

STORM TV

IPTV Head-End System



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Consortium Introduction

1. SICC

- Project management and main contractor
- 4th biggest SI company and No.1 company for IPTV in Korea
- Specialty of System Integration/IPTV/BSS/OSS

2. TVStorm

- Implementation of digital media service fusion through Embedded software and data broadcast middleware
- No.1 solution vendors for Open Smart Media Platform and H/E solution for IPTV
- Specialty of IPTV Platform/ STB Middleware

3. i-On

- Implementation of service Delivery Platform : From collecting content to accounting and billing for service
- No.1 solution vendors of service delivery platform and more than 1,000 references all over the world
- Specialty of Service Platform and H/E system for IPTV

4. KMT-ir

- Marketing and Sales company for StormTV in Iran
- Subsidiary company of KMTechnology
- Specialty of Contact Center/Network Implementation and consultancy

We provide all service for IPTV business to customers from Consultancy to Operation support with high level engineers and experts from Korea.

✓ Consultancy

5 yeas Masterplan

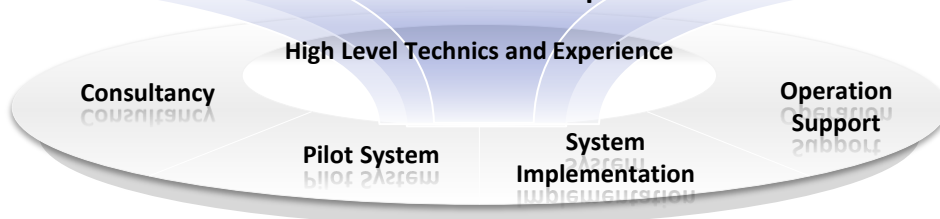
- AS-IS Analysis with BP
- Service Modeling
- IPTV technology defining based on services model
- Pilot system design
- Budgeting/Scheduling

✓ Operation Support

Ensure to supply high quality and reliable service

- Transferring Operation knowhow
- On site Co-operation with Korean experts
- Quick responding process to subscriber
- 24X7 operation support

Cost Effective and Efficient Implementation



✓ Pilot System

Implementation of Test Environment

- Implementation of Pilot
- IPTV operation environment analysis
- Network environment analysis

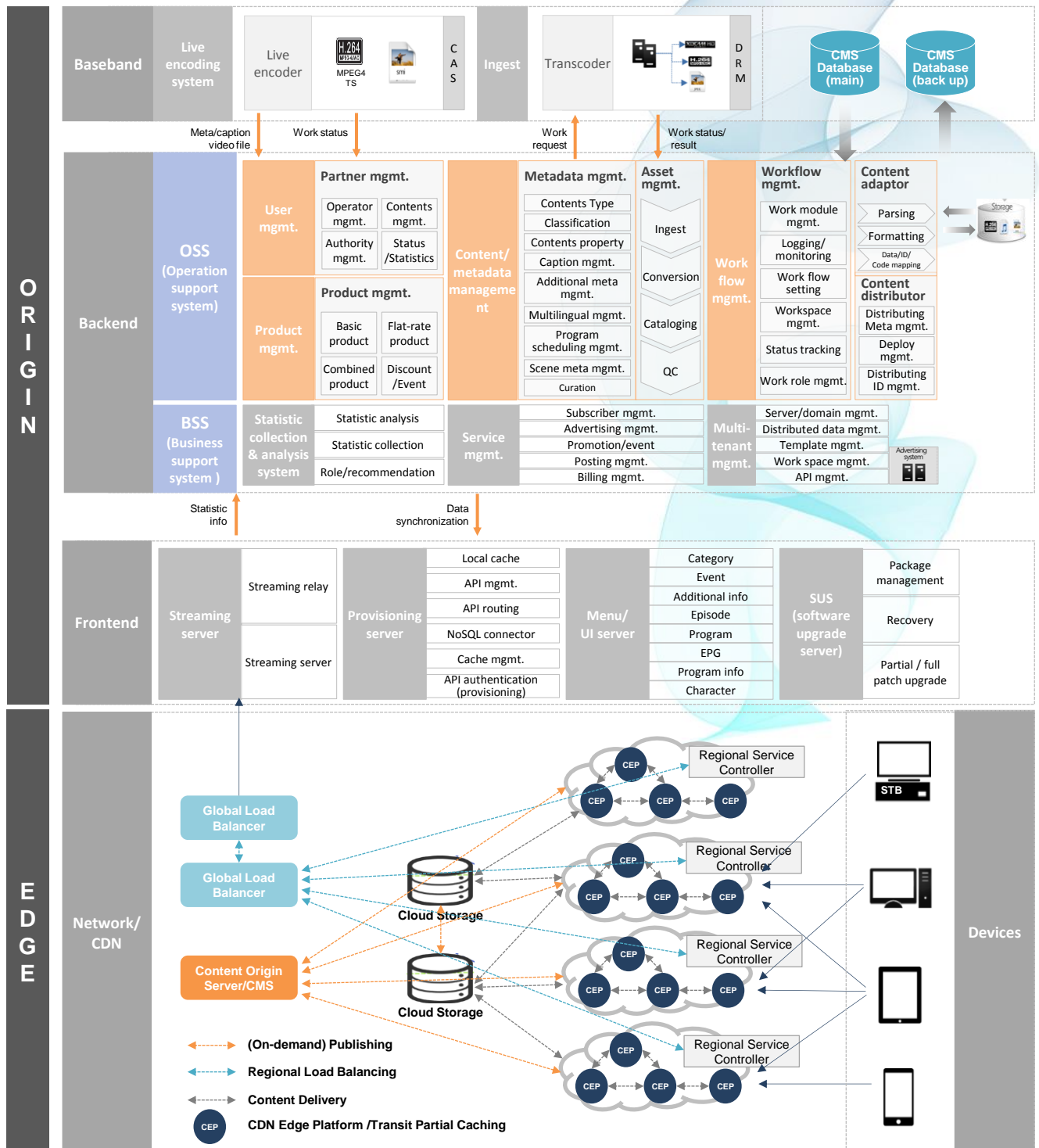
✓ System Implementation

Optimized IPTV system implementation

- Implementation of IPTV Service System based on Masterplan
- Knowledge Transferring
- Interfacing & Integration of Modules

Overall IPTV System

StormTV Head-End solution consists of contents deploying technology for multi-screen, Multi-profiling and Dynamic Adaptive Streaming technology to support N-screen and SMS system to manage various package products for subscribers.

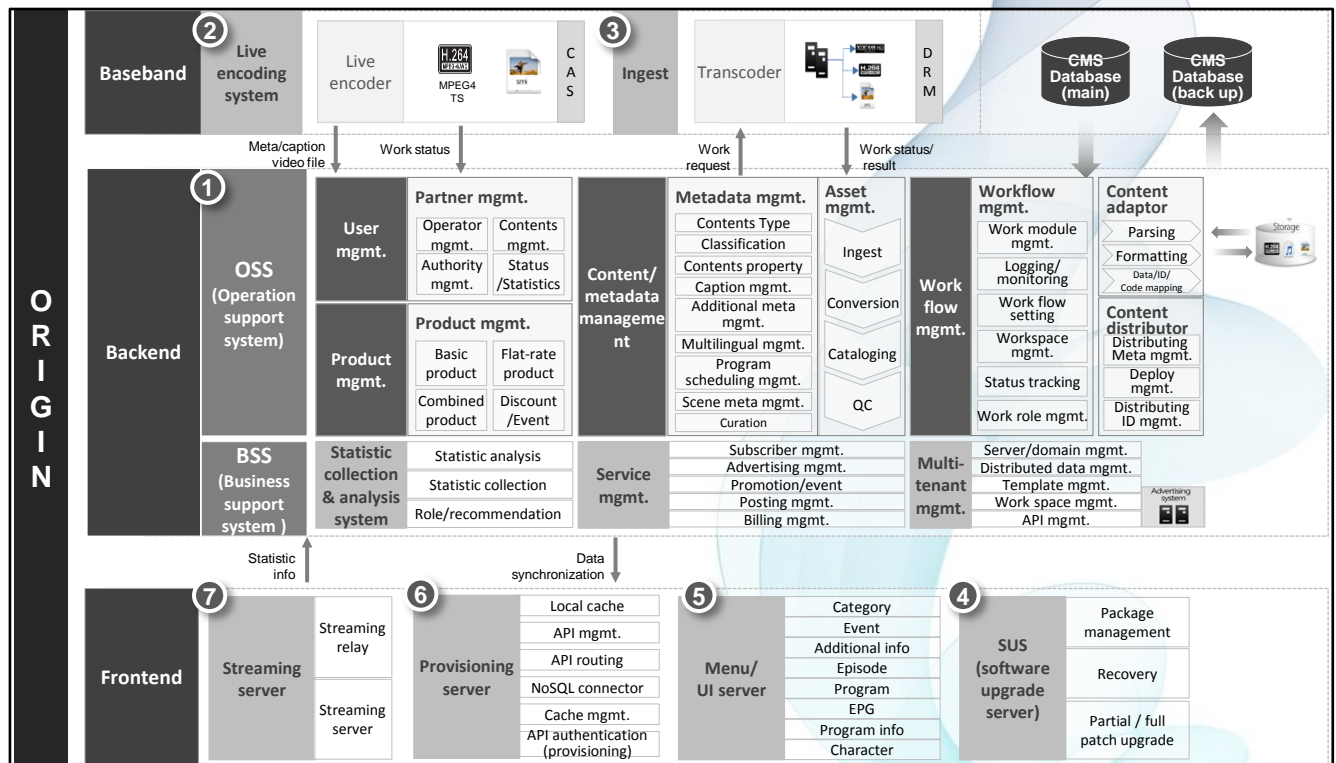


IPTV Implementation process

We come up with expected risks and errors through consultancy and pilot system for efficient implementation of IPTV system with well organized process.

Process		Purpose	Activity	Output
Initial Stage	Consulting	<ul style="list-style-type: none"> ▪ Making Business / Service plan ▪ Validation of IPTV system and environment for Service 	<ul style="list-style-type: none"> ▪ Business plan analysis ▪ Environment analysis ▪ Technical review ▪ Service modeling(optional) ▪ Business modeling(optional) ▪ Scheduling and budgeting ▪ Pilot system design ▪ Pilot system implementation ▪ Technical verification ▪ Main system implementation planning 	<ul style="list-style-type: none"> ▪ Master plan ▪ Pilot system
	Pilot			
Implementation Stage	Analysis	<ul style="list-style-type: none"> ▪ Seamless implementation of IPTV Service Platform ▪ Cost effective and efficient implementation 	<ul style="list-style-type: none"> ▪ Project management for implementation ▪ Requirements management Service logic design and development ▪ IPTV System implementation ▪ Quality Assurance activities ▪ SW image management activities 	<ul style="list-style-type: none"> ▪ Main System for IPTV ▪ Manual (Operator, User) ▪ SAT(Software Acceptance Test):(scenario, result) :
	Design			
	Implementation			
	Test			
	QA			
Operation Stage	Stabilization	<ul style="list-style-type: none"> ▪ Secure stable system operation and service quality ▪ Operation knowhow transferring 	<ul style="list-style-type: none"> ▪ Service quality monitoring ▪ Quality improvement ▪ Commercial operation & Maintenance ▪ Operation support with Korean experts(optional) 	<ul style="list-style-type: none"> ▪ Operation Report ▪ Quality assurance report ▪ Maintenance report
	Commercial Operations			

Storm TV introduction



1 Mgmt. of Content/Metadata

Metadata Management

- Dynamic metadata relationship modeling
- Dynamic UI management

Workflow Management

- Plug-in type work module
- workflow for each content type & each user group

2 Live Encoding System

Encoder Duplication

- Switch-over the signal automatically through backup encoder when main encoder failed

3 Ingest

N-Screen Contents Distribution

- Multi screen content, multi device connection environment

Automatic Content Distribution

4 SUS Role

Software Upgrade

- Recovery
- S/W Upgrade & Management

5 Menu/UI Server

Common UI Management

- Home/Hidden/Setting/EPG

Common UI Framework

- Multiple-Screen UI/UX
- Seamless Data synchronization

6 PVS Role

Provisioning

- Service Authentication
- Subs info / License info
- Service Product

7 Streaming Server

HLS, Seamless Playback

- Secured and flexible services with Firewall
- Guaranteed QoS in Public network

Multi-Profile Streaming

- Various contents Profile supporting: HD/SD/Mobile
- Audio Only Streaming Supporting

Adaptive Streaming

- Change Streaming Bandwidth recording to network status for providing Seamless contents viewing

Client Middleware

Devices

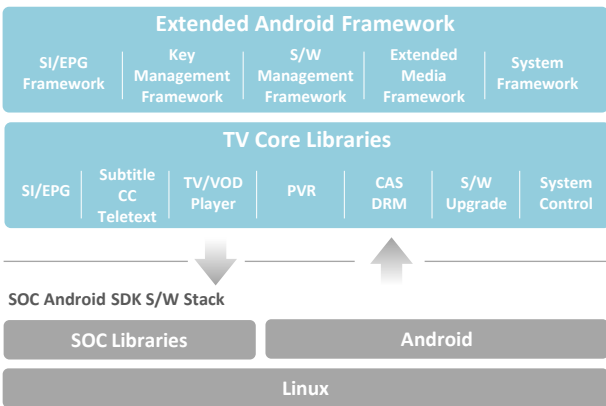


t.ware™ Android provides all the necessary function for Smart TV/STB services based on Android platform. It also offers various Smart TV services such as Live TV (Terrestrial/Cable/Satellite/IPTV), VOD with extended Android framework.

Applications



t.ware Android



t.ware™ Android Platform architecture

It provides library for integrating with various kinds of SI standards and 3rd party solutions and also provides STB Platform Implementation to support various kinds of STB and Chipset that is not provided in Android platform.

- ✓ Support Version
 - Android Kikat
 - Android Lollipop

- ✓ Demo Clip

<https://www.youtube.com/watch?v=dS9jnG4zT4Q>

[Provides Player/Media Framework]

For N-Screen service, we have our own Player and Media Framework mounted on Devices such as Mobile, Tablet etc. and it make us to develop Mobile IPTV App. efficiently and effectively for customers.

- Total solution for streaming, authentication, time shifting and acceleration
- Enable to provide stable streaming environment, powerful media security and service convenience for subscriber
- Easy customization responding to the various customer requirements, flexible extension and optimized mobile service supplementary with SDK

Android Media Framework iOS Media Player Framework

HLS Gateway for Android

Support Apple's HTTP Live Streaming in Android Latest version and lower environment

Cache & DRM

Enable users to cache and download the HTTP live streaming contents into mobile devices

Time Shifting

Enable users to store the live streaming contents real time, and to move and play the playback point