, 3 Screen Solutions UI / app, Opera app store)
- Generic Validation Test Plan (VTP) customized to fulfill Swisscom's specific requirements
- Regular automatic and manual QA campaigns
- Best tailored solution for customer's strategy with respect to time-to-market and STB target price
- Portable solution reusable for next generation devices



Case Study – Bouygues Telecom

Bbox Miami: IPTV + OTT + DVB-T Pay TV STB running Android TV (GTVS) with 4K (UHD) decoding support



What iWedia is providing?

- ANDROID4TV Pay TV extension embedding market-proven CoMedia DTV stack for IPTV and DVB-T support
- CPE System Integration with ByTel Service Delivery Platform and 3rd party solutions (Marvell SDK, Arcadyan BSP, Verimatrix CAS and DRM, IFeelSmart UI / app)
- ABR clients software stacks (HLS and MPEG DASH) optimised for Live TV use cases *and 4K (UHD) decoding*
- TR-069 / TR-135 client software for remote monitoring
- Generic Validation Test Plan (VTP) customized to fulfill ByTel's specific requirements
- Regular automatic and manual QA campaigns
- Back-to-back product Lifecycle Management (Android versions from Jelly Bean to Pie)



BROADBAND INFOVISION AWARDS

Case Study – KDDI

Android TV (GTVS) IPTV + OTT UHD "buddy box"



What iWedia is providing?

- ANDROID4TV Pay TV extension embedding market-proven CoMedia DTV stack for IPTV support
- Customisation of Android TV GMS
- Dialog with the main legacy cable box – HDMI-CEC, http streaming
- CPE System Integration with 3rd party solutions (Marvell SDK, Kaonmedia BSP, Marlin for IPTV, PlayReady, Widevine)
- Generic Validation Test Plan (VTP) customized to fulfill KDDI's specific requirements
- Regular automatic and manual QA campaigns
- Five months to complete the project



Case Study – True Corporation

Common Android TV based middleware and application for OTT and Hybrid STB

- *Android TV based OTT with 2 STBs providers*
- *Android TV based Hybrid Cable, DTH project*

What iWedia is providing?

- ANDROID4TV Pay TV extension embedding market-proven Comedia DTV stack (DVB) and DASH/HLS client software
- Custom Launcher application development
- Promethean Targeted advertising integration
- True-ID and True Money integration
- True In-house VoD, User Data monitoring system integration
- CPE System Integration with 3rd party solutions (AmLogic and HiSilicon SDK, Irdeto CAS, Widevine DRM)
- Regular automatic and manual QA campaigns



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Case Study – SKY (UK, Germany, Italy)

Common Android based middleware and application for OTT and Hybrid STB

- *AOSP based OTT*
- *Phase 1 for OTT STB project*
- *Phase 2 for Hybrid (DVB-S+T) Android based STB project*



What iWedia is providing?

- DASH/HLS client software
- Teatro TV Browser integration
- SKY Customer launcher integration and support Synaptics SDK optimization
- SKY in-house monitoring and user data analytics integration
- CPE System Integration with 3rd party solutions (Synaptics SDK, Microsoft PR DRM)
- Regular automatic and manual QA campaigns
- QA testing service for stability and reliability testing

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Case Study – TELUS

Pik TV STB: OTT UHD Pay TV STB running Android TV (GTVS)

What iWedia provided?

- STB System Integration with Ericsson MediaFirst TV Platform with 3rd party solutions (Google Android TV OS, Broadcom SDK, Arcadyan BSP, Ruwido RCU software, Ericsson DRM, Ericsson UI / app, Netflix app)
- Generic Validation Test Plan (VTP) customized to fulfill TELUS's specific requirements
- Regular automatic and manual QA campaigns
- Multiple Android versions supported (Marshmallow and Nougat)

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Case Study – Stofa

DVB-C (quad tuners) + OTT UHD Pay TV STB running Android TV (GTVS)

What iWedia provided?

- ANDROID4TV Pay TV extension embedding market-proven Comedia DTV stack for DVB-C support
- Quad tuners enable: watch and multiple records, fast zapping, PiP
- STB System Integration with Service Delivery Platform with 3rd party solutions (Google Android TV OS, Broadcom SDK, Kaon BSP, Irdeto CAS, PlayReady DRM, Stofa UI / app)
- Generic Validation Test Plan (VTP) customized to fulfill Stofa's specific requirements
- Regular automatic and manual QA campaigns

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Case Study – Beeline (Russia)

Common Android AOSP based OTT platform

What iWedia provided?

- System integration service to manage multiple STBs
- DASH/HLS client software optimised for Live TV use cases
- Beeline application development and integration
- CPE System Integration with 3rd party solutions (AmLogic SDK, different OEMs, Verimatrix DRM, Kaltura OTT platform)
- Generic Validation Test Plan (VTP) customized to fulfill Beeline's specific requirements
- Regular automatic and manual QA campaigns

Case Study – NetbyNet (Russia)

Common Android AOSP based OTT platform

What iWedia is providing?

- System integration service to manage multiple STBs
- VisualOn Media Player(OSMP+) integration and optimised for Live TV use cases
- NetByNet application development and integration
- CPE System Integration with 3rd party solutions (AMLogic SDK, different OEMs, Verimatrix DRM)
- Generic Validation Test Plan (VTP) customized to fulfill NBN's specific requirements
- Regular automatic and manual QA campaigns

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Case Study – NTT Plala Hikari IPTV Service

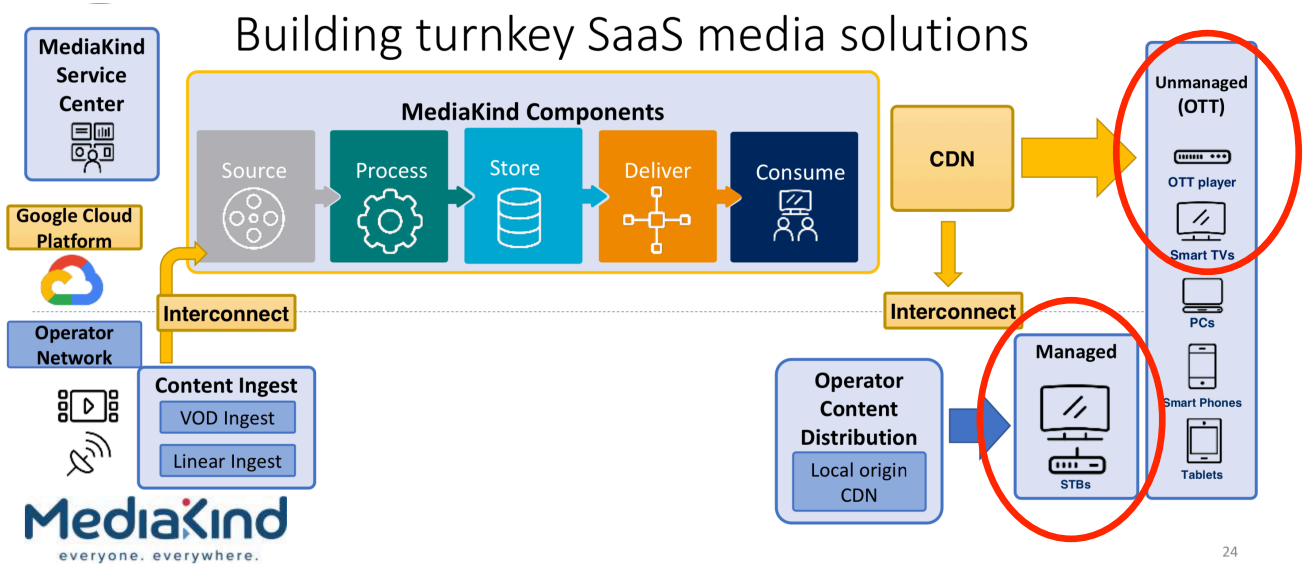
Common Android TV based middleware for TV set and STBs

What iWedia provided?

- ANDROID4TV Pay TV extension embedding market-proven Comedia DTV stack (ARIB) for IPTV and IP-Retransmission
- DASH/HLS client software optimised for Live TV use cases
- NTT Dokomo OTT service integration
- CPE System Integration with 3rd party solutions (HiSilicon SDK, Huawei OEM, Marlin IPTV-ES/ DRM)
- Generic Validation Test Plan (VTP) customized to fulfill NTT Plala's specific requirements
- Regular automatic and manual QA campaigns

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Case Study – MediaKind MediaFirst cloud TV Platform



What iWedia is providing?

- Development of the “white label” client for Android, Samsung, LG, FireOS
- Integration of the Android client app and 3rd party components into MK TV platform
- AndroidTV System Integration (BCM, AML, Synaptics)
- Licensing of Teatro Media Player for STB
- PoCs (Comedia Hybrid Broadcast/IPTV, STAGE native UI)

Source: http://www.ipshowcase.org

Case Study – Teatro-3.5 Porting

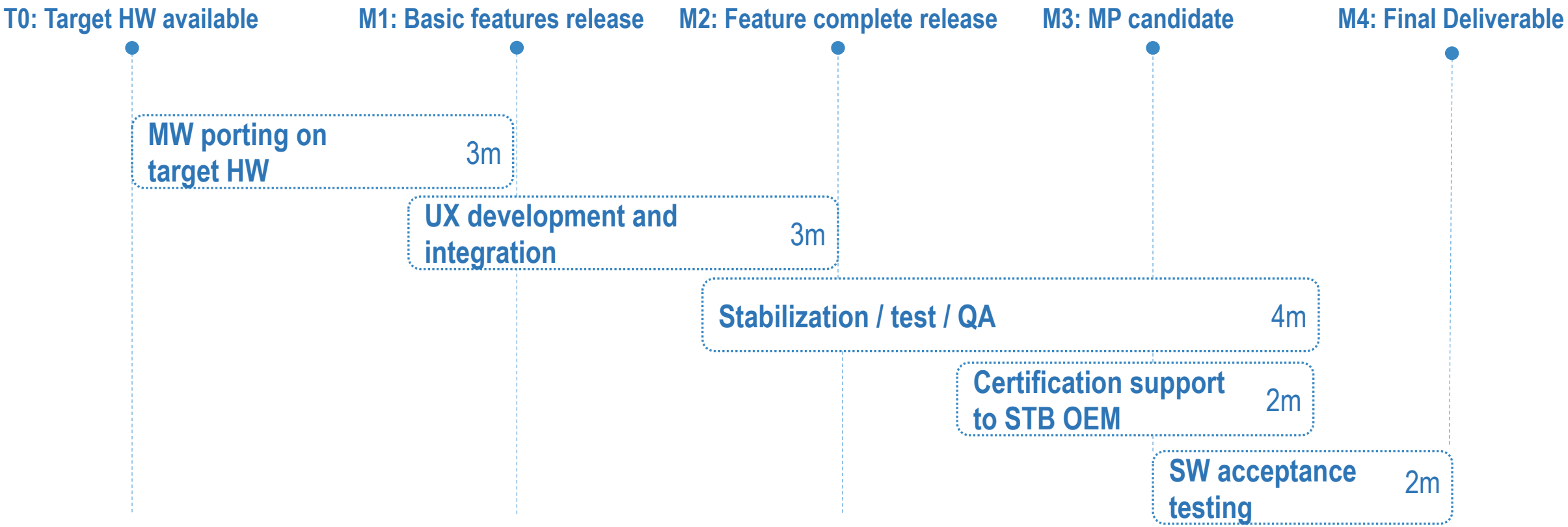


What iWedia is providing?

- Teatro-3.5, a STB software solution targeted at Pay TV STB running Android TV
- Based on iWedia's ANDROID4TV framework which extends Android TV with broadcast and multicast Pay TV functionalities implemented as input modules within the Android TV Input Framework (TIF)
- STAGE Live UI / app compliant with Operator Tier Program and can be used as custom launcher
- Customisation of Android OS (AOSP or Android TV)
- CPE System Integration with 3rd party solutions (SoC SDK, STB BSP, CAS / DRM, SDP, CDN)
- Generic Validation Test Plan (VTP)
- Regular automatic and manual QA campaigns

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Typical Product Development Schedule



- Estimated around 9 months including all certification and acceptance by Customer
- Certification support for Dolby, DLNA, HDMI, Google CTS/GTS,…

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