

A large crowd of people, seen from above, is arranged in a heart shape on a white background. The heart is composed of many small, colorful figures, with some individuals standing outside the main heart shape. The overall image conveys a sense of community and collective effort.

# GOVERNMENT DATA FOR BUSINESS INNOVATION IN THE 21<sup>ST</sup> CENTURY



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With all the recent attention to big data and advanced analytics, it is easy to forget that businesses have been using data to create new insights and innovation for centuries.

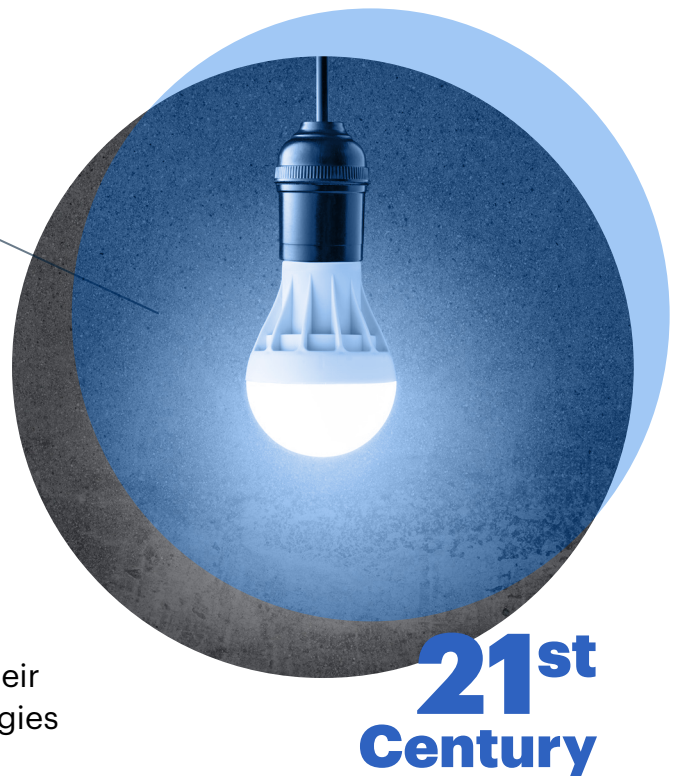
## 17<sup>th</sup> Century



Coined in 1865 by Richard Millar Devens in his Encyclopedia of Commercial and Business Anecdotes, the term “business intelligence” was first used to describe how a 17th century banker, Henry Furnese, achieved an advantage over his competitors by collecting and analyzing internal and public information relevant to his business activities. By organizing this information in a structured manner, Furnese was able to maintain a “complete and perfect train of business intelligence.”

## Fast forward to the 21st century

where the legacy of business intelligence is now strengthened by government data. Within the past decade, governments have started to publish massive troves of freely accessible data and businesses operating all over the world are finding that analyzing government data together with their own data sources can transform their strategies and operations.



## 21<sup>st</sup> Century

## A few examples:



**CVS Health** developed an online tool called [myhealthfinder](#) that uses government health data to provide consumers with personalized recommendations for preventive healthcare services, based on age and gender. By [collaborating](#) with the U.S. Department of Health and Human Services (HHS), CVS Health leverages government data to connect consumers with a range of useful services, including vaccinations and screening tests, which are available at CVS Minuteclinic and CVS Pharmacy locations.



**Starbucks** collaborated with Esri, a geospatial technology company, to develop a business intelligence system called Atlas. This data-driven platform uses government demographic data, government weather data, and proprietary sales data to develop highly sophisticated consumer marketing strategies. For example, Starbucks uses demographic data on the number of local smartphone users to determine where [mobile app discounts](#) will be most impactful. Starbucks uses weather data to synchronize [Frappuccino promotions](#) with rising temperatures.



**Best Buy** developed an innovative [market segmentation strategy](#) using government data that was key to growing the consumer electronics brand. Using a combination of government demographic data and proprietary sales data, the strategy uses advanced analytics to define and group consumers by [personas](#), with names like Barry, Jill, Buzz, and Ray. Each persona represents a different consumer segment with specific buying habits. For example, Buzz is the 'young technology enthusiast' while Jill is the 'suburban mom'. Best Buy used these data-driven profiles to restructure its in-store and online experience, which together helped to reinvent the brand to meet the needs of 21st century consumers.

# GOVERNMENT DATA ENABLING ECONOMIC GROWTH ACROSS ALL SECTORS

In July 2017, the [Center for Open Data Enterprise](#) and the U.S. Executive Office of the President Office of Management and Budget (OMB) co-hosted a [Roundtable on Open Data for Economic Growth](#), which brought together nearly 80 participants from the U.S. federal government, business, nonprofits, and academia. The Roundtable confirmed that many businesses depend on government data to guide business investments, develop new products and services, and foster innovation, and produced new case studies showing how they are putting this data to work. One compelling case study came from the Kellogg Company's Vice President and Global Lead of Data Acquisition and Governance, Rick Davis.



## ● How the Kellogg Company Innovates with Government Data

The Kellogg Company, an American multinational food manufacturing business, known for its famous breakfast cereals and snack brands, is a leader in its use of government data to improve operations and spur product innovation.

Many businesses follow a problem-centric approach to government data use, combining proprietary data with publicly available data to address existing organizational challenges. Other businesses like the Kellogg Company also use a discovery-centric approach, which allows their data analytics team to identify new correlations and trends by fostering intellectual curiosity. Together, these data-driven approaches help the Kellogg Company generate increased revenue, reduce costs, and better meet customer needs.

**According to Davis, there are four key steps of the process that Kellogg uses, and that any company can use, when applying government data for business decisions:**

## **1 FORMULATE THE QUESTION AND HYPOTHESIS**

For example, data scientists at the Kellogg Company used government data to explore the impacts of cold weather conditions on consumer spending behavior. The process begins by formulating a business question and a hypothesis that can be tested by data analysis. The question could be: *“Is the harsh winter affecting our consumer sales?”* The corresponding hypothesis could be: *“Lasting cold temperatures are reducing the number of shopping trips and reducing cereal consumption.”*

## **2 IDENTIFY RELEVANT DATASETS**

The next step is to identify relevant data to test the hypothesis. Businesses can look to both government data and proprietary data. For the hypothesis on winter sales, for example, the Kellogg Company combined its own retailer point-of-sale data (by zip code, by day, and by three-year history), and government weather data (by zip code).

## **3 CONDUCT ANALYTICS TO DEVELOP INSIGHTS**

Once data sources have been identified, the company can analyze them to test different hypotheses. In this case, data analysis was used to identify sales patterns and develop models to show how they correlated with weather patterns. The Kellogg Company discovered that sales drop when temperatures are below 20 degrees Fahrenheit for three consecutive days - but that they may not drop on Fridays, when the effect of payday outweighs the effect of weather.

## **4 APPLY FINDINGS TO BUSINESS STRATEGY**

Finally, the company can apply the findings to enhance its business strategy, optimize customer experience, and support product innovation. Businesses can also use this process to improve operational efficiency and effectiveness. In this example, the Kellogg Company changed their digital coupon distribution schedule to drive consumers to make purchases on Fridays, since the data analysis demonstrated that the day was relatively “weatherproof.”



# LOOKING TOWARDS THE FUTURE



As we look ahead, emerging technologies will enable businesses to further transform the power and utility of government-released open data, driving demand to make even more data freely accessible and more easily used.

The potential value and use to the public can be further advanced when federal agencies commit to better internal analysis of high value datasets. With enhanced use of open data and advanced analytics using sophisticated quantitative methods such as statistics, descriptive and predictive data mining, machine learning, simulation and optimization, government can produce insights that spark development of new products and services. The private sector, nonprofits, academic institutions, and other sectors can benefit from government-generated insights that are relevant to the complex questions and problems they are seeking to solve for today's consumers and other customers.

When it comes to the private sector, machine learning is already having an impact for businesses operating all over the world. Walmart, for example, is piloting a program that uses emerging technologies to [improve customer experience](#) inside their retail stores, detecting unhappy customers with facial recognition technology. The company is also using a combination of government data and machine learning to [optimize delivery routes](#).

In the 21st century, businesses across all sectors will continue to seek new ways to leverage the petabytes of data being collected and released by governments. The increasing availability of government data coupled with emerging technologies will help companies reinvent their existing business models and can potentially transform the ways in which companies generate revenue and interact with consumers around the world.

## PROJECT TEAMS

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## THE CENTER FOR OPEN DATA ENTERPRISE

is a nonprofit organization based in Washington, DC, whose mission is to maximize the value of open government data as a public resource, by focusing on data users. Over the past several years, the Center has worked with over a dozen federal agencies to develop best-practice recommendations to help them meet the needs of their agencies and data users. In 2016 and 2017, the Center convened interagency Roundtables co-hosted by the White House and OMB to develop recommendations for national open data guidelines. The Center has also worked with numerous governments abroad and international NGOs to utilize government data for private sector development and sustainable development.

## ABOUT ACCENTURE FEDERAL SERVICES

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