New BDC solution from NXP & WT

WT At A Glance

Founded in **1993**

WW **No. 4**
Asia **No. 2**
Disty

Y19 Revenue Of **$11B**

50 Offices In Asia

~2,400 Staff

+13,300 Customers

Core Value

- Demand Creation
- Customer Relationship
- Mass Market Development
- Supply Chain Management
- Financial Strengths

Focus Segment

- Automotive
- Industrial
- Communication
- AIoT
- Green Energy
- Cloud

文曄科技 WT MICROELECTRONICS

Distributor Ranking, Worldwide & Asia

Semiconductor Distributors, Worldwide Revenue by Company, 2018 and 2019 (Millions of Dollars)

Rank in 2018	Rank in 2019	Company	2018	2019	Growth	2019 Share	2018 Share	Share% Growth
2	1	Arrow Electronics	16,894	16,209	-4.1%	11.2%	11.1%	0.1%
1	2	WPG Holdings	17,315	16,175	-6.6%	11.2%	11.4%	-0.2%
3	3	Avnet	15,289	14,193	-7.2%	9.8%	10.0%	-0.2%
4	**4**	**WT Microelectronics**	**9,009**	**10,807**	**20.0%**	**7.5%**	**5.9%**	**1.6%**
5	5	Macnica Fuji Electronics Holdings	4,165	3,928	-5.7%	2.7%	2.7%	0.0%
		Others	89,629	83,032	-7.4%	57.5%	58.8%	-1.3%
		Total	**152,301**	**144,344**	**-5.2%**	**100.0%**	**100.0%**	

Semiconductor Distributors, Regional Revenue by Company, Asia/Pacific, 2018 and 2019 (Millions of Dollars)

Rank in 2018	Rank in 2019	Company	2018	2019	Growth	2019 Share	2018 Share	Share% Growth
1	1	WPG Holdings	16,812	15,658	-6.9%	15.6%	16.0%	-0.4%
2	**2**	**WT Microelectronics**	**9,009**	**10,807**	**20.0%**	**10.8%**	**8.6%**	**2.2%**
3	3	Arrow Electronics	5,888	6,137	4.2%	6.1%	5.6%	0.5%
4	4	Avnet	5,611	5,251	-6.4%	5.2%	5.3%	-0.1%
7	5	Edom Technology	2,623	3,089	17.7%	3.1%	2.5%	0.6%
		Others	64,996	59,443	-8.5%	59.2%	61.9%	-2.7%
		Total	**104,940**	**100,384**	**-4.3%**	**100.0%**	**100.0%**	

Note: Numbers may not add to totals shown because of rounding.

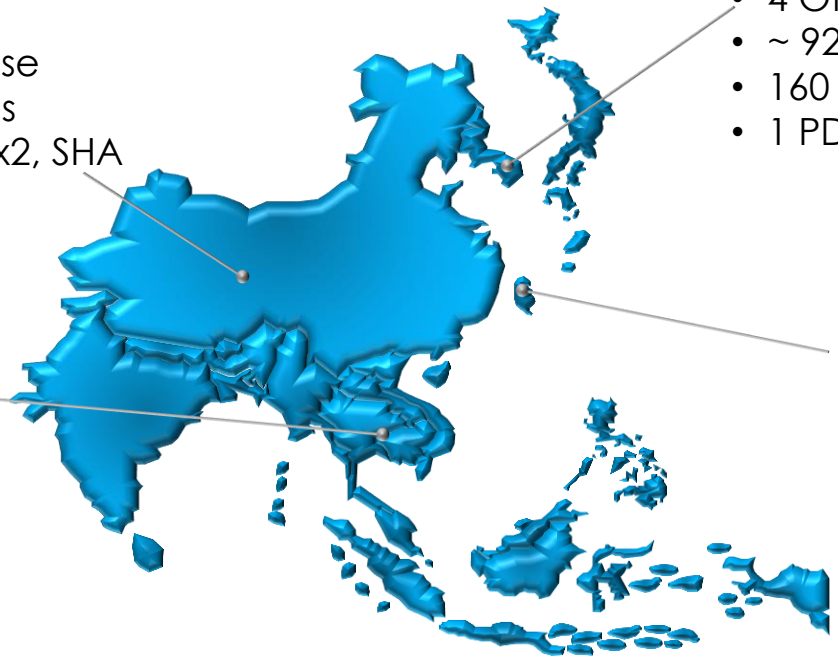
Source: Gartner (February 2020)

- **The fastest growth among top semiconductor distributors**
- **Continue gaining share with strong growth momentum**
- **Positive growth rate among WW top 5 distributors during the market downturn**

Substantial Resource & Channel Coverage

China
- 33 Offices
- ~ 7,400 Cust. Base
- 1,000 Employees
- 5 PDC: HKx2, SZx2, SHA

Korea
- 4 Office
- ~ 920 Cust. Base
- 160 Employees
- 1 PDC



South Asia & India
- 9 Offices
- ~ 940 Cust. Base
- 130 Employees
- 1 PDC: SGP

Taiwan
- 4 Offices
- ~ 4,100 Cust. Base
- 1,100 Employees
- 1 PDC

Group Total
- 50 offices
- ~ 13,300 Active Customers
- ~ 2,400 headcounts
- 8 PDC in Asia

Office List

文曄科技 WT MICROELECTRONICS

Excellent FAE Support

Design Services – System Level

- Power, image, lighting, motor control, RF and automotive electronics design services centers
- IoT gateway, wearable device, digital power, smart lighting, and WiFi/BLE/Zigbee/NFC/GPS module

FAE Support – Component Level

- Experienced engineers dedicated to suppliers
- Optimal solution suggesting
- Application consulting
- Board level debugging and manufacturing assistance

450+ FAE Support Customers Timely and Professionally

Professional Supply Chain Management

MRP System

- Proficient planning: processing 100K records in 10 min
- Timely analysis reports

Strong Logistics Operation & Network

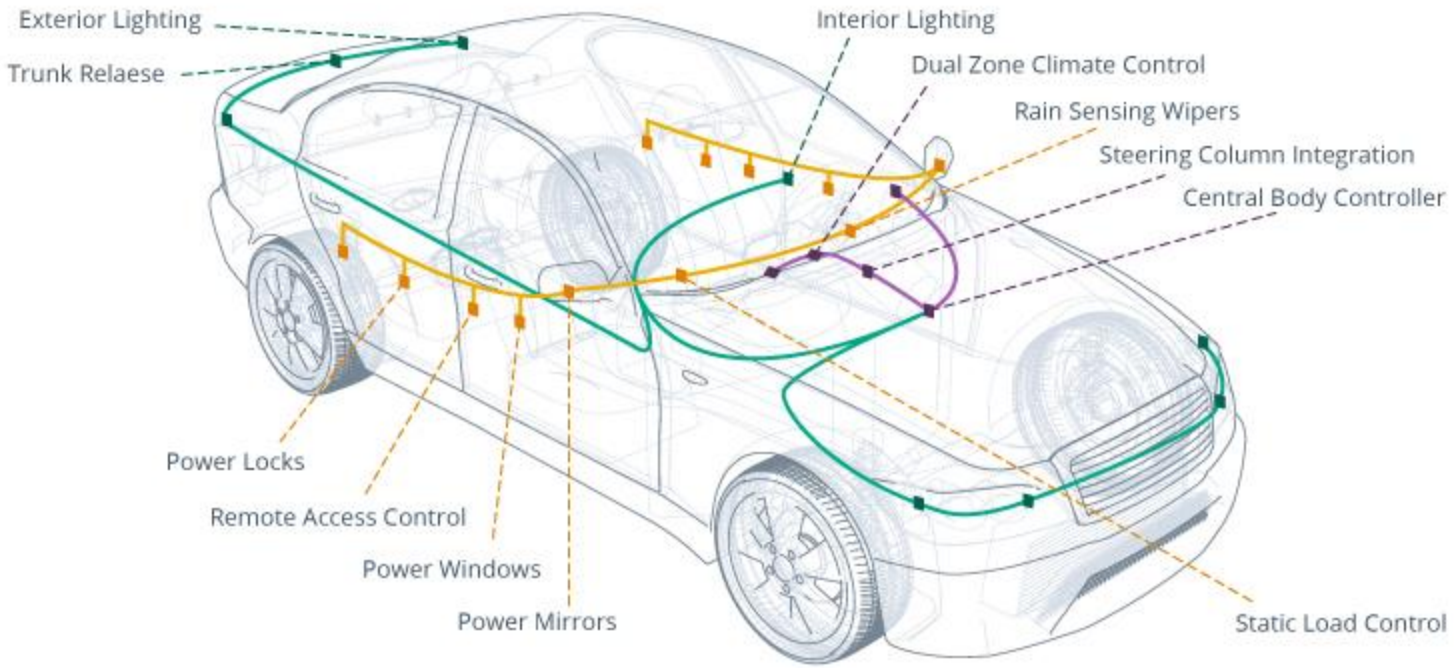
- 8 PDC in AP
- Serving 50+ hubs & B2B program

Accurate,
Efficient
On-Time Delivery

EWM (Extended Warehouse Management)

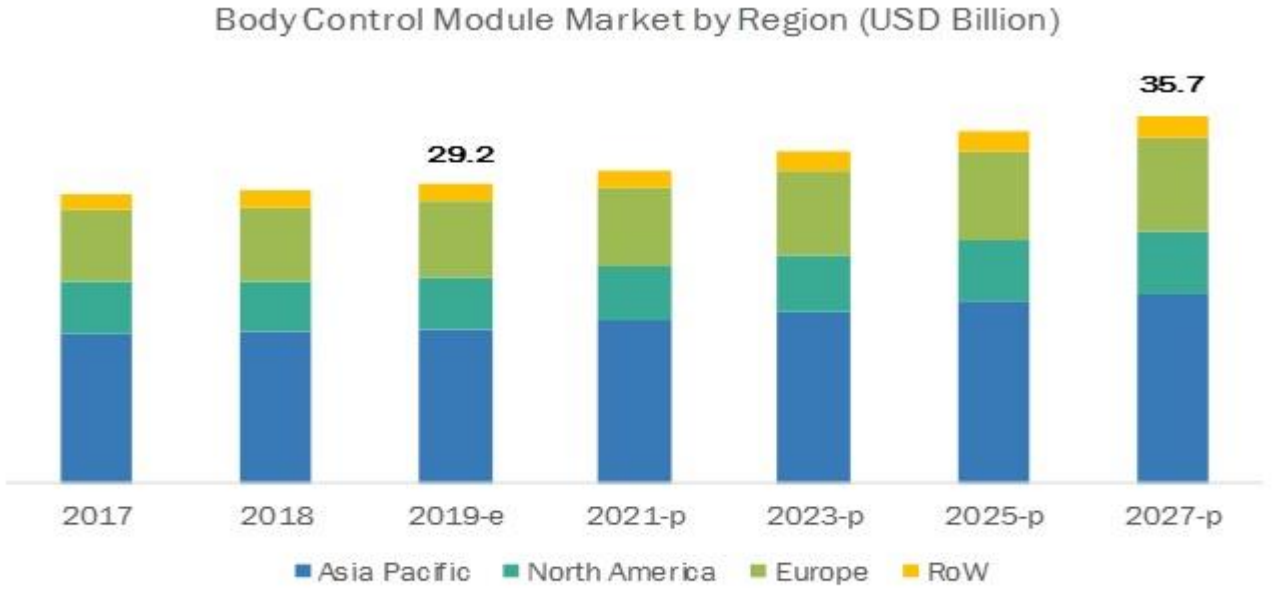
- Effective logistics management and tracking.
- Customization support
- Completion of warehouse semi automation

In-Car Electronics via BCM



COMFORT, SECURITY, LIGHTING AND ACCESS TECHNOLOGIES

BCM Market by Region

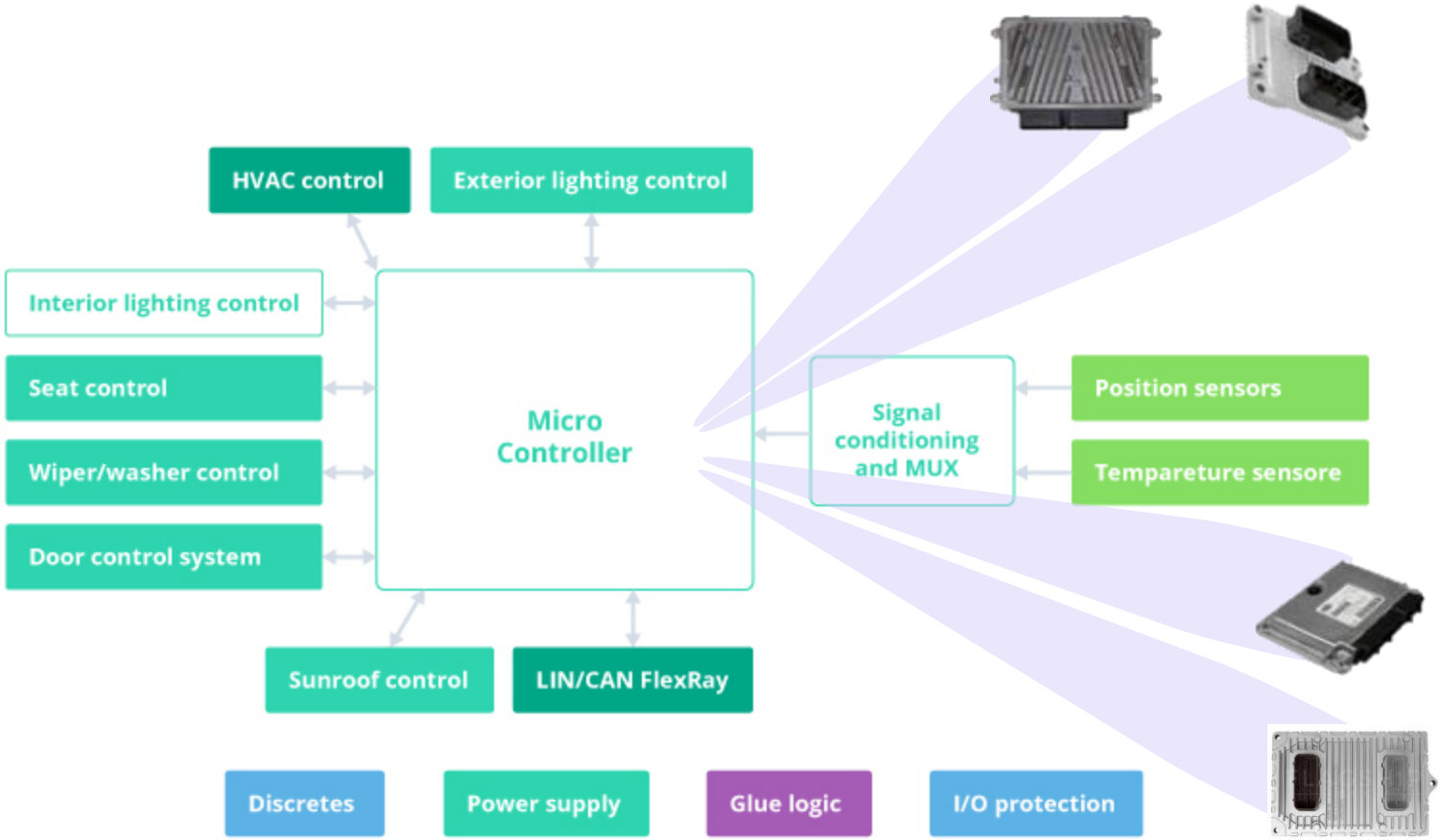


Source: Secondary Research, Expert Interviews, Company Presentations, and MarketsandMarkets Analysis

CAGR **2.6**%

- The global body control module market is projected to reach USD 35.7 billion by 2027, at a CAGR of 2.6%
- By 2027, Asia Pacific id estimated to account for the largest share of the body control module market
- The market growth can be attributed to factors such as installation of advanced body control functions, increasing sales of mid-size and luxury vehicle

General Representation of BCM



So What are the main functions of a BCM?

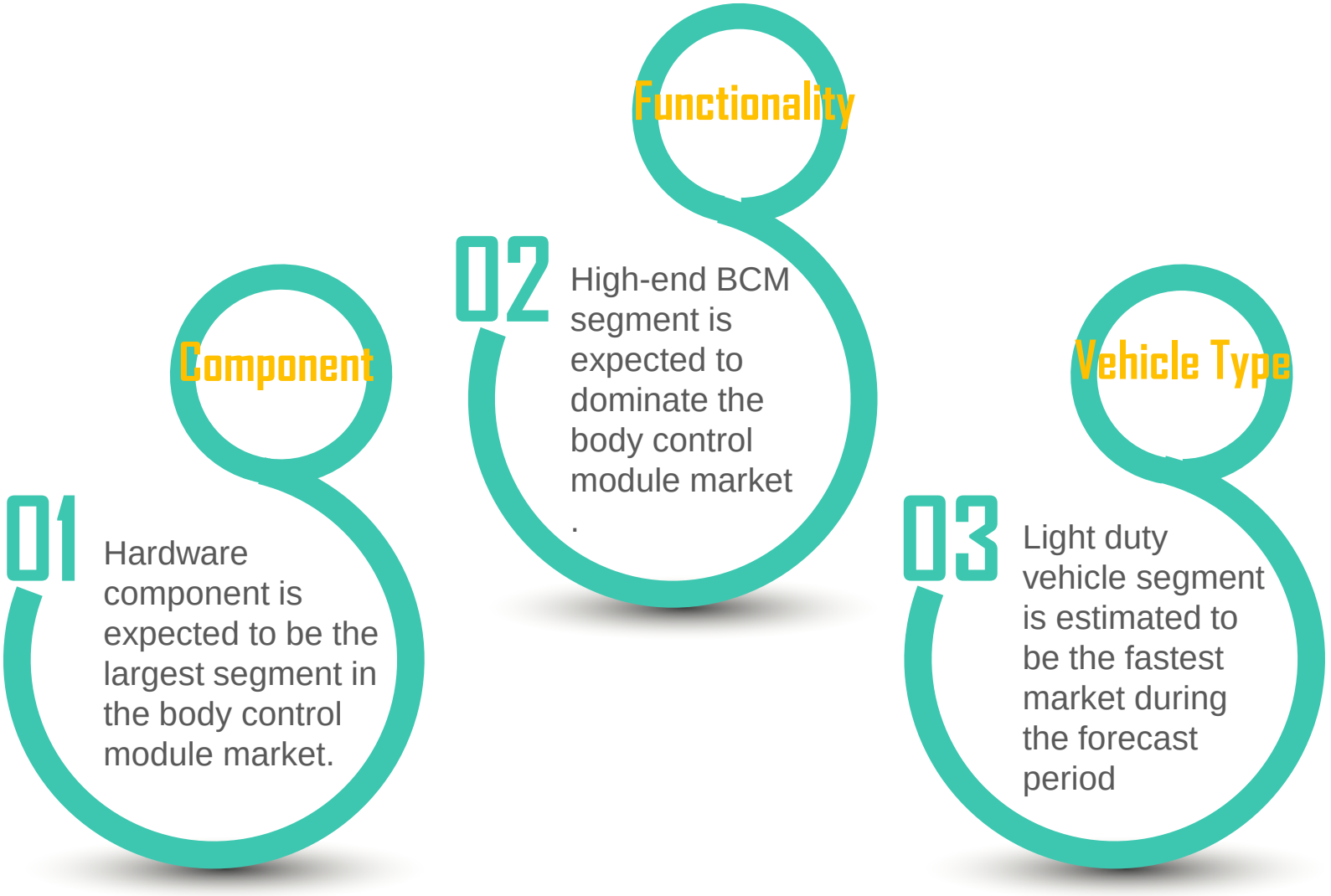
BCM Development

Effectiveness through integration

OEMs should consider BCM programming a requirement for their developers. Customized body control module software must be developed for each specific case. Yet the general requirements of this software are the same:

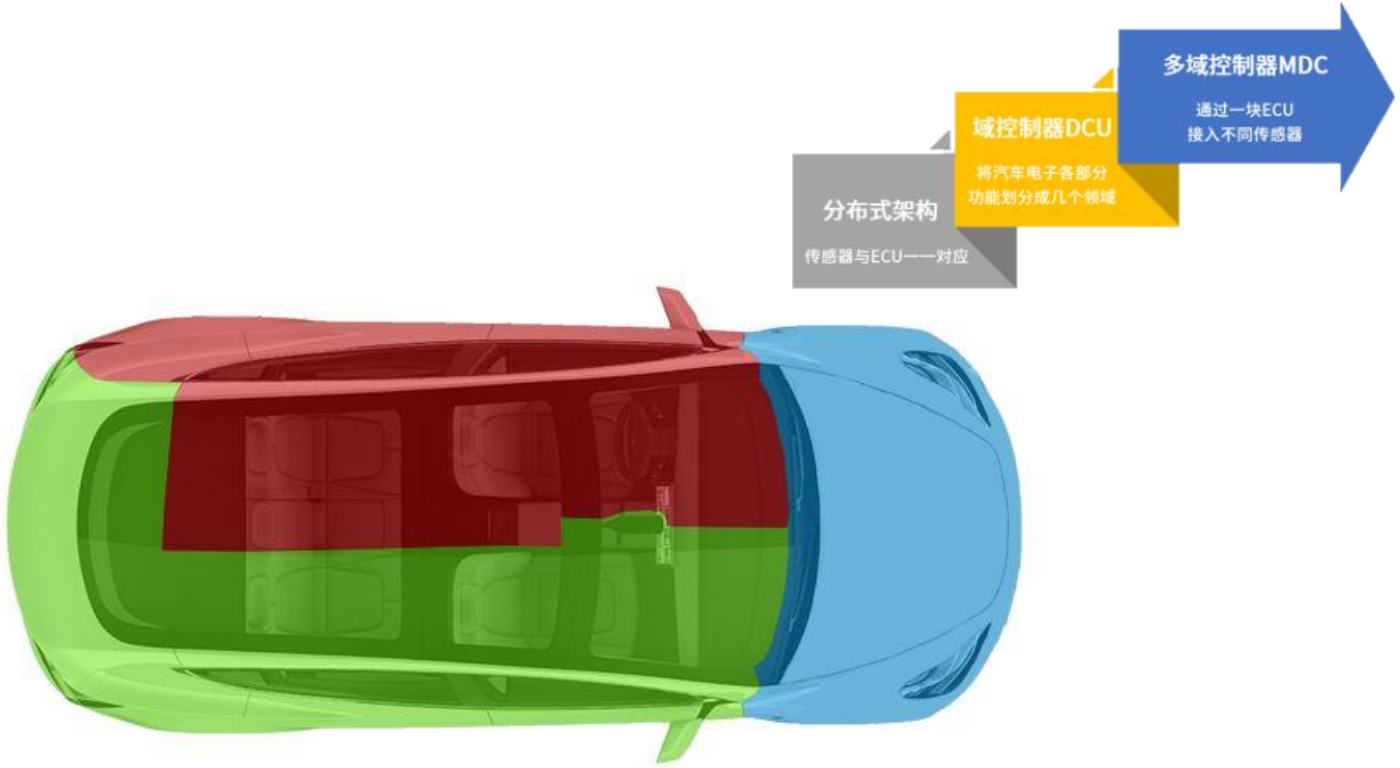
- Cost-efficient performance
- Focus on reliability and safety
- Energy efficiency
- Scalability, cross-model solutions, mastering of complexity
- Diversification and fast product cycles
- Support of global OEM platforms and growth in new markets
- Integration of advanced data management features
- Support new OTA features
- Compliance with ISO 26262, SPICE, and AUTOSAR 4.x standards

Key Factors for New Market



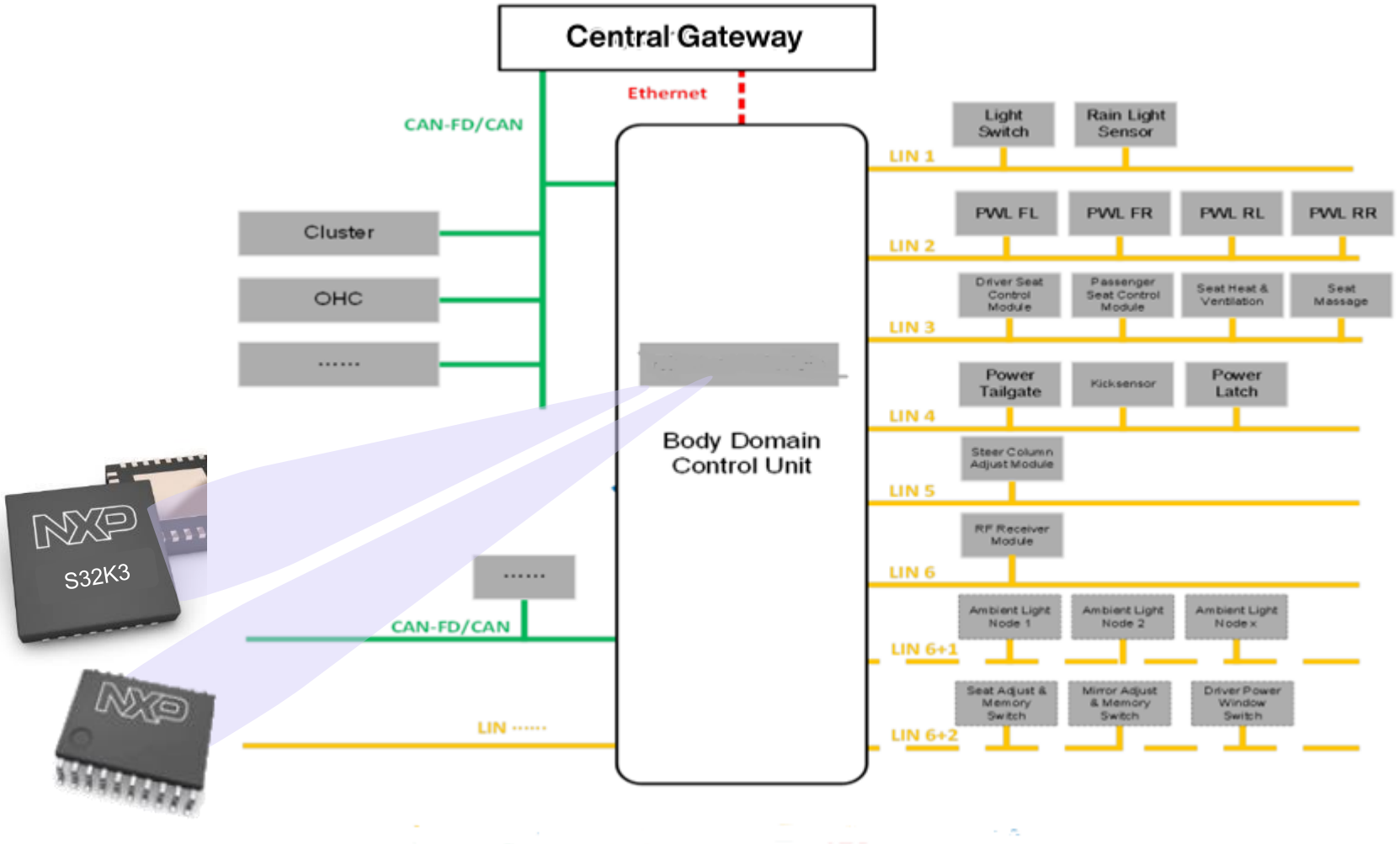
BCM is challenging. But it's also remarkably beneficial

New Architectures for BCMs

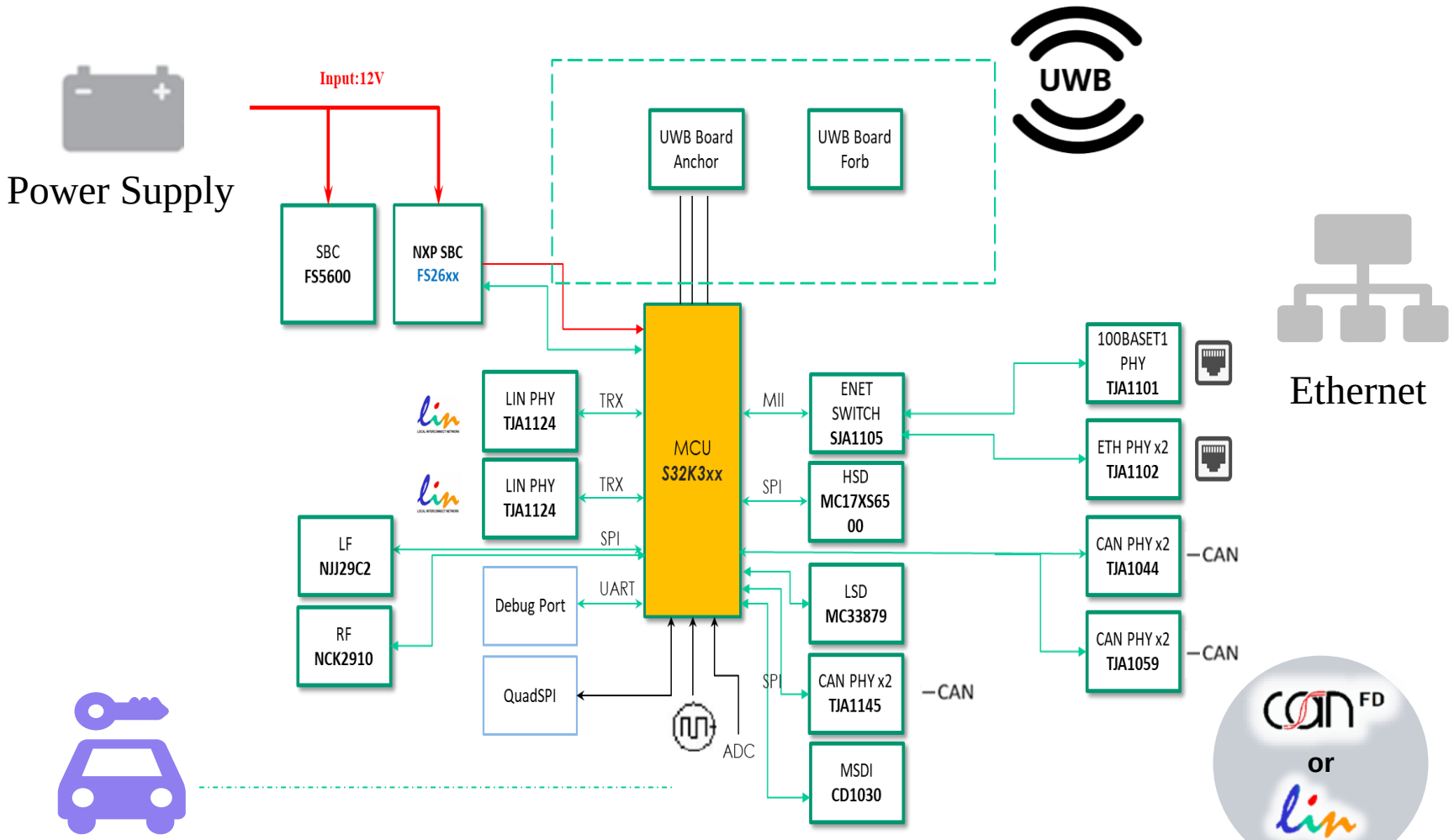


- Today, embedded software is used to develop two major types of architectures for BCMs: centralized and distributed.
  - **Centralized** architectures require fewer modules with high functionality compared to distributed architectures, which are built with a smaller number of modules and more communication interfaces.
  - **Distributed** BCM architecture is more flexible, yet it's not possible to reach the level of optimization of an ECU with a centralized structure.

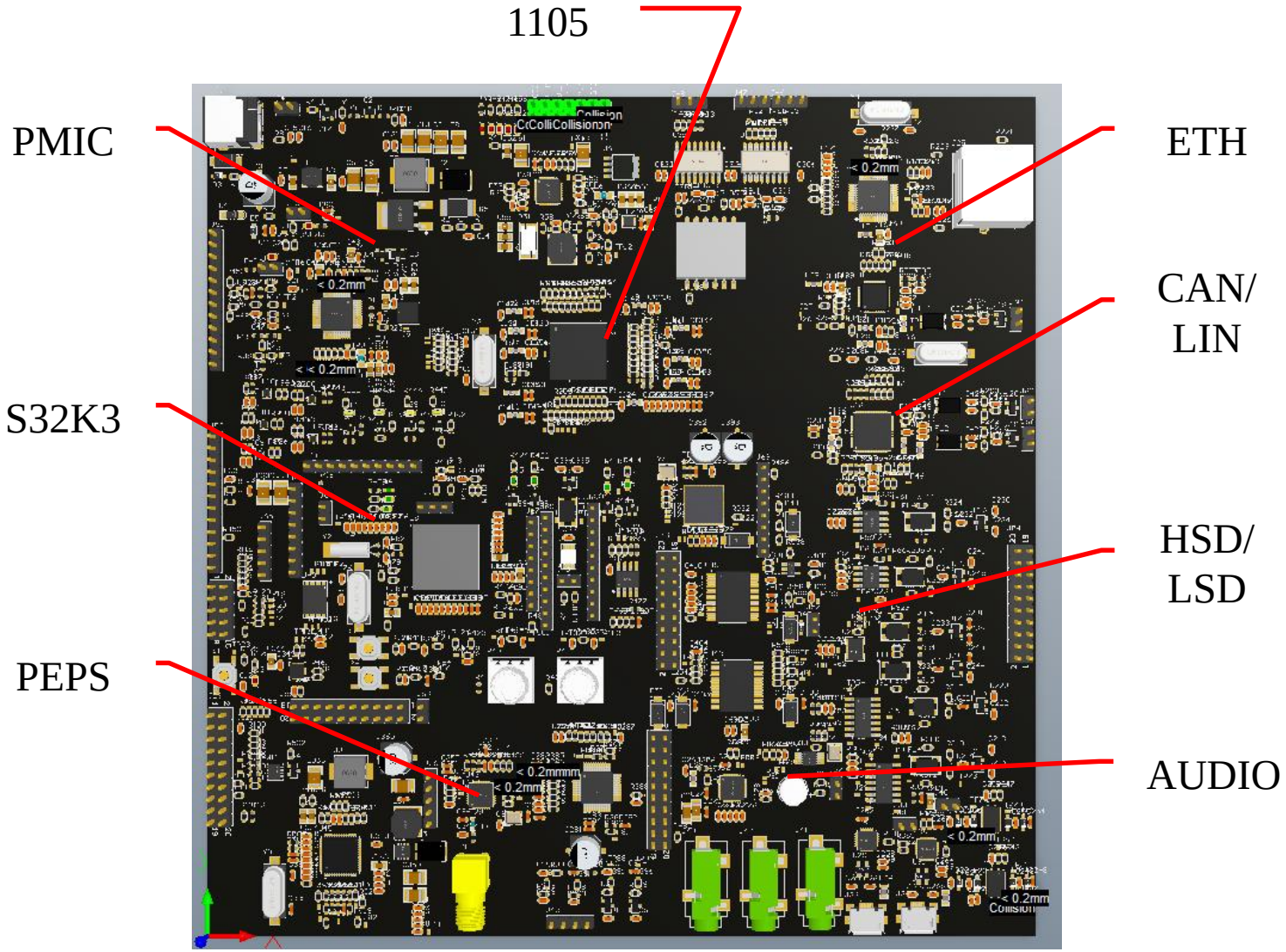
Body Domain Controller



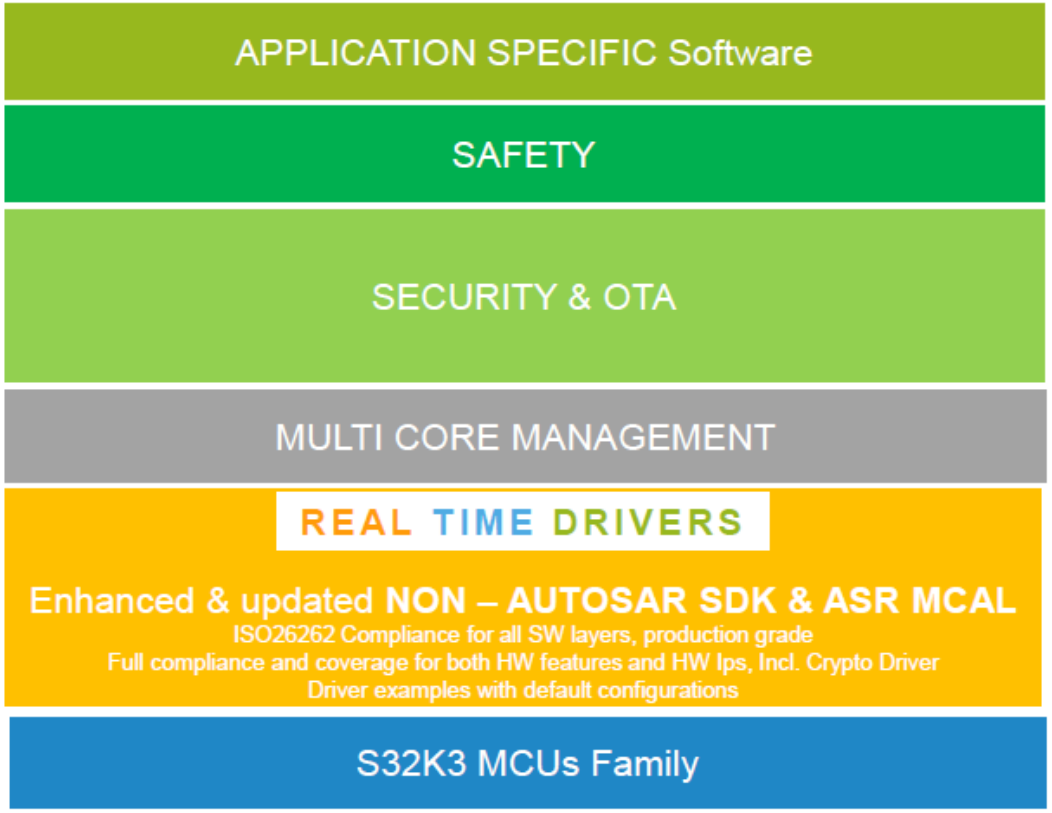
Design for BDC



Design for BDC

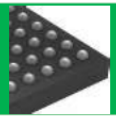
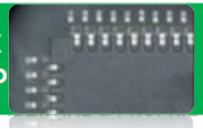


SW for BDC



- Gateway, ETH, PEPS, FOTA etc.,
- Safety Framework SW & Core Self Test
- Security Firmware

NXP Solutions for BCM - 1

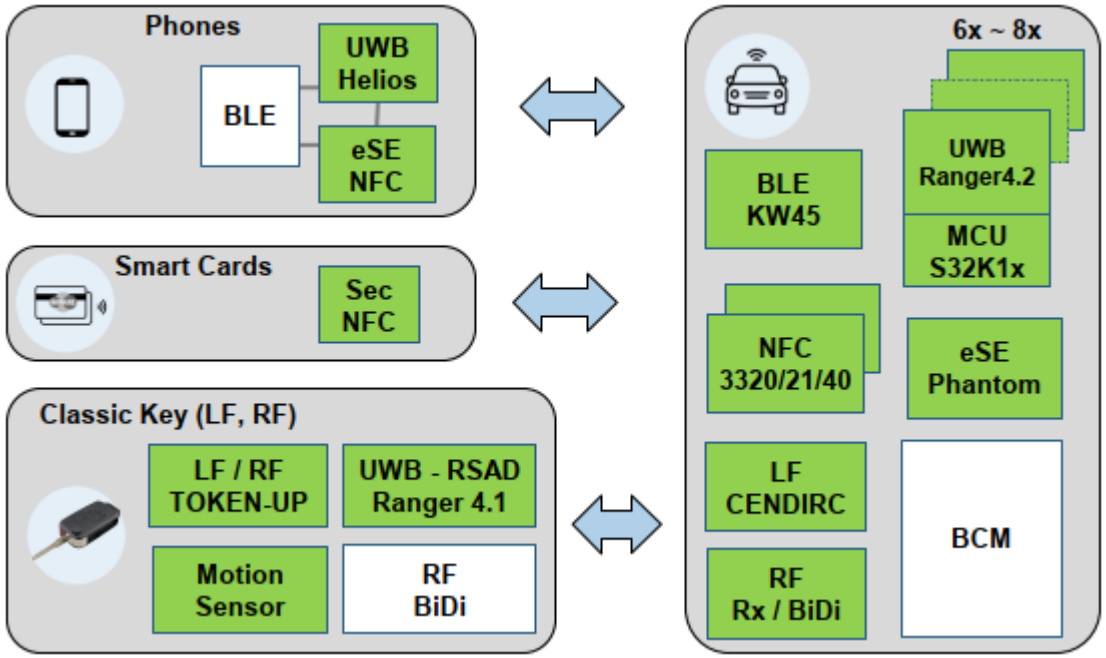
	S32K1	S32K3
Performance	M0+ @ 48MHz Or M4F @ 80-112MHz Single-core	1-3 M7 @ 120-240 MHz Single-core, Multi-core or Lockstep core
Memory	128KB-2MB P-Flash 17-256KB RAM	512KB-8MB P-Flash 128KB-1152KB RAM
Security & OTA	**CSEc** Sym Cipher Up to 20 keys OTA Support (RWW)	**HSE B** Sym & Asym Ciphers; 100+ Keys, Side channel protection Seamless OTA (RWW, Memory remapping for A/B Swap, FW rollback option)
Safety	**ASIL B**	**ASIL B / D**
Key Peripherals	Ethernet (AVB), up to 3 CAN FD Flextimer,TRGMUX,PDB for Motor control. FlexIO	Ethernet (TSN, AVB), up to 8 CAN FD eMIOS, BCTU, LCU for Motor control Advanced peripherals I3C, Enhanced FlexIO
Packaging		BGA  Max QFP  LQFP 

Safety ◦ Security ◦ Longevity

NXP Solutions for BCM - 2

CAN Functions:		Basic Transceiver		+ Standby Mode		+ Dual Channel		Sleep Mode	Partial Networking
		5V MCU	3V MCU	5V MCU	3V MCU	5V MCU	3V MCU		
Classic CAN Typ. 500kbps	12V Systems	TJA1057G	TJA1057G/3	TJA1044G	TJA1044G/3	TJA1046	TJA1059	TJA1043	TJA1145
	12V VeLIO Certified	N/A	N/A	TJA1044V	TJA1044V	TJA1046V	TJA1059	N/A	TJA1145
	24V Systems	TJA1051	TJA1051/3	TJA1042	TJA1042/3	TJA1059	TJA1059	TJA1043	TJA1145
CAN FD Beyond 1Mbps	**Transceiver Requirements:** • 5 Mbps bit timing guaranteed • 2 Mbps EMC IBEE compliant • C&S CAN FD IOPT compliant	TJA1057G	TJA1057G/3	TJA1044G	TJA1044G/3	TJA1046	TJA1059	TJA1043	TJA1145(A)
		TJA1441	TJA1441	TJA1442	TJA1442				
	Option: 1.8µs Wake-up Filter Time *(relevant for 2023+)*			TJA1044G	TJA1044G/3	TJA1448	TJA1448	TJA1443	TJA1145
				TJA1442	TJA1442				
	Grade 0								
	CAN Signal Improvement			TJA1462	TJA1462			TJA1463	
	Secure CAN			TJA1152	TJA1152			TJA1153	

NXP Solutions for BCM - 3



Smart Access System Play

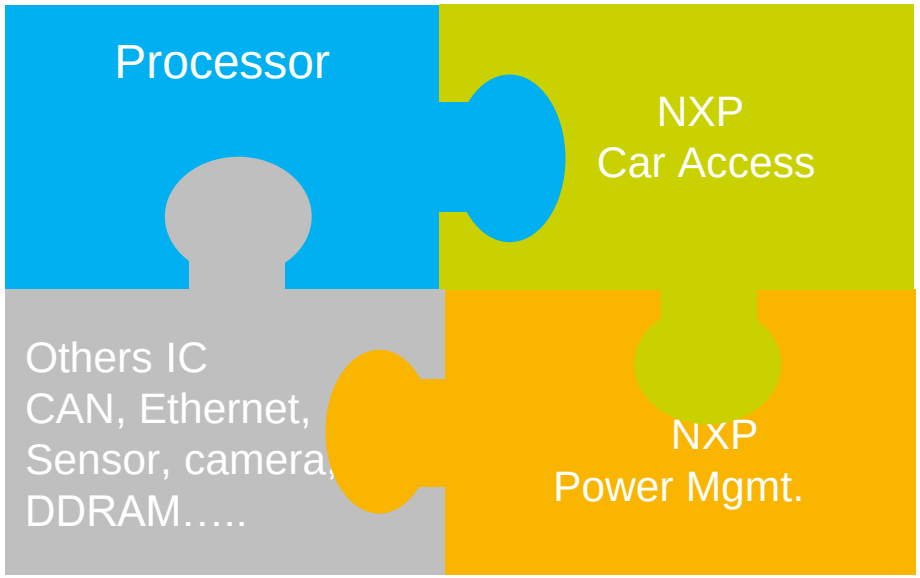
- CCC R2/R3 technologies available (e.g. UWB MAC, BT SDK)
- Digital Key HW/SW/Services for Phone, Smartcard and eSE
- Mobile Phone UWB interoperability proven
- NFC performance up, e.g. operating range (NCF3321)

NXP Solutions for BCM - 4

HSD驱动芯片优势

- 可靠性：诊断功能多，具有安全失效模式的保护特性
- 多样性：支持 SPI 通信， 输出端电流检测镜像功能
- 诊断性：支持 ASIL B, 拥有保护，诊断，失效模式，有 safety manual 和 FMEDA 文档
- 高准确度: 准确检测芯片的电源电压和温度
- 高集成度: 支持菊花链形式的 SPI 通信
- 下一代产品展望: Q100 family, 极低的内阻值 , 48V family, smart low RDSon switches ….

NXP Solutions for BCM



1

Automotive MCU:

MagniV

S32K1xx

S32K3xx

2

Networking:

CAN/LIN/FlexRay

100Base-T1 ETH PHY

Giga ETH Switch

3

Car Access:

RKE/PKE secure car access

Automotive NFC

UWB

4

Power Mgmt:

System PMIC

Safety SBC

Battery Sensor

Power Driver

Thank You