Roles of Smart TV in Internet of Things

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Our goal
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

Home Network (WLAN or Ethernet)

- TV (DMP)
  - News
  - TV Guide
  - Content List

- Mobile DMP
  - News
  - TV Guide
  - Content List

- Audio DMP

TV (DMS/DMP)
- Stored content
- Broadcast content
- Premium content
## 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

Roles of Smart TV in Internet of Things
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**

**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

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
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
<table>
<thead>
<tr>
<th>Platform feature</th>
<th>Magic Motion Remote Control (gestures)</th>
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<tbody>
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<td>Role distinction</td>
<td>Average at Data processing due to lack of ability to run applications in background</td>
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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

<table>
<thead>
<tr>
<th></th>
<th>Storage</th>
<th>Visualization</th>
<th>Interaction</th>
<th>Processing</th>
<th>Source of data</th>
</tr>
</thead>
<tbody>
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<td>Samsung</td>
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- 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.