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Data Management in a Digital World

- Lifecycle and Benefits
- Digital Trends and Public Sector Applications
- Improving Data Accessibility
- Cyber Security Implications
- Key Lessons Learned During COVID-19

Image Source: govloop.com

JOINT COUNCIL'S EXECUTIVE MONTHLY REPORT

Developed by the Research Committee

February 2021

1. Introduction

A new technology wave in the form of digitization is sweeping the globe. This digital wave, fueled by massive quantities of data pouring into organizations from many sources (i.e. scanners, sensors, smart devices, social media, video and text) has been changing data management practices for the last few years.[1]

The public sector faces a new and dynamic digital agenda that is disrupting traditional (paper-based) forms of data management. In today's digital world, organizations are forced to consider the broader opportunities and risks of data.[2]

More than ever before, government organizations are making use of data to inform decisions, gain deep insights, and achieve desired results. However, such data also creates risks that organizations must identify and address effectively.

According to NG Data, data management is an "administrative process that includes acquiring, validating, storing, protecting, and processing data to ensure the accessibility, reliability, and timeliness of the data for its users".[3]

Why is this Report Important?

- Proper data management can give governments the ability to improve quality of life for citizens, build vibrant communities, and develop a thriving economy.
- Policy decisions are more effective when based on underlying data. These policies can set goals, measure performance, and increase citizen confidence in government through transparency.
- The public sector has increased the use of digital technologies in the fight against the ongoing COVID-19 pandemic. When used properly (i.e. when in compliance with privacy regulation) digital data sources demonstrate great potential in tracing the source and predicting the future spread of infectious diseases.[4]

What is covered in this executive report?

This report includes the following:

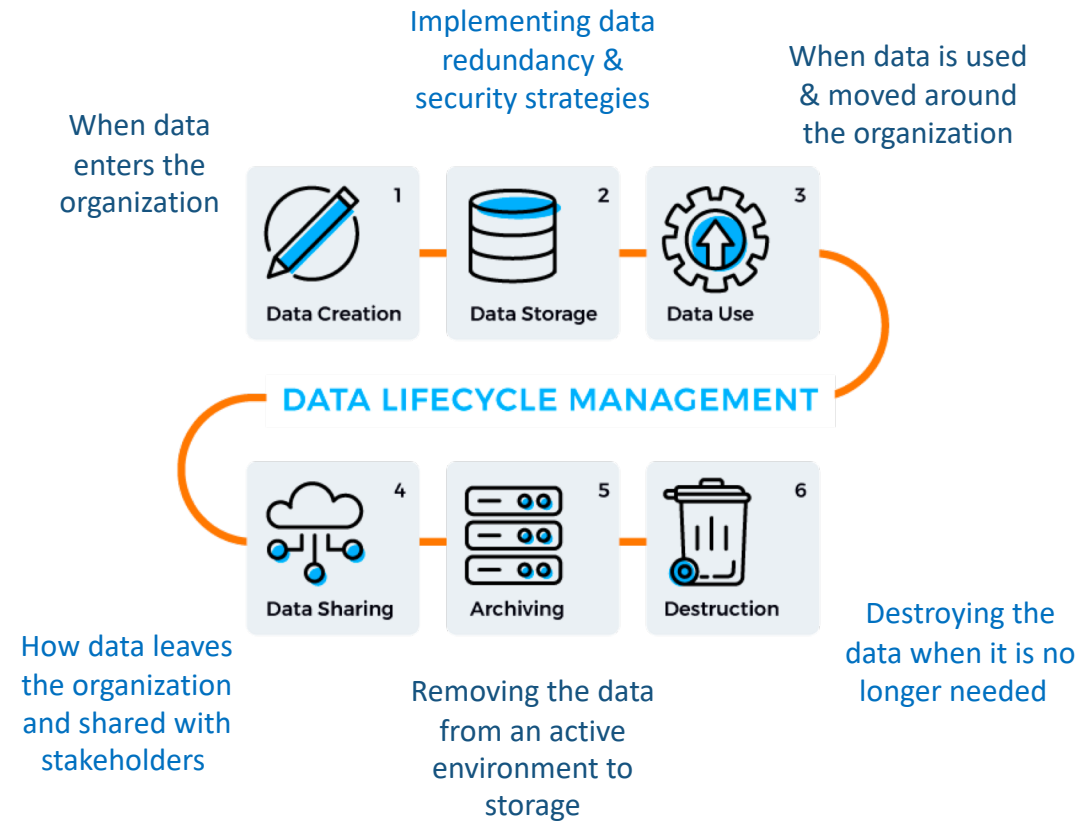
- Introduction
- Data management: lifecycle & benefits
- Digital trends & public sector applications
- Improving data accessibility
- Cyber security implications
- Seven key data lessons learned during COVID-19

1. The Digital Wave – How It Impacts Data Management
2. Data Management: What It Is and Why It Matters
3. What is Data Management?
4. On the responsible use of digital data to tackle the COVID-19 pandemic

2. Data Management Lifecycle

Data affects every organization, employee, executive, customer, and user.

The data management lifecycle is a process that helps organizations manage the flow of data throughout its lifecycle – from initial creation through to destruction. While there are many interpretations regarding the various phases of a typical data lifecycle, the stages can be summarized as follows[5]:



5. What are the 6 Phases of the Data Lifecycle?
6. Master Data Management for government

Benefits of Data Management for the Public Sector [6]

1. Accurate, complete and consistent citizen data across organizations
2. A holistic view of service consumption for more informed decisions
3. Streamlined services delivered at a lower cost
4. A common entry point for front office, back office, and citizen self-service
5. A common data backbone for digital transformation
6. Better outcomes– and a better experience–for the citizen

3. Digital Trends & Public Sector Applications

There are several digital trends that are fundamentally changing the way the public sector operates today, as well as the way citizens and businesses interact with them. Some examples include[7]:

- The **Internet of Things**, including machine-to-machine (M2M) integration and sensor technology
- **Facial recognition** and **biometrics** can create personalized experiences using predictive analytics based on prior transactions and behavior. This technology also aims to identify or authenticate individuals
- **Digital marketing** targets specific consumers based on their unique digital profiles and online behavior
- **Big data** – the sheer volume of information that needs to be processed – demands a fundamentally new database structure and a new generation of bandwidth, data extraction and analysis tools. Organizations also require staff capable of designing, sourcing and implementing the technology required to capitalize on big data

The value of data is not based on its source, quality or format. Its value depends on how it is utilized. The following are some examples of how these digital trends impact data use in the public sector:

7. The Digital Wave – How It Impacts Data Management
8. 5 Ways Smart Cities Use Traffic Data for Traffic Management
9. 18 Examples Of Big Data Analytics In Healthcare That Can Save People
10. Digital agriculture: enough to feed a rapidly growing world?
11. Automated Facial Recognition In the Public and Private Sectors

Examples of Data Applications in the Public Sector

Transportation

With 55% of the world's population living in urban areas, traffic congestion has increasingly become a problem for municipalities. To address this, governments are using sensor technology and big data to reduce congestion through intelligent synching of traffic signals, prompting variable speed limits, and providing drivers with real-time alerts advising the fastest routes.[8] Real-time data is also used to mitigate car accidents and extreme weather conditions to increase driver safety and improve emergency response times.

Healthcare

The healthcare sector uses big data analytics to make a large difference in modern treatment. Data and analytics is used to predict disease outbreaks, circumvent preventable illnesses and generally improve the quality of care and life of patients. Big data in healthcare also enables massive volumes of information to be created by the adoption of digital technologies that collect patient records and supports the management of hospital performance, otherwise too large and complex for traditional technologies.[9]

Agriculture

In the agriculture sector, data analytics increases innovation and productivity by leveraging real-time data gathered from soil sensors, GPS-equipped tractors and weather tracking to determine when, where and how to plant.[10] Data analytics is also used to manage environmental challenges, assess risk and reward, generate predictive models, increase yields, and improve supply chain management.

Gambling Industry

Drivers' licences in many Canadian provinces, such as Ontario, BC, and Manitoba, include facial recognition ready photographs. Facial recognition is used during the licence application process to detect ID theft and fraud. Facial recognition is used in many Canadian casinos in order to detect known criminals and cheats. Cameras in Ontario casinos run facial recognition software on individuals entering the building and compare images with a database of self-identified gamblers who ask to be placed on a no-gambling list.[11]

4. Improving Data Accessibility

The public sector is uniquely positioned to improve data insights due to the vast wealth of meaningful data they handle. However, a common problem experienced by many government organizations is that their data is typically spread across different silos. This makes the data difficult to access for analysis, decision-making and insights. An important first step for public sector organizations to start their digital transformation journey is getting quick access to different data sources through a single view. According to Forbes, there are three main areas government organizations should consider to improve access to data[12]:

1

Improve the understanding and inventory of data and corresponding systems

- It is vital to take a step back and examine the broader system and data architecture across the organization. Analyzing workflows and how the end user travels across these systems can help organizations identify possible redundancies or duplication. Address data fragmented across disparate silos and legacy systems by utilizing new approaches to data management. Consolidating data simplifies the tasks associated with data management, reducing security risks and allowing for the consolidation of both data and the associated workloads.

2

Use digital transformation as an opportunity to re-engineer

- After gaining a well-understood model of data usage, conduct some analysis and begin thinking about optimization. Leverage the digital transformation journey to rethink processes and workflows. Mapping workflows presents the opportunity to visualize the processes that can be streamlined. It enables organizations to reimagine how to increase efficiencies by cutting down steps for the end user.

3

Perform a self-assessment to find (and fill) gaps

- It is important to perform an assessment of which in-house tools and capabilities need to be simplified through digitization. It is also important to pinpoint gaps. When data management gaps are identified, organizations should perform market research and develop a business case to address specific challenges. A careful review of the tools, technologies and approaches that are used by large organizations in the private sector can be beneficial for public sector organizations.

12. Digital Transformation For Public Sector Agencies Starts With Better Data Management And Strategies

5. Cyber Security Implications

Cyber security threats are increasing and becoming more complex through digital technology. Governments have a responsibility to safeguard their citizens from a whole range of threats, to enable them to live and work without fear.[13] Digitization is both a hindrance and a help in this struggle.

The following are some examples of how digitization can act as a risk or safeguard to cyber security threats.

Digitization as a Risk to Cyber Security

On the one hand, as governments embrace digital technologies and become more interconnected with partner organizations and smart devices, new vulnerabilities arise that can be exploited by cyber attackers. Hackers can damage data, steal data, and/or disrupt phone and computer networks.[14] This can paralyze systems and make data unavailable. Terrorists, fraudsters and hackers can jeopardize the delivery of essential public services and the smooth running of civil society.[15]

Digitization as a Safeguard to Cyber Security

On the other hand, digital technologies and better data sharing can provide a sophisticated means of combating threats governments are introducing information security management systems to safeguard the data they store and increasingly relying on. According to EY, "governments must also exploit the power of cloud computing to increase their own computing capacity, support secure biometric identification programs and provide safe payment platforms for citizen transactions".[16]

13, 14 How does digital government become better government?
15, 16. What Are Cyber Threats and What to Do About Them

6. Data Lessons During COVID-19

Data has played a major role in government efforts to combat the effects of COVID-19. Data, analytics, and emerging technologies can be leveraged to support governments to make informed policy decisions. For example, enforcing restrictive protocols such as travel bans, school closures, quarantine measures, and social distancing to reduce the spread of the virus. Data has also supported policy decisions around the release of economic aid, re-opening of cities, improving public health capacity, and much more.[17]

According to Deloitte, several key lessons have emerged that can shape governments' data strategy even beyond the pandemic. These lessons include the following:

- Respond nimbly
- Use predicative models
- Seek out emerging patterns

Real-time data is key to resilience **1**

- Show and tell
- Keep it simple, yet effective
- Take actions, make decisions

Data Presentation is most effective when it's centered on users **2**

- Drive innovation
- Form new alliances

Cloud converts data from a luxury to a utility **3**

- Address data ownership
- Build transparency in data governance

Data governance is crucial **4**

- Implement privacy by design
- Build data protection coalitions

A data strategy is incomplete without privacy and security **5**

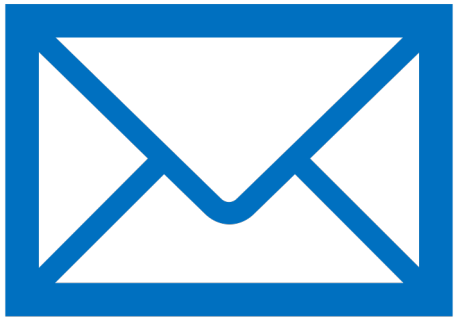
- Reduce barriers to data-sharing
- Create data-sharing platforms
- Encourage citizen-participation and cocreation

Data-sharing enables innovation **6**

- Use inclusive data
- Use interoperable data

Identifying and addressing data issues can strengthen decision-making **7**

17. Seven lessons COVID-19 has taught us about data strategy



For Further Reading

- What government needs to know about data management
- Why master data management is key to digital transformation
- Three critical steps to fast-track agency digital transformation, data management
- Safeguarding against cyberattack in an increasingly digital world
- Is Your Data Strategy Ready For Digital-First Business?
- Data integration is vital to companies operating remotely
- AI drives the evolution of technology and data governance

Other noteworthy articles:

Unlocking the power of the cloud

Data privacy: Behavioural analytics, data hoarding and government crackdowns to dominate 2021

Canadian privacy expert says 2021 could be the year for digital ID projects

Delivering for citizens through digitisation of government services

Reflections on Public Service During a Pandemic

Digital Government – a better Government

Research Repository

Access the Citizen First Research Repository.

Recent entries on the research repository:

The Importance of Client Satisfaction Research - Joint Council's Executive Report January 2021

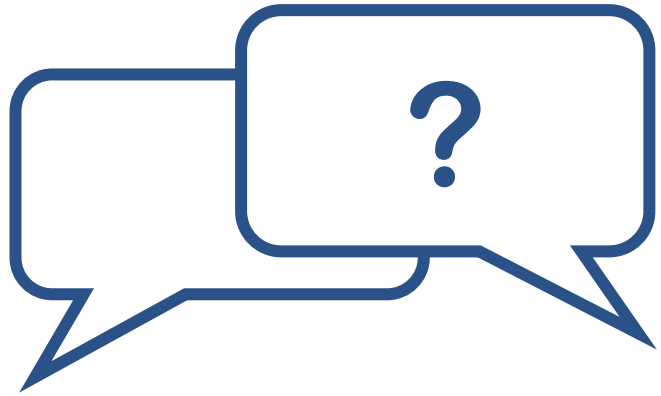
The report highlights client satisfaction research as an important decision-making tool for the public sector. The report focuses on the latest Citizens First edition (Citizens First 2020) to be published in April 2021.

Trends in the Daily Newsletter

According to the Harvard Ash Centre, digital government leaders need to rethink funding models for long-term impact. The Covid-19 has accelerated the demand funders experienced from governments to support digital services. Moving forward, the public sector experiences growing consensus around investing in digital infrastructure that can be leveraged across the government.

Research findings by the Digital ID and Authentication Council of Canada highlight that three-quarters of Canadians feel it's important to have a secure, trusted, and privacy-enhancing digital ID to safely and securely make transactions online. The majority of Canadians believe it is important for federal and provincial governments to move quickly on enabling digital ID in a safe and secure manner, according to the survey.

A recent article published by State Scoop outlines six practical steps for using innovation as a strategy for success. These steps aim to help public sector organizations deliver on their vision for a reimagined IT culture and move forward with digital transformation.



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