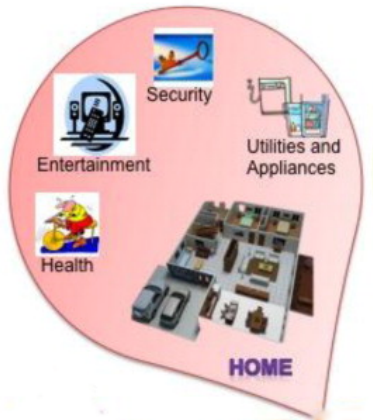


Roles of Smart TV in Internet of Things

Murad Yusufov

P.G. Demidov Yaroslavl State University
Yaroslavl FRUCT Laboratory

Our goal



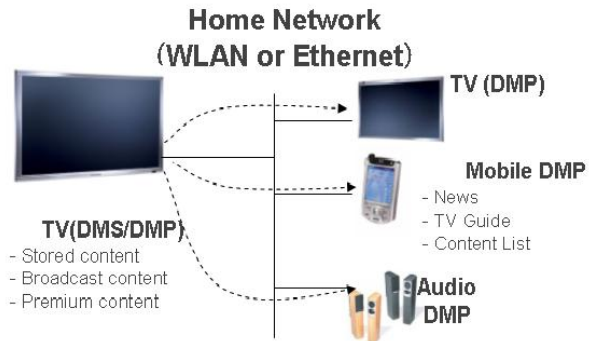
Roles of Smart TV in IoT

We analyzed hardware and software which comes with modern Smart TV platforms and distinguished following roles:

- Information storage
- Visualization device
- Interaction point
- Data processor
- Source of data



Role: Information Storage



Role: Information Storage

Description

Stores user's media files and sensor data Enables access to data from any device

Example

TV acts as home media server

Requirements

Internal storage drive or support for external USB drives

Role: Visualization Device



Role: Visualization Device

Description

Displays various visual data

Example

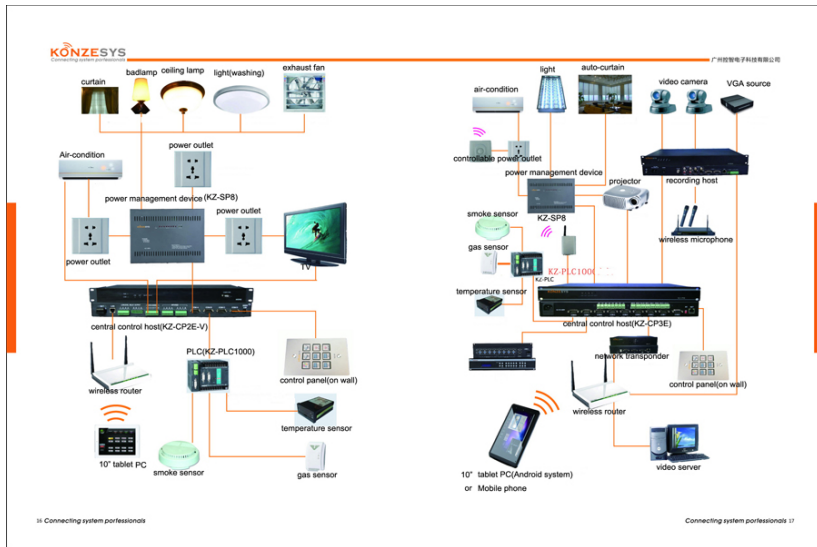
Status of home devices and sensors
(refrigerator, temperature, etc.)

Requirements

- Way to access content from other devices
- Ability for other device to initiate data displaying



Role: Interaction Point



Role: Interaction Point

Description

Acts as user interface for IoT

Example

Unified control point for Smart Home

Requirements

At least one of control options: remote, voice, gesture, other devices (smartphone, tablet)

Role: Data Processor



Role: Data Processor

Description

Processes data for low performance devices

Example

Managing routine work, such as making morning coffee

Requirements

- Possibility to install applications
- Processing capabilities

Role: Source of Data

Description

Provides various sensor data (video, audio, water, smoke, temperature)

Example

Home security and children monitor

Requirements

Embedded sensors or ability to connect attachable ones

Platforms and middleware

Platforms

High-level product with API that differs from vendor to vendor.

Middleware

API that provides basic functions to control TV which application developers use to focus on high-level programming instead of low-level.

List of Platforms and Middleware

Platforms

- Samsung Smart TV
- Panasonic Viera Connect
- LG Smart TV

Middleware

- Google TV
- Microsoft Mediaroom

Samsung Smart TV

Platform feature

Smart Interaction (motion and voice control)

Role distinction

Average at Data processing due to lack of ability to run applications in background

Panasonic Viera Connect

Platform feature

Viera Remote (smartphone application), USB keyboard

Role distinction

Average at Data processing due to lack of ability to run applications in background

LG Smart TV

Platform feature

Magic Motion Remote Control (gestures)

Role distinction

Average at Data processing due to lack of ability to run applications in background

Microsoft Mediaroom

Platform features

- Kinect
- Mediaroom Presentation Framework

Role distinction

- Average at Information Storage due to lack of USB support
- Bad at Visualization due to lack of sharing support
- Average at Data processing due to lack of ability to run applications in background



Google TV

Platform feature

Remote with touchpad and QWERTY keyboard;
smartphone application

Role distinction

Good at Data processing due to ability to run
applications in background

Conclusion

	Storage	Visualization	Interaction	Processing	Source of data
Samsung	Good	Good	Good	Average	Good
Panasonic	Good	Good	Good	Average	Good
LG	Good	Good	Good	Average	Good
Mediaroom	Average	Bad	Good	Average	Good
Google TV	Good	Good	Good	Good	Good

- Each platforms interaction capabilities are good, such technologies may find use in other domains of IoT.
- Google TV is already suitable for usage in IoT.

