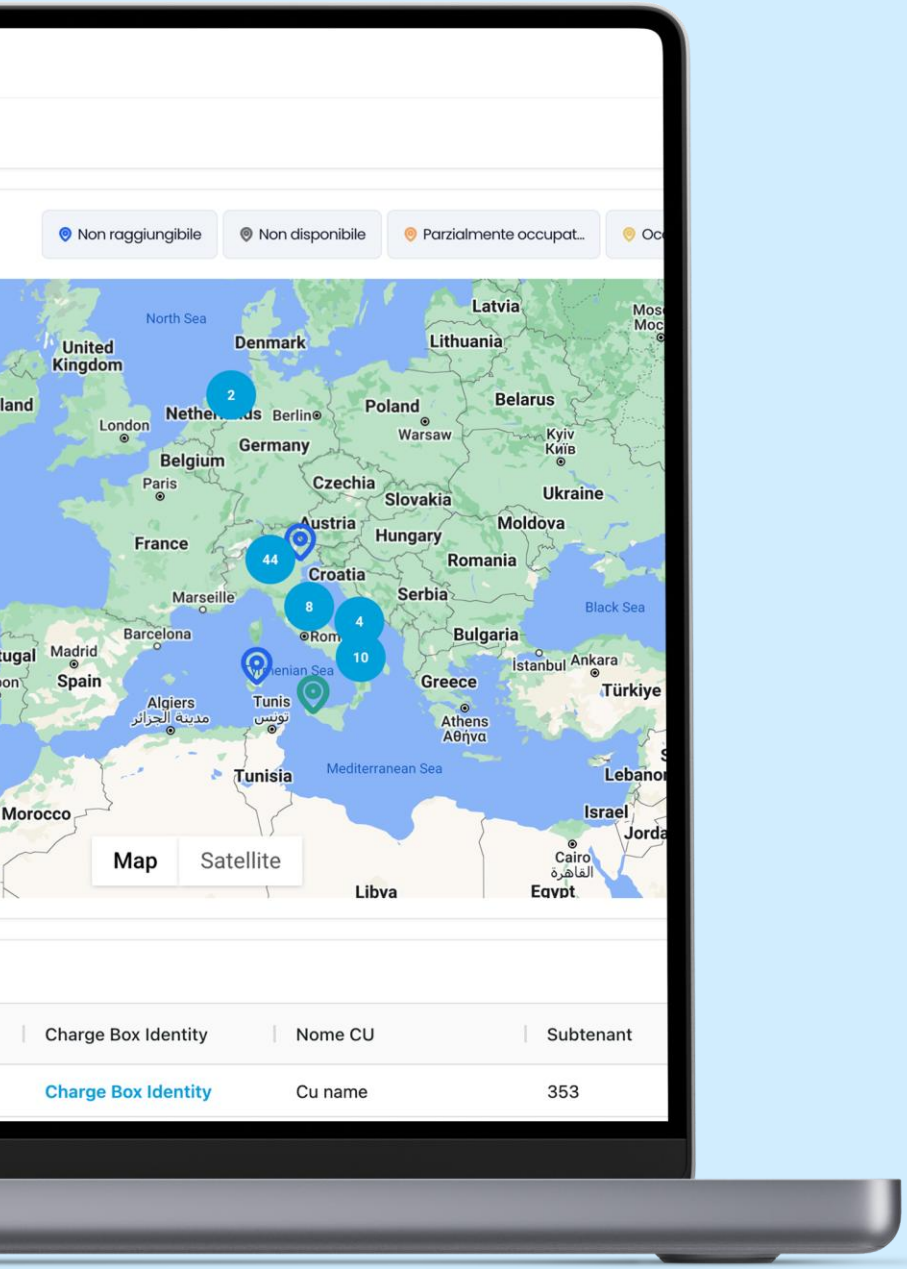


Horizons 2025

Syntphony EV Charging

One Platform for Every Charging Need

Syntphony EV Charging is a secure, cloud-based platform designed to manage electric vehicle (EV) charging networks flexibly and resiliently.

Its cloud-agnostic architecture ensures scalability and efficient workload management, delivering a seamless user experience while adapting to the evolving needs of the electric mobility market.

Business Need

As electric vehicles reshape global mobility, the demand for innovative, scalable, and sustainable charging solutions is more crucial than ever. With 15+ years of expertise in mobility, Syntphony EV Charging leverages cutting-edge technology to power the EV ecosystem, ensuring future-ready solutions for infrastructure growth.

Solution

Syntphony EV Charging offers a robust, adaptable platform for EV charging network management. It integrates advanced security, seamless interoperability, and extensive customization options. Designed to meet electric mobility's complex and dynamic needs, it enhances efficiency, reliability, and user experience, supporting the global transition to sustainable transportation.

NTT DATA

Horizons 2025

Syntphony Payments

Total Control and Flexibility to Create Value for Customers

Syntphony Payments is the end-to-end payments solution for NTT DATA's Syntphony ecosystem, a robust and secure SaaS solution designed for various business sectors. From large enterprises to retailers, our platform offers a wide range of digital payment instruments to meet the changing needs of global customers. Syntphony Payments offers a seamless end-to-end solution with a multi-procurement approach and add-on modules for diverse requirements, our platform ensures businesses can adapt and thrive in today's dynamic market landscape.

Business Need

In today’s dynamic payments landscape, businesses face the challenge of managing a multitude of payment methods and channels with full control and flexibility. Research indicates that the trend towards digital payments will continue to accelerate, with non-cash transactions volume projected to grow at a 15% CAGR from 2023 to 2027.

Solution

Syntphony Payments platform core modules are Payment Services (offering multi-purchase, digital payments and core payment solutions), Payment Gateway, Payment by Notification (allowing generation of links or QR codes for virtual POS) , virtual point of sale, wallet services and value-added services (including PFM and data analytics, discounts and rewards, corporate services.

NTT DATA

Horizons 2025

AgnES

Digital Therapeutics Value for Patients and HCPs

AgnES is a new solution designed to lead SaMD and DTx development to a new approach, also thanks to a proper family of related services. AgnES is agnostic to the pathology and clinical target.

Through AgnES, sponsor companies will be able to realize their own certified SaMD solution, with less risk and less effort.

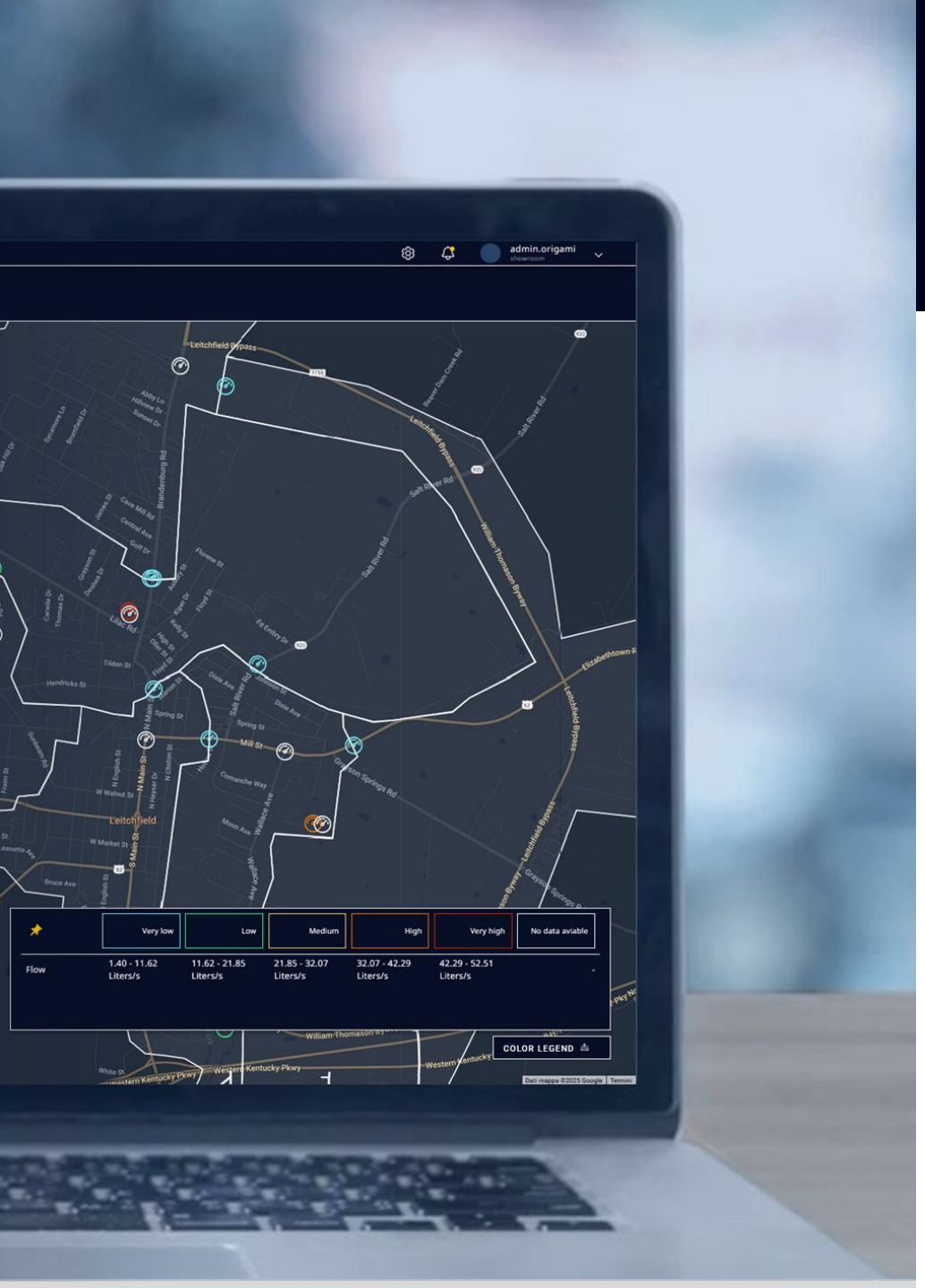
Business Need

Developing Digital Therapeutics (DTx) involves high costs and long timelines, delaying market entry. Effective project management is essential to coordinate clinical, regulatory, and technological efforts. Startups often struggle with ongoing maintenance and compliance, leading to support gaps. Successful adoption requires gaining healthcare providers' trust and integrating DTx into clinical workflows, but low awareness and skepticism hinder this process.

Solution

AgnES allows companies to create standardized software efficiently by combining its modules with therapeutic content. It identifies clinical needs, explores digital compounds, and ensures project sustainability. During development, it provides structured project management and coordination with clinical partners and regulators. Post-development, it manages long-term operations and services.

NTT DATA



Horizons 2025

Syntphony Water Management

Water Distribution System with Optimized Decision-Making.

For water utility companies that need to monitor the proper functioning of their water distribution network and water consumption, our product Syntphony Water Management is a cloud-native smart water management software that uses the available data fed by AMI (advanced metering infrastructure) devices for water distribution network mapping, meter data collection, display and monitoring, anomaly detection, and network behavior simulation.

Business Need

To ensure that water quality and service standards comply with technical regulations, the following are essential:

Continuous monitoring of districts and water networks

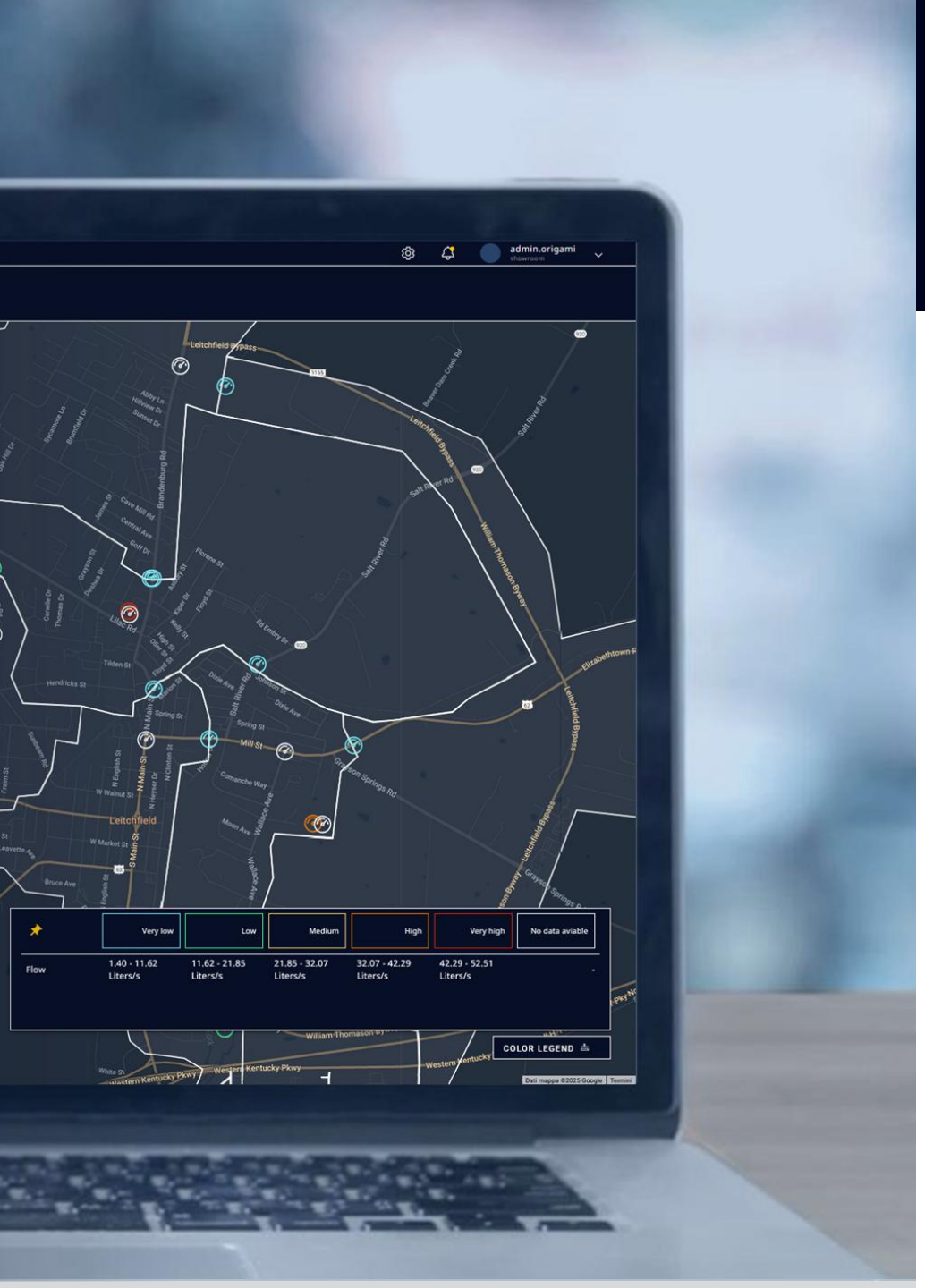
Digitalization of Integrated Water Service management

Decision-making support and preparation of the Water Balance Report required by the Authority

Solution

Syntphony Water Management stands out for its flexible architecture, predictive analysis capabilities, and advanced integration with existing enterprise systems. The platform is scalable, modular, and designed to meet the specific needs of each water utility manager

NTT DATA



Horizons 2025

Syntphony Water Management

Water Distribution System with Optimized Decision-Making.

For water utility companies that need to monitor the proper functioning of their water distribution network and water consumption, our product Syntphony Water Management is a cloud-native smart water management software that uses the available data fed by AMI (advanced metering infrastructure) devices for water distribution network mapping, meter data collection, display and monitoring, anomaly detection, and network behavior simulation.

Business Need

To ensure that water quality and service standards comply with technical regulations, the following are essential:

Continuous monitoring of districts and water networks

Digitalization of Integrated Water Service management

Decision-making support and preparation of the Water Balance Report required by the Authority

Solution

Syntphony Water Management stands out for its flexible architecture, predictive analysis capabilities, and advanced integration with existing enterprise systems. The platform is scalable, modular, and designed to meet the specific needs of each water utility manager

NTT DATA

Horizons 2025

Photobooth GenAI: Aiva

Reimagine Yourself, with GenAI

Attendees capture a headshot, and AI transforms it into a unique, stylized portrait.
This process enhances the image creatively, ensuring every portrait is distinct and visually captivating. Participants can instantly print their personalized artwork or scan a QR code to seamlessly share it on social media, amplifying their experience and extending the event's digital presence.

Business Need

Maximize attendee engagement and event visibility through AI-driven, shareable content to:

- Create a memorable experience and enhance emotional connection with the event.
- Strength event identity aligning with event branding.
- Amplify Social Media reach and optional data and insights.

Solution

A Generative AI-powered photobooth that transforms headshots into exclusive, themed portraits tailored to the event's identity or individual preferences.

This fusion of AI creativity and personalization enhances the attendee experience and drives organic digital amplification, making the event more engaging, shareable, and impactful.

NTT DATA

Horizons 2025

Face Anonymizer

Privacy-Protection with AI

Our real-time face-blurring solution leverages AI-driven detection to automatically obscure faces in live video streams, ensuring compliance with privacy regulations like GDPR and CCPA. Designed for environments requiring continuous monitoring—such as schools, hospitals, and public spaces—this technology safeguards personal data without compromising security.

Business Need

Organizations face increasing regulatory pressure to protect personal privacy while maintaining adequate security operations. This solution addresses key challenges:

- Ensuring compliance to privacy laws.
- Eliminates the need for manual blurring.
- Adapts to existing CCTV infrastructure with minimal disruption, ensuring seamless deployment.

Solution

Our AI-powered real-time face blurring system detects and immediately applies customized blurring effects to faces in live video feeds. It operates at high frame rates while preserving video quality and security integrity.
The system is configurable to meet specific industry needs, providing a cost-effective and automated privacy protection solution.

NTT DATA

Intelligent Vision

Transforming Machine Perception and Automation

Technical Challenge

Computer vision enables machines to interpret and understand visual data from images and videos, simulating human vision capabilities. Traditional systems face limitations in real-time analysis, adaptability to diverse conditions, and decision-making latency issues.

Research Goal

Develop intelligent vision systems capable of accurately interpreting visual data across varying conditions, extracting and processing information efficiently to support high-value business applications.

Technology

Intelligent vision leverages advanced AI technologies such as deep learning models. Such algorithms enable machine to understand visual content by interpreting pattern in the images or videos.

Novelty

AI-powered vision systems leverage edge computing, enabling real-time processing with reduced latency. These systems enable smarter applications in surveillance and robotics, transforming machine perception and interaction efficiently and securely.

Business Applications

Enhancing surveillance systems for better threat detection and responses, improving quality control and defect detection in manufacturing environments, enhancing product recognition and inventory management, and assisting in medical imaging analysis and diagnostics.

Marble Vision

Unlocking the Future: Real-Time, Multi-Sensor Insights

Technical Challenge

Developing an Earth observation satellite system capable of capturing higher-resolution, high-frequency images to power a single, vertically integrated digital twin platform. The challenge is transforming raw satellite data into actionable insights .

Research Goal

Generate dynamic geospatial data that provides real-time insights to support informed decision-making, unlocking new capabilities for sustainable and efficient operations.

Technology

NTT DATA is building on AW3D foundations and investing in observation satellite systems that will power a dynamic digital twin as a service solution.

Novelty

This geospatial intelligence platform uniquely combines high-frequency, high-precision imaging with in-situ data integration, enabling a dynamic and comprehensive view of operational footprints.

Business Applications

Marble Visions is essential for urban planning, disaster management, telecommunications, agriculture, construction, defense, energy, and navigation. It aids in city planning, risk assessment, network optimization, precision farming, infrastructure development, security, resource exploration, and logistics.

Horizons 2025

Perfect Store

Transforming Retail Audits with AI-Powered Product Recognition

Perfect Store is a solution that supports sales representatives' daily audit activities by automating product recognition and KPI calculation. Reducing manual reporting time and increasing data accuracy enables sales teams to focus on higher-value activities such as optimizing product displays and strengthening customer relationships. This automation improves efficiency, enhances decision-making, and drives better product placement and sales performance.

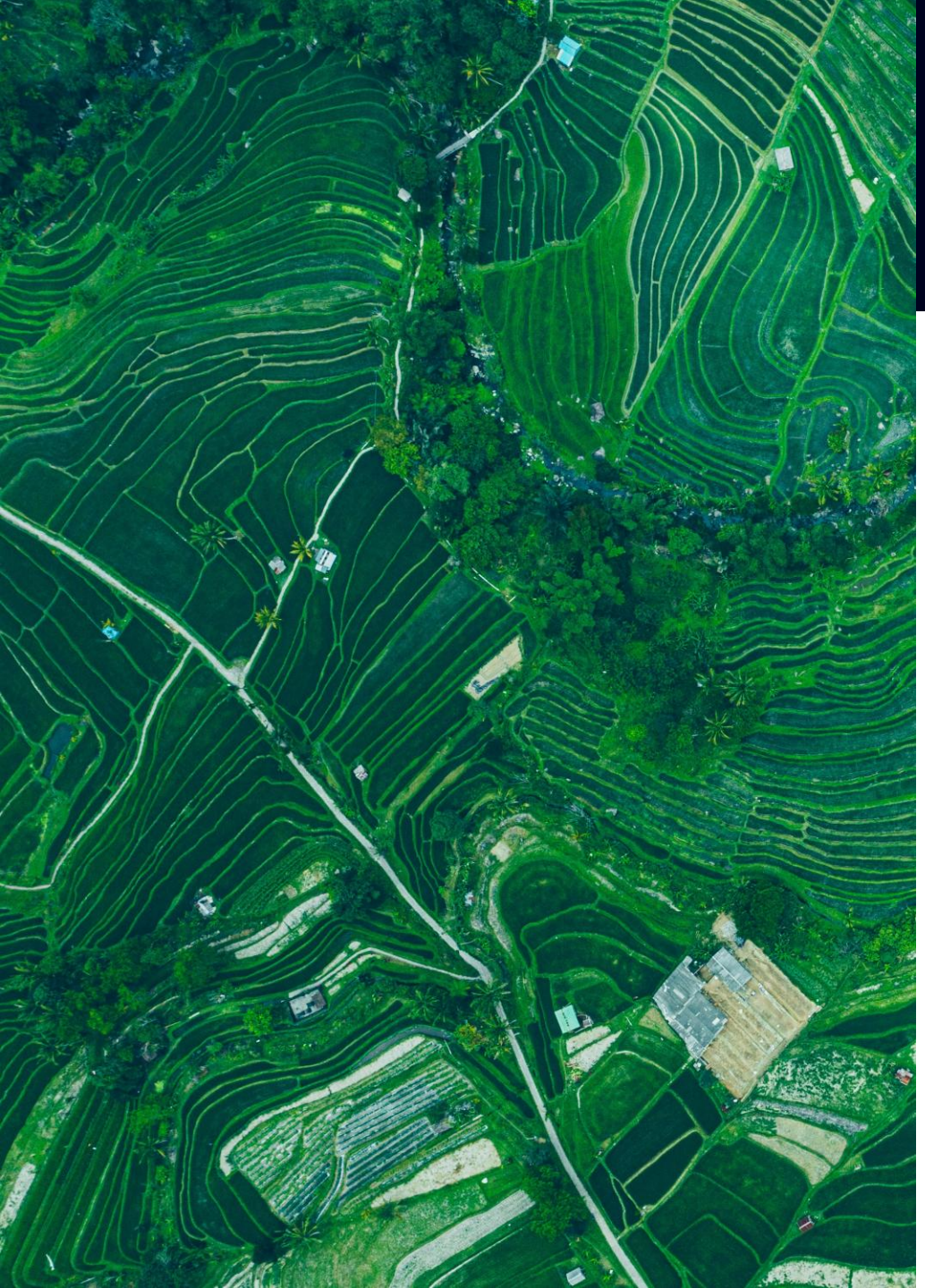
Business Need

Consumer packaged goods (CPG) rely on frequents in-store audits to ensure product placement compliance. Field sales representatives manually verify assortments, using Sales Force Automation (SFA) tools to streamline the process. However, these methods, require significant human effort, making them time-consuming and prone to inconsistencies.

Solution

Perfect Store leverages computer vision and spatial computing for real-time product recognition. The mobile application operates without internet connectivity and can detect and classify up to 300 items on store shelves. This advanced approach enhances audit accuracy, reduces reliance on manual input, and provides sales teams with actionable insights to optimize retail execution.

NTT DATA



Horizons 2025

Farm360

Boosts Farmer Productivity and Reduce Carbon Footprints.

Farm360 enables farmers to enter the carbon credit market by tracking and improving sustainable farming practices. Agriculture faces growing challenges due to climate change and soil degradation. Rising temperatures, unpredictable rainfall, and extreme weather events make it harder to maintain stable crop yields. At the same time, over-cultivation, deforestation, and excessive chemical use deplete soil nutrients, reduce fertility, and increase the risk of desertification.

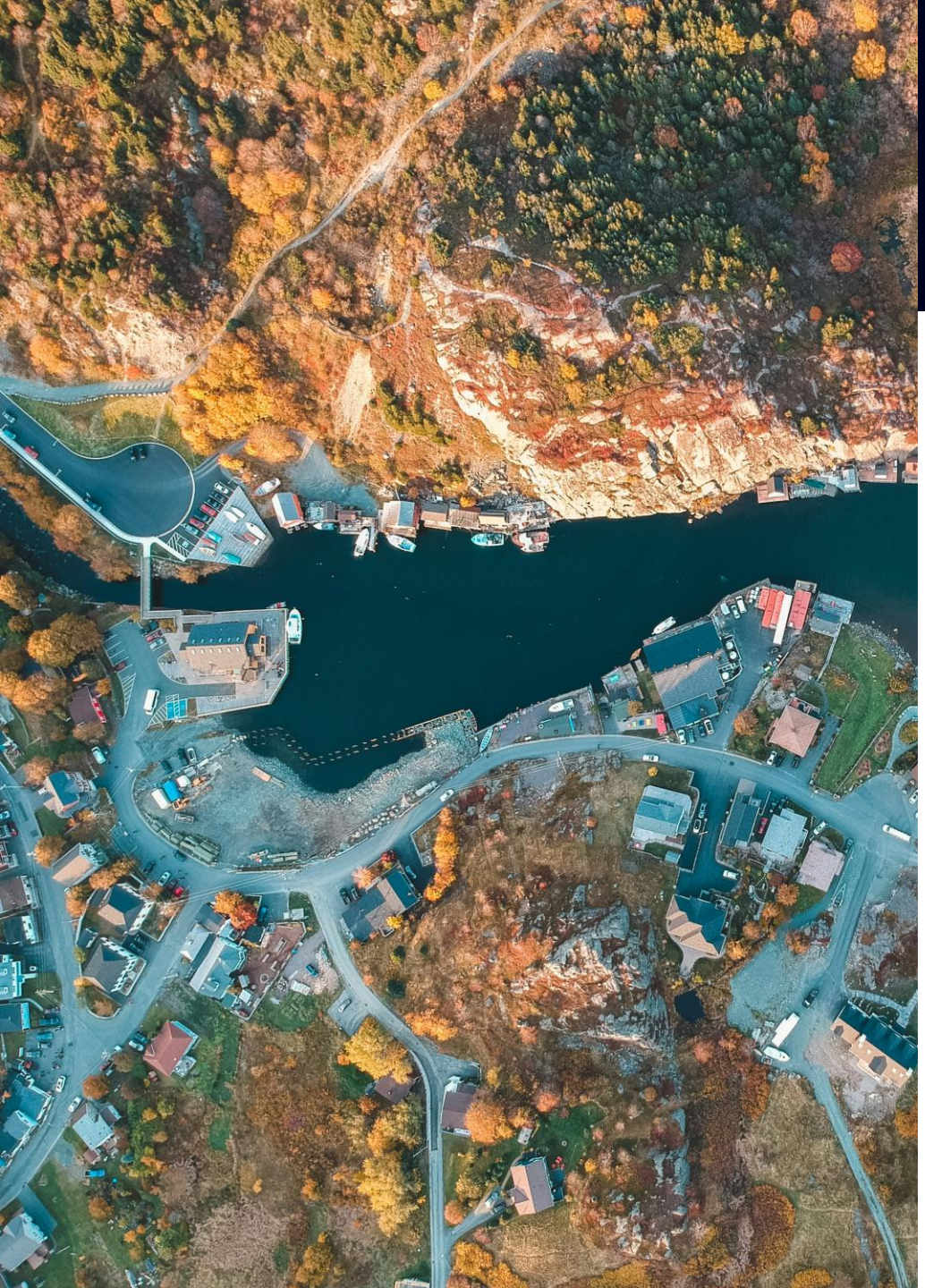
Business Need

Climate-related disruptions threaten global food security, raise production costs, and put additional pressure on farmers to balance efficiency with sustainability. Traditional farming methods are no longer sufficient to address these challenges, creating a strong need for accessible, cost-effective precision agriculture solutions.

Solution

Farm360 helps farmers and agricultural industries increase productivity by continuously monitoring crop fields using satellite data and delivering customized recommendations through a simple mobile application. By applying precision agriculture techniques, the platform optimizes resource use, improves yields, and supports sustainable farming.

NTT DATA



Horizons 2025

SDME x Bifrost AI

AI-Powered Satellite Data Modeling for Enhanced Analytics

SDME (Satellite Data Modeling Engine) streamlines AI development by integrating real and synthetic satellite data. The rapid expansion of satellite technology has led to an unprecedented volume of high-resolution imagery from optical, SAR, and hyperspectral systems. This data is critical for infrastructure monitoring, urban development, disaster response, and security. However, the vast scale of satellite imagery requires AI-driven analytics to extract meaningful insights efficiently.

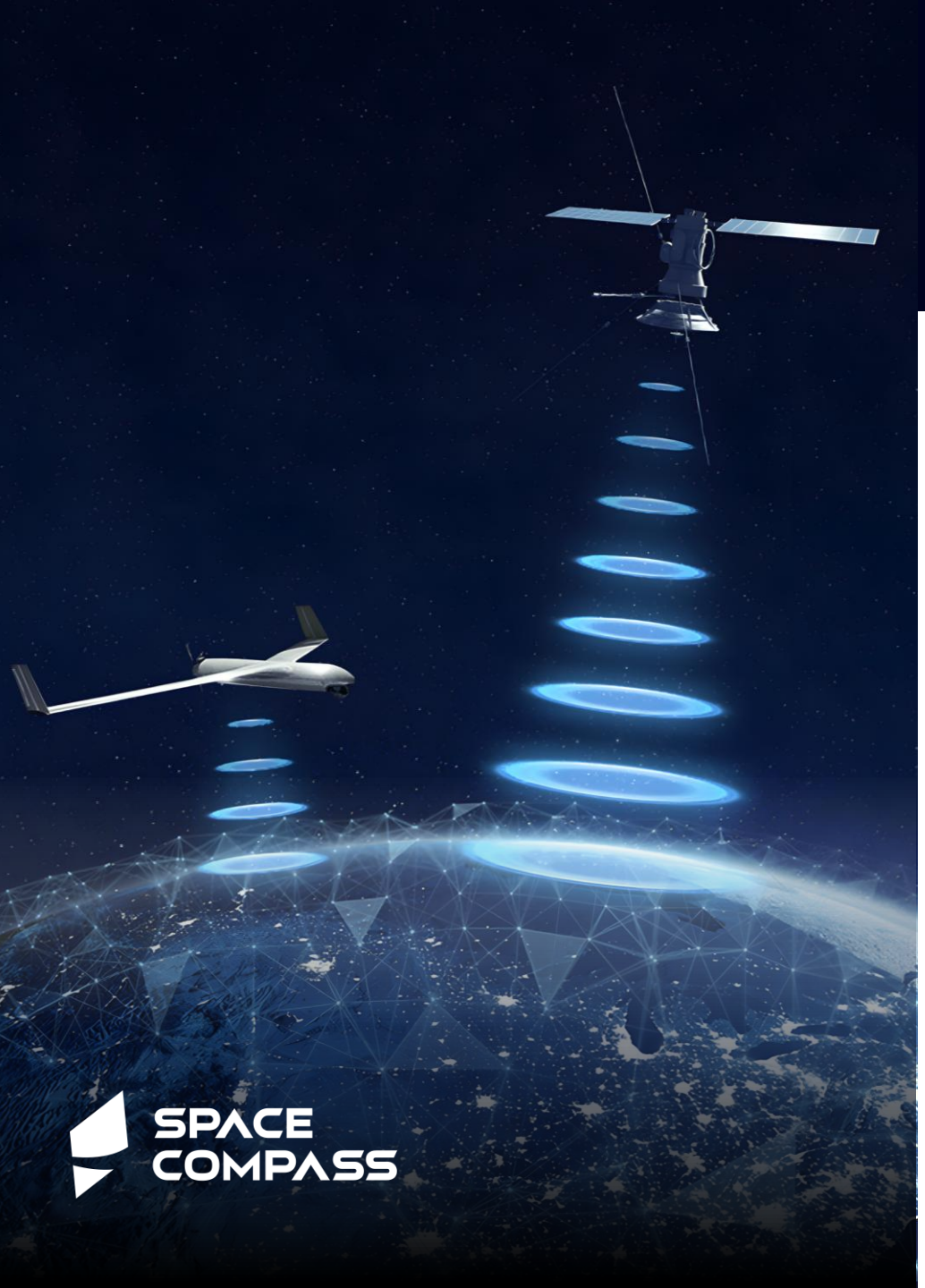
Business Need

Training AI models for satellite image analysis requires comprehensive datasets, yet rare or specific scenarios—such as natural disasters, conflict movements, or unusual object placements—are infrequently captured in routine monitoring. This data scarcity limits the ability to develop robust AI models that recognize these critical events.

Solution

SDME enhances AI development by combining real and synthetic satellite data. Partnering with Bifrost AI, we create high-quality synthetic images to meet AI model needs. This approach lowers costs associated with satellite data while boosting AI performance in specific scenarios, making satellite analytics more efficient and affordable.

NTT DATA



Horizons 2025

Multi-orbital Laser Communication Network

Advancing Space-Based Connectivity and Real-Time Earth Observation

Space Compass is one of the world's largest telecom providers and Asia's leading satellite operator. It pioneered the development of a Space-Integrated Computing Network.
This multi-orbital, optical laser communication infrastructure extends beyond traditional mobile and fiber networks, enhancing global connectivity, real-time Earth observation, and disaster resilience. By leveraging advanced space-based technologies, Space Compass aims to overcome terrestrial limitations and deliver faster, more reliable data transmission.

Business need

Data downlink delay

Traditional Earth observation satellites can only transmit data when passing over a ground station, leading to several hours or even days delays in critical data delivery.

Network blind spots

Even technologically advanced countries like Japan experience coverage gaps, particularly in emergencies, where mobile connectivity and land data access are essential.

Solution

Space Compass addresses these challenges with two key innovations:

Optical Data Relay Service
Enables Earth Observation (EO) operators to transfer satellite data in seconds or minutes instead of hours, maximizing the value and immediacy of real-time insights.

Space RAN (Radio Access Network):
Provides low-latency, disaster-resilient 5G connectivity, allowing direct smartphone connections and real-time high-resolution image transmission, even in remote or crisis-affected areas.

NTT DATA

Horizons 2025

GridWatch

AI-Powered Vegetation Risk Monitoring for Energy Infrastructure

GridWatch leverages satellite data to assess vegetation risks based on environmental factors and proximity to infrastructure. High-voltage energy transmission infrastructures extend across vast and often remote areas, where vegetation growth presents a serious risk. Overgrown trees and dry vegetation can lead to power line damage, outages, and worst cases, wildfires. These incidents threaten communities and ecosystems, exposing energy providers to financial losses and regulatory challenges.

Business Need

Energy providers must regularly inspect vegetation along their infrastructure to mitigate risks. However, onsite visits and drone inspections are costly and provide only partial, time-limited insights. There is a growing need for reliable, cost-effective monitoring solutions that deliver real-time, system-wide visibility.

Solution

Our AI-powered solution enables proactive risk management by identifying high-risk areas and optimizing maintenance routes. The insights are integrated into the **Marble Visions** platform, a Dynamic Digital Twin of the infrastructure, providing a real-time, interactive view for remote inspection and more efficient maintenance planning.

NTT DATA

Gen AI for Video Understanding

AI-based Video Elaboration and Captioning

This modular and flexible AI-driven solution enhances video analysis by integrating multiple AI-powered capabilities, including face and object recognition, action detection, speaker recognition, sentiment analysis, and automated subtitling. Advanced AI models and cognitive services enable seamless video and audio content processing. Its cloud-agnostic architecture ensures scalability, security, and performance, supporting deployments on AWS, Google Cloud, or on-premises infrastructures.

Business Need

Industries like broadcasting and media require efficient solutions to analyze, categorize, and extract insights from video content. Traditional methods are time-consuming, labor-intensive, and costly. Organizations seek AI-powered automation to streamline metadata extraction, optimize storage, and enhance User Experience.

Solution

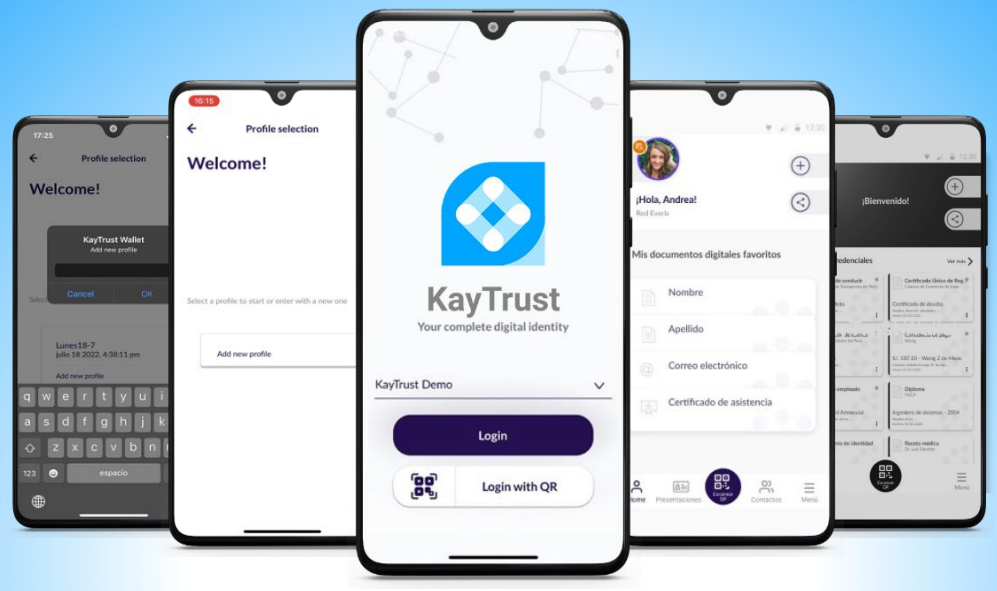
Designed with a vendor-independent approach, the platform integrates custom AI models and third-party cognitive services for extensibility, high performance, and seamless workflow integration. Its automated analysis capabilities accelerate content indexing, improve video storage efficiency, and enhance user engagement across multiple industries.

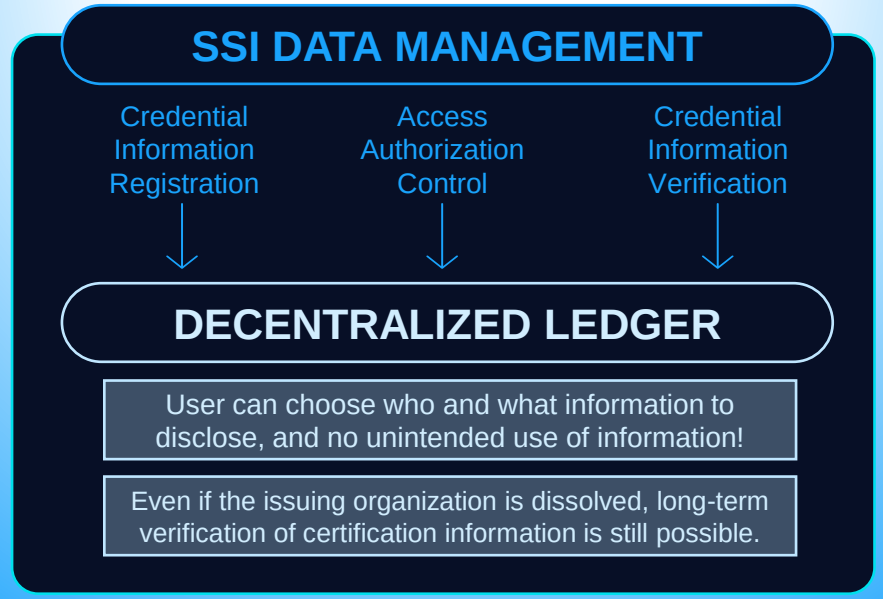
NTT DATA

Horizons 2025

NTT DATA DID/VC Accelerator

New Digital Identity and Certificate (DID/VC) in the Web 3 Era





NTT DATA provides secure digital identities and verifiable credentials for Web3, enabling safer, more efficient online interactions. Our accelerator offers a secure wallet for accessing Web3 services and facilitates issuing and verifying Verifiable Credentials (VC). Streamlining digital identity management significantly reduces validation costs, ensuring seamless and safe onboarding. The solution is compatible with over 150 blockchains and complies with multiple frameworks, including LACCHAIN, EBSI, and Alastria.

Business Need

Identity Theft and Fraud: Cases of identity fraud have surged, with millions of incidents reported by 2023.

Data Breaches: Between 2020 and 2022, global fines for data breaches reached $1.74 billion.

High KYC Costs: Banks spend an average of $60 million annually on Know Your Customer (KYC) compliance.

Solution

The solution is a secure Web3 wallet that ensures self-sovereign and verifiable digital identities, lowers information validation costs and enables safe, fully digital onboarding. It adheres to EC, W3C, DIF, and OpenID standards, ensuring seamless integration. It has been deployed in Europe, the Americas, and Japan and has success stories in finance and the public sector.

NTT DATA

Horizons 2025

Digital Euro

Accelerating Digital Euro Adoption for Financial Institutions

The European Central Bank (ECB) is preparing to introduce the digital euro, representing a significant shift in the European monetary system.

This transition will redefine financial transactions, requiring banks and financial institutions to adapt rapidly.

Business Need

Financial institutions across the Eurozone must upgrade their infrastructure and operations to support the digital euro. Beyond compliance, they must develop innovative use cases that create competitive advantages and unlock new business opportunities in the evolving digital currency ecosystem.

Solution

We propose an accelerator that enables banks and financial institutions to seamlessly integrate the digital euro into their existing applications and systems. The platform facilitates rapid adaptation and customization of use cases, ensuring a smooth transition while fostering innovation in digital payments and financial services.

NTT DATA

Project Pax

A Blockchain-Based Global Stablecoin Settlement Platform

Project Pax aims to establish a global settlement platform using stablecoins that comply with existing regulatory frameworks. With its clear legal structure for stablecoins, Japan serves as a key market for this initiative.

Launched in 2024 by Progmat and Datachain in collaboration with Swift, the project provides 24/7 cross-border remittance and gross settlement, eliminating delays caused by time zones and banking hours. In phase 2, the project seeks to expand into EU, Hong Kong, and tokenized ecosystems built on blockchain.

Business Need

Cross-border remittance faces inefficiencies due to time zone differences, increasing settlement times and costs. Banks conducting FX transactions are exposed to currency exchange risks that current systems cannot fully mitigate. Lastly, traditional correspondent banking processes slow down settlements, impacting customer experience and liquidity management.

Solution

Project Pax utilizes blockchain to develop a global settlement platform for instant, atomic transactions. Collaborating with Swift, banks, and regulators, it adheres to AML/CFT regulations and global financial standards, enhancing liquidity, reducing FX risk, and improving efficiency in cross-border transactions.

NTT DATA

Horizons 2025

Value Transfer Protocol

A New Standare for Secure Peer-to-Peer Transactions

Value Transfer Protocol (VTP) is an innovative mechanism proposed by NTT DATA for secure peer-to-peer value transfer. Unlike traditional digital payment systems, tokens can circulate without relying on a central ledger.

The protocol allows the tokenization of any asset and facilitates seamless value transfers between devices and systems, both online and offline.

Business Need

A fast, cost-effective, and platform-agnostic method to tokenize and transfer value across various industries, such as securities, bonds, and central bank digital currencies (CBDCs); tickets, coupons, and verifiable credentials and confidential information and other digital assets.

Additionally, businesses need a versatile solution for various edge devices, including PCs, smartphones, and IoT systems

Solution

A cross-platform value transfer that enables seamless transactions across different systems, increasing liquidity and usability. It also allows customizable and independent value transfers without platform restrictions and token traceability by facilitating transparent tracking, supporting business applications and compliance with AML/CFT regulations. With its platform-independent approach and security-first design, the VTP sets a new standard for decentralized, real-time value exchange.

NTT DATA

Horizons 2025

3D Videogame with Vocal Interaction

A New Level of Immersive Gameplay

This 3D sci-fi platformer, built with Unreal Engine, blends action and exploration in a dynamic, futuristic world. Players navigate a PC motherboard overrun by enemies, collecting coins and unlocking new challenges.

Guiding the journey is **Elysia**, a generative AI assistant in the form of a butterfly, who offers gameplay tips, fun gaming anecdotes, and interactive voice-based assistance, making the experience more engaging and lifelike.

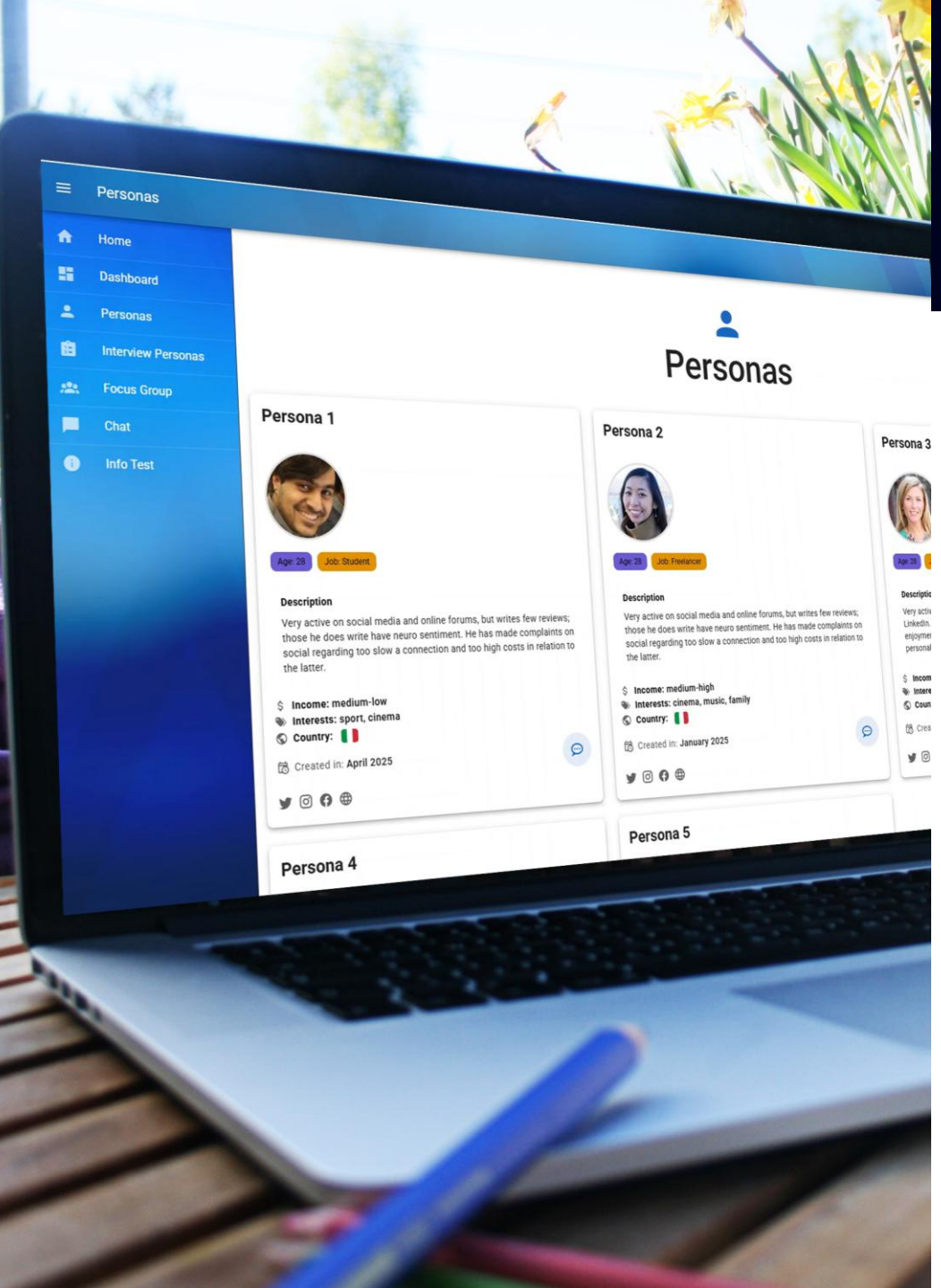
Business Need

As gaming evolves toward more immersive experiences, traditional interactions between players and digital characters remain limited by repetitive dialogues, scripted responses, and static world-building. There is a growing need for dynamic, AI-driven interactions that enhance realism and engagement.

Solution

Our solution adds a new dimension to game design. Thanks to the integration of AI-driven characters and mechanics, this game redefines player immersion, offering ever-changing adventures that feel unique in every session. Creating interactive, unscripted dialogues and supporting voice-based interactions that feel natural and intuitive.

NTT DATA



Horizons 2025

AI Customer Hub

AI-Powered Digital Humans for Marketing Campaign Testing

This innovative solution leverages advanced AI models to create dynamic Digital Humans representing customer segments.
These Digital Humans engage in realistic debates within virtual chatrooms, simulating customer interactions to generate valuable insights into preferences and behaviors. By analyzing these social simulations, businesses can refine their marketing strategies with data-driven precision.

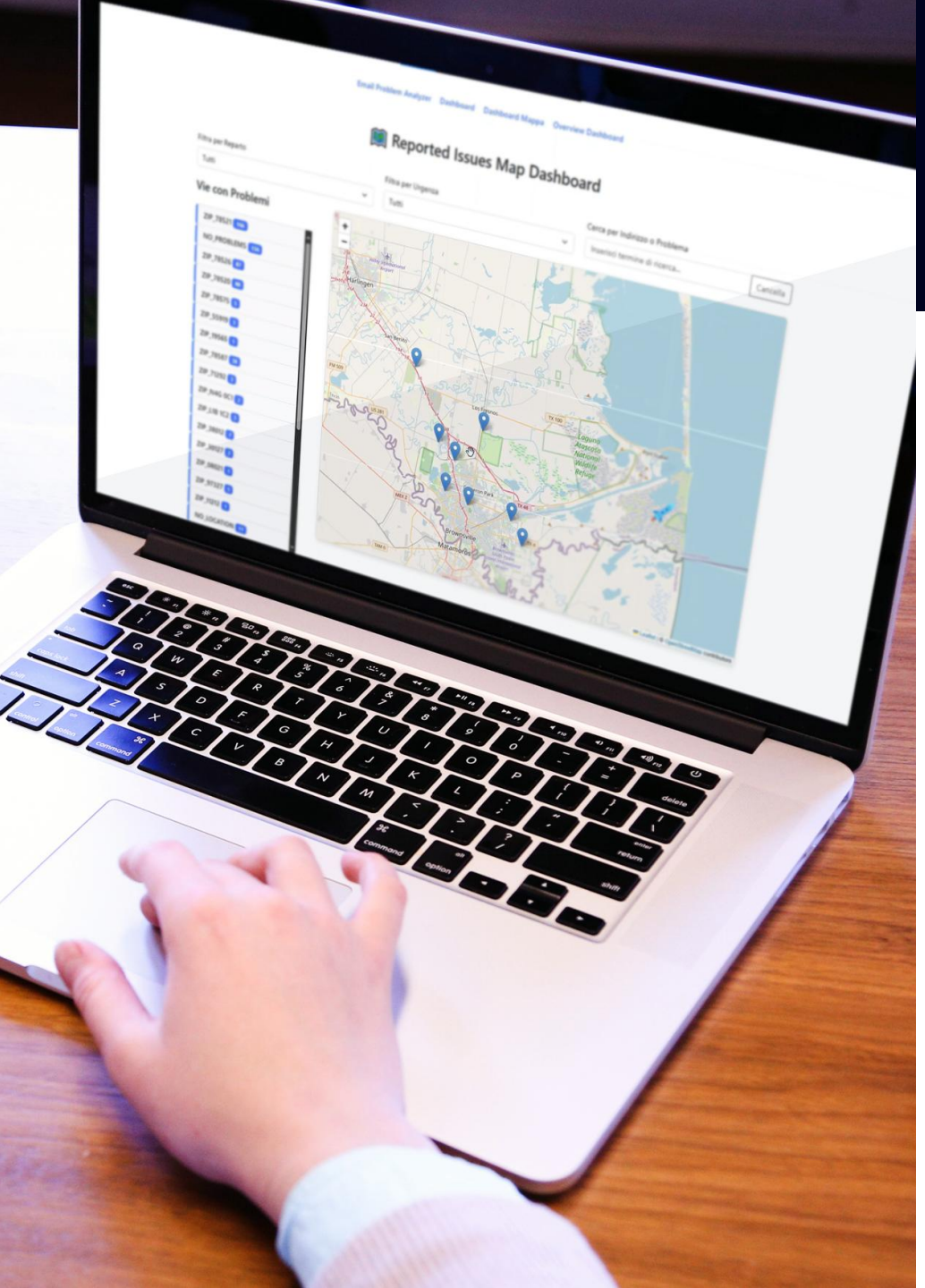
Business Need

Businesses require deep insights into customer behavior to develop tailored products and services, accelerate time-to-market, and optimize marketing and communication campaigns. Traditional market research methods can be slow, costly, and limited in scope, making AI-driven simulations a powerful alternative for real-time, scalable consumer analysis.

Solution

The solution uses AI-powered profiling to generate Digital Humans that engage in realistic discussions, simulating complex social dynamics and providing deeper insights into customer preferences. Through advanced social simulations, businesses can analyze interactions in virtual chatrooms to uncover patterns in decision-making, emotional responses, and brand perception.

NTT DATA



Horizons 2025

Automatic Analysis of Citizens Complaints

Intelligent Document Processing

This GenAI-powered system transforms how cities process citizen complaints by extracting key insights such as urgency, sentiment, and topic.
The analyzed data is then visualized through an Augmented Reality (AR) application, overlaying real-time issues on an interactive city map. This solution enhances decision-making, improves citizen engagement, and accelerates issue resolution by providing city officials with intuitive, data-driven insights.

Business Need

Cities rely on citizen feedback to improve public services and allocate resources efficiently. However, the high volume of daily complaints makes manual processing inefficient, delaying responses to urgent issues. A system that automates complaint analysis and prioritization would enable city officials to respond faster, optimize resource distribution, and enhance service quality.

Solution

A system that integrates AI and AR to analyze citizen complaints in real time and visualize critical issues at specific locations, allowing officials to take immediate action.
The solution streamlines complaint management, enhances public engagement, and ensures faster, more effective responses to urban challenges.

NTT DATA

Horizons 2025

Bid Management

Intelligent Document Processing

Bid Management is a GenAI-powered tool that streamlines tender analysis by automating the extraction, comprehension, and translation of key information from various documents.

It accelerates the creation of Request for Quotation (RFQ) drafts, ensuring standardized documentation quality, improved information retrieval, and reduced response times.

Business Need

Organizations face challenges in efficiently analyzing complex tender documents and generating accurate drafts. Manual processes are time-consuming and prone to inconsistencies. A solution that automates data extraction and document processing is essential to improving efficiency, maintaining quality standards, and enhancing competitiveness in bidding processes.

Solution

The tool integrates an advanced search engine to retrieve relevant past tender documentation based on required technical expertise, an AI-powered chatbot to summarize documents and answer queries—including image-based information—and an automated system for drafting RFQ responses.

NTT DATA

Horizons 2025

Digital Human

Enhancing Customer Engagement with AI-Powered Interaction

Digital Humans are AI-driven representations of people, ranging from digital twins and avatars to humanoid robots and conversational interfaces. They enable human-like interactions and drive innovation across various business models. Designed for multiple sectors, such as banking, financial services, event management, and hospitality, they function as digital advisors, virtual concierges, and interactive brand representatives, enhancing user engagement and service experiences.

Business Need

As businesses evolve in an increasingly digital world, they face several challenges that impact customer engagement, operational efficiency, and overall user experience. Digital Humans offer innovative solutions to bridge these gaps.

Solution

Digital Humans leverage GenAI for human-like interactions and knowledge management, emotion recognition to respond to emotions, TTS and STT for natural speech, facial animation and motion capture for realistic expressions, robotics for human-computer interaction, and 3D rendering technologies for ultra-realistic avatars.

NTT DATA

Horizons 2025

Gamified Recruitment

Enhancing Engagement Through Interactive Learning

We develop a video game-based experience to improve recruitment and onboarding. It allows candidates to explore a virtual Japanese town while gathering clues and answering questions about NTT DATA.

This interactive journey assesses their understanding of the company's principles and values. Generative AI-powered characters provide adaptive dialogue and behavior, making the experience more immersive and engaging.

Business Need

Traditional recruitment methods failed to engage candidates and ensure long-term company values and culture retention.

The HR department needed a modern, interactive solution to attract top talent, create a memorable onboarding experience, and strengthen the connection between new hires and the company from day one.

Solution

A recruitment video game that transforms the hiring process into an experience where candidates navigate a virtual Japanese town interact with AI-driven characters and engage in dynamic Q&A sessions to learn about the company's culture, values, and vision.

This approach has significantly enhanced information retention and deepened new hires' connection with our corporate identity.

NTT DATA

Horizons 2025

The Immersive «Gregorian Tower»

Award-Winning Pavilion at Expo Dubai 2020

An Immersive Experience solution exhibited during Expo Dubai 2020. The stand won the award as one of the best pavilions at the event and is now permanently installed in Dubai.

Additionally, the experience has been adapted into a stand-alone application for Meta Quest 3, expanding its accessibility beyond the physical exhibition.

Business Need

The Vatican's Culture Pavilion at Expo Dubai 2020 required an innovative and immersive way to engage visitors while virtually allowing visitors to explore Italian heritage.

The challenge was creating an interactive, meaningful experience that would stand out while ensuring compliance with COVID-19 regulations.

Solution

The Torre dei Venti (**Gregorian Tower** 1578-1580) was the centerpiece of the experience. The space was photogrammetrically scanned and recreated as a fully immersive virtual environment, allowing visitors to explore it interactively.

A Leap Motion device enabled gesture-based navigation, providing a touch-free experience that met health and safety requirements.

NTT DATA

Intelligent Virtual Entity: IVE

An Advanced Orchestrator for Conversational AI and Intelligent Solutions

Technical Challenge

IVE enables the rapid development of conversational AI solutions fully integrated within existing customer environments.

Research Goal

Act as a bridge between cloud services, modular AI functionalities, and legacy infrastructure, ensuring seamless communication and cooperation to create a high-performance, unified ecosystem across multiple domains.

Technology

IVE integrates major conversational platforms like Google DialogFlow, Microsoft CLU, IBM Watson, and Amazon LEX, and uses plugins to enhance responses and perform actions on customer systems.

Novelty

IVE's modular and independent architecture allows businesses to use specific functionalities, such as entity extraction, or combine multiple modules for complex solutions, like user opinion evaluation through virtual assistants or automated document retrieval via chatbot.

Business Applications

IVE accelerates the time-to-market for AI solutions by integrating and optimizing existing technologies. It is a powerful orchestrator for conversational AI, intelligent document management, web and social analysis, gaming, and immersive experiences, ensuring efficient deployment.

Horizons 2025

Press Release Generator

Consistent and Scalable Content Creation

The Press release Generator assists press release specialists by extracting information from verified sources and generating content that aligns with the company's tone, personality, and messaging. Users can select content types, customize parameters, and receive AI-generated drafts tailored to their needs through a web application.

The solution enhances consistency, personalization, content acquisition, idea generation, error reduction, and scalability, streamlining the press release creation process.

Business Need

Press release specialists must generate high-quality, brand-aligned content quickly and efficiently, and while traditional methods can be time-consuming, GenAI algorithms offer a solution by automating content generation, extracting relevant information from trusted sources, and adapting it to the company's communication style.

Solution

The solution includes a web application where users can select content types, specify information sources, and customize parameters such as tone of voice and language preferences.

A GenAI prompt-tuned model generates a structured draft, which can be manually refined and transformed into a LinkedIn post or other media content.

NTT DATA

Simulative Agents

AI-Driven Realistic Human Behavior for Interactive Applications

Technical Challenge

Simulative Agents rely on an effective architecture that combines LLMs with RLHF to create generative agents capable of performing daily activities, forming opinions, and engaging in natural conversations.

Research Goal

Develop realistic human behavior representations that enhance interactive applications, from immersive virtual environments to communication-driven spaces. .

Technology

The solution utilizes LLMs for natural language processing and reinforcement learning for behavior synthesis, supported by a memory stream database that tracks an agent's experiences to plan actions effectively.

Novelty

This technology introduces generative agents that exhibit highly realistic individual and social behaviors. These agents adapt dynamically to interactions, simulating complex social behaviors, decision-making, and group dynamics within virtual environments.

Business Applications

This technology has wide applications across industries. In gaming and virtual reality, it boosts immersion and engagement. In customer service, it offers personalized experiences. In training, it provides realistic behavioral modeling for corporate training, crisis response, and education.

Horizons 2025

Tourist Virtual Assistant

AI-Virtual Travel Assistant for Personalized City Exploration

This Generative AI Virtual Assistant enhances travelers' experiences by providing real-time, personalized support for queries related to attractions, events, restaurants, shopping, accommodations, and services.

Built on OpenAI and the Semantic Kernel agentic framework, the assistant continuously updates its knowledge base, ensuring travelers always receive the most current information during their visit.

Business Need

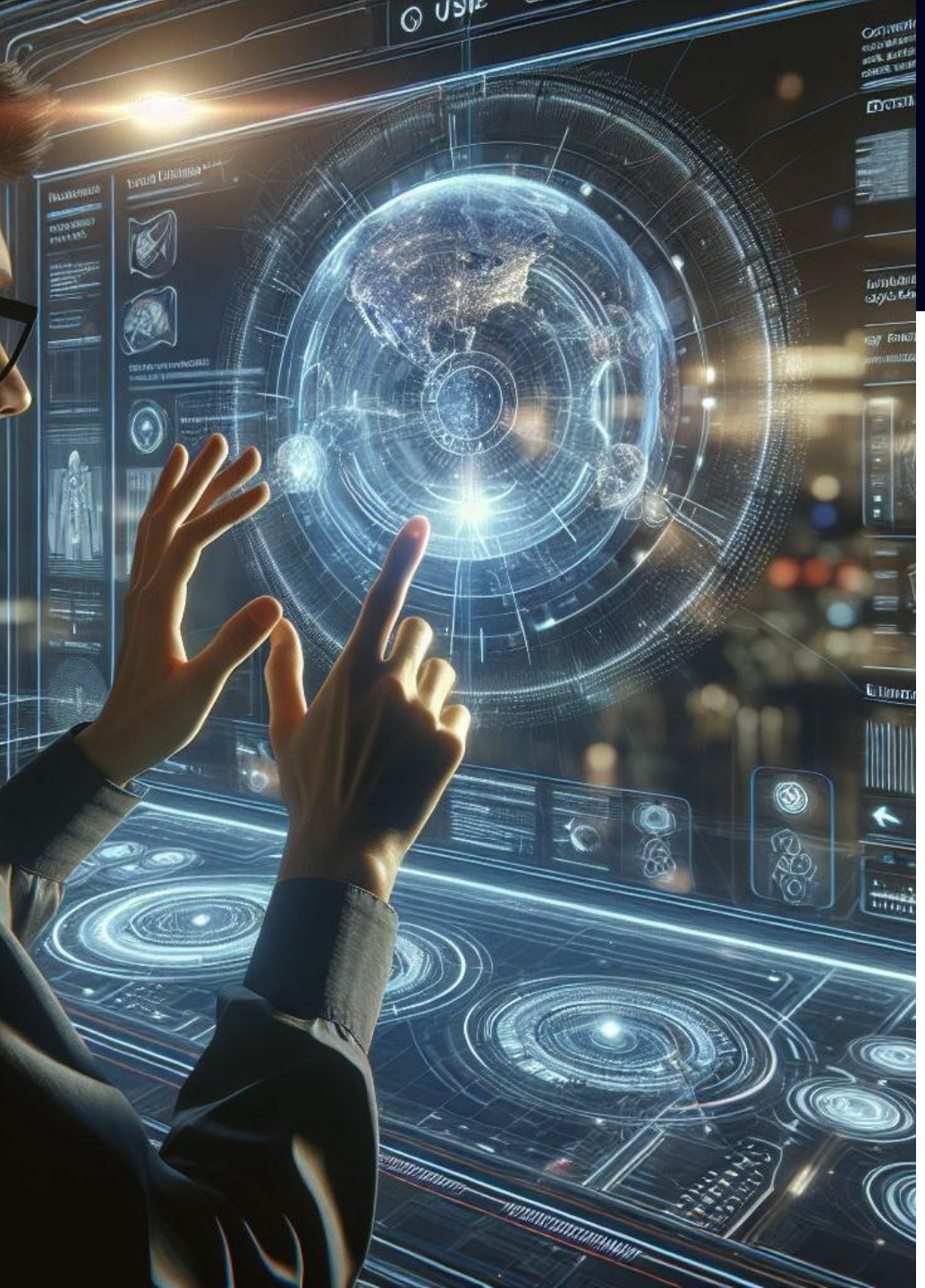
To improve visitor experiences, the client seeks an intelligent virtual assistant capable of offering personalized recommendations and instant support. Traditional information sources lack adaptability and real-time updates. A conversational AI solution is required to deliver an accurate, seamless, interactive travel experience.

Solution

The solution comprises an agent built upon Azure OpenAI and Semantic Kernel framework.

The Semantic Kernel acts as an orchestration layer, directing the Azure OpenAI GPT Large Language Model to interpret user requests, access relevant tools, and provide context-aware responses.

NTT DATA



Horizons 2025

Natural UI Sphere

See. Interact. Control. A new dimension of interaction

Natural UI Sphere redefines Human-Machine Interfaces (HMI) by making data interaction as intuitive as speaking or gesturing. At its core, it features an interactive map controlled via voice, gestures, and touch, transforming complex data into actionable insights. Future Generative AI integration will not only display information but also understand context, predict trends, and assist in decision-making, making it a powerful tool for optimizing city infrastructure, monitoring critical environments, and beyond.

Business Need

Post-pandemic challenges have heightened the need for touch-free, efficient interactions that maintain operational continuity while ensuring safety and convenience. Traditional input methods often require physical contact, which can be impractical or undesirable in various industries.

Solution

Natural UI Sphere integrates multimodal interactions—combining voice, gestures, and traditional controls—to create a more intuitive user experience. The interactive map is a proof of concept for complex data exploration, but its flexible architecture extends to any UI element. Generative AI will enable natural language understanding, predictive insights, and optimized decision-making, making human-machine interaction more intelligent and adaptive.

NTT DATA

Natural UI Sphere

Multimodal interaction with Human Machine Interface (HMI)

Technical Challenge

In the post-pandemic era, traditional interaction methods that require physical contact with devices present usability and accessibility challenges. Many scenarios demand touch-free interaction, requiring a seamless, intuitive solution.

Research Goal

Develop an HMI (Human-Machine Interface) that enables multimodal interactions through voice, gestures, and traditional controls, allowing users to interact with complex data naturally and intuitively.

Technology

Multimodal Interaction: Voice, gestures, touch.

Interactive Map: Real-time data control.

Generative AI: Future integration for enhanced decision-making.

Novelty

Natural UI Sphere integrates voice, gesture, and touch interactions into a single adaptive experience. Generative AI integration enables context-aware assistance, predictive insights, and decision-making support, making it a game-changer in Territory Digital Twins.

Business Applications

This technology enhances urban infrastructure management, logistics, and large-scale operations, providing real-time data analysis and visualization. By transforming raw data into actionable insights, it supports smarter, more efficient, and adaptable operational strategies across various industries.

Horizons 2025

RailVision

Next-Generation HMI for Smart Railway Operations

RailVision is an advanced Human-Machine Interface (HMI) designed for Territory Digital Twins in railway operations. Integrating a real-time digital map with live infrastructure video feeds provides operators with a comprehensive visual command center for tracking, planning, and optimizing railway traffic.

Future enhancements will incorporate Generative AI to suggest optimal routes, detect anomalies, and improve predictive maintenance, transforming raw operational data into an intuitive, interactive experience for a more efficient, reliable, and adaptive railway network.

Business Need

Modern railway systems require efficient and safe traffic management, where operators need real-time monitoring and decision-making tools to optimize operations and improve network reliability.

Converting complex railway data into actionable insights is key to ensuring better service quality and infrastructure performance.

Solution

RailVision integrates digital maps and real-time video feeds into a centralized HMI, providing an intuitive railway traffic monitoring and optimization interface.

With future GenAI-driven capabilities, the system will enable intelligent route planning, anomaly detection, and predictive maintenance.

NTT DATA

Attribute-Based Encryption (ABE)

Advanced Access Control for Secure Data Sharing

Technical Challenge

ABE addresses the need for fine-grained access control in encrypted data, enabling data owners to define attribute-based access policies (e.g., role, organization, clearance level). Unlike traditional encryption, which relies on user-specific keys, ABE provides greater flexibility and scalability.

Research Goal

Enhance ABE's resilience against quantum computing attacks, improve multi-authority ABE for decentralized environments, and reduce computational overhead for real-time applications.

Ensuring secure, efficient, and scalable encryption for modern digital ecosystems.

Technology

ABE is based on advanced cryptographic techniques, combining existing encryption technologies with proprietary libraries that enable the attribute-based policy to be part of the encryption.

Novelty

ABE supports both Key-Policy and Ciphertext-Policy ABE, allowing the encryption key or the ciphertext to define access rules.
This makes ABE particularly suited for distributed and highly regulated environments where flexible access control is critical.

Business Applications

ABE is widely applicable in several industries, such as cloud computing, healthcare data sharing, secure IoT communication, and financial systems. It allows organizations to securely share sensitive data while ensuring compliance with privacy regulations like GDPR and HIPAA.

Horizons 2025

Dynamic Infinity

Expo 2025 - NTT Global Promotion

Dynamic Infinity is a global, collective experience highlighting **NTT**'s presence and thought leadership at **Expo 2025 Osaka**.

By leveraging Generative AI, the project envisions future scenarios, illustrating NTT's societal impact and a harmonious future where humans and technology coexist. This end-to-end initiative, developed by Tangity, NTT DATA Italy, and NTT DATA Japan, strengthens NTT's position as an innovation leader and global change agent.

Business Need

To elevate NTT's global presence, Dynamic Infinity provides a unique, interactive platform that fosters engagement and showcases NTT's commitment to shaping the future through technology and human-centered innovation.

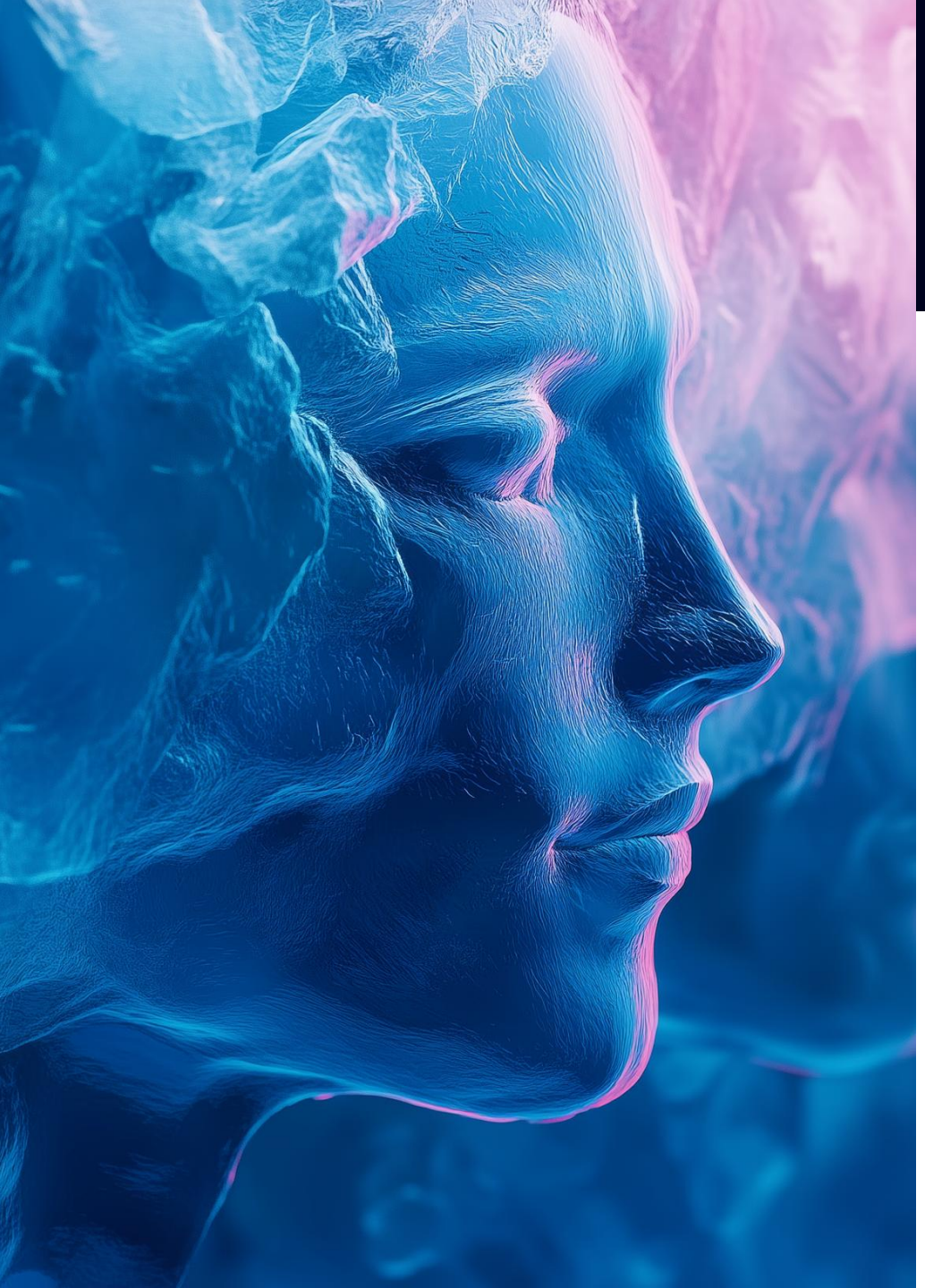
Showcasing NTT's technological capabilities and innovations, such as **IOWN**, **Another Me**, and **Feel Tech**, to a broad global audience beyond tech professionals.

Solution

Dynamic Infinity is more than an immersive experience—it is a creative space designed to inspire and provoke reflection on the global impact of innovation.

The experience blends physical and digital elements, featuring gamified storytelling that allows users to explore, interact, and co-create their vision of the future step by step.

NTT DATA



Horizons 2025

未来 FUTURES

AI-powered Foresight to Explore Future Scenarios

The 未来 FUTURES Framework uses Generative AI to create compelling, immersive scenarios across industries.

Digital humans from the future offer unique insights into emerging trends, technologies, and transformative disruptions, enhancing strategic clarity.

Business Need

Organizations across sectors face rapid technological shifts, new business models, and evolving customer expectations. Without structured foresight, companies risk losing competitiveness and missing critical opportunities to adapt proactively.

Solution

The 未来 FUTURES Framework enables organizations in industries such as Banking, Automotive, and Insurance to explore multiple possible futures. Using AI-generated scenarios and interactive digital personas, organizations can identify common challenges and develop resilient strategies to confidently navigate future uncertainties.

NTT DATA

Body Core Temperature Monitor

Understanding critical sleep parameters

Technical Challenge

Accurately measuring core body temperature has been historically difficult due to thermal losses caused by heat flux dissipation into the surrounding environment.

Research Goal

develop a high-precision monitoring technology capable of assessing the impact of lifestyle and environmental factors on sleep patterns and quality.

Technology

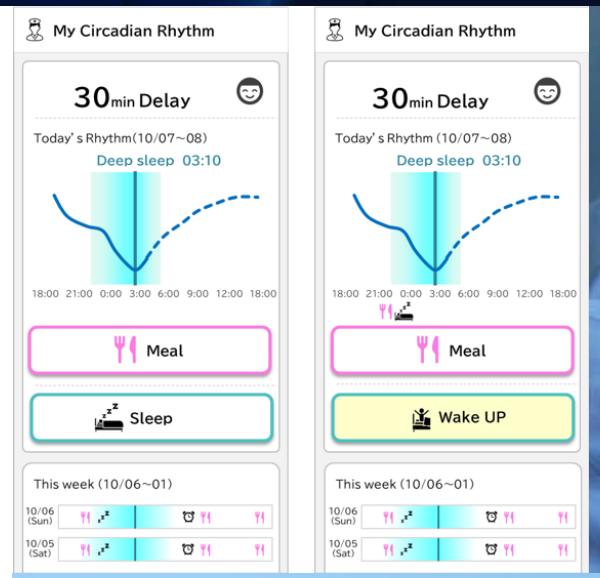
It measures “skin temperature“ and “heat flux“ to estimate the temperature deep inside the body (heat flux method). NTT has incorporated a unique structure inside the sensor to measure heat flux in daily life accurately.

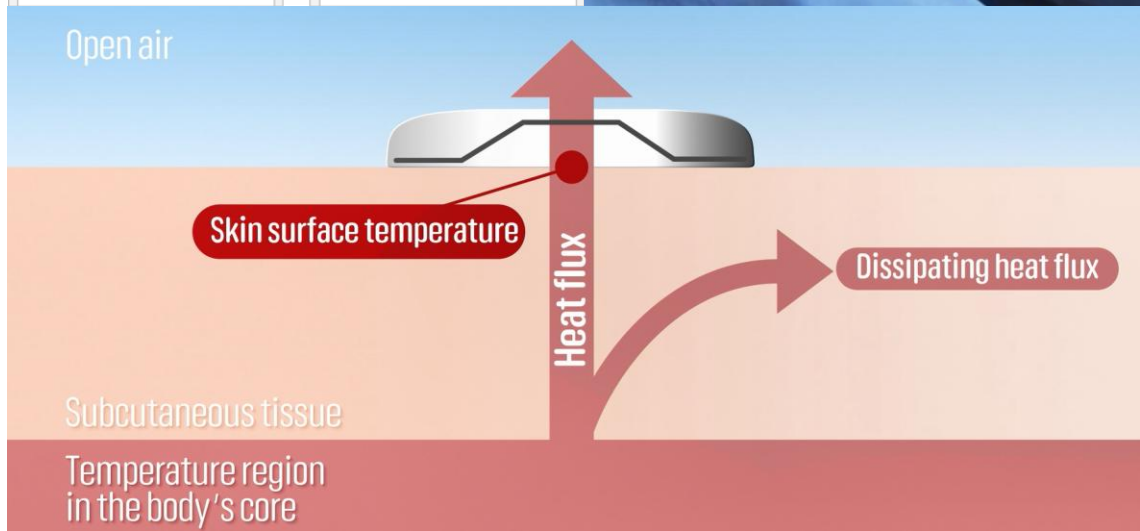
Novelty

NTT’s proprietary heat flow compensation structure significantly improves temperature estimation accuracy, achieving readings comparable to rectal temperature measurements—the current gold standard.

Business Applications

By delivering reliable circadian rhythm insights, this technology bridges the gap between physiological monitoring and lifestyle optimization, paving the way for more innovative sleep solutions, such as sleep quality optimization, health & wellness solutions, and medical & Research applications.





KANO

Save Over 20% on Software Architecture and Design Services.

KANO is a Generative AI solution designed to tackle complex knowledge management challenges where traditional Retrieval-Augmented Generation (RAG) falls short. A key use case is helping organizations understand IT landscapes and legacy platforms, where data spans structured and unstructured sources, including diagrams and technical documentation. KANO integrates multimodal AI and knowledge graphs to unlock insights and automatically generate new design documentation. The solution is securely deployed within customer cloud environments, ensuring compliance with information security requirements.

Business Need

Traditional GenAI RAG solutions struggle when information is scattered across large, diverse datasets, making it difficult to retrieve useful, context-aware insights.

This challenge is particularly evident when organizations need to onboard new knowledge, such as during system migrations, digital transformations, or staff onboarding.

Solution

KANO outperforms standard RAG-based approaches, delivering greater accuracy and richer insights. It can automatically generate draft documentation, such as high-level designs, reducing the cost and time of IT project architecture and design by at least 20%. By integrating advanced AI-driven knowledge extraction and structuring, KANO accelerates decision-making, modernization efforts, and operational efficiency.

NTT DATA

KANO

Advancing Knowledge Management with GraphRAG and Agentic AI

Technical Challenge

GenAI Retrieval-Augmented Generation solutions face multi-hop infe-rencing issues, mainly in knowledge-intensive scenarios. Valuable information is often found in diagrams, requiring context-aware AI for effective extraction and interpretation.

Research Goal

This research-driven initiative, developed for a paid client engagement, aimed to reduce the cost of architecture and design efforts in the Software Development Lifecycle (SDLC) while accelerating time-to-market for large-scale projects.

Technology

Our solution employs multimodal AI and GraphRAG to navigate complex knowledge management environments. We also use agentics to create new design documents from the same knowledge base.

Novelty

KANO is novel in integrating multiple AI technologies, representing an early commercial application of GraphRAG and agentic AI in real-world scenarios. The solution has delivered remarkable results, evidenced by strong customer interest and ongoing efforts to scale a dedicated team to meet demand.

Business Applications

KANO is a cross-industry solution for any large enterprise with a complex IT landscape. It is already being applied in IT architecture analysis, legal case intelligence, and the decomposition of complex applications. Its extensive potential use cases make it a scalable knowledge management tool.

Horizons 2025

XR glasses “MiRZA”

Lightweight XR glasses with wireless connection to smartphone

New XR glasses developed by NTT QONOQ Devices. Designed to be easy to put on and take off and to reduce fatigue, these glasses are lightweight (approximately 125g) and have a shape similar to regular glasses. Wireless connection to smartphones allows for easier operation. 6DoF supports spatial awareness and display with FHD resolution and 1000nits brightness improves visibility. These high performance XR glasses will help customers in a variety of situations, including remote work support.

Business Need

Scene 1
Remote work support

Scene 2
Smooth communication with real-time character display and interpretation

Scene 3
Multiple large screens for a comfortable working environment

Solution

NTT DATA

https://www.nttqonoq.com/device/mirza/?lang=en

Non-Invasive Glucose Meter

Painless wearable technology

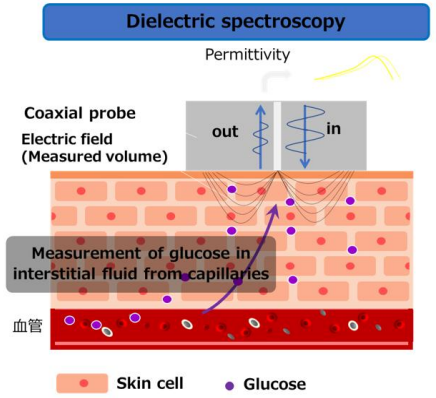
Technical Challenge

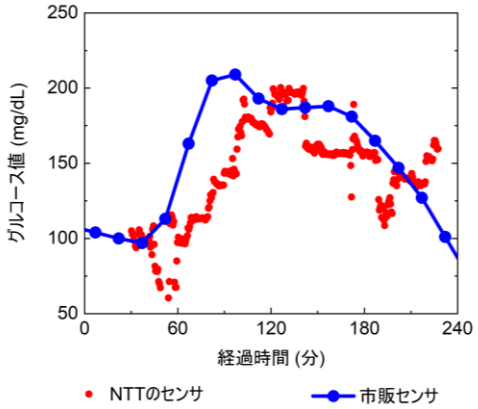
High-precision measuring of blood glucose levels requires invasive tech to analyze interstitial fluid directly.

This creates a barrier for potential users due to pain and needle fear.

Research Goal

Develop a highly accurate, non-invasive glucose monitoring system that provides reliable health insights without requiring invasive methods.





Technology

Estimation of changes in glucose levels in interstitial fluid by differential detection between two sensor probes with different penetration depths in the skin

Novelty

Measures glucose concentration changes in interstitial fluid through microwave technology, eliminating the need for needles. And the prototype is as compact as a smartwatch, making it practical for continuous, everyday health tracking.

Business Applications

This innovation has the potential to drive healthier lifestyles, improve chronic disease management, and contribute to a future of personalized healthcare. It is also a valuable tool for corporate wellness programs, helping organizations enhance employee health and productivity.

Horizons 2025

Secure Light. Zero Delay.

Secure Light. Zero Delay.

This technology enables ultra-secure, lightning-fast optical communication, ensuring data integrity, privacy, and resilience in the era of photonic disaggregated computing.

Integrating photonic cryptographic circuits safeguards sensitive data while enhancing trust, security, and efficiency in high-performance optical networks.

Business Need

High-Security Data Transmission:
Increasing data volumes require robust security with low latency.
Secure Photonic Computing:
Protecting data flow between distributed photonic components is essential for disaggregated architectures.
Eavesdropping and Tampering Protection:
Preventing interception and unauthorized modifications in optical communication.
Low-Latency Encryption:
Real-time applications need fast encryption that maintains speed.

Solution

Photonic cryptographic circuits offer significantly lower latency, ensuring real-time security. Cryptography is implemented directly within the optical domain, eliminating vulnerabilities associated with electronic conversions. Photonic circuits enable highly secure key distribution protocols, leveraging light's unique properties.
This technology secures photonic disaggregated computing environments, reducing reliance on energy-intensive electronic security mechanisms.

NTT DATA

Photonic Cryptographic Circuits

Secure Light. Zero Delay.

Technical Challenge

Traditional electronic cryptographic circuits cause delays in optical communications and computing. With rising data transmission speeds, there's a need for more efficient and faster security for next-generation optical infrastructures.

Research Goal

Implement cryptography within photonic circuits, ensuring enhanced security and performance in optical communication and computing environments.

Technology

An algorithm using an encoding circuit that converts bit values into photonic addresses to realize low latency.

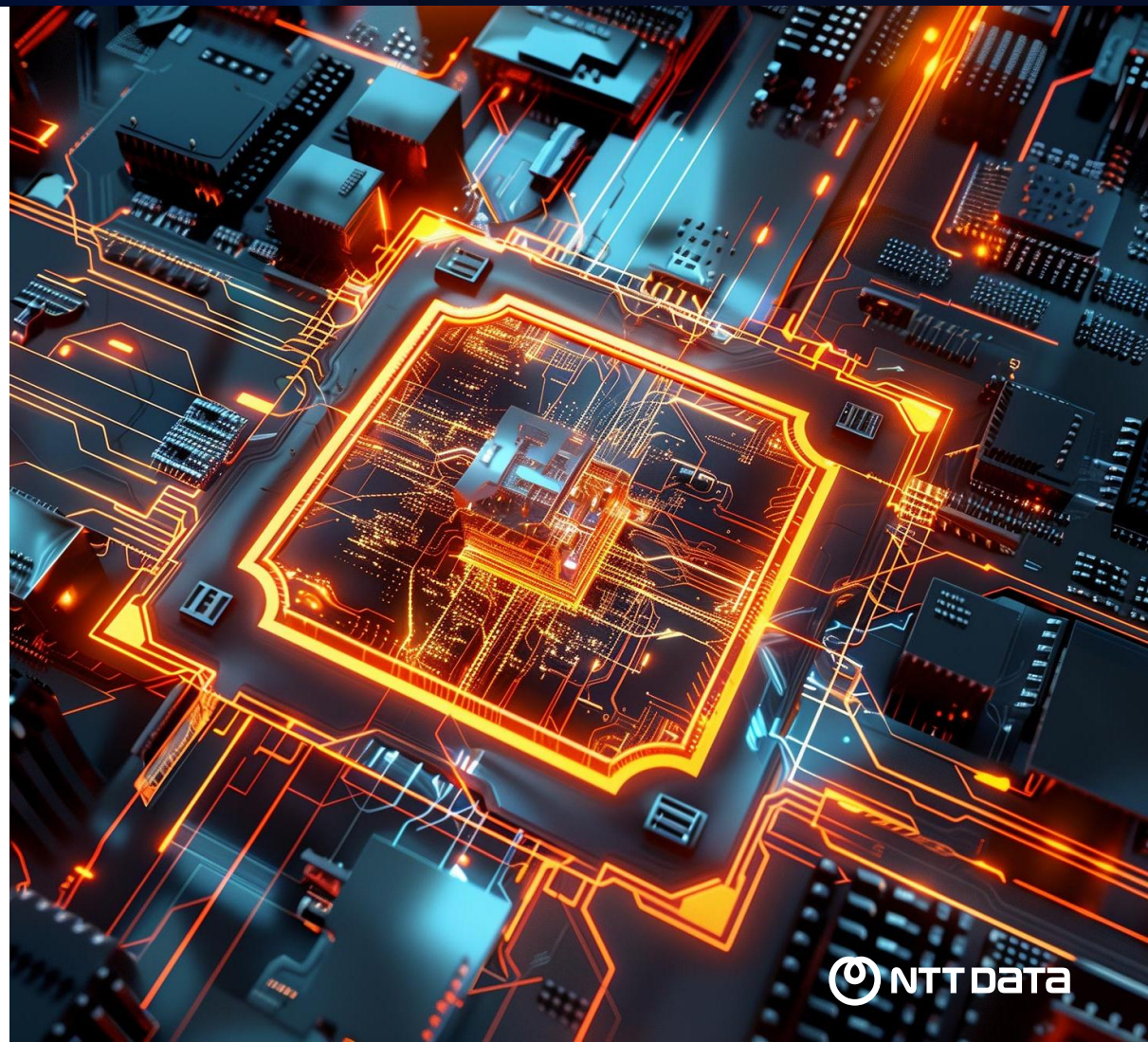
Photonic cryptographic circuits using NTT's optical integration technology.

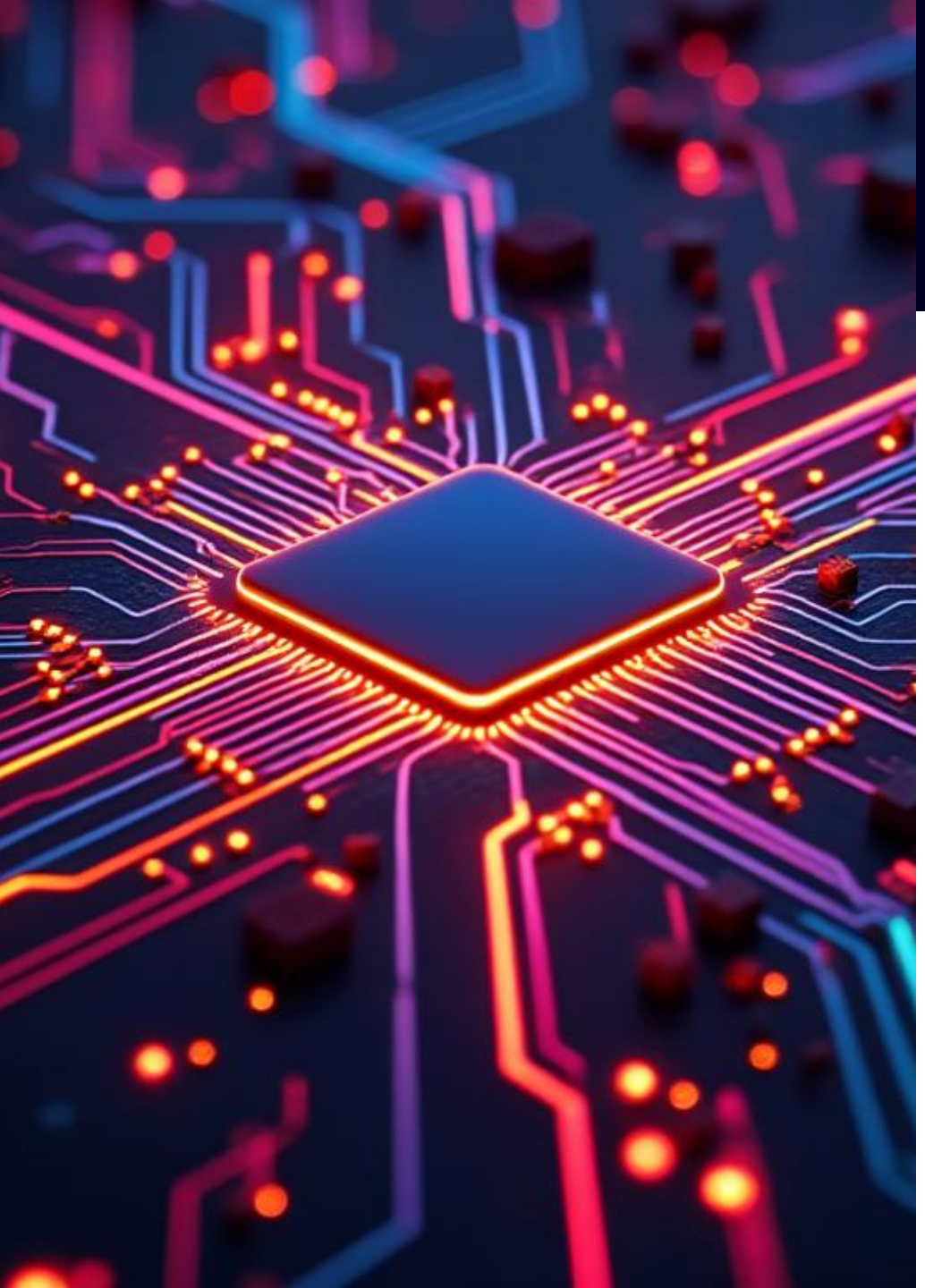
Novelty

For the first time, photonic circuits enable the execution of a one-round symmetric key cryptographic calculation, marking a breakthrough in secure optical processing.

Business Applications

This technology will be crucial for optical information processing infrastructures, including photonic disaggregated computing, and is expected to be implemented by 2030 and beyond..





Horizons 2025

Photonics-Electronics Convergence

Bridging Worlds: Power & Speed Reimagined

PEC technology transforms computing and communication by delivering unparalleled energy efficiency and bandwidth, enabling sustainable, high-performance systems.

By replacing electrical interconnects with optical solutions, PEC overcomes the limitations of traditional wiring, enhancing scalability, speed, and power efficiency in modern computing architectures.

Business Need

- Reducing Power Consumption in Data Centers and High-Performance Computing.
- High-Bandwidth Interconnects for Disaggregated Computing.
- Overcoming Electrical Wiring Limitations.
- Faster Communication Within and Between Systems.
- Support for Advanced Packaging & Chiplets Design.

Solution

PEC technology offers a scalable, energy-efficient optical interconnect solution, including

- Low-Power Optical Interconnects,
- High-Bandwidth Communication,
- Long-Distance Communication,
- Scalable Interconnect Solutions,
- Inter-Data Centre Communication (PEC-1),
- Inter-Board Communication (PEC-2);
- and Inter-Semiconductor Package Communication (PEC-3).

NTT DATA

Photonics-Electronics Convergence (PEC) Devices

Bridging Worlds: Power & Speed Reimagined

Technical Challenge

Electrical wiring has innate limitations in communication distance and struggles to connect many LSIs efficiently. As computing systems evolve, low-power, high-speed interconnects are essential for scalability and efficiency.

Research Goal

Connect remote LSIs using optical signals, reducing power consumption and enabling optical disaggregated computing by enhancing data transmission speed and efficiency.

Technology

World's top-level compact and highly efficient optical semiconductor device technology (Membrane photonics).

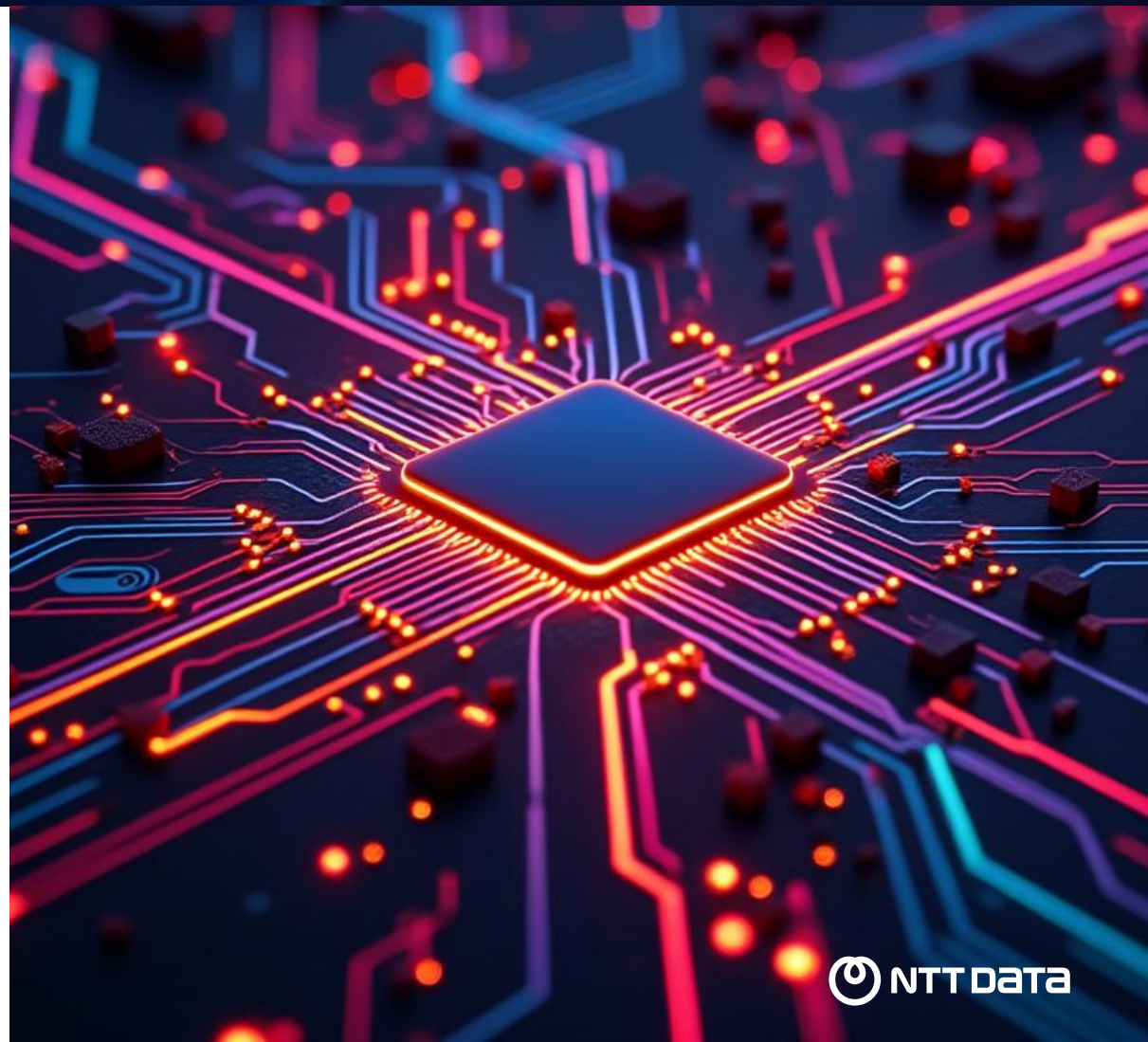
Technology to connect an electric chip and an optical fiber on the same chip or substrate.

Novelty

NTT's proprietary optical semiconductor thin-film fabrication technology integrates high-speed, low-power light sources on silicon substrates. This breakthrough allows efficient optical communication between LSIs, overcoming the constraints of electrical wiring.

Business Applications

This technology applies to the information and communications industry. PEC-1 (Available now) enables inter-data center communication; PEC-2 (FY 2025) enables inter-board communication; and PEC-3 (FY 2028) enables inter-semiconductor package communication.



Transdermal Drug Delivery

Advanced Iontophoresis Based Process

Technical Challenge

Microcurrent treatments are widely recognized for their benefits in beauty and skincare, but their reliance on large, specialized equipment limits accessibility for everyday use.

Research Goal

Develop a next-generation skincare solution that provides a practical, non-invasive alternative to traditional beauty treatments, offering spa-quality results without bulky equipment or injections.

Technology

Apply the electrode material derived from biocellulose, which is used in developing low-environmental-load batteries, to facial masks. The flow of ions generated by battery reactions promotes the penetration of drugs and active ingredients.

Novelty

The device makes advanced skincare treatments accessible at home by replacing large microcurrent machines. It improves the penetration efficiency of active ingredients by 100% compared to traditional non-woven masks without iontophoresis.

Business Applications

This technology can be integrated into beauty masks, eye patches, and adhesive plasters, expanding applications across beauty, healthcare, and medical fields. In beauty, the goal is to commercialize this product within a few years, offering consumers a convenient, high-performance skincare solution.

Horizons 2025

Kirameki Display

Ultra-Real Definition Display Technology

Kirameki, meaning “sparkle,” is a revolutionary display technology that leverages a new algorithm, advanced imaging techniques, and precise light ray calculations to achieve unparalleled resolution and fidelity. Unlike conventional displays, Kirameki can accurately reproduce the colors, brightness, and texture variations of materials, capturing their natural sparkle and depth in ways previously impossible. This breakthrough opens new commercial opportunities by redefining how digital displays represent high-value products.

Business Need

Retailers often face challenges in displaying high-end, rare, or bulky products, such as luxury watches, jewelry, and automobiles. Traditional photos and online catalogs fail to capture material richness and texture variations, making it harder for customers to appreciate these products’ proper aesthetics and craftsmanship.

A more immersive and realistic display solution is needed to enhance customer confidence and decision-making.

Solution

The Kirameki display recreates the natural interplay of light, texture, and color, allowing customers to experience a product’s visual depth and material properties from different angles, just as they would in real life.

Enhancing realism improves in-store decision-making, reduces reliance on physical inventory, and increases security for high-value items for luxury retail and beyond.

NTT DATA

5G products suite

Service & Network Orchestration, Edge Deployment & Roaming

Technical Challenge

Industry (Energy, Manufacturing) verticals, as well as Telco&Media subjects, either Public Service Providers or Enterprises, demand to lean on a flexible infrastructure to enhance their business and support mission critical needs.

Technology

NTT DATA modular suite addresses service order management (SOM), 5G network and slicing management (5GEF) and automated deployment (CreEdgeOn) with AI-based tuning. 5G Roaming (SEPP) is provided for Automotive, IoT and Industry cases.

Research Goal

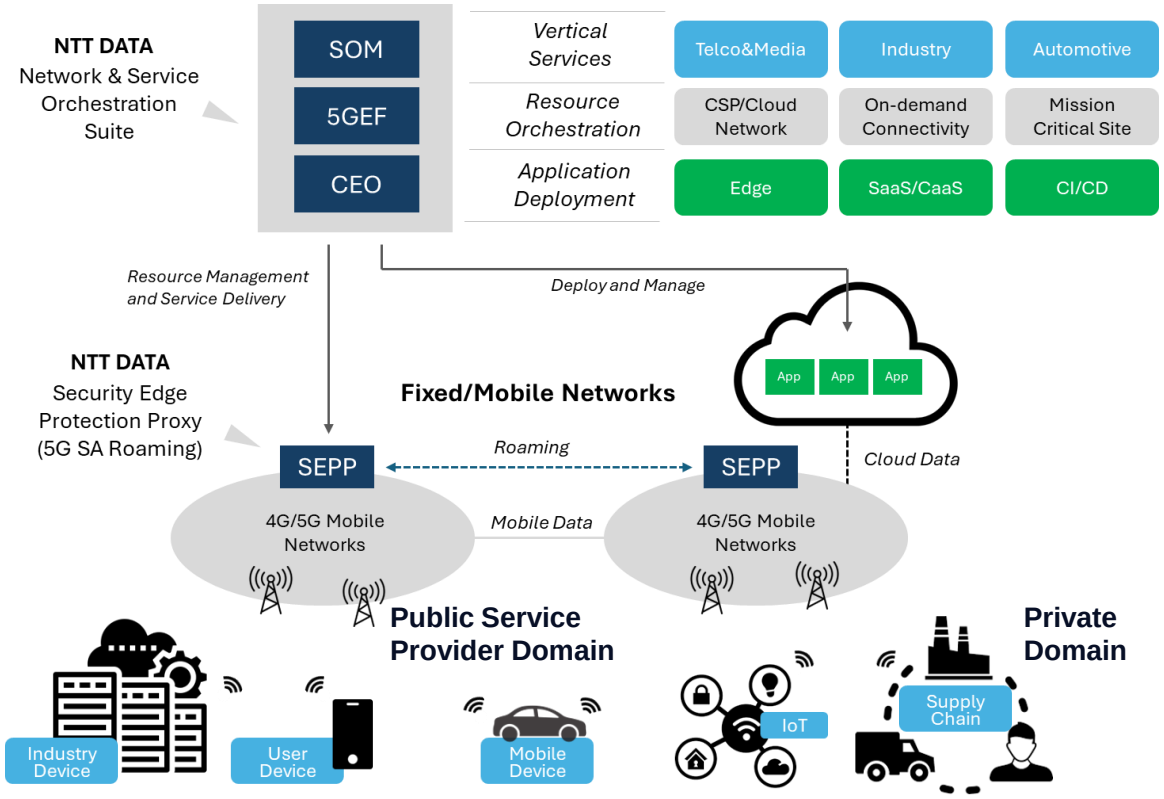
The aim is to develop a framework that simplifies 5G network management and FTTx or 4G legacy, enhancing security, and operational efficiency. NTT DATA suite accelerate 5G adoption and monetization, through easy-to-use interoperability.

Novelty

The innovation lies in integrating cloud-native solutions with ETSI, 3GPP, GSMA and TMForum standard bodies, providing a cloud-like experience for mobility and on-demand connectivity. Automation and scalability are enhanced through machine learning and distributed deployment.

Business Applications

Solutions are applicable to telecom operators, service providers, and enterprises needing secure and scalable 5G (and legacy) networks. Automotive use cases and industrial apps can be designed easily and delivered in zero-touch mode.



SOM	Service Order Manager (workflow and orchestration enginr)
CEO	«Create on the Edge», CreEdgeOn (edge deployment manager)
5GEF	5G Enabling Fabric (RAN/Core network and connectivity manager)
SEPP	Security Edge protection Proxy (5G SA Roaming)

Horizons 2025

Kiber

Empowering Industrial Operations with Advanced AR Solutions

The Kiber set is an advanced AR solution tailored for industrial remote assistance, featuring a wearable device with a binocular visor, HD camera, and noise-canceling headphones. It also includes a web-based platform and mobile app for seamless collaboration.

This all-in-one kit empowers field workers with hands-free operation and real-time support, and it can be used with 5G connectivity, including 5G bubbles, for enhanced performance.

Business Need

Industrial operations often require immediate expertise and collaboration between on-site and remote teams. Traditional methods can be inefficient and time-consuming. The Kiber set addresses this need by providing instant remote assistance, enhancing productivity, and ensuring that field workers receive timely support while staying focused on their tasks, even in areas with 5G bubble connectivity.

Solution

The Kiber set offers a comprehensive solution with its wearable AR device, web platform, and mobile app. It enables real-time video and audio streaming, secure communication, and document sharing, optimized for low bandwidth and compatible with 5G networks. This ensures field workers perform efficiently with continuous support from remote experts, leveraging advanced connectivity.

NTT DATA

Horizons 2025

Syntphony Payments

End-to-End SaaS for Digital Payment Management

Syntphony Payments is NTT DATA's comprehensive SaaS payment management solution, designed for multi-industry businesses seeking to offer innovative, seamless digital payment experiences.

The platform supports various payment tools, including invisible payments, terminals, e-invoices, digital wallets, and cryptocurrencies, ensuring businesses can meet evolving customer demands with a flexible, future-ready approach.

Business Need

Disconnected Payment Systems:
Siloed infrastructures cause inefficiencies and reconciliation issues.
Manual Finance Processes:
Excessive time is spent on error handling and transaction reconciliation.
Limited Payment Options:
Customers demand flexibility, but many systems lack diverse payment capabilities.
Lack of Transaction Insights:
Payment data is often fragmented, preventing a holistic view of transactions and customer behavior.

Solution

Syntphony Payments delivers a seamless, end-to-end payment solution, integrating multi-acquiring and multi-payment methods into a single platform.

Through modular add-ons, businesses can manage reconciliation, wallets, SEPA payments (CT, DD), and subscriptions, enhancing efficiency and adaptability in a rapidly evolving market.

NTT DATA

Syntphony Payments

Next-Generation Secure Payment and Face Recognition System

Technical Challenge

Integrating secure multi-payment methods with reliable face recognition presents challenges in data privacy, fraud prevention, and ensuring seamless user experiences across platforms. Face recognition must be accurate and unbiased.

Research Goal

Develop a robust, privacy-compliant face recognition system that ensures secure and seamless payment integration across multiple platforms. The focus is accuracy, fraud prevention, and an intuitive user experience.

Technology

The solution is mainly based on Cloud applications and could be easily integrated with APIs. The core is developed in Java with the integration of deep learning algorithms and AI.

Novelty

The system enables alternative payment methods across multiple devices and channels, enhancing security and ensuring a frictionless, transparent payment experience.

Business Applications

Retail enhancing customer experience with contactless, personalized payments. Banking securing transactions and streamlines access. Transportation enabling automated fare collection and identity verification. E-commerce reducing fraud and facilitating multi-channel transactions, while boosting customer loyalty.

Horizons 2025

NTT DATA & Komi Hakko Corp

Quantum-Powered Scent Innovation

NTT DATA applies quantum technologies to drive business optimization, automation, and scheduling across multiple industries. In collaboration with **NTT and Komi Hakko Corp**., **NTT DATA** is automating scent synthesis using quantitative scent data. By leveraging NTT's LASOLV coherent Ising machine, this initiative streamlines the traditionally expert-driven and time-intensive scent formulation process, demonstrating the potential of quantum computing in R&D and product innovation.

Business Need

Traditional scent formulation is time-consuming and highly specialized, relying on perfumers' expertise and manual adjustments.

A faster, data-driven approach to analyzing and synthesizing complex scent compositions is needed.

Solution

NTT DATA and NTT and Komi Hakko Corp. utilize quantum computing—precisely NTT's LASOLV coherent Ising machine—to digitize scent information and automate formulation. This approach enables instantaneous data analysis, drastically reducing time and resource requirements, and enhancing accuracy in scent development.
This innovation paves the way for broader quantum computing applications in material sciences, chemistry, and beyond.

Quantum Mathematical Optimization

AI-Driven Scent Formulation: Automating and Optimizing Scent Data Analysis

Technical Challenge

The complexity and variability of scent data make prototyping and evaluating scent formulations extremely time-consuming. Traditional methods rely on expert intuition and create inefficiencies in product development and quality.

Research Goal

Automating the scent formulation process by leveraging quantitative scent data and advanced data analysis techniques would significantly improve efficiency and accuracy.

Technology

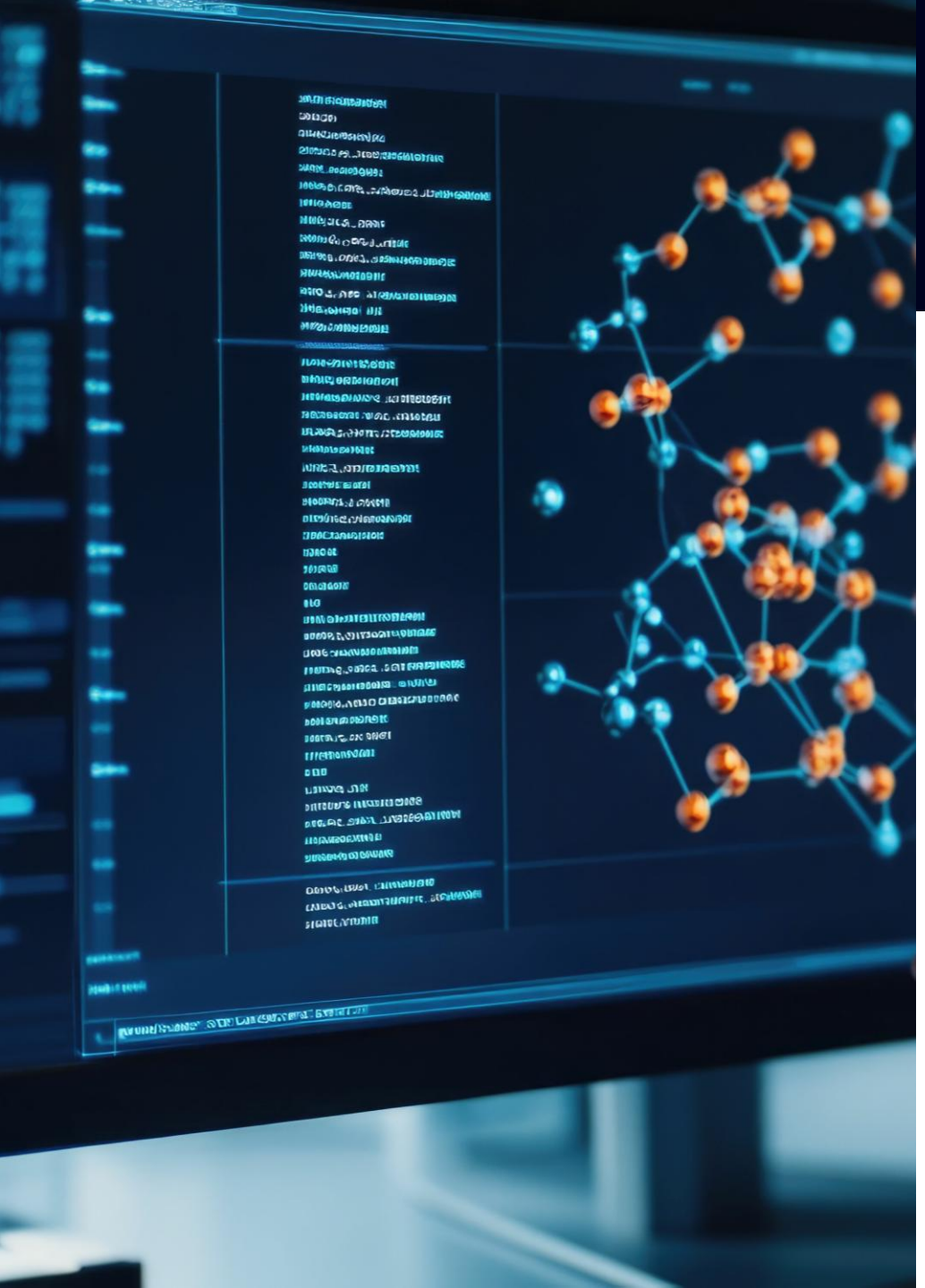
NTT DATA is utilizing NTT's quantum computer LASOLV (coherent Ising machine) to enhance its calculation technology, enabling instantaneous analysis of complex scent data.

Novelty

The novelty of this approach lies in its ability to encode scent information digitally. This transforms a traditionally subjective and manual process into an automated, data-driven system, accelerating R&D and product innovation.

Business Applications

NTT DATA applies its quantum technology expertise to address large-scale optimization problems in various fields, such as manufacturing, transportation, finance, and logistics. We help clients innovate and improve processes through optimization, streamlining, automation, and scheduling.



Horizons 2025

Design of high-performance materials

Accelerating Innovation with Advanced Simulations

The development of high-performance materials is often constrained by the extensive computational resources required for traditional computational chemistry.

This approach accelerates material discovery and design by integrating high-throughput screening and predictive modeling, unlocking new possibilities across industries such as pharmaceuticals, energy, and chemical manufacturing.

Business Need

Efficiency and Cost Reduction: Traditional material discovery methods are slow and expensive, limiting innovation.

Accelerated Innovation: There is a growing need to explore broader chemical spaces and rapidly identify promising material candidates.

Sustainability: Reducing reliance on resource-intensive computations and physical experiments lowers the environmental impact of material development.

Solution

A new molecular simulation protocol integrates Generative AI, Machine Learning, and Quantum Machine Learning with traditional computational chemistry techniques.

This hybrid approach enhances efficiency, precision, and scalability, enabling rapid design and optimization of high-performance materials across multiple industries.

NTT DATA

AI and Quantum-Driven Materials Discovery

Design of high-performance materials with GenAI and Quantum Computing

Technical Challenge

The large-scale computational resources required for chemistry simulations and calculations constrain the discovery of high-performance materials. Traditional methods are computationally expensive and often limited in accuracy.

Research Goal

Create a new simulation protocol integrating GenAI, Machine Learning, and Quantum Machine Learning with computational chemistry to accelerate the design and discovery of advanced materials while reducing computational overhead.

Technology

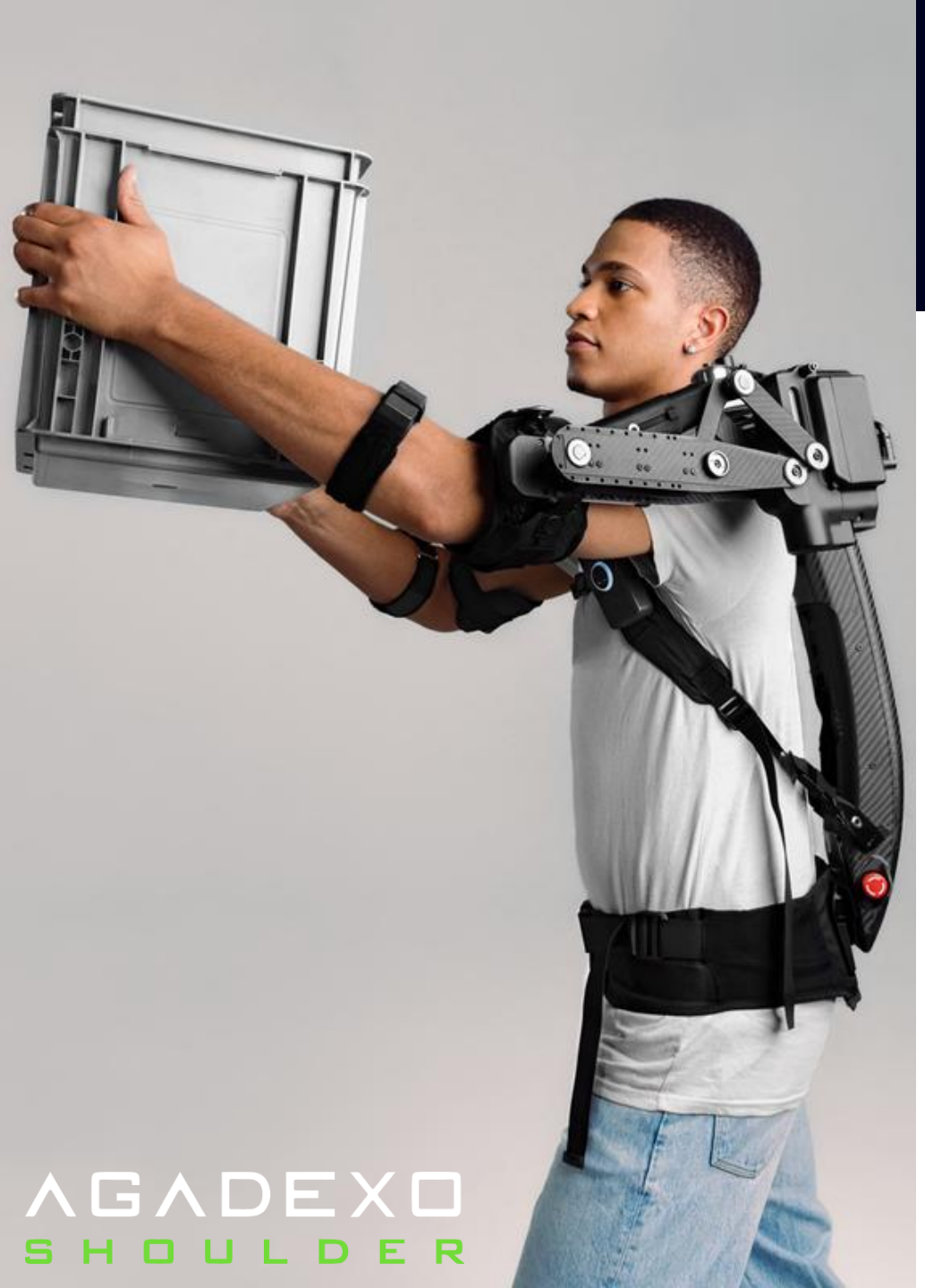
GenAI: to expand the chemical space that can be explored.
Machine Learning: to predict the properties of target molecules.
Quantum Machine Learning: to enhance the performance of traditional techniques.

Novelty

The methodology enables the discovery of materials with precise, desirable properties. By combining AI-driven modeling with quantum-enhanced simulations, it surpasses the capabilities of conventional simulation techniques, significantly reducing time and computational costs.

Business Applications

Pharmaceuticals: accelerating drug discovery. **Materials Science:** designing high-performance materials for various industries. **Chemical Industry**: optimizing chemical processes and developing new compounds. **Energy Sector:** enhancing the development of advanced materials.



Horizons 2025

AGADE: Human-tailored robotics

AI-Driven Exoskeletons for Safer and Smarter Workplaces

Work-Related Muscular Disorders (WRMD) are a significant cause of inefficiency in production and logistics, leading to ergonomic risks, absenteeism, and rising costs. While co-bots and robotic manipulators can automate some tasks, many manual material handling activities remain essential and physically demanding. Upgrading facilities to eliminate biomechanical overload requires significant financial and time investments, making a wearable solution a more viable alternative. By empowering people, AGADE transforms manual labor into a safer, more sustainable, and more productive experience.

Business Need

In the EU, 40% of workers suffer from shoulder and back pain due to physically demanding tasks. While White-collar executives face legal risks from ergonomic standard violations and inefficient workflows, Blue-collar workers struggle with musculoskeletal disorders, reduced quality of life, and workplace frustration.

Solution

AGADE is revolutionizing workplace ergonomics with a new generation of industrial exoskeletons featuring semi-active patented actuation and AI-driven adaptive assistance.

This “assistance-as-needed” model dynamically adjusts support levels, reducing strain, improving worker well-being, and enhancing occupational safety standards.

NTT DATA

AGADE: Human-tailored robotics

AI-Driven Semi-Active Exoskeletons for Smart Workplace Assistance

Technical Challenge

Exoskeletons are wearable robotic systems designed for human augmentation, yet achieving intelligent, adaptive muscular assistance while maintaining comfort and low power consumption remains a significant challenge.

Research Goal

AGADE aims to enhance exoskeleton technology by developing a semi-active actuation system that intelligently reduces muscular strain while ensuring high user comfort and energy efficiency.

Technology

AGADE is patented robotic semi-active technology based on an elastic mechanism combined with electrical actuation, designed to minimize power consumption and hence improve comfort for the user,

Novelty

As the first startup introducing innovative occupational exoskeletons based on semi-active technology, AGADE integrates AI-driven real-time assistance. The system automatically recognizes manual tasks and dynamically adjusts support levels.

Business Applications

AGADE's B2B robotic solutions serve industries requiring physical labor assistance, including manufacturing, food processing, construction, logistics, and retail. These exoskeletons enhance productivity, worker safety, and operational efficiency by reducing workplace fatigue and injury risks.

Robodog for autonomous inspection

AI-Driven Autonomous Mobile Robots (AMRs) for Smart Inspection & Logistics

Technical Challenge

Ensuring reliable navigation and obstacle avoidance in dynamic environments requires advanced sensor data processing. AMRs must autonomously perform inspection tasks according to predefined plans or environmental changes.

Research Goal

Enhance AMR autonomy and intelligence by developing improved perception, decision-making, and learning algorithms.
This will enable robots to operate independently in complex, unpredictable environments.

Technology

A wheeled or legged robot with LiDAR, cameras, thermal or acoustic sensors, and AI-based navigation, perception, and reasoning algorithms allows robots to act according to the environment.

Novelty

Fully autonomous robotics that analyzes sensor data in real-time, allowing them to make independent decisions and dynamically adjust to environmental variations without human intervention.

Business Applications

Automates industrial inspections in hazardous or hard-to-reach environments and enhances warehouse efficiency by employing AMRs for material handling, optimizing logistics operations, and reducing manual labor dependency.

Horizons 2025

Patrolling Drone's Swarm

Autonomous Surveillance and Infrastructure Protection

This solution introduces an AI-driven fleet of drones operating as a coordinated swarm to patrol sensitive areas autonomously. Each drone dynamically adjusts its position and movement based on real-time data, mission objectives, and the positions of other drones, ensuring comprehensive monitoring and rapid response to potential threats.

By integrating AI-powered autonomy and robust aerial surveillance, this solution enhances security operations, minimizes human intervention, and improves real-time threat detection across critical infrastructure sites.

Business Need

Critical infrastructure requires advanced surveillance and protection to enhance security and resilience.

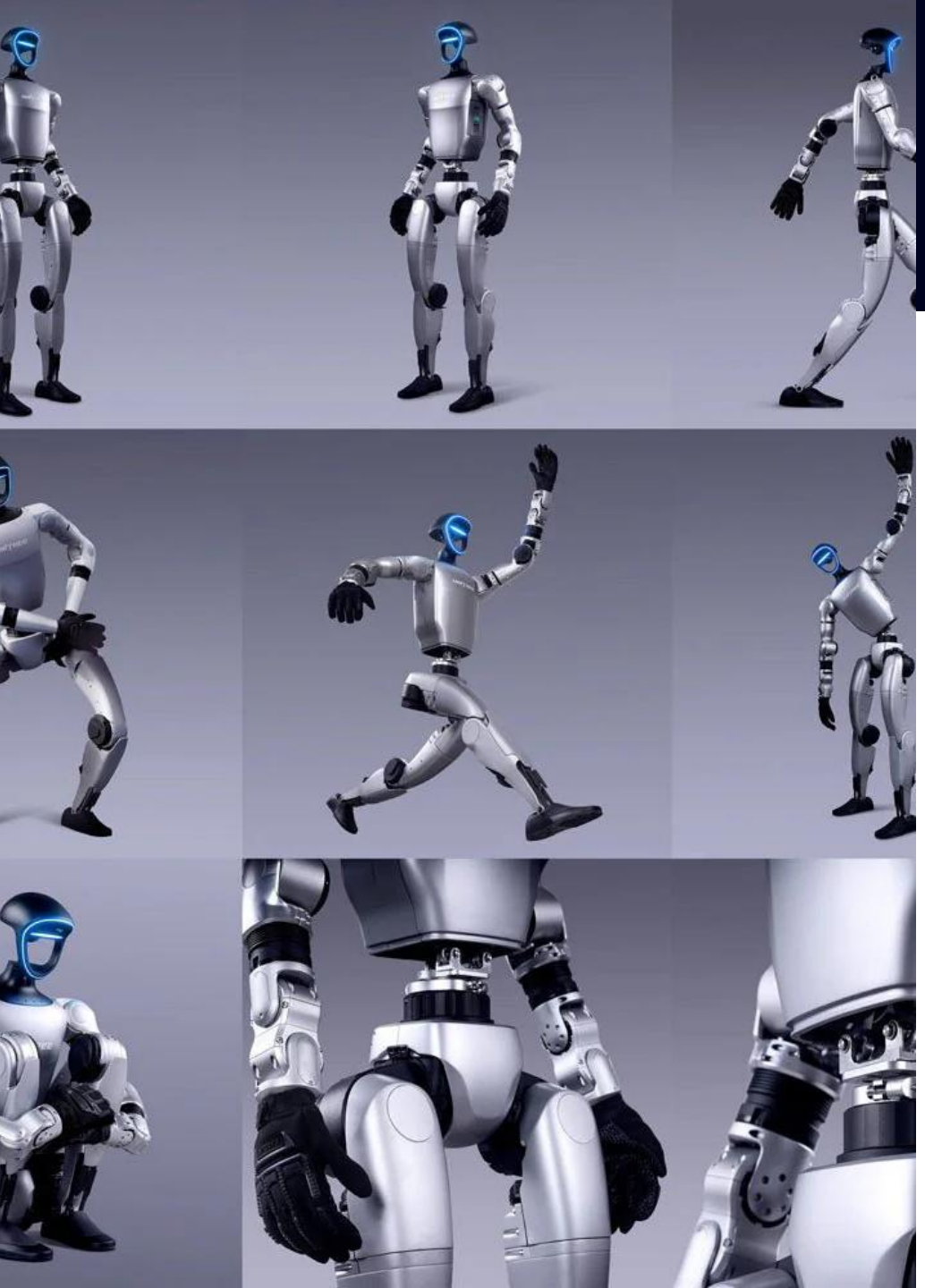
Traditional monitoring methods can be inefficient and labor-intensive, making AI-driven automation and robotics a key enabler for improving efficiency and reliability in security operations.

Solution

The system leverages Reinforcement Learning (RL) algorithms to optimize drone flight paths, ensuring efficient mission coverage and seamless communication between drones.

For inspections, computer vision and advanced sensors enable drones to operate effectively even in challenging weather conditions such as rain, fog, and low visibility, providing reliable, high-precision results.

NTT DATA



Horizons 2025

Humanoid Robots

The Future of Industrial Efficiency and Safety.

Utilizing humanoid robots in an industrial context is one of the most advanced aspects of modern automation. These robots can operate in environments designed for humans without significantly modifying factories or assembly lines. Their capability to interact with the surroundings and perform complex tasks ensures reliability and precision while using human tools and machinery.

Business Need

Industries today face increasing challenges, including shortages, rising costs, and the need for greater efficiency. Many sectors struggle to find skilled workers, particularly for repetitive, dangerous, or physically demanding jobs. Humanoid robots offer a practical solution by seamlessly integrating into human-centric work environments, improving productivity, and reducing risks.

Solution

Businesses adopting humanoid robots gain a competitive edge, boosting innovation, agility, and long-term scalability. Humanoid robots enhance efficiency without requiring workplace modifications. They operate continuously, reducing labor costs, workplace injuries, and material waste while adapting to various tasks and improving safety and compliance.

NTT DATA

Jibo

Robot companion for families

Jibo is a pioneering social robot designed as an interactive companion for families. Initially developed by **Jibo Inc**., it was introduced in 2014 and launched in 2017. With its 360-degree rotating head, Jibo tracks movement responds with expressive cues, and engages users in natural interactions. Now, **NTT Research** is breathing new life into Jibo, integrating a cutting-edge conversational engine powered by Large Language Models (LLMs) and exploring healthcare applications, positioning Jibo as a robotic companion and caregiver for senior people.

Business Need

Traditional voice assistants like Alexa and Google Home lack physical presence and mobility, limiting their ability to engage users interactively. Jibo aimed to bridge this gap, offering movement-based social interactions and continuous, personalized assistance that enhances user engagement.

Solution

Jibo combines advanced sensors, AI-driven interactions, and a lifelike robotic presence to deliver an immersive user experience.

It can set reminders, check the weather, take photos, and even dance and tell stories, making it a compelling family companion.

With NTT Research’s innovations, Jibo is evolving into a healthcare-focused robotic assistant, providing companionship and support for elderly individuals.

NTT DATA

TESTUDO

Monitoring and Protection of Critical Infrastructure

Technical Challenge

Enhance the surveillance and protection of the Critical Infrastructure using autonomous systems and advance technologies to ensure their reliable, robust and resilient operation.

Research Goal

Threat prediction and prevention. Use cases include synchronized cyber-physical attacks on water treatment facilities, chemical fires in tunnels caused by electric vehicles, and disruptive online events targeting water reservoirs.

Technology

Autonomous platforms comprised a set of uncrewed vehicles (UGV) and drones (UAV) with individual fixed sensors and threat assessment via XAI technologies.

Novelty

The solution combines autonomous systems with advanced detection, monitoring, and predictive technologies. By transmitting diverse, multimodal data streams in real-time, it provides actionable insights directly to operators, improving situational awareness and response.

Business Applications

This technology and know-how are game-changers for industries where protecting Critical Infrastructure is paramount, such as safeguarding tunnels, water dams, water reservoirs, and other vital civil engineering structures.

Horizons 2025

Robodog for autonomous inspection

Inspection and Asset Monitoring via Autonomous Robots

This solution showcases how a four-legged robotic platform can transform industrial inspection tasks by leveraging advanced sensors and AI-driven analysis.

Robodog is equipped with cutting-edge technology; it autonomously gathers, processes, and interprets data, providing rapid and accurate insights. These insights enable human operators to make informed decisions and take timely action, significantly enhancing operational efficiency and safety.

Business Need

Industrial facilities require routine inspections to ensure safety, detect equipment failures, and optimize performance. However, manual inspections can be time-consuming, costly, and hazardous. A more efficient, accurate, and automated solution is needed to minimize risks and maximize operational uptime.

Solution

This autonomous robotic platform is equipped with RGB cameras and 3D LiDAR, allowing it to navigate uneven terrain and conduct inspection tasks at predefined waypoints. The robot employs AI-based anomaly detection to identify potential issues and send real-time alerts to a control room. Operators can then take remote control via teleoperation if necessary. The system is also adaptable, allowing for the integration of additional sensors as needed.

NTT DATA

Social Robotics

Where Humans and Machines Meet

Technical Challenge

A key challenge in social robotics is enabling robots to interpret and respond effectively to human emotions and social cues. Achieving this requires sophisticated AI models and advanced sensors to process complex human behaviors.

Research Goal

Develop robots that can interact naturally with humans, fostering trust and collaboration. This involves advancing AI capabilities to recognize and mimic human-like behaviors, ensuring seamless integration into daily life.

Technology

LLM-based conversational engine, computer vision, and sensor systems to interact with humans. They can detect facial expressions, voice tones, and body language, enabling them to respond appropriately to human emotions and intentions.

Novelty

This project bridges the gap between technology and human interaction by enabling robots to understand emotions, mimic social behaviors, and provide personalized engagement. These capabilities unlock new possibilities for companionship, healthcare, and human-robot collaboration,

Business Applications

Providing companionship and emotional support to improve patient well-being and mental health outcomes. Enhancing learning experiences through interactive, adaptive, and personalized teaching. Supporting individuals by assisting with daily tasks and offering companionship, improving quality of life.

NTT DATA

Acoustic XR

Next-Generation Spatial Audio: Personalized Sound Control in Open Environments

Technical Challenge

The unique shape of each person's ear makes it difficult to deliver consistent spatial audio experiences. Traditional noise-canceling technology is effective in closed environments but struggles to block unwanted noise in open spaces.

Research Goal

Develop signal processing and audio control technologies that create immersive audio spaces, allowing individuals to hear only the sounds they want while filtering out unwanted noise.

Technology

The technology cancels out sound leakage with sound radiated from the holes in the enclosure, uses a model of how the ear shape changes sound, and reduces the delays in sound generation and data transfer.

Novelty

This non-ear-blocking device features speakers that seamlessly blend playback and ambient noise. The technology under development is the world's first system to improve noise cancellation performance in open spaces.

Business Applications

This technology can enhance video installations in noisy vehicles, provide harmonized audio guides in museums to reduce fatigue, and offer live commentary systems at sporting events for better understanding.

Horizons 2025

Led Assistive Technology (LAT)

Smart Light-Based Communication for Safer Motorbike Cockpits

Led Assistive Technology (LAT) is an advanced motorbike cockpit system that utilizes colored light signals to deliver critical real-time information to riders.

The system dynamically adjusts color, intensity, and blinking patterns to provide alerts such as approaching vehicles, navigation guidance, technical warnings, turn indicators, EV battery levels, and Bluetooth call notifications.

Business Need

Riders require a cockpit system that delivers essential information without causing distraction. Traditional dashboard displays can be complex to read at high speeds or in challenging road conditions.

LAT Technology enhances safety and usability by providing intuitive, non-intrusive visual cues, allowing riders to stay focused on the road.

Solution

LAT Technology integrates RGB LEDs, an electronic driver, and advanced software to seamlessly connect with the motorbike's power supply and CAN BUS system. The software processes real-time data and activates visual alerts to ensure immediate, clear communication with the rider.

By eliminating the need for constant dashboard monitoring, LAT Technology improves both safety and riding experience.

NTT DATA

Led Assistive Technology (LAT)

A New Standard for Safe and Intuitive Cockpit Designs

Technical Challenge

LAT addresses the need for motorbike riders to receive critical information without being distracted from the road. Additionally, it incorporates security features, enhancing the overall safety.

Research Goal

The research goal is to find a new easy way of communicating information to the rider and to increase security. These are the two major needs in the motorbike industry today.

Technology

LAT uses RGB LEDs, an electronic driver, and advanced software to enhance motorbike cockpits. Connected via the main power supply and CAN BUS, the system processes real-time data to display information.

Novelty

This technology represents a completely new approach to motorbike cockpit communication. This innovative system is currently in the process of IP protection, highlighting its originality and potential impact on the industry.

Business Applications

LAT applies to the motorbike industry, particularly for manufacturers seeking to enhance safety and usability in their cockpit designs. This technology can be extended to other markets, such as micromobility, e-bikes, and even automobiles, offering similar benefits in enhancing safety and User Experience.

NTT DATA

Sound Event Detection

Real-Time Urban Event Detection

Technical Challenge

Ambisonic microphones require specialized configurations, limiting their scalability and affordability. Achieving accurate detection in noisy, reverberant settings and enabling real-time estimation is a key challenge for urban sound monitoring.

Research Goal

Explore networked microphones deployed across cities to detect and report real-time critical events, such as urban changes, machine operations, natural phenomena, crimes, and accidents.

Technology

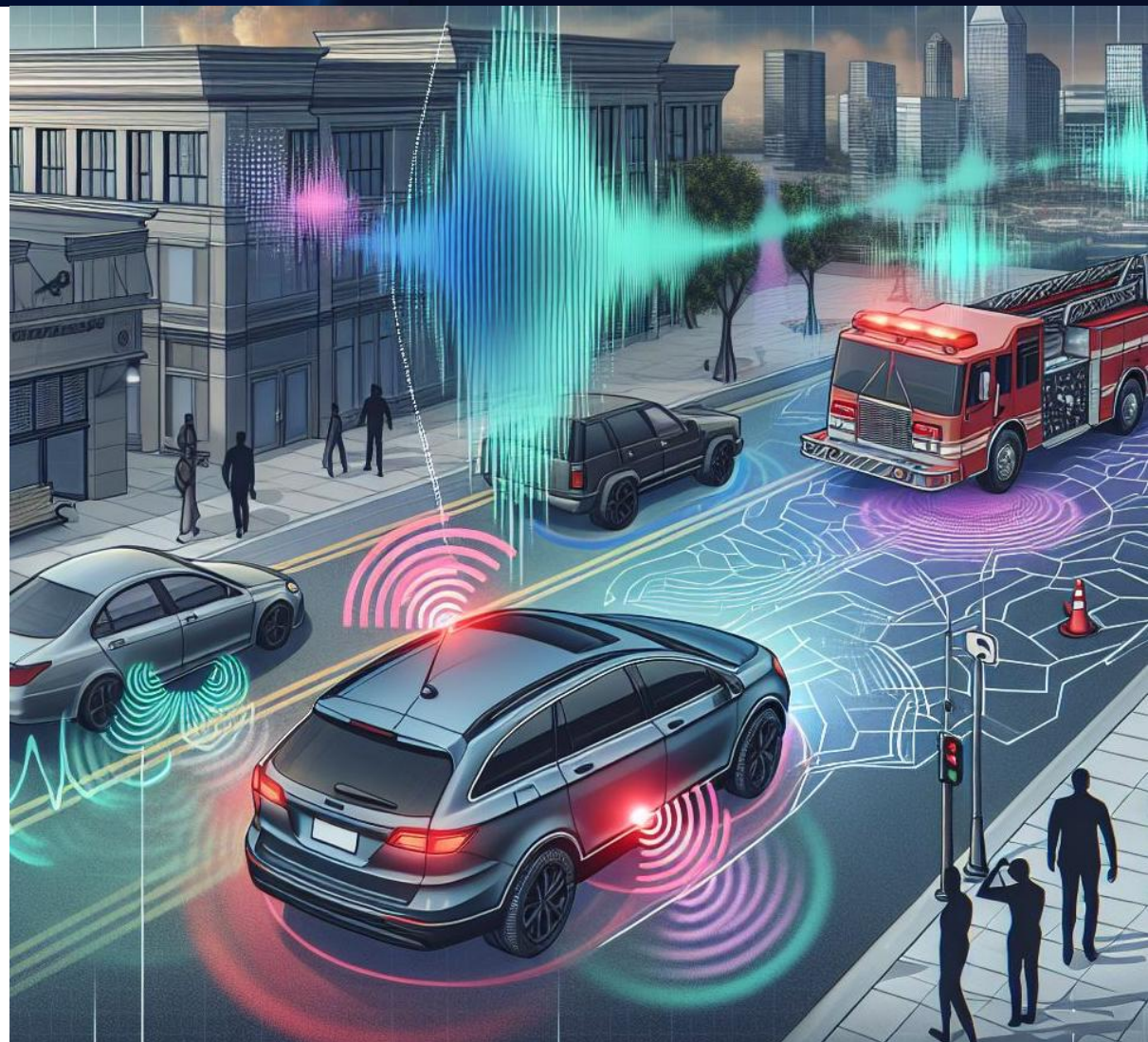
Feature values are derived from any microphone array for real-time detection and localisation. Deep learning corrects physical quantities rather than using it directly, improving estimation accuracy.

Novelty

Unlike academic models, this system runs efficiently on a single-board computer. Optimized learning data collection provides accurate event detection while remaining scalable and cost-effective for widespread deployment.

Business Applications

This technology enables alert features to keep smart glasses wearers safe, noise-canceling earphones to pick up outside sounds, siren directional alerts for driver assistance, advanced sensing for remote control of buses and trains, and in-vehicle monitoring catering to various industrial market needs.



LUXY | Tangity part of NTT DATA | NTT sonority

Horizons 2025

Silente*

Never Heard a Chair Like This - Turn on the Silence

Silente* was designed and developed by **Tangity, the NTT DATA Design Studio**, in collaboration with **NTT Sonority Corporation**. It was manufactured by **Luxy**, an international brand specializing in the production of designer seating.

Silente* aims to respond to some of the new needs and behaviors that have emerged during the COVID-19 pandemic. The chair allows the user to create a comfortable and private acoustic bubble in any environment, be it the open space at work or your home office, without needing headphones.

Business Need

Nowadays, many of us are working between our homes and offices. While one virtual meeting follows the next, we use our headsets most of our workday. With this innovation design project, we sought to create a new physical design product that would allow anyone to work remotely or simply zone out and relax without disturbing those around us or putting a toll on one's ears due to long-term headphone usage.

Solution

Silente* uses cutting-edge sound management technology to address technical and organizational challenges.

This innovative product features two key technologies. **The Personal Sound Zone (PSZ)** creates a private acoustic bubble containing sound and preventing it from spreading. Meanwhile, the Intelligent **Microphone function (IML)** identifies speech direction to filter out background noise, ensuring crystal-clear voice transmission.

NTT DATA

Silente

Soune Technology for Domestic and Work Environment

Technical Challenge

Workers rely on headsets in crowded workspaces for privacy and noise reduction during remote communication, but prolonged use can cause discomfort. A solution is needed for high-quality, private audio without headphones.

Research Goal

NTT DATA, in collaboration with NTT **Sonority**, aims to improve the audio experience by developing a solution that eliminates the need for headsets while maintaining sound quality, privacy, and environmental noise reduction.

Technology

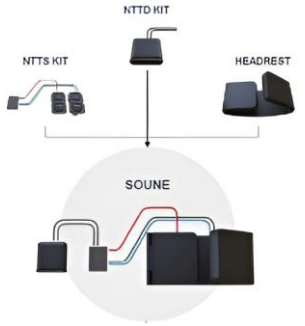
Soune is an NTT DATA asset that utilizes NTT Sonority's sound masking technology to create private acoustic areas and employs Intelligent Microphones to eliminate background noise for clear voice transmission.

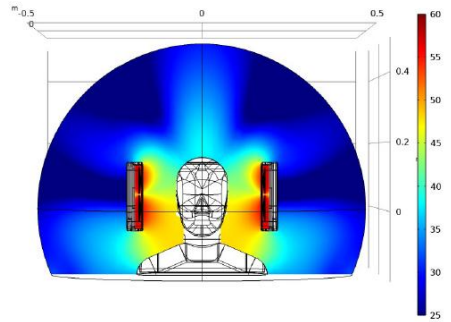
Novelty

Silente* is NTT DATA's first chair, featuring **Soune** Technology in the headrest for Bluetooth connectivity. This innovation allows users to enjoy private audio without headphones, with sounds only creating a subtle, non-intrusive buzz for nearby individuals.

Business Applications

Soune Technology is adaptable to home and office furniture, transforming workspace audio experiences. Additionally, it can be leveraged in the automotive, airline, and railway industries, enhancing privacy and user comfort in various travel and mobility environments.





Horizons 2025

Digital Twin of a Robotic Arm

Digital twin of robotic arms for industrial digitalization use cases

In the era of Industry 4.0, manufacturers require advanced, connected environments for training and testing robotic arms in diverse scenarios.

The Robotic Arm project leverages cutting-edge simulation, AI, and connectivity technologies to create a versatile and interoperable platform, enhancing operational efficiency and enabling seamless robotic integration.

Business Need

Manufacturers seek to reduce reliance on proprietary software and specific programming languages imposed by robotics manufacturers.

A unified platform that connects different robotic systems—regardless of brand—alongside other shop floor machines is essential for resource optimization, productivity gains, and sustained competitiveness.

Solution

The Robotic Arm project integrates NVIDIA Omniverse's 3D simulation and photorealistic rendering, bidirectional connectivity via OPC-UA, and 5G-enabled hardware communication. AI algorithms recognize objects in real time and control robotic movements, enabling realistic simulations, efficient training, and seamless integration of diverse robotic systems. This solution enables realistic simulations, efficient training, and seamless integration of diverse robotic systems.

NTT DATA

Digital Twin of a Robotic Arm

Interoperable Robotics Platform

Technical Challenge

Integrating robots and machines from different manufacturers presents significant challenges in interoperability, real-time communication, and precise control. Achieving seamless coordination across diverse robotic systems requires advanced connectivity and data processing capabilities.

Research Goal

Develop a robust and flexible platform that enables seamless robotic system integration, improving AI-based object recognition and movement control while optimizing connectivity and data exchange for enhanced performance.

Technology

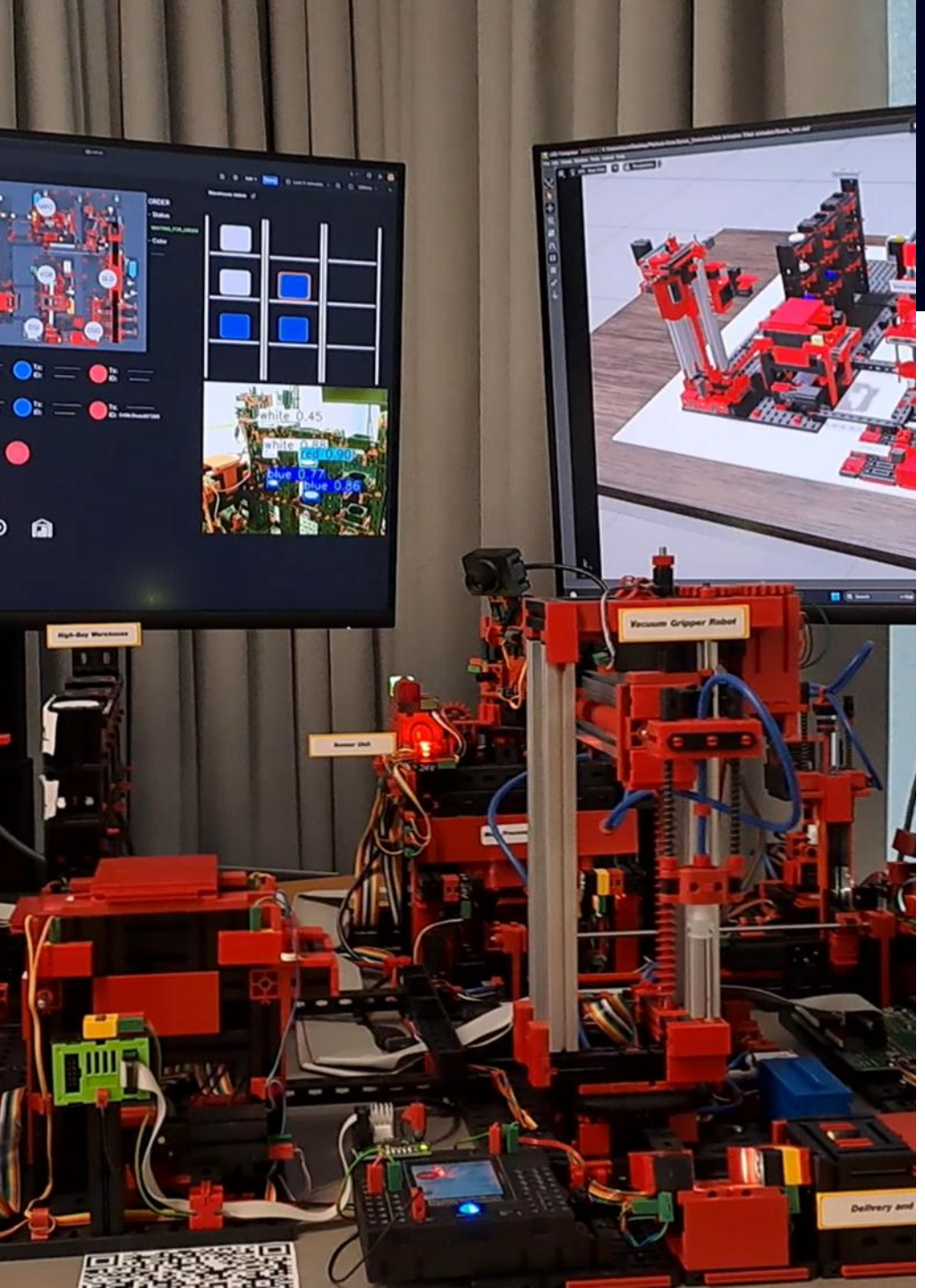
Leverages advanced technologies such as NVIDIA Omniverse for 3D simulation and rendering, OPC-UA for bi-directional connectivity, 5G for high-speed communication, and AI for object recognition and robotic control.

Novelty

This solution ensures full interoperability between robots of different brands, creating a standardized ecosystem that allows machines to operate in sync. It provides real-time supervision, simulation, and testing of production lines, enabling manufacturers to optimize workflows before deployment.

Business Applications

The ability to test and optimize robotic operations before implementation minimizes downtime, accelerates decision-making, and allows for selecting the best-fit robotic solutions independent of the manufacturer's brand. This platform enables manufacturers to reduce production costs, improve resource allocation, and enhance competitiveness by leveraging Digital Twin technology and Robotics Cloud.



Horizons 2025

Microfactory Digital Twin

Scaling Digital Twin from micro factory to a full-scale plant

Integrating a Digital Twin with NVIDIA Omniverse in a micro-factory setting marks a significant leap in manufacturing technology.

This approach combines real-time data synchronization, advanced analytics, AI, and simulation to create a continuously updated Digital Twin. Shifting from reactive to proactive maintenance reduces downtime, optimizes costs, and extends equipment lifespan.

Business Need

Factories require minimized downtime, reduced production losses, and optimized operational costs while ensuring equipment longevity.

Integrating real-time data and AI-driven insights is essential for improving decision-making and maintaining operational continuity.

Solution

This project establishes a micro-factory environment where IoT, AI, and simulation technologies map assets and machines in real-time. Integrated with NVIDIA Omniverse, the synchronized Digital Twin enables proactive maintenance, operational efficiency, and downtime reduction.

The scalable architecture allows for seamless replication from micro-factories to full-scale manufacturing plants, ensuring adaptability across industries.

NTT DATA

Microfactory Digital Twin

From Micro to Macro, scaling Digital Twin from micro factory to a full-scale plant

Technical Challenge

A synchronized Digital Twin needs seamless integration of various technologies to ensure compatibility across systems and standards. Real-time data sync is essential for effective monitoring and proactive maintenance.

Research Goal

Develop a scalable Digital Twin that can be replicated from a micro-factory to a full-scale plant. The research focuses on validating real-time synchronization and the impact of proactive maintenance in reducing downtime and operational costs.

Technology

This solution utilizes advanced technologies like NVIDIA Omniverse for real-time simulation, Node-red for flow-based programming, Kepware for industrial connectivity, and OPC UA for secure data exchange.

Novelty

This solution introduces passive real-time data synchronization, allowing the Digital Twin to update and monitor equipment performance continuously. Shifting from reactive to proactive maintenance enhances efficiency, cost-effectiveness, and equipment longevity.

Business Applications

This offering is ideal for manufacturing industries aiming to enhance operations, minimize downtime, and extend equipment lifespan, especially in sectors with complex machinery and substantial operational costs.

Horizons 2025

OT Security on Microfactories

Enhancing Resilience and Efficiency in Smart Factories

Factories must minimize downtime and production losses, requiring solutions that optimize costs and extend equipment lifespan.

Achieving this demands seamless OT and industrial IoT standards integration, leveraging advanced data analysis, AI, and simulation to enhance real-time monitoring and operational efficiency.

Business Need

This initiative serves as an accelerator for cybersecurity consulting services, enabling customers to assess and strengthen industrial security strategies while ensuring seamless technology integration in manufacturing environments.

Solution

We provide an industrial security laboratory capable of conducting direct attacks on industrial protocols such as OPC-UA and MQTT, facilitating real-world scenario testing.

This environment enables replicable simulations, including anomaly detection, production modeling, and process visualization, ensuring factories can test, refine, and implement resilient security strategies at scale.

NTT DATA

OT Security on Microfactories

Strengtening Security and Resilience Testing for Smart Factories

Technical Challenge

Implementing robust security measures in industrial environments while minimizing performance degradation in communication and data processing is critical to ensuring security without disrupting real-time operations.

Research Goal

Develop a production-like testing environment as a physical layer for designing and validating innovative security concepts and real-world use cases in resilient smart factories.

Technology

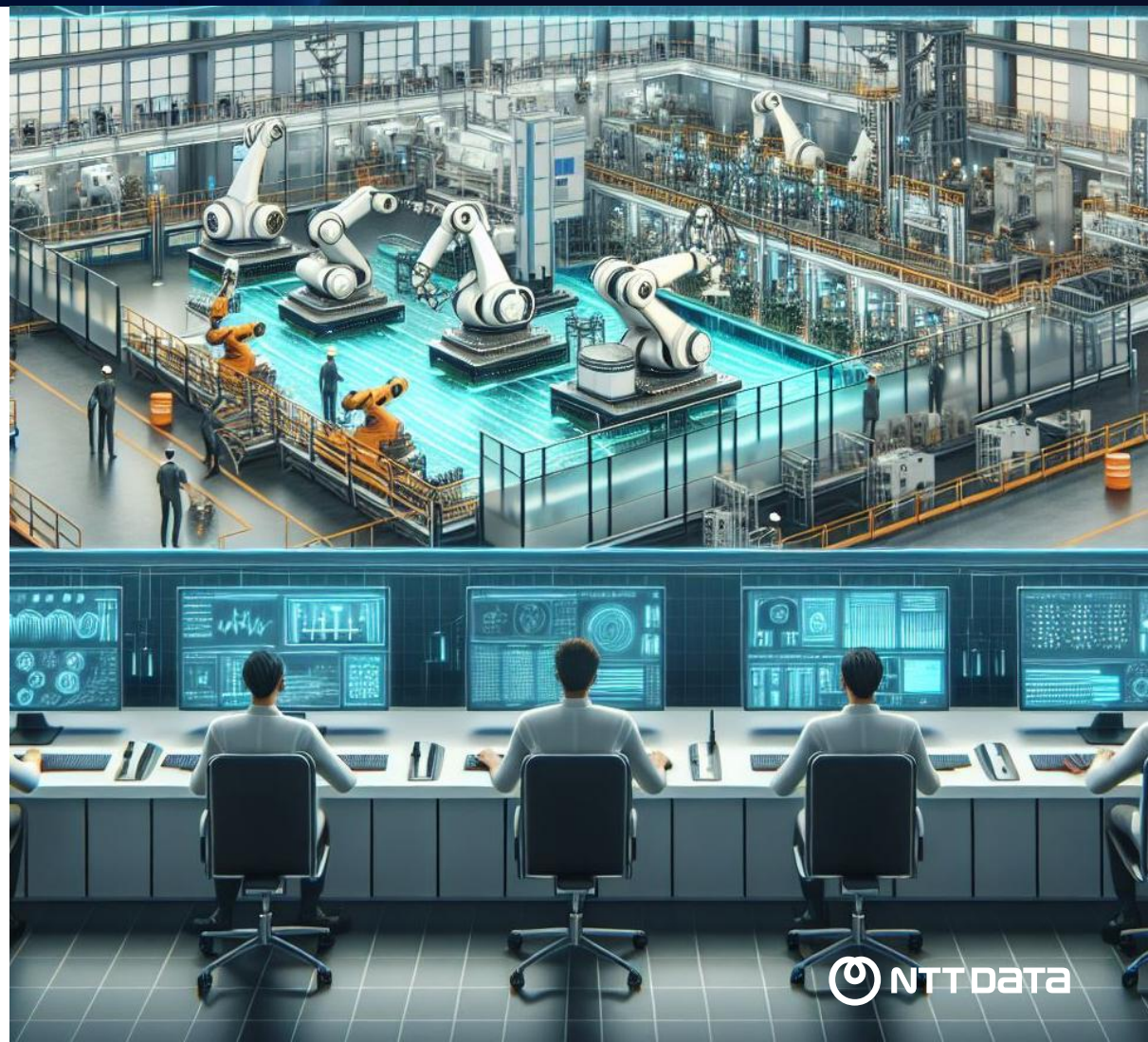
This micro-factory environment maps our assets and machines, integrating IoT standards, advanced data analysis, and AI to reduce downtime and improve real-time monitoring.

Novelty

An industrial security lab that conducts direct attacks on protocols like OPC-UA and MQTT for real-world testing and enhances replicability from micro-factories to full-scale production, aiding in anomaly detection, production simulation, and process visualization.

Business Applications

This initiative accelerates cybersecurity consulting services, allowing customers to assess vulnerabilities, optimize security strategies, and enhance the resilience of industrial systems.



Horizons 2025

Territory Digital Twin

A Comprehensive View for Enhanced Territory Management

Digital transformation and green transition require advanced tools to efficiently share, analyze, and interpret data across entire territories.

The Territory Digital Twin leverages real-time, heterogeneous data to create highly accurate virtual replicas of real-world environments, from urban areas to natural landscapes, enabling precise simulations and assessments.

Business Need

Organizations across multiple sectors need actionable insights to anticipate risks, optimize resource allocation, and enhance operational efficiency.

A comprehensive data-driven platform enables sustainable growth, improved customer satisfaction, and better living conditions.

Solution

The Territory Digital Twin platform integrates, correlates, and visualizes territorial data in real-time, supporting monitoring, simulation, and assessment.

Its applications span urban development, infrastructure management, risk assessment, and environmental monitoring, offering a holistic, data-driven approach to decision-making for more resilient and sustainable territories.

NTT DATA

Territory Digital Twin

A Comprehensive View for Enhanced Territory Management

Technical Challenge

Managing and integrating vast amounts of heterogeneous data from multiple sources in real-time presents significant challenges. Ensuring data accuracy, consistency, and security is crucial for reliable simulations and assessments.

Research Goal

Develop advanced methodologies and algorithms that enhance the accuracy and efficiency of digital twin models by improving data integration, real-time processing, and predictive analytics.

Technology

The Platform leverages advanced technologies such as Digital Twin, Geographic Information Systems (GIS), IoT sensors, satellite images, AI, and ML to create dynamic and interactive virtual replica of territories.

Novelty

By consolidating multiple data sources into a single, unified platform, this solution eliminates traditional data silos, enabling new insights and deeper analysis that were previously unattainable.

Business Applications

The Territory Digital Twin has broad applications across industries. It optimizes asset deployment and maintenance, improves service coverage, and enables accurate risk assessments for events like floods and wildfires. It also enhances resource planning and management, driving efficiency and sustainability.