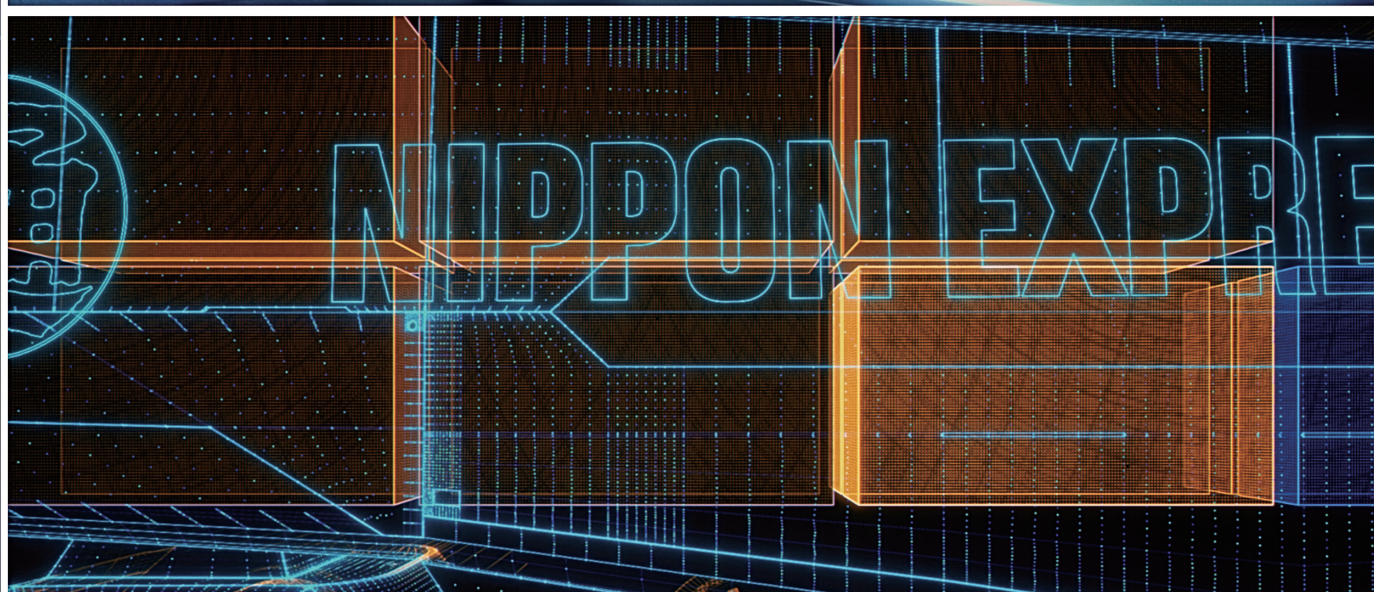
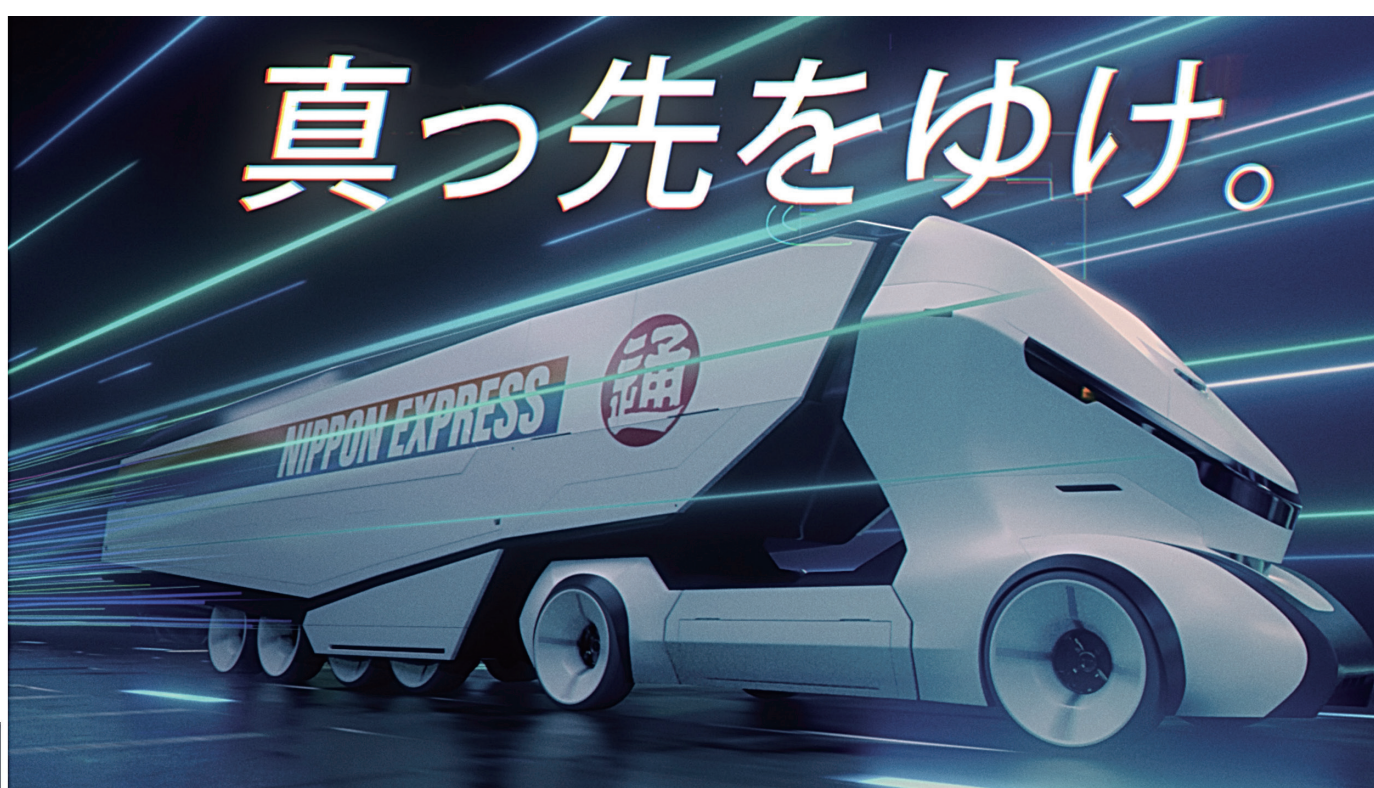




# Using Digital Platforms to Build Sustainable Supply Chains

The “king of integrated logistics” is achieving a major transformation. Amid the drastic changes in the social environment around logistics, which include population decline and decarbonization, what does a socially-acceptable sustainable supply chain look like? Nippon Express is using digital transformation as the starting point to turn its strategy toward building an open “digital platform” that goes over individual optimization.



Digital strategy at Nippon Express has accelerated. In 2017, the company established the Logistics Engineering Strategy Division at its head office to speed up installation of automatic and labor-saving equipment in warehouses as well as taking part in proof-of-concept experiments for autonomous driving and truck platooning. In the area of introducing automatic and labor-saving equipment, Nippon Express opened NEX-ALFA, a cutting-edge showroom-style logistics facility in Tokyo in July 2020. It is also introducing automated guided vehicle (AGV) devices and automated guided forklifts (AGFs) in its warehouses all over Japan.

In addition, the company established a new Digital Platform Strategy Division in April 2020 to build platforms for each customer industry, launching a serious initiative to integrate the management of entire supply chains.

A strong sense of crisis about the future of the logistics industry lies behind the company's new focus on digitalization. Takashi Masuda, Director and Executive Officer with responsibility for corporate and financial planning, says, “The way the logistics industry looks may have changed dramatically by the late 2030s. By that point, I expect the work in warehouses will be almost fully automated and automated driving

will have been realized to a considerable degree. The work of ‘logistics’ itself will never be eliminated, but it is possible that machines and robots will have taken over most of the work that was done by humans. We have a strong sense of crisis about what a logistics company like Nippon Express will have as its ‘pillar of business’ at that point.”

If the majority of logistics work is automated by machines and robots, it will be difficult for logistics companies to exhibit the operational strengths they had built up over many years and to differentiate themselves from competitors. It will also facilitate entry into the industry from other sectors. “At the moment, other industries have already begun entering logistics as a new business domain, and the faces of the players are changing,” points out Takashi Masuda.

### Backcasting from the Future Image for Reflection in Management Strategy

In this environment, from last year to this year, a dedicated digital transformation (DX) team within the Corporate Planning Division at Nippon Express brought in outside experts and others and predicted the changes that could take place in the logistics industry over the medium to long



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term. The hypothesis generated was the scenario described above. Takashi Masuda emphasizes the importance of the backcasting approach, saying, "It is only a hypothesis, and the situation is changing all the time. Nevertheless, what is important is that we backcast from the predicted future image and make fixed-point observations about what is happening at the moment and what kind of changes are taking place in our customers' industries while making incremental corrections to be ready for the future."

What will Nippon Express do as its business to make its presence felt in the logistics industry at that point in time? One answer to this question is "solutions." Takashi Masuda explains, "For example, the global supply chains of corporations have been disrupted due to the COVID-19 pandemic. If you look at how inventory is held, while consolidating inventory is desirable in terms of management efficiency, it is necessary to hedge against risk through dispersal. We believe that presenting solutions to these kinds of customer issues from a perspective that takes in the entire supply chain based on DX is the direction we should take and will be something that differentiates us from competitors."

It is also predicted that the development of logistics into social infrastructure will proceed at increasing speed going forward in conjunction with changes in the social environment, such as population decline and carbon neutral. Takashi Masuda points out, "It is becoming a society in which ESG and the SDGs will be valued more. In the future, cross-industry supply chains that are efficient and environmentally-friendly in society as a whole and not just in individual companies (smart supply chains) will be required. The future will be an era in which logistics that does not contribute to society will not survive."

**Expanding the Platform Strategy into Semiconductors after Pharmaceuticals**

So what is a socially-acceptable sustainable supply chain? The first step in realizing this is the platform strategy being implemented for each industry. Haruyasu Toda, Executive Officer with responsibility for digital platform strategy, stresses, "The method of individual customization for each company is reaching its limits in terms of efficiency. Tailor-made logistics may appear very helpful in the short term, but assets can even turn into liabilities at some point in times of dramatic change. Platform-type services that lead to solutions while solving issues that are common to each industry are more effective in times of risk and dramatic change and can ensure sustainability."

Based on such a strategy, Nippon Express has already developed a digital platform that can provide total management of ordering and distribution channels for the pharmaceutical industry with plans for full-scale operation soon. In the pharmaceutical industry, quality maintenance in compliance with Good Distribution Practice (GDP) is a pressing theme, and, as part of this, temperature management and preventing counterfeit pharmaceuticals based on ensuring traceability are common industry issues.

Therefore, as well as attaching IoT sensor tags to products to constantly monitor for deviations in temperature during the shipping process, Nippon Express has developed a mechanism using blockchain technology that allows all the stakeholders making up the supply chain, including pharmaceutical manufacturers, wholesalers, medical institutions, and logistics companies, to share information via the cloud while ensuring security.

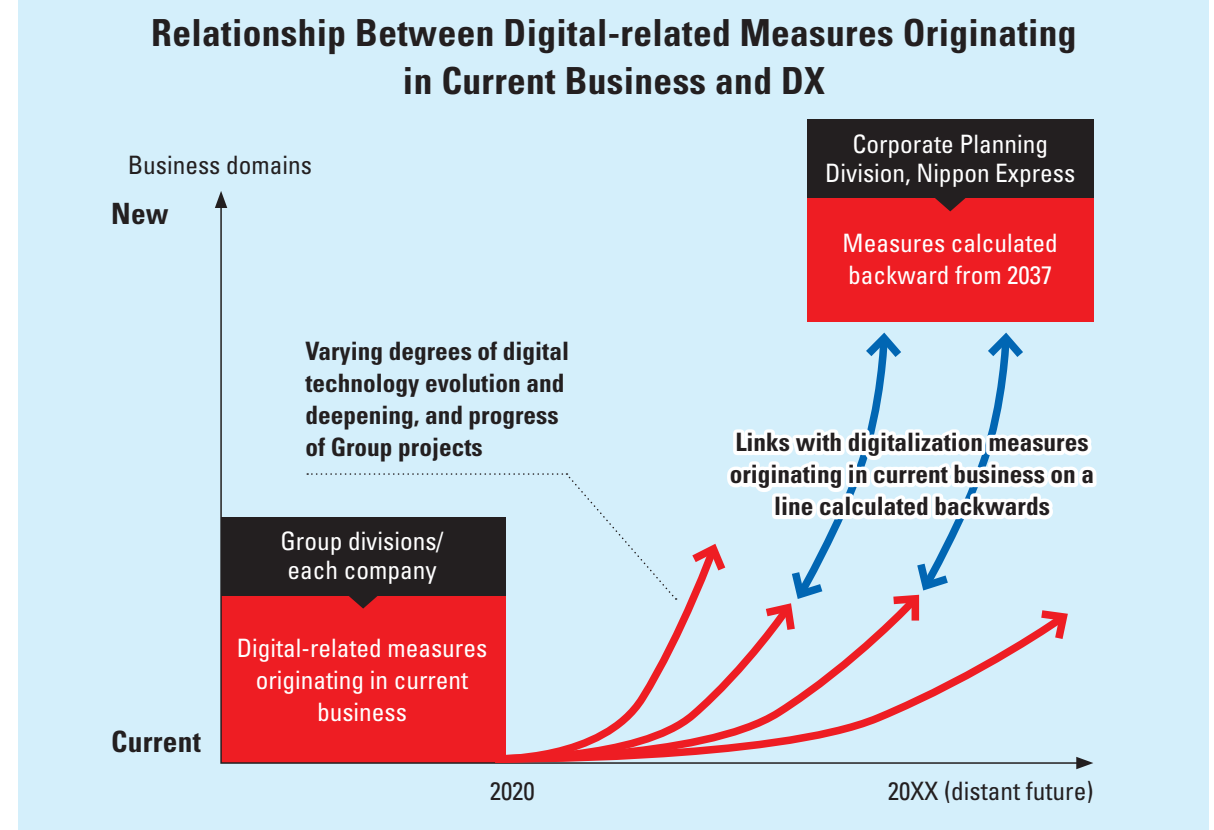
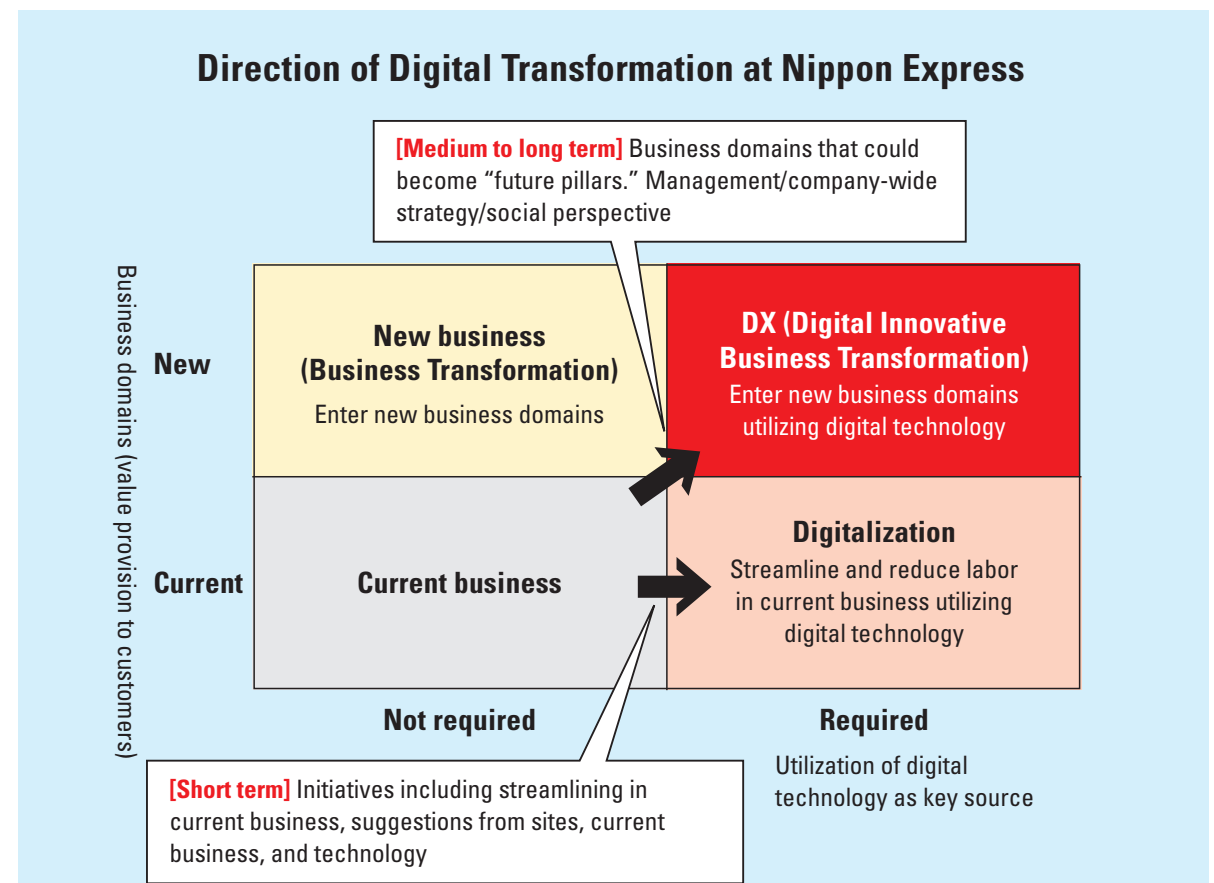
Haruyasu Toda explains the important thing is being open, which allows anyone to participate. He says that if all the stakeholders can work on a single platform, it dramatically increases social efficiency. In addition, even when a situation such as COVID-19 arises, the supply chain as a whole forms "one team," which increases its resilience, enabling it to survive diverse risks. Digital transformation is the key tool in achieving this.

Nippon Express is looking at expanding the digital platform to the semiconductor sector after the pharmaceutical industry. There has been an unprecedented boom in demand for semiconductors, underpinned by 5G demand and demand for remote devices due to the COVID-19 pandemic. However, one of the common issues in supply chain and transportation processes is handling "vibration." Many of the semiconductor manufacturing devices delivered to semiconductor manufacturers are expensive products, costing several hundred million yen per device, but they are vulnerable to vibration, which creates difficulties in transportation. Haruyasu Toda says while vibration was mainly handled manually in the past, by attaching IoT sensor tags to devices, it will be possible to visualize "what happened where" in real time, which can lead to future improvements, as well as being able to know whether the vibration itself is within the permissible range in the form of data.

Moreover, it will become possible to increase product yield rates by visualizing vibration when transporting semiconductor chips to assembled product manufacturers as well. Haruyasu Toda indicates the enthusiasm for the horizontal deployment of the platform strategy, saying, "I think there is plenty of value in building a digital platform in the semiconductor industry as well. There must also be pressing common issues in any other industry. For example, there might be issues such as individual identification of counterfeit brands and fabric in the apparel industry, and the construction of new supply chains that go beyond the traditional network of affiliates is a major issue in the automobile industry where a rapid shift to electric vehicles is taking place."

**Shifting Investment Strategy to a Digital Focus**

Changes in the approach to investment strategy are also required to accelerate the digital platform strategy. Takashi Masuda observes that investment at logistics companies has been mainly focused on tangible fixed assets such as land, warehouses, and vehicles up until now, but intangible fixed assets, such as digital investment, will be-



come more important going forward. Warehouses can be leased rather than owned or removed from the balance sheet through securitization, but benefiting from the digital sector is difficult without direct investment. Takashi Masuda states, "Tangible fixed assets are important for a logistics company, but in-house ownership of everything is not always necessary, and it is important to look at the balance. Going forward, it will actually be essential to invest in mechanisms that will manage the platforms."

**Creating Value Based on a Perspective that Goes Beyond Logistics**

Takashi Masuda says, "In developing digital platforms, it is important to have an overall view of the supply chain as a whole, including distri-

bution channels rather than simply grasping the scope of logistics in a narrow sense. The key to success or failure lies in whether Nippon Express can consider the streamlining of total supply chains from raw material procurement through to the arrival of products on store shelves as a challenge for itself." He indicates his confidence about this, stating, "In this regard, our strength is the breadth of our customer base. By providing services to a wide range of customers rather than focusing on specific industries, developing the platform strategy should be able us to demonstrate our competitive edge. I believe it is our mission to build new social infrastructure and provide it in a sustainable manner."

Nippon Express' challenge to become a company that constantly adds value to change has only just begun.

**NEX-ALFA, Cutting-Edge Logistics Facility**  
 — Realizing faster, more secure, and seamless logistics from warehouse receiving through shipping —

- RACK FORK AUTO:** An unmanned, laser-guided forklift automates receiving and shipping operations on high storage racks.
- EVE:** A robot transports product shelves, dramatically improving productivity through picking "without walking."
- AutoStore:** Robots on a grid perform receiving and shipping of tightly packed containers.
- THOUZER:** A robot that automatically follows workers, replacing a dolly, with a maximum speed of 7.5km/h and maximum load capacity of 120kg.
- AGV:** Automated transports can go under and lift up racks and tow pallets.
- Projection Picking System:** The system employs image processing technology to prevent mistakes in picking and makes it possible to sort 36 items at a time.

Nippon Express opened NEX-ALFA (Auto Logistics Facility), a cutting-edge, showroom-style logistics facility, in Tokyo in July 2020. While actually operating the AutoStore robot storage system and automated transport robots, it will increase the ability to propose order-made logistics solutions integrated with Nippon Express' front-line capabilities.