The Smart TV Operating System



2019.09



Why TVOS

Vision & Target

Architecture

Organization

What's Next

Driver from Current Industry

- Requirements for the Terminals to be Smart and Standard
 - Service fragmentation caused by various middleware
 - Terminal fragmentation caused by various CASs
 - User experience inconsistency caused by different media frameworks
 - Service deploy difficulty caused by non-smart terminals

Driver from New Industry

China 4K/8K UHD Plan drives the development of the terminals

- ✓ Need key technology support
- ✓ Need technical standard support
- Need to build an open industry and application ecosystem

TVOS Vision

To be a global leading Smart Media Terminal OS

- Collaborate with key technologies to build a smart media terminal OS with ultimate experience, green & security, rich services, and future-oriented.
- Build an application ecosystem to support long-term development of smart media terminals.

TVOS Target

- Service Extension Efficiency
- User Experience Consistency
- Development Efficiency
- Cross-hardware Platform
- System-level security scheme
- Sustainable development

TVOS Architecture



TVOS Architecture Features

- Layered architecture: Cross-hardware platform; Basic media services; Supports multiple application frameworks. Can be tailored and combined.
- Security framework based on REE/TEE
- Application Manager supports multiple application types
- Unified Media Engine based on Gstreamer
- HTML5 Engine based on Chromium



TVOS Architecture Evolution



TVOS Feature Roadmap



Basic: DVB stack Broadcast, VOD Cardless DCAS Main for Java APIs

Smart Home:

Payment:

Alipay

Multi-Play for Broadcast &VOD DCAS with smart card DRM Support for Web APIs Self-developed App Mgr etc. Home network devices Smart Home: Support WAN devices **Payment:** Multiple: Wechat, Alipay, etc Value-added service: Cloud game, Cloud VR, Video Phone, Multi-screen

Cable STB DBS STB

Basic:

Basic:

8K for Broadcast & VOD Support Python APIs Tailorable for profile App Store Support smart gateway Support IPTV Human Machine Interface: Intelligent voice **Development:** IDE

Basic:

AI framework Graphic Framework ...

Smart Gateway IP STB

TVOS Standards

Industry standards in China

- ✓ 2016.12 GY/T 303.1 《Functions and Architecture》
- ✓ 2016.12 GY/T 303.2 《Security》
- ✓ 2018.7 GY/T 303.3 《API》
- ✓ 2018.7 GY/T 303.4 《HAL》
- ✓ 2018.7 GY/T 303.5 《Component API》
- ✓ 2018.7 GY/T 303.6 《 TEE API》
- ✓ 2018.7 GY/T 303.7 《Conformance test》

TVOS Standards

International Standards

- J.1201(J.stvos-spec-req) in ITU-T SG9
- J.1202(J.stvos-spec-arch) in ITU-T SG9
- J.stvos-sec in ITU-T SG9
- J.stvos-hal in ITU-T SG9
- J.stvos-spec in ITU-T SG9

The Organization of TVOS

institutions

Operators

software vendors

device vendors

Chip vendors

The TVOS team is officially set up

by Technology Division of NRTA.

Currently, there are more than

120 members.

The Organization Structure of TVOS



Collaborative Work Platform





Commercial Promotion

Full Open Source

Internationalization

Application Ecosystem Construction

Welcome to join TVOS Thank you!