

# Murata's growth trajectory and expansion in field of electronics

As the functionality of cellular phones has improved and the speed/capacity of communications systems has risen, we have achieved tremendous growth by pursuing business globally and expanding product development and production capacity with a focus on growing markets. With 5G proliferating since we entered the 2020s, industries and companies have undergone immense changes. In around 2030, 6G will arrive, and communications as social infrastructure is projected to see further advances. We will expectedly enter a world where everything is connected via communications systems.

In response to such technological innovations, the electronics field will continue to expand, and business opportunities for Murata will also multiply.

1990s >
2000s >
2010s >
2020s >
2030s

## 2G

Voice-to-digital cellular phone systems emerge. In addition to talking, users can now also exchange email messages via their phones.

## 3G

Users are now able to take pictures with cameras built into their cellular phones, and send and receive images through high-speed data communications. In the late-2000s, cellular phones also get equipped with GPS functionality.

## 4G

With the diffusion of smartphones, devices become even more multifunctional. Apps and social media proliferate, transforming the ways that people communicate.

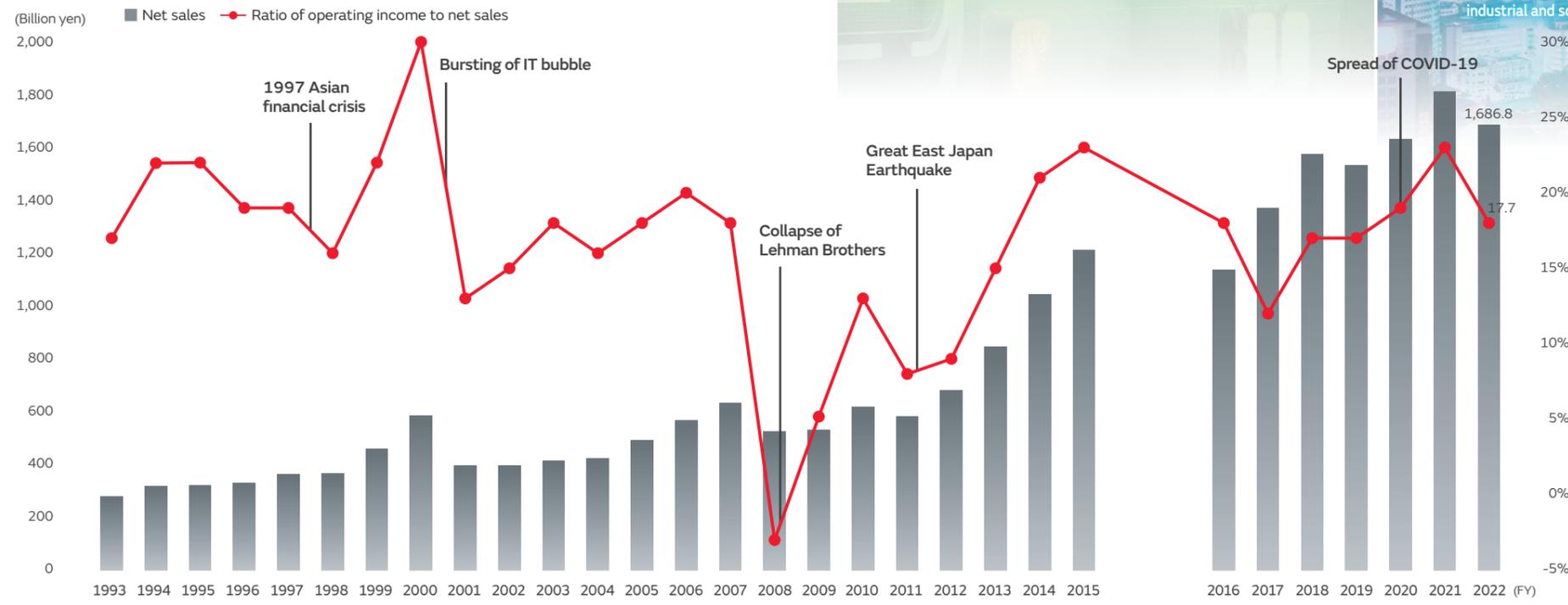
## 5G

Internet of Things (IoT)—All devices are connected to the internet. As local 5G sees increasing adoption, the smartification of factories and offices is progressing. And in the mobility space, the number of electric vehicles (xEVs) on the roads is rising, autonomous driving technology is evolving, and innovation in the CASE (connected, autonomous, shared, and electric) vehicles is progressing. Business opportunities are therefore expected to expand. Greater control over information and things will result in a redefinition of “communications” as industrial and social infrastructure.

## 6G

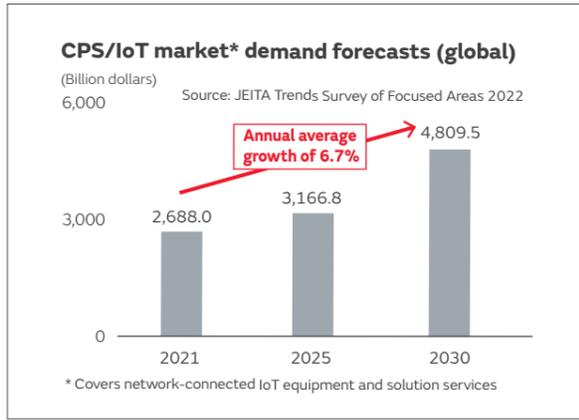
Communications coverage will expand into the oceans, the air, and space, creating a world in which even more people and things are connected. Cyber-Physical Systems (CPS) are expected to see broad adoption as tools for leveraging the power of artificial intelligence (AI) to process and deploy digitized big data. Communications will not only make people's lives more comfortable, but also contribute to the resolution of social issues.

### Murata's operating performance



### New technologies/keywords

- Generative AI
- Digital twins
- Metaverse
- Holograms
- Automatic charging
- Communication robots
- Biometric data-driven healthcare
- Fully autonomous driving
- Flying cars (eVTOL vehicles)



# Market expansion in infrastructure business domain

## Future of communications

**Network side**

**Market trends**

- Emergence of large-capacity optical communications to support ultra-high-speed communications and large-scale computation
- Transmission ranges are limited, so high efficiency relay devices and base stations will increase
- The processing and communications capability of devices and other hardware will also support high speed communications

**Business opportunities**

- Rise in demand for high levels of performance and reliability to support network connectivity functions
- Increase in demand for components due to more connected devices and processing capability improvements

**Device side**

**Market trends**

- Increasing shift toward wearable and implantable devices
- Acquire and digitalize all types of information
- Develop advanced modules and sensors
- Need for miniaturization, enhanced energy saving, and improved reliability in order to make devices more portable and wearable

**Business opportunities**

- Increase in demand for small and high performance components and modules
- Increasing technical requirements to reduce electricity consumed and improve efficiency
- Added value will shift to hardware + software/solutions

**Edge devices**

**Virtual-space Cloud system AI**

Functions will be distributed between peripheral devices

## Future of mobility

**In-vehicle domain**

**Market trends**

- Evolution of autonomous driving technology alongside xEV shift
- More importance for ECUs due to more data processing and increasing complexity of controls

**Higher demand for electronic components**

|                               |                           |                           |
|-------------------------------|---------------------------|---------------------------|
| <b>Electrification</b>        | <b>Autonomous systems</b> | <b>Connected vehicles</b> |
|                               |                           |                           |
| Multilayer ceramic capacitors | MEMS inertial sensors     | V2X modules               |

**Out-vehicle domain**

**Market trends**

- Expansion of vehicle-based services such as MaaS (Mobility as a Service) due to the connection of vehicles to social platforms via communications technology
- Robot taxis, micro mobility and flying cars (eVTOLs) are emerging as new modes of transportation

**Growth of mobility business through technological innovation for CASE (connected, autonomous, shared, and electric) vehicles**

**Murata's initiatives**

- We will use our knowledge gained from the communication field to provide new value, including software and solutions.
- Exploration of business opportunities in the out-vehicle domain

## Message Strengthening of "Power to Sell" as the market expands

Murata has always had a strong sales structure built on a well-established Account Management foundation. Accounts are supported globally, regionally, or locally depending on the scale of the business. Information sharing across our entities, a strong business development team, and our network of rep and distribution partners make sales one of our strengths.

Many things changed during the global pandemic. Access to the customer, specifically engineers, has become increasingly difficult. Therefore, we need to reimagine our efforts to engage them and advance our "Power to Sell."

Our goal in the Americas is to create an exceptional customer Digital Experience. To do so, we built an enhanced website with a focus on increased technical content, developed a studio to create video content, launched a 24/7 Community forum for engineers to chat with our team and share knowledge within the community. These efforts work seamlessly with our evolving distribution partners and the

rapidly growing web distributors network.

This improved customer experience generates a wealth of data from markets, applications, products, and specific customer needs and contacts. We can link various parts of this data to our Customer Relationship Management (CRM) system that helps us focus and prioritize our sales and engineering resources.

This Customer Digital Experience is leading to an elevated Sales Experience for our team and an even better Employee Experience. We plan to continue these efforts and improve our "Power to Sell."



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