

# NEXTY ELECTRONICS WORLD

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# Quality & SCM Special Feature: Delivering Reliable Value-added Solutions that Support Customer Advancement

Launched in April 2017, NEXTY Electronics Corporation is not only the largest of its kind in Japan, but has also emerged as a company that mobilizes its high-valued technologies, quality, and functionality throughout the world. The significance of electronics—including automated driving and ever-growing smartphones capacity—rises by the year, and expectations towards their quality and logistics are also rising in step. Including partner company resources, the Quality Assurance and SCM Department comprises a total of 313 members, with 140 of them in the Quality Unit and 173 in the Supply Chain Unit, who coordinate to strengthen our capabilities on a global scale.

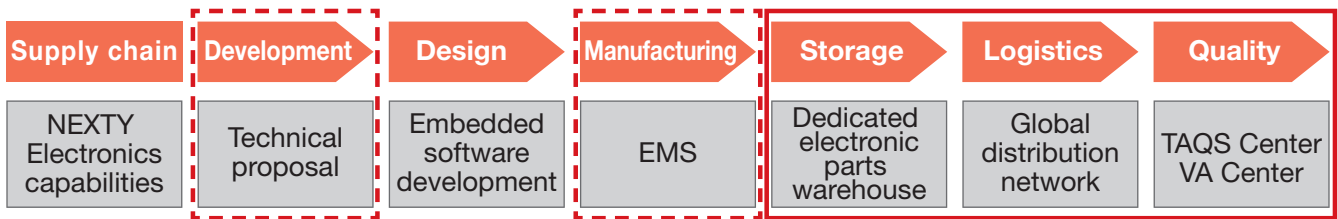


Quality & Supply Chain Management Division  
Masayoshi Yamazaki, Senior Executive Officer

## Introduction

As the top department responsible for functionality, our department, Quality & Supply Chain Management, is engaged in strengthening the quality and logistics capabilities we have built up over the years in the vehicle-mounted technology field. Our scope goes beyond the domestic market, as our objective is to enhance capabilities to enable the same level of support to overseas customers and suppliers as we do domestically. We are dedicated to continue stepping up efforts that ensure that we can respond to customer needs in either automotive or non-automotive areas as a truly global electronics company that delivers superior quality and logistics support unmatched by conventional electronics companies.

## Roles at NEXTY Electronics



Besides storage, logistics and quality functions, we offer quality-based support in development and manufacturing fields as well

— Main function  
- - - Support function

## Quality & Supply Chain Management Division Functions

### Quality Support

We offer a wide range of quality services including part design reviews, management surveys, defect analyses, and more. Our quality support services are based on official standards like JEDEC, JEITA, and AEC, and cover everything from inspection and screening to initial defect analysis, failure analysis, root cause analysis, and quality reliability assessments.

### Inspection and Manufacturing

We provide a variety of manufacturing support services that include data writing to various devices including flash memory MCUs, as well as laser marking, taping, and more. We also offer quality support services, some of which include visual device inspection, function testing, screening, failure analysis, and reliability testing. In our aim to realize value-added solutions in the areas of primary analysis, delegated analysis selection, and manufacturing and assembly services, we are focusing efforts on quantitatively expanding our services in data writing to devices, screening inspection, and function testing. We are also working to expand the range of products we support in system development and quality improvement.

### Global Logistics

Built on our solid network of 10 domestic and 34 overseas offices, our supply chain supports our customers' parts procurement in wide range of industries from automotive and consumer goods to industrial equipment. To ensure a stable supply to each customer's manufacturing site in each country, we have developed a unique crisis management system that verifies impacts on the supply chain if a catastrophe occurs, and reports to our customers at the earliest moment. In the future, we expect to improve the efficiency of our logistics with economies of scale, and intend to pursue expansion of our supply chain into emerging countries whose procurement demands are on the rise. We also intend to continue proactively incorporating cutting-edge technologies such as smart logistics to realize new logistics services.



# Component Business Process: Quality Assurance and Product Support Backed by Years of Career Experience and Know-how

Alongside NEXTY's component business process, our Quality Unit coordinates quality-related work with marketing and sales departments even before part selection is finalized. Although component introduction processes vary from customer to customer, we provide an extremely wide range of quality assurance services that are carefully designed to fulfill the needs of each customer. Even before the customer's mass production begins, we support them by conducting meetings, preparing necessary documentation and process audits, providing ex-post follow up, and performing reliability assessments on certain parts. An example of a typical work flow is shown in the figure below.

Typical items prior to mass production of parts are shown on the right side of the flowchart.

**① Part Design Review (DR):**

Support for organizing and clearly identifying necessary items as well as reviews of new or change-required points by using DRBFM.

**② Process Auditing Support:**

Audits of the factory which will actually manufacture the part, conducted based on an audit sheet.

**③ Reliability Assessment:**

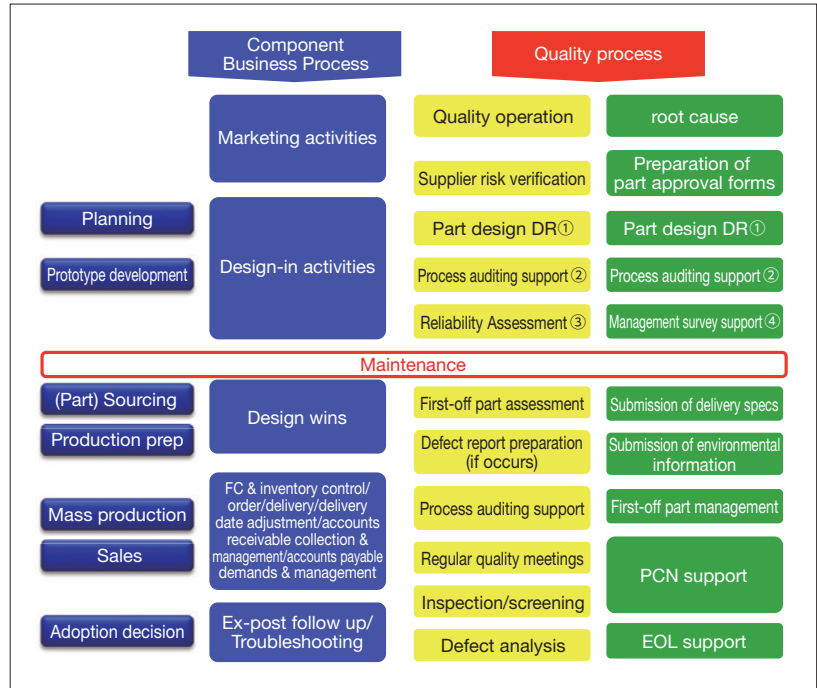
Support for acquiring customer-focused verification item data.

**④ Support for Management Surveys:**

Support for interview-based surveys on capabilities in fields of sales management, design management, and quality management.

In addition to the above, the creation of approval forms is also an essential job. Even after mass production begins, we methodically implement the necessary work while coordinating with various company departments on such matters as sorting out management when first-off parts are delivered, and submission of incoming part inspection forms. Among these tasks, one of the most difficult is coping with product defects when they occur.

Note: Name of the event varies by customer.

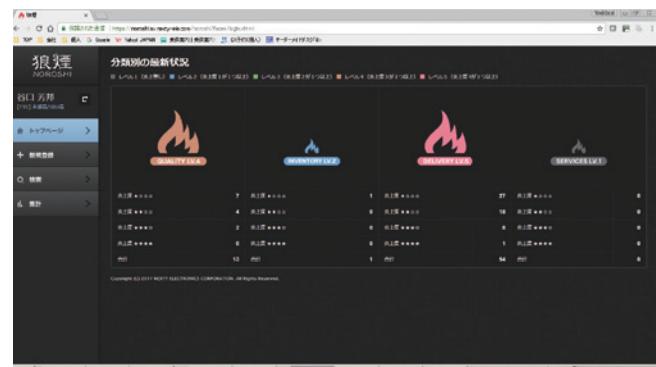
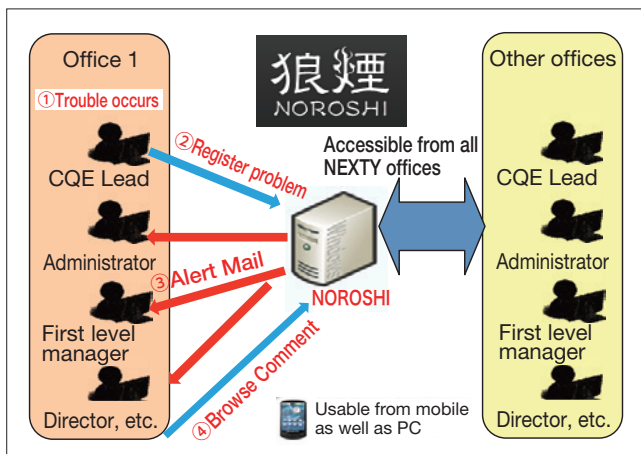


Relationship between Component Business Process and Quality Process

## Defect support (FAR)

When defects occur, we not only collect the defective item, inform suppliers, and request an analysis request, but also prepare defect reports and coordinate with the supplier to plan permanent corrective action. The two most important factors are conveying accurate information and acting quickly. A CQE (Customer Quality Engineer) coordinates with the supplier to prepare and deliver a defect report, also known as an 8D Report, to the customer in their preferred format, which are prepared using expert knowledge to include a "why-why analysis," "4 M analysis," "FTA," "cause-and-effect diagram," and "defect cause mechanism description."

We have also developed a system notifies reliable defect status to internal stakeholders by employing our in-house system, "NOROSHI." In this system, emails are immediately sent according to priority to stakeholders to provide instant information updates. This system is used not only for defects issues, but also for sending alerts and sharing information on inventory and delivery status.



③Alert Mail  
<Severity Level 3-4> notifications are sent to the President, Director, Sales Dept. Manager, and Quality Assurance Dept.

# Quality Information Service: Delivering Precise Quality Information Tailored to Each Customer's Needs

When new parts are adopted or parts are changed during mass production, a number of documents (approval forms) must be submitted to the customer for approval. Despite the widely varying content required in such cases, our staff members facilitate a smooth approval process by preparing the necessary paperwork without omission or delay. Throughout this process, the collection of chemical information and its entry in prescribed formats are extremely complicated and daunting tasks. We have therefore taken steps to establish a system for product chemical management which handles 'each country's environmental regulations', 'industry standards', and 'customer's individual guidelines' by a dedicated department with expert knowledge in such matters.

## Primary Tasks

- ① **Communicate product chemical information**
  - (1) Data creation, submission, and delivery control using industry and customer defined forms and systems.
  - (2) Support for data creation at suppliers.
- ② **Verification of the supplier's chemical management system.**

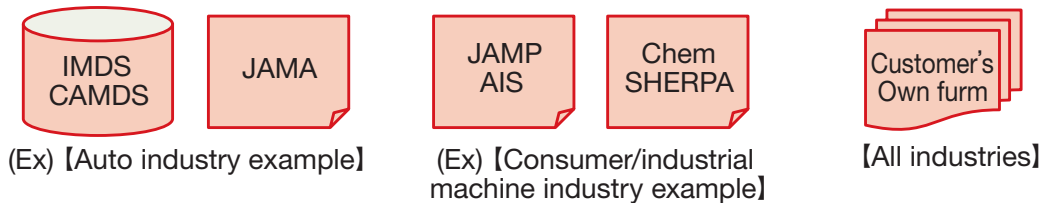


Consolidation of info and accumulation of know-how by a dedicated department

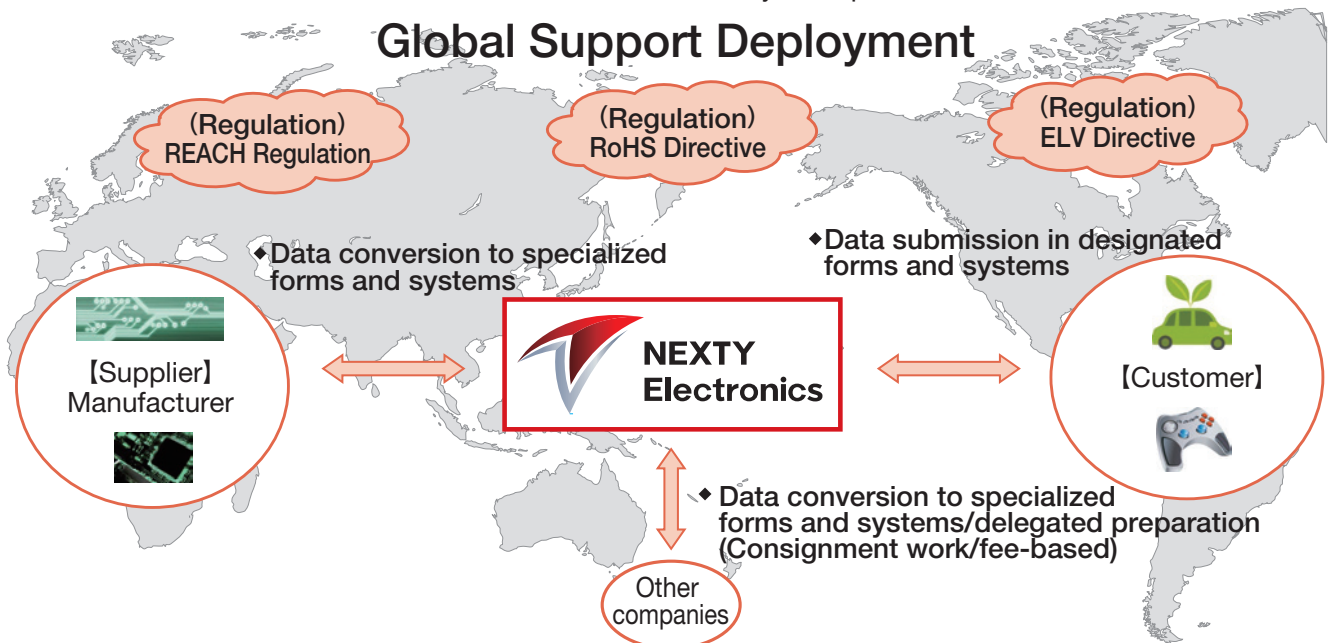
## Transfer of info on chemical substances along the supply chain



We submit up-to-date data on chemicals contained in the product without omissions and by the set date using the forms and systems specified by the customer.



## Global Support Deployment



# Quality Support Center: Product Support that Protects the Customer's Quality Levels

Backed by years of career experience and know-how built up at the TAQS Center (TAQS: Toyotsu Automotive Quality Support) and VA Center (VA: Value-Added), our Quality Unit provides everything from inspection and screening to initial defect analysis, failure analysis, root cause analysis, and quality reliability assessments. It also offers a wide range of product support services, including data writing to devices, non-defective product analysis, intellectual property related support for new products, laser marking, and transfers from stick or tray to taping.

## NEXTY Quality Support Center: Quality Support from Design-in to Mass Production and Beyond

### Outfitted with a dedicated semiconductor & device warehouse

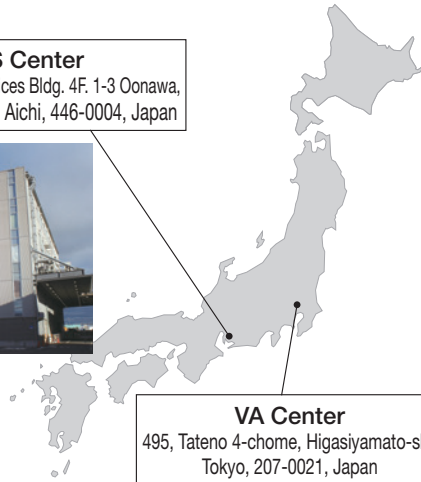
- Reporting system in the event of disaster
- Seismic countermeasures (safe storage)
- Reserve inventory management



March 2008 : Quality Support Center established  
 January 2009: JIS Q 14001:2004 certification acquired  
 January 2013: JIS Q 9001:2004 certification acquired

### Address

**TAQS Center**  
 Toyotsu Logistics Services Bldg. 4F. 1-3 Oonawa,  
 Ozaki-cho, Anjo-shi, Aichi, 446-0004, Japan



**VA Center**  
 495, Tateno 4-chome, Higasiyamato-shi,  
 Tokyo, 207-0021, Japan

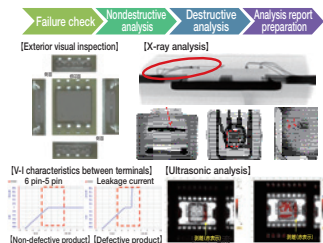


- **Building structure**  
 Superior earthquake-resistant construction
- **Security**  
 Surveillance camera monitored  
 Access controlled
- **Work environment**  
 Temperature and humidity controlled  
 Anti-electrostatic measures

## Quality Support Center Capabilities

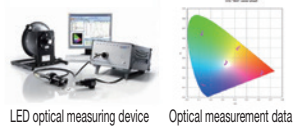
### Failure Analysis

- Nondestructive analysis using visual checks/X-ray/SAT
- Defective terminal checks by observing VI characteristics
- Physical analysis through decapping & scanning electron microscopy (SEM)
- Fault localization using OBIRCH



### Function testing

- Visual inspection (naked eye, magnifying glass, microscope, automatic inspection equipment)
- Nondestructive inspection with X-ray equipment
- Characteristics inspection with jigs and specialized measuring instruments
- Inspection of devices (HDD, LCD, etc.)

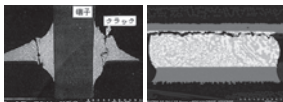


- **Electrical inspection**
  - Screening according to manufacturer specifications
  - Additional inspections, emergency screening
  - Burn-in screening
  - Proposal of corrective measures based on defect analysis

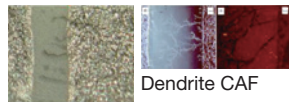


### Reliability Assessment

- Equipped with several environment testing machines including temperature and humidity ovens, temperature cycling ovens, HAST, PCT, etc.
- Environmental evaluation testing under all manner of conditions



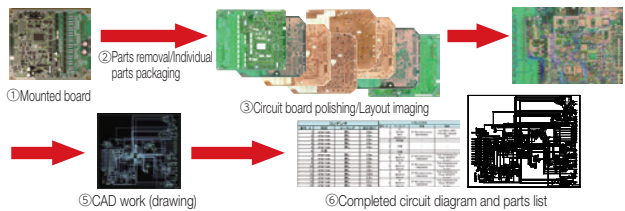
Solder thermal fatigue testing



Migration testing

### Development support (VAN Partners)

#### ■ Circuit board reverse engineering



Ascertain function of mounted parts, measure constants, investigate part numbers → reflect in circuit diagram and parts list

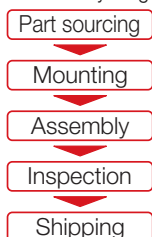
### Data Writing<sup>\*\*</sup>

- Data writing to NOR flash, NAND flash, EEPROM, MCU, CPLD, FPGA, memory module, etc.
- Labeling, laser marking
- Lead coplanarity, marking inspection



### Modular mass production support<sup>\*\*</sup>

- Support for every stage from parts procurement to mass production



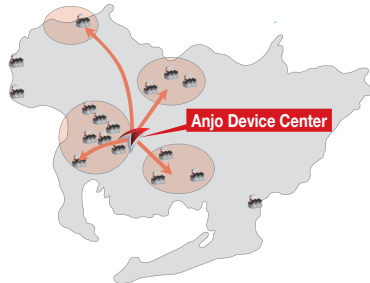
\*\* VA Center only



# Quality Support Centers: Introducing the TAQS Center and VA Center

## TAQS (Toyota Automotive Quality Support) Center

The TAQS Center is located in the Toyota Logistics Service–Anjo Device Center in Anjo City (Aichi Prefecture). The center provides a wide range of quality assurance services, and is especially convenient for customers in the Mikawa area.



### TAQS Center functions

#### Evaluation/analysis

- Defect analysis
- Reliability assessment
- First-off part inspection

#### Inspection and screening

- Visual inspection
- X-ray inspection
- Electrical characteristics inspection

**Sketch Map of the TAQS Analysis Area**

**OBIRCH** (Optical Backscattering Interferometry)

**Ultrasonic microscope**

**Electronic microscope**

**Laser decapping**

**Cross-section polishing**

**X-ray inspection machine**

**Laser microscope**

**Chemical decapping**

## VA (Value-Added) Center

The VA Center provides value-added services such as data writing to flash memories and MCUs and also performs inspections on them. To ensure responsiveness in meeting customer requests, the center is well equipped with the facilities and systems needed to perform a diverse range of analyses and quality control tasks. This not only reduces the burden on customers, but also satisfies the needs to keep costs down and assure quality.

### Data writing services

The VA Center provides data writing services that include writing customer-provided data to flash memories, MCUs, and other devices.

#### Automated writing line



#### Manual writing



#### Post-writing data aging



### Analysis Services

- Primary failure analysis of optical parts  
Amount of light emitted from the light source; measurement of total luminous flux, wavelength, and color temperature is possible for individual LEDs or mounted boards up to 150 mm in size.

- Primary failure analysis operation of hardware products Investigate the cause of HDD failure by checking its operation with specialized analysis software

#### Setting



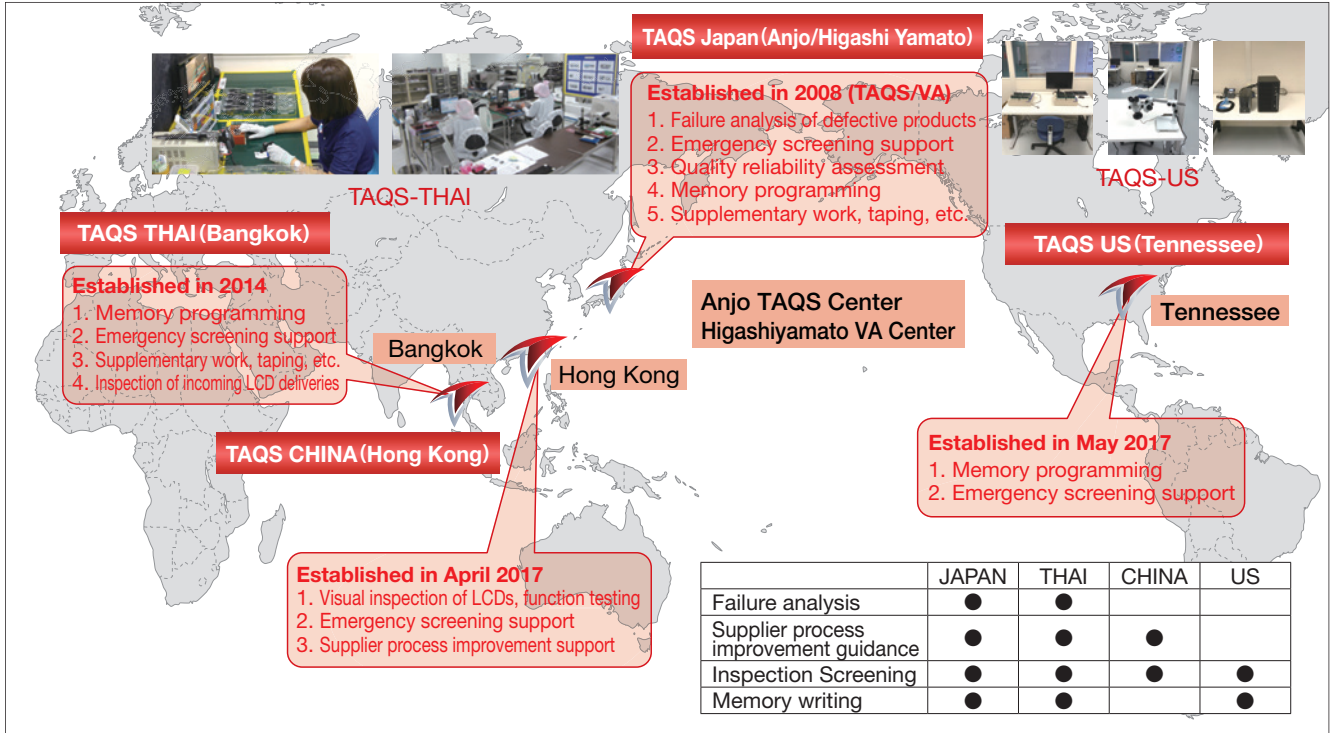
#### Optical property measurement



# Overseas Deployment of Quality Functions: NEXTY Electronics' Pursuit of Quality Continues Worldwide

## Overseas Deployment of Quality Functions

The Quality Unit is expanding its operations abroad, for instance by setting up Quality Support Centers overseas which are modeled on the quality capabilities of Japan centers.



### TAQS-THAI

TAQS-THAI boasts the longest history as an overseas Quality Support Center.

#### Feature

- Shortens quality issue response time by handing work locally
- Provides support in the local language

#### Business activities

Provides a wide range of quality-related support including not only memory writing, analysis, screening and supplementary work, but also support for local business transaction quality, approvals, and audits.



LCD inspection

### TAQS-US

TAQS-US started as a simple clean room set up inside a warehouse in Maryville, Tennessee. TAQS-US aims to contribute to reducing customer-side investment in new equipment by improving quality assurance support (i.e. reducing miss-writing and visual defects) and providing memory writing support services. Facility expansion is planned for the future.

#### Business activities

Started out with memory writing and parts inspection



### TAQS-CHINA

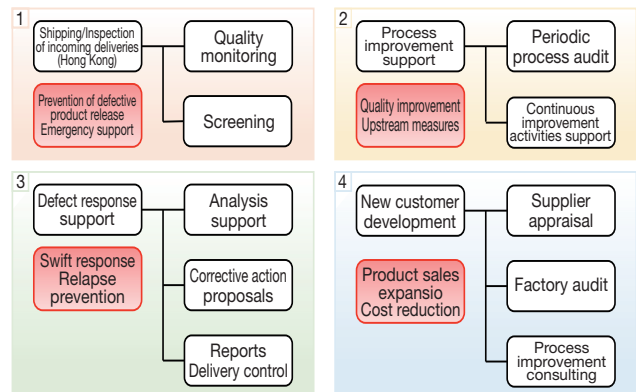
Based on its corporate philosophy that quality is built on small efforts and mutual trust with manufacturers, TAQS-CHINA strives to boost customer confidence by reducing defects and establishing quality control from the customer's point of view.

#### Business activities

Through its quality center set up in Hong Kong, TAQS-CHINA is expanding services not only in Guangdong province, but also in Eastern China, based upon four key pillars (see Figure 1).



(Figure 1) Four pillars



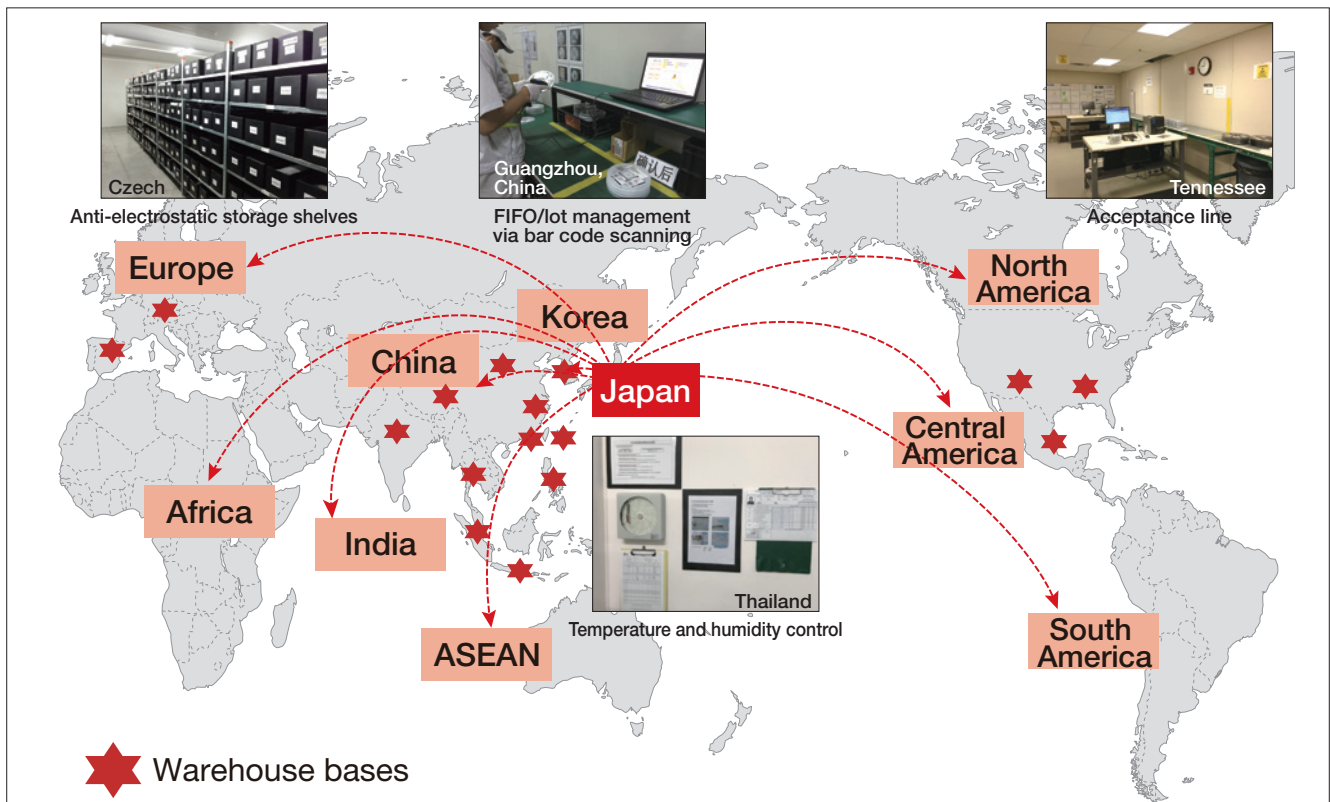
# Global Logistics: Supporting the Supply Chain with Extensive Career Experience and a Comprehensive Global Network

Based on a comprehensive domestic and international logistic network, NEXTY's supply chain supports parts procurement for customers in a wide range of industries that cover everything from automotive to consumer goods and industry equipment.

- Consists of a global delivery system coordinated with Japan
- Establishing a warehouse dedicated to electronic parts at overseas offices ⇒ provides temperature/humidity control, anti-electrostatic measures, and lot management, and secures safety stock
- Responding to customer's needs with the Toyota Tsusho Group network ⇒ expands products overseas and supports the development of sales routes, etc.

## Global Network

We are committed to continuing to improve the efficiency of our logistics with economies of scale, and to pursuing expansion of our supply chain into emerging countries, whose procurement demands are on the rise. We also intend to continue actively incorporating cutting-edge technologies such as smart logistics to realize new logistics services.



## Dedicated electronic parts warehouse

Dedicated electronic parts warehouse are operated at each site in an aim to realize globally uniform quality levels.

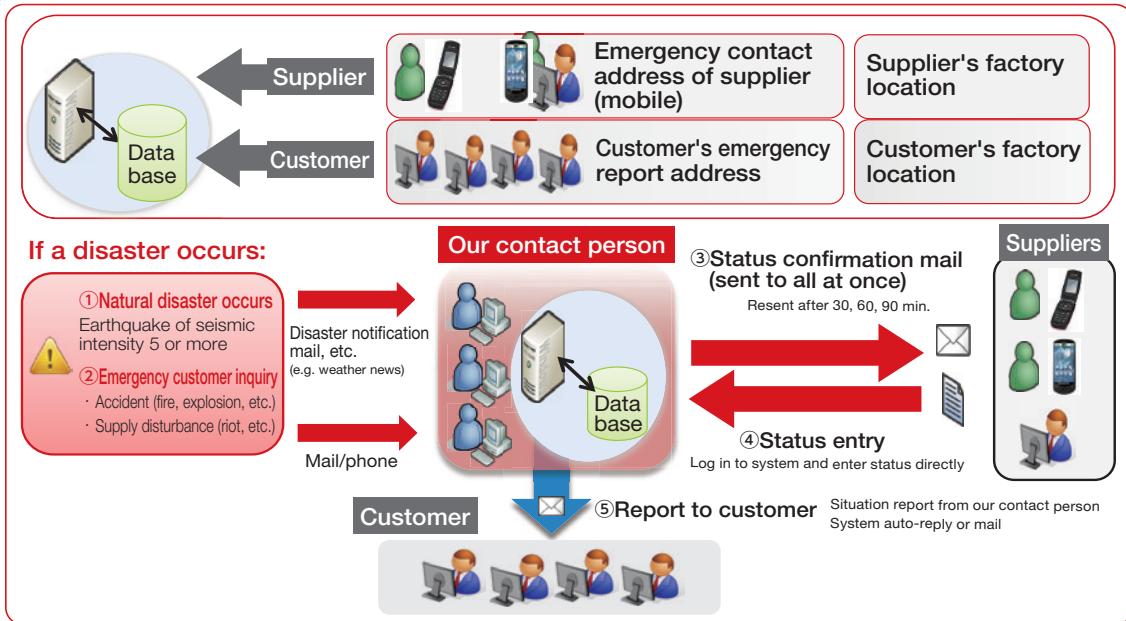
- **Temperature and humidity control**  
Air-conditioning and industrial heat exchangers installed in machine rooms are used to regulate temperature and humidity in the building within a defined range (temp. 5–35°C; humidity: 20–70%).
- **Anti-electrostatic measures**  
To prevent electrostatic damage, anti-static floors, tables, and shelving are installed. Workers wear anti-static footwear and clothing, and also wear anti-static wristbands that ground electrostatic charges whenever carrying out tasks.
- **Dust-proofing measures**  
Measures have been implemented to prevent dust and dirt from entering from outside such as dual-door entryways and locating the warehouse behind the building.
- **First-in-first-out (FIFO)**  
Inventory management is operated on a first-in-first-out basis.
- **Lot control**  
Inventory is recorded on multiple systems to ensure traceability.



# Crisis Management: Committed to Providing a Stable Supply to Customer Production Bases

By organizing a dedicated team combined our in-house developed system, we are implementing this initiative to rapidly check the status of suppliers when a disaster occurs and provide situation reports to customers.

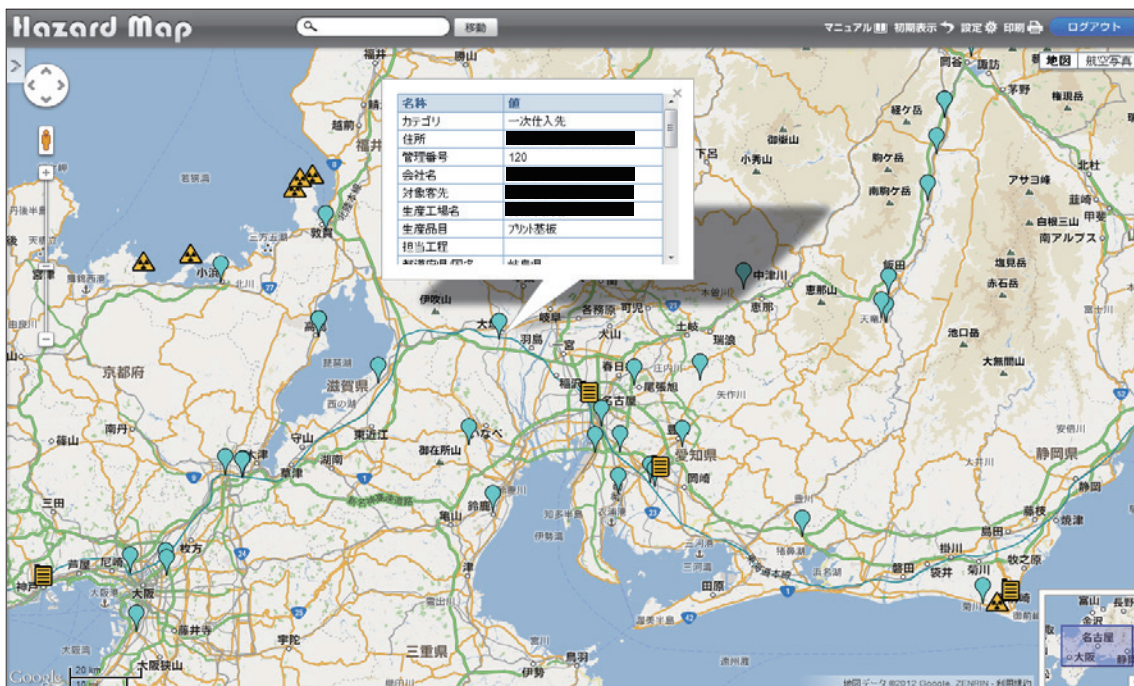
## Crisis Management System



In preparation for crisis and risks (earthquake, flood, explosion, etc.), a database of supplier manufacturing sites is established and a situation report is sent to customers at the earliest moment (in the event of an earthquake, info is sent within 2 hrs.)

## Hazard Map

Information in our supplier database is used to plot supplier factory locations on a world map and disaster risk information is then made visually accessible by integrating it onto the map.





**Be the Next Bridge to the Future**