

Enable a Data-Informed Government

Modernize Your Data Architecture
Without Ripping and Replacing

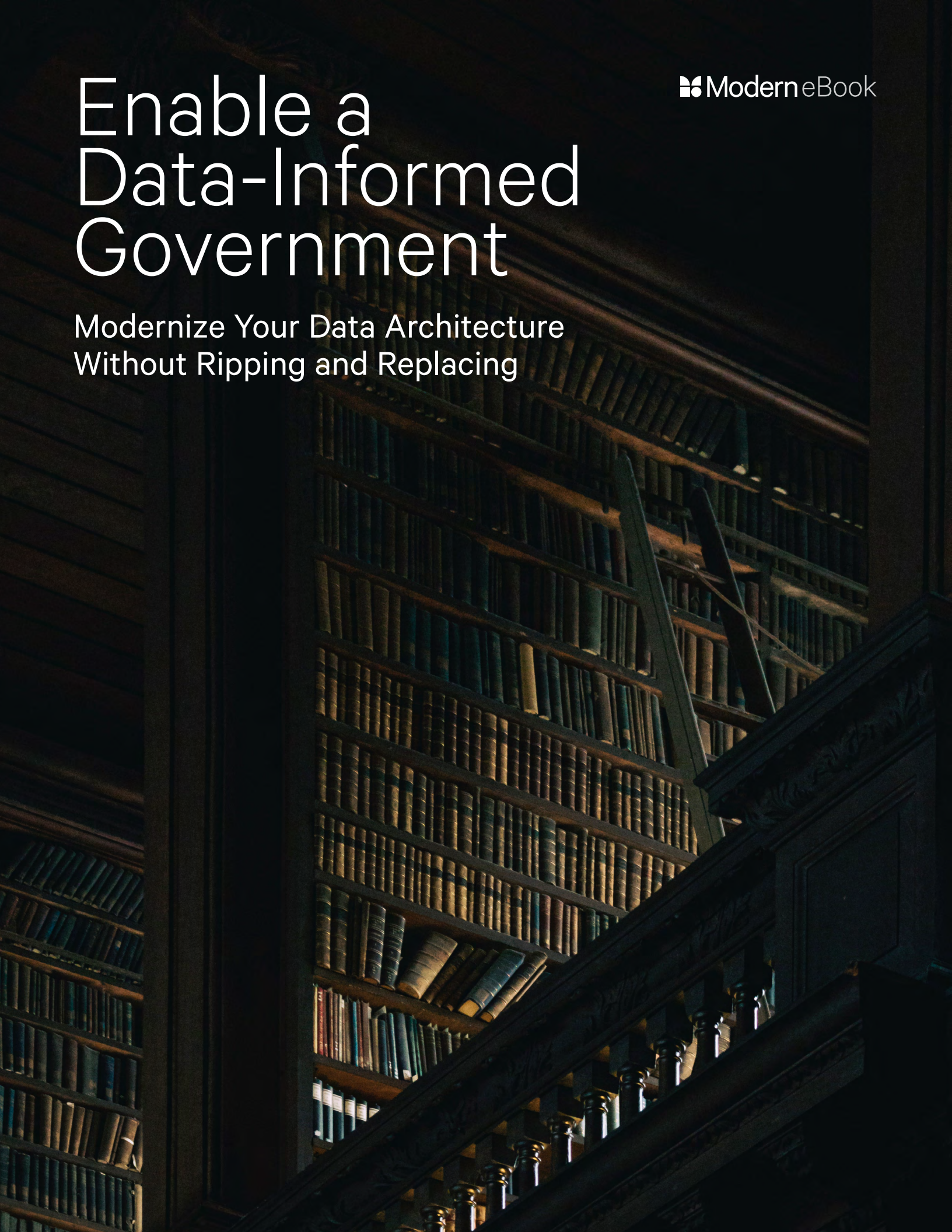


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Introduction

Government agencies have struggled with their data for decades now. It can be frustrating when, even as technology advances and new platforms and tools are deployed, an organization's users still feel that their needs aren't being met. While meeting user needs is a challenge for large government agencies with big technology budgets and resource pools, it is an even greater challenge for agencies that are smaller. They simply can't afford to overhaul their tools and architecture every few years and are stuck with a lot of legacy technology that they must make the best of.

Luckily, there is an option that is faster and more affordable, and which will enable legacy systems to operate much more like modern systems — without replacing them. This option can be game changing for government agencies of all types and sizes!

The Common (And Outdated) Assumption

Most people assume that if they want to modernize a data architecture, they must completely overhaul the current portfolio of tools and technologies and migrate to the newest, most up-to-date options. Historically, this was mostly true as different generations of technology didn't always work well together.

Government agencies often had data locked within disparate data platforms being accessed with a wide range of aging tools. In a 2019 report, the U.S. Government Accountability Office (GAO) analyzed 65 federal legacy systems and identified the 10 most critical at 10 agencies ranging from Defense to Treasury.

Among the 10 most critical legacy systems that GAO identified as in need of modernization, several use outdated languages, have unsupported hardware and software, and are operating with known security vulnerabilities. For example, the selected legacy system at the Department of Education runs on Common Business Oriented Language (COBOL)—a programming language that has a dwindling number of people available with the skills needed to support it. In addition, the Department of the Interior's system contains obsolete hardware that is not supported by the manufacturers. Regarding cybersecurity, the Department of Homeland Security's system had a large number of reported vulnerabilities, of which 168 were considered high or critical risk to the network as of September 2018.



Table 1: The 10 Most Critical Federal Legacy Systems in Need of Modernization

Agency	System name ^a	Age of system, in years	Age of oldest hardware, in years	System criticality (according to agency)	Security risk (according to agency)
Department of Defense	System 1	14	3	Moderately high	Moderate
Department of Education	System 2	46	3	High	High
Department of Health and Human Services	System 3	50	Unknown ^b	High	High
Department of Homeland Security	System 4	8 – 11 ^c	11	High	High
Department of the Interior	System 5	18	18	High	Moderately high
Department of the Treasury	System 6	51	4	High	Moderately low
Department of Transportation	System 7	35	7	High	Moderately high
Office of Personnel Management	System 8	34	14	High	Moderately low
Small Business Administration	System 9	17	10	High	Moderately high
Social Security Administration	System 10	45	5	High	Moderate

Source: GAO analysis of agency data. / [GAO-19-471](#)[GAO-19-471](#)

^a Due to sensitivity concerns, GAO substituted a numeric identifier for the system names.

^b The agency stated that the system's hardware had various refresh dates and was not able to identify the oldest hardware.

^c The agency stated that the majority of the network's hardware was purchased between 2008 and 2011.

Introduction

(continued)

While the tools and platforms worked acceptably when implemented, they inevitably became outdated. As scalability and communications standards advanced, the best way to move forward was to rip and replace everything that was in place.

Of course, ripping and replacing the entire ecosystem within an agency's data architecture can be very expensive and time consuming. It can also be a huge organizational disruption and distraction, which can make the opportunity costs substantive relative to the hard costs.

Opportunity costs are often not given the focus they deserve and are therefore underestimated or even unaccounted for. Eventually, a full update and modernization of the underlying platforms and tools will need to be done. However, why not make the best of what you've got today by making the upgrades in increments over time instead of making massive, disruptive changes all at once?



A New, Little-Known Alternative Approach

What many agencies don't yet realize is that there is another path to data optimization. Instead of replacing your outdated and increasingly incompatible tools and platforms, add an overlay of connective tissue so that they can continue working while the connective layer modernizes the governance, access protocols, and integration among those tools and platforms. This makes it easy for users to access and analyze employee, financial, or any mission-related data.

It may sound too good to be true...and it was, until recently.

Today, it is possible to bring legacy platforms up to a level of performance and integration that they can't achieve on their own. Under this new model, an agency's legacy platforms continue to operate as they usually do, but the overlay layer enables access to both the legacy platform and the results from the legacy platform so that the results can be translated to work with any other tool or platform in the stack -- whether legacy or not. And, all of this will have a modern level of governance and transparency on top. With a high level of automation, existing teams can handle all of the management of the data operating system with the time saved from the efficiencies that it provides.

Considering how new protocols for connecting computers and peripherals evolve over time and will continue to evolve, adapters are readily available to connect old protocols to new protocols. For example, consider a VGA to USB-C adapter or a Firewire to HDMI adapter. People don't buy a new computer just because their TV or monitor uses a new and different connection protocol. They also don't replace a TV or monitor because their new computer doesn't have the same connector ports. Rather, people buy an adapter that will translate between the new and old so that the computer and monitor work as seamlessly as if they were both on the latest standards. Imagine a technology that is like a comprehensive set of adapters connecting all the systems that support your agency individually and enabling them to work in concert.



Data Operating Systems to the Rescue!

A data operating system like DataOS from The Modern Data Company can do everything described previously and more. It can connect agencies' legacy platforms and tools that don't connect well, if at all, natively. It also brings a layer of governance, data lineage, and data cataloging to help create a single view and entry point to all the legacy infrastructure currently in place. This can transform the depth and breadth of what is possible for government agencies.

In addition to allowing legacy migrations to be postponed or phased over time, a data operating system also simplifies the use of agency data assets for both business and technical users alike. There is no need for users to keep track of what data sits in which repository. Users see a single, unified view of all the data available to them and then the data operating system will bring the various components together for any given analysis request. Even if distinct employee and financial repositories exist, users won't need to know or care.

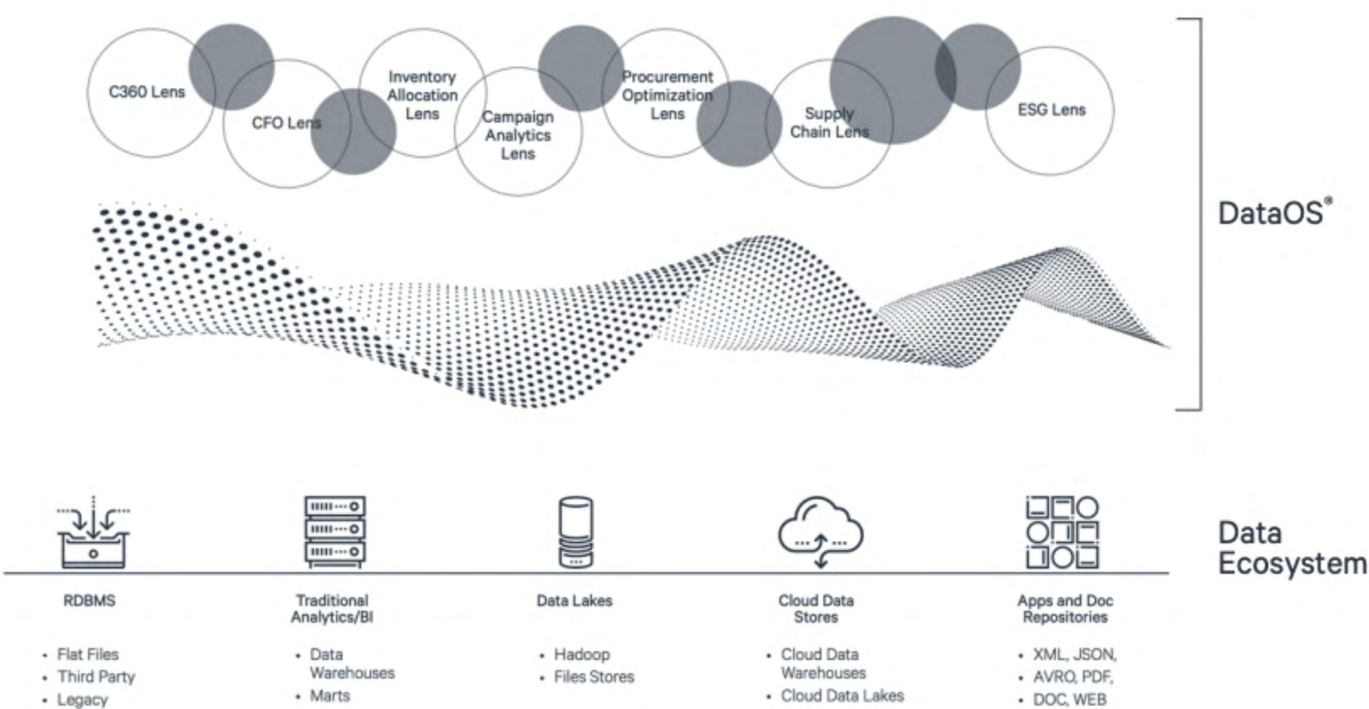
A data operating system can be implemented in just weeks and will let an agency's users quickly start getting better, more robust access to all agency data assets right where they sit today. As various underlying legacy components are replaced over time, the change will be seamless to the users since they access the connective layer and not the underlying platform. The data operating system will simply switch over from the legacy platform to the updated platform once it is ready in a way that will be transparent to users. It is a win all around.



Learn How to Make Your Current Environment Go Further

The Modern Data Company has built a data operating system, DataOS, that enables all types of users across an agency’s enterprise. With right-to-left engineering and robust integration capabilities, business and technical users alike can find the data they need and build any query or report without requiring a full rip-and-replace of legacy platforms. Once the connective layer is in place, IT can begin replacing legacy components at whatever pace makes sense. However, these replacements are no longer a prerequisite to modernize your organization’s approach for extracting value from its data.

Modernize your data architecture without ripping and replacing



To discover more about how DataOS can help you modernize your legacy infrastructure without ripping and replacing it all, schedule a demo or contact us at info@tmdc.io

[Schedule a Demo →](#)

[Contact us at \[info@tmdc.io\]\(mailto:info@tmdc.io\) →](#)



About DataOS®

DataOS is an operating system that consists of a set of primitives, services and modules that are interoperable and composable. These building blocks enable organizations to compose various data architectures and dramatically reduce integrations. Enterprises can have the same data-driven decision-making experience akin to data-first tech companies in days and weeks instead of months and years.

About The Modern Data Company

Founded in 2018, The Modern Data Company began with the realization that enterprise-wide data access has been siloed. Data engineers and database administrators have been the longstanding data gatekeepers who funneled data to analysts and data scientists. We aim to change that by freeing enterprises to make better data driven decisions by democratizing access to data. When all employees, irrespective of their technical skills or background, can easily explore and analyze enterprise data, then both productivity and market expansion are realized at a faster pace.



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