

Leadership for Data Driven Management

CDO Handbook

CDO : Chief Data Officer

Volume 2
CDO Jobs

Key points and steps for CDOs to achieve results as key players in the organization.

INFORMATION-TECHNOLOGY
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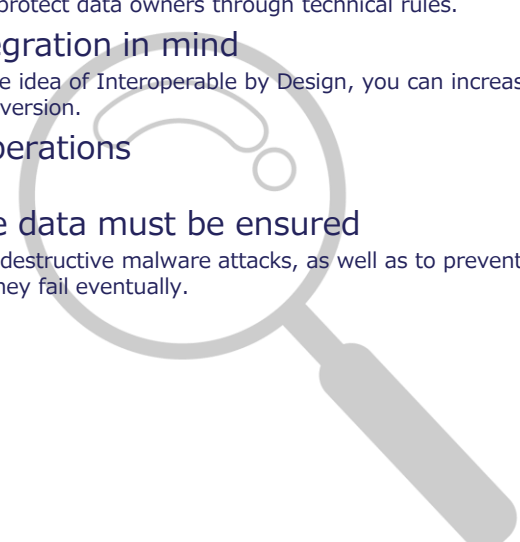
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*Please also read "Data Driven Management Handbook for Managers"

The perspective required of CDO

CDO need to break away from the traditional paper and database-centric mindset and shift to thinking for the network era.

- ♦ Understand data environment
 - Data is all around us and is exploding
 - Data can be obtained from any object or activity, even if it is not currently being collected.
 - Adding data acquisition sensors to existing equipment can lead to new services.
 - Data is the product (not a supplement to a system)
 - Data is produced and distributed. Quality control is required, and subsequent updates are also necessary.
 - Can be machine readable (can be automatically linked) for a variety of uses
 - By automatically entering data from the interface, manual re-entry, and errors can be prevented, and by using the data utilization support function, accessibility can be ensured and service integration becomes possible.
- ♦ Maximizing the value of data
 - Understanding your data can increase its value
 - By utilizing data that can be used by different departments and companies, as well as external data, we can say that it is of great value.
 - The value of data changes depending on how it is presented
 - Visualization helps users understand.
 - Updated data is valuable
 - Decisions are made based on the latest data. It is important that the data is regularly updated and the frequency of updates is clear.
- ♦ Data Management
 - Data is accessed, not transferred
 - By accessing data immediately when it is needed, it is possible to obtain the latest data and improve processing speed. By limiting the scope of access, it is also possible to achieve high governance.
 - Data should be managed in a distributed manner
 - By managing data in a distributed manner rather than concentrating it in a database, it becomes easier to ensure that data is up-to-date and to manage security and sensitive data.
 - Data sovereignty must be protected
 - Since data can be easily copied, a mechanism is needed to protect data owners through technical rules.
 - Data must be designed with reuse and integration in mind
 - By considering standards when designing data and using the idea of Interoperable by Design, you can increase reusability and prevent costs and errors caused by data conversion.
 - We need to create a feedback loop from operations
 - Errors are sometimes discovered during the process.
 - Data security and management of sensitive data must be ensured
 - It is necessary to have mechanisms to defend against data-destructive malware attacks, as well as to prevent accidents caused by operational errors and to ensure that they fail eventually.



CDO Should Know

CDO is senior executive, he or she is required to have diverse knowledge in a wide range of areas, including data technology.

In other words, what is required is "management knowledge that is based on knowledge of the means of utilizing data and the effects of data utilization, and that enables companies to work together with other executives to realize concrete governance that is linked to business value."

Management

Strategic thinking, business Insight	Negotiation skills	Legal and Compliance
Future predictions	Organization, human resources (Data Maturity)	Finance
Storytelling	Journey	Risk Management
Leadership	Meaning	System management and Governance system, Utilization (LegalTech)

Using this knowledge of management and data, we will present an overall picture of management, and by analyzing that data, we will identify issues and future prospects. We will also disseminate this knowledge throughout the organization.

Data Management

Data (Text, Images, Video, 3D , Geospatial)
Interoperability
Data Management Platform
Vacation
Modeling
Data Quality
Data Governance
Project Management
Change Management
Security and Privacy Management
Edge Cloud IoT

Data sharing

Translation
Data Space
Data Integration Platform
Data Exchange
Building Blocks
Trust Infrastructure (authentication, Logging, Secret DM, etc.)
Knowledge Graph

Data Utilization

AI (Generative AI)
Analytics
Data Science
Visualization
Statistics
Data Utilization Tools

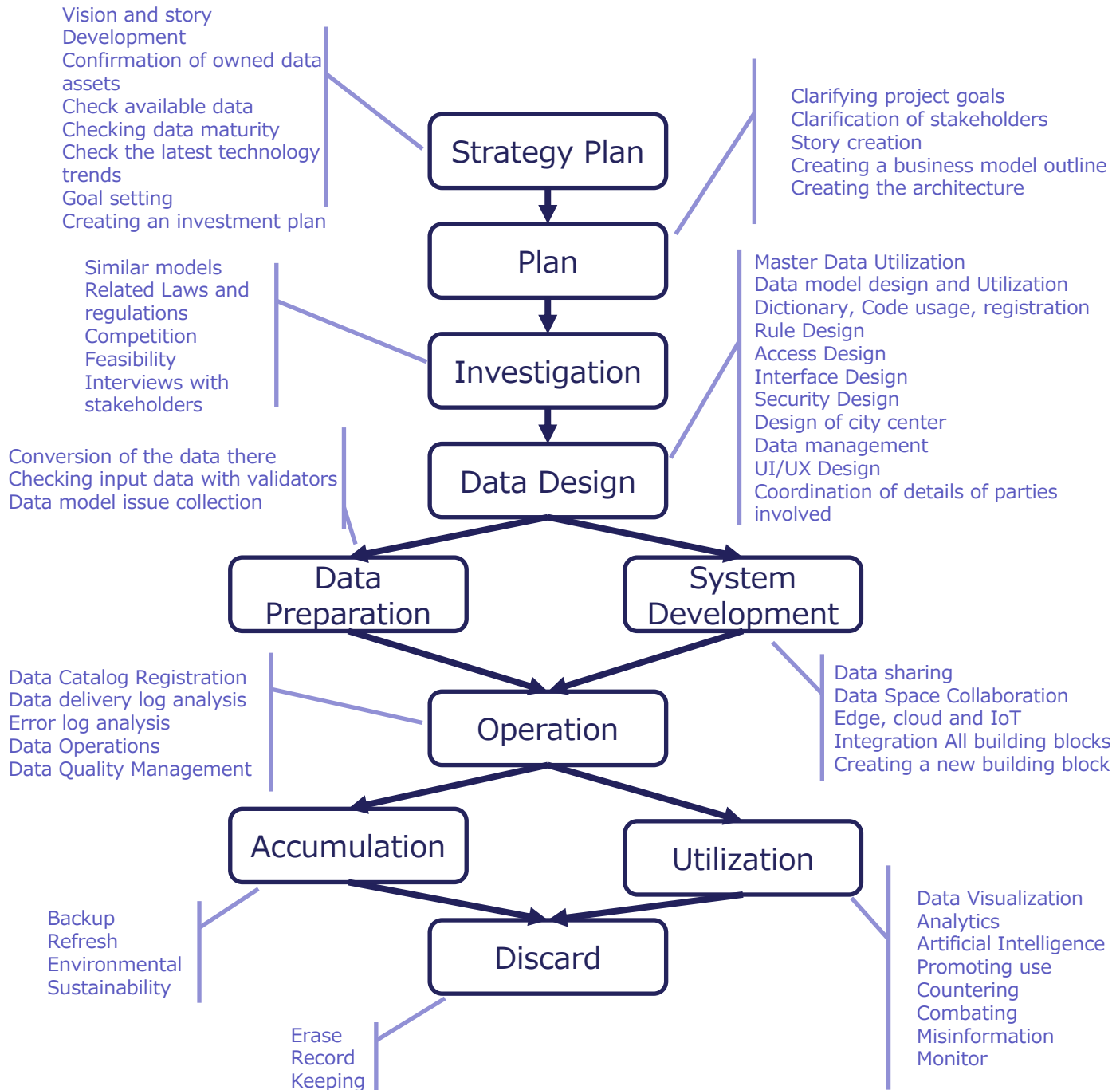
Evaluation

Benefit Analysis
Strategic Evaluation
Quality Assessment
Data Operations

Using this knowledge of data management, utilization, and integration, we will ensure a stable supply of necessary data throughout the organization and ensure that it can be used effectively throughout the organization.

Actions in the Data Lifecycle

CDOs need to understand the data their organization needs and manage the data lifecycle



It is necessary to coordinate with the CIO , CSO , CPO , etc. to ensure that no security incidents occur in data and to mitigate the damage if an incident does occur.

In addition, a long-term perspective is important for data management, and it is necessary to design it with consideration for measures to prevent leaks of sensitive information, as well as advanced technologies such as quantum computing that are being developed for the future.

CDO and Digital Transformation

There are many ways for organizations to use data to make fundamental improvements and reforms to their operations. CDOs need to view areas that have undergone basic digitalization and the operations of each department from the perspective of "digital transformation through data."

A perspective on every task

Are there any areas where data is being entered manually (digitalization is a prerequisite)?

- Are the data inputs and outputs necessary?
 - Are there any inconveniences to customers?
 - Is it possible to input the digital data that the sender has on the web?
 - Are you printing out paper or sending confirmations by mail?
- By the way, is that data item necessary?
 - Is the data item used in the business or related business?

Can regularly performed tasks be automated (digitalization as a prerequisite)?

- Is it possible to link the data with automatic output from sensors?

Are you looking at similar data from other departments?

- Can master data be shared?
- Is there a chance for new discoveries?

What tasks are problematic (e.g., frequent errors)?

- This can be resolved through data analysis, utilizing past data and know-how, etc.

Can you improve or add something to the work or facilities there?

- Maintaining data on company vehicles and facilities in various locations, or adding sensors, can lead to new business opportunities.

There are certain patterns of opposition to data-based transformation, and many of these can be resolved with careful explanation.

- Can be used for purposes other than collecting data
Example of response: "Can we use it by changing the rules for collection or anonymizing the data?"
- It is outside the scope of data collection and has no benefit to self-employment
Example response: "Why don't we think about this across the entire organization?"
- I'm too busy and it's too much hassle.
Example of response: "Would you like to aim for improvements in the medium to long term?"
- Ineffective
Example of response: "Even if it doesn't work now, you can get benefits by accumulating data."

Variations

[Business change] Traffic volume and people flow survey method changed from counter to using mobile phone location information.

[Operational change] Change from face-to-face confirmation to facial recognition at departure gates.

[Business change] Shift from individual application for in-house travel expenses to transportation IC cards.

[New service] Temporarily identifies dangerous areas by warning about vehicle braking and sudden steering.

[New service] Concentrating mobile phone location information to commercialize population density maps

[New service] Providing detailed rainfall analysis using operational data from sewage treatment facilities

The CDO takes the lead in developing the organization's overall strength

"Data Maturity" is attracting attention as an organization's ability to use data effectively. The CDO's important role at the management level is to improve data maturity as the overall strength of the organization.



Executive

- Lack of information prevents proper management decisions.
- Can we make better use of our own data?



Employee

- I don't know the current information.
- I have to go to the scene and gather information.

Data Infrastructure

- Because there was no data infrastructure, accurate information was not available, and management and employees were unable to make the most of their capabilities.



Executive

- Data is controlled, and decisions can be made intuitively.
- Security is managed by the data infrastructure, so you can rest assured.



Employee

- Necessary data is readily available, and tools are provided, allowing users to carry out a variety of analyses on their own.

Data Infrastructure

- By providing the right data and tools, the data infrastructure reduces unnecessary work for everyone in the organization and improves performance.

There are various models of data maturity, including models that focus on the "overall strength of the organization" and models that focus on "data management."

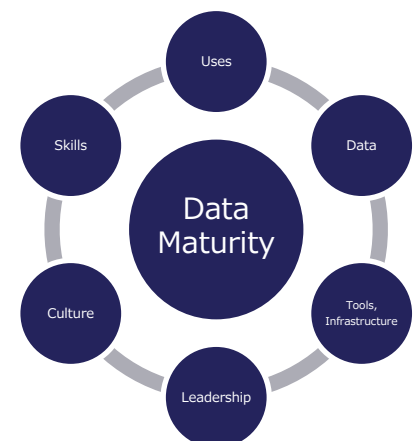
Here we will show an example of data maturity that focuses on the "overall strength of the organization" in order to manage data across the entire company.

- Use : Is data being used in business strategies, decision-making, and on-site?
- Data : Data is organized and managed
- Tools, Infrastructure: An environment for using data is provided
- Leadership : Is there a leader who will drive the data strategy?
- Culture : Is there a data-driven culture?
- Skills : Do each person involved have the appropriate skills and are they making use of them?

Managers and employees worked hard without a sense of unity to improve their respective data-related skills and the data environment in each situation, and the organization lacked overall strength.

- As a result of dealing with issues on an individual or departmental level, usable data becomes fragmented, resulting in ineffectiveness and unsustainable efforts.

This enables us to comprehensively consider the development of skills among stakeholders, data integration, and the environment, and as the overall strength of the organization improves, the competitiveness of the business and employee satisfaction will increase.



Using such a model makes it possible to clearly define the responsibilities of each party.

Steps to reform by CDO

- 1. Form a team to create a vision and create a schedule for each agenda**
 - In order to realize value in the short term, we will create a tentative schedule to ensure that management and those on the front lines understand the plan from a medium- to long-term perspective.
 - Clarify the small successes at each milestone and their significance.
- 2. Take inventory of data within your organization**
 - In order to inventory the data, we will create a provisional data management policy and collect information on the data we hold.
 - Ultimately, data collection and management should ideally be done using standard data (such as DCAT) that indicates terms and concepts, but you should decide what data to include based on your organization's level of understanding and your enthusiasm for the effort.
 - At first, it's not as simple as just providing the name of the data, an overview, collection method, or period.
- 3. Find and review your master data**
 - Identify data that is used across multiple business processes across the organization.
- 4. Review core data parts (generic basic information such as dates)**
 - We aim to standardize basic data such as dates and addresses, and help participants understand the significance of data organization.
 - We will gradually implement reforms, starting with new systems and systems that need to be changed.
- 5. Create a data design policy**
 - We will create a data design policy for the system we are going to create.
- 6. Gather the tools you need**
 - We provide tools to make design and progress efficient and sustainable.
 - CAD to create machines or buildings , specialized tools improve management efficiency and quality.
- 7. Integrating the whole architecture**
 - We handle the overall management, including rules and interfaces.
- 8. We will carry out digital transformation through data reuse etc**
 - We will implement digital reforms, including a thorough review of data input and output.
 - Switch to direct input and data linking
 - Utilize related technologies such as UI/UX improvement to prevent wrong input and inter-system integration through APIs.
 - We will reform business models and develop new products and services by utilizing data.
- 9. Introducing the dashboard**
 - The collected data will be used to create a dashboard and will also serve as the base data for simulations.
- 10. Summarize the results**
 - Success stories are important to continue spreading within the organization. We will summarize the results and discuss future plans.



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For the latest information, please check this site.
<https://www.ipa.go.jp/en/digital/data/data-spaces-academy.html>

