

NEC's DX Offerings for Data-Driven Management and a Use Case

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Abstract

We are now in the era of volatility, uncertainty, complexity, and ambiguity (VUCA) in which severe changes can be constantly expected. In such times, a shift is required from conventional *KKD* management (relying on *kan* (intuition), *keiken* (experience) and *dokyo* (courage) to make management decisions) in Japan to data-driven management using algorithms and data. This paper discusses the reason why data-driven management has been gathering attention in businesses as well as the issues that customers face with the introduction of data-driven management at their offices. Lastly, this paper also describes a use case of the introduction of NEC's DX offerings into a customer's company.

Keywords



data, data usage, data-driven, data utilization, DWH, data warehouse, data mart

1. Introduction

1.1 What is data-driven management?

Data-driven management¹⁾²⁾ enables users to perform informed decisions in accordance with data provided to achieve business objectives. For example, a weather forecast says that the probability of rain is 80%, so you bring an umbrella with you. That is data-driven decision making. The idea of data-driven management is to objectively understand events by analyzing and using data and continuously make data-driven decisions based on those results to accumulate corporate growth.

1.2 Effects of data-driven management

Establishment of data-driven management is expected to result in the following effects:

- (1) Highly objective understanding of events based on data
- (2) Standardization of complex decision-making criteria based on analytics using AI and other technology

- (3) Accurate, quick decision making based on visualizations such as graphs, etc.

Implementing data-driven management enables quick responses to market changes so both an increase in sales and a decrease in costs can be achieved at the same time.

2. Background

Companies that practice data-driven management are more likely to have higher probabilities of success than those that do not. Also, the rate at which their businesses grow is seven times higher than that of the growth rate of the global gross domestic product (GDP), and the increase in their corporate value is also noticeable. Now in an era of rapid change, companies that succeed will respond quickly to changes through data utilization, making it an era of success for them.

3. Customer Challenges

Customers aiming at data-driven management are facing the following four issues.

3.1 Data silos

Good insights are often hindered by insufficient data for analysis in companies³⁾. The data is usually stored at isolated locations throughout organizations or departments and it is controlled by different people. Even if you can specify what data is needed, you will have difficulty getting access to the data in a timely manner and be unable to gain any data-driven insight. This is caused by so-called data silos. For timely access to necessary data, the elimination of data silos is a significant and urgent issue.

3.2 Education and mindset

In companies where *KKD* management (decision making based on intuition, experience, and courage) is established, the traditional way of doing business is often regarded as being problem-free, so data-driven management has difficulty being established in such situations. In such cases, people need to understand that data-driven management can improve operation efficiency and help the company achieve better results and that *KKD* management is no longer capable of handling recent situations. Then, what should be done next is to set key performance indicators (KPI) for each office or company and incorporate them in their operations by linking the KPI with the data. To advance any business reforms, it is necessary to foster a mindset in which decision making should be based on data and to let people experience the success that can be obtained by using data at work.

3.3 Return on investment

Even after the return on investment (ROI) is explained specifically to decision makers of companies, they often don't find any advantage in data-driven management. Those decision makers cannot judge if it is really effective because data-driven management is very different from the traditional way of business. This hinders the decision of investment and therefore makes it impossible to advance the project. In such a case, it is recommended for them to start the project with a small investment to verify the effects of the data usage. Then, they can gradually increase the investment according to the project scale while checking the results.

3.4 Inter-organizational linkage

When IT departments develop data analysis environments without coordinating with the operations department, some details necessary for analysis by the operations department may be omitted, often resulting

in unusable analysis or inability to obtain the analysis results desired by the people in the field. If this occurs, it is necessary to establish a cross-functional organization that can compile the detailed requirements of the business units and agree on the objectives/outcome targets for the use of the data analysis from a neutral standpoint.

4. DX Offerings for Data Usage

To solve the aforementioned issue, NEC provides DX offerings that enables data to be used optimally as shown in **Fig. 1**.

4.1 Assessment for data usage

After sharing the client's business goals with the relevant parties, a workshop is conducted to select focus areas and identify issues that must be overcome to achieve the business goals, and then an assessment is performed to formulate a roadmap to reach the goals. NEC also proposes DX offerings, which are described later, for realizing the roadmap (**Fig. 2**).

4.2 Support for planning the deployment of data usage platform

This service aims to create a roadmap to increase the value of the data the customer already owns. This is achieved by first identifying the current and desired state of data usage, examining typical use cases of the data in combination, formulating a data usage strategy roadmap for achieving the business goal, and finally

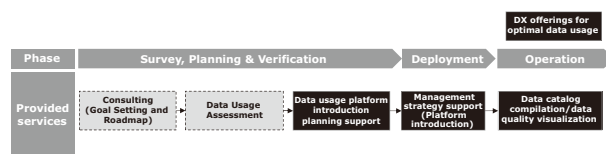


Fig. 1 DX offerings for data usage.

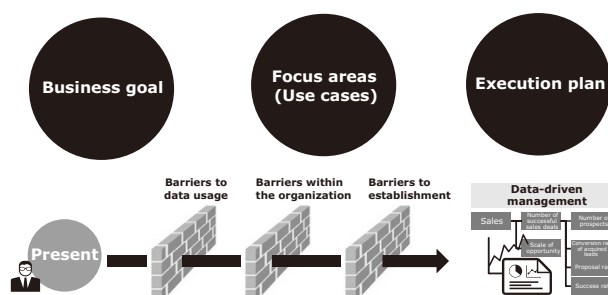


Fig. 2 Outline of data usage assessment.

proposing a specific system architecture.

This system architecture is based on NEC's rich experience in introduction of data usage platforms over twenty years. It is practicable at the level of the field engineer and is an offering for developing the scenario of data usage in collaboration with the customer (**Fig. 3**).

4.3 Management strategy support (Introduction of platforms)

This is an offering to build infrastructure based on the system architecture defined in the data usage platform deployment planning support. It proposes architecture and operation of infrastructure that can expand in line with growing requirements, such as by continuously building up use cases, increasing the number of users in stages, adding functions, and responding to data growth.

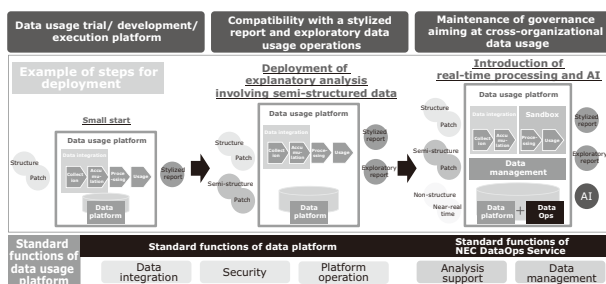


Fig. 3 Outline of data usage platform introduction planning support.

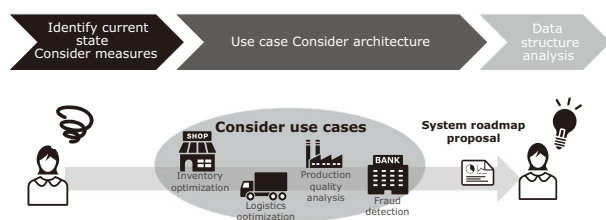


Fig. 4 Outline of management strategy support (introduction of platform).

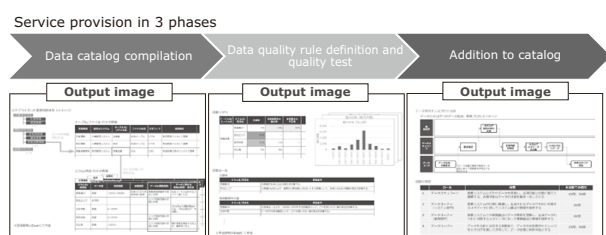


Fig. 5 Outline of data catalog compilation/data quality visualization.

Proposals of small models are also possible, which enables customers to start with just a small investment when deploying a data usage platform (**Fig. 4**).

This offering provides the expertise in data usage in stylized forms so the data usage values can be verified in a short period. Application of NEC's secure development/operation guidelines makes it possible to handle the key data in a secure manner.

4.4 Data catalog compilation/data quality visualization

Once a data catalog is compiled, various problems occur such the lack of data that can be used for analysis in the operations department.

It is hard for the data analyzing personnel to identify what kind of data is stored in which location. Even when the design document is available, it is still hard to understand the significance of content in the business. In this DX offering, the customer is interviewed on the significance of data and its positioning in the business, and based on the results of the interview, the data is reorganized in the form of a catalog.

In addition, when problems occur such as missing data or data not being created according to the rules, a quality inspection is performed to ensure that the data can be utilized, and a report is issued on the current state of the data (**Fig. 5**).

This offering provides NEC's expertise which enables the customer to develop the first version of the data catalog, data quality rules and data addition/updating process in a short period of time.

5. Case Study: Citizen Watch Co., Ltd.

In FY2019, Citizen Watch started a new mid-term management strategy under the group's midterm management vision of "Innovation for the next — Sense the time and create an impression for the future."

The company is working on a project to build a data usage platform as one of their measures to further strengthen their ability to respond to the ever-changing times (**Fig. 6**).

5.1 Background of issues

The existing data warehouse (DWH) of the company had mainly accumulated sales-related data, with virtually no manufacturing, process, or accounting data.

In addition, when each department within the company requested the use of data such as sales progress by period or actual fixed costs, the data mart had to be designed and developed manually each time, requiring a

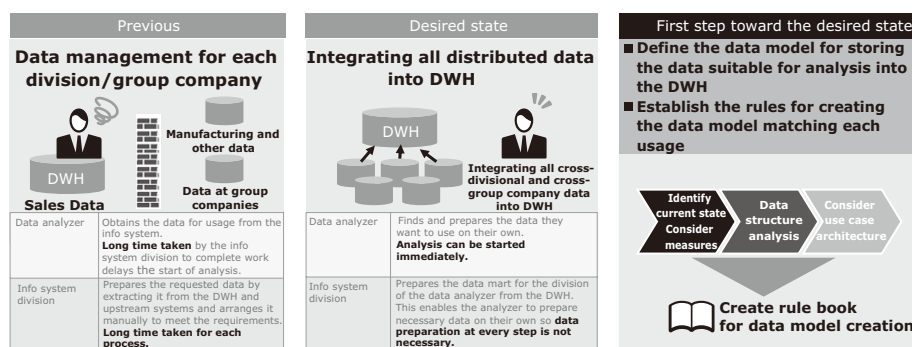


Fig. 6 Scenario for Citizen Watch Co., Ltd.

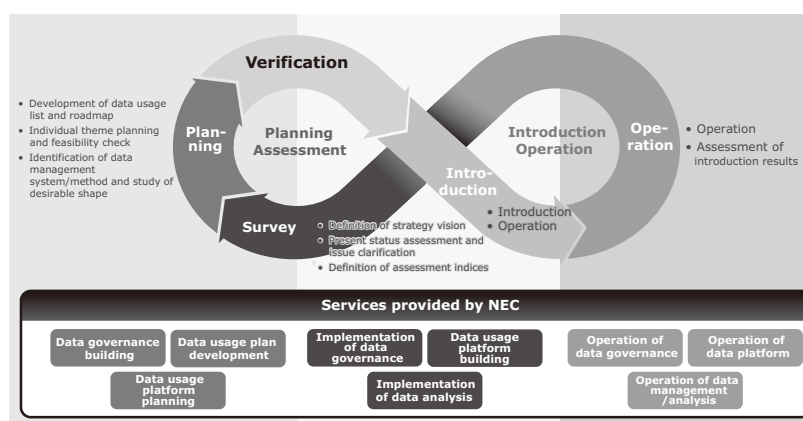


Fig. 7 Process of data use of customer.

considerable amount of man-hours.

We aimed to build a standardized data usage platform to integrate the data managed by different group companies in different departments and business categories and utilize it across the entire company.

5.2 Results of introduction

Using NEC's DX offerings for data usage platform deployment planning support, Citizen Watch proceeded with the introduction of data-driven management; creating the data model suitable for analysis to be stored in the DWH, as well as the rules applied to the data model creation according to each purpose.

NEC analyzed actual data by receiving the data structure information, called the schemer, from Citizen Watch. First, we checked the present status such as the contents of data, the linked locations and the table definitions. Then, based on the overview of the status, we identified the table definition information and integrated entire data structure, so that the customer can keep and access the required information more efficiently.

After this process, the key points were identified based on NEC's expertise, and discussions were repeated to create the rules for data model creation that is valid even when new data is generated in the future.

A large number of issues were uncovered in the process of arranging and integrating the data, such as having to unify the structure of sales data among group companies. These issues were also important in determining the direction of future system construction.

These actions have enabled us to develop a culture and processes that allow people from various departments and positions to quickly utilize the data they need and solidify the foundation for our customers to implement data-driven management.

6. Conclusion

From planning to introduction, operation and back to planning again, data usage is not simply a waterfall process. Instead, the cycle as shown in **Fig. 7** will continue as the customer's business grows.

NEC's strength lies in its know-how in proposing data

utilization to a large number of customers as well as in its DX offerings for data usage that can support this cycle at any stage. NEC will continue to help customers realize data-driven management through proposals based on these DX offerings.

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June 2022

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