

Alexa 产品设计与 AWS IoT 集成分享

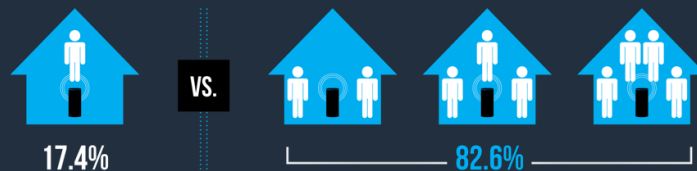
Zhe Sun, Alexa 系统架构师

新兴的交互习惯



80%被统计的家庭有2个或以上的人与Alexa有过交互

OVER 80% OF HOUSEHOLDS SURVEYED
HAVE TWO OR MORE PEOPLE CONVERSING WITH ALEXA



46% 美国成年人使用语音助手或者语音搜索

55% 使用语音交互的原因是解放双手带来的便捷

60% 每天使用语音助手4次以上

91% 会购买更多的智能设备

愿景：Alexa无处不在



家庭音响
Home Audio



家用电器
Appliances



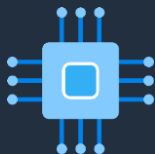
电视 / 视频设备
TV / Video



穿戴式设备
Wearables



汽车
Automobiles



数字助手类设备
Digital Assistants



智能家居
Smart Home



智能手机
Smartphones





Sonos 智能音箱



支持Alexa的LG冰箱



支持Alexa的DISH媒体
控制器



Ge首推可通过Alexa控制的
照明设备



福特汽车装备Alexa智能语
音助手



Ubtech推出支持Alexa的机
器人



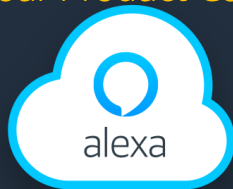
大众汽车集成Alexa语音服
务



华为旗舰手机Mate9使用
Alexa

你的设备如何连接Alexa 服务

How Does Your Product Connect to Alexa?



事件 Events

客户端发给Alexa的信息

Information sent from Client to AVS

指令 Directives

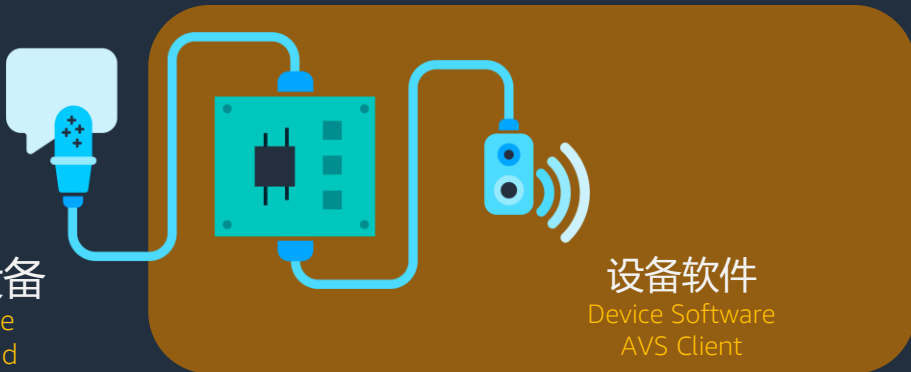
AVS云端发给设备的执行指令

Instructions sent from AVS (cloud) to the Client



声学前端设备

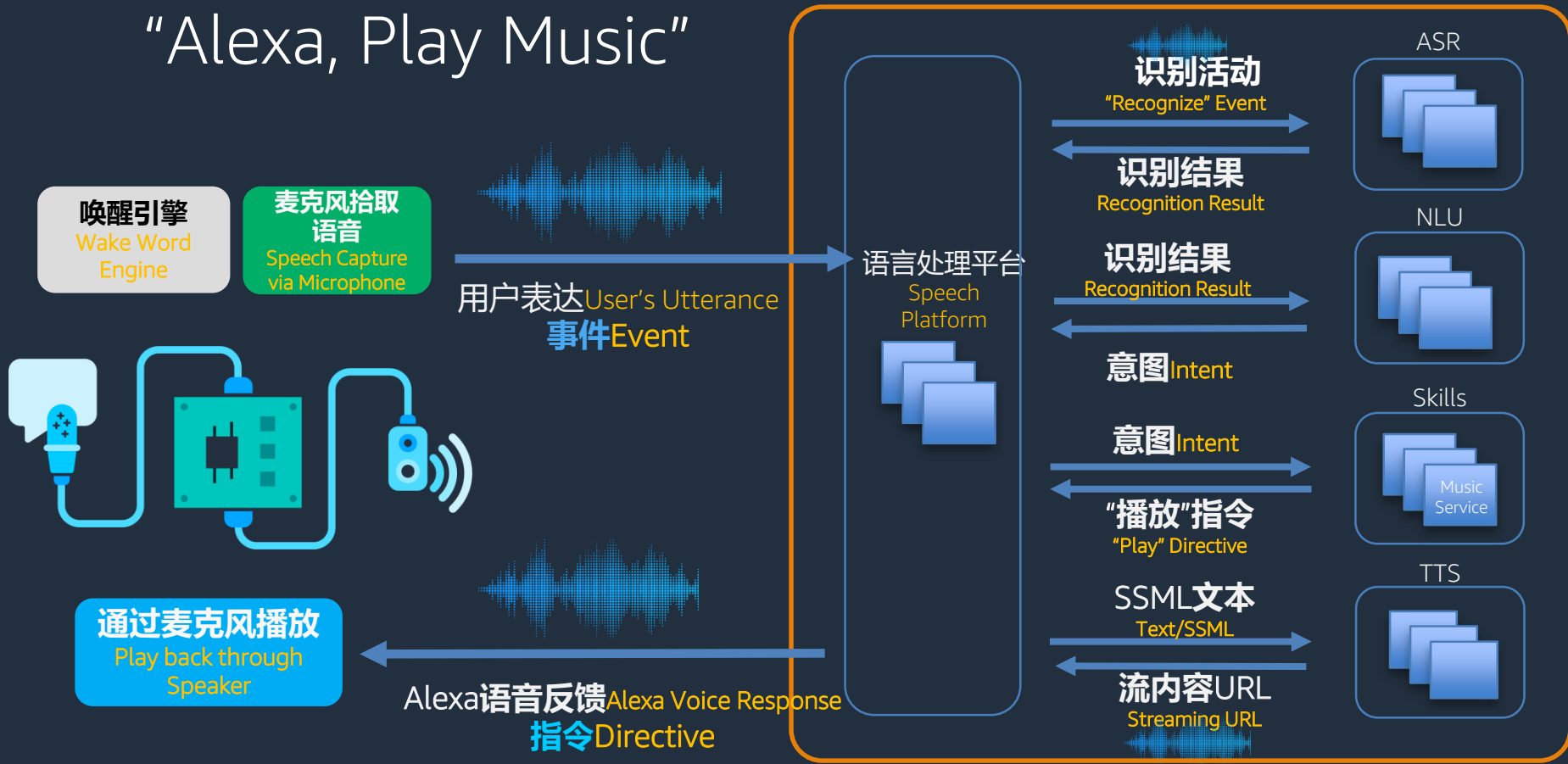
Voice Hardware
Audio Front End



设备软件

Device Software
AVS Client

"Alexa, Play Music"



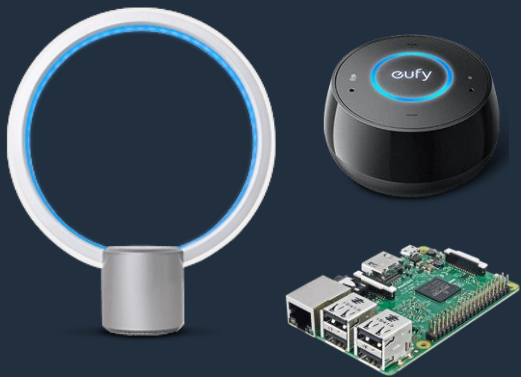
给开发人员的Alexa

Alexa for Developers

在你的设备上集成Alexa服务

Integrate Alexa Into Your Voice-Enabled Product

Alexa Voice Service (AVS)



AWS中国（北京）区域由光环新网运营
AWS中国（宁夏）区域由西云数据运营

为Alexa开发技能

Build Experiences "Skills" on top of Alexa

Alexa Skills Kit (ASK)



开发可以和Alexa一起工作的产品

Build "Works with Alexa" Products

Alexa Smart Home and Gadgets



aws | Webinars

想清楚你要围绕Alexa做什么了吗？

What will you build with Alexa?



学习
Learn



设计
Design



构建
Build



发布
Launch

语音前端用户交互界面Voice Forward UI



非头戴式
Headless



带屏幕
Screen Based

参考AVS文档开展设计

Design with AVS Documentation



功能需求

Functional Requirements

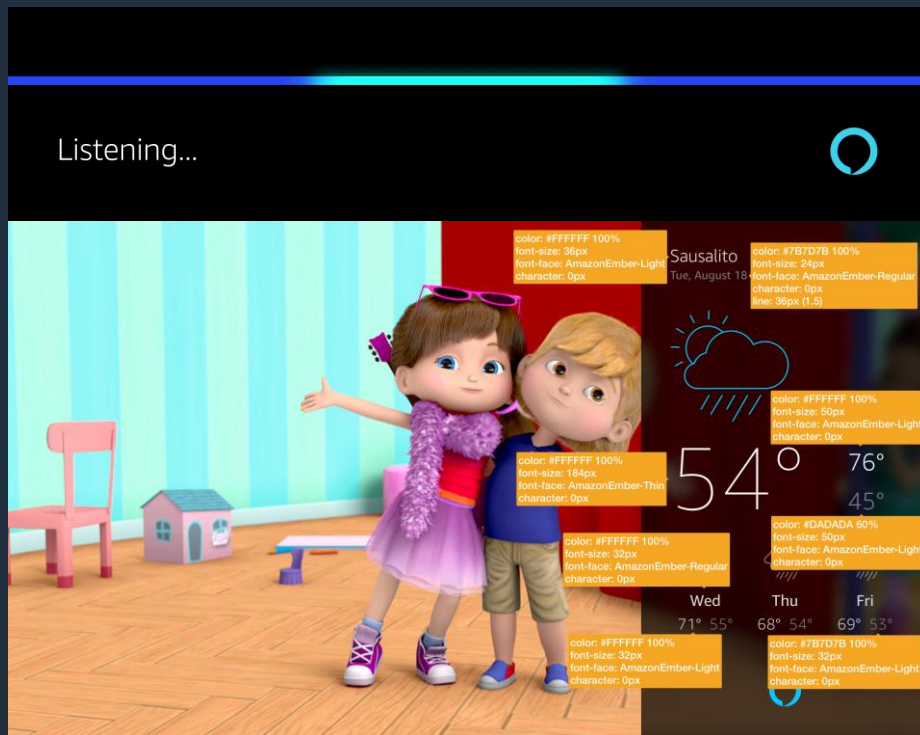
客户体验指南

UX Guidelines

参考AVS文档开展设计

Design with AVS Documentation

- 使用图像表示设备状态
Graphical indicators of device state
- 使用Display Cards API
Display Cards



想清楚你要围绕Alexa做什么了吗？

What will you build with Alexa?



学习
Learn



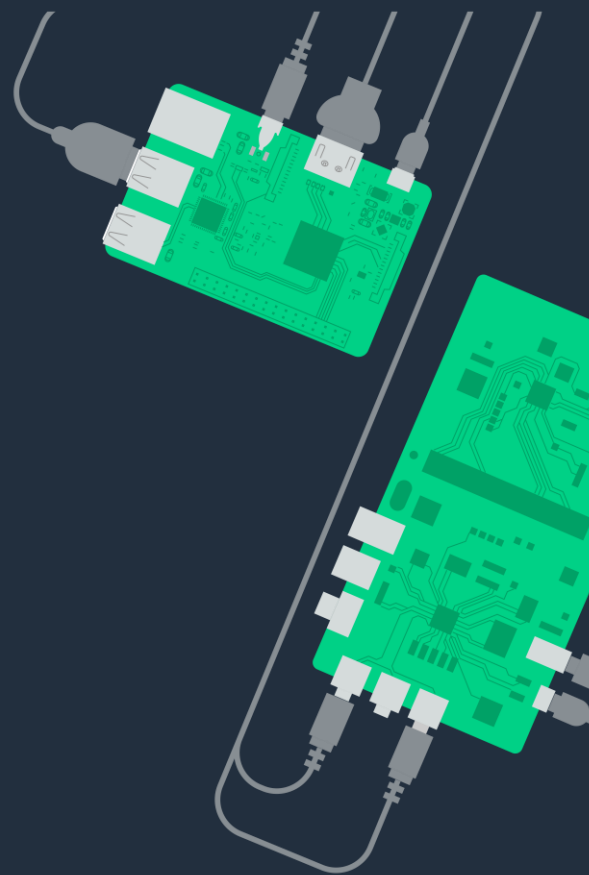
设计
Design



构建
Build



发布
Launch

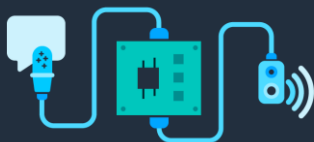


如何在我的设备中集成Alexa? How Do I Build Alexa Into My Product?

开发工具包 Development Tools



软件工具 Software tools



硬件开发套件 Hardware dev kits

解决方案供应商 Solution Providers



系统集成商 Systems Integrators



原创设计厂商 ODM Original Design Manufacturers

AVS开发选项

Development Options for AVS

AVS云端API

AVS Cloud API

AVS设备SDK

AVS Device SDK

AVS开发套件

Dev Kits for AVS

系统集成商模块

HW/SW Modules from SIs

ODM方案

ODM Solutions

支持Alexa的设备

Alexa-Enabled Products



基于树莓派快速构建原型产品

Quickly Prototype with a Raspberry Pi

Alexa语音服务的Device SDK AVS Device SDK

- 使用树莓派就可以构建 Easy to prototype using a Raspberry Pi
- 采用”Alexa”唤醒词 Hands-Free implementation with “Alexa” wake word detection
- 支持任意USB麦克风及现有的扬声器 Works with any USB microphone and off-the-shelf speakers

即刻开始 Getting Started

1. 购买一个树莓派 3 和一个麦克风 Buy a Raspberry Pi 3 and USB Microphone
www.amazon.com
2. 免费注册一个亚马逊AVS开发者账号 Register for a free Amazon AVS Developer Account
developer.amazon.com/edw/home.html
3. 在树莓派 3 上使用免费的AVS Device SDK进行开发 Prototype with AVS Device SDK on Raspberry Pi 3
github.com/alexa/alexa-avs-sample-app



系统集成商 Systems Integrators



LIBRE™

sugr

Linkplay
Technology Inc.

dti
Play-Fi®

[alexadesign/si](https://alexadesign.si)

ODM解决方案

ODM Solutions



wistron®



JUNLAM

alexa.design/odm

AWS中国（北京）区域由光环新网运营
AWS中国（宁夏）区域由西云数据运营

Alexa可用性 Alexa availability



与AWS IoT集成思路

- 智能家居中控
- 产品差异化
- Technicolor Broadband Gateway
 - *Alexa Client*
 - *Greengrass*

New Technicolor PRODUCTS and SERVICES with Greengrass



Personal Assistant

Voice-activated user experience
App – Helpdesk optimization

10Gb Broadband GW

Extraordinarily powerful – Best Wi-Fi
Carrier-grade – Full service platform



Tri-band Wi-Fi Extender

Whole home coverage – Cool design
Intelligent diagnostics and roaming

ALEXA SKILLS KIT



Alexa, ask Lyft for a Lyft Line to work

Skill类型

Custom Skills

自行定义skill能够处理的请求类型，以及用户通过哪些语句可以发出这些请求（utterances）。例如查询信息，提交订单或者进行交互性游戏。

Smart Home Skills

用于控制智能家居设备例如灯，温控设备等。Alexa已经对用户语音接口进行了定义。调用这些skill的时候并不需要特定的skill名称，对于客户将会更加易于使用。例如，您可以直接说“Alexa，ask for a Lyft Line to work”。

Video Skills

用于向客户提供视频内容（例如电影，电视剧等）的技能。

Smart Home vs Custom Skill

Smart Home Skill

- 需要有自己的云服务
- Alexa定义用户意图
(*smart home API*)
- 需要Lambda函数
- 需要Account Linking

Custom Skill

- 自有云服务非必需
- 自定义用户意图
- 可选Lambda (推荐) 或 web service
- 可选Account Linking

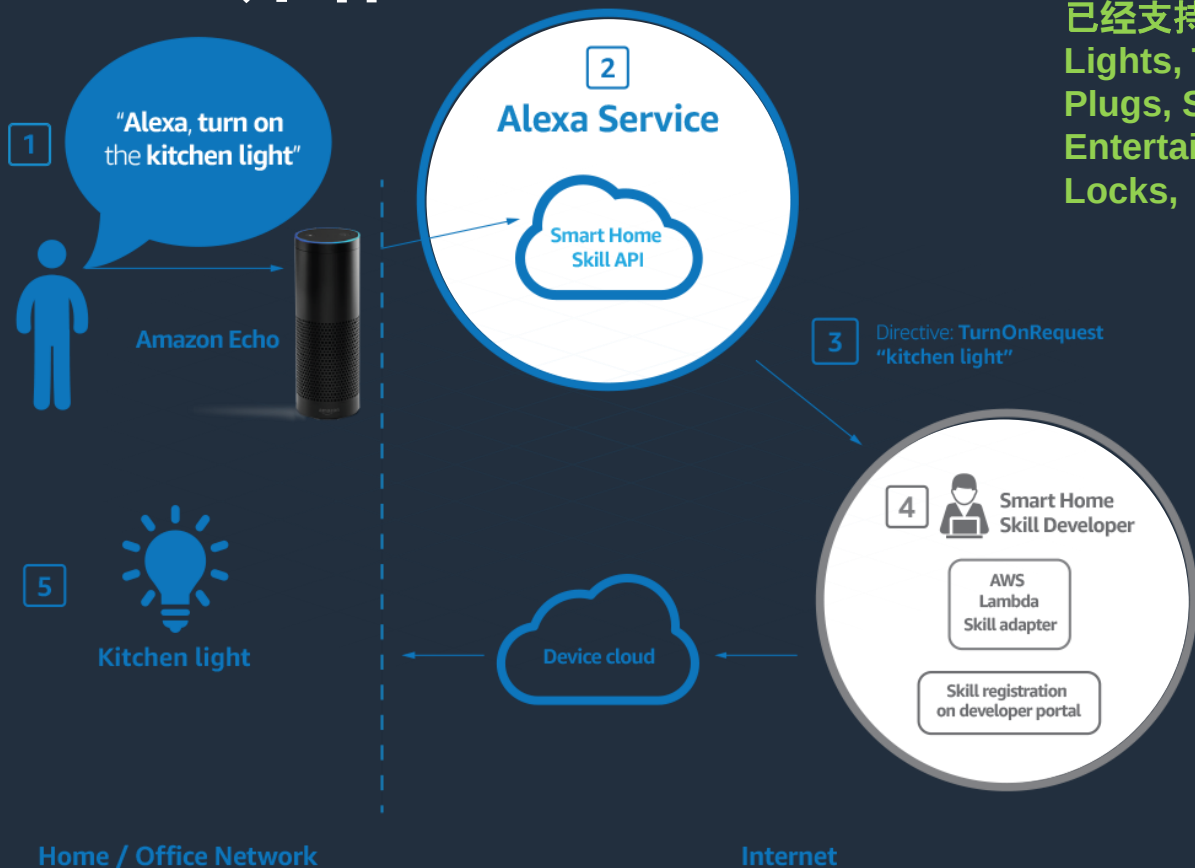


Smart Home 集成



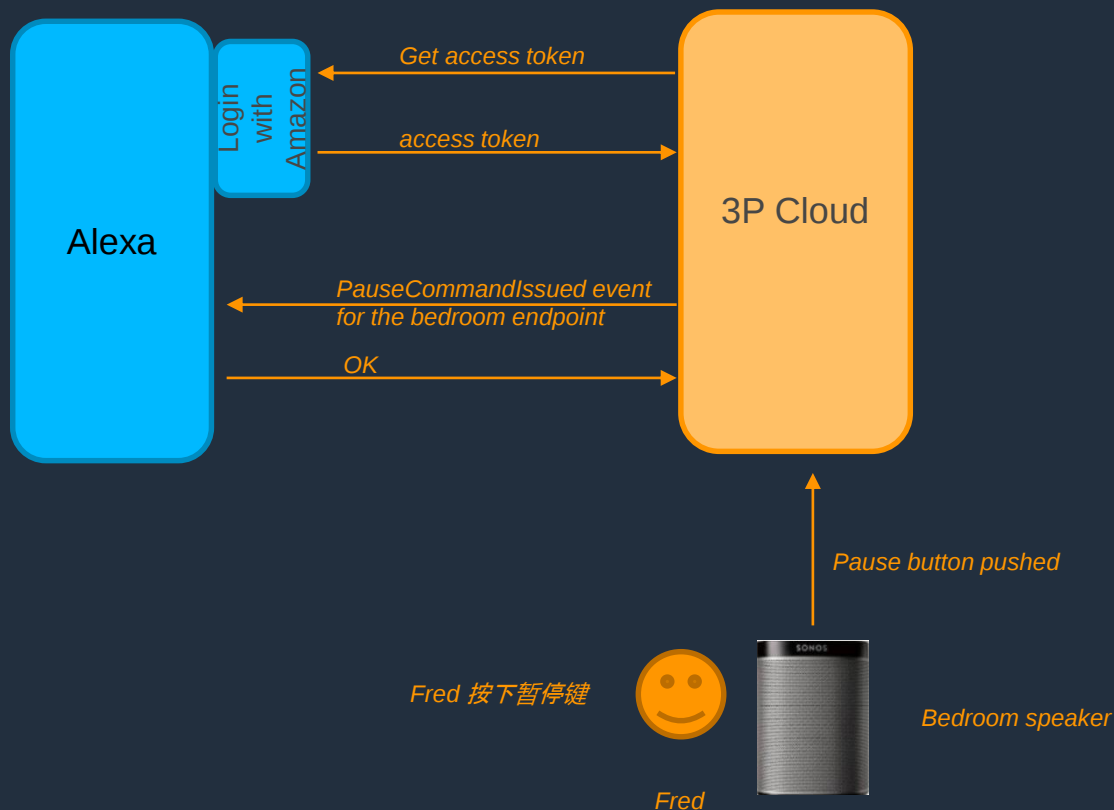
智能家居设备

Smart Home 介绍

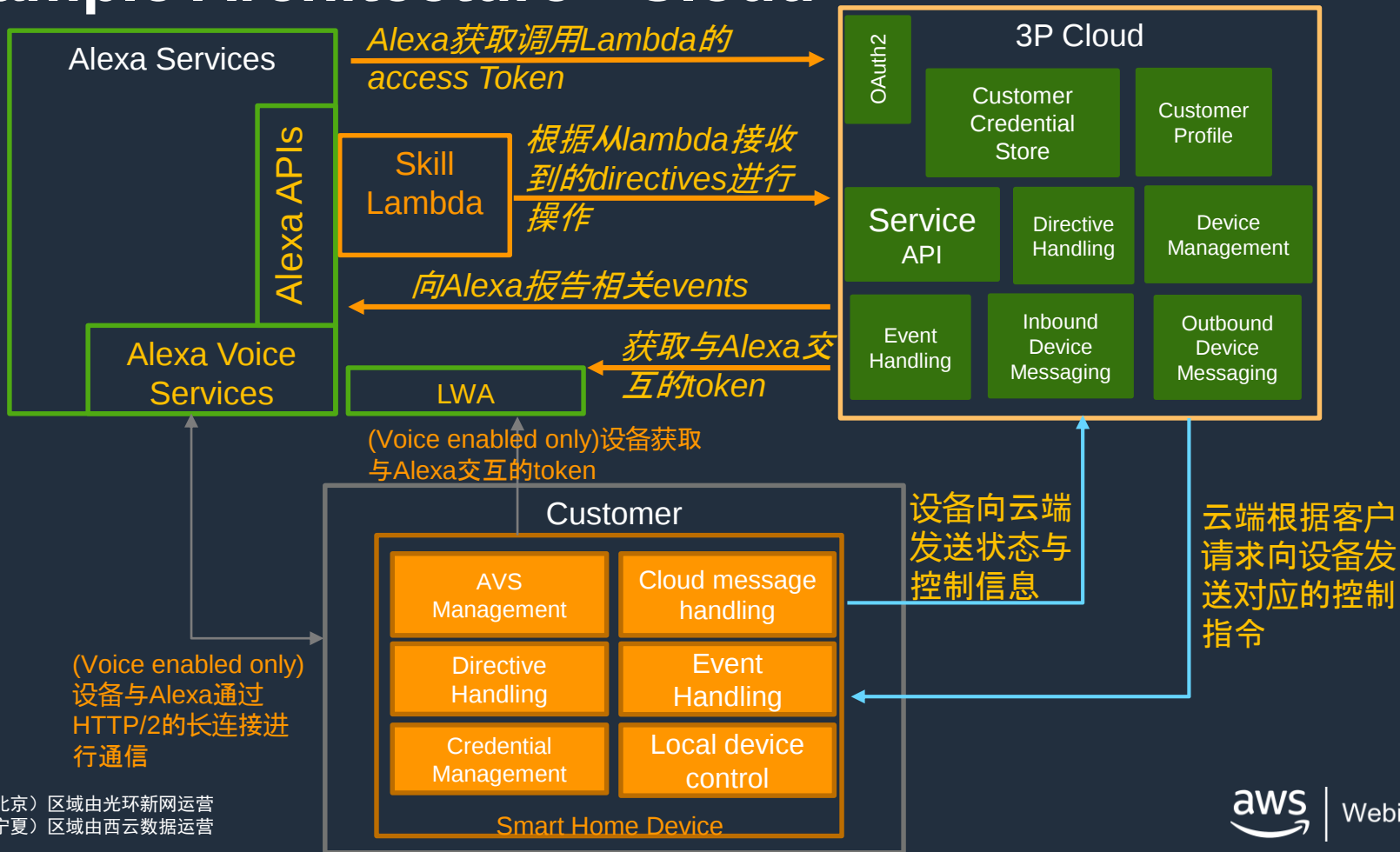


已经支持:
Lights, Thermostats, Smart
Plugs, Switches, Cameras,
Entertainment Equipment,
Locks, Scenes

Example Smart Home Interaction – Local Operation



Example Architecture - Cloud

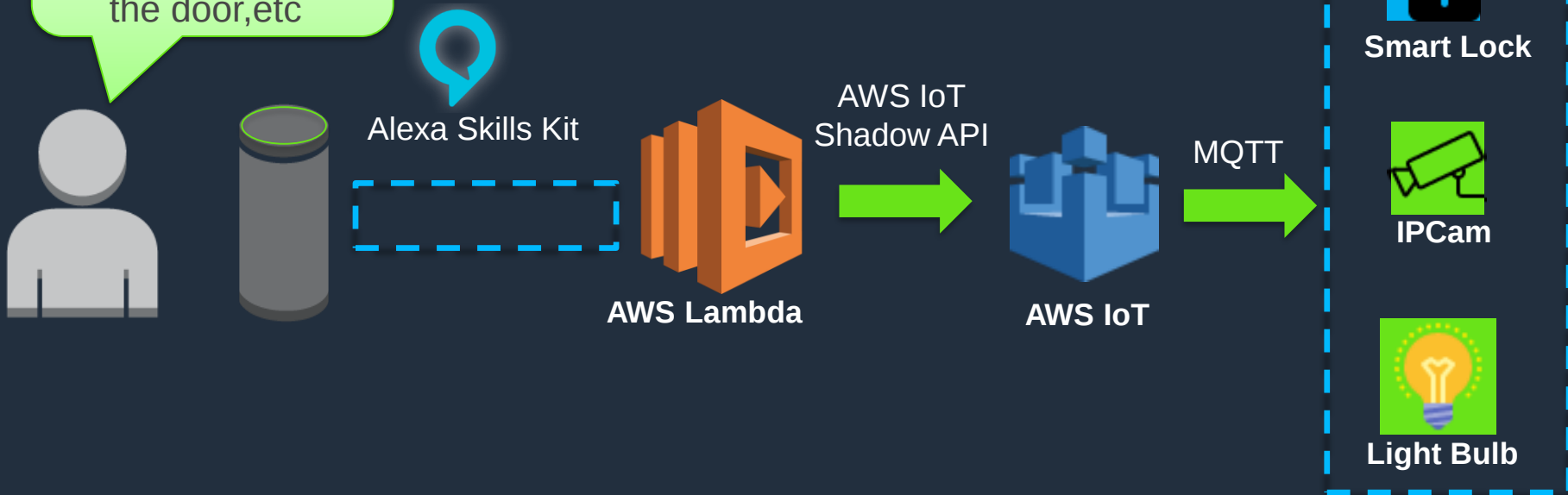


与AWS IoT集成思路



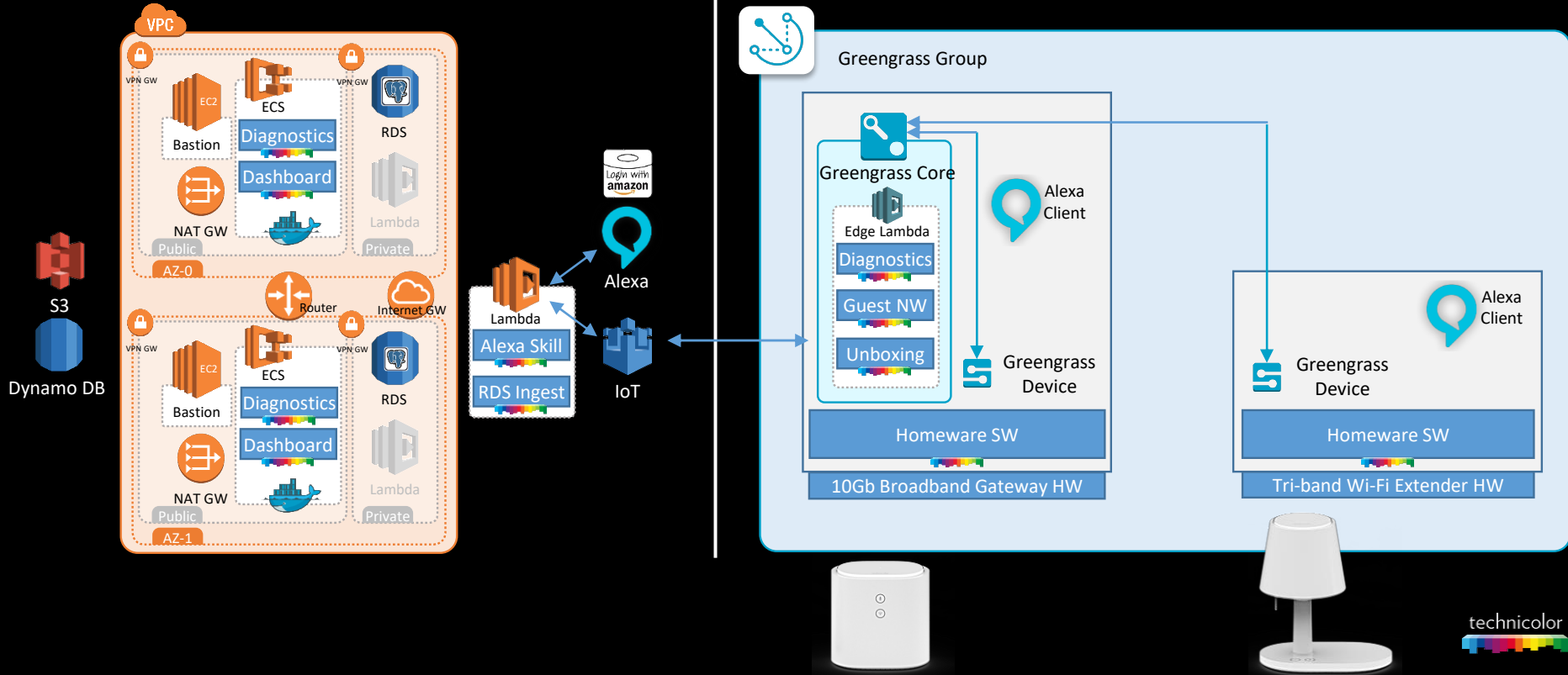
场景举例：智能设备

- Alexa, turn on the light
- Alexa, close the door, etc



Detailed ARCHITECTURE and USE CASES

CLOUD ← → EDGE



Custom Skills

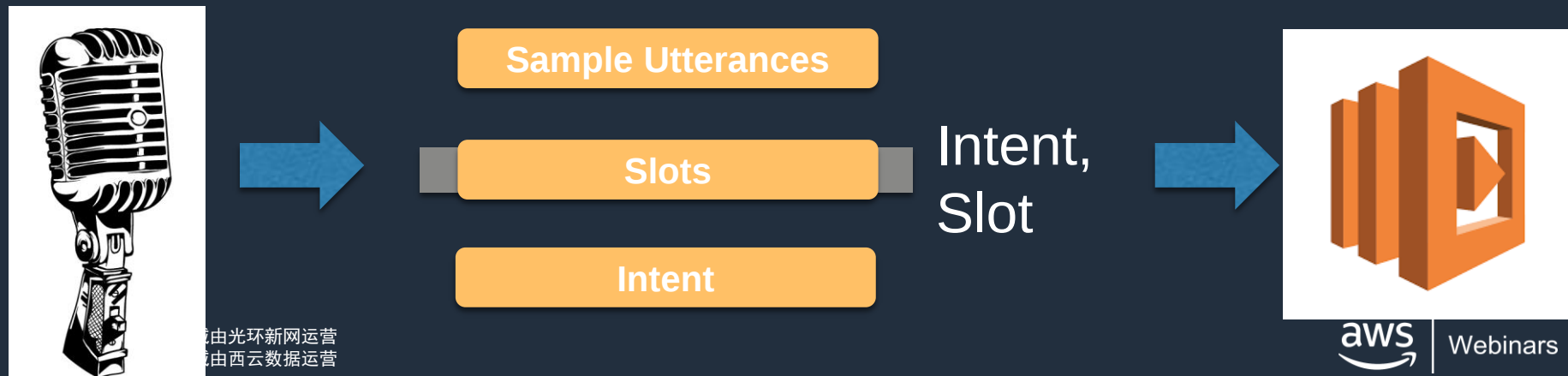
UNDER THE HOOD OF ASK

让我们进一步了解调用ASK的过程中具体发生了什么：



Custom Skills - 输入与输出

- Invocation Name
- Intent, Slot out



alexa, open piano facts

wake word

launch

skill (invocation) name

*Describe
Intent*

describe a chord in the key of G

Slot

Slot

Utterance

*HowFast
Intent*

how fast is allegro tempo

Slot

Utterance

Sample Utterances

DescribeIntent describe a {musicthing} in the key of {key}

DescribeIntent what is a {musicthing} in the {key} key

HowFastIntent how fast is the {tempoName} tempo

HowFastIntent how quick is the {tempoName} tempo

HowFastIntent what is the tempo for {tempoName}

ASK Lab – AWS IoT



<https://github.com/alexalibrary/alexalibrary/tree/master/aws/Amazon-IoT>

与AWS IoT集成思路



Thank You

<http://developer.amazon.com/alexa>

