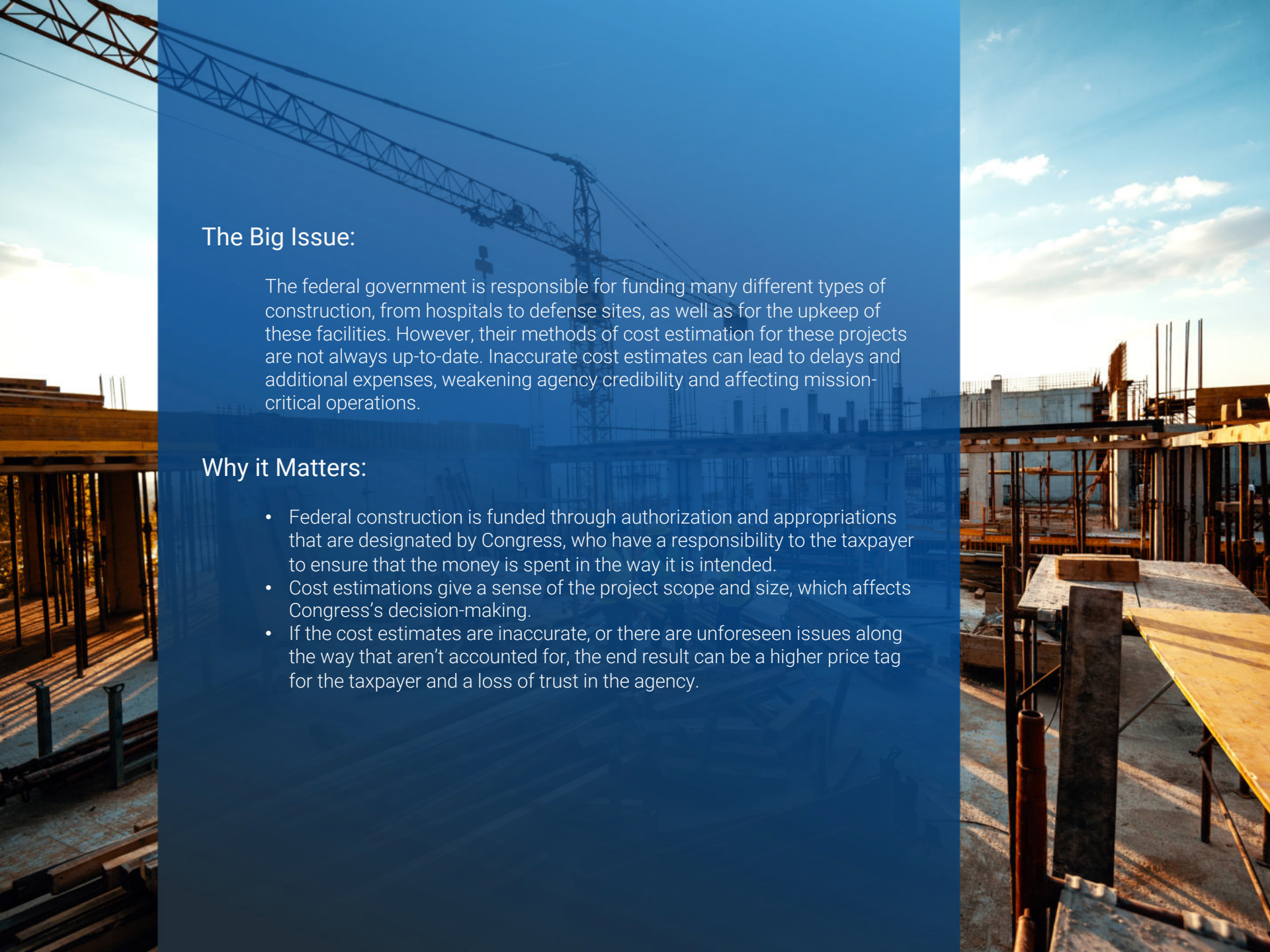
Government Business Council

Building a Better Way:

Federal Construction Cost Estimation

GORDIAN®



The Big Issue:

The federal government is responsible for funding many different types of construction, from hospitals to defense sites, as well as for the upkeep of these facilities. However, their methods of cost estimation for these projects are not always up-to-date. Inaccurate cost estimates can lead to delays and additional expenses, weakening agency credibility and affecting mission-critical operations.

Why it Matters:

- Federal construction is funded through authorization and appropriations that are designated by Congress, who have a responsibility to the taxpayer to ensure that the money is spent in the way it is intended.
- Cost estimations give a sense of the project scope and size, which affects Congress's decision-making.
- If the cost estimates are inaccurate, or there are unforeseen issues along the way that aren't accounted for, the end result can be a higher price tag for the taxpayer and a loss of trust in the agency.

COST ESTIMATING

CONSTRUCTION COST ESTIMATION, EXPLAINED

Construction estimates are key to a transparent and trustworthy project cycle.

Accurate estimations are the basis for key decisions, for establishing the metrics of project success, and for tracking the status of the project.

Cost estimates typically include costs for[1]:

Construction (labor, equipment, materials, mobilization, bonds, and profit)

Engineering

Research and acquisition of the right of ownership

Administration, contingencies, and other management costs

Sustainment, restoration, and modernization (SRM) of existing facilities.

Importance of contingencies: some costs can be more difficult to estimate than others, and in an increasingly dynamic economy they can change quickly. External third party costs (such as those in urban areas that must factor in utilities and railroads) are prone to risk and change, and construction material prices are notoriously kinetic. SRM costs, which focus on needs and upkeep of existing facilities, can also be difficult to predict. Planning for these contingencies is a key part of an accurate cost estimate.

BEST PRACTICES

KEY TO CONFIDENCE

In the federal government, data-driven cost estimations are key to maintaining public trust that major projects funded by taxpayer dollars are being carried out responsibly.

BEST PRACTICE CHARACTERISTICS

A reliable cost estimate generally relies on four tenets:

Comprehensive
Does the estimate cover all of the necessary components?

Well-documented
Has the agency shown clearly from which source each part of its estimation is based?

Accurate
Are the sources used for the cost estimation reliable and up-to-date?

Credible
Is the cost estimate reasonable, believable, and in line with industry and agency best practices?

ISSUES

1

Inaccurate/Out-of-Date Information

Reliable baselines are critical to a successful cost estimation, but when an agency relies on inaccurate or out of date information, their decisions will ultimately also be flawed.

Inflation, commodity price increase, unexpected costs and delays can all skew the accuracy of a cost estimate baseline.

Inaccurate cost estimates impact Congress's ability to make informed decisions about appropriations of taxpayer money.

Varying agency guidance in developing cost estimates also poses problems, as cost estimates using different methodologies may not be comparable.

USE CASE

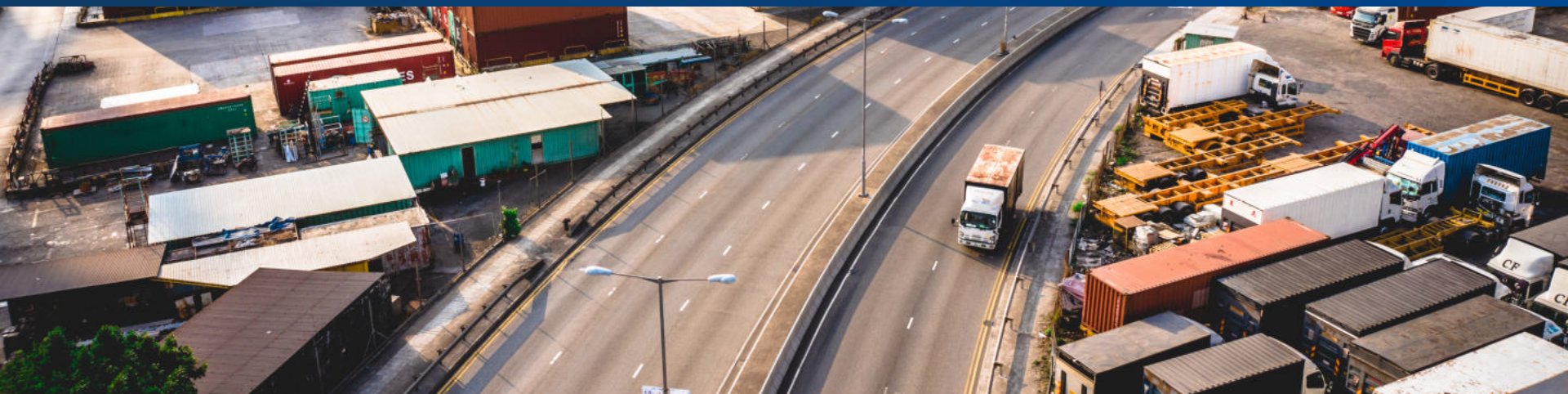
Military Construction (MILCON)

In 2018, the Government Accountability Office (GAO) conducted an evaluation of the Department of Defense's (DoD) construction cost estimation guidelines, and found that inaccurate baseline data often led to considerable changes in construction costs.

Between 2010 and 2016, the DoD reprogrammed* $1.6 billion in MILCON appropriations to cover emergency expenses not factored into initial cost estimates.

Out of three high-value projects examined by the GAO, two saw a more than 30-percent increase from the initial cost estimates submitted to Congress: construction of a trainee barracks in California, which rose from $63 million to $95 million, and a naval training facility in Florida that rose from a $20.5 million project to $28.9 million. [2]

* *"Reprogramming" : the practice of using unspent money from other projects to support endeavors that have not been appropriated money by Congress.*



SRM

Sustainment, Restoration, and Modernization (SRM)

Cost estimates are critical to sustainment, restoration, and modernization efforts as well as new construction.

SRM includes the maintenance, repair, renovations and modernizations of federal property.

Cost estimation for SRM must account for a variety of factors and eventualities that can change rapidly, including obsolescence, extraordinary damage (such as from an act of war or nature), or changing use.

The DoD is also one of the largest recipients of SRM appropriations for maintaining military property, but underfunding and changing readiness priorities have left a backlog of work orders and a “waiting-for-things-to-break” approach. As of 2018, the DoD had a total plant replacement value of more than $1 trillion, and between one-fifth and one-quarter of military facilities conditions have been rated as “poor” or “failing.”[3]

ISSUES

2

Weak reporting frameworks

Accurate reporting and development of mechanisms that allow a project to be monitored throughout each phase are crucial to transparency about how taxpayer dollars are being spent.

Poor end-of-cycle reports that do not critically evaluate the project cycle, including instances of unexpected or unplanned-for costs, mean that future cost estimations are not able to use lessons learned or established best practices from past projects.

Future cost estimates will use past calculations to inform their model. If a project is not accurately reported, it affects future capabilities.

USE CASE

GSA Rebaselining

The General Services Administration (GSA) is the "landlord" of the federal government, responsible for the maintenance and upkeep of government buildings.

The GSA does not always report to Congress when it "rebaselines" projects (rebaselining refers to changing the metrics for being on-schedule and on-budget). A report by the GAO found that the GSA had rebaselined 25 of the 36 projects that the GAO had reviewed between FY2014 and FY2018, to accommodate changes in design or tenant needs.[4]

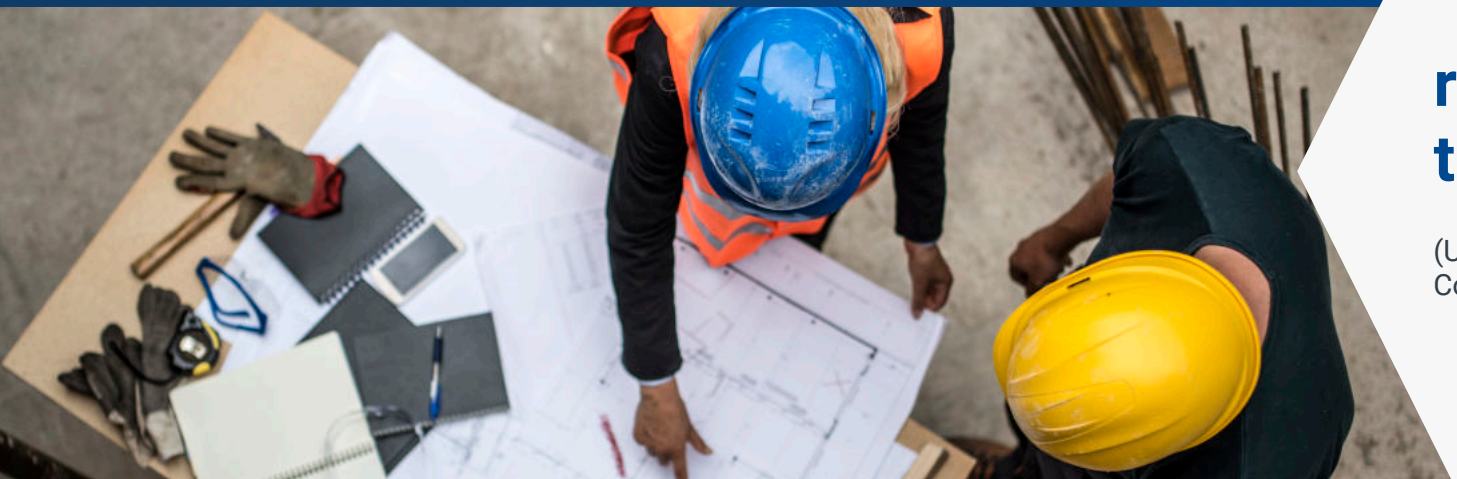
While these changes serve real needs, lack of adequate reporting structures for evaluating problems and reporting changes in cost estimations prevents accurate reporting of their success to Congress. Neither party can therefore use past guidance to inform future decisions.

USE CASE

REAL WORLD CONSEQUENCES: ***Overruns at the VA***

The Department of Veteran's Affairs (VA) is one of the largest healthcare providers in the country, using public funds to update and construct hospitals. This has not always been a smooth process. Between 2013 and 2016, construction costs on a new veteran's hospital in Denver skyrocketed to $1.68 billion, nearly double the amount that had been Congressionally appropriated[5]. The GAO found that unreliable and frequently altered cost estimations contributed to this increase, as well as unclear procurement protocols that caused confusion during the estimation phase[6].

The decline of public trust in the VA's ability to effectively estimate and manage construction projects led Congress to outsource the Denver hospital construction and several other construction projects above $100 million to the Army Corps of Engineers. These construction overruns can also lead to very real consequences for veterans, who cannot receive care at hospitals that take too long to be built.



"Failed plans result in plans that fail."

(US House of Representatives, Committee on Veterans Affairs)[7]

SOLUTIONS

1

Using Consistent Methodology

Using consistent methodology across the federal government, such as the GAO Cost Estimating and Assessment Guide[8], which compiles best practices from the federal government, industry, and the public sector to assist agencies both in producing their own cost estimations, and in defending these estimates to Congress. Some agencies have already begun this process. The Federal Emergency Management Agency (FEMA), for example, has developed a Cost Estimating Format (CEF) for large construction projects (in their case, to restore, repair, or replace facilities damaged by disaster). This CEF is an eight-part uniform methodology that streamlines the cost estimation process and is consistent with both GAO requirements and industry standards, making it clearer to report on and compare with other projects.[9]

SOLUTIONS

2

Harnessing the Power of Technology

Cost estimations and assessments have previously relied heavily on professionals and mathematical models. Now, industry advances in machine learning[10] indicate a new range of tools that government agencies can use to produce cost estimates that are more accurate and can account for a wider range of variables. In particular, cost predictive softwares and systems that can rapidly respond to changes or use predictive analytics are able to better anticipate external factors when developing a cost estimation.

SOLUTIONS

3

Increased Transparency

Lack of accurate reporting or transparency into changes in cost estimation can lead to a breakdown of public trust in the agency. Improved reporting structures, clarity about changes in a budget or schedule, and commitments to learning from best practices will all serve to maintain confidence.

DEBATE

Build or Buy?

Is it more effective and efficient for government procurers to build their own solutions, or take advantage of those offered by industry?

BUILD

Government-designed solutions and softwares are developed specifically for the issues they face -- custom fixes for custom problems. Building solutions can save time and energy by bypassing the bidding process and eliminating complications or time spent communicating with an external vendor[11].

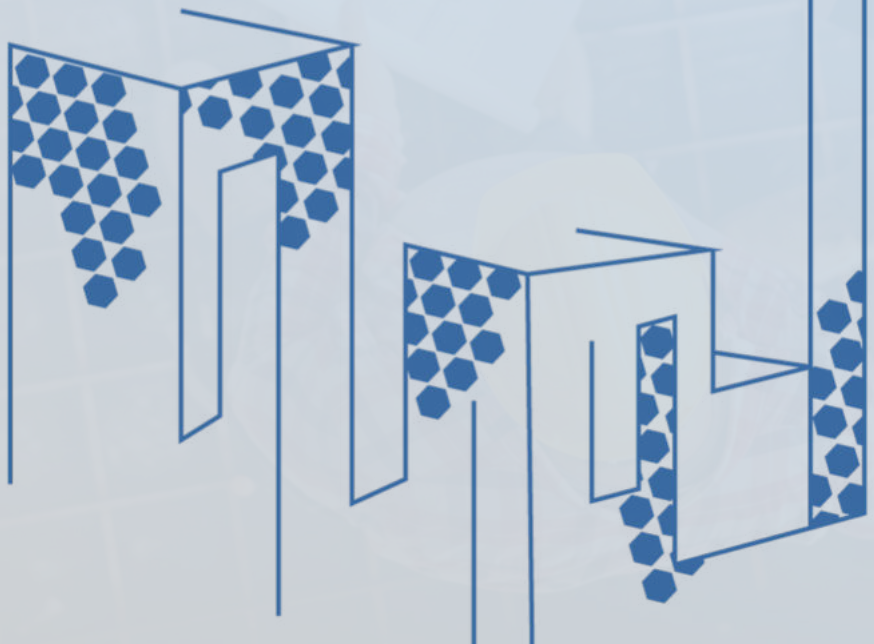
BUY

As industry continues to innovate and develop increasingly sophisticated technological solutions, buying becomes a more attractive option. Government-built softwares or systems can be costly, time-consuming, and difficult to maintain. Commercial packages offer increasingly flexible and customizable options that hybrid government-specific needs and requirements with best practices in the industry[12].

FINAL THOUGHTS

Discovering Confidence

Federal cost estimation for new construction and SRM is a complicated process that is increasingly vulnerable to rapid changes. Technological innovation and improved predictive modeling provide an opportunity for building more reliable processes that produce more accurate cost estimates, which in turn shores up confidence that the government is spending public money wisely.



INDUSTRY PERSPECTIVE

COST-ESTIMATING INNOVATION FROM GORDIAN

The increasing need for Federal government stakeholders to develop accurate project cost estimates requires leveraging the full power of industry innovation. Recent advancements in predictive cost data development, cloud technology deployment and AI-based contextual cost analysis have the potential to drive exponential improvements in Federal project estimating and budgeting.

To that end, Gordian is ushering in a renaissance in cost data by leveraged industry-leading RSMeans data to guide investments in advanced analytics, FedRAMP-secure cloud technology, artificial intelligence and machine learning. The result is a paradigm shift in cost accuracy, scope completeness, project schedules and staff training. Gordian's focus on its core mission of cost data and estimating innovation enables Federal customers to stay focused on their core agency missions.

Endnotes

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Government Business Council

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