Sensors Converge

Jump Start Your Low-Power IoT Sensors Application Development

June 20–22, 2023 | Santa Clara, CA

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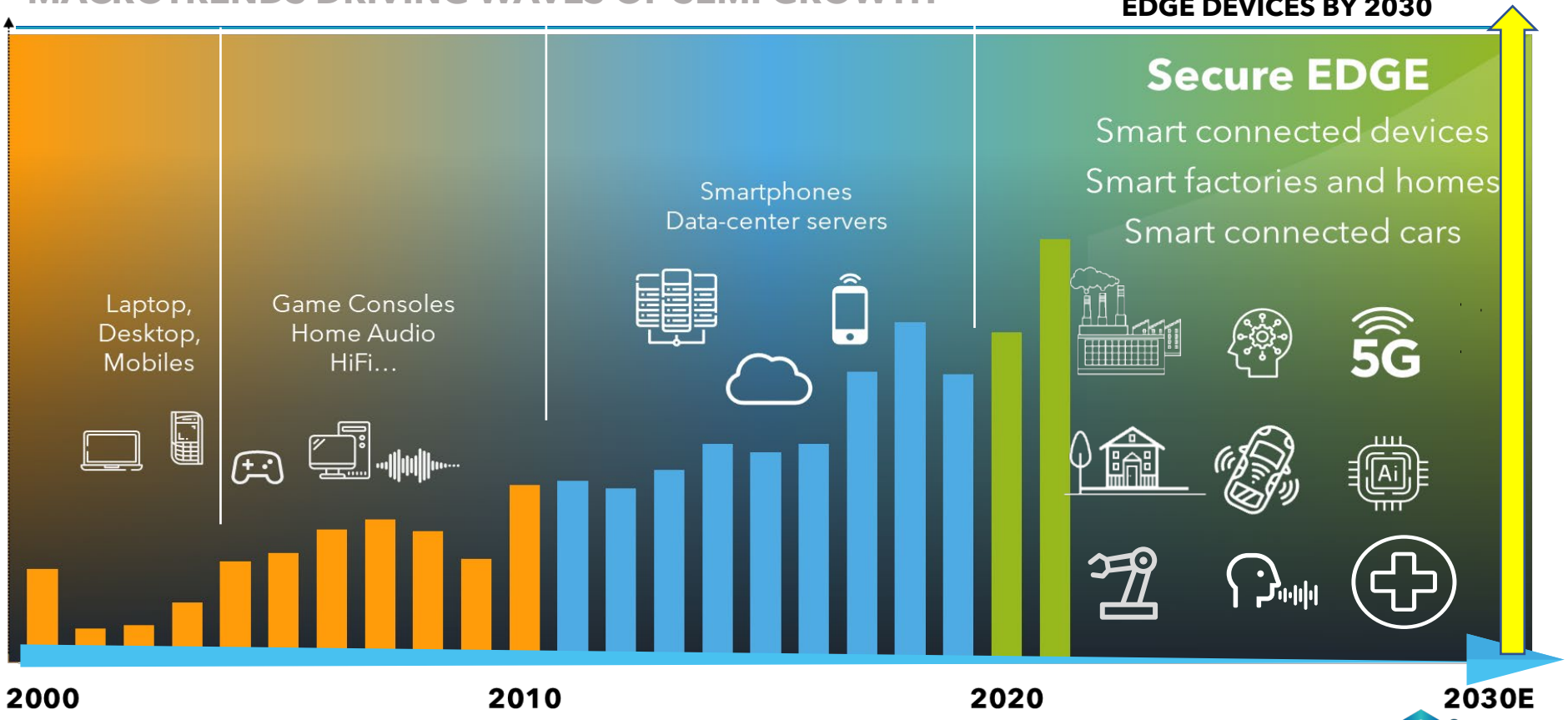
RISE OF THE SECURE EDGE

MACROTRENDS DRIVING WAVES OF SEMI GROWTH

> 75 BILLION CONNECTED SECURE EDGE DEVICES BY 2030



Semiconductor TAM

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Source: I.H.S., McKinsey 2022

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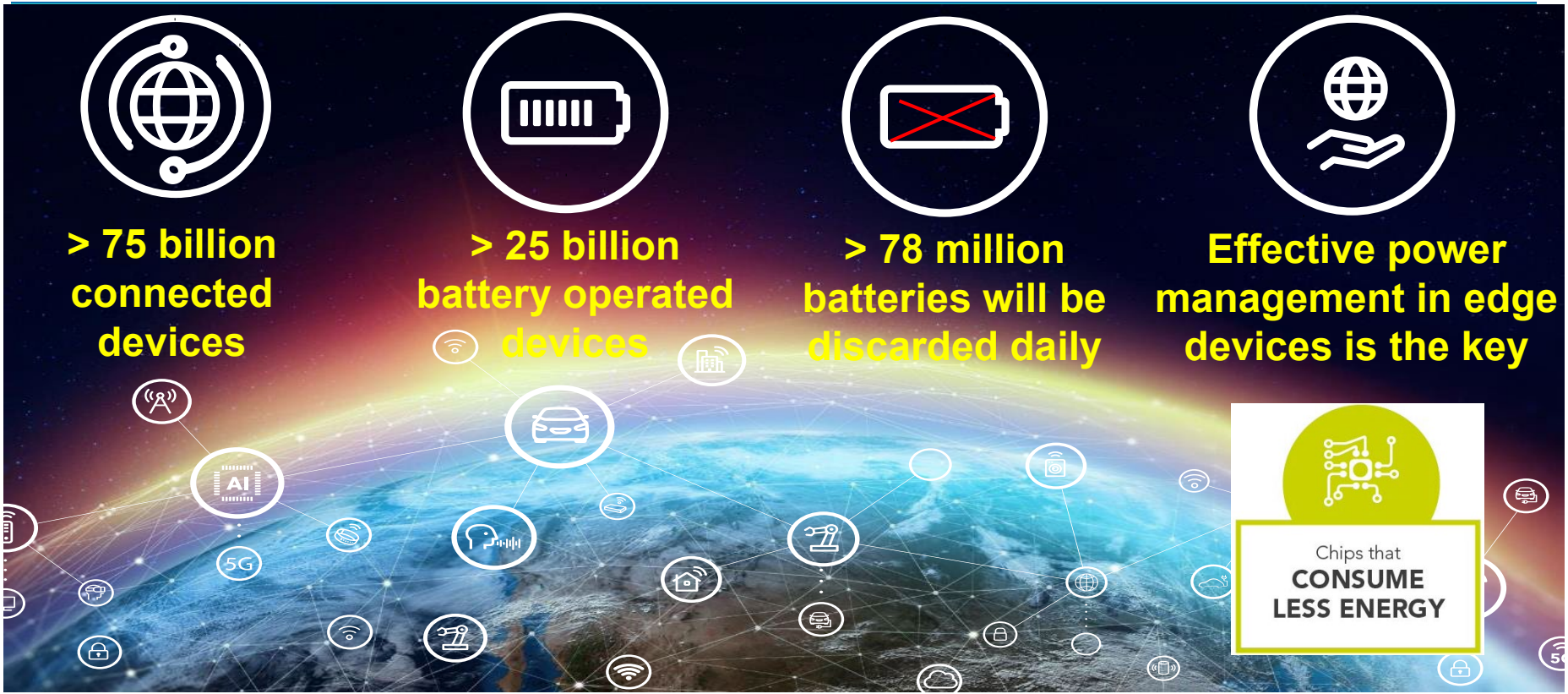
WHY LOW-POWER DESIGNS ARE CRITICAL FOR EDGE DEVICES



Sources: *Statista* & *EnABLES*

RISE OF TECHNOLOGY FOUNDATION FOR EDGE DEVICES

SENSE

Everything **Aware**

THINK

Everything **Smart**

CONNECT

Everything **Connected**

ACT

Everything **Efficient**

Everything **safe AND secure**

Easy to implement **scalable system solutions**

Low-power AND sustainable

KEY CONSIDERATIONS FOR LOW-POWER IOT APPLICATIONS

Low-Power Operation:

- ❑ Integrated PMU
- ❑ Reduced power modes
  - Sleep, Deep-Sleep, Power Down, Deep-Power Down modes
- ❑ Configurable wake-up options
- ❑ Low-power consumption (nAmp to uAmp)
- ❑ Quick wake-up time (transition to active mode)

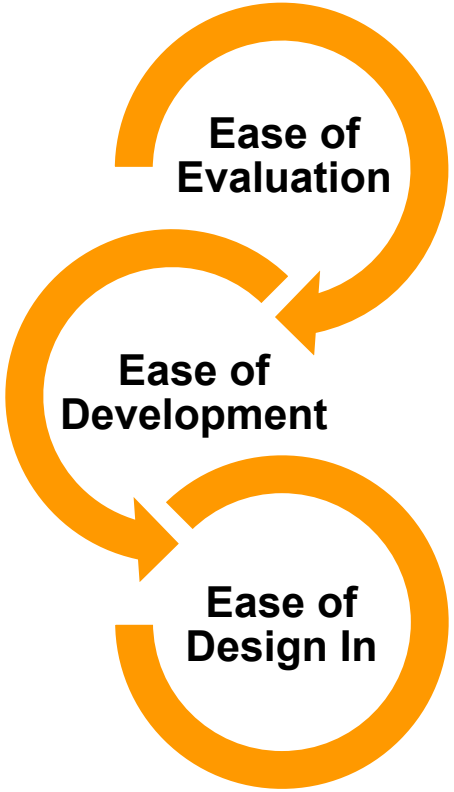
Embedded Functions:

- ❑ Fully configurable, completely autonomous solution
- ❑ Programmable thresholds, timers
- ❑ Reduces bandwidth, latency and computational requirements
- ❑ Interrupt mode
- ❑ No complex algorithm, low-code, low-memory

KEY CONSIDERATIONS FOR LOW-POWER IOT APPLICATIONS

Enablement Ecosystem:

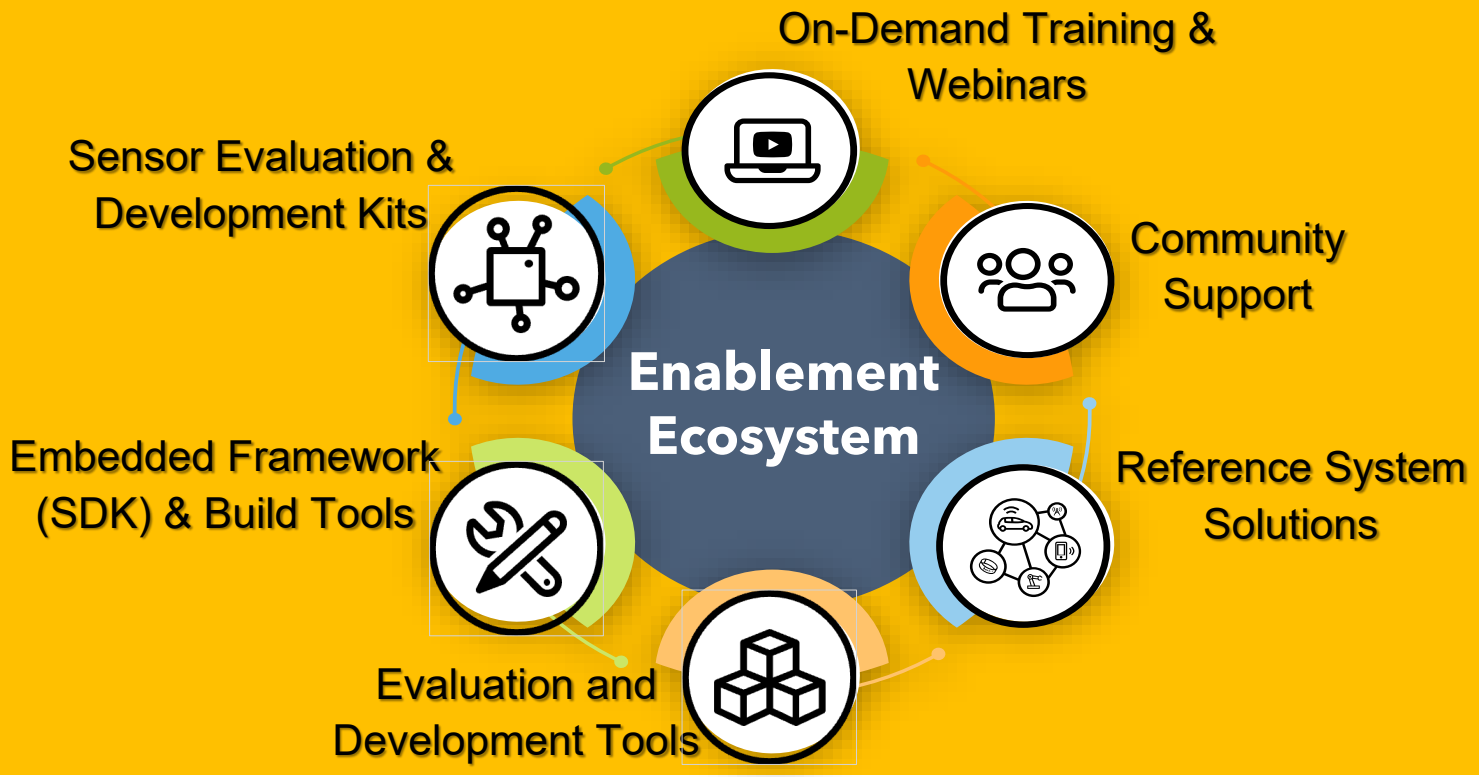
- ❑ Hardware & software enablement ecosystem with rapid development kits
- ❑ Helps in improving ease-of-use and quick evaluation.
- ❑ Accelerate end user development
- ❑ Improve OOBE (Out Of Box Experience)



Key Takeaways

- ✓ Ease of evaluation, development and design prototyping.
- ✓ Reference out-of-box examples showcasing low-power operation.
- ✓ Increase customer's confidence, help jump-start their development.

ENABLEMENT ECOSYSTEM



RAPID DEVELOPMENT KITS

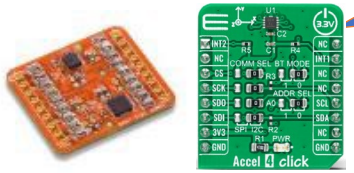
Demo Kit (Shield + MCU)

Complete Solution for ‘Out of Box’ sensor demonstration, evaluation and development

Shield Board

Evaluation Boards, pin compatible with most Arudino and FRDM development boards

Breakout/Click Board



Boards for product prototyping, can be easily wired to host MCU

Demonstration Kit (Shield + MCU)

- Officially supported combination of a Sensor Shield board and an Arduino® development MCU board.

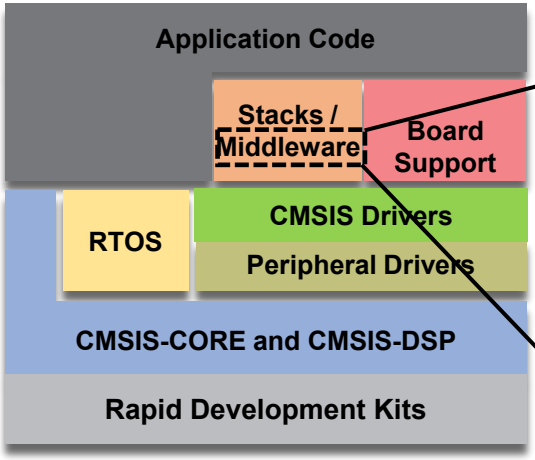
Shield Board

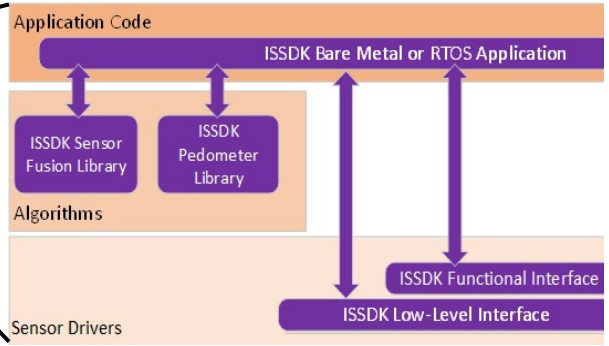
- Pin compatible across most Arduino® development MCU boards.
- Pins available as test points for evaluating pin signals such as VDD, GND, I^2C, SPI, INT etc.

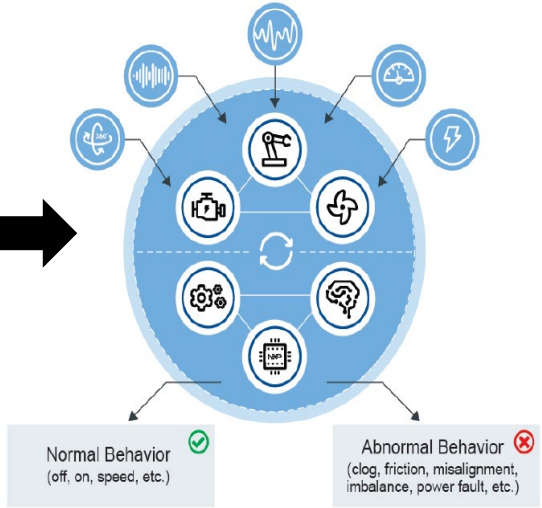
Breakout/Click Board

- Small form factor design or mikroBUS™ based design, ideal for product prototyping.

EMBEDDED FRAMEWORK AND BUILD TOOLS







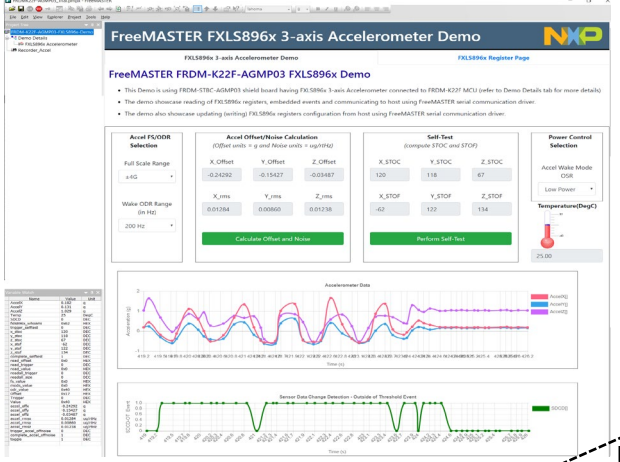
MCU SDK | **Sensors SDK** | **Reference Examples**

Key Benefits to End Users:

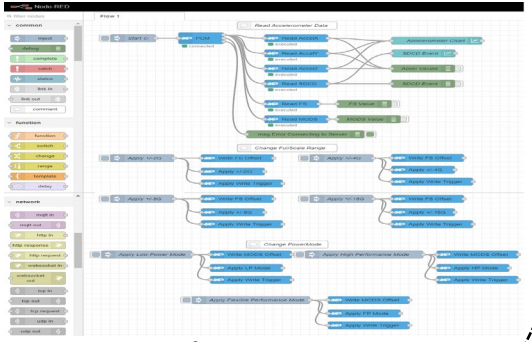
- ❑ Open Source: Sources are released under BSD-3 clause open source.
- ❑ Portability: CMSIS compliance enabling easy porting across broad range of Arm® Cortex®-M core based MCUs.
- ❑ Quality: Production-grade quality, reference out-of-box examples.
- ❑ Tools Integration: Integrated with SW & Tools for quality user experience.

EVALUATION AND DEVELOPMENT TOOLS

Sensor Registers Page



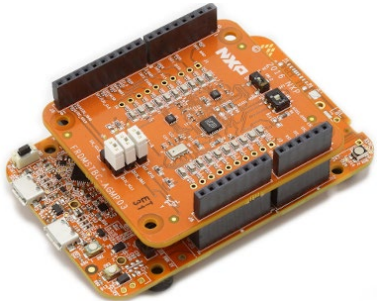
Sensor Control Page



Node-RED Extension

Windows Development PC

Serial UART
over USB



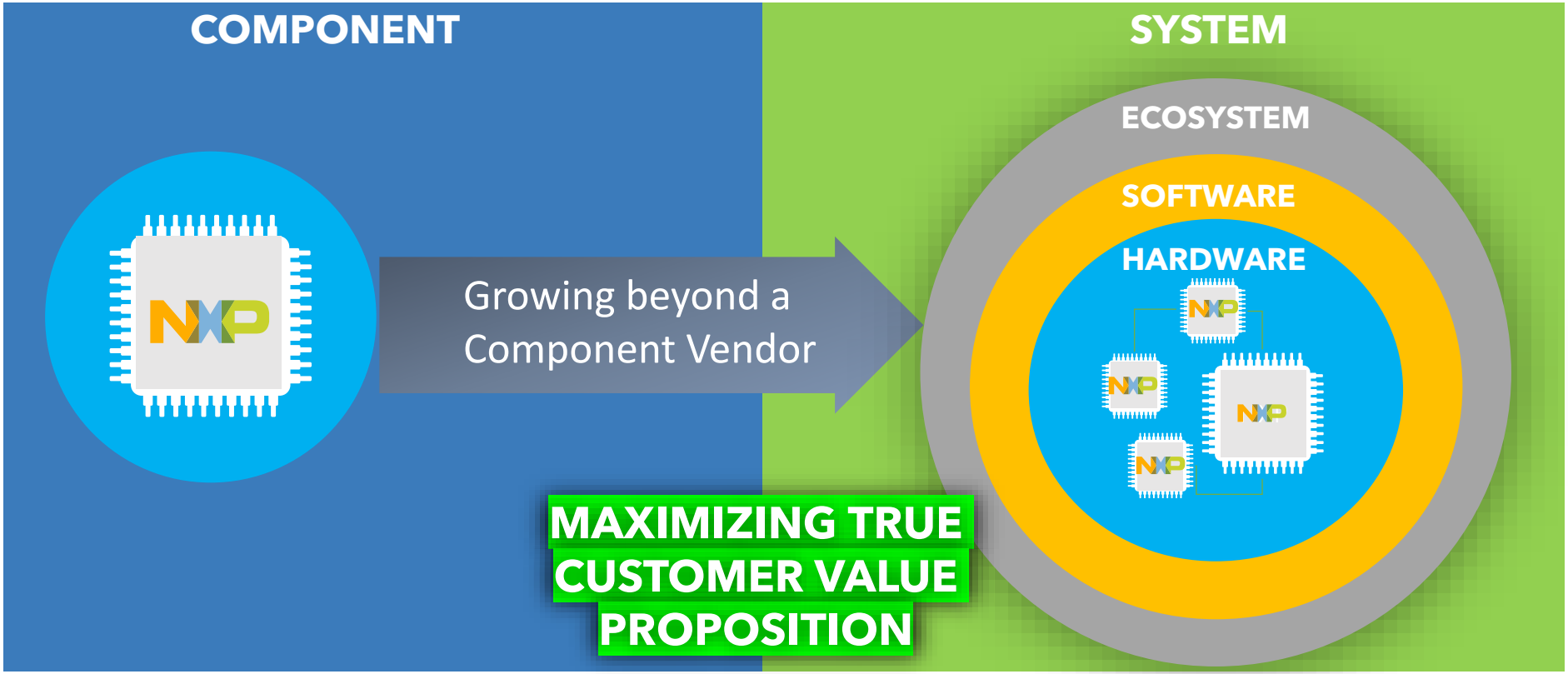
Rapid Development Kit

Key Benefits to End Users:

- ❑ Plug & Play Tool
- ❑ Enables Quick Evaluation
- ❑ Register bit-fields read/write
- ❑ Real-time control & monitoring

TRANSFORMING FROM COMPONENTS TO SYSTEMS

LEVERAGE FULL POTENTIAL OF NXP'S PORTFOLIO & CAPABILITIES



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Q & A

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