



Remotec
TECHNOLOGY LTD.

紅外應用與藍牙IoT科技接軌 - 不可或缺的智能家居標準



Standardizing the IR Fabric
the IoT last mile Bluetooth connectivity that matters today

Daniel Chun
Chief Executive Officer
Remotec Technology Limited, Hong Kong



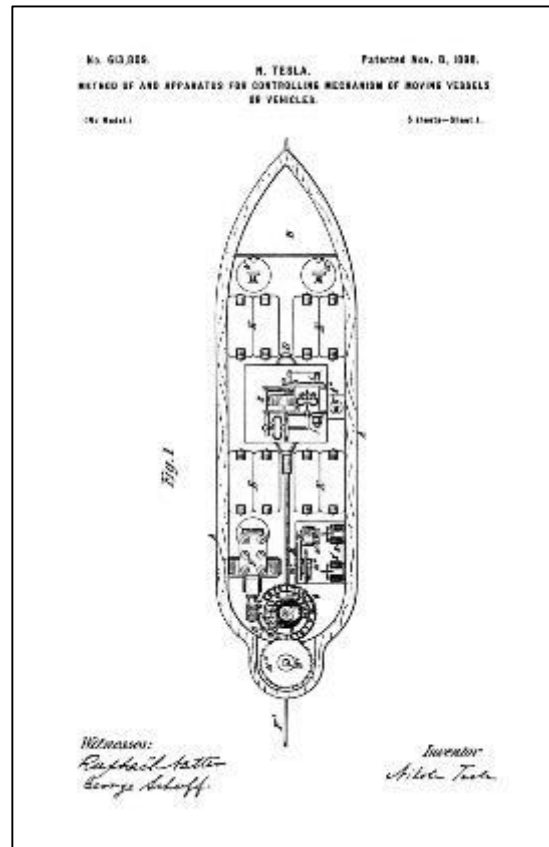
Please find us at
Hall 5 Stand 32

Remotec
TECHNOLOGY LTD.



Remotec
TECHNOLOGY LTD.





In fact, remote controls are an invention born in the 1800s. Renowned Serbian-American inventor Nikola Tesla created one of the world's first wireless remote controls, which he unveiled at Madison Square Garden in New York City in 1898.

For his demonstration and patent, Tesla employed a miniature boat controlled by radio waves. Ref: USPTO Patent #613809





Over 2000 brands of TV, 50 brands in Sound bar & Projectors



Over 300 brands in Air Conditioners

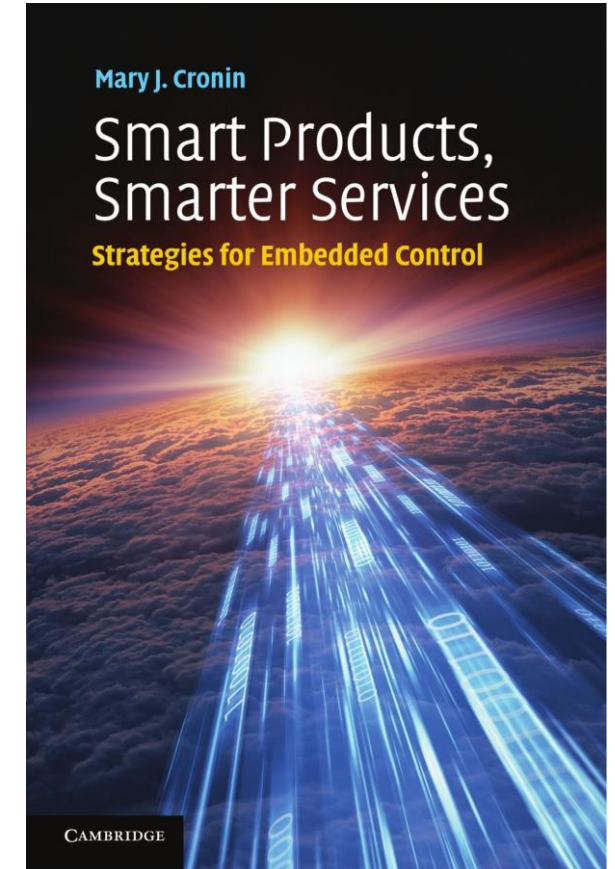


Complexity for solution providers

*“That very complexity of organizing smart devices with so many type of embedded connectivity options has been a frequent **source of frustrations for solution providers** and individual consumers”*



Professor Mary J Cronin
Caroll School of Management
Boston College, Massachusetts, United States



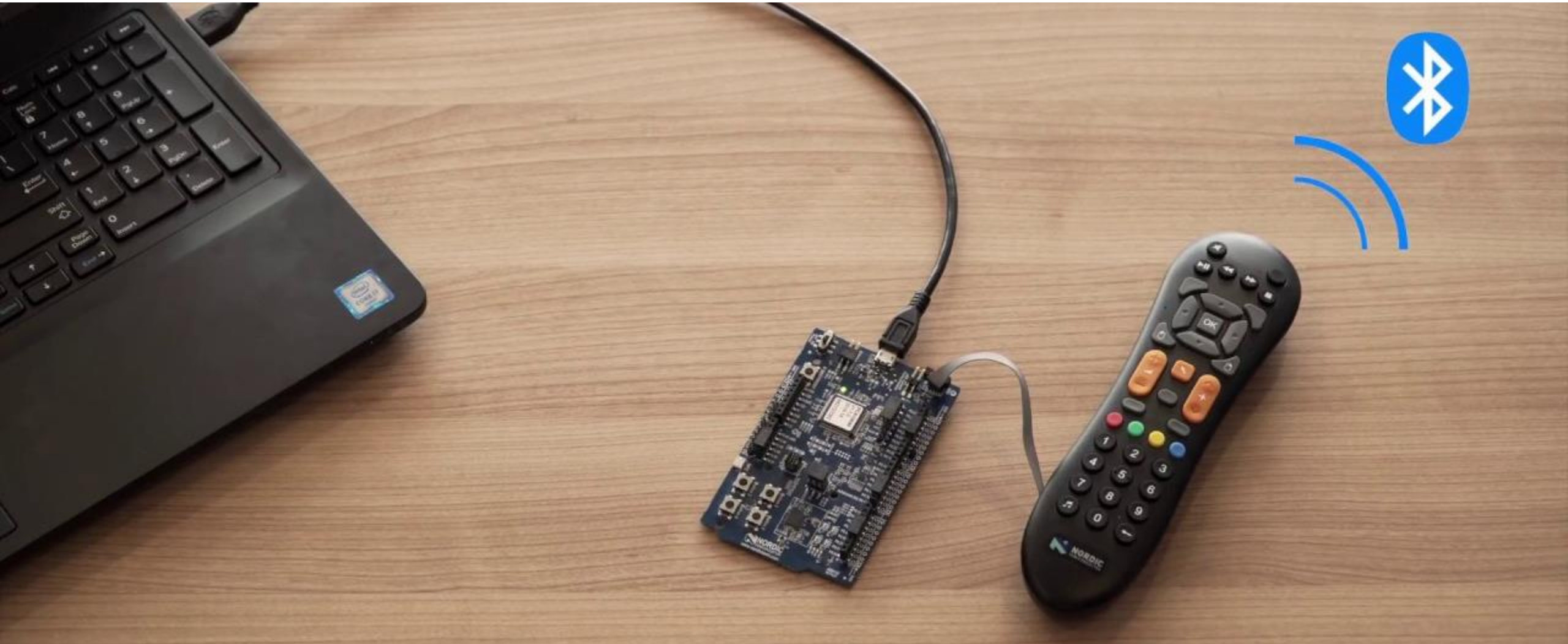
In the wild, one has to make their own bridge



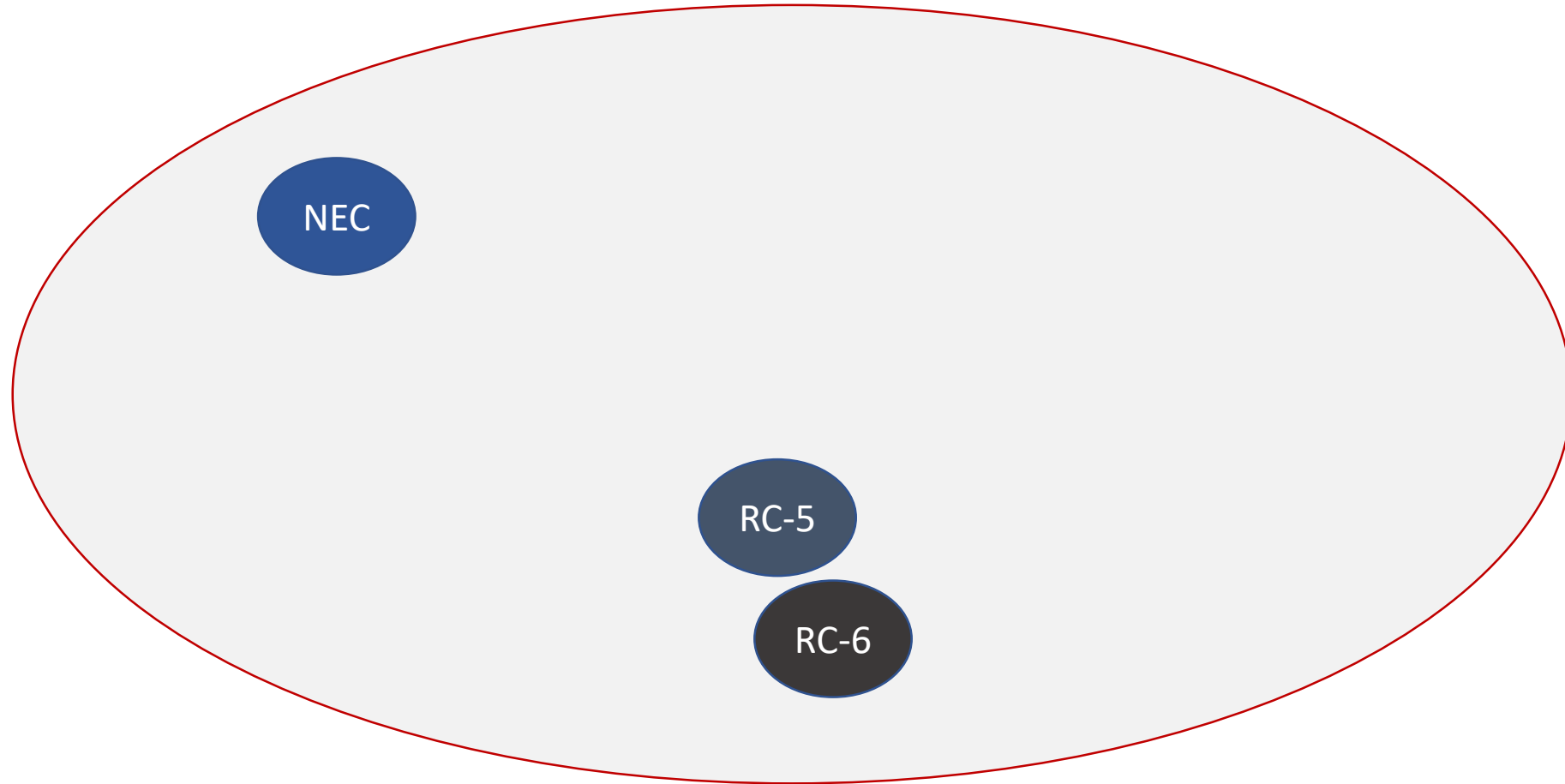
IR Bridges were made by many companies



Some chipsets companies created SDK



TV / AV industry currently has over 300 IR Protocols



Many have been integrated with Bluetooth

Ready for Universal Infrared Code integration with Bluetooth



CSR1011



TEXAS INSTRUMENTS

TIDC-CC2650/40RC



REALTEK

RTL8752C



NORDIC
SEMICONDUCTOR

nRF52



Chipset companies that has a Remote Controller SDK



CY5672 PRoC™



DA14585 Voice RCU



SILICON LABS

EM34x*

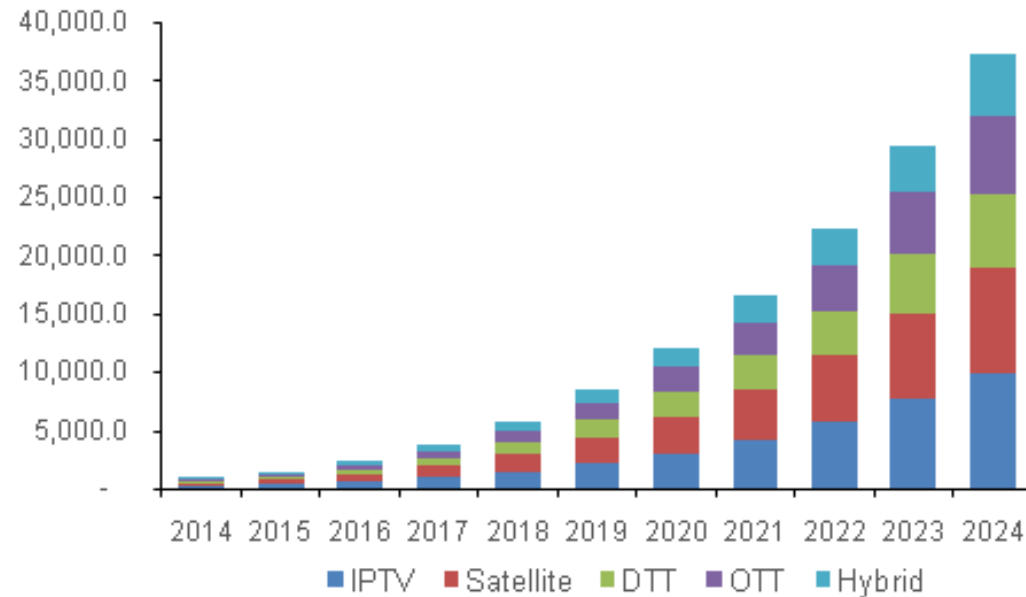


*RF4CE

Case Study 1 - TV Entertainment (Over-The-Top)

Growth in OTT content distribution

With high penetration of hi-speed Internet and mobile data, good content (music or movies) are now consumed in many modes. TV, Projectors, smartphones, Tablets sparking parallel growth.



Roku



Chromecast



amazon fireTV



apple tv

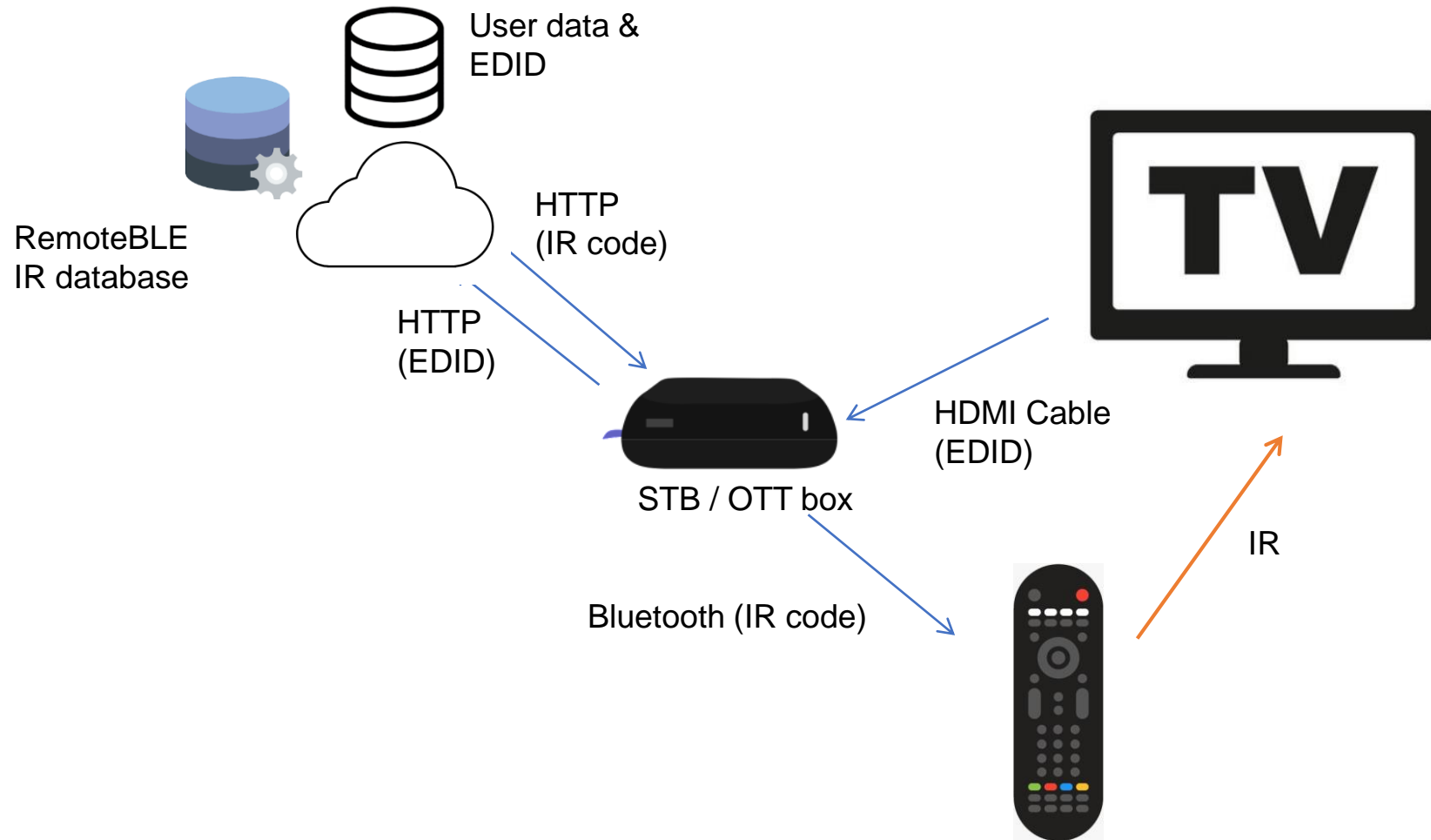
Industry Insights

While the MSO market continues to grow with the cable and broadband businesses, there is a parallel growth in the content distribution over the top by many worldwide players

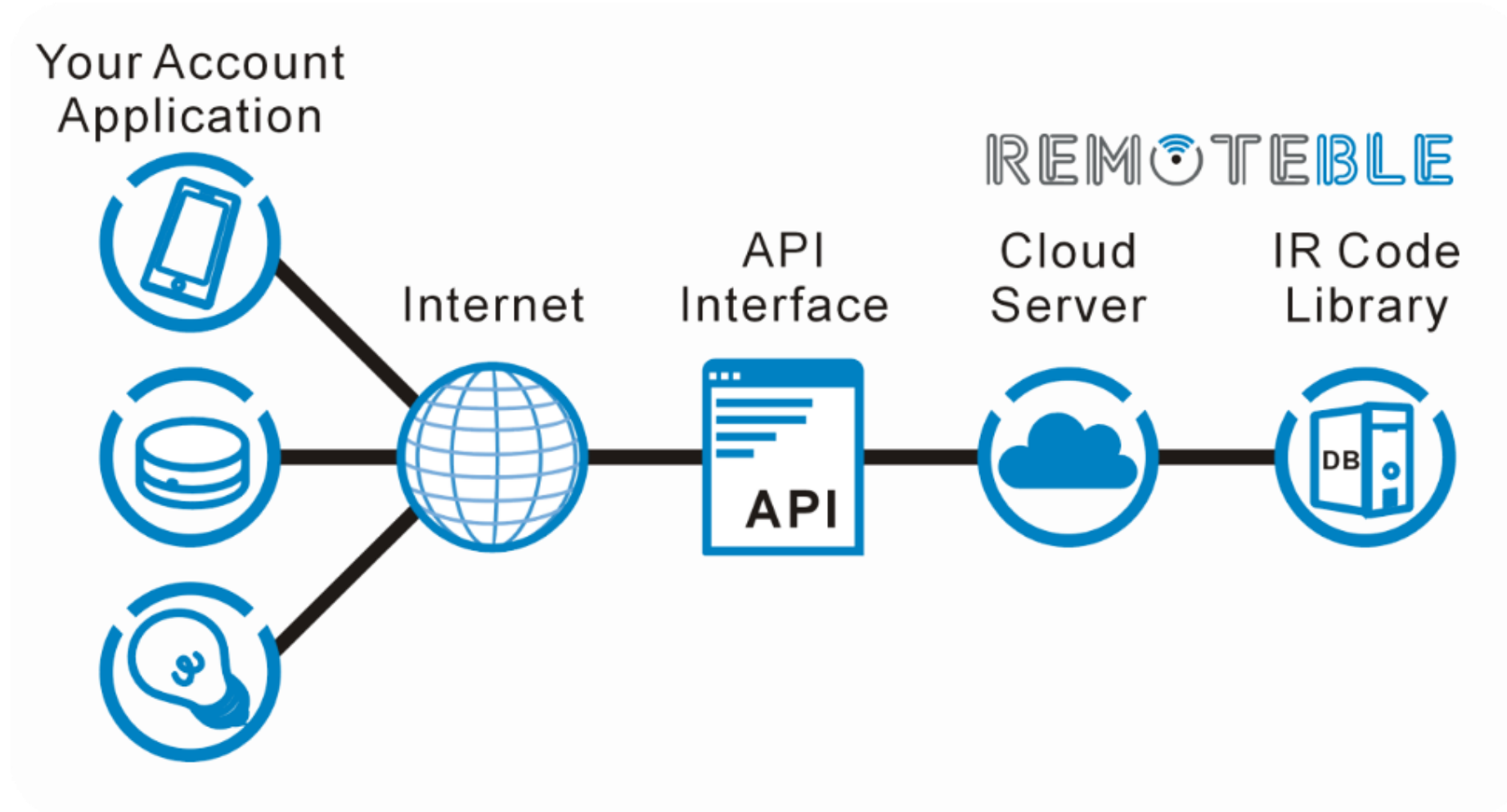
The use of voice-activated search for content is also becoming an industry standard for both MSOs and OTT boxes. The voice control can therefore be further segmented to near-field, button triggered handheld remote market and a far-field always on voice-assistant market.



Typical Use Case of Cable / OTT box



Cloud-based IR code Library



Cloud-based IR code Library

- We are the Google
- There is no common standard, each vendor uses their own IR protocol - making it difficult for further application development

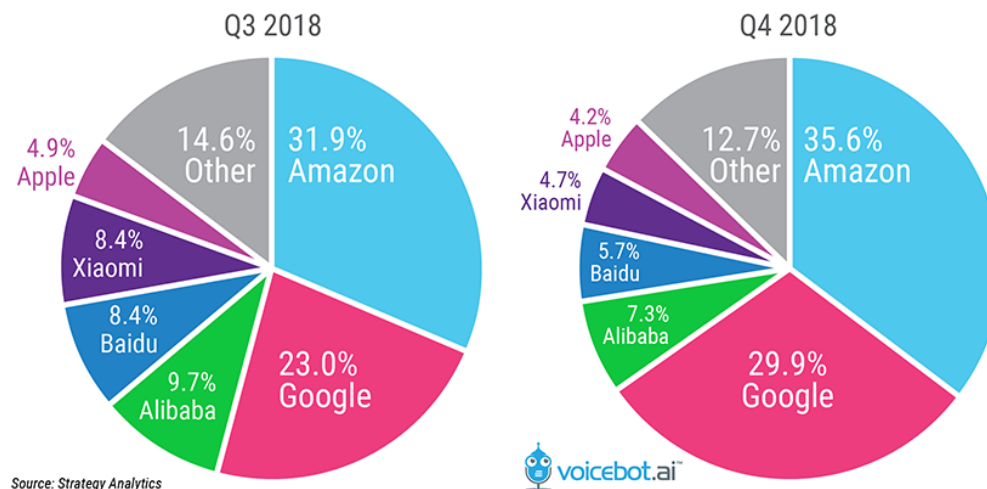


Voice-enabled Bluetooth remote with IR



Voice Assistants in Speakers / TV

Which digital assistants are people using?



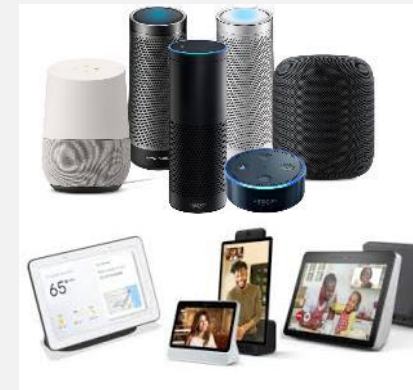
Source: Voicebot.ai

Industry Insights

Voice Assistants are already widely deployed in speakers forms

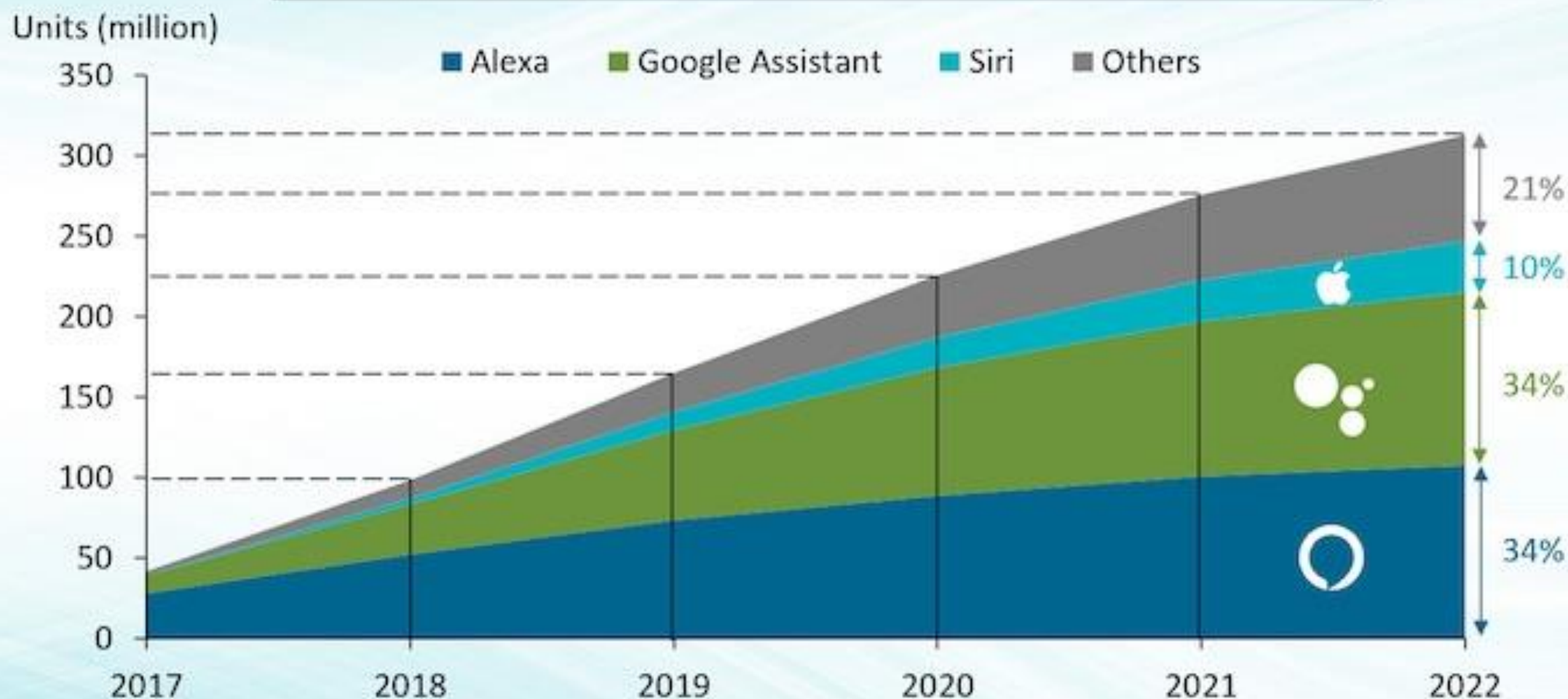
There are also now products that adopt voice assistants (e.g. Facebook Portal, SOMFY TV Soundbar).

“Alexa..... turn on my AC”
 “OK Googleturn on the fan”
 “アレクサ、エアコンをオフにする”



Smart speaker installed base to reach 100m in 2018

Worldwide smart speaker installed base forecast by platform



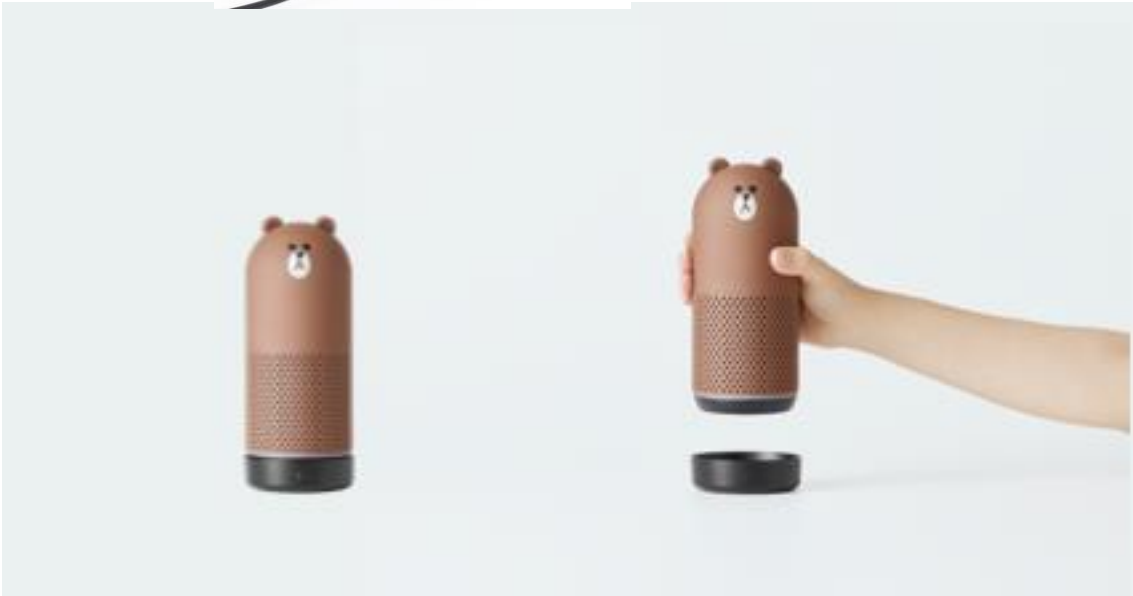
Source: Canalys estimates and forecasts, Smart Speaker Analysis, May 2018

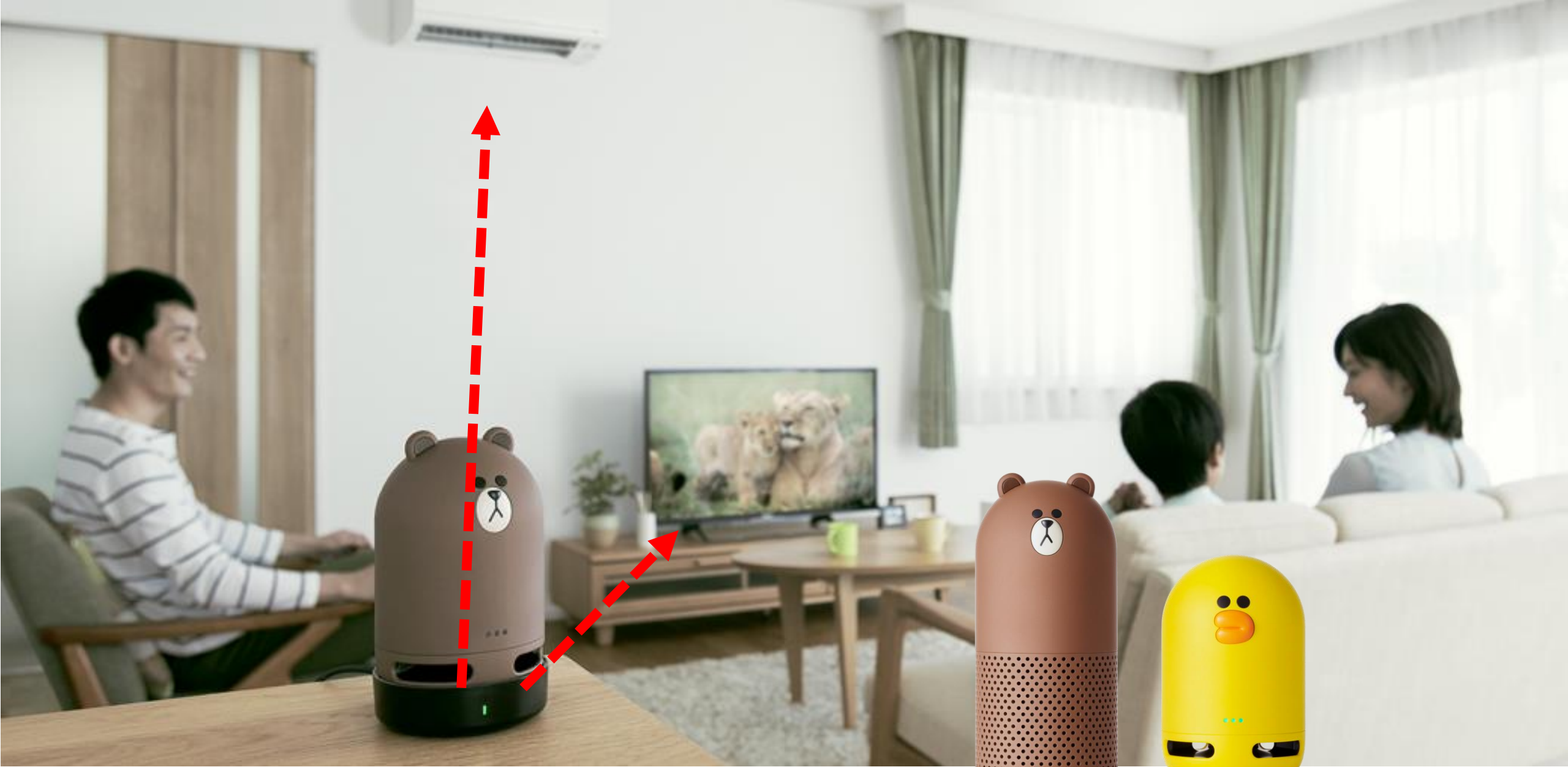
Source: Canalys

Smart speakers set to surge in East Asia

Worldwide smart speaker installed base forecasts
2018: 114.0 million units
2019: 207.9 million units
Growth: 82.4%

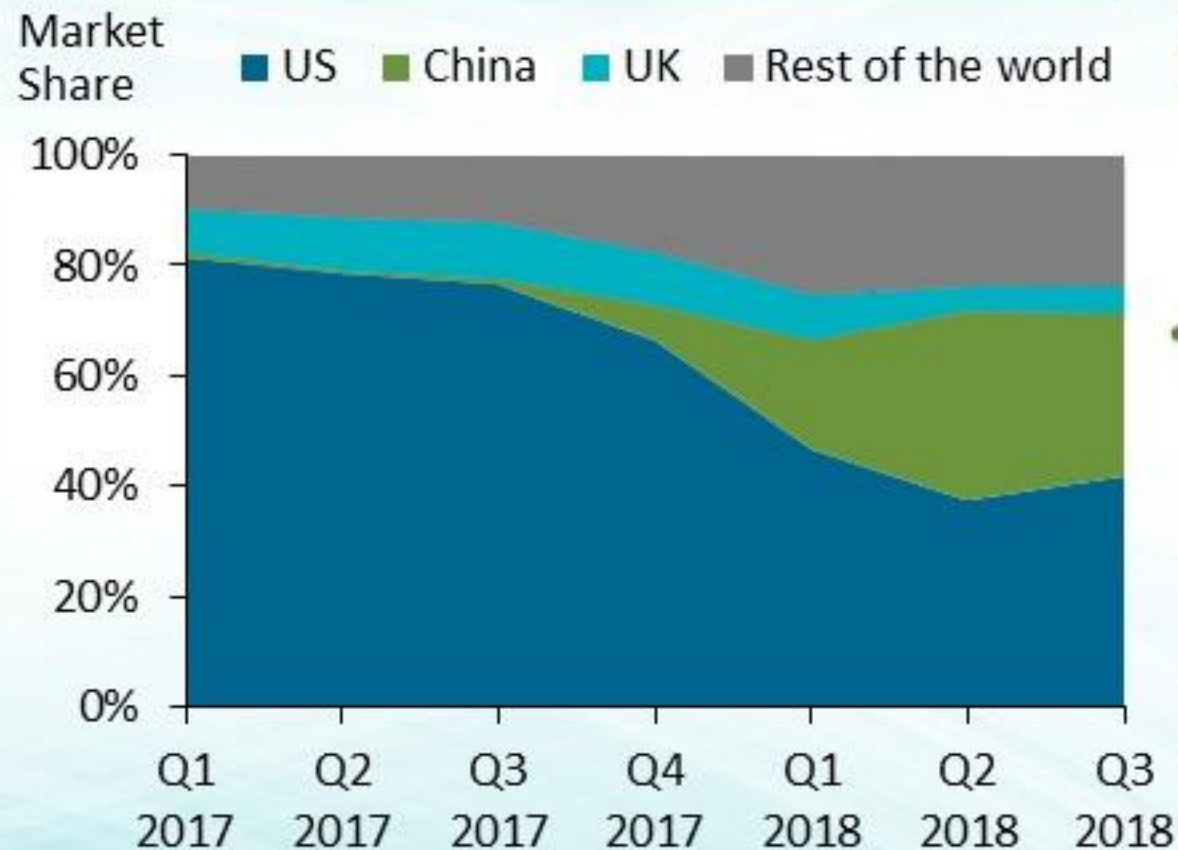






The US and China take 70% of the global market

Worldwide smart speaker market share
Q1 2017 to Q3 2018



Top three markets in Q3 2018



1. United States

amazon Google Apple



2. China

天猫 TMALL MI 百度 Baidu

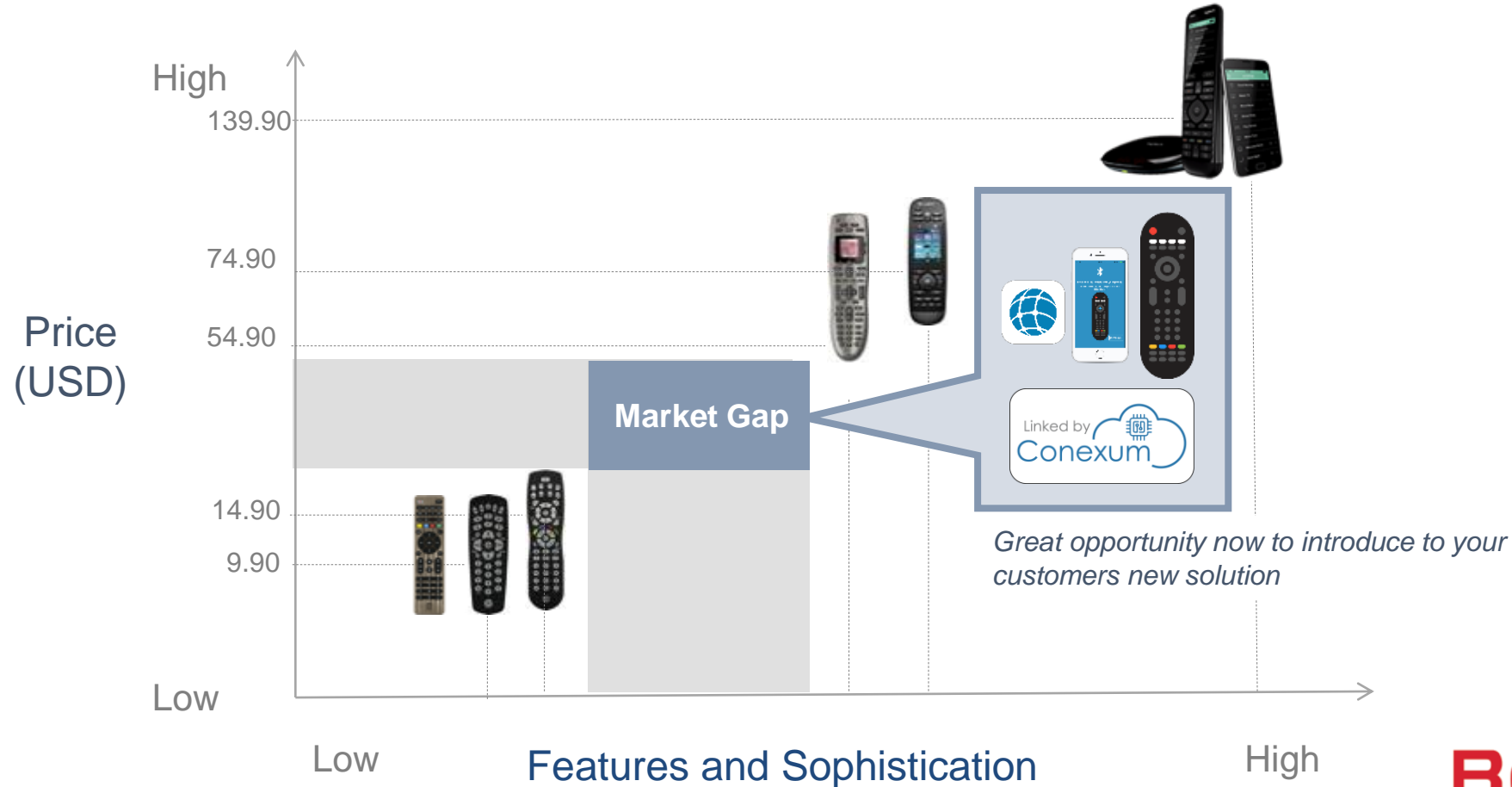


3. United Kingdom

amazon Google Apple

Universal Remote Controller (Market Gap)

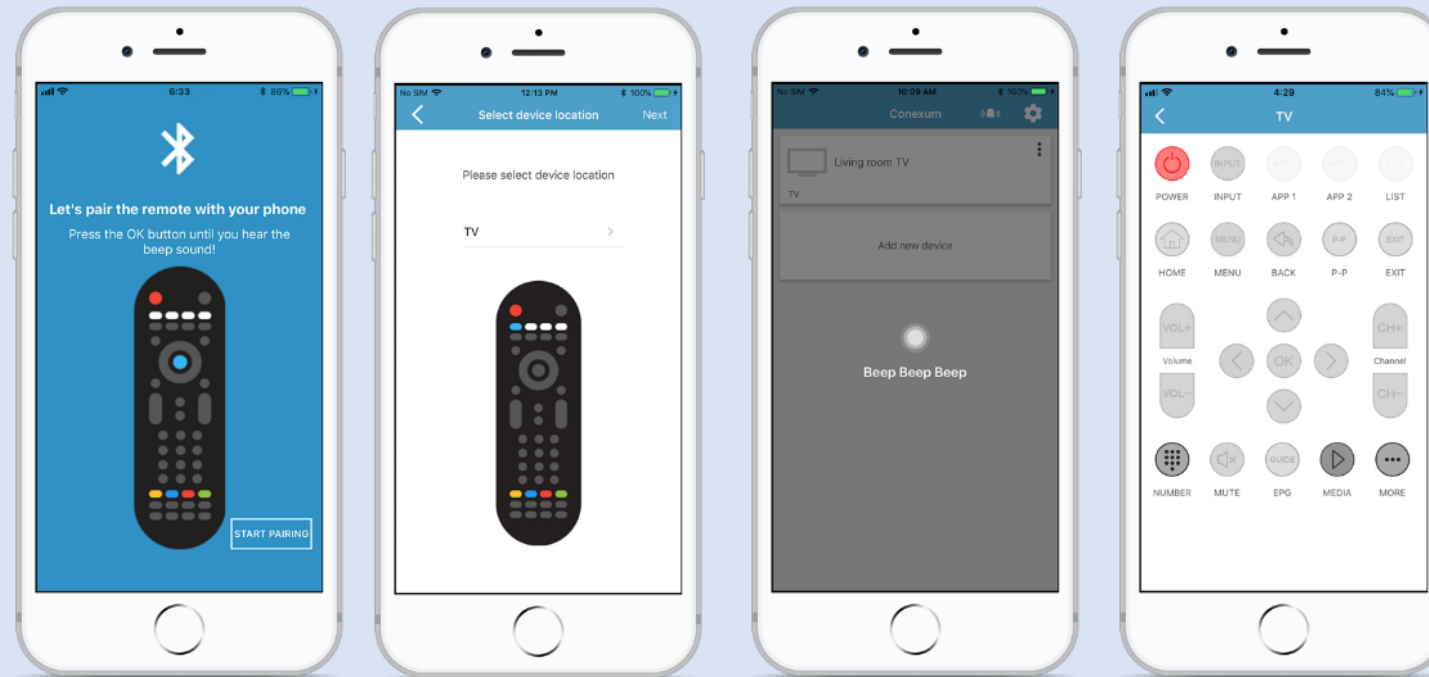
Build and increase valuation in the URC market – increase value on IR codes, firmware & software, and better gross profit margin for the Linked by Conexum program



Find my remote and better UX

Find my Remote, Macro, Soft-remote features, SmartSearch and easy setup

This improved the user experience and allows the support evergreen IR code library



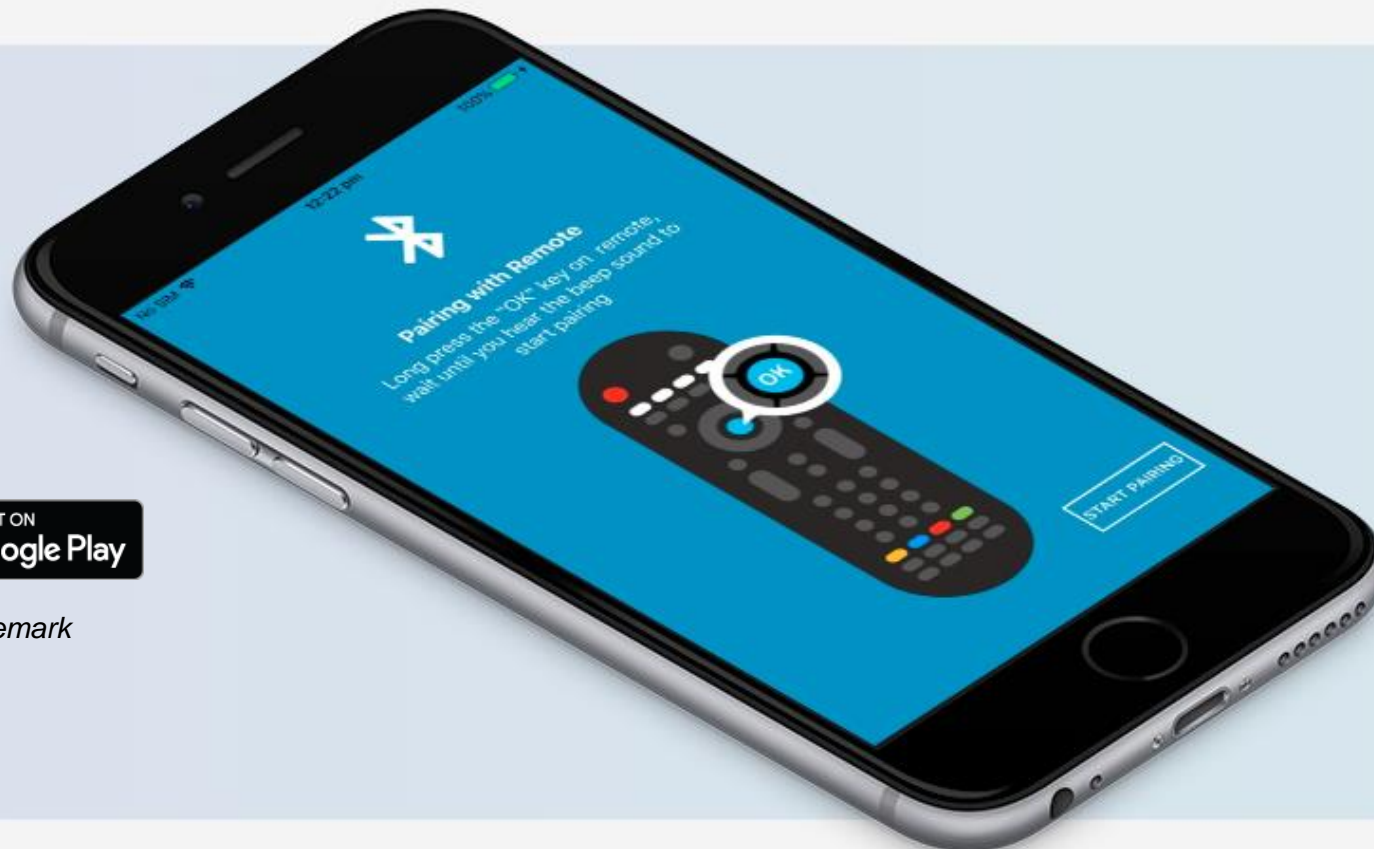
Apps driven enhanced UX/UI

A Mobile App makes it simple for programming the various devices at home

Enhanced SmartSearch experience for easy setup of IR codes on devices

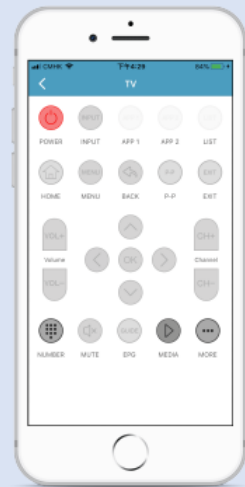


Conexum is US registered trademark



Apps As Soft-Remote – IR Bridge

With the mobile app, a customer can issue any no of scene control or macro



**In-App Purchase*



Smart Home is vertical growth for many players



Timeframe: February 2016 - February 2018 For comprehensibility, values for volume and growth are standardized and normalized. (values from 0-100)

OTT Box and AI Speaker (+ Infrared)

Build and increase valuation in this segment by adding – Infrared Control that controls all appliances today



New Work Proposal to Bluetooth SIG

- Apr, 2019 Bluetooth SIG Automation Group – SmartHome Subgroup
 - A NWP was proposed to SmartHome Subgroup @Automation WG
 - Will be contributing our 28 years of experience to help standardize the way IR code is coded / encoded
 - Plan to add MESH + IR Bridge use cases
 - Fast route to gain approval from Bluetooth SIG

Since 2010, Remotec has defined a standard protocol called Universal Infrared Descriptor (UIRD) which describes how the infrared codes should be stored in flash memory or in the host with standard Application Programming Interface (API) for using these data. The UIRD standard was adopted by ZigBee in their RF4CE 2.0 profile with over 30 million units shipped with the largest US cable operator. The UIRD protocol is now being adopted by many of our own IoT customers, and furthermore, UIRD has also been integrated by Remotec for chipset companies like Texas Instruments, Realtek, Qualcomm, Nordic for developers to implement IR bridging application and control interfaces.

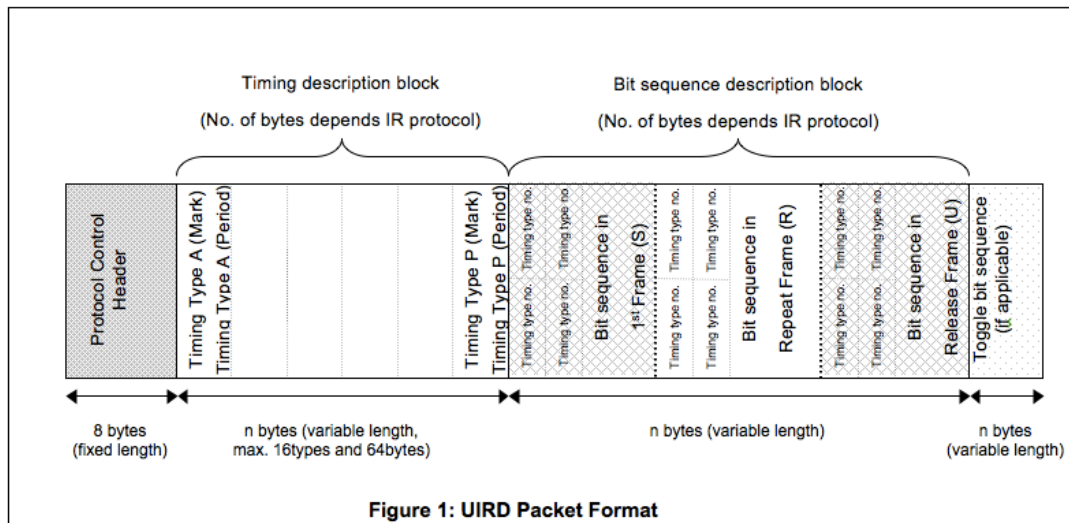
Univeral IR code descriptor

Proven IR firmware solution for many IR Blaster

Remotec has developed a data encoding method called Universal IR Descriptor (UIRD) to standardize IR codes bringing compatibility to various consumer electronics brands

E.g. Open API - RF4CE ZRC 2.0 published

UIRD Packet Format



Industry standards

Remotec's UIRD standard is being adopted by many major brands and in Consumer Electronics for implementing and adding IR to their existing IoT solutions.

This standard will become important for ensuring IR products can go-to-market with the highest compatibility possible with the different brands of consumer electronics.



Chipsets with our Infrared engine



Solution Includes:

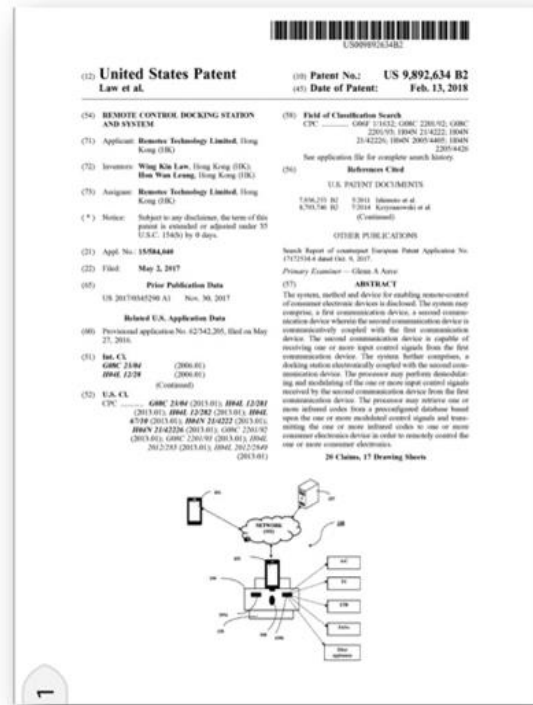
- MCU Chipset
- Universal IR API
- Universal IR Engine Firmware
- IR Learning Engine
- Universal IR Database
- IR Database for System-on-Chip (SoC) for RF4CE
- Wi-Fi, BLE, ZB Modules
- Cloud IR DB, Mobile Apps

Features:

- Supports IR-controlled home appliances – Air Conditioner, Lighting, TV, Cable, Set-Top Box, DVD, and more!
- Firmware Independent –
- Location Independent of IR code library - can be via cloud or host system, or embedded
- Evergreen IR Library - continuous effort to improve and update
- Industry's first coverage reports by region and category

Remote Control Docking System and Method

USPTO Patent# 9,892,634 B2



Remote Control Docking System and Method

- US Utility Patent# 9,892,634 B2
- Any appliance or device that transmit (e.g. a clock, a speaker, a fan, a desk lamp) could be the docking station that transmit IR

A fan or speaker is the docking station that can now transmit IR code through an IoT platform

<https://patents.google.com/patent/EP3249624A1/>

Remote Control Docking System and Method

USPTO Patent# 10,101,771 B2



Remote Control Docking System and Method

- US Utility Patent# 10,101,771 B2 (CIP)
- Any appliance or device that transmit (e.g. a clock, a speaker, a fan, a desk lamp) could be the docking station that transmit IR
- IR receiver Module enhanced the IR signal data synchronization of docking station

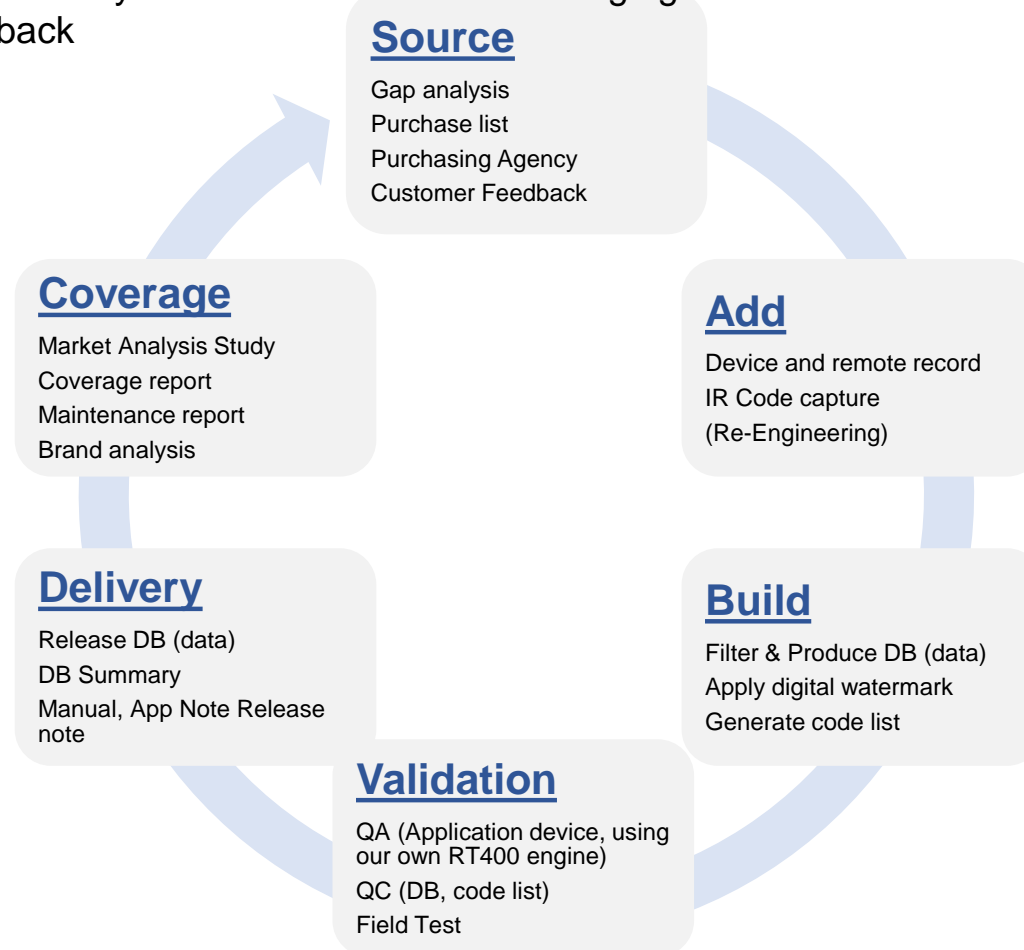
A speaker or fan is the docking station that can now transmit IR code + receive the IR status

<https://patents.google.com/patent/US10101771B2/>

Standardized Universal IR code library

Establish standard operating procedures - business process

To ensure high quality and frequent update of Infrared codes database. All IR codes are scientifically validated and caters to changing market needs and customer feedback



Quality assurance

IR codes are captured from original remote controls purchased or supplied by our strategic partners

This well-defined process on procurement, capturing, records and code data management enables **traceability** and completeness



IR Coverage Reports

Our CSABVD ensures quality and traceability

To ensure high quality and frequent update of Infrared codes database. All IR codes are scientifically validated and caters to changing market needs and customer feedback

Remotec
Remotec Technology Limited

3. Market Overview

United States is the No. 1 television consumption country in terms of North American TV market, it is also the most influent considering both the volume and revenue.

The below graph can illustrate the total volume of the US TV.

Number of connected TV households in the United States (in millions)

Source: <http://www.statista.com/statistics/708856/number-of-connected-tv-households-in-the-us/>

Among them, smart TV volume is also ascending:

10

Remotec
Remotec Technology Limited

15

Remotec
Remotec Technology Limited

4. Coverage Summary

According to the market information provided by third party reports and customer feedback, we select 17 popular TV brands as our major coverage targets:

Rank	Brand	Market Share	Estimated Coverage Rate
Top 5	SAMSUNG	26.65%	92.36%
	VIZIO	21.10%	96.31%
	SONY	13.30%	90.62%
	LG	11.35%	93.22%
	PANASONIC	7.83%	89.65%
Others	ATC		87.33%
	BERSON		85.15%
	BESENDE		90.15%
	HITACHI		86.21%
	PHILIPS		81.88%
	RCA		93.75%
	SANYO		86.73%
	SHARP		92.68%
	TCL		92.25%
	TECHIBA		88.54%
	UPSTAR		85.32%
	WESTINGHOUSE		91.81%
NON-FAMOUS BRANDS		86.25%	
Sum		100.00%	93.33%

Overall coverage:	93.33%
Total # of brands:	399
Total # of code sets:	2319

For the top 5 brands, in 2016, most of them tend to adopt RF remotes to their new high-end product models, while IR model is still maintained within the devices.

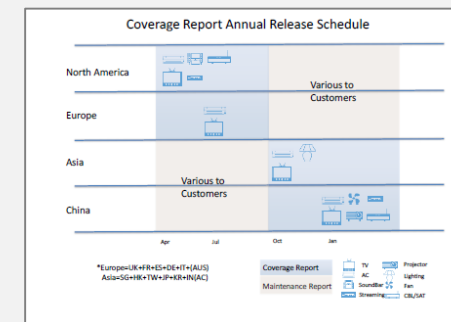
14

IR coverage analysis

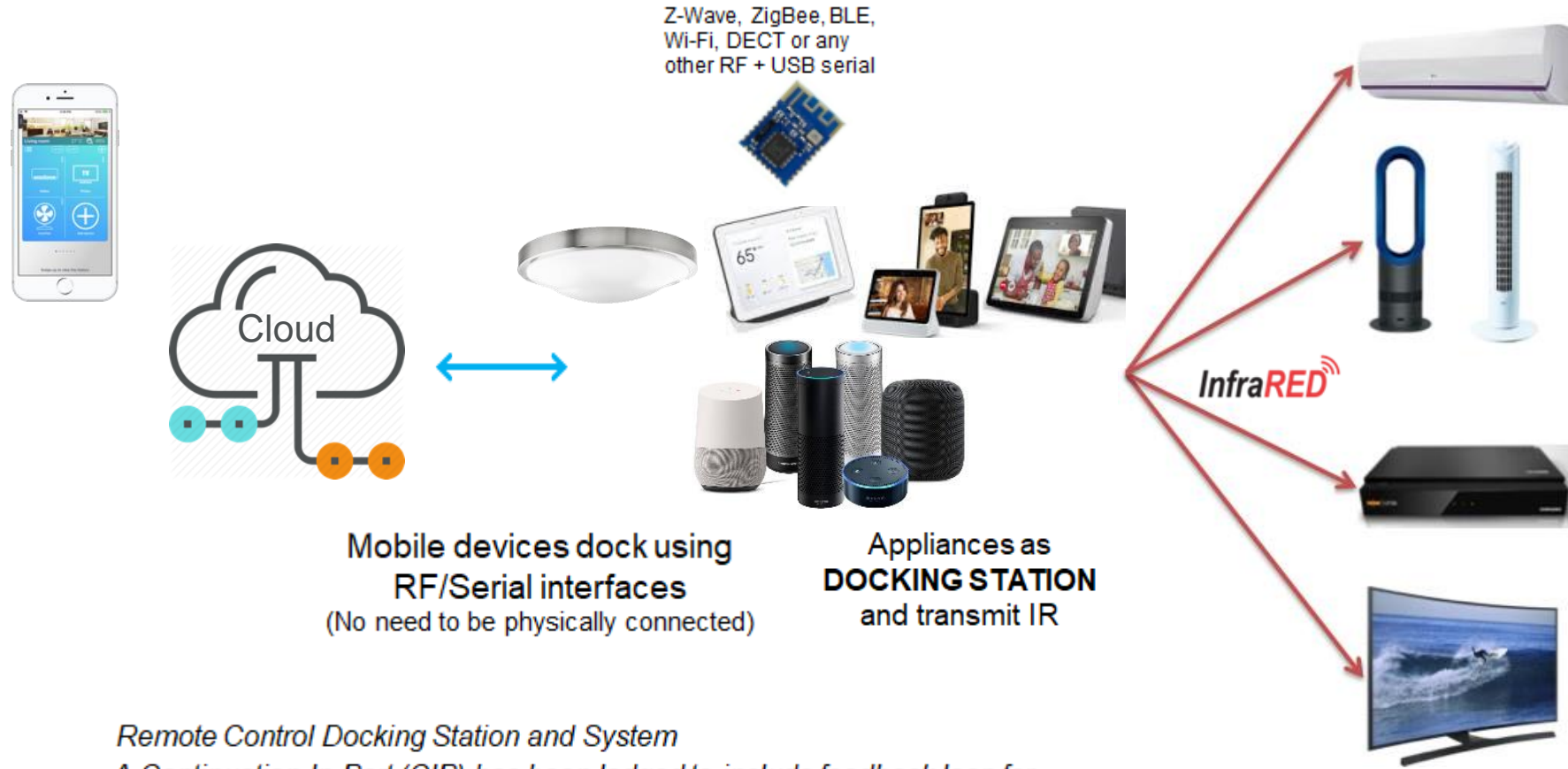
Original IR remotes are captured through the CSABVD process

This well-defined process on procurement, capturing, records and code data management enables **traceability** and **completeness**

The output is a continuous improvement and quality assurance for our customers



Remote Control Docking System and Method



Remote Control Docking Station and System

A Continuation-In-Part (CIP) has been lodged to include feedback loop for receiving IR signals using the dock and synchronizes the entire system.

Remote controller won't be replaced



World's first universal remote controller



Company history



Linked by 
Conexum



Hall 5 Stand 32



DC 

Hong Kong Eastern



Scan the QR Code to add me on WeChat

Thank you

Daniel Chun
Chief Executive Officer
+852 51325169

