Case Studies

Explainable AI & Human-AI Collaboration

With lower barriers to entry, AI is now being leveraged across a broad range of industries and organizations. However, the main impediment for its successful use is being addressed by explainable AI (XAI). XAI helps users to understand, trust and manage AI-produced outputs. The required explanations for XAI differ depending on specific tasks, abilities and expectations of the users. NTT DATA is currently amassing important experiential knowledge of XAI by developing and implementing solutions for clients. For example, in an image search system, researchers are provided with a list of similar images according to his/her query, and XAI highlights the parts of the images that were used as determining factors for its result. By examining this detail to verify the results, users gain confidence in the AI output. Additionally, by understanding the reasoning behind the output, researchers can more effectively communicate their decisions. NTT DATA is creating a diverse collaboration between humans and AI while gaining essential experience in the selection of appropriate XAI models and alternative methods of explanation for specific applications.

Creating Value With Spatial Computing

To recreate physical things within a digital world requires digitizing their positions and conditions. The analysis and utilization of such information is expanding the emerging field of research called spatial computing. NTT DATA is working on spatial computing using analytics to extract and analyze data within a 3D space. This technology digitizes and records the type, condition and position of an object, then synthesizes the information with 3D maps generated from images captured using a standard camera. One of the promising applications for this technology is in social infrastructure research and maintenance. The value stems from automating the collection of elements across a wide region such as road conditions or traffic signs. In the future, our goal is to detect and analyze data from people and/or things and position them in a real-time environment. By combining this data with precise 3D mapping, simulations of events such as natural disasters will become highly accurate. NTT DATA continues to create significant value by leveraging spatial computing technologies to solve societal and business challenges.

NTT DATA
Technology
Foresight

NTT DATA Technology Foresight 2020

LOOKING AHEAD:
Technology Trends Driving Digital Innovation

NTT DATA R&D experts continuously analyze real-world case studies and other sources to identify the most significant technology and societal trends that we believe will drive change over the next three to ten years. The Information Society Trends provide our perspective on the evolution of society and business. The Technology Trends summarize our views on innovative technologies and their impact on the world.

Information Society Trends

Individual-Centered Design
IST 01

The power of the individual continues to grow. Technological advancements have increased our ability to analyze people and objects with extreme precision, enabling personalization of services, products and organizations. Continuous and rapid improvement of human-centered design that deeply focuses on the individual is imperative to expand future business opportunities and improve society.

Expand Beyond Borders
IST 02

Territorial and digital/physical limitations are fading. The evolution of technology enables businesses to transcend boundaries and delve into untouched frontiers, crossing global and conventional borders. The relentless leveraging of technology and innovation to break down barriers will become a driving force of economic growth.
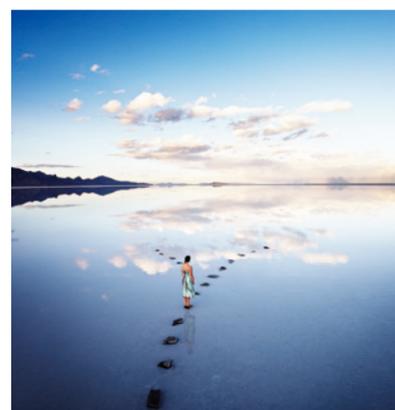
Forge New Norms
IST 03

Technology is permeating society at an unprecedented rate rendering traditional norms obsolete. Conventional standards must be transformed to keep pace with innovation. It is essential to forge, shape and nurture new norms that can adapt rapidly to changes in societal and business environments to achieve a sustainable society.

Technology Trends

Intellectual Advancement of AI
TT 01

Advanced language proficiency for AI such as translation and summarization is reaching human ability. Modeling human cogitation, AI will gain new capabilities through varied and diverse research efforts. Such ability includes flexibility by applying knowledge and experience once learned and logical thinking by inference using causality.

Coexistence with AI
TT 02

AI presently coexists within society. In daily life, numerous individuals use AI and rely and benefit from its capability. Addressing issues such as an explanation of specific results, establishment of quality standards, prevention of discrimination and countermeasures for vulnerability, are essential for continued acceptance and progress.

Data-Driven Transformation
TT 03

Data is now the bedrock for growth. Capturing data from unprecedented sources combined with mechanisms for aggregation and analytics will enable new levels of convergence between the digital and physical worlds. This in turn will bolster data-driven decision making and accelerate transformation.

AI for Healthcare & Life Sciences
TT 04

AI-assisted medical diagnosis along with the use of more precise and comprehensive data is becoming more accepted and prevalent in practice. Augmenting healthcare workers with AI innovations such as pattern search for genome data and structure prediction for protein promise further advancements in healthcare and the life sciences.

Security for the Digital Era
TT 05

Given the limitless application of data, its protection is being re-engineered. On top of traditional protection methods, organizations are implementing zero-trust security measures to counteract breaches quicker and to minimize damages. Business leaders are also adopting privacy protection technologies to keep individual data anonymous.

Computer Power Evolution
TT 06

The inexhaustible demand for computing power is being tackled through a combination of new, denser chips and application-specific architectures. To solve power requirements additional new materials like carbon nanotubes, and approaches like photonics and neuromorphic architectures are also being investigated and introduced.

Synergy in Human-Machine Systems
TT 07

Pervasive AI is redefining the relationship between humans and machines. Human-machine synergy in systems driven by AI will create added value. For example, AI may offer safer driving for unanticipated dangers in automobiles, but humans can provide flexibility to adapt to changing conditions.
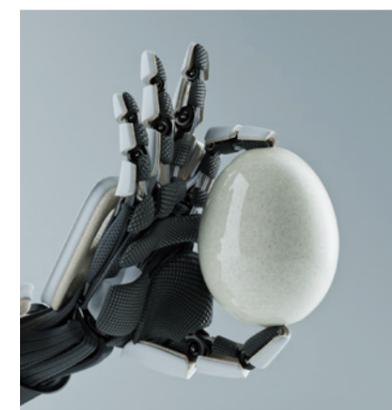
Hardware Evolution for Service Operations
TT 08

To operationalize service chains with IT, hardware must permeate operations in areas never thought possible. Hardware combined with AI acquires the capability to understand complex surroundings and undertake dexterous operations. As a result, evolved hardware with extensive use of IT is expected to revolutionize service operations.