

NXP微处理器和微控制器概览

MICR业务事业部，大中华区市场部
2017



PUBLIC



SECURE CONNECTIONS
FOR A SMARTER WORLD

技术进步加速为恩智浦带来发展良机

智慧生活，安全连结

连结无处不在



在线用户**超过10亿**
连网设备**超过300亿**

互联

智能无处不在



2020年智能设备出
货量将**超过400亿台**

处理

安全无处不在



可减少经济损失
5000亿美元

安全

恩智浦的独有优势：安全智能互联解决方案

安全技术

应用识别	设备识别
认证	合规
加密加速	网络安全
NFC	RFID
安全启动	安全密钥
安全存储器	安全更新
可信任执行环境	唯一芯片识别

专业安全

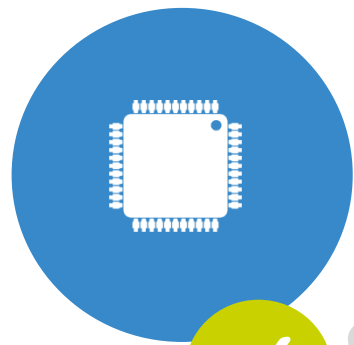


智能互联



唯一能够提供全面物联网解决方案的供应商

数字信号处理器
微控制器
中央处理器



传感器套件



Wi-Fi, BT, Thread,
ZigBee无线连接



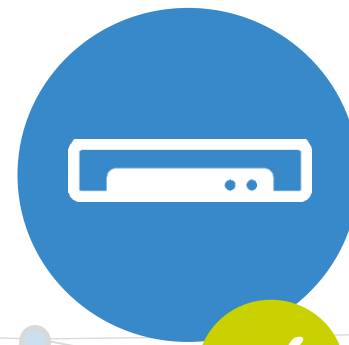
能源管理



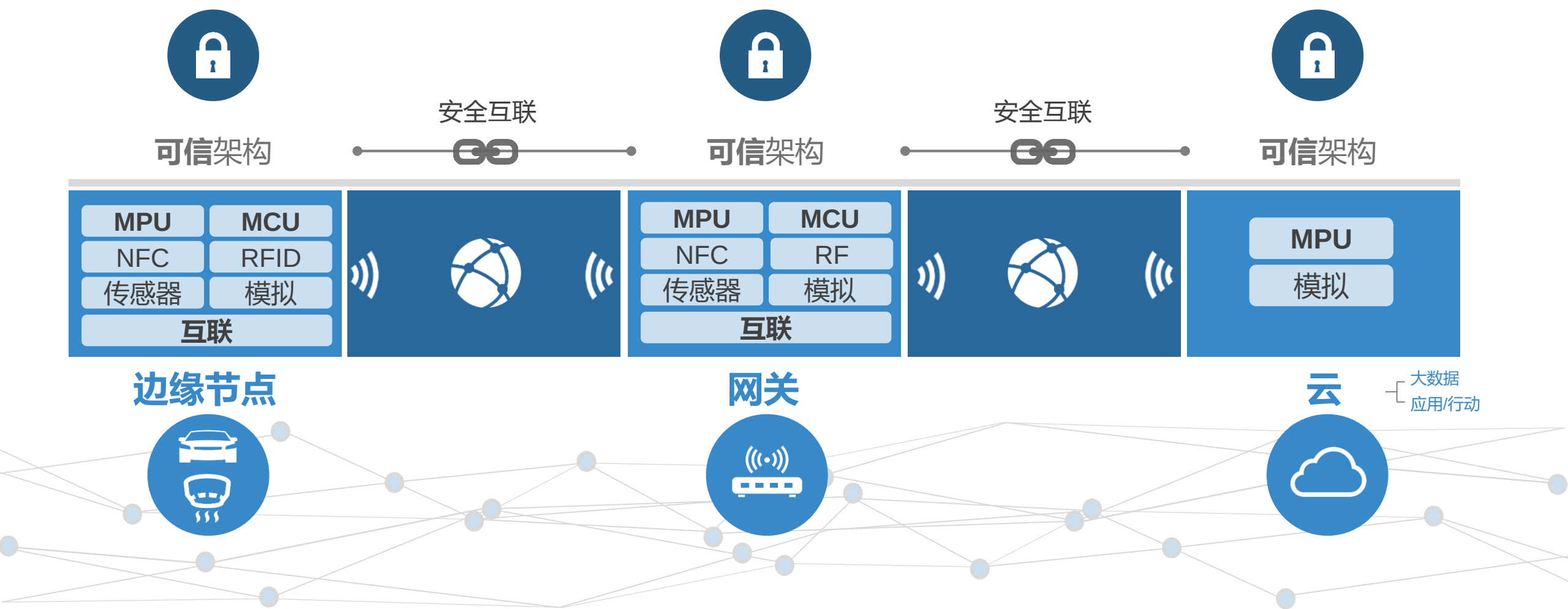
全面的软/硬件
安全套装



物联网模块
封装



物联网需要安全、动态的网络



MICR 微控制器业务部

为客户带来的价值

- 为 IOT 应用提供丰富的产品和方案组合
- 软硬件开发平台
- 领先的客户技术支持渠道，质量管控和供货保证
- 广泛的合作伙伴、完整的生态系统
- 针对中小客户的需求，构建易用型的系统级方案

客户示例



重点产品

Kinetis & LPC 32-bit
ARM® Microcontrollers

i.MX ARM® Applications
Processors

应用



Wearable / Healthcare

- Health / Fitness & Wireless Healthcare
- Diabetes & Cardiac Care
- Diagnostics & therapy



Smart Home

- Smart meters & grid
- Integrated wireless connectivity solutions
- Home energy control



Smart Accessories

- Game controllers and consoles
- Wearable computing
- eReaders, tablets, portable navigation



Vehicle Networking & Information

- Infotainment, software define radio
- Navigation systems, E-call



Home Appliances

- Energy efficient refrigerators, dishwashers
- Human-machine interface
- Connected appliances



Factory Automation & Drives

- Machine-to-machine
- Motor control
- Industrial networking



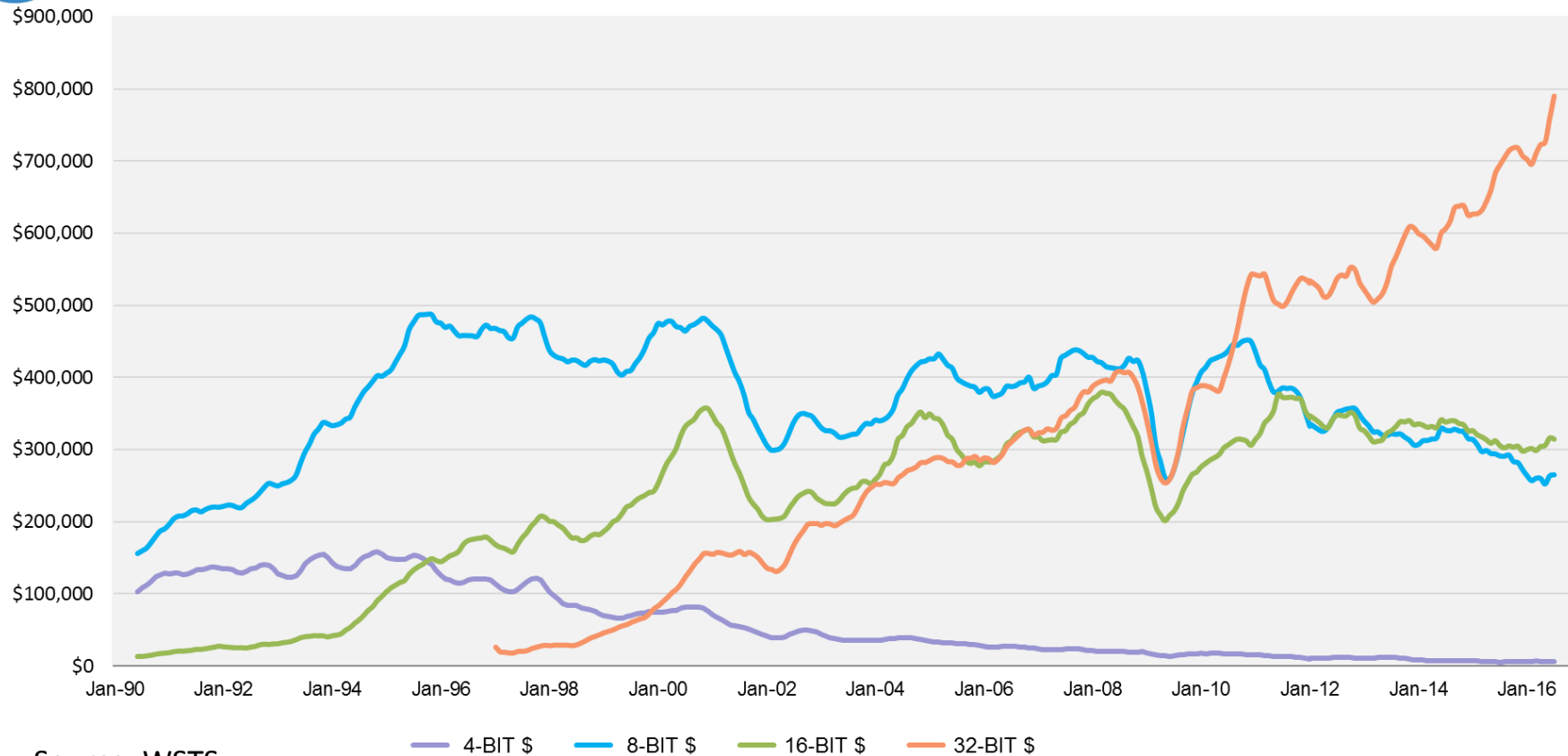
可扩展的 ARM 微处理器和微控制器组合



LPC + Kinetis : 为 32bit MCU 市场增长提速



MCU Market by Architecture (bit width)

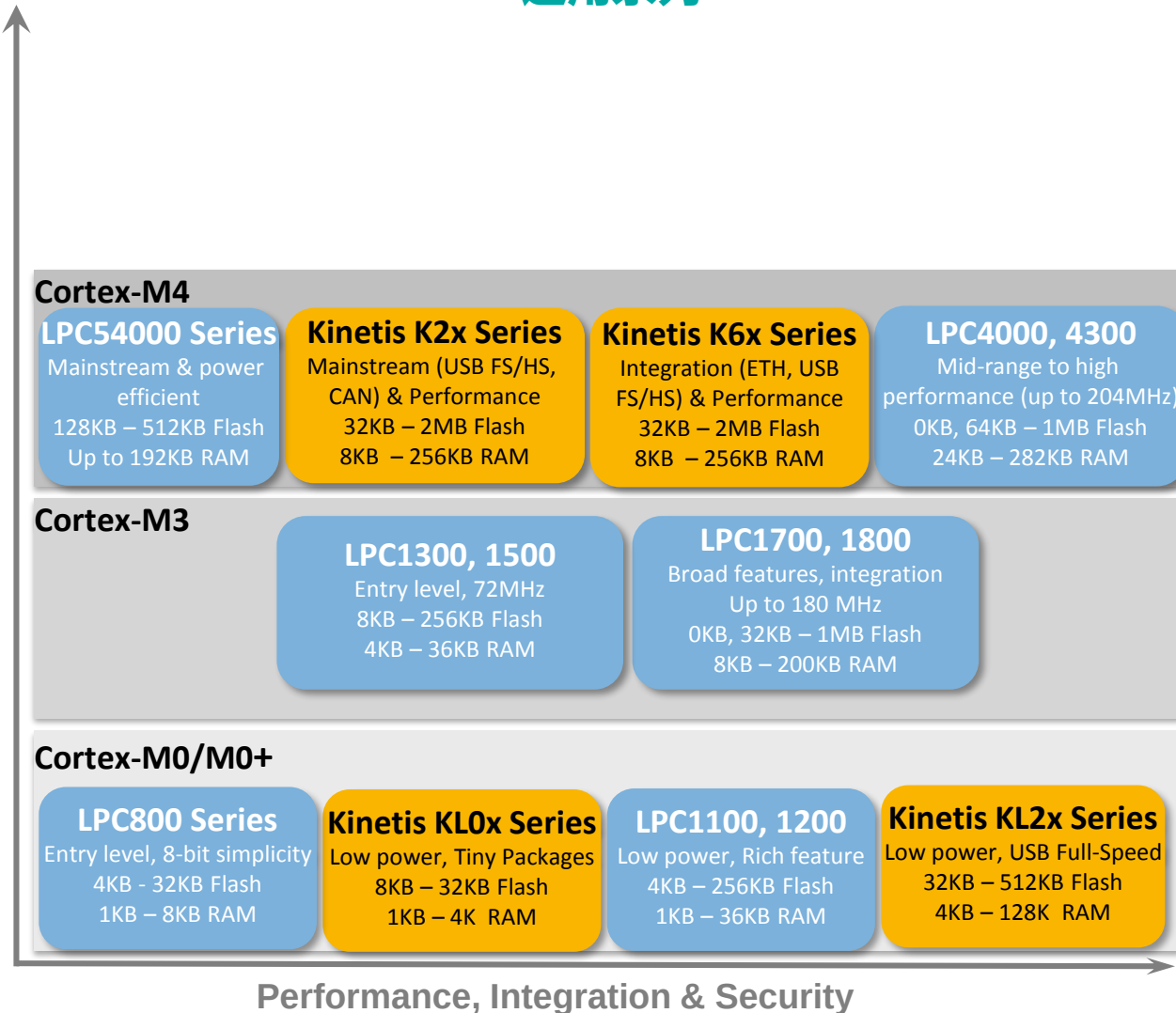


Source: WSTS

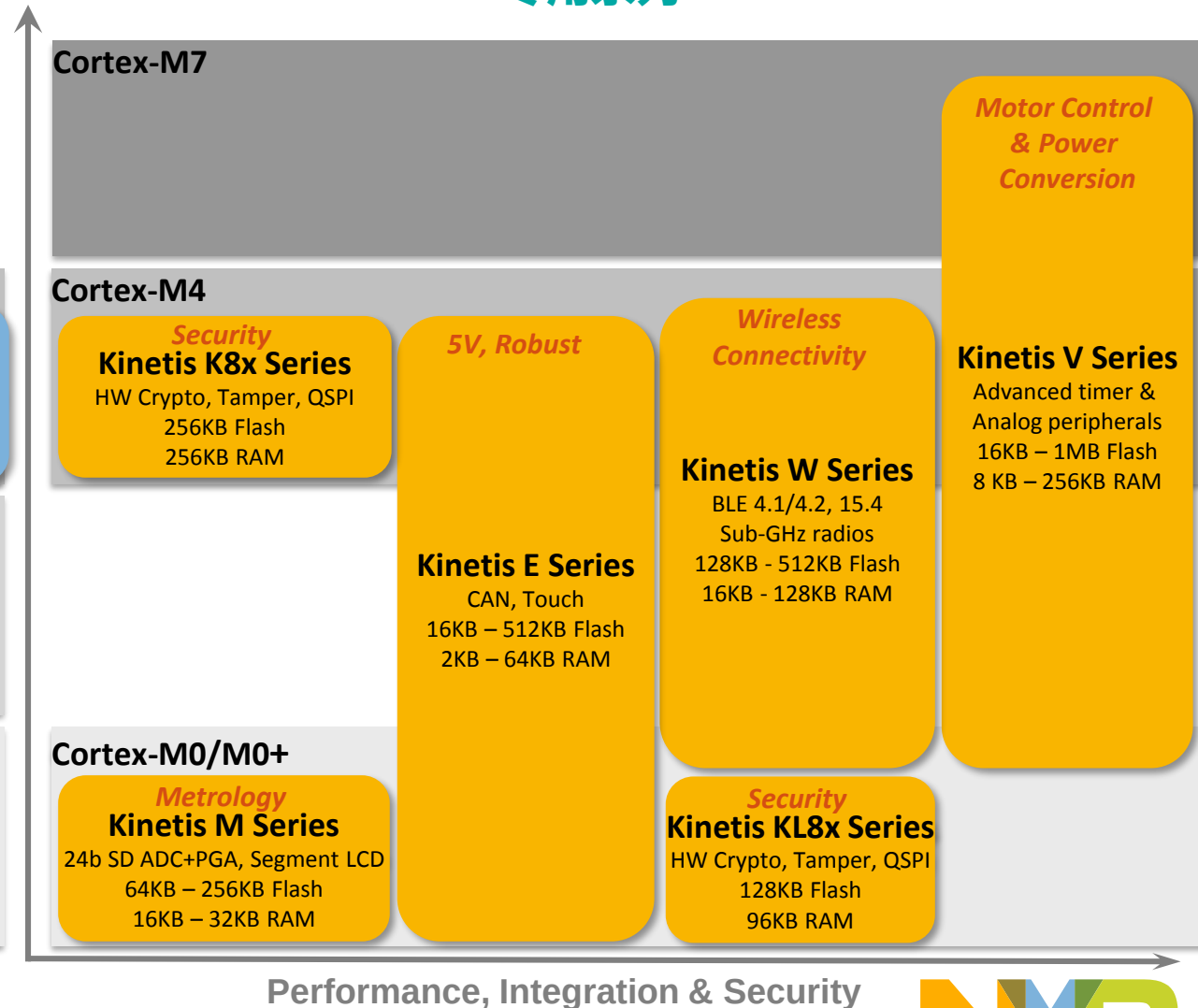


Kinetis + LPC: 基于 ARM 的 MCU 产品集

通用系列



专用系列





产品长期供货保证

- ▶ NXP (both NXP LPC and former Freescale) have longstanding track records of **providing long-term production support** for our products
- ▶ NXP has a **formal product longevity program** for the market segments we serve
 - For the automotive and medical segments, NXP will make a broad range of solutions available for a minimum of **15 years**
 - For all other market segments in which NXP participates, NXP will make a broad range of solutions available for a minimum of **10 years**
 - **Life cycles** begin at the time of launch
 - Includes NXP's standard end-of-life notification policy
- ▶ For a complete list of participating products, visit, nxp.com/productlongevity

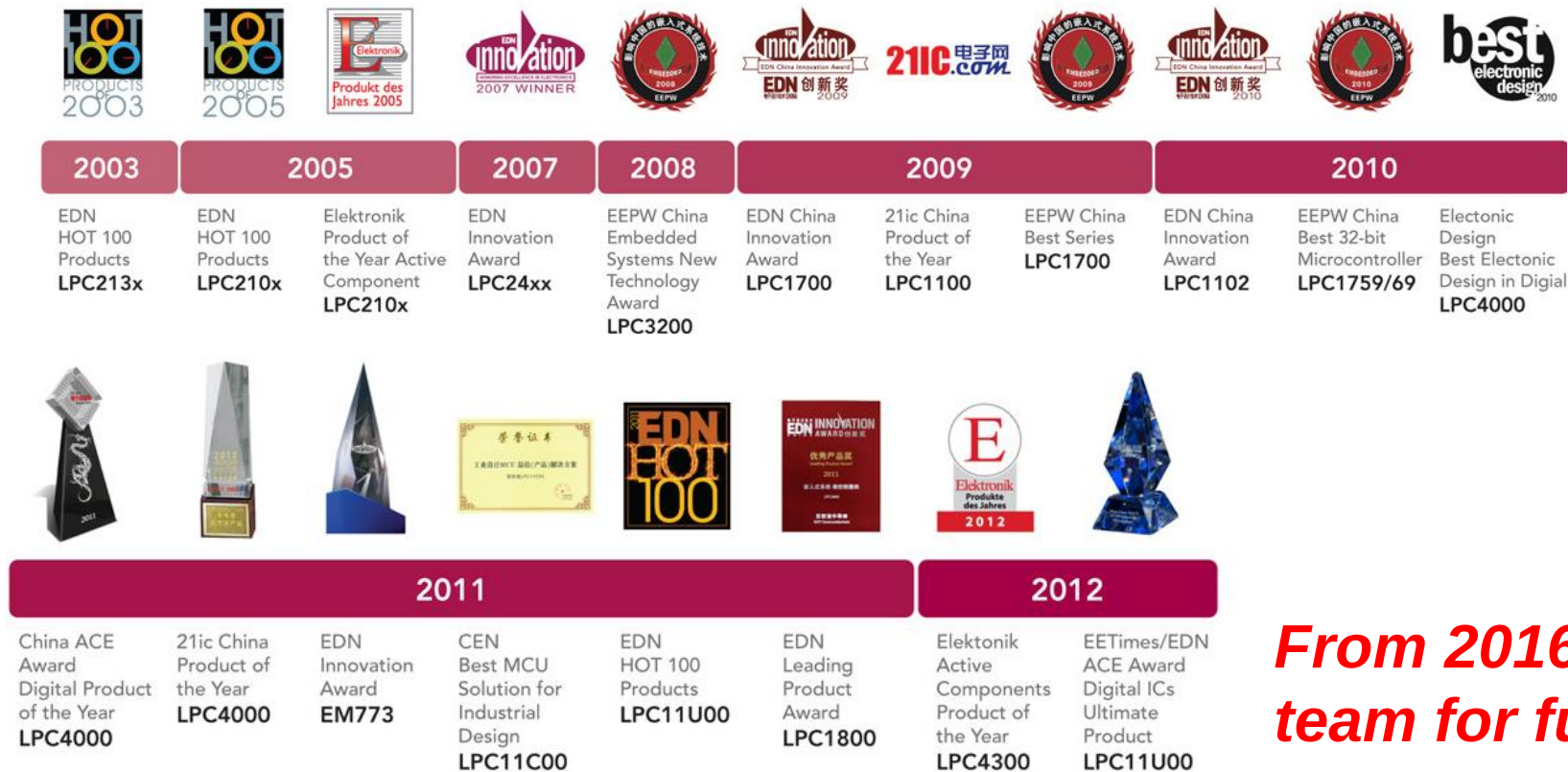




LPC , 面向通用市场

LPC – 回顾创新，展望增长

- 1999 推出 LPC700, 进军大中华区
- 2002 推出 LPC2106, 业界首款内置 Flash 的 ARM7TDMI 单芯片 MCU



From 2016 re-united the LPC team for future growth

LPC 的应用领域概述



LPC 产品定位

占据通用MCU市场领先地位，专注于革新技术和差异化



LPC800 MCU Series

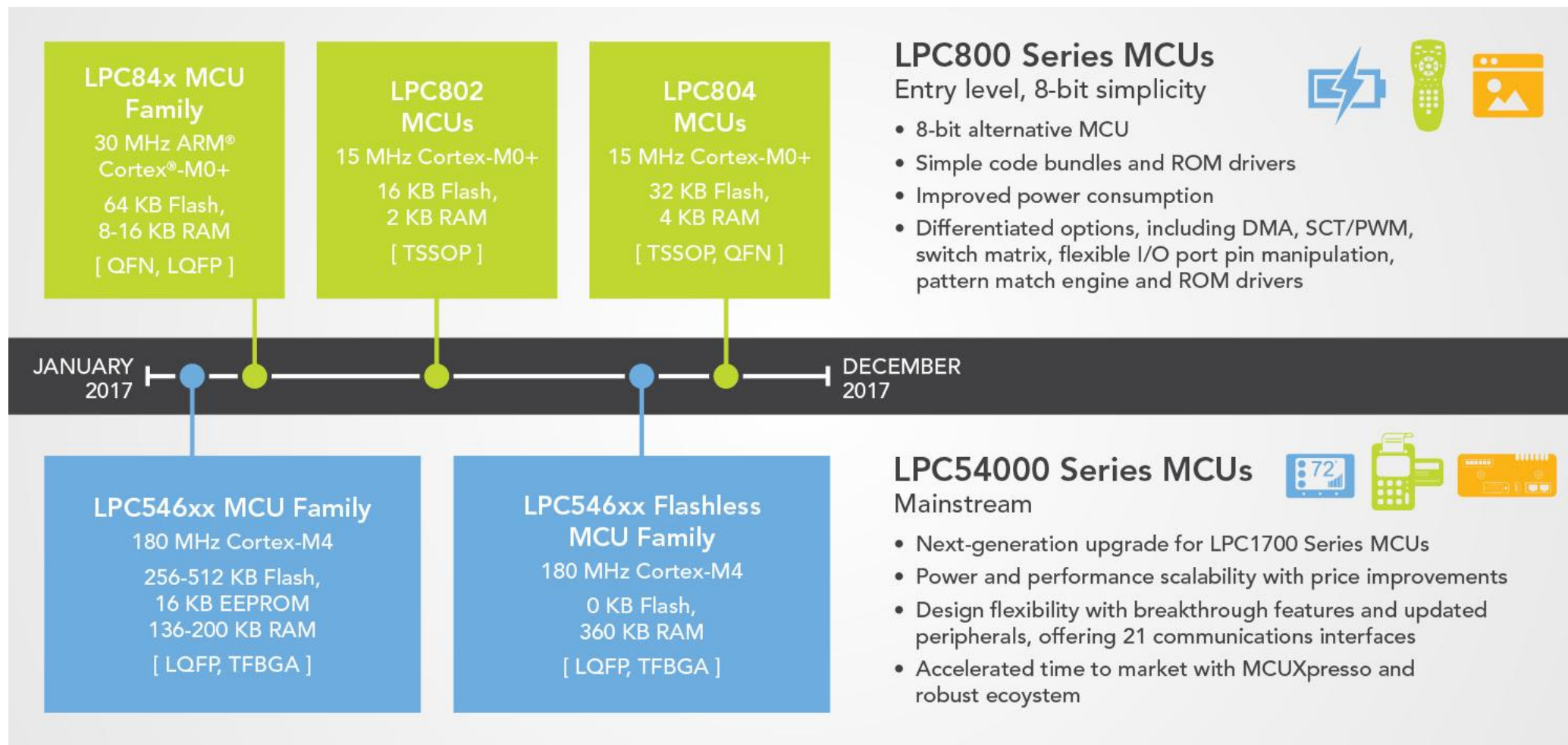
- Cortex-M0+ up to 30 MHz
- Differentiated features
- From 8 to 64K flash range
- Down to TSSOP 16



LPC54000 MCU Series

- Cortex-M4 100MHz & 180MHz platforms
- Improved power-efficiency
- Flexible comm. Interfaces
- Advanced Peripheral Integration
- From 128K to 512K Flash

2017 LPC 产品路线图





KINETIS , 针对专用领域

Kinetis MCU 的成功案例



Kinetis K2x
Kinetis KL1x



Kinetis K1x
HomeKit



Kinetis K1x
HomeKit



Kinetis K2x
Kinetis KL1x



Kinetis KL3x
Kinetis K3x



Kinetis KL1x



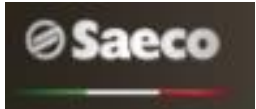
Kinetis K1x
Kinetis KV3x



Kinetis K, Kinetis W



Kinetis K2x



Kinetis KE0x



Kinetis KE0x



Kinetis KE0x
Kinetis KV3x



Kinetis K2x



Kinetis K2x



NXP Kinetis 产品系列

高性能和集成度

General Purpose
23 Packages

- From 50 to 180 MHz
- 32kB to 2MB Flash
8 to 256 kB SRAM
- Memory Expansion
- High Precision Analog
- Options with
 - › Advanced Security & Protection
 - › FS/HS+PHY USB
 - › CAN, Ethernet
 - › Segment/Graphics LCD
 - › PGA/OpAmps
 - › FlexIO

K
Series

无线连接

Application Specific
4 Packages

- Sub-1GHz and 2.4GHz (inc. BLE & 802.15.4, Zigbee, Thread)
- 128 to 512kB Flash
16 to 64 kB SRAM
- High Precision Analog
- Options with FS USB

W
Series

安全

Application Specific
4 Packages

- From 72 to 120 MHz
- HW Cryptography
- Anti-Tamper
- 128 to 256kB Flash
128 to 256kB RAM
- QSPI

K8x
KL8x

控制和电源管理

Application Specific
5 Packages

- From 75 to 168 MHz
- 16 to 512kB Flash
8 to 96 kB SRAM
- Fast, High Precision Analog, Timers/PWM
- Real-time computation and math acceleration
- Options with CAN

V
Series

5V / 健壮性

Application Specific
10 Packages

- From 20 to 168 MHz
- 8kB to 512kB Flash
1 to 64 kB SRAM
- Enhanced ESD/EMC Performance
- High Current Output
- Options with
 - › CAN
 - › New touch sensor
 - › FlexIO

E
Series

低功耗

General Purpose
19 Packages

- From 48 to 72 MHz
- 8kB to 512kB Flash
1 to 128 kB SRAM
- Smart, Autonomous Peripherals/Timers
- High Precision Analog
- Options with
 - › Advanced Security & Protection
 - › FlexIO

L
Series

计量

Application Specific
4 Packages

- From 50 to 75 MHz
- 64kB to 256kB Flash
16 to 32 kB SRAM
- AFE w/ up to Quad 24b Sigma-Delta ADCs
- Options with
 - › LCD

M
Series

ARM Cortex-M4 Based MCUs

ARM Cortex-M7 Based MCUs

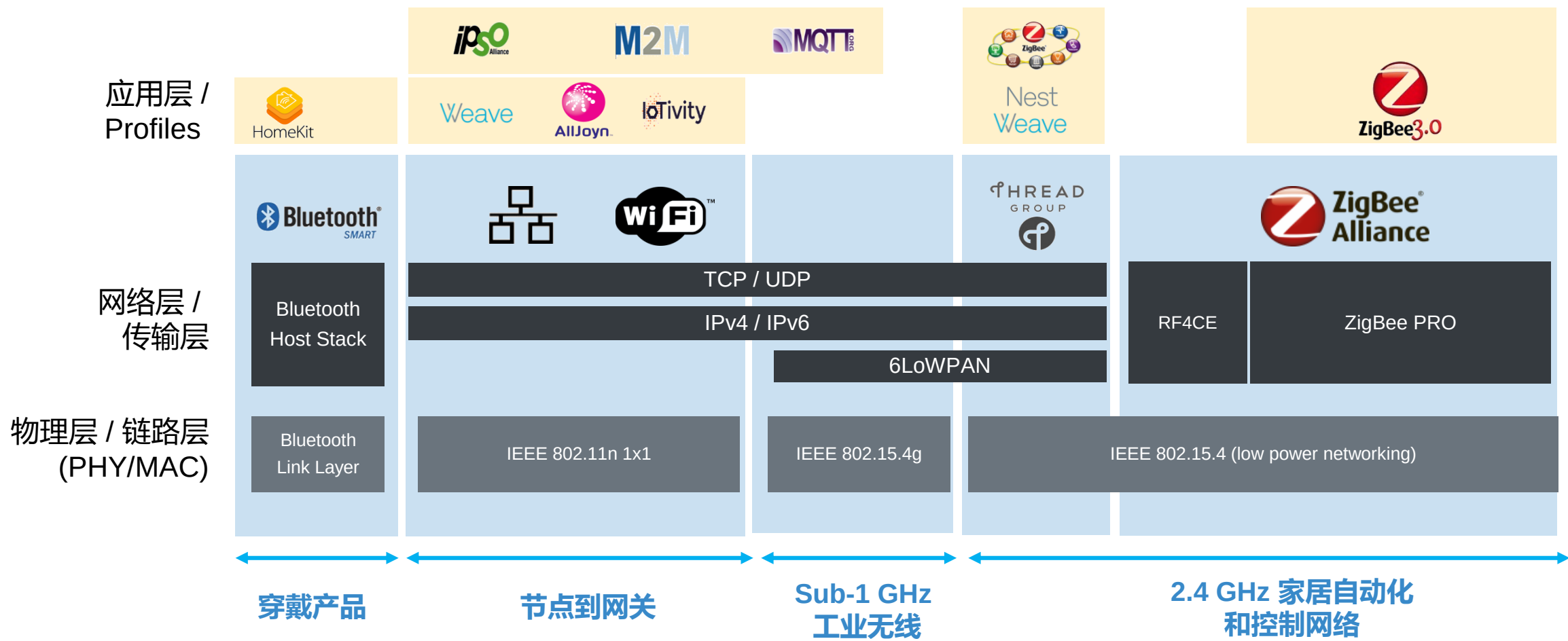
ARM Cortex-M0+ Based MCUs



无线互联



IoT 框架





ZigBee® 3.0
Better Together



JN5169

Low power, High Performance 802.15.4 wireless microcontroller

32b RISC @32MHz
32kB RAM
512kB flash
Tx Power +10dBm
Rx Sensitivity -96dBm
Tx 23.3mA, Rx 14.7mA
QFN40 6x6mm
Tamb -40°C / +125°C

Development Kit
HA and lighting
integrating **easy and secure NFC**

commissioning

Modules

NXP Modules

Target Applications
HBA, Lighting., Smart meters

Energy metering

Availability

Now



JN5174/78/79

Low power, High Performance 802.15.4 wireless microcontroller

Cortex M3 @32MHz
32kB RAM,
160/256/512kB flash
Tx Power +10dBm
Rx Sensitivity -96dBm
Tx 22.5mA, Rx 14.8mA
QFN40 6x6mm
Tamb -40°C / +125°C

Development Kit
HA and lighting
integrating **easy and secure NFC**

commissioning

Modules

NXP Modules

Target Applications
HBA and Lighting

Availability

Sampling Now

Full Release June 2016



THREAD



KW2xD

High Performance 802.15.4 wireless microcontroller

Cortex M4 @50MHz
64kB RAM,
512kB flash
Tx Power +8dBm
Rx Sensitivity -102dBm
Dual-PAN, Antenna Div.
Tx 19mA, Rx 17mA
LGA 8x8mm
Tamb -40°C / +85°C

Development Kit
FRDM, USB Dev Boards

Modules

From Partners

Target Applications
Home and Building
Automation

Availability

Now



KW21Z

Very Low power, High Performance 802.15.4 wireless microcontroller

Cortex M0+ @48MHz
128kB RAM,
512kB flash
Tx Power +4dBm
Rx Sensitivity -101dBm
Dual-PAN, Antenna Div.
Tx 6.5mA, Rx 6.5mA
QFN 7x7mm, WLCSP
Tamb -40°C / +105°C

Development Kit
FRDM, USB Dev Boards

Modules

From Partners

Target Applications
Home and Building
Automation

Availability

Sampling April 2016

Full Release Sept 2016



Bluetooth® SMART



KW31Z

Very Low power, High Performance BLE 4.2 wireless microcontroller

Cortex M0+ @48MHz
128kB RAM,
512kB flash
Tx Power +4dBm
Rx Sensitivity -96dBm

TRNG
Buck Boost DC/DC from 0.9V to 4.2V

Tx 6.5mA, Rx 6.5mA,
QFN 7x7mm, **WLCSP**
Tamb -40°C / +105°C

Development Kit
FRDM, USB Dev Boards

Modules

From Partners

Target Applications
Secure BLE applications,
Home Automation

Availability

Sampling April 2016

Full Release Sept 2016



QN902x

Low Power, High Performance BLE 4.0 wireless microcontroller

Cortex M0
64kB RAM, 96kB ROM
128kB flash/ flashless
Tx Power +4dBm
Rx S -95dBm
Tx 8.5mA, Rx 9.2mA,
ADC: 10-bit, 4 chan
QFN 6x6mm, 5x5mm
Tamb -40°C / +85°C

Development Kit
QN9020DK boards

Modules

To be defined

Target Applications
BLE applications

Availability

Now



QN9080

Ultra Low Power, High Performance BLE 4.2 wireless microcontroller

Cortex M4 **with FPU**
128kB RAM, 256kB ROM
512kB flash
Tx Power +2dBm
Rx S -95dBm
Tx 3.4mA, Rx 3.6mA,
ADC: 14 ENOB @ 32 kHz
Fusion Sensor processor
QFN 6x6mm, **WLCSP**
Tamb -40°C / +85°C

Development Kit
QN9080DK boards

Modules

To be defined

Target Applications
Watches and wristband

Availability

Sampling May 2017

Full release Aug 2017



THREAD



Bluetooth® SMART



ZigBee



KW41Z

Very Low power, High Perfs '15.4 / BLE 4.2 wireless microcontroller

Cortex M0+ @48MHz
128kB RAM, 512kB flash
Tx Power +4dBm
TH Rx Sens -101dBm
BLE Rx Sens -96dBm
Dual-PAN, Antenna Div.
Tx 6.5mA, Rx 6.5mA,
QFN 7x7mm, **WLCSP**
Tamb -40°C / +105°C

Development Kit
FRDM, USB Dev Boards

Modules

From Partners

Target Applications
Home and Building
Automation

Availability

Sampling April 2016

Full Release Sept 2016



NXP NFC I2C TAG

NTAG I2C plus connected NFC tag solution by NXP

ISO/IEC 14443-2/3, NFC forum compliant - Type 2 Tag
888B EEPROM or 1904B EEPROM
Access Protection via RF : WRITE ONLY per 16 Bytes
Pass through mode: 64B SRAM buffer to transfer data
Signal output : To detect RF field or synchronise data
Energy harvesting : To power external components
SOT902 (leadless) – TSSOP8 (8pin)



PN7120

Best plug'n play full NFC solution – easy integration into any OS environment

ISO15693 compliant -longer read range than ISO14443
Reading distance up to 70mm
MIFARE Classic security (CRYPTO1 HW)
Host protocol : NCI 1.0
Host Software : Android driver and Linux driver
Host interface : I2C
VFBGA49

KINETIS 控制



目标市场和应用



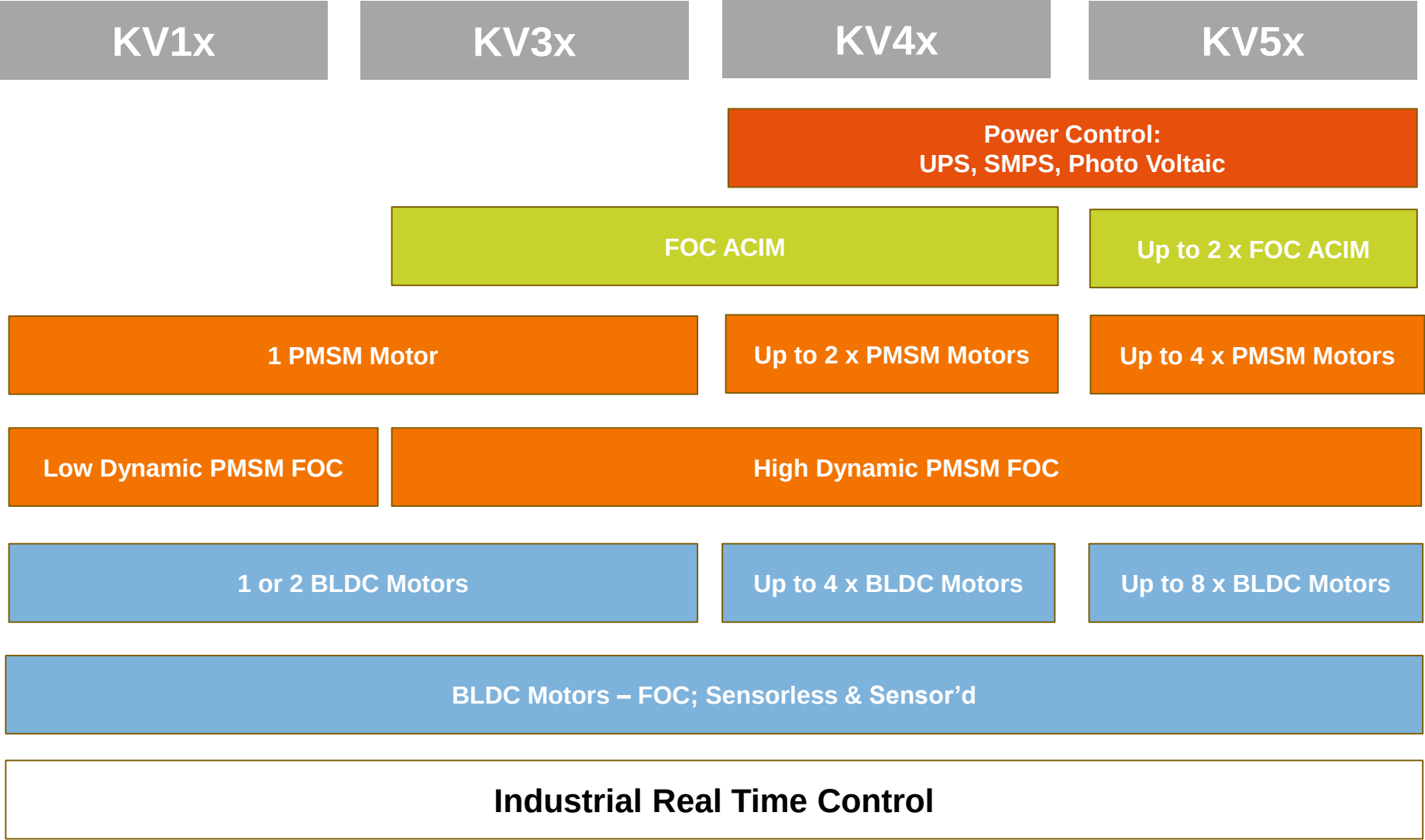
Kinetis V

主打电机控制和数字电源转换



- **ARM Cortex-M0+ / M4 / M7 cores** bring broad choice, and smooth upgrade.
- Scalable MCU families from **75MHz** to **240MHz MCUs**, maximize resource reuse and flexibility
- **Optimized** MCU performance and **high speed/resolution** analogy peripherals.
- **Tower** and **FRDM boards, Libraries** and **KMS (Kinetis motor suite)** reduced motor control learning curve and speed time to market.

Kinetis V – 目标应用



Kinetis E - 5V , 高可靠性和健壮性

5V

- Wide range power supply 2.7V – 5.5V

健壮性

- EMC/ESD technology to ensure strong noise immunity

高性能和能效比

up to 40x higher performance than 8/16-bit MCUs

- ARM Cortex M0+ core up to 72MHz
- ARM Cortex M4 core up to 168MHz

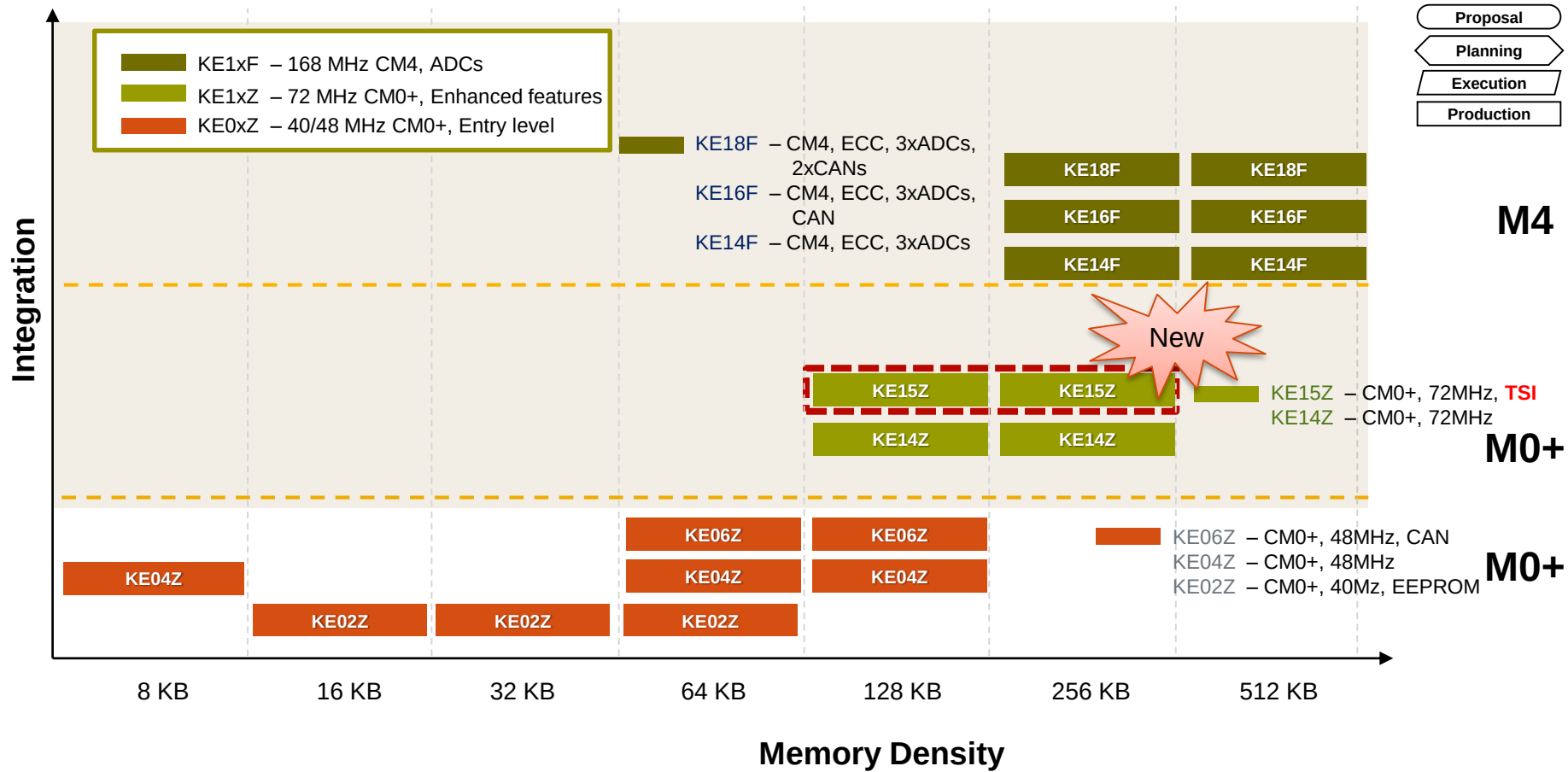
价格低

- Optimized for cost-sensitive applications
- Offering low pin count options



Kinetis E 产品系列

2.7-5.5V MCUs with high reliability and robustness,
Based on ARM® Cortex-M® with best-in-class Enablement



Touch Sense Interface Value Features

- ☐ Two operation modes
 - Self-cap: up to 25 keys
 - Mutual: up to 36 keys
- ☐ Advanced robust in EMC
 - Pass IEC61000-4-6 standard test
- ☐ Advanced robust in waterproof
- ☐ High sensitivity and resolution
- ☐ No need for CPU interfere
- ☐ Ease of use
 - NXP Touch Library support
 - SDK touch APIs support
- ☐ No need for external components



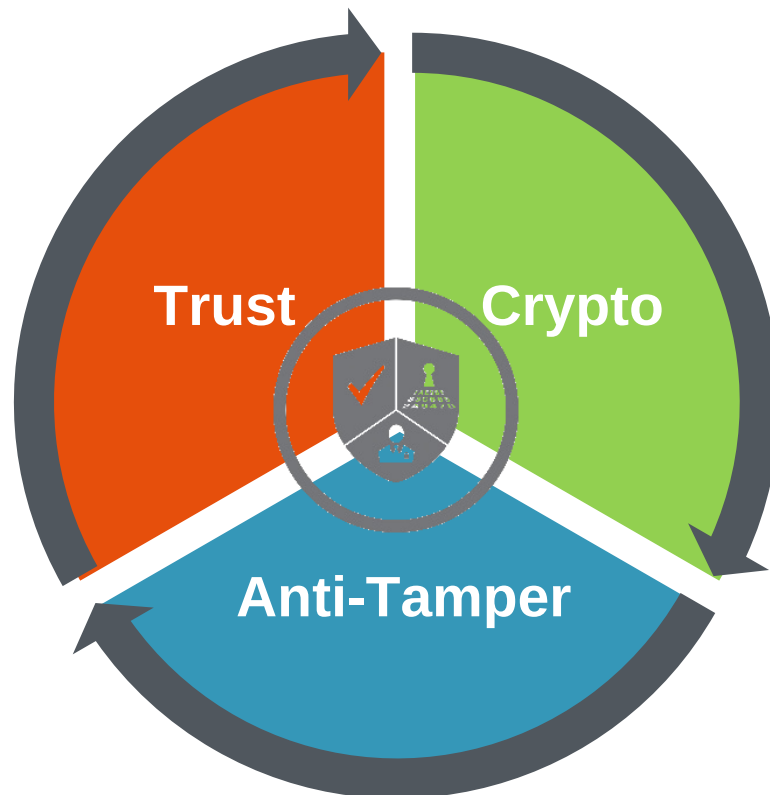
KINETIS 安全



Kinetis 安全概述

授权访问

- Code I/P Protection
 - Internal Memory Protection
 - External Memory Protection
- Debug Port Protection
- Authentication
 - Software Updates
 - Device Verification
- Secure Boot



数据保护

- Symmetric Encryption
 - DES/DES3, AES
- Asymmetric Encryption
 - RSA, ECC
- Hashing
 - CRC, MD5, SHA
- True Random Number Generation
- Security Protocols
 - SSL, HomeKit, Thread

监控物理攻击和环境攻击

- Tamper Detection
 - Physical
 - Enclosure Intrusion
 - Drilling and Probing
- Tamper Detection
 - Environmental
 - Voltage
 - Temperature
 - Frequency
- Secure Storage

Kinetis KL8x 和 K8x

World's most secure ARM® Cortex®-M based MCUs

Kinetis KL8x MCU

72MHz ARM Cortex-M0+

Advanced Security

Secure RAM & Boot,
Memory Protection Unit,
Low Power Trusted Crypto.
Engine (DES/3DES/AES/RSA),
Tamper Detection,
ISO7816-3 EMV SIM,
Random Number Generator

128/96KB Flash/SRAM,
USB, FlexIO, QuadSPI (XIP),
121 MBGA / 80 LQFP

+ Performance

+ Memory

+ Crypto
throughput

+ Ext. memory
expansion &
protection

Kinetis K8x MCU

150MHz ARM Cortex-M4

Advanced Security

+

Crypto. Acceleration Unit,
On-the-Fly Decryption for
external memories

256/256/16KB
Flash/SRAM/Cache,
USB, FlexIO, QuadSPI (XIP),
SDRAM, SD/eMMC, FlexBus,
121 XFBGA / 100 LQFP

Hardware and software compatibility with PCI-certified enablement





微控制器生态系统和工具

NXP 微控制器开发平台概述

Hardware Development Tools

Baseline Evaluation Kits



LPC Xpresso



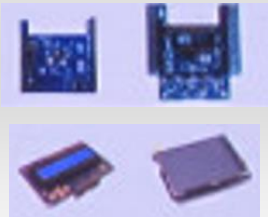
Freedom Development Platform



Tower System

Expansion & Partner Solutions

MCU Expansion boards from NXP & 3rd Parties



Low cost hardware platforms for evaluation and application development. Partner solutions for hardware debugging solutions

Runtime Software

Baseline

Kinetis SDK/LPCOpen

- Drivers
- System Services
- FreeRTOS
- USB
- emWIN
- TCP/IP
- Filesystem



Micrium

ARMmbed

expresslogic



Comprehensive frameworks and solutions for low-power, connected, and secure embedded systems

Expansion – Connect, Control, Graphics



- HomeKit SDK
- Motor Control
- Wireless Charging
- Sensor Fusion
- MFi
- Graphics Partners
- POS / EMV
- Connectivity Solutions



Software frameworks and development tools for targeted applications and certified connectivity solutions

SW Development Tools

IDE Toolchain



Configuration Tools

- Power Estimation
- BSP Tools
- Project Generator
- Power Analyzer

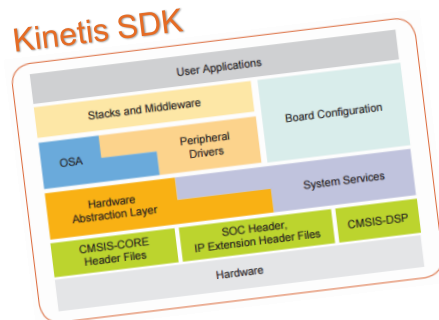
Industry leading IDE support and intuitive software configuration tools to accelerate application development

NXP 集成开发环境和工具

- MCUXpresso



LPCOpen v2/3



MCUXpresso
Software and Tools

- IDE
- SDK
- Config Tools

NXP Cortex-M
Microcontrollers

- LPC + Kinetis



<http://www.nxp.com/mcuxpresso>

MCUXpresso 软件和工具

为 LPC & Kinetis Microcontrollers



MCUXpresso Software and Tools

- IDE
- SDK
- Config Tools

NXP Cortex-M
Microcontrollers

- LPC + Kinetis



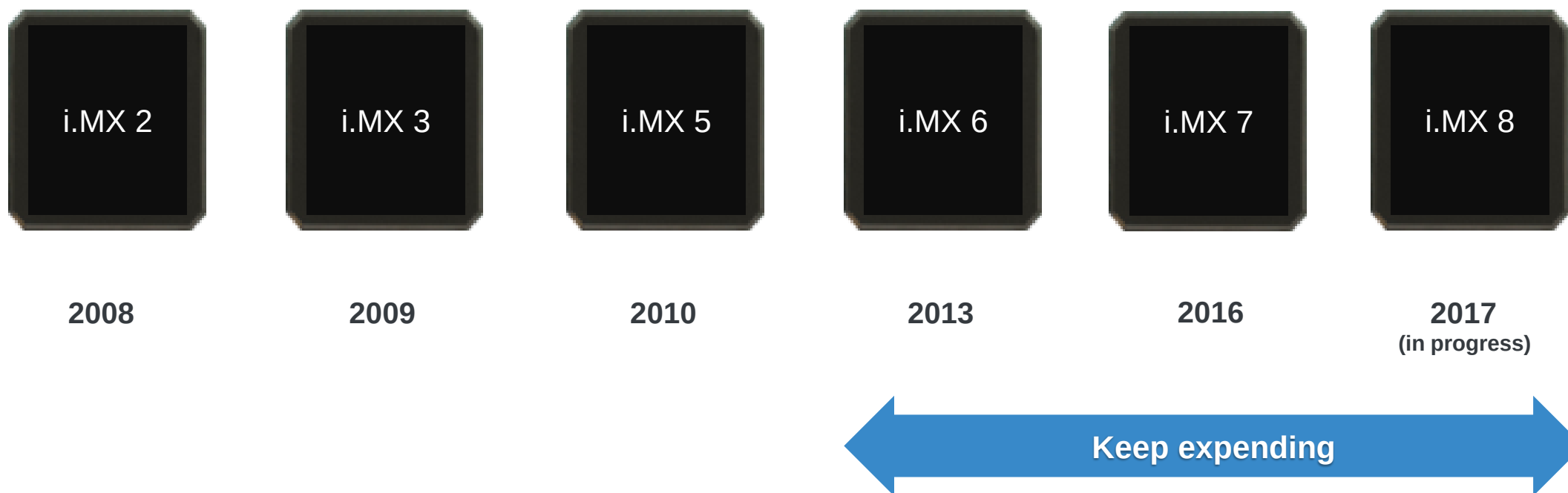
<http://www.nxp.com/mcuxpresso>



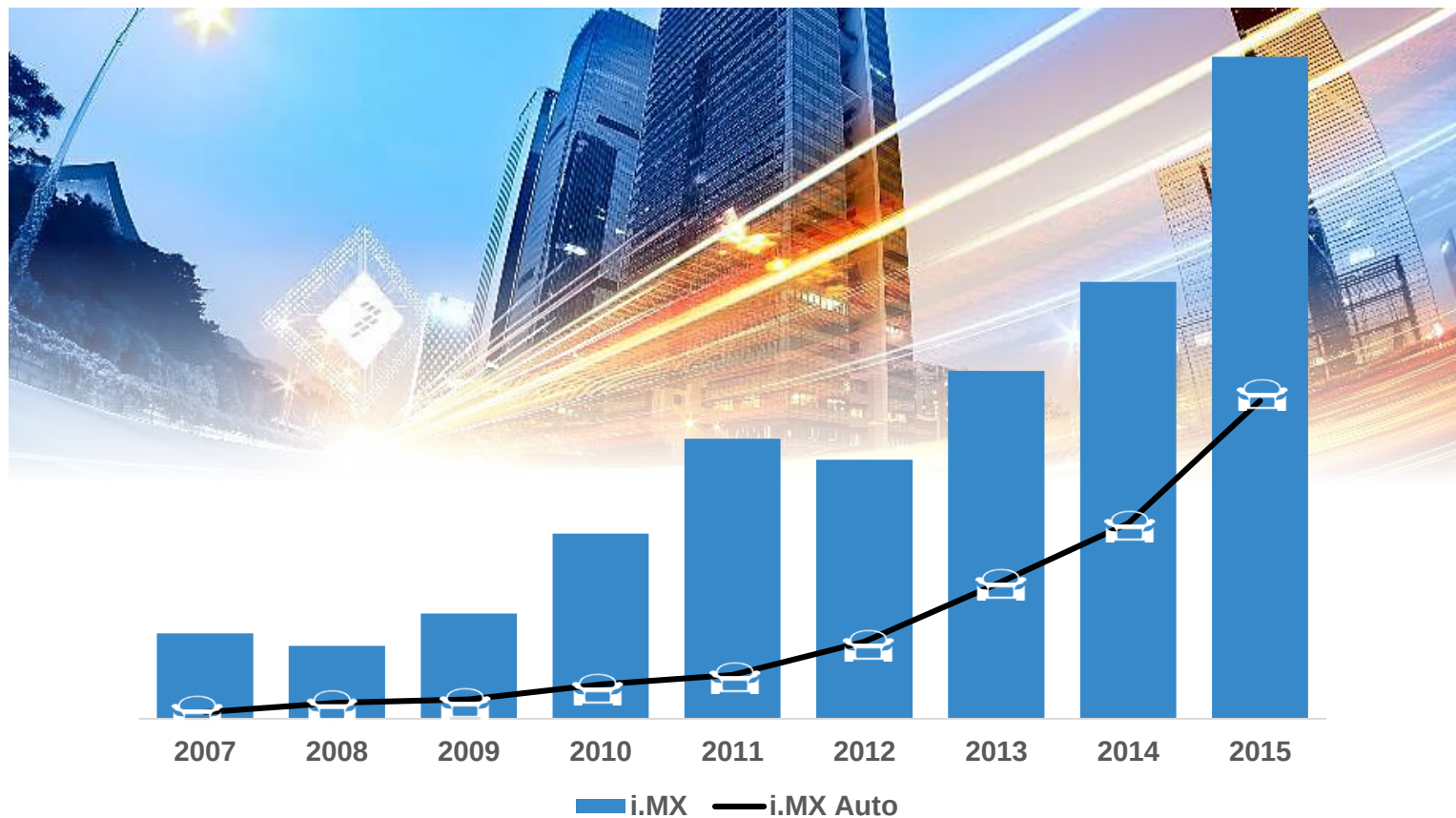


SECURE CONNECTIONS
FOR A SMARTER WORLD

i.MX – 用于多重市场的微处理器品牌

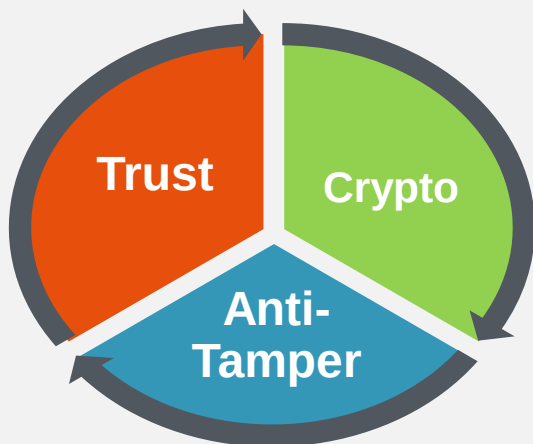


i.MX 服务于汽车电子和智能设备的高速增长



Over **250M i.MX** SOCs shipped to date
Over **65M vehicles** enabled with i.MX since 2007
#1 in eReaders, **#1** in Auto Infotainment MPU

Product Longevity



i.MX 应用处理器的产品价值

- **可扩展性**

- CPU (single/dual/quad, asymmetric), GPU, IO
- Software: Linux, Android, Windows-embedded, RTOS
- Pin compatibility and software portability

- **信任**

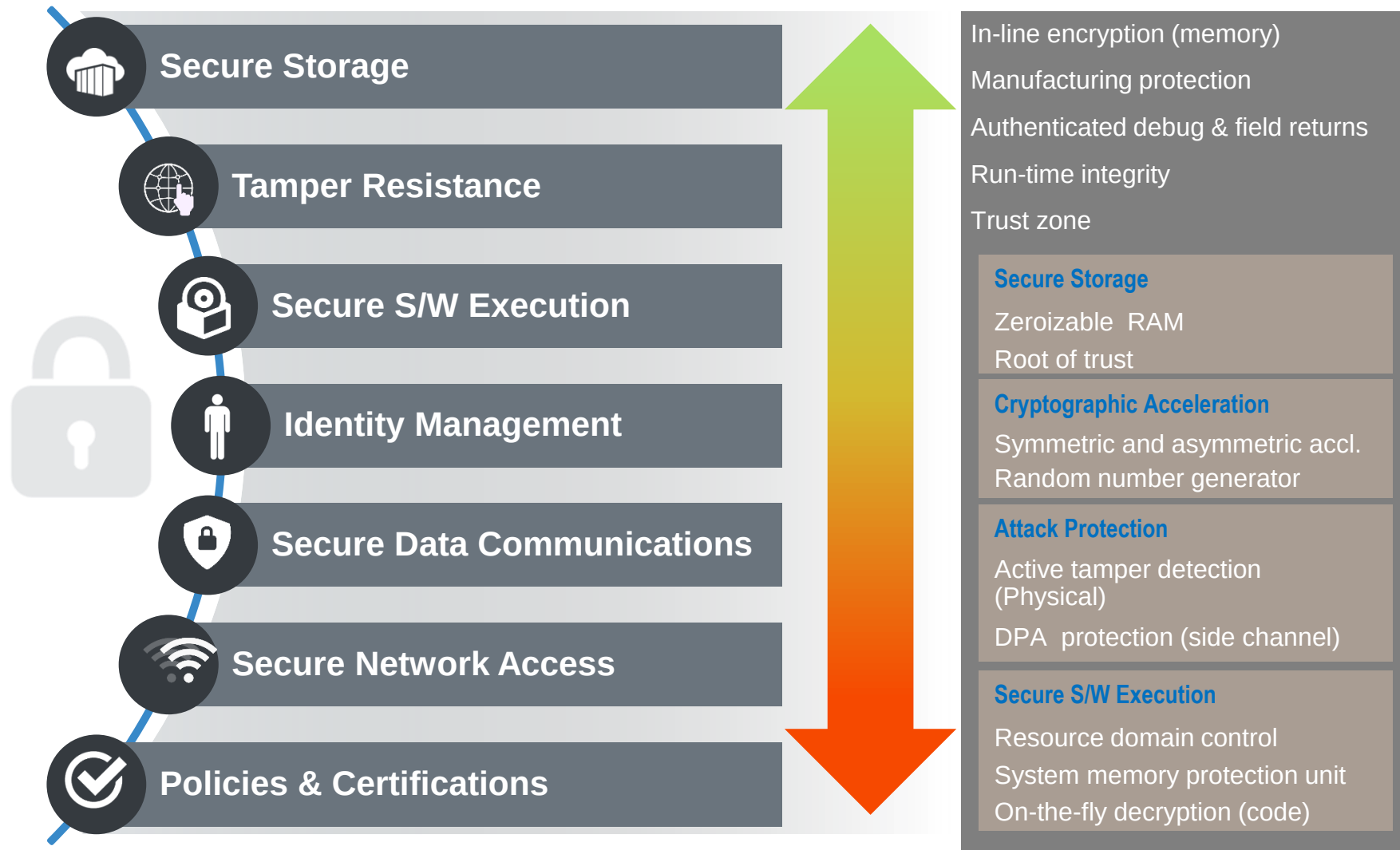
- Longevity: minimum of 10-15 years in all markets
- Quality, robustness, zero-defect methodology
- Security and Safety
- Qualifications: AEC-Q100, JEDEC Industrial and Consumer

- **易于使用**

- Industry-leading ecosystem, partnerships and support
- Design collateral, distribution, communities
- System solutions: SoC, sensors, memory, PMIC, connectivity



i.MX 硬件模块的高安全性



i.MX Linux



- Silver Member of Linux Foundation
- AGL Working Group Bronze Member
- Over the past 15 years shipping i.MX applications processors, there have been 39,000+ Linux downloads
- *Multiple i.MX 6 series customer engagements are using GENIVI solutions*
- *NXP has more compliant platforms than other semiconductor vendor*
- Reference: <http://www.genivi.org/compliant-products>

Commitment: **11** (soon to be **12**) Android OS versions released over past **8** years

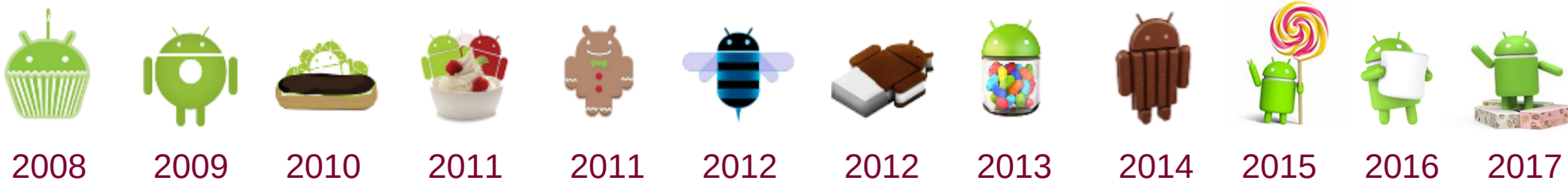
Broad Acceptance: **25,000+** downloads of BSP to date

Fast Development: **~4 months** from development start to production release on multiple Android versions

Cross market robustness: **Automotive, Embedded/Industrial, Consumer**

Continued support: New OS releases for **min. 2 years** after silicon production

Leadership: i.MX – only Android system shipping in a **top 5 OEM infotainment platform** today



i.MXCommunity.org – 在线技术支持和分享平台



Greater than **4,000 members**

3500 **new content** added **every year**

Support and enablement for i.MX processors and software – **share** tips, **ask** questions, **spark ideas**

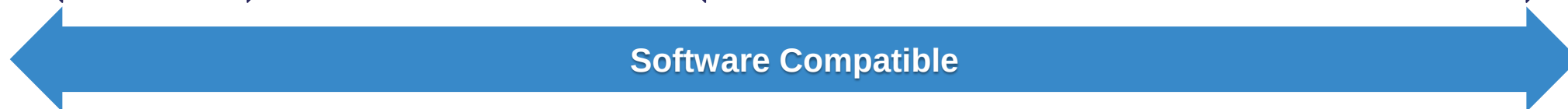
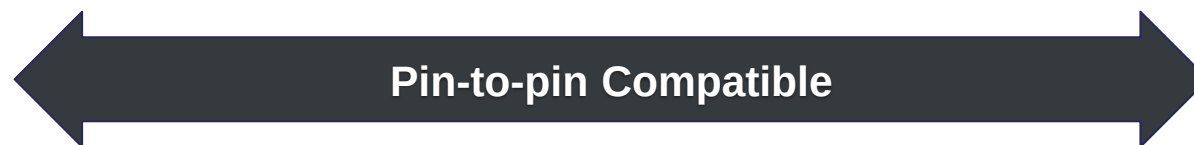
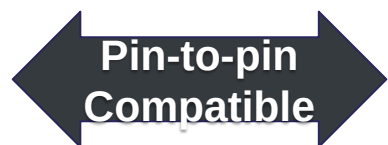
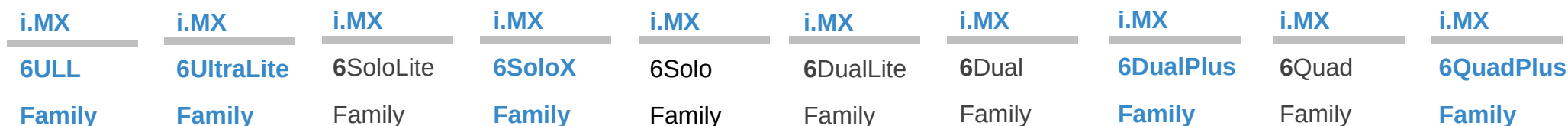
Federated **search capability** integrated with our website

Forums – Discussions – Groups – Blogs Posts – News – Multimedia Gallery – Training

i.MX 6: 提供设计的扩展性和灵活性

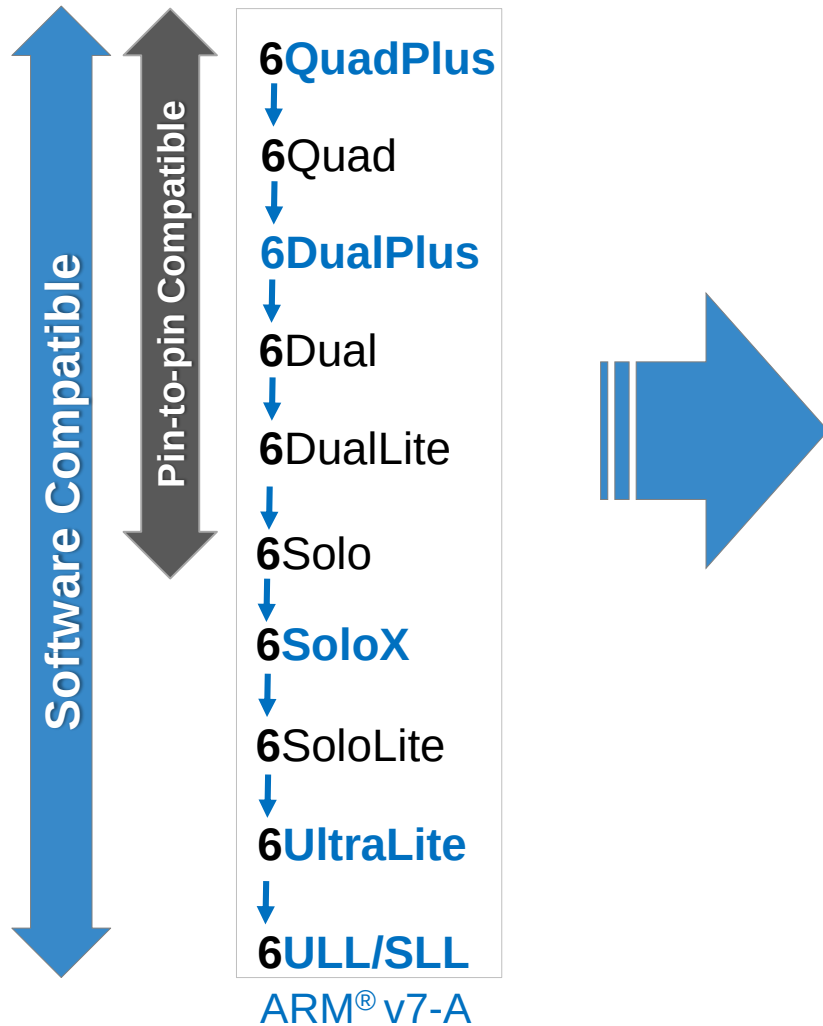
一项设计，多次使用

Scalable series of **TEN** ARM-based SoC Families



Expanded series for performance, power efficiency and lower BOM

i.MX 7/8: 精准定位至细分市场



i.MX 8 family

Advanced Graphics and Performance

ARM® v8-A
(32-bit/ 64-bit)

i.MX 8M family

Advanced Audio and Video

ARM® v8-A
(32-bit/ 64-bit)

i.MX 8X family

Safety Critical & Efficient Performance

ARM® v8-A
(32-bit/ 64-bit)

i.MX 7

Power Efficiency & BOM Cost Optimizations

ARM® v7-A
(32-bit)



i.MX 开发平台



i.MX 参考设计平台

SABRE Platform for Smart Devices



- Builds on SABRE Board design with additional features including 10.1" capacitive multi-touch display, 2x MIPI camera sensors, SPI Nor Flash, GPS, ambient light sensor and digital microphones

Supported	Description
i.MX 6Quad i.MX 6Dual (emulated)	Quad-core 1-1.2 GHz ARM Cortex-A9 Dual-core 1-1.2 GHz ARM Cortex-A9
i.MX 6DualLite i.MX 6Solo (emulated)	Dual-core 1GHz ARM Cortex-A9 Single-core 1GHz ARM Cortex-A9

SABRE for Auto Infotainment



- Support for terrestrial and satellite radio tuners, Wi-Fi, Bluetooth, GPS, cellular modem, iAP authentication modules, MOST vehicle networking, cameras and displays

Supported	Description
i.MX 6Quad i.MX 6Dual (emulated)	Quad-core 800MHz-1GHz ARM Cortex-A9 Dual-core 800MHz-1GHz ARM Cortex-A9
i.MX 6DualLite i.MX 6Solo (emulated)	Dual-core 800MHz ARM Cortex-A9 Single-core 800MHz ARM Cortex-A9
i.MX 6SoloX (Q3'15)	800MHz ARM Cortex-A9 200MHz ARM Cortex-M4

SABRE Board for Smart Devices



- Multiple connectivity options: Wi-Fi®, Bluetooth®, GPS, Ethernet, SD, parallel/serial interfaces, SATA (i.MX 6Quad only), and PCIe

Supported	Description
i.MX 6Quad i.MX 6Dual (emulated)	Quad-core 1-1.2 GHz ARM Cortex-A9 Dual-core 1-1.2 GHz ARM Cortex-A9
i.MX 6SoloX	1GHz ARM Cortex-A9 200MHz ARM Cortex-M4

i.MX 6SoloLite Evaluation Kit



- Enables EPD and/or LCD or HDMI display, touch control and audio playback, and the ability to add WLAN, a 3G modem or Bluetooth technology
- E-Ink display available separately

Supported	Description
i.MX 6SoloLite	Single-core 1GHz ARM Cortex-A9

SABRE Platform for Smart Devices (SDP)

Part Numbers: MCIMX6Q-SDP (\$999)
MCIMX6DL-SDP (\$999)

Overview

- i.MX 6Quad or 6DualLite
 - i.MX 6Dual emulation on 6Quad
 - i.MX 6Solo emulation on 6DualLite
- MMPF0100 PMIC
- 1 GB DDR3 memory (non terminated)
- 3" x 7" 8-layer PCB

Display connectors

- Native 1024x768 LVDS display (comes with kit)
- 2nd LVDS connector
- Connector for 24 bit 4.3" 800x480 WVGA with 4-wire touch screen
- HDMI connector
- MIPI DSI connector

Audio

- Wolfson Audio Codec
- Microphone and headphone jacks
- Dual 1W speakers



Connectivity

- 2x full-size SD/MMC card slot
- 22-pin SATA connector
- 10/100/1000 Ethernet port
- 1x high-speed USB OTG port
- mPCI-e connector

Debug

- JTAG connector
- Serial to USB connector

Expansion Connector

- Enables parallel LCD or HDMI output
- Camera CSI port signals
- I2C, SSI, SPI signals

Additional Features

- 3-axis accelerometer
- GPS receiver
- Ambient light sensor
- eCompass
- Dual 5MP cameras
- Power supply
- Battery charger
- Battery connectors

OS Support

- Linux and Android BSPs
- Others: 3rd parties

Tools Support

- Lauterbach
- ARM (DS-5)
- Macraigor

• WiFi: (not included with kit)

- Silex WiFi module
- Murata WiFi module

SABRE Board for Smart Devices (SDB)

Website: www.nxp.com/sabresdb

Part Numbers: MCIMX6QP-SDB
MCIMX6Q-SDB
MCIMX6SX-SDB

Display (10.1"): MCIMX-LVDS1

Display (4.3"): MCIMX28LCD

Overview

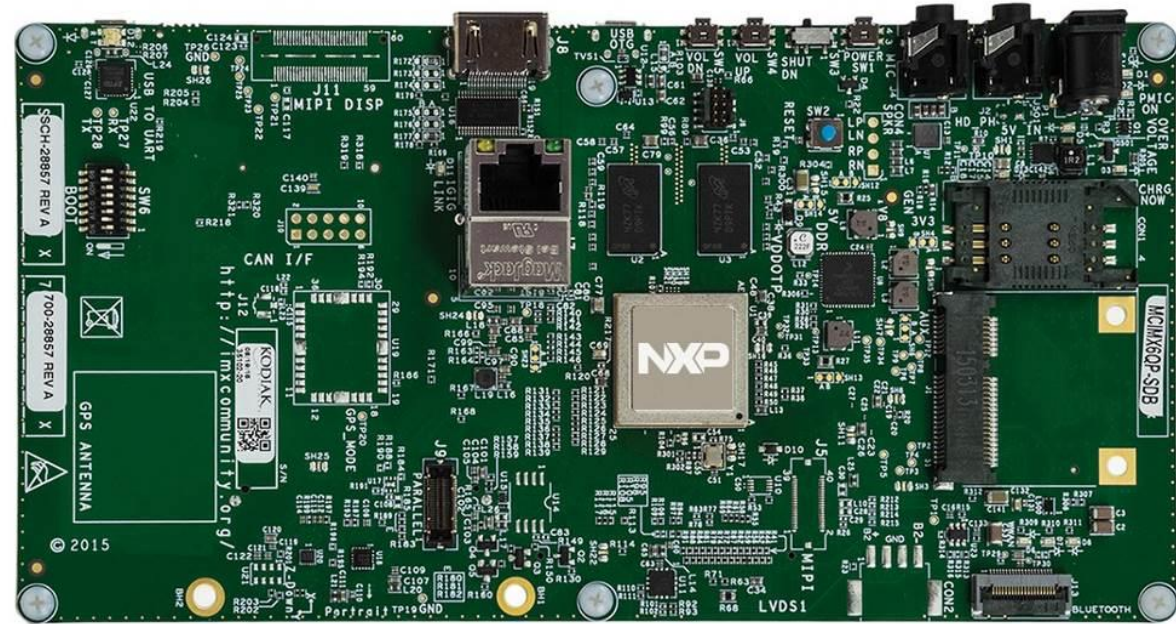
- NXP i.MX 6QuadPlus, 6Quad or 6SoloX
 - i.MX 6DualPlus emulation on 6QuadPlus
 - i.MX 6Dual emulation on 6Quad
- NXP MMPF0100 vF9 PMIC (i.MX 6QuadPlus)
- NXP MMPF0100 PMIC (i.MX 6Quad)
- NXP MMPF0200 PMIC (i.MX 6SoloX)
- 1 GB DDR3 memory (non terminated)
- 3" x 7" 8-layer PCB

Display Connectors

- 2x LVDS connectors (i.MX 6Quad)
- 1x LVDS connector (i.MX 6SoloX)
- Connector for 24 bit 4.3" 800x480 WVGA with 4-wire touch screen (i.MX 6Quad)
- HDMI Connector (i.MX 6Quad)

Audio

- Audio Codec
- Microphone and headphone jacks



Connectivity

- 2x full-size SD/MMC card slot
- 22-pin SATA connector (i.MX 6Quad)
- 10/100/1000 Ethernet port
- 1x high-speed USB OTG port
- 1x CAN port (i.MX 6SoloX)
- mPCI-e connector

Debug

- JTAG connector
- Serial to USB connector

Expansion Connector

- Enables parallel LCD or HDMI output
- Camera CSI port signals
- I2C, SSI, SPI signals

Additional Features

- 3-axis NXP accelerometer
- eCompass
- Power supply
- No battery charger

OS Support

- Linux and Android BSPs from NXP
- Others: 3rd parties

Tools Support

- Lauterbach
- ARM (DS-5)
- Macraigor

WiFi: (not included with kit)

- Silex WiFi module
- Murata WiFi module



i.MX 6SoloLite 电子书开发平台

Part Numbers: MCIMX6SLEVK (\$399)
IMXEBOOKDC3-E (\$499)

Processor

- i.MX 6SoloLite 1 GHz ARM® Cortex™-A9 CPU
- PF0100 PMIC

Memory

- 512 MB Double Data Rate2 Mobile (LPDDR2) DRAM memory
- Footprint for Managed NAND (eMMC/eSD)
- SPI Flash
- Three Secure Digital (SD)/multimedia card (MMC) sockets

Display

- HDMI Daughter Card available
- Parallel WVGA LCD add-on card via expansion connector
- EPD add-on card via expansion connector

Audio

- Audio HP Jack
- External speaker connection
- Microphone

Connectivity

- USB Host connectors
- Micro USB OTG connector
- Ethernet (10/100T) connector
- SIM Card Socket
- Mini PCIe connector

Debug

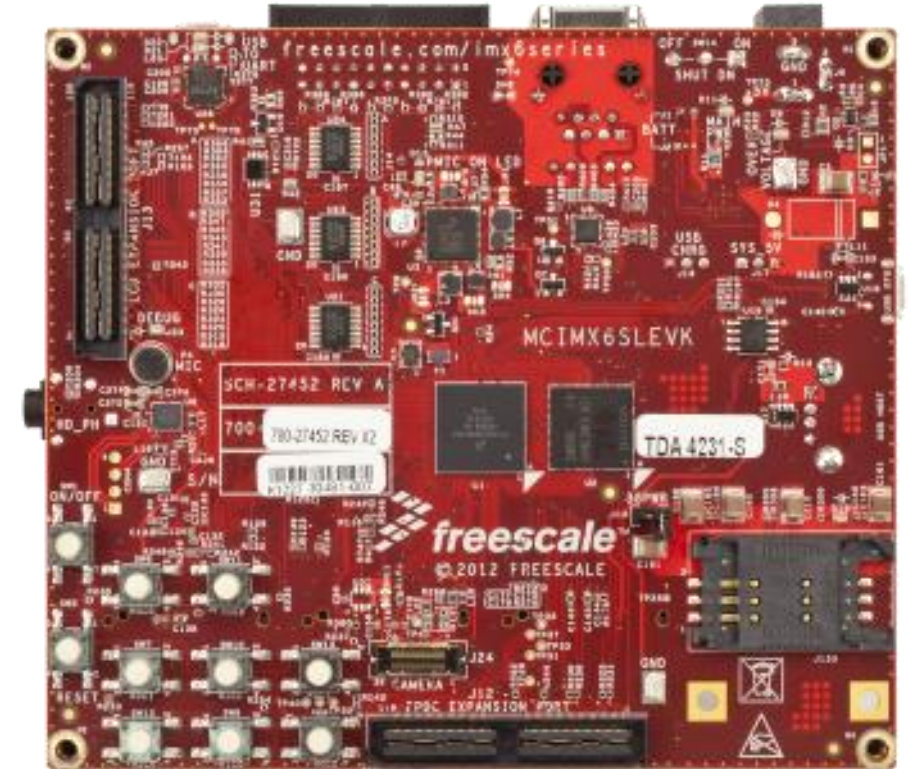
- JTAG connector
- One console UART

Other

- MMA8450QT three-axis digital accelerometer (SABRE)

Tools & OS Support

- VMware player to bring up image on a Windows PC
- Linux® and Android™ BSPs



i.MX 6UltraLite 开发平台

Part Numbers: MCIMX6UL-EVKB (\$149)

Display (4.3"): LCD8000-43T (\$100)

Processor

- i.MX 6UltraLite 528MHz ARM® Cortex™-A7 CPU

Memory

- 4Gb DDR3L DRAM memory
- 256Mb Quad SPI Flash
- Footprint for NAND
- Footprint for eMMC
- TF socket for boot

Display

- Parallel WVGA LCD add-on card via expansion connector
- HDMI connector and Footprint for HDMI transmitter
- Camera Connector

Audio

- Audio Codec
- 4-pole Audio Headphone Jack
- External speaker connection
- Microphone

Connectivity

- USB Host connector
- Micro USB OTG connector
- Two Ethernet (10/100T) connector
- SD/SDIO Connector
- Two CAN Transceivers
- EMV Smart Card connector

Debug

- JTAG connector
- Serial to USB connector

Sensors

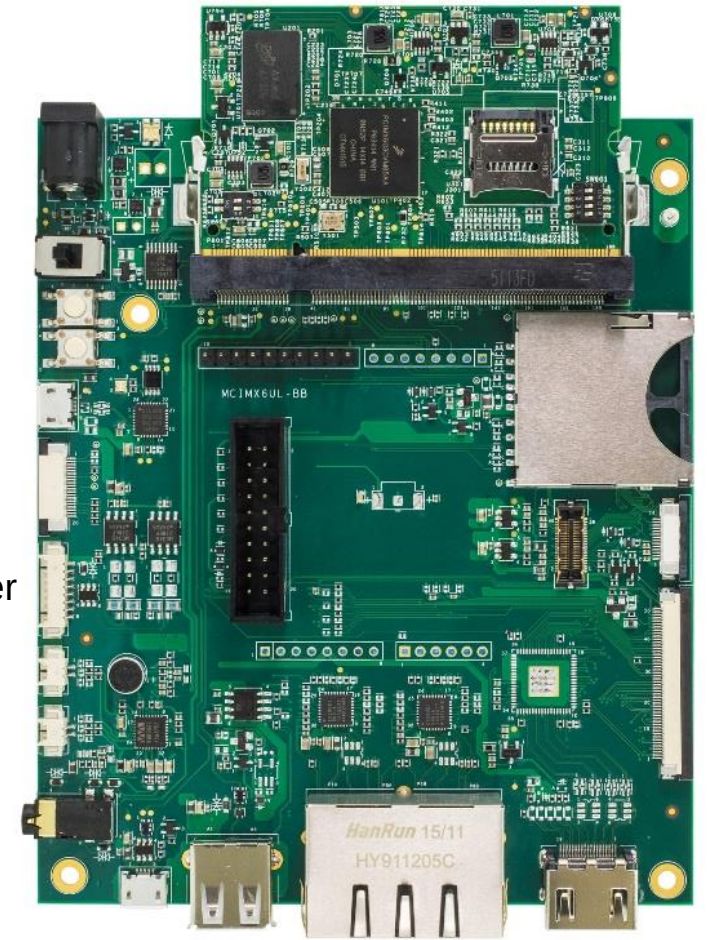
- Footprint for FXAS21000CQR1 Gyro
- FXLS8471Q three-axis digital accelerometer
- MAG3110 Digital eCompass

Tools & OS Support

- Linux® BSPs

Others

- CPU Module: 1.67x2.66 inch
- Base Board: 4.25x5.12 inch
- 4 layer through hole PCB



i.MX 7: SABRE 开发平台

Processor

- i.MX 7Dual
 - Dual Cortex™-A7 @1GHz
 - 512KB L2\$
- NXP PF3000 PMIC

Memory

- 1 GB DDR3
- eMMC5.0 footprint
- QuadSPI Flash
- SD/MMC socket
- NAND footprint

Display/Camera Connectors

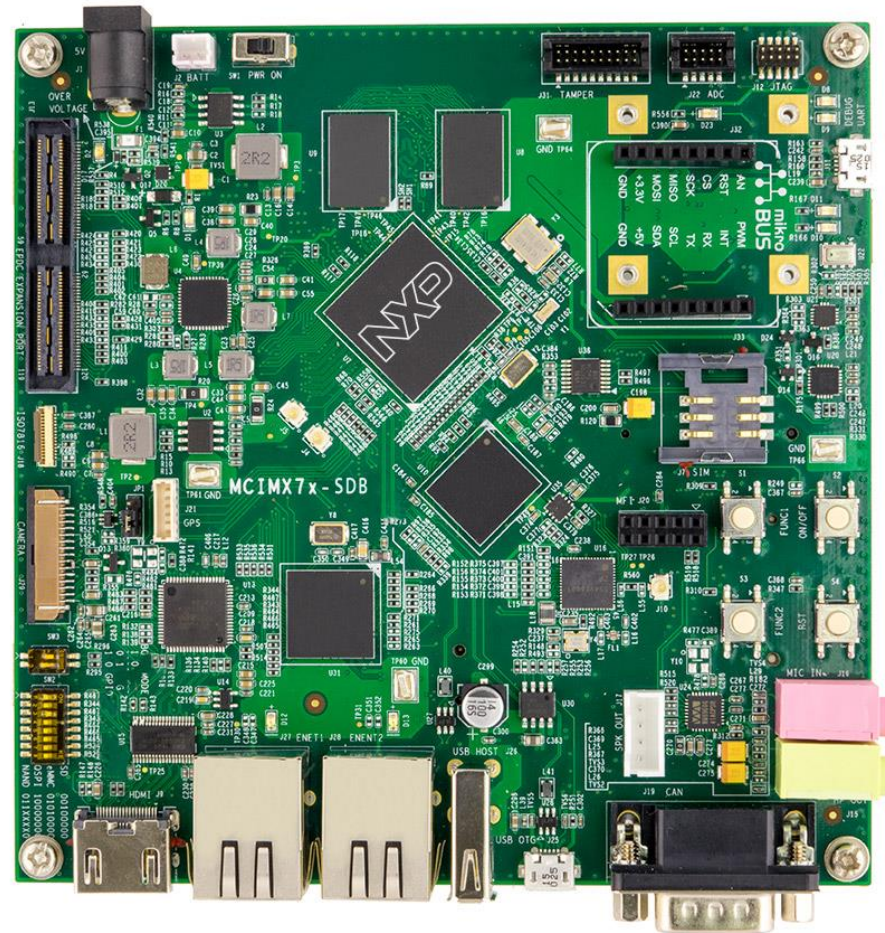
- HDMI
- Parallel LCD
- MIPI-DSI
- Electronic Paper Display
- MIPI-CSI (camera)

Wireless

- Wifi (802.11ac) onboard
- BT4.0 / BLE onboard

Audio

- Audio HP Jack
- External speaker connection



Connectivity

- USB Host connectors
- microUSB OTG connector
- 2x ETH (1Gbit) Receptacle
- Full Mini PCIe socket
- SIM Card slot
- CAN (DB-9)
- GPIO
- MFi Module support
- MikroBus expander

Debug

- JTAG connector
- UART via USB

Sensors

- **FXOS8700** three-axis digital accelerometer/Magnetometer
- **MPL3115A2R** Altimeter/Pressure sensor
- **FXAS21000** three-axis digital Gyroscope

Tools & OS Support

- Linux®
- Android™
- FreeRTOS

NXP Designs

- A one-stop-website to help customers develop their embedded design using complete NXP technology with,
- Projects, solutions and reference designs using NXP technology
- Access to information such as software, schematics and user documentation for quick use and customization
- Designed by NXP technical experts and third party partners

Focused applications:

- IOT & wireless connectivity
- Wireless charger
- Payment and access
- Motor control

www.nxp.com/nxpdesigns

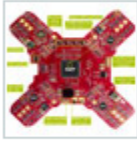
NXP Designs

Technical content and expertise to help jump start your design and get you to production faster.

Explore NXP Designs

[+ NXP Designs by Application](#)

[+ NXP Designs by Product](#)

	NXP Design	Description	Quick Links
	Hexiwear - Complete IoT Development Solution	Next generation IoT development platform designed to reduce time to market. Comes in compact form factor with on-boards MCUs, BLE Connectivity, sensors, OLED display, battery. Open source software package includes embedded software, cellphone apps and cloud connectivity. Expandable with 200 additional click boards™	■ Fact Sheet ■ Buy ■ Software ■ Schematic ■ Design Files ■ Bill of Material (BOM) ■ iOS App ■ Android App
	Quadcopter Drone	The powerful Electronic Speed Controller (ESC) solution combines four separate ESC boards into one and controlled by with a single Kinetis KV4x or Kinetis KV5x MCU.	■ Software ■ Schematic ■ Design Files ■ Bill of Material (BOM) ■ Application Notes
	Internet Radio Audio Streaming	Demonstrate an easy-to-use internet-radio application.	■ Software ■ Application Note ■ Brochure
	BLE Controlled Robot	The Bluetooth® Low Energy (BLE) controlled robot brings the robot control to your cellphone. Develop your own smart robot using FRDM-KW40 board and Pololu Zumo Robot.	■ Software ■ Schematic ■ Design Files ■ Bill of Material (BOM) ■ Application Notes and Design Guides ■ Quick Start Guide

i.MX 生态系统 - 多重市场，多种选择

硬件

工具

硬件模块

IDH/EBS

ODM

培训

快速上市

SABRE BOARDS

OS 开发

中间件、应用层

软件



SECURE CONNECTIONS
FOR A SMARTER WORLD