Projects and Partners
ForeSight Voice Mining is an advanced system that provides insights in order to offer **better customer experience** and to **train agents more efficiently** by enabling **real-time monitoring** and **quantitative and objective analysis** of massive call data.

- **Improve customer satisfaction**
- **Lower operation cost**
- **Increase revenue**

**Customers**

**Agents in a contact center**

**Manager/analyst**

**Speech recognition**

**Emotion recognition**

10,000 individual work stations in offices are now using this service

Supports their responses by automatically searching for an appropriate FAQ for each call.

Analyzes the nature of each call by recognizing speech and emotion.

**Utterance comprehension**

Sompo Japan Nipponkoa

Projects and Partners: an example of corevo™
Contact center AI solution “ForeSight Voice Mining”
corevo™ machine learning technology can be used to detect abnormal operation sounds in real time, thereby improving the efficiency of maintenance and inspection work in factories. Intelligent microphone technology is also used to pick up only machine operation sounds in the presence of ambient factory noise.

Abnormal sound detection

Detects abnormal sounds by learning normal sounds

Machine operation sound

Noise

Intelligent microphone

Extracts only machine operation sounds in a noisy environment

Minimize impact on production
Projects and Partners: an example of corevo™
“Capture-and-guide” hospitality service

Using corevo image recognition technology, we have developed a hospitality service in which users need only to point their smartphone camera towards a sign board or an object to get useful information in their mother tongue.

This is being tried out at Haneda Airport in collaboration with Tokyo International Air Terminal Corporation (until August 2018).

Easy to use on the Web

Only 2 - 3 images need to be registered in advance

Navigation information
- Multilingual information from signage boards
- Map to destination

Menu
- Multilingual translation of the menu
- Detailed information

With a view to spreading the use of partner robots that work closely with humans, Toyota Motor and NTT have started joint research on using Toyota’s support robot, Human Support Robot (HSR), and corevo™ to support humans in everyday lives.

Aimed at services that anticipate human behavior

Visitor guidance service prototype

We have developed a service that forecasts taxi demand by geographic location by combining corevo™ machine learning technology and the demographic data created based on mobile network usage. The forecasting is so accurate that taxi drivers have been able to increase their revenue.

Forecasting taxi use demand

**AI Taxi**

Forecasting demand after 30 minutes to optimize driver placement

- **Operation data**
- **Demographic data created based on mobile network usage**
- **Spatio-temporal multidimensional collective data analysis**

**Service launched Feb. 2018**

- **Reduce waiting**
- **Growth in sales**
  - Veteran driver
  - Ordinary driver
- **Handling sudden demand increase**
  - Delay
  - Accident
  - Alternative transportation

**corevo™ machine learning technology enables forecasting future demand of taxi usage, combining with demographic data exploited from mobile phone network. This contributes growth of taxi companies by providing useful information for drivers.**
Toyota Motor and NTT are collaborating to develop, validate, and standardize technologies used in the connected car field.

A field trial is planned for 2018.

Projects and Partners

Research into car security for connected cars

NTT is conducting research on **car security** to make **safe and secure connected cars** a reality by drawing upon its extensive experience and technical expertise accumulated in the IT security field.

**Car security research**

- **Cloud measures**
  - Advanced attack detection in cloud

- **Network traffic**

- **In-vehicle measures**
  - Rapid attack detection in vehicle

**Cyber attack countermeasures** specialized for “in-vehicle”

*Service provider* and *Auto manufacturer/supplier*
Projects and Partners

IoT smart manufacturing with FANUC

Using its R&D technology, the **NTT Group** is collaborating with **FANUC**, a global supplier of factory automation systems, to contribute to **improving productivity** and **industrial competitiveness** at manufacturing sites.

**Software component management** makes it possible to implement functional updates, such as device control and failure prediction, easily and rapidly.

**Real time**

Edge computing makes it possible to achieve the coordinated operation of multiple devices in a scalable manner.

**Connective**

IoT data sharing makes it possible to interconnect various devices and sensors in a factory.

**Commercial service of the FIELD system started in Oct. 2017**

FIELD system is an IoT system for manufacturing industry developed jointly with Cisco systems, Rockwell Automation, Preferred Networks and NTT group under FANUC's initiative.
Nippon Yusen (NYK), MTI and the NTT Group have successfully conducted a proof-of-concept experiment for a next generation IoT platform designed for modern ships.

Optimization of vessel operation
Reduction of operational workload
Environmentally friendly vessels

Proof-of-concept experiment for an on-board IoT platform

Onboard utilization
Satellite communication

Rapid use of data onboard
Detailed analysis at onshore operation centers

Onboard data collection box
Software component management
IoT data sharing

SAP and NTT are collaborating to develop a solution which enables driver’s fatigue and stress level to be analyzed in real time through the use of “hitoe” together with biometric information analysis technology.

**Vehicle operation management solution**

- **Biometric data**
- **Driving data**

"hitoe" shirt for drivers

**Sample fatigue analysis (highway bus driver)**

- Good Fatigue estimation
- Rest

Fukui to Nagoya  Nagoya to Fukui

- Rest at Service Areas

- **Instructions to drivers**
- **Improve safety, etc.**

"SAP and NTT Enhance Global Partnership, IoT Solution Development to Support Safe Operation of Transportation Industry" 
Toray and NTT have jointly developed a functional fabric “hitoe” which can collect biometric information reliably without irritating the skin.
The functional fabric “hitoe” is expected to be applied in a wide range of fields, from sports and safety control to medical care.
A realistic image, enabling the viewer to **feel as if they were in the field** during a game, is synthesized in a virtual space. By experiencing, virtually, balls thrown by a pitcher during preparation, a batter can **achieve a better, stable performance** in a game.
The **synchronous live streaming** technology of “Kirari!” was demonstrated through a worldwide synchronous live performance of **Perfume**, a trio of Japanese female artists. **A new moving experience** was shared all over the world by real-time synchronization of videos of 3 venues separated by a distance of **10,000 km**.

**Perfume x docomo**

**FUTURE-EXPERIMENT “Eliminate distance”**

[Diagram showing a triangle with cities: Tokyo, London, New York, and arrows indicating synchronization with delay and fluctuation]

**Low-latency synchronization**

New live experience as if three artists were in one place

[YouTube link provided: https://www.youtube.com/watch?v=lgdASCXJjNk]
Mitsubishi Heavy Industries (MHI) and NTT have jointly developed “InteRSePT”, cyber-security technology for critical infrastructures.

**Features**

InteRSePT detects and neutralizes anomalies from an unknown cyber-attack in real time, facilitating safe and secure system operation of industrial control systems.

**Highly reliable control technology developed for defense/space fields**

**Threat detection & prevention for industrial control systems**

Detect errors

Control whether to pass or block

Many control signals

Detect and block anomalies in communications specific to industrial control systems

**Critical infrastructures**

For safe and secure operation

Market Expansion

Power plants

Transportation systems

Chemical plants

(InteRSePT is a registered trademark of MHI in Japan.)

Projects and Partners
Innovation in laser processing technology with MHI

Mitsubishi Heavy Industries (MHI) and NTT have demonstrated kW class high power single-mode laser transmission over long distances by harmonizing MHI’s high power laser processing and NTT’s photonic crystal fiber (PCF). This is a key technology for expanding the applications of laser processing technology and advancing innovation in social infrastructure products.

High power laser processing technology
MITSUBISHI HEAVY INDUSTRIES & NTT

Photonic crystal fiber (PCF) technology

Conventional optical fiber

Photonic crystal fiber

Silica Glass (Cladding)
Core (Optical Path)

Several to several-tens times longer transmission

Example of laser processing


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In addition to physical abilities, such as muscle strength and cardiopulmonary functions, perceptual functions, such as situation assessment, tactical maneuvers, and decision making under pressure, play an important role in winning a game.

The **Sports Brain Science Project** is using leading-edge ICT, such as wearable sensing and virtual reality, to analyze the **brain mechanisms** that support the outstanding perceptual abilities of top athletes, and developing **effective training methods** based on these analyses.

**Understanding of the mechanism of information processing in brain by measuring various biometrics of athletes**

**Measurement using wearable sensing and virtual reality**

**Estimation of psychological state using measurement of eye movements**

**Estimating attentional span**

Dell Technologies and NTT Group are collaborating on the first smart city proof-of-concept with Las Vegas as part of the city's digital transformation. NTT’s Cognitive Foundation enables one-stop operation of information and communications technology (ICT) resources, from devices and networks to the cloud.

Proof-of-concept experiment for smart city

- NW configuration
- IaaS/PaaS setup
- Sensors operation

Response to public safety incidents

Cognitive Foundation

ICT resource
- Data center (Core)

ICT resource
- Micro data center (Edge)

ICT resource
- Sensors (Video/Audio)

Rapid deployment, ICT resources optimization

Applications


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