Smart Terminals Enable Intelligent Services
-- WASU Strategy and Operation Practice

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Wasu DTV Media Group is a large state-owned company in media industry in China, leading the development of China’s new media industry. As the largest cross-regional cable network operator in China, Wasu has nearly 30 million cable subscribers.
On Nov 22, 2018, SARFT issued ‘Guidance on promoting the development of Intelligent Services, giving the overall objectives.'

Jan 28, 2019, NDRC, ten ministries and commissions jointly issued a document to further optimize supply and promote the growth of consumption.
Business evolution and innovation of Cable TV

One-way
- Free channel
- Pay channel
- Data broadcast

User accepts passively

Human-machine
- On demand
- Value-added
- Targeted advertising

User can make their own choice

Community
- Livelihood community
- Industry community
- Political community

Communication within the network

Intelligence
- Voice remote control
- Rating big data
- Personalized media assets

Close service based on machine learning and AI

“The only thing that is constant is change.”
— Heraclitus

“No one can control change, only before it happens.”
— Peter F. Drucker
TVOS+Smart Terminals Boost Intelligent Services

Integrated operation

Introducing and grafting various achievements of Internet technology

Intelligent service

HW+SW+ Intelligent business

- TVOS is fully optimized for broadcasting business features and enhanced the security.
- The Smart STBs based on TVOS will be the basis of Cable family business.
- TVOS supports the converged video and low latency video, meeting the industrial development requirements.

- Big data and AI enable the development of various industries.
- As a household terminal, the STB, combined with voice control and face recognition, can achieve more.
- Smart home services become the gateway and hub of the control to the home.
- Smart terminals + applications enrich the intelligent service content.
Why TVOS

✓ Build an integrated platform construction and a scaled business operation of the whole province to capture greater market share.
✓ Effectively upgrade service quality, reduce operating cost
✓ Simplify technical and business operations, drive more efficient support, maintenance, and commercialization

● Build Wasu Smart Terminal product line with TVOS integration and development

● Explore the characteristic operation of Smart Terminals through media service and intelligent Apps
What are Smart Terminals

- Advantages and features of Smart Terminals
  - Compared with smartphone
    - More computing power
    - Larger screen (support multi-touch)
    - More friendly UI (support Face Recognition, Voice Control, motion sensing, etc.)
    - Rich terminal functions with more applications
  - Features of Smart Terminals
    - Support multi-screen
    - Voice control and Face Recognition
    - Insight to subscriber behavioral patterns, personalized homepage through big data
    - App stores
Product planning and form of Zhejiang Wasu

- STB
- Smart TV
- Home gateway
- Multimedia APP
TVOS Smart STB

- 4K/HDR/60FPS/HEVC+AVS2 decoding
- TVOS secure startup
- HW ChinaDRM
- Optional high performance router module
Smart TV (Size: 50~65 inches)

- DVB Linear
- Cable access
- USB CAM SC CA

Live channel
- DVB Linear
- Cable access
- USB CAM SC CA

VOD/Time-shifting
- Wasu interactive TV business
- Internet access

The same UI as 4K Smart STB, reuse most of the code, implement the same features, share HE system.
**Home Smart Gateway**

**TV1**
- Cable access
- Fiber access
- Photo/Video

**Mobile/PC**
- Gigabit broadband + 4K programs (4-8 channels)

**TV2**
- WiFi, Bluetooth, Zigbee
- Monitoring and smart devices

**Smart Gateway**
Multimedia APP

Compatible with Android STB/TV chipsets

4K live programs over IP through gateway

VOD/Time-shifting and other value-added services via gateway
By the end of Jun. 2019, Wasu has deployed more than 1,000 self-service machines in Hangzhou, which can handle more than 200 high-frequency services for individual.
Intelligent Service Platform Architecture
Smart Services “1+5” Platform

- Communication Platform
- Internet of Things Platform
- AI Platform
- Monitoring Platform
- Information Platform
- Audio/Video Service Platform

Chinese text:
- 通信类能力平台
- 物联类能力平台
- 监控类能力平台
- 信息类能力平台
- 音视频服务类平台
Audio/Video Service Platform

Based on content production, Media Asset orchestration system, content transmission and distribution system, and operation and support system by enhancing interactive terminals (STB, Integrated TV, OTT STB, OTT TV, mobile, etc.)
Information Platform

Based on Radio/TV terminals, working together with Live/VOD platform, traffic information, urban public health information, environmental monitoring information and public safety information, price index information, traffic information, weather information, etc. are respectively released to the public, the families and individuals in various forms, such as Digital Library, Remote Education, Cultural Album, etc.
Monitoring Platform

Taking the advantage of TV network resource, build Monitoring Platform to process image information collected from the collection points through the network, just-in-time, accurately get the situation of the monitored road, the city, sanitation, traffic, public security to provide the surveillance videos for Urban Information Management Center to achieve cross-regional unified monitoring, unified management, such as Sunshine kitchen, Sunshine campus, etc.
Build communication Platform, based on broadcasting network and Wasu Cloud broadband, through either traditional IP only or pushing video conference to STB users, to realize the large-scale video conference capacity by multi-party interaction or one-way viewing and high reliability and economy at the same time, such as Video Conference, Emergency Consultation, Family Call, Doctor-patient Communication, Police-civilian Interaction, Home-school Communication, etc.
Internet of Things Platform

Based on the broadcasting networks, build Internet of Things Platform, connecting to the back-end of IOT cloud platform through digital STBs or home gateways, to complete the acquisition, processing and storage of the status and data came from various sensors, as well as the information transmission and analysis, and provide users with a variety of household life services, health services and community service, such as Smart Family, Smart Community, Home-based Care. etc.)
AI Platform & Smart Services

Effectively implement AI technologies through TVOS terminals, including voice control, face recognition, secure payment, intelligent Internet of Things, and keep continuous evolution and smooth upgrading, to provide unlimited business development.
Feature 1 – Family Call

Based on TVOS, Family Call can be achieved HD video communication between TV and mobile phone, TV and TV. This application won the second prize in the first TVOS application innovation competition, and has been tried out and promoted in some relevant company.
Feature 2 - Video Conference CunCunTong

Video conference CunCunTong was build through broadband network and cable network, has short construction time, low investment and maintenance cost. The system has many functions, such as Emergency Command, Multi-point Discussion, Technical Training, Distance Education, etc. Real-time video conference can be held between main and sub-conference venues, villagers can watch the real-time meeting through STBs.
Feature 3 – Cloud Game
Cloud Game, a cloud-based game application with rich contents, was jointly developed and deployed with Shiboyun company, including 2D, 3D, motion-sensing games, etc., supporting a variety of operating peripherals, such as mouse, keyboard, gamepad, steering, etc., allowing users to enjoy high-quality interactive experience by using existing terminals.
Feature 4 - Voice Remote Control

Voice Remote Control has gradually become a standard equipment for TV sets and other devices, and intelligent audio is also popular as the representative of AI. At present, Wasu has realized the docking of voice recognition technology based on Iflytek and Baidu respectively, and successfully applied in TVOS STBs.
Feature 5 - Face Recognition

At present, Face Recognition has been applied in Wasu series customer services, such as Community Correction, and it will be applied in remote teaching of party members and online classes.
Feature 6 – ‘Done in one go’

STB is the best family trusted, authenticated terminals, due to the credible terminal installation position, trusted network, trusted terminal, and combined with facial recognition technology to ensure the identity, it is vigorously promoting the change from ‘Done in one go’ to ‘Done on Smart Terminals’.
Feature 7 – Smart Medical Care

Through thousands of STBs and the online medical team, to raise the medical service information platform and the household televisions, implement health monitoring, home health, experts, family endowment, psychological care and video reunion of family members in different places, solve the difficulty of some elderly people who are unable to use smart phones and can't see the phone screen clearly.
Thank you