

Research

Data Management Related Trends in the U.S.

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Recently, amidst the globalization of management, enhancement of consolidated management, and fiercer competition with other companies in the same industry, companies are required to make accurate management decisions even under highly uncertain situations more than ever before. If we look at public organizations, accountability for citizens and NPOs is expanding, and there is a trend of open data where diversified information possessed by administrations in machine readable format is being publicly released to encourage private sector use. Due to this background, public organizations need to conduct more efficient and highly transparent administration. In addition, due to change in the environment surrounding data use such as the progress in technology (for example, progress in establishment of environments for practical use of big data, spread of sensors and other IT equipment, and a decline in data saving cost prices including storage), the needs for (1) realization of data-oriented decision making, and (2) upgrading operations are growing. To achieve (1) and (2) above, the use of data as an information asset through seamless data management is necessary, and cross-functional efforts which are different from conventional data management conducted mainly by IT departments are important. These efforts also must address changes in business processes and structures. As a keystone to promote such data management, there is a movement to establish a new Chief Data Officer (CDO) position in Europe and the U.S., and the movement is receiving attention.

1 What is a CDO? A New Trend in Data Management

CDO is a position that promotes activities of policy formulation, execution, evaluation, and improvement regarding the management and use of diversified data stored within a company, and in some cases, senior management-level authority is granted to the CDO. Introduction of the CDO position has been increasing

over the past several years. Although many details are unclear, companies and government agencies in the U.S. have established the position or are currently examining the establishment of the position¹. In particular, it is said that the financial sector (banks and insurance) and the government sector have been the first to establish the position. ("Banking, government and insurance are the first three industries to adopt the CDO role and in that order.")²

Hitachi Research Institute considers the establishment of the CDO position as one of the new trends in data management. Therefore, Hitachi Research Institute investigated the purpose of CDO position establishment as well as specific efforts and roles of the CDO, and promotes this research for the purpose of looking at the future direction of data management. As part of the research, this paper introduces case examples of Colorado State, New York State, and the City of Chicago from interview surveys of CDOs in the U.S. that we have conducted up until now.

2 Efforts by Local Governments in the U.S.

2.1 Colorado State : First U.S. State that Adopted the CDO Position

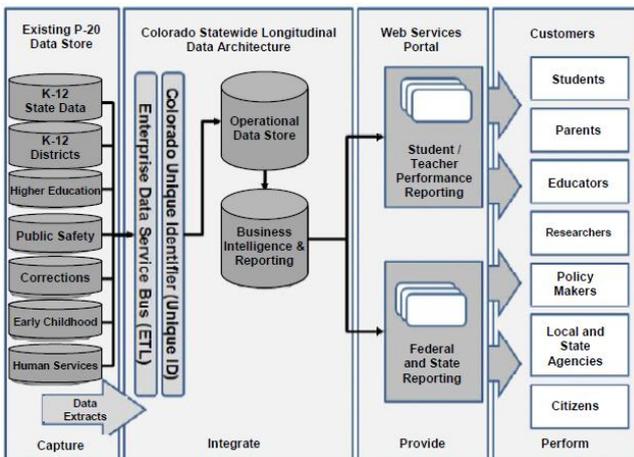
The State of Colorado was the first U.S. state to establish the CDO position in the state's OIT (Governor's Office of Information Technology) information bureau in 2009. The purpose of establishing the position is to enhance information sharing among all departments and agencies within the state for (1) improvement of services for citizens, (2) improvement of work efficiency of the state

¹ Massachusetts Institute of Technology "On the Rise of the Chief Data Officers in a World of Big Data" Yang Lee, et al. December 15, 2012

² Gartner "CIO Advisory: The Chief Data Officer Trend Gains Momentum" Debra Logan, Mark Raskino, January 13, 2014

government, and (3) transmission of information about policies. In January 2010, OIT announced a data strategy (State of Colorado Data Strategy 2010) which included the establishment of sustainable data management and a governance program. In this data strategy, the focus areas of data management are education (coordination of education records from kindergarten to university graduation, etc.), social services (information provision regarding social security related services), e-government services (single Sign-On to information on driver's licenses, vehicle registrations, taxes, revenues, etc.), employment and revitalization of the economy (response to changes in the economy and labor market), execution of laws (safety measures of the state and community), and formulation of policies (information provision to legislative members and policy planners, etc.). CDO is a position that sets goals for these focus areas of data management and implements programs to achieve these goals.

Taking the educational field as an example, creation of a system conceptual model (Fig. 1) regarding educational field data (data regarding education and study of students from kindergarten to graduate school) in the state that generates data to report to students, educators, policy makers, and local and state government is the aim.



Prepared from the State of Colorado Data Strategy 2010

Figure 1: State Education Longitudinal Data System Architecture

2.2 New York State: Aiming for Information Sharing Among Departments and Agencies

The State of New York formulated an IT Transformation Program with the aim of advanced use of IT resources (IT infrastructure and IT staff members) and improvement of management efficiency within the state government in 2011. In November 2012, ITS (Office of Information Technology Services) was established as a new information bureau of the state, and IT work staff members in the state were consolidated into ITS. At the same time, a CDO position was established in ITS. The CDO of New York State promotes data standardization and sharing of best practices for data sharing among departments and agencies in coordination with the CPO (Chief Portfolio Officer) who carries out the formulation of IT strategies, performance management within ITS, and portfolio management of IT investment and CIOs in each field such as education, energy and environment, financial regulations, administration and supervision, labor, health and human resource services, and public safety, etc. In addition, the CDO is involved in the issuance of the open data policy of New York State (Open Data Handbook) and operates the open data portal site in cooperation with the CTO (Chief Technology Officer) as well.

2.3 City of Chicago: Promotion of Data-oriented Decision Making

In December 2012, the City of Chicago announced the Open Data Executive Order for the purposes of improving transparency of municipal administration and fulfilling accountability of politics to the city's citizens with open data as well as providing an innovative tool to improve life. In addition, the authority of the CDO established as a control tower of open data promotion in 2011 was enhanced. The CDO promotes the addition of data for release on the data portal site of the City of Chicago and improvement of convenience in coordination with data coordinators of respective departments and agencies. Moreover, toward the achievement of data-oriented decision making in municipal government, the CDO plays the role of executing a large scale data analysis project (Smart Data Platform) for the city.

This Smart Data Platform aims for information

provision to departments and agencies of the city for data analysis and problem resolution in addition to sharing the platform by use of open source software with other cities that do not have development resources. The activity will continue for approximately two and a half years from March 2013. A distinguishing point of the project is that work began with items that generate immediate effects. For example, 31 data factors related to the outbreak of rats were analyzed to forecast rat outbreaks so extermination can be implemented before complaints are received from citizens. The City of Chicago will extend the platform function in the future, and at the same time, the city is planning the creation of an archive of training related documents and templates for use in other cities.

Establishment of the CDO position introduced in this paper started around 2010 and the approach has just begun, however, the fact is CDOs already play a central role in promoting data standardization for information sharing among departments and agencies, and CDOs function as a hub to accelerate data use in administration departments in local governments. On the other hand, there are also issues in the promotion of data management under the leadership of CDOs. More specifically, the issues are (1) environment problems such as existence of workplace cultures and authority that are not willing to give out data and shortage of data management personnel, and (2) data use related problems including insufficient successful case studies and visualization of cost-effectiveness. For these issues, it is important to pursue a synergy effect by simultaneously establishing an environment that includes the appointment of personnel responsible for data management (a Data Steward) in each administration department and accelerating data use by accumulating data use results.

3. Conclusion

In Japan as well, from the middle of the 2000s, demands for globalization and improvement of work efficiency have been increasing mainly in the manufacturing industry, and there is a movement toward working on data use through the construction of cross-sectoral information systems. However,

generally speaking, the concept of data management itself is barely recognized, therefore, a scheme for data management efforts has not been established yet either.

This research makes it clear that local governments in the U.S. have established the CDO position and efforts are being made under respective data strategies. However, all CDO positions were established just recently and various issues still remain in the promotion of data management. Currently, in order to resolve these issues, CDOs are carrying out efforts in various locations through measures including information exchange concerning excellent case examples. Hitachi Research Institute is planning to continue monitoring these trends and pursuing research.