Standardization of Household Appliances for Smart Life
面向智慧生活的家用电器标准化
Zhao Ru, Haier
茹昭，海尔
1. IoT & Smart life
2. Introduction of Haier U+
3. Standardization work in Haier U+
4. Conclusion and prospects
IoT & Smart life
物联网与智慧生活
Diversity in Smart Home...

- Home Automation
- Energy Management
- Health
- Auto
- Entertainment

- Security
- Wearable
- Smart GW
- Smart Phone/PAD/TV
- Cloud Service
- ...

Cloud Service

Smart Gateway

Local Network

Home Automation

Energy Management

Smart Phone

Health

Auto

Entertainment

Security

Wearable

PAD

TV
Related Scenes

Away: remote control
在外：远程控制

In home: automated regulation
家中：自动化调节

Enjoy a comfortable entertainment life
享受舒适的娱乐生活
Introduction of Haier U+
海尔优家介绍
1. Device/Service Plug and Play
2. Good user experience

1. Accelerate Smart devices upgraded
2. Cross-Vendor interconnection
3. Data sharing
4. Cost saving, reduce development time

Easy to develop APP and Service based on U+ SDK/OpenAPI

Easy to deploy services based on U+ API
- **Hardware Module:** **uPlug**
  - WIFI module
  - Accelerate the upgrade from traditional devices to Smart devices
  - Stable with lower cost

- **Interconnection:** **uSDK**
  - Target to Smart phone/Tablet
  - Support local area network and wide area network
  - Stable, extendable, compatible
  - Good documentation

- **Control Center:** **uGW**
  - Multiple protocol access, Device management
  - Data management and Scenario management
  - Security management

- **Cloud Platform:** **uOpenAPI**
  - User management
  - M2M
  - Capability
  - Operation and support
  - Service support
1. U+ cloud provide unified access-in service
云平台对外提供各种统一的资源服务，包括设备接入、App接入、开发者接入和第三方云接入所需的各种服务和资源；
2. U+ cloud provide unified service interface
云平台通过整合第三方内容、服务提供统一的对外资源服务接口
3. U+ cloud provide big data analysis service
大数据分析是平台的增值服务，云平台对开发者提供大数据分析服务，为设备改进、用户体验提升和战略决策提供依据
U+ Scenes

- User
- Cloud
- Data
- Resource
- Device
- Factory
- Experience
- Optimize

Interact / Share
Connect
Update / Custom
Visible
Visible
Data

Experience

- 交互
- 分享
- 互联
- 迭代
- 定制
- 可视
- 数据
Standardization work in Haier U+
海尔优家的标准化工作
Problem of Interconnection

- A different app for every device.
- Integration is difficult.
- Devices can’t interact locally.
- Cloud connections abound.
- Rich scenarios can’t easily be built.
Solution-1
uPlug hardware module made by Haier supports AllJoyn

1. Door closed
2. Switch off
3. Turn off light

1. Door open
2. Switch on
3. Turn on light
4. Welcome home
Solution-2
uGW SDK made by Haier supports AllJoyn
Cross-cloud interconnection

Standard
- Device controlling
- Device monitoring

3rd party cloud
Interconnection between AllJoyn & oneM2M

- M2M standard
- Open API
- Multiple IoT protocols, including CAE, XMPP, MQTT
Security threats for smart home occurred EVERYWHERE

Contents may be tampered with

Authorization
- controlling safety
- binding

Encryption
- privacy protect
- def sniffing
- def replay

Authentication
- access control
- end to end authentication

Data protection
- encrypted storage
- code protection
- anti-crack

Security risks may spread

Security threats for smart home occurred EVERYWHERE
Artificial intelligence

Leading to a new era of artificial intelligence
Distributed and natural interaction
Thoughtful, active and attentive service

U+大脑1.0

• 引领进入人工智能新时代
• 分布式、自然交互
• 思考、主动的贴心服务
Data model

Device
Attributes
Operations
Common
Device-specific

Smart Home APPs

Interface

Smart TV Service Interface

Air Management Service Interface

Lighting Service Interface

standardization

Haier TV
LG TV
Samsung TV
Others

Haier AC
LG AC
Samsung AC
Others

LIFX Lighting
Philp Lighting
Samsung Lighting
Others
Conclusion and prospects

总结与展望
U+ Smart Life Platform

Ecosystems software

hardware

food

ecosystem

incubator

eco-resources

content

full-service

creativity

users

network device

washing care

entertainment

security

health

air

water

U+APP

U+ brain

Ecosystems

Resource open

U+ cloud(M2M/big data/Interconnect factory)
Standardization work

- M2M interconnection standards
  智慧家庭互联互通标准体系
- Security standards
  智慧家庭安全标准体系
- Man-machine interaction standards
  智慧家庭交互标准体系
- Data model standards
  智慧家庭数据模型标准体系
Big Data for intelligence

Core value

Value amplification
- Improved SH devices
- Accurate SH services

Big data collection

Collect

process

Closed loop - continuous improvement

Consume

Get more data

products

- Air conditioner
- Refrigerator
- TV
- Weight meter
- Door lock
- Security services
- Healthcare

GW
THANKS