

Passive Components Business Strategy

Hiroyuki Uemura

Senior Executive Vice President

CEO of Electronic Components Business Company

Joachim Zichlarz

Senior Vice President

CFO of Electronic Components Business Company

- ◆ Sustainable growth and profit after the RF360 carve-out

Joachim Zichlarz

- ◆ Execute Monozukuri innovation &
Product development of Next-generation electronic
components with IC collaboration

Hiroyuki Uemura

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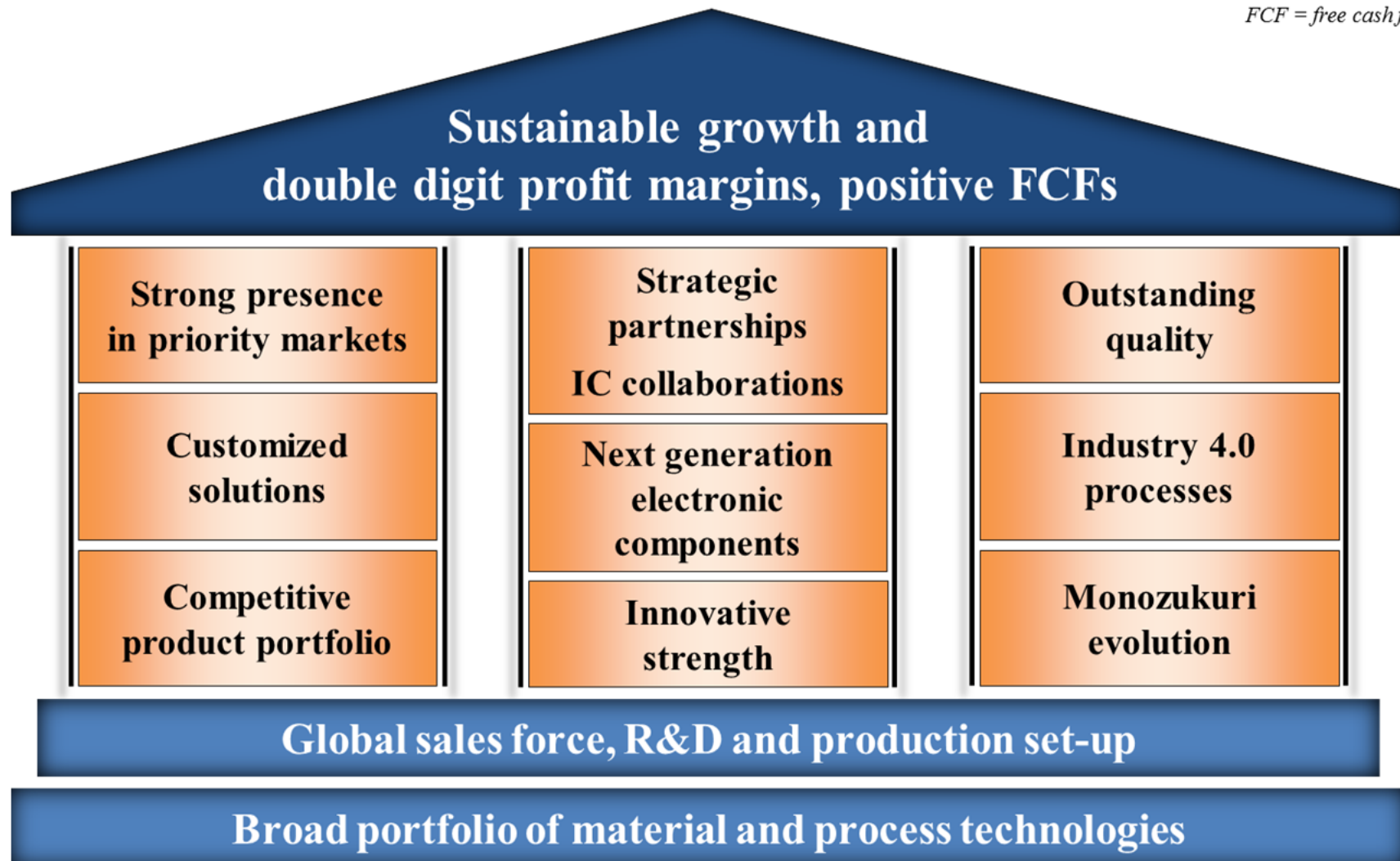
Joachim Zichlarz

- ◆ Execute Monozukuri innovation & Product development of Next-generation electronic components with IC collaboration

Hiroyuki Uemura

Our house of success

FCF = free cash flow



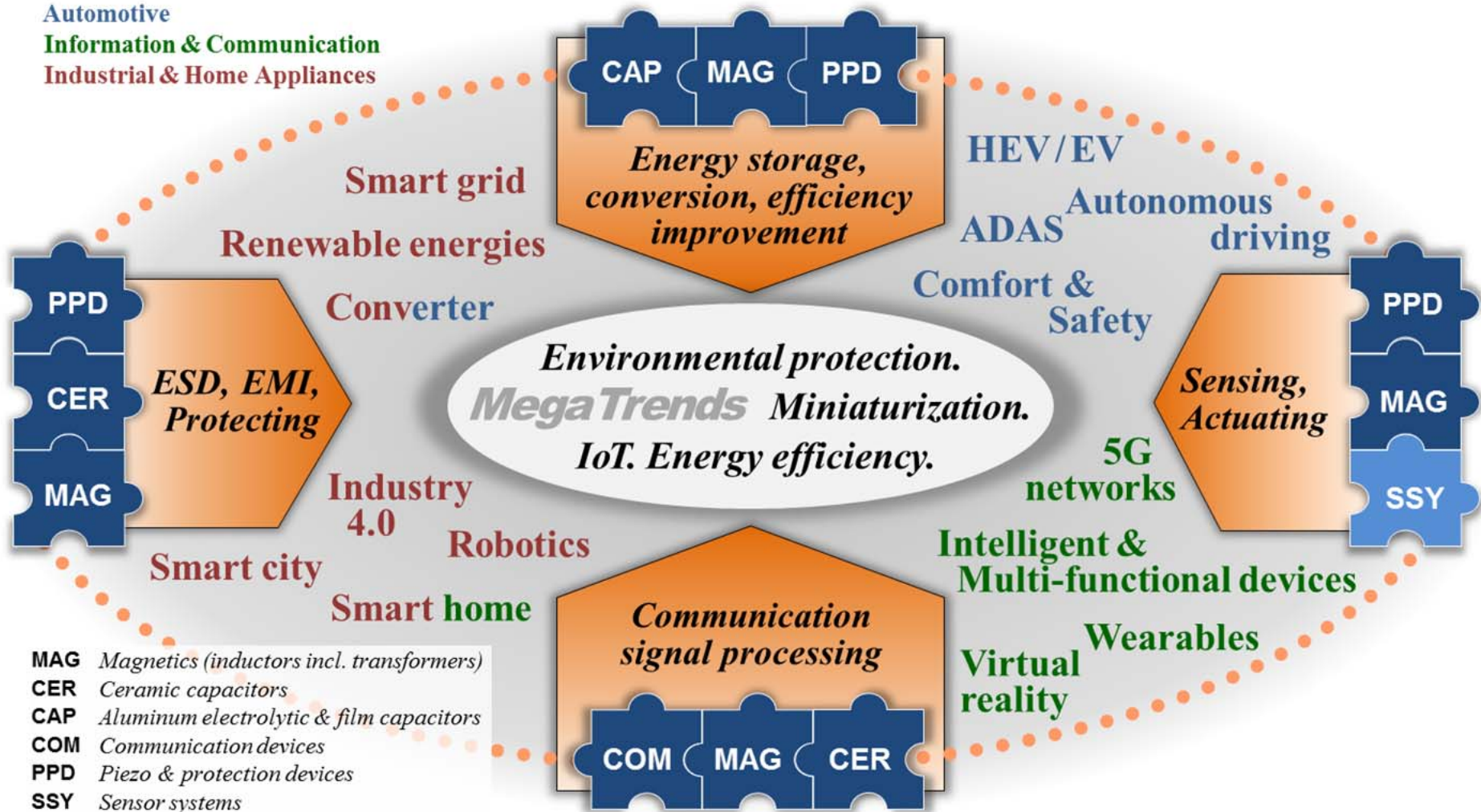
Our passive components support electronics mega trends

Priority markets & applications

Automotive

Information & Communication

Industrial & Home Appliances

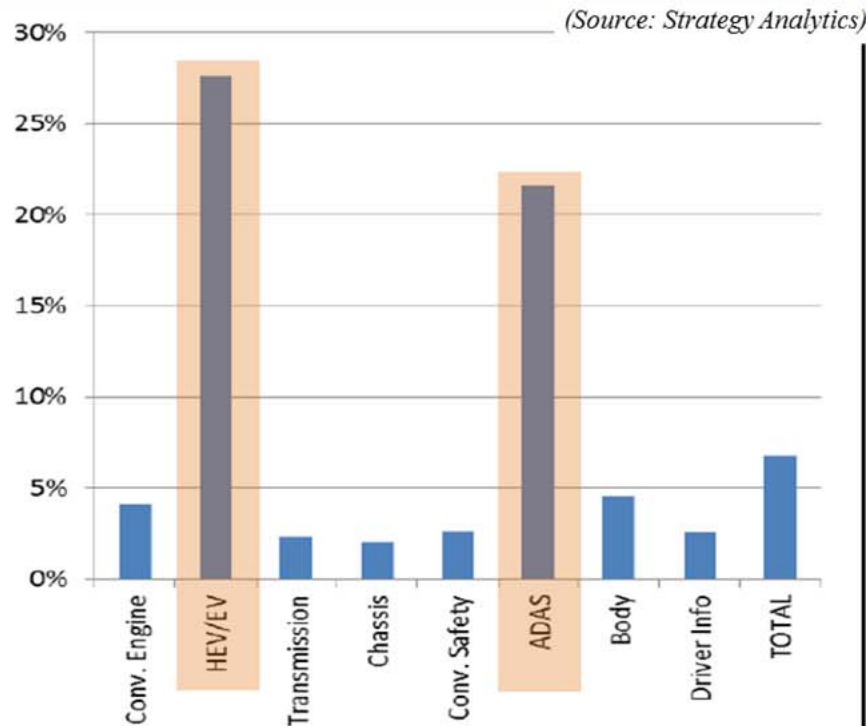


Priority market Automotive

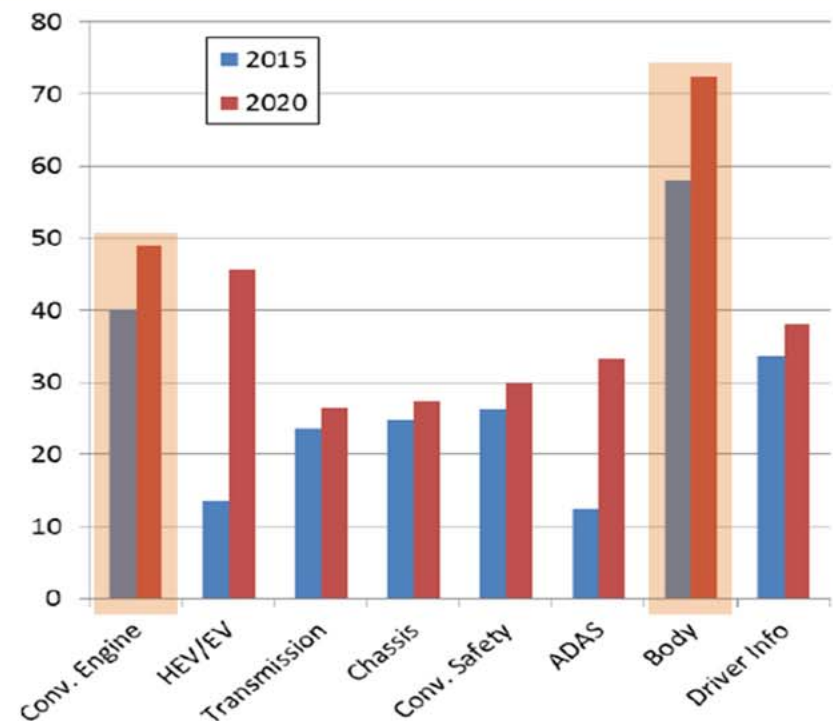
➤ Market growth of xEVs and Advanced Driver Assistance Systems (ADAS) is very strong, while absolute demand for conventional engine, body and driver information remains big.



CAGR 2015 – 2020



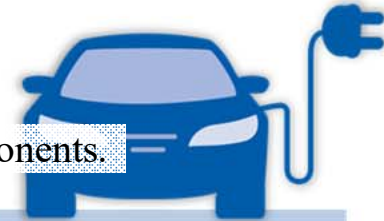
Electronic system demand in USD billion



TDK provides a comprehensive and competitive product portfolio for automotive applications and targets over-proportional growth.

Promising perspectives in eMobility

➤ TDK offers 4 key ‘system level’ products for e-mobility as well as many passive components.

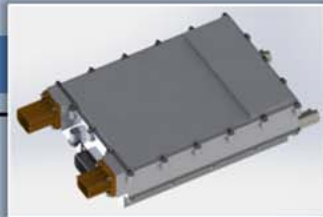


Systems level

On-board chargers

Power grid

Wireless charging systems



High voltage battery



DC/DC converters

Inverters

Low voltage board net

Electric motor

Components level



Ceramic capacitors

MegaCap

CeraLink

Inductors (incl. transformers)

WPT coil packages

DC link capacitors

Aluminum capacitors

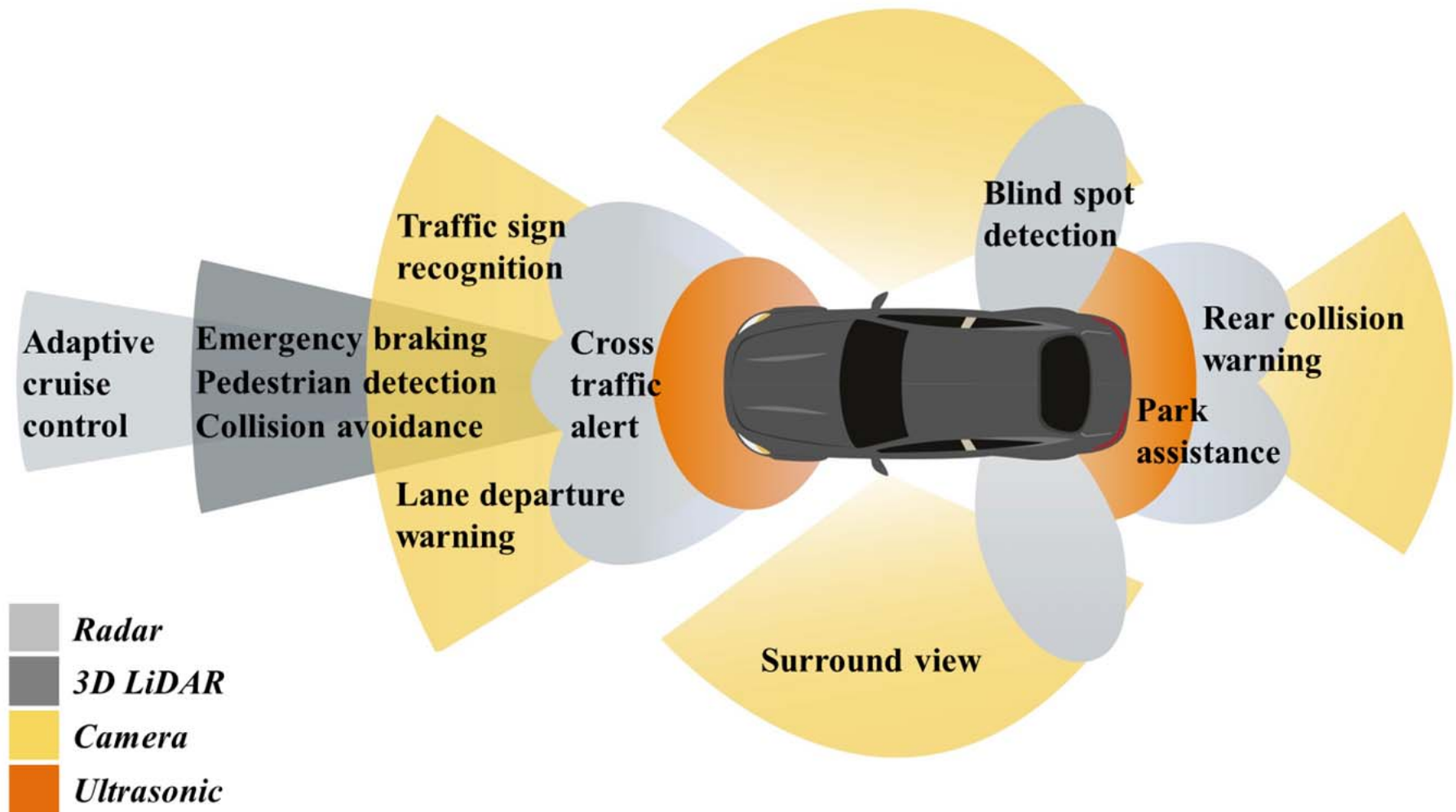
Sensors

Magnets

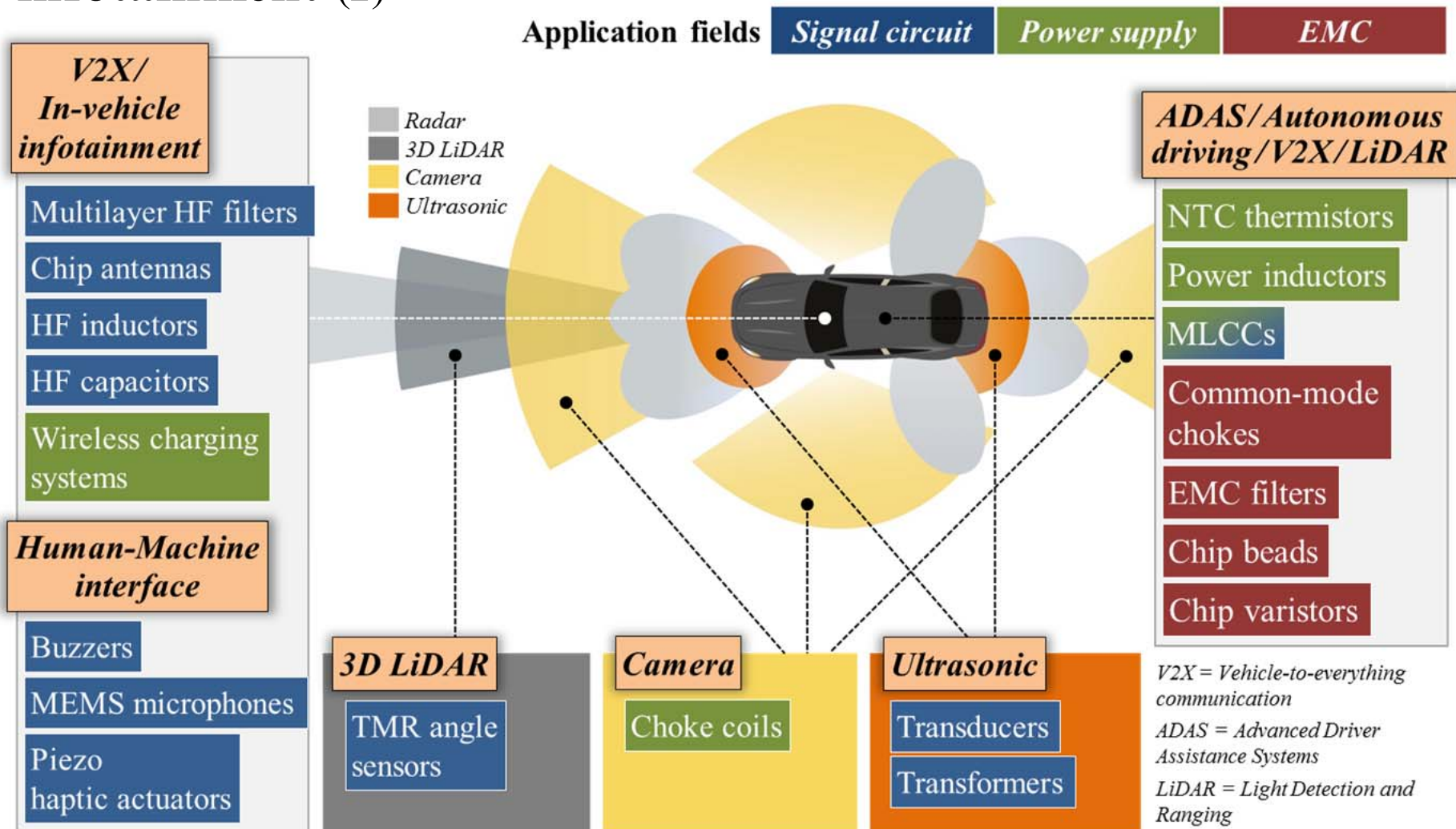
Growing demand for xEVs will fuel strong growth for passive components and systems from TDK.

Our comprehensive portfolio for ADAS and in-vehicle-infotainment (1)

ADAS = Advanced Driver Assistance Systems

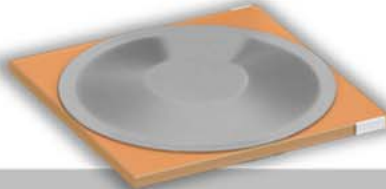
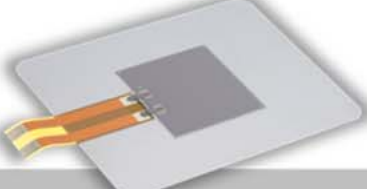


Comprehensive portfolio for ADAS and in-vehicle-infotainment (2)



Our haptic solutions – New dimensions in performance

➤ Based on our advanced multilayer piezo ceramics technology, TDK opens up new applications especially in the promising area of Human-Machine interfaces (HMIs).

PowerHap™	PiezoHap™
	
Outstanding features	
<ul style="list-style-type: none"> • Highest displacement (up to 200 µm), force (up to 20 N) and acceleration (up to 15 g) 	<ul style="list-style-type: none"> • Lowest insertion height (0.35 mm)
<ul style="list-style-type: none"> • Extremely fast response time 	
Additional benefits	
<ul style="list-style-type: none"> • Power-saving solution • Flexible vibration patterns/customizable profiles 	



TDK has started sampling and has received a very positive market response.

Priority market Information & Communication (ICT)

➤ The total available market for TDK will double in the next 4 years. (Source: TDK estimates)

Key trends & drivers

Intelligent & Multifunctional

- Improved image quality, power storage, user interface
- Low-power cameras
- Advanced sensing for positioning and user ID

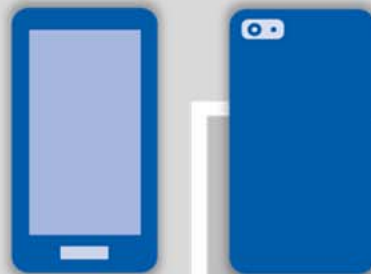
Evolution to 5G

- Higher data rates
- More and higher frequencies
- New antennas, user features, enabling technologies

Miniaturization

- Ever smaller, low profile
- Functional integration
- Lower power consumption

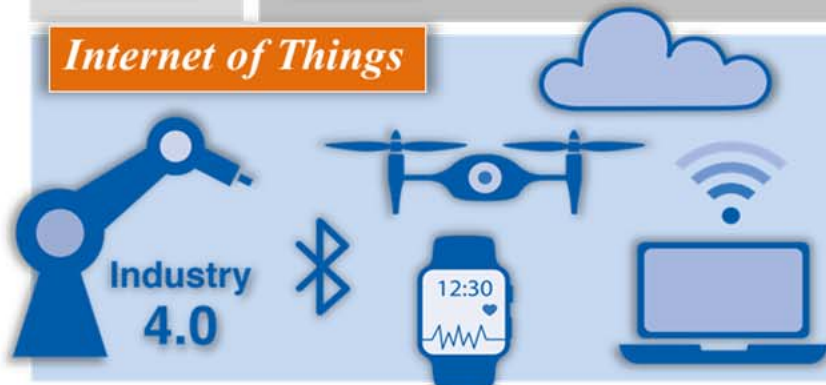
Smart functionality



Advanced communication systems



Internet of Things



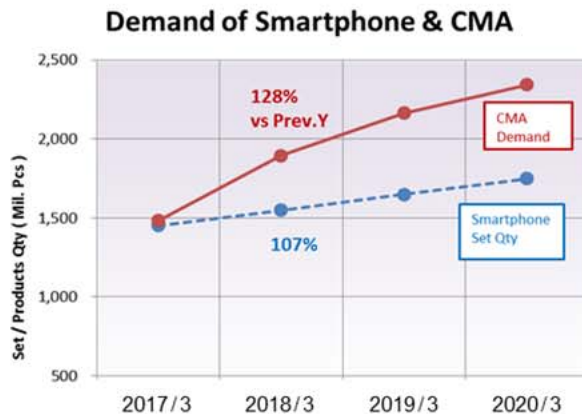
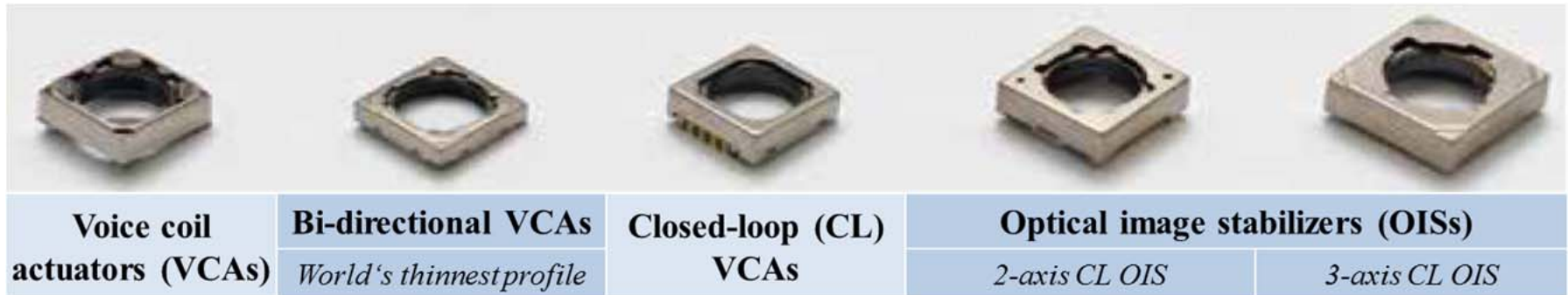
TDK products (excerpt)

- Camera module actuators
 - Optical image stabilizers
 - Power inductors
 - Sensors
 - MEMS
 - WPT systems
-
- RF antennas
 - Filters, duplexers, couplers, baluns
 - Thin-film devices
 - EMC solutions
-
- HF & power coils
 - Tunable capacitors
 - Beads
 - Embedding technologies

TDK provides a comprehensive and competitive product portfolio for ICT applications and targets over-proportional growth.

Example for our technological competence in key components for ICT: camera module actuators (CMAs)

➤ The requirements for autofocus speed & accuracy and image quality in smartphone cameras are rising.



CL VCA features

- Highly responsive
- High positioning accuracy
- Low power consumption

OIS features

- High control performance
- High displacement accuracy
- Good frequency response

Major applications


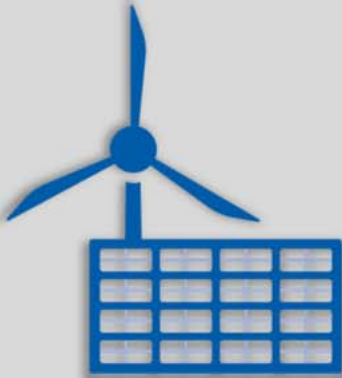


- Cameras in mobile phones
- Tablets
- Projectors

TDK lens actuators improve the performance of smartphone cameras.

Priority market Industrial

➤ The industrial markets offer good growth opportunities created by mega trends.

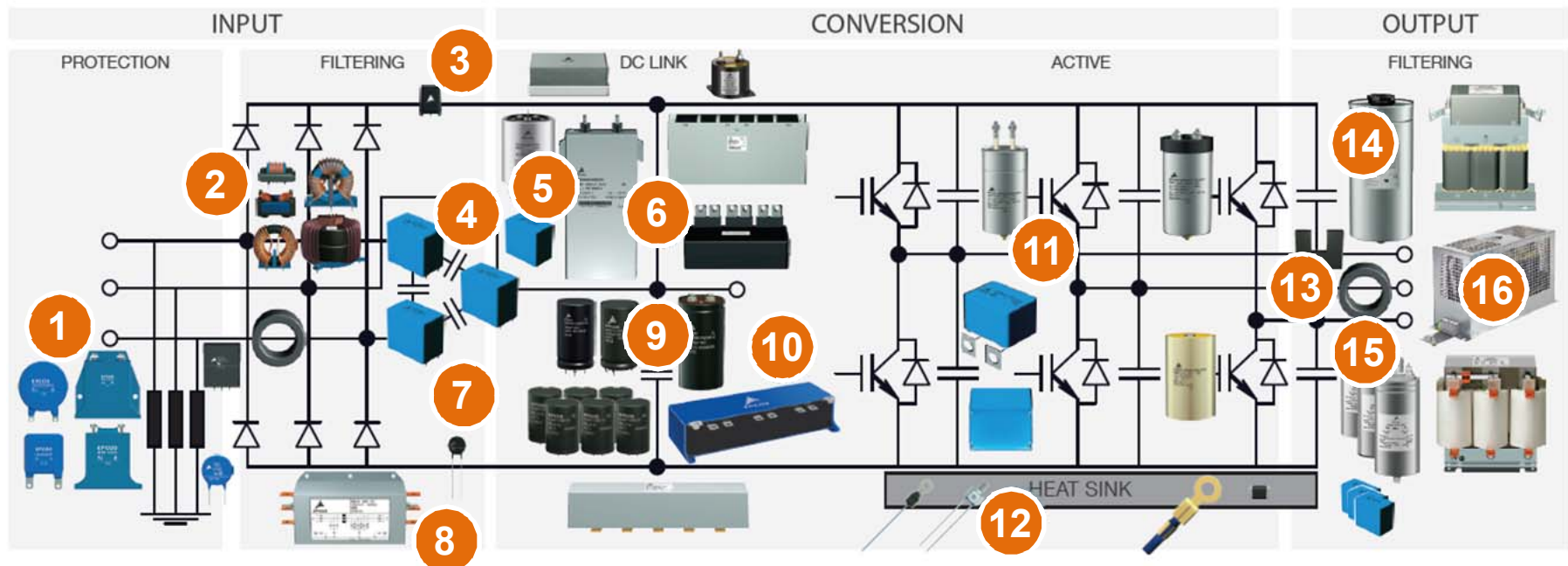
Important trends & drivers

Energy efficiency	Green energy	Smart grid	Smart manufacturing
<p>➤ Strong demand for energy efficient devices</p>  <p>➤ New generations of IGBTs and semi-conductors (GaN, SiC)</p>	<p>➤ Global energy demand constantly increasing</p> <p>➤ Strong demand for wind and solar power generation</p> 	<p>➤ Low-loss power transmission systems (HVDC High-Voltage Direct Current) and smart metering</p> <p>➤ Decentralized power generation with storage and buffering</p> 	<p>➤ Global trend towards smart manufacturing</p>  <p>➤ New applications for connectivity and sensing</p>

TDK is well established and delivers state-of-the-art solutions for Industrial.
TDK targets to grow faster than the market.

Example for our strong position in key industrial applications: frequency converters

- Frequency converters are an integral part of energy efficient drives and other industrial applications and enjoy strong growth prospects. (9.4% per annum expected growth rate for 2016 – 2020 in USD; Source: Technavio 2017/1)
- TDK offers attractive and competitive solutions for frequency converters in more than 15 product groups.



TDK offers almost all required passive components.

◆ Sustainable growth and profit after the RF360 carve-out

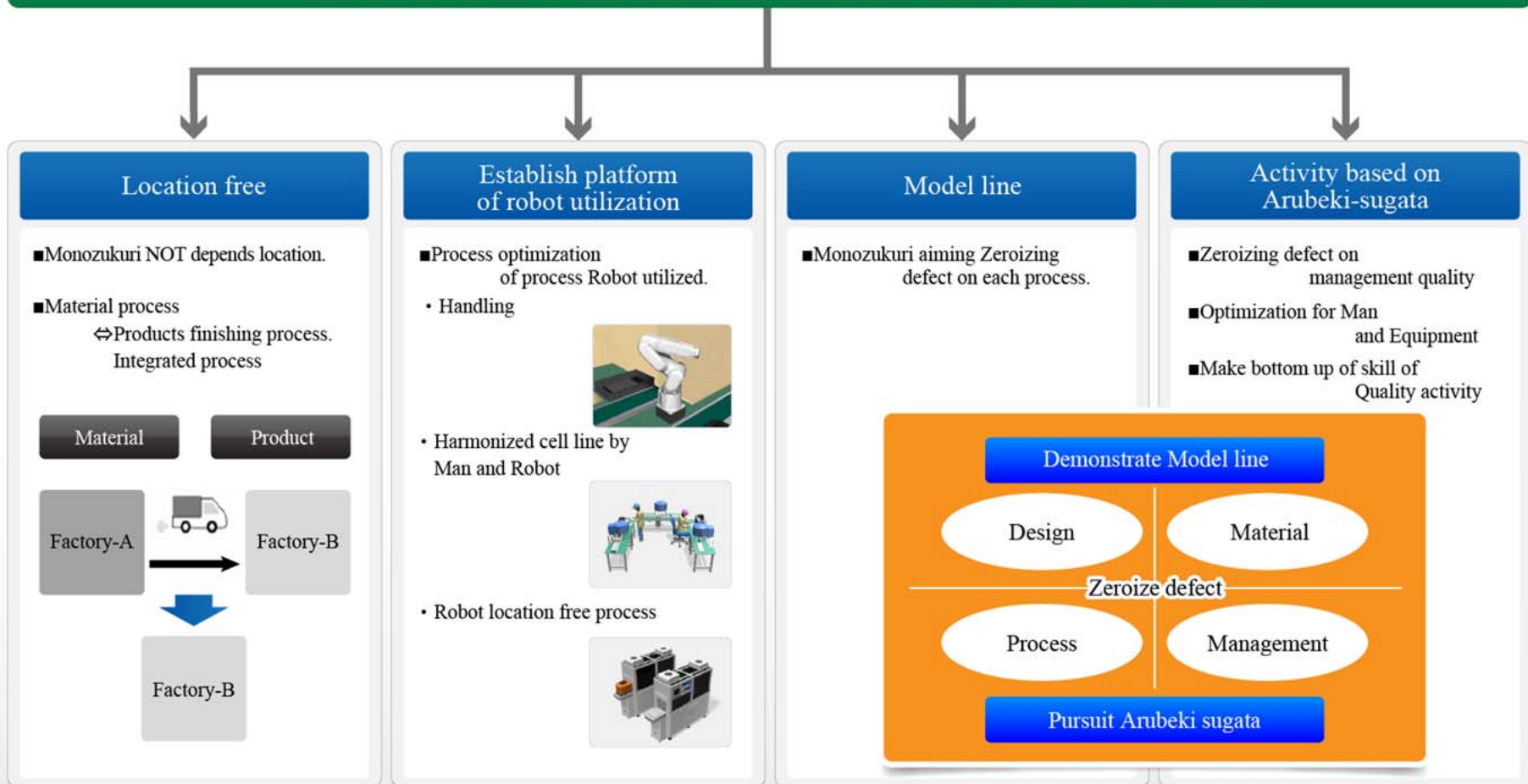
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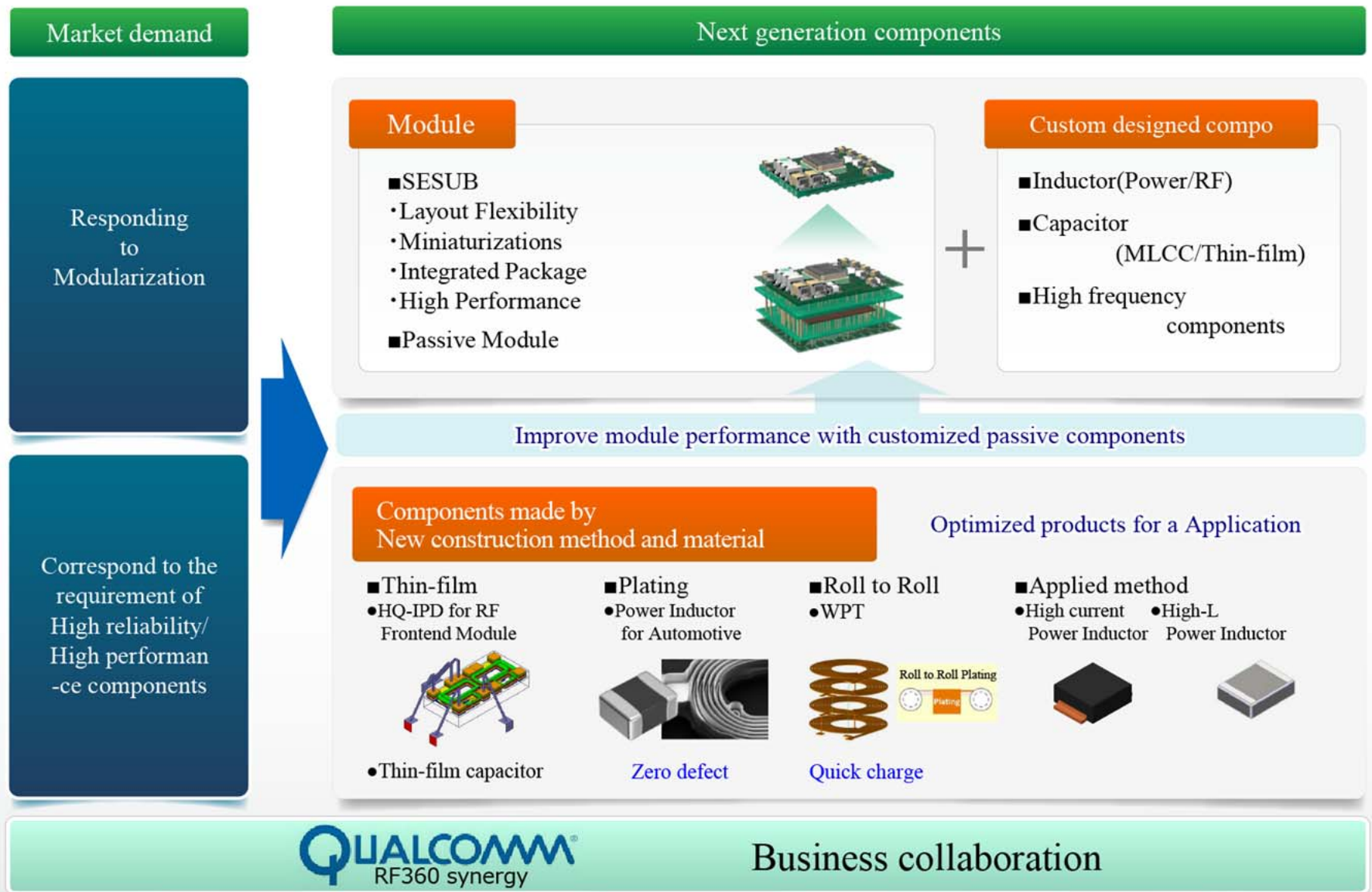
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Hiroyuki Uemura

Pursuit TDK industry 4.0 + Zero defect

Monozukuri innovation based on the Arubeki-sugata concept





Strengthen elemental technology for passive component in each area

(Material / Lamination / Thin-film / Wire wound / Assembling)

● Honjo East site

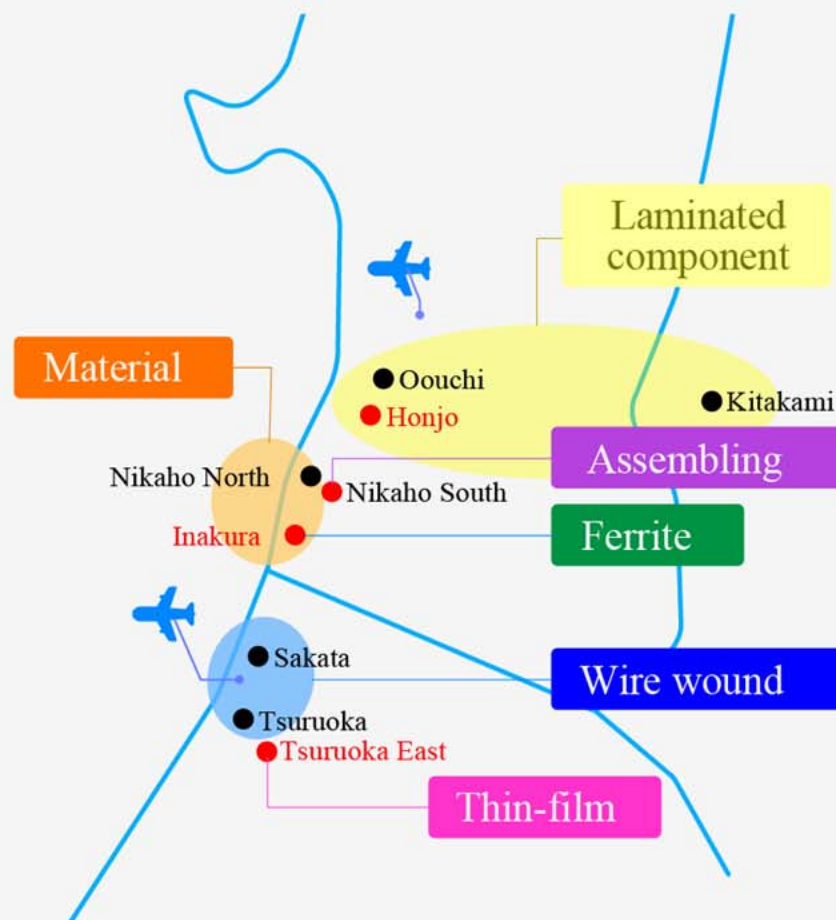


Floor area: 50,000 m²

● Inakura East site



Floor area: 15,000 m²



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