Telink + Xped share vision on leading IoT race

WORLD LEADING, HIGHLY INTEGRATED, LOW POWER SOC SOON WITH ADRC TECHNOLOGY.

ENABLING A SMARTER WORLD

TELINK SEMICONDUCTOR

xped
MAKING TECHNOLOGY
HUMAN AGAIN

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About Telink

VISION: TO BECOME THE WORLD LEADING IOT CONNECTIVITY CHIP SUPPLIER
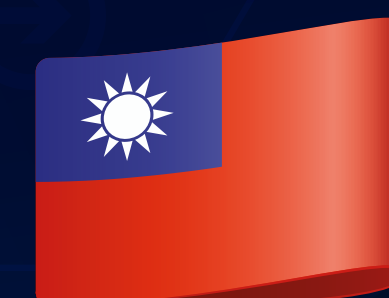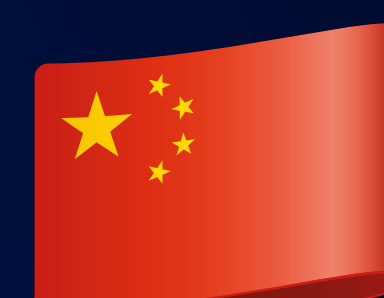
FABLESS IC DESIGN COMPANY
- Founded by IC design experts and executives in 2010
- Core members of technical team all from top US IC companies

FOCUS ON HIGHLY INTEGRATED RF SOC FOR IOT AND HID
- 10+ SoC in Mass Production

R&D LOCATIONS AND OFFICES
- California, USA
- Shanghai, China
- Shenzhen, China
- Taipei, Taiwan

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About Xped

VISION: MAKING TECHNOLOGY HUMAN AGAIN

INTERNET OF THINGS (IOT) TECHNOLOGY BUSINESS
- Founded in 2008 by current management
- Successfully listed on ASX April 2016
- Working with world's largest chip manufacturers to adopt ADRC
- License agreements underway with technology partners
- Target markets include Health, Industrial, Education, Transport, Cities

INTELLECTUAL PROPERTY
- Extensive patent portfolio with over 9 patents across 14 countries.
- Continuing to innovate and expand IP including Xerts digital coupons

LOCATIONS
- Singapore
- Australia
- USA (soon)

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Telink Core Competencies

THE ABILITY TO DELIVER THE HIGHEST INTEGRATION LEVEL, SMALLEST DIE SIZE AND LOWEST TOTAL BOM COST SOC PRODUCTS WITHOUT ANY COMPROMISE ON PERFORMANCE, WHICH HAS BEEN PROVEN BY MULTIPLE PRODUCTS IN MASS PRODUCTION.

Unique and pioneering chip system architecture, RF and digital block design; a systematic way to lower chip cost

Telink-owned low cost high performance 32 bits MCU IP

Big cost advantage of our products enable us to maintain at least 20% - 30% BOM cost advantage over all major competitors

Xped Core Competencies

EASY TO USE AND CONFIGURE WITH ONE TAP PAIRING OF ADRC DEVICES. THE ABILITY TO CONTROL AND MONITOR DEVICES, INCLUDING MONITORING USAGE AND EVENTS, WITH CAPABILITIES TO CAPTURE NECESSARY INFORMATION FOR ANALYTICS AND BIG-DATA PURPOSES. THE ARCHITECTURE IS BUILT WITH SECURITY IN MIND AND CAN BE INTEGRATED INTO COMPLEX THINGS.

Worlds first device browser which supports Android and iOS; One app known as a device browser (DEB) that can control any device

RML is a new language developed by Xped; RML make devices/things self describing to smart phones; each device/thing can have more than one interface

Embedded IoT stack is supplied in latest silicon from top-tier Chipset Manufacturers

Extensive patent portfolio IP protection granted across major jurisdictions including China and USA

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IoT Problems
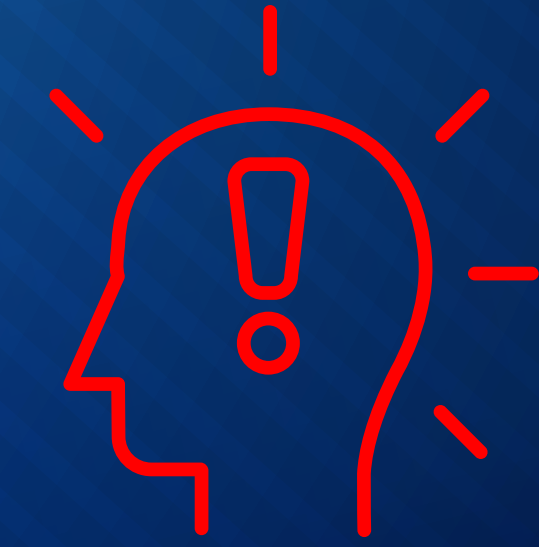
THERE A SEVERAL COMPETING PLATFORMS AND CONSORTIUMS

THERE IS NO INTEROPERABILITY BETWEEN PLATFORMS

EVERY DEVICE REQUIRES A DIFFERENT APP TO CONTROL THINGS

PAIRING AND CONNECTING TO THINGS IS DIFFICULT AND THERE IS NO STANDARD WAY OF DOING IT

MANUFACTURERS ARE FORCED TO USE FIXED PROFILES FOR EACH TYPE OF DEVICE / THING

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IoT Solutions

INTEROPERABILITY CAN ONLY BE ACHIEVED AT THE APPLICATION LAYER BY A COMMON PROTOCOL

THE WWW TAUGHT US THIS LESSON. HTTP AND HTML REVOLUTIONIZED INFORMATION INTEROPERABILITY GLOBALLY

ADRC PROVIDES RCP AND RML WHICH CAN PROVIDE GLOBAL INTEROPERABILITY BETWEEN ALL DEVICES

ADRC MAKES CONNECTING TO THINGS AS SIMPLE AS TAPPING AN NFC ENABLED SMARTPHONE TO THE THING. EVERY THING IS ADDED IN EXACTLY THE SAME WAY

ADRC PROVIDES 'DYNAMIC PROFILE' TECHNOLOGY ALLOWING MANUFACTURERS TO INNOVATE AND DIFFERENTIATE WITHOUT RESTRICTION

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ADRC Features
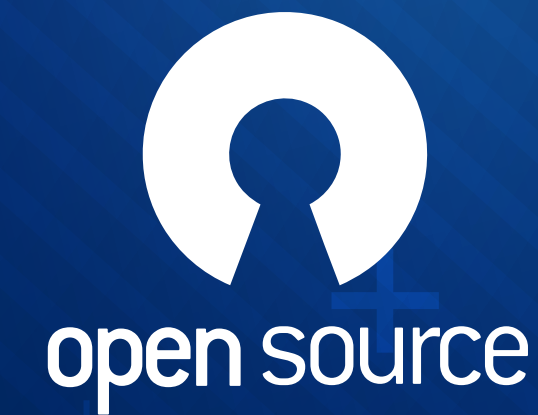
open source

ONE APP KNOWN AS A 'DEVICE BROWSER' CAN CONTROL EVERY DEVICE

RML MAKES THINGS SELF DESCRIBING

NFC ON-BOARDING OF ALL THINGS IN EXACTLY THE SAME WAY

EACH THING CAN HAVE MORE THAN ONE USER INTERFACE, E.G. (A SIMPLE ONE FOR TECHNICALLY CHALLENGED, STANDARD ONE FOR MOST AND A FULL FEATURED ONE FOR TECHNOPHILES)

DEVICE BROWSER, RCP AND RML ARE OPEN SOURCE TECHNOLOGIES

EMBEDDED IOT STACK IS SUPPLIED IN POPULAR SILICON FROM TOP-TIER VENDORS INCLUDING INTEL® AND TELINK SEMICONDUCTOR

THE CORE ADRC MECHANISMS ARE PROTECTED BY A SUITE OF GRANTED PATENTS

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ADRC Benefits

✓ **NO CONFUSION AS TO WHICH APP TO USE TO CONTROL A DEVICE**

✓ **THE EASIEST AND MOST INTUITIVE WAY TO CONNECT WITH THINGS**

✓ **BREAKS DOWN THE BARRIER TO ACCEPTANCE CAUSED BY PROPRIETARY TECHNOLOGIES**

✓ **TECHNOLOGY CAN SCALE QUICKLY INTO MULTIPLE VERTICALS FOR RAPID MARKET PENETRATION**

✓ **MANUFACTURERS CAN INNOVATE WITHOUT RESTRICTIONS**

✓ **THE IP CAN BE EASILY CONTROLLED AND MONETIZED**

✓ **USERS OF ALL ABILITIES CAN BE CATERED FOR MAKING THEIR USER EXPERIENCE AN ENJOYABLE AND MEMORABLE ONE**

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Offering for IoT market

IEEE 802.15.4
Standardized radio technology for low power personal area networks

Bluetooth®

2.4 GHz

Wi Fi

[Auto Discovery Remote Control]

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Telink are the Leader with Significant Sustainable Competitive Advantages

WORLDS ONLY ALL-IN-ONE CHIP SUPPORTING ZIGBEE/RF4CE/BLE/BLE MESH/THREAD/HOMEKIT/ADRC (INTEGRATING NOW)

WORLDS FIRST IOT CHIP WITH ADRC

- First to market with ADRC in single IOT chip
- Simple tap and connect system for configuring devices

PROVEN BEST PERFORMANCE AND LOWEST COST BLE MESH SOLUTION

- Tier 1 companies selecting Telink's superior BLE MESH technology over competitors

MATURE AND LOWEST COST ZIGBEE/RF4CE TECHNOLOGY

WORLDS FIRST CONCURRENT BLE + 802.15.4 DUAL MODE CHIP
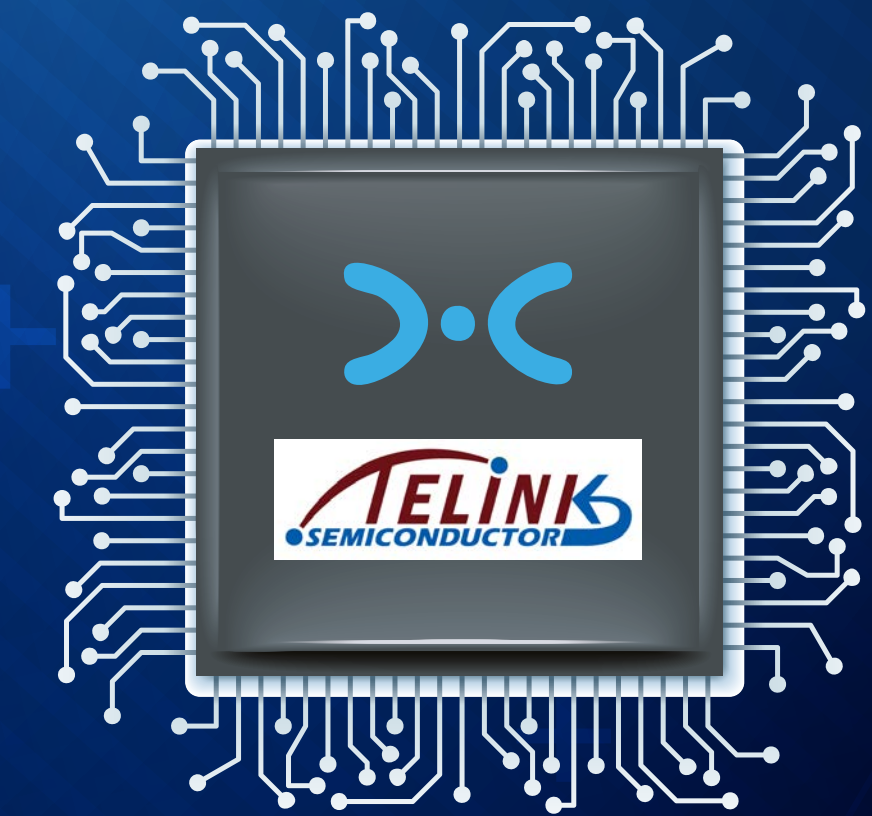
- 1 year ahead of nearest competitor
- Key to IoT success: BLE talks to Smartphone, Zigbee/Thread talks to home network

HIGHEST LEVEL INTEGRATION, SMALLEST DIE SIZE & LOWEST TOTAL BOM COST

- **>30% BOM cost saving over all major competitors**

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Integrating Auto Discovery Remote Control (ADRC) technology

XPED AND TELINK WILL BE FIRST TO MARKET WITH ADRC INTEGRATION ON SINGLE IOT CHIP

XPED HAS AN EXTENSIVE PATENT PORTFOLIO IN 14 COUNTRIES

XPED IS WORKING WITH TWO US-LISTED CHIPSET MANUFACTURERS TO INTEGRATE ADRC INTO SPECIFIC PRODUCTS

ADRC PROVIDES AN ADVANCED TECHNOLOGY PLATFORM FOR IOT CREATING AN END-TO-END SOLUTION FOR DEVICE MANUFACTURERS AND THEIR CONSUMERS

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ADRC is being integrated into Intel IoT gateway platform

INTEL CUSTOMERS WILL HAVE ACCESS TO ALL THE BENEFITS THAT ADRC TECHNOLOGY PROVIDES, INCLUDING NFC ON-BOARDING OF DEVICES WITH A SIMPLE TAP.

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(intel®)
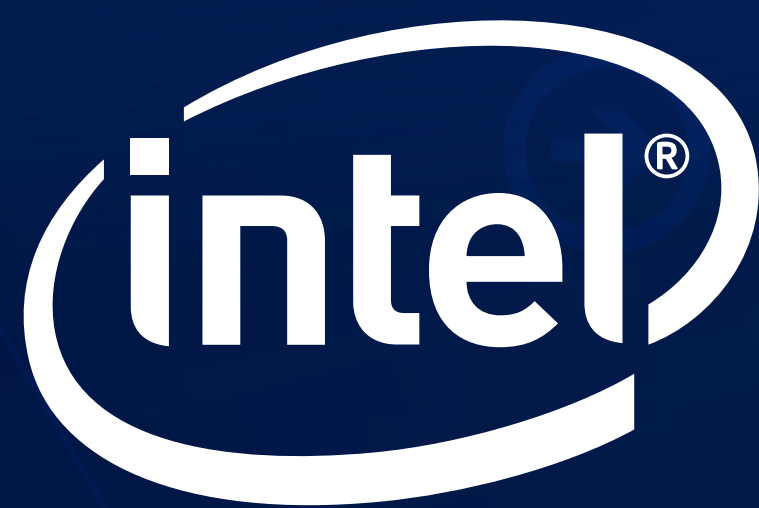
BLE-mesh Technology

TELINK'S PROPRIETARY BLE MESH TECHNOLOGY CAN SUPPORT MULTIPLE TERMINALS TO CONTROL MULTIPLE SMART DEVICES SIMULTANEOUSLY IN REAL TIME.

PATENTED NETWORK TRAFFIC CONTROL TECHNOLOGY TO ENSURE REAL TIME STATUS AND CONSISTENT CONTROL.

HARDWARE TECHNOLOGY SUPPORTS APPLE HOMEKIT.

Bluetooth®

MESH NETWORKING WILL BECOME AN INTEGRAL COMPONENT IN ENSURING CONSUMERS' BLUETOOTH ENABLED:

- Smart locks
- Lights
- HVAC (heating, ventilation and air-conditioning) systems
- Appliances work together to deliver a seamless smart home experience

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BLE-mesh Technology

TELINK'S BLE MESH TECHNOLOGY PROVIDES THE OPTIMUM PRODUCT USER EXPERIENCE BECAUSE OF THE UNIQUE FEATURES IT IS ABLE TO SUPPORT AND NOW WITH XPED AND TELINK COLLABORATION TO INTEGRATE ADRC TECHNOLOGY WILL BECOME A DOMINATING FORCE IN THE IOT MARKET.

For smart lighting developers, Telink provides a software development kit that delivers turnkey hardware reference designs.

This includes reference hardware and firmware, light module schematic and PCB (with interface to all types of LED drivers), remote control schematic and PCB, ZigBee/BLE/2.4Ghz stack, profiles, and UI's (user interfaces), and free Android and iOS app references.

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GE Lighting – Case Study

TELINK'S BLUETOOTH MESH TECHNOLOGY IS BEING USED IN CONNECTED LED LIGHT BULBS FROM GE LIGHTING, IN ITS C BY GE PRODUCT FAMILY.

THE WIRELESS CONNECTED LIGHTING SOLUTION PROVIDED BY TELINK ENABLES CUSTOMERS TO EASILY IMPLEMENT FEATURES LIKE:

- On/off control
- Dimming and colour space
- Grouping control
- Acene mode control
- Timer or sensor integration
- Control bridge
- Mesh networks
- Power consumption profiling

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GE Lighting – Case Study

"For many, lighting is the gateway to a smart home that connects other devices including smart thermostats, security cameras and smoke alarms. While interoperability is key, in a crowded market with no clear platform winner, we wanted to give consumers the option for a standalone smart lighting solution".

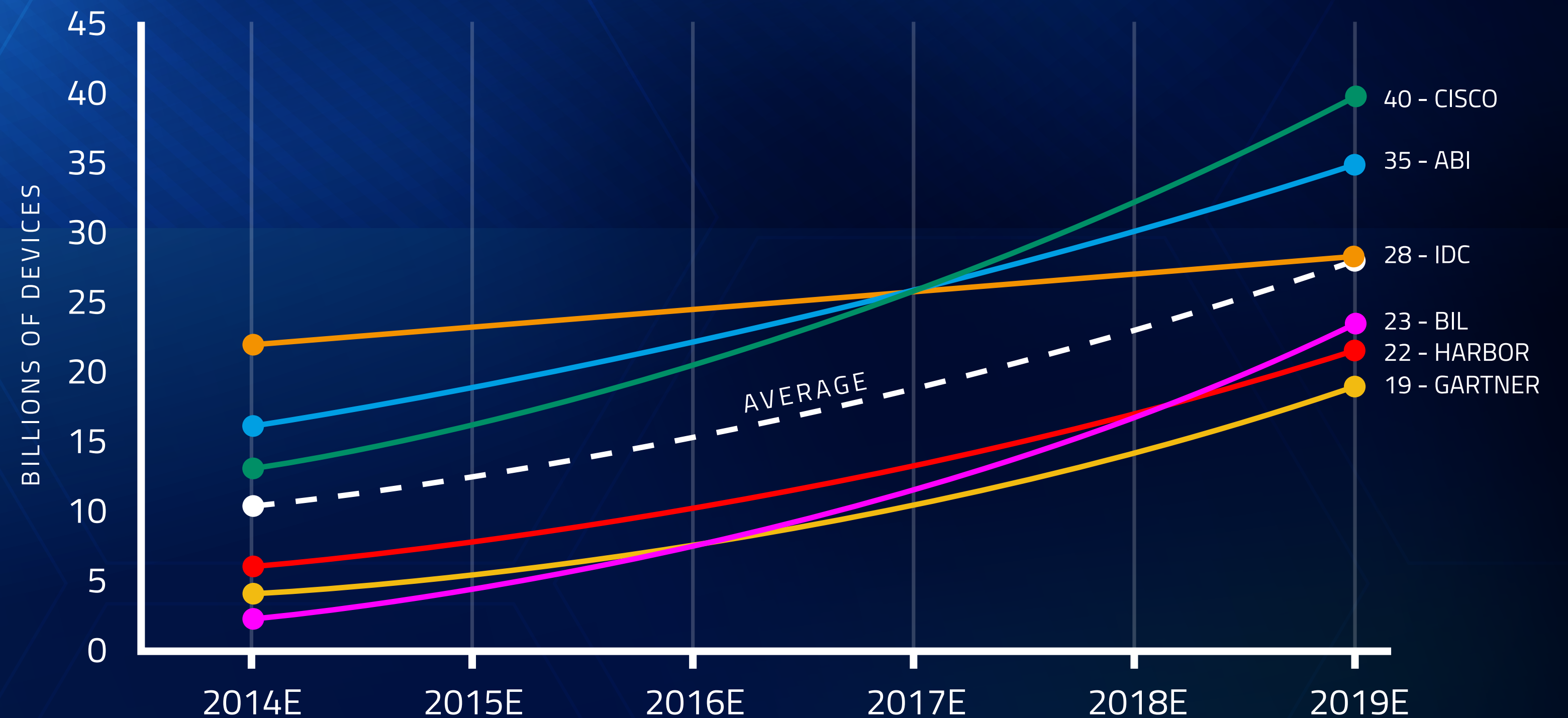Tom Stimac, Chief Innovation Manager, GE Lighting
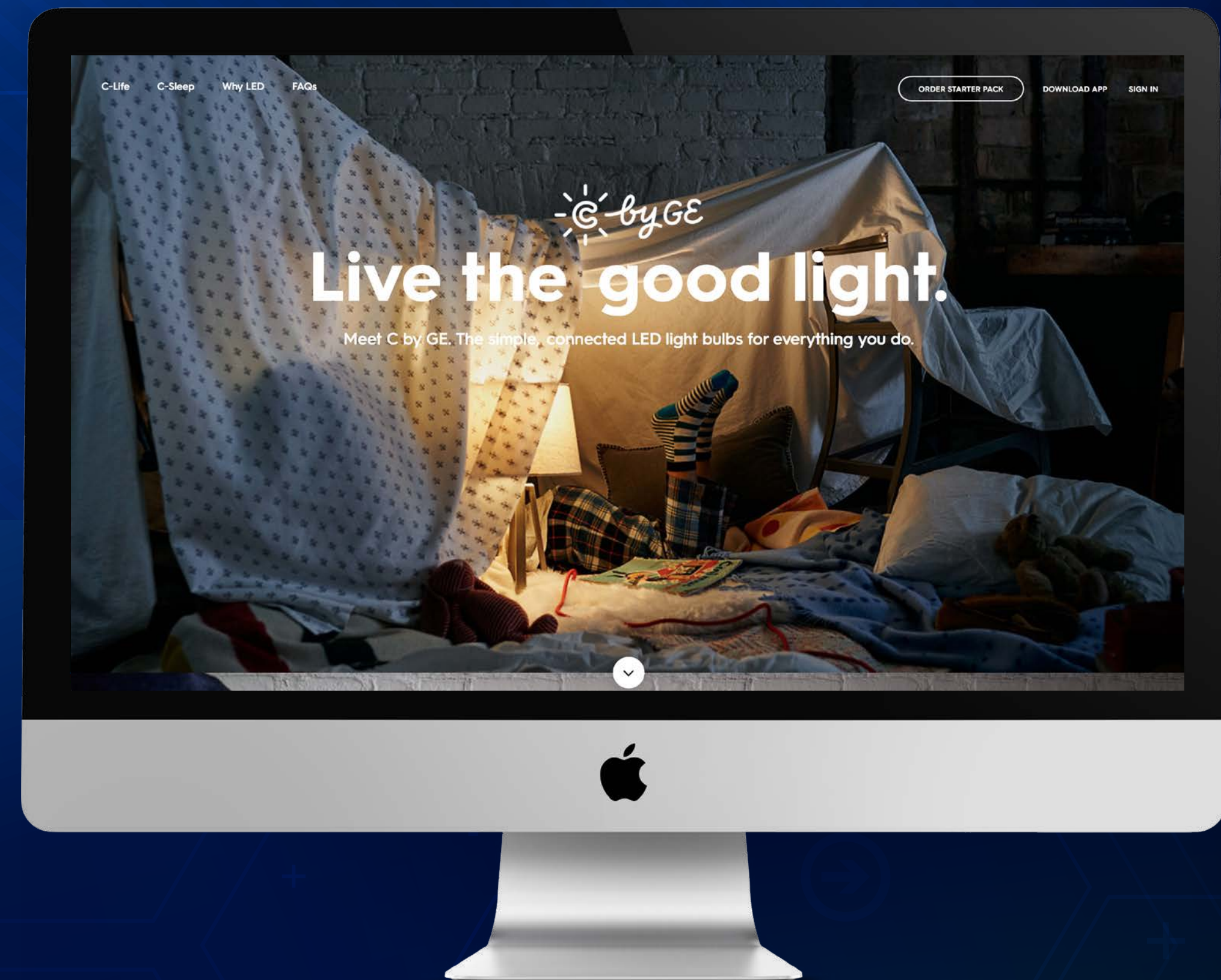
WWW.CBYGE.COM

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IoT Market – Huge Growth Forecast

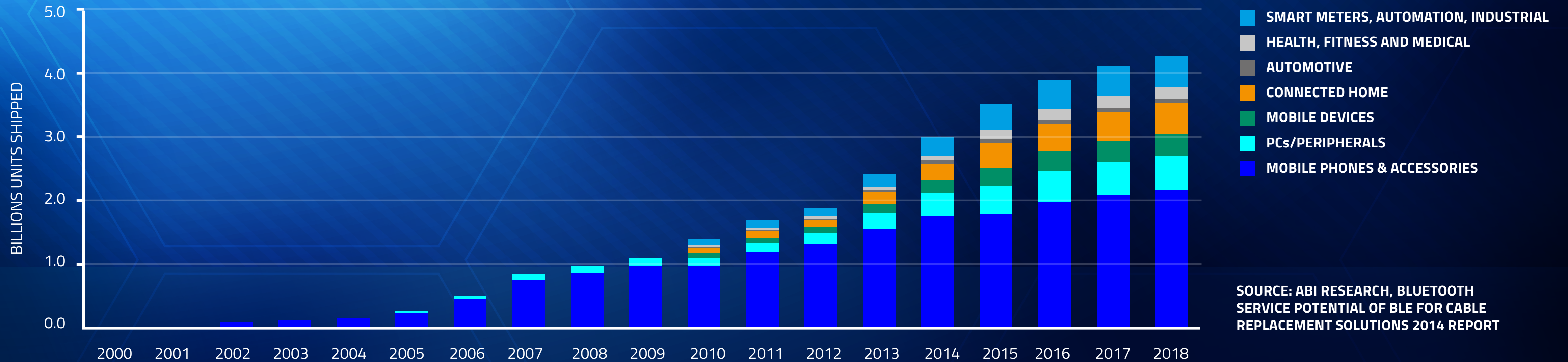**THE IOT CONNECTED DEVICES WILL REACH 20 - 40 BILLION UNITS BY 2019. THE MARKET SIZE FOR IOT CONNECTIVITY CHIP IS GOING TO BE HUGE!**

BILLIONS OF DEVICES

45
40
35
30
25
20
15
10
5
0

2014E 2015E 2016E 2017E 2018E 2019E

40 - CISCO
35 - ABI
28 - IDC
23 - BIL
22 - HARBOR
19 - GARTNER

AVERAGE

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BLE Market

BLUETOOTH ENABLED DEVICE ANNUAL SHIPMENTS, MAJOR MARKETS WORLD MARKET, FORECAST: 2000 TO 2018

Legend:
- SMART METERS, AUTOMATION, INDUSTRIAL
- HEALTH, FITNESS AND MEDICAL
- AUTOMOTIVE
- CONNECTED HOME
- MOBILE DEVICES
- PCs/PERIPHERALS
- MOBILE PHONES & ACCESSORIES

SOURCE: ABI RESEARCH, BLUETOOTH SERVICE POTENTIAL OF BLE FOR CABLE REPLACEMENT SOLUTIONS 2014 REPORT

According to a report by **ABI Research** titled, "Emerging Bluetooth Verticals," cumulative shipments of BLE-enabled devices are forecast to exceed 4 billion devices by 2017. ABI also estimates that in 2012 there was an installed base of 3.6 billion Bluetooth-enabled devices. By 2018 this is forecast to grow to almost 10 billion.

1.8 billion LED bulbs were sold in 2014, 45.1% CAGR till 2019. According to **On World** by 2020 , there will be over 100 million Internet connected wireless light bulbs and lamps worldwide up from 2.4million in 2013. BLE & ZigBee are expected to be the major connectivity technologies.

Telink Customers & Revenue

SHIPPING IN EXCESS OF 6 MILLION CHIPS PER MONTH

MORE THAN 60 VOLUME PRODUCTION CUSTOMERS IN 2015

OVER 100 CUSTOMERS IN THE PIPELINE INCLUDING GOOGLE NEST, APPLE AND XIAOMI

RAPID REVENUE GROWTH. 2015 REVENUE 3X 2014 REVENUE, WITH FORECAST 3X GROWTH FOR 2016.

CISCO™ Haier FUJITSU lenovo LITEON KONKA

FOXCONN GE TOSHIBA SHARP Chicony Genius

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Telink TLSR8269 chip

WORLD'S FIRST ALL-IN-ONE SYSTEM-ON-CHIP FOR THE INTERNET OF THINGS. THE UNIQUE SINGLE CHIP COMBINES THE FOLLOWING:

- Radio frequency (RF)
- Digital processing
- Protocols stack software and profiles for Bluetooth Smart
- BLE Mesh
- 6LoWPAN
- Thread
- ZigBee
- RF4CE
- Apple HomeKit
- 2.4GHz proprietary standard support

- 512kB flash memory (enabling all functionality to be embedded)
- Can function up to temperature of 125C degrees, making it suitable for us in LED lighting applications.

- Supports over the over-the-air upgrades
- Product feature rollouts

NEXT STEP IS TO INTEGRATE XPED'S ADRC FIRMWARE INTO THE TELINK IOT CHIP

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Telink BLE + IEEE802.15.4 + ADRC Multi-Standard Wireless SoC

TARGET APPLICATIONS:

- Smartphone and tablet accessories
- RF Remote Control
- Sports and fitness tracking
- Wearable devices
- Wireless toys
- Building Automation
- Intelligent Logistics/Transportation/City
- Industrial Control
- Smart Lighting, Smart Home devices
- Smart Grid
- Consumer Electronics
- Health Care
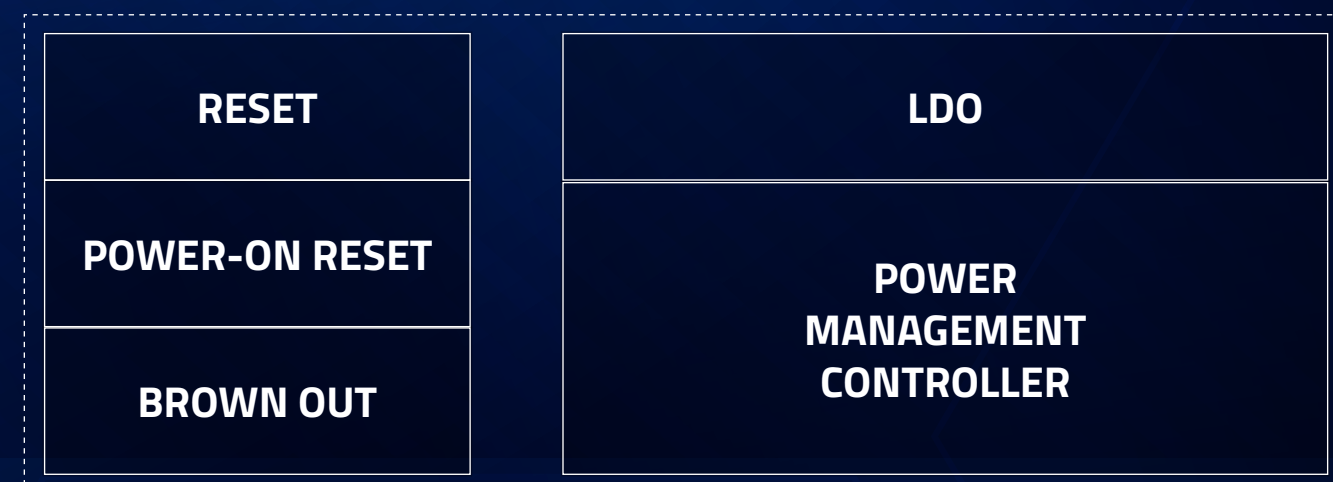- **Low-energy Wi-Fi coming soon!**

Wi Fi   >•<

[Auto Discovery Remote Control]

CLOCK

12/16MHz Crystal Oscillator	32MHz RC Oscillator
32/768KHz Crystal Oscillator	32KHz RC Oscillator

POWER MANAGEMENT

RESET	LDO
POWER-ON RESET	POWER MANAGEMENT CONTROLLER
BROWN OUT	

32bit MCU	GPIO	32KB SRAM	AES Encryption & Decryption	Timer 0~2/ Watchdog
	I2C			
	SPI		1 Quadrature Decoder	32K LTIMER
	UART	512KB FLASH		
	USB			
	Debug Interface			
BLE/802/15/4 /2.4G Radio	DMIC	14bit ADC	6-Channel PWM	System Timer
	AMIC			
	SDM	Analog PGA		

INTERFACE

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Thank you
for your time.

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