“To modernize or not” is no longer the question. The real questions pertain to the “how” of IT modernization:

- How can agencies fund modernization initiatives?
- How can program and IT leaders collaboratively define objectives?
- How can agencies assess what needs to be done and prioritize a way forward?

With this playbook, Accenture Federal Services arms agencies with recommendations for where to start, outlines some of the most effective ways to modernize federal systems and offers tangible financial strategies for making modernization happen today: using central and self-funded Working Capital Funds, shifting from capital to operating expenses, accelerating system retirements and partnering with program leaders to achieve mutually beneficial results.

Changing Drivers While the Car is Moving

Modernization is essential to reducing costs, improving security and optimizing outcomes. Yet it has proven difficult to achieve and scale. O&M-heavy budgets required for ongoing support of inefficient operations prevent agencies from investing in modernization. And too many program owners are reluctant to fully abandon or risk disrupting their tried-and-true systems, or forfeit the dollars devoted to supporting them. At the same time, scaling modernization can take multiple fiscal years to plan, procure and implement—much longer than one-year, use-or-lose budget cycles or the average tenure of a federal CIO.

Those obstacles haven’t disappeared, but pressure to modernize the federal technology environment is growing. IT modernization is a high priority of the Trump Administration, as evidenced by its Cybersecurity Executive Order and the actions of the Office of American Innovation (OAI). The recent passage of the Modernizing Government Technology Act suggests that Congress agrees.

Intensifying the pressure is the rapidly changing macroeconomic, business and consumer environment—as well as dramatically increasing customer expectations, with 85 percent of Americans expecting the same or higher quality from government digital services as from commercial organizations.1

As the pace of mission and business operations and service delivery accelerates, more adaptive and agile systems have become essential. For example, the Pentagon recently concluded that accelerated adoption of cloud computing is “critical to maintaining our military’s technological advantage.”\(^2\) At the same time, agencies face a growing inability to support legacy environments thanks not only to retiring workers and skills shortages but also declining vendor support and lack of interoperability with new commercial technologies.

### Four Funding Strategies for IT Modernization

While most CIOs and other IT leaders have long recognized the need to modernize, they have often lacked the funding to do so. For example, tight budgets and reliance on Continuing Budget Resolutions over the past several years have made consistent IT investment decisions challenging. This makes identifying new sources of funding a priority. CIOs can use a combination of four core financial strategies to make IT modernization a reality.

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#### STRATEGY #1 – TAKE ADVANTAGE OF WORKING CAPITAL FUNDS

**Good choice for modernizing commodity systems and infrastructure**

The Modernizing Government Technology Act (MGTA) of 2017 was passed as part of the National Defense Authorization Act (NDAA) for fiscal year 2018. Signed into law by the Trump Administration on December 12, 2017, MGTA creates new funding streams that agencies can use to modernize their technology to lower the cost of government, improve mission performance and agility, capture greater efficiencies and enhance security. Among the most notable MGTA features are Working Capital Funds (WCF)—multi-year, revolving funds with two specific varieties:

- **Central WCF.** MGTA promotes the use of a centrally administered competitive IT Modernization Central Fund. Any federal agency can apply for funding that must be repaid within five years. The proposed overall funding is just under $500 million for fiscal year 2018-2019. Sunset provisions limit most funding to these time periods—creating an incentive to move quickly to secure the dollars.

  To capture these funds, agencies need to present a strong business case for IT modernization projects/initiatives that adopt agile or iterative software development, must show preference to the use of commercial cloud technology, enhance cyber security and embrace strong program management and procurement strategies. It will also be critical to embrace standardized Technology Business Management-based metrics and reporting structures (an Office of Management and Budget requirement already familiar to those managing certain aspects of agency IT budgets in fiscal year 2018).

- **Self-funded agency WCF.** MGTA also authorizes the 24 CFO-level agencies to take advantage of their own new or existing self-funded WCFs to support modernization efforts within those agencies. Due to the needed and immediate flexibility that they offer, self-funded WCFs can have significant long-term impact.

  Agencies are well advised to focus these investments initially on quick-win projects that can deliver rapid payback with meaningful impact and minimal risk. This allows limited funding to be used for several modernization cycles within the funding window. Cloud
infrastructure and software/platform-as-a-service are prime examples as they minimize upfront development. Continuing with data-center and contact-center optimization and consolidation may be wise choices for similar reasons.

STRATEGY #2 – SHIFT FROM CAPEX TO OPEX
Good choice for modernizing fully integrated or commercially focused systems

Agencies operate many legacy systems on premise using in-house or contractor resources—at significant cost for basic operations and support. While modernizing them can help reduce maintenance costs and deliver other performance advantages, the scope of these systems often necessitates significant upfront capital investments to upgrade.

By shifting some systems from capital expense to operating expense, CIOs can kill multiple birds with a single stone. Among them: minimizing immediate capital investment, reducing ongoing costs (and making them more predictable), tapping into commercial platforms, innovation and expertise, and addressing cybersecurity risks.

CIOs can run this play in a variety of ways:

- **Managed services**, where existing systems are shifted to third-party management and can therefore be modernized through operating costs without the constraints of annual budgets.

- **Shared services**, where multiple agencies team up to standardize and simplify core back-office processes (for example, finance, procurement and human capital management).

- **Software-as-a-Service (SaaS)**, which makes it possible to benefit very quickly from the latest technology—with continual enhancements and security updates—without any large, upfront costs.

This play is already top of mind for many, as evidenced by a recent Accenture Federal Services survey of 185 federal IT decision-makers.³ When asked about making this shift from capital expense to operating expense for cloud-based IT, 80 percent agreed that this switch makes it affordable to migrate systems that had been too costly to move in the past. What’s more, 80 percent also believe that funds freed up by moving to the cloud and other new technologies is or will be financing the migration from legacy systems.

As one example, a federal agency recently leveraged a managed services contract to modernize a suite of mission-critical mainframe-based legacy systems. By reducing O&M spending under the agreement, the agency could reduce long-term contracting costs while facilitating upfront investments in modernization. In addition, the multiyear agreement provided the flexibility to update the system iteratively. Taking advantage of DevOps to increase development speed and agility, the agency was able to replace more than 3 million lines of COBOL code and legacy databases with a new, cloud-ready, Java/Oracle-based application suite. Following the migration of 18 billion records, the systems were seamlessly switched on with no end-user impact.

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³ Digital Decoupling Survey, Accenture Federal Services, October 2017
STRATEGY #3 – ACCELERATE SYSTEM RETIREMENTS

Good choice for replacing agency-specific systems, applications and environments

For some systems, the most sensible path forward is to simply retire them. A thorough portfolio analysis (see GIVE ENTERPRISE SYSTEMS A CHECKUP – next section) can determine which systems are aligned with current and future business needs or are candidates for retirement. By eliminating redundant or underused systems, CIOs can demonstrate rapid progress on multiple fronts: reducing costs and vulnerabilities, increasing efficiency and freeing up resources for other modernization initiatives.

In some cases, the application itself is managed by a specific program while the support and infrastructure costs are borne by IT. Many CIOs are familiar with the frustration of having to maintain legacy technology to power outdated applications, which drive up costs and risks agency-wide. This scenario can create a disincentive to modernize where the costs and benefits are not distributed equitably. A detailed business case showing total and ongoing costs for orphan systems can provide additional motivation for programs to modernize—or serve to justify higher chargeback fees for those that elect not to.

In terms of migrating systems to the cloud, the conventional wisdom is that they should be rearchitected first to fully capitalize on native cloud capabilities. However, in some cases, a more accelerated “lift and shift” approach is preferable. Using this model, agencies can retire legacy infrastructure faster and then invest the cost savings in subsequent cloud optimization. For evidence that this approach can pay off, look to the Federal Communications Commission, where former CIO David Bray was able to slash spending while delivering better performance.

When Bray took over as CIO of FCC in 2013, he uncovered 207 systems—some dating back more than 20 years. Those systems were being maintained by nearly 400 contractors whose tenure averaged 15 years. All told, the agency was devoting 85 percent of a $64 million IT budget to legacy systems. Within four years, FCC had cut legacy spend by 35 percent through a modernization plan focused on delivering small wins, migrating to cloud computing and trimming back contracted personnel.

In terms of shifting from CapEx to OpEx, FCC replaced its aging Consumer Complaint Center with a commercial SaaS solution. The SaaS option cost just $450,000 and was deployed in only six months—a fraction of the $3.2 million and two-year timeframe quoted to build a new system internally. The agency also deployed a cloud-based Electronic Comment Filing System without requiring new money from Congress. Those initial successes prompted the agency to go “all in” on cloud with “Operation Server Lift.” Moving racks of servers to facilities run by a commercial cloud provider has led to an immediate decline in legacy spend.4

STRATEGY #4 – PARTNER TO CAPTURE & SHARE PROGRAM COST SAVINGS

Good choice for modernizing large, agency-specific systems

Investments in modernization can produce cost savings far beyond the IT budget itself. The challenge for many agencies is capturing and recognizing these benefits, especially as they can often dwarf IT savings alone.

4 http://m.nextgov.com/it-modernization/2017/03/its-possible-cut-legacy-spending-heres-fcc-did-it/136268/
With this play, the CIO engages with program leaders to build a joint business case to justify a modernization investment based on total financial impact. For example, collaboration between the CIO and program leaders can reveal significant opportunities to redesign and improve business processes, including adopting automation. The growing maturity of digital platforms makes it easier to jointly develop prototypes to demonstrate and validate these proposed performance improvements.

Ultimately, better processes and more up-to-date systems can yield reductions in cost to serve, fraud, waste & abuse, supply chain and other program costs—funds that can then be reallocated to further modernization efforts by both IT and the programs it supports. Furthermore, initial successes can make it easier to work with other programs on win/win partnerships to improve performance and reduce costs.

Four Steps to IT Modernization

With sources of funding identified, agencies can begin the actual planning for IT modernization. Historically, IT modernization efforts have focused too often on the largest or most immediate “dumpster fire” at the expense of plotting a more thoughtful path forward. While a sense of urgency is important, too much haste can lead agencies to simply replicate past mistakes in new form factors and to miss out on potential synergies.

Any IT modernization strategy that creates a clear, actionable path forward needs to address four key elements:

- **Create a baseline.** To ensure a level playing field for decision making, start with a comprehensive and unbiased understanding of the health and performance of your agency’s existing application portfolio.

- **Define a mission-driven strategy.** Base the go-forward strategy on needed and anticipated business outcomes and requirements, which will drive prioritization and funding.

- **Build the roadmap.** Consolidate disparate business cases into an integrated and actionable plan for both individual systems and broader portfolios.

- **Organize for success.** When it comes to long-term, sustainable success, how you execute is as important as what you build.
GIVE ENTERPRISE SYSTEMS A CHECK-UP

Agency CIOs usually inherit environments that are large, complex and often opaque. It can be challenging to get a handle on exactly what exists—much less which systems are modernization priorities.

Application Portfolio Management (APM) provides benchmarking and analysis of the current state. Beyond evaluating the health and performance of the existing portfolio, APM can help reveal interdependencies in systems, including “shadow IT” and other program-maintained applications. Ultimately, these insights enable CIOs to decide which systems to maintain and which to retire, replace or modernize.

An effective APM program delivers the information CIOs need to make long-term decisions, including:

- **Strategic alignment** to ascertain the fundamental role an application plays in the organization, including measurable impact, traceability to mission or business objectives and how its failure would affect operations.

- **Cost to operate** to establish both direct and indirect maintenance costs, including financial impact of retirement on other operations.

- **Functional health** to identify direct impacts on user performance, including satisfaction, constraints, functional gaps and redundancies.

- **Technical health** to determine compliance with current enterprise architecture standards, ability to consistently meet performance objectives and service-level agreements, availability of vendor or other support, and anticipated end of life.

- **Security vulnerability** to create a risk profile encompassing known security vulnerabilities and exploitable architectural patterns, adherence with current security standards, integration with existing cybersecurity networks and state of cyber hygiene.

- **Modernization and cloud readiness** to understand how performance, technical and regulatory and compliance requirements impact the viability and cost of potential remediation, replacement or migration strategies.

Leading with APM is valuable for two reasons. First, it provides the more complete understanding of current strategies, drivers, commitments and liabilities needed for more effective planning. Second, it creates talking points for subsequent costs-versus-value discussions with the business.

While some of this knowledge is nominally maintained today, the actual data is too often incomplete and outdated. What’s needed are more agile and uninterrupted approaches that can be used to dynamically answer “what if” questions and drive a continuous optimization strategy. These assessments should also consider the implications of in-flight projects to aid long-term planning.
DO YOU NEED A TARGET DIGITAL ARCHITECTURE & OPERATING MODEL?

Yes, there is urgency for every agency to modernize. But what exactly is the agency modernizing to?

Simply replacing or refreshing existing legacy systems is akin to paving cow paths. Instead, invest time and thought into what the agency’s future can and should look like. What are the mission goals that could be pursued via redesigned processes and modernized systems? What do today’s (and tomorrow’s) customers need and want? Is there an opportunity to join forces and share services with other organizations?

Consider not just modernizing applications but digitizing the agency. Start by creating a detailed definition of the future state—including technology architecture, operating model and performance objectives. That vision will help ensure that an agency doesn’t waste precious dollars or time modernizing a soon-to-be-obsolete system. Rather, it prioritizes modernization efforts that will support longer-term, strategic and business outcome goals while still addressing more immediate cost, risk and compliance concerns.

LEAD WITH MISSION REQUIREMENTS

Enterprise IT systems and applications do not operate in a vacuum. In fact, they are closely tied to the business operations, services and processes they support, and they move in concert with each other. Consequently, a proposed modernization strategy must earn the full backing of the business—and that requires the CIO to ensure that anticipated mission or business benefits justify the mission or business investment.

In terms of senior decision-makers, aim to engage them early to understand overall agency objectives and priorities. Seize the opportunity to educate them on the strategic goals of the modernization program—typically improved agility, more actionable insight and lower total cost of ownership—as well as near-term cost-saving opportunities. Review and get their input on known hot topics and potential quick wins (see MODERNIZATION: HOT LIST). Also discuss how emerging technologies like the cloud, artificial intelligence (AI) and the Internet of Things (IoT) can deliver transformative performance improvements.

MODERNIZATION: HOT LIST

Looking for quick-win candidates that can indeed be “quick”? Look for modernization opportunities driven by one or more of the following:

- Need identified by key decision maker or executive
- Addresses a common government problem with potential to jointly pursue (citizen engagement, case management or use authorization)
- GAO or IG finding, or Congressional concern
- Known technical performance issue
- FISMA issue
- High-impact, measurable business process improvement opportunity
- Multiple data redundancy/re-keying issues or high administrative burden issue
- Systems with sensitive data and potential security concerns
- Large frustrated user community
Why are clear business objectives so critical? Quite simply, without them many projects fail to deliver anticipated benefits. Use your APM data to engage program executives in collaborative discussions about current constraints and future objectives. Strive to create a joint strategy for simultaneously modernizing business processes and systems. All the while, keep the focus on simplification, consolidation and standardization where possible. As part of this exercise, introduce business stakeholders to approaches like human-centered design (HCD) or service design as frameworks for integrating user requirements consistently across the end-to-end customer journey.

For each proposed project, clearly define performance objectives and create a business case justifying required investments based on realizing these anticipated outcomes. Don’t limit yourself to financial metrics—but do ensure that you establish tests and measures for assessing success. If you find that your objective is not measurable, consider other ways to determine whether you are hitting your targets. These metrics can also serve as mileposts for iterative development with project sequencing driven by anticipated impact.

CONSIDER ALL OF THE OPTIONS

With stakeholder input and buy-in for both individual requirements and overall priorities, CIOs can transform application gap analysis into actionable modernization roadmaps. For specific systems, modernization can take many shapes financially and technically. Key factors to consider include the uniqueness of the function performed (in other words, is there a commercial equivalent?), as well as long-term strategic and operational plans. Among the most common options:

- **Rearchitecting/Remediating/Refactoring** – reengineering legacy systems to deliver more modern performance and interoperability; these efforts can be narrowly scoped or designed to fully replace all legacy code and dependencies. More agile approaches driven by automation are making this strategy faster to implement and more cost-effective than was previously possible.

- **Replatforming** – “lifting and shifting” systems from high-cost hardware to more cloud-ready platforms using commoditized technology.

- **Replacing** – deploying an entirely new COTS, SaaS or custom application to replace a legacy system; digital platforms (PaaS) can provide a compelling hybrid solution addressing agency-specific requirements as a service.

- **Retiring** – decommissioning an application that has become redundant, has lost its user base or has become so outdated that it no longer has value to the agency.

In the case of monolithic legacy systems, a hybrid strategy to digital decoupling is often required. Critical capabilities can be layered in near term while working to unlock core business data, logic and rules for use in new applications. For risk mitigation, application discovery can identify and map current “black box” functionality so it can be more readily exploited and exported.

In deciding which specific systems to modernize and when, consider both potential impact or benefits, such as cost savings, improved performance and better cyber hygiene, against the project’s complexity, which drives cost, time requirements and risk. A potential danger is focusing on retirement alone because it will drive agencies to primarily target smaller systems that are neither strategic to the mission nor likely to generate significant cost savings.

Instead, pursue a two-track strategy with an overriding focus on advancing the mission with more agile, transformative capabilities while lowering long-term sustainment and operational
costs. As a secondary focus, charter a dedicated team to pursue quick-win opportunities that deliver rapid return on investment (ROI) by rationalizing and retiring redundant systems. This two-track approach makes it possible to pursue and provision each objective appropriately—ensuring that tactical cost savings don’t come at the expense of more strategic objectives.

As one option, agencies can prioritize based on potential impact and time to payback (see figure below).

**MODERNIZATION PRIORITIZATION MATRIX**

<table>
<thead>
<tr>
<th>TACTICAL IMPACT</th>
<th>STRATEGIC IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>QUARTER</td>
<td>MULTI-YEAR</td>
</tr>
<tr>
<td>COMPLEXITY/SPEED</td>
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- These projects should be top priorities. Beyond their direct impact, they can help create momentum for the overall program.
- Replacing legacy systems with COTS, SaaS/PaaS or Shared Services is a frequent focus.

- These are often large, complex business process reengineering projects of strategic importance and large potential payoff; however, they also require significant commitment and expertise due to their risk.

- Rapid ROI can make this a compelling target for time-boxed Working Capital Funds.
- Good opportunity to test modernization strategies & processes.

- Low priority projects to avoid where possible.
- Infrastructure modernization may fall here due to the modest differentiation it delivers; cloud migration may be a better strategy.

For security vulnerabilities, distinguish between systemic challenges that can only be mitigated by active modernization and more immediate needs that can be remediated with better cyber hygiene. For vulnerabilities requiring modernization, the impact is often strategic.

**ORGANIZE FOR SUCCESS**

The best-laid plans mean little without great execution. Creating dedicated teams and centers of excellence for core aspects of IT modernization can scale and industrialize efforts and take advantage of economies of scale. For example, digital service centers can bring together scarce talent to create reusable, citizen-centric apps that can accelerate end-to-end digital transformation using common platforms.

IT modernization projects have a justified reputation for risk and failure. The truth is that legacy systems entail many unknowns that can be answered only through active discovery. As a result, adoption of agile and other iterative approaches is critical to managing risk—especially as organizations look to migrate static implementations to very dynamic cloud environments.
While the need for agile-based approaches like DevSecOps is clear, it is also important to recognize that project pace isn’t one size fits all. Rather, systems of record (ERP), engagement (CRM or SCM) and innovation have differing requirements—user expectations, as well as adaptability of related processes, workforces and ecosystems—that are most effectively undertaken at different speeds.

Finally, strong governance with active participation of business stakeholders is critical to keeping programs moving forward and aligned with mission objectives. Working collaboratively to define success metrics and proactively reporting on them builds trust and engagement with key stakeholders.

The Time is Now

There is no dispute that federal agencies need to modernize the core systems powering their operations with greater urgency. Rather, the real question is how they do so in a thoughtful, deliberate, user-centric way—positioning them for continued success with digital platforms and operating modes that are more agile, secure, intelligent and cost-effective to operate.

The additional funding available under MGTA creates the impetus to move forward today and make this a reality. However, agencies should not limit themselves to WCFs but also explore multiple avenues that can support end-to-end transformation.
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