The 2020 Guide to Legacy System Innovation

software AG
GOVERNMENT SOLUTIONS

Legacy Systems Meet the 21st Century

Legacy systems running on mainframe computers are at the heart of our economy – and our society. They are an essential part of our tax systems, our social services, and our public safety. They also run the stock market, our financial institutions, ATMs, transportation systems and utility grids. In fact, we use them all the time and likely don't even know it.

For state and local governments, these legacy systems are a mixed blessing. On the one hand, they have provided extraordinary reliability. They've proved themselves with successful track records of 20, 30, or even 40 years. On the other hand, they are rigid, and some would even say fragile, closed and expensive to maintain. Making changes to a legacy system is costly, risky, and prone to failure. Also, legacy systems are by nature siloed systems that keep their data locked inside where it's safe, but inaccessible. As one senior public sector IT executive put it, "I feel like my data is in jail."

For decades, agencies have been looking for freedom from legacy systems—a way off of their existing systems. Software AG offers a better, stronger alternative: the Freedom for Legacy solution. It promises freedom for legacy data, freedom for the underlying business logic, freedom for user workflows and freedom for IT organizations to innovate without risk, without expensive rip-and-replace strategies, and without modifying valuable legacy code.

The result is freedom for IT organizations to collaborate with business users to build new approaches, which will enable agencies to quite literally change people's lives.

The Legacy Challenge

IT organizations in state and local government in the 21st century face multiple challenges related to the legacy technology central to their mission. These include day-to-day operations, staffing, responding to pressure for innovation from elected officials, application users and citizens themselves, and complying with ever-changing government regulations.
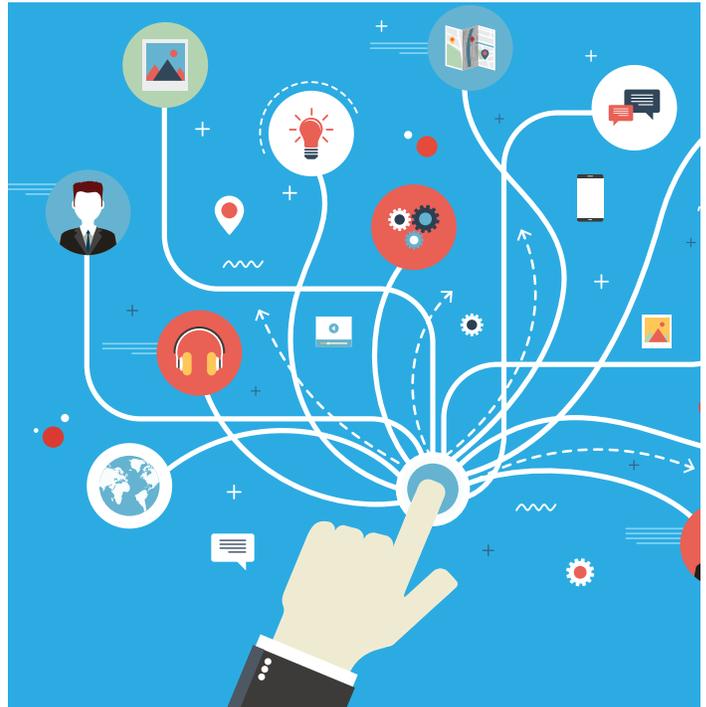
"Keeping the lights on" is always at the top of the list. Smoothly functioning IT is absolutely crucial to running government agencies. If, for example, the system related to Supplemental Nutrition Assistance Program (SNAP) is down, families may literally end up hungry, with less food on the table.

Users of legacy systems are moving toward retirement, and employees entering the workforce today expect the same type of intuitive computer interfaces they're accustomed to everywhere else in their lives. They are typically frustrated by green screens that can't be mastered without significant training, and this makes both new hire training and employee retention a problem.

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In addition to local demands for change, IT must comply with a plethora of federal regulations that are constantly being revised and amended. Compliance is extremely important because funding often depends on it.

Another impetus for change comes from the citizens who use the vast range of services that governments provide. They expect convenient web and mobile access to these services. They also expect the city and state employees they deal with to be able to solve their problems quickly, and that means those employees need up-to-date and easy-to-use IT systems.

Advances in technology are yet another driver of change. Governments at all levels need to keep up with new developments, not only to provide the best level of service possible, but to interact efficiently with private sector systems and modern consumer technology. They also need to strengthen security and safeguard the data available for users via web and mobile access.

Beyond these important concerns related to day-to-day operations, there is constant pressure for change in the public sector. Much of this pressure comes from elected officials and their political appointees. Politicians often run on platforms that promise change. Once in office, they want to deliver on these promises, and the burden of implementing change in today's world often falls on the IT organization.

The Keys to Freedom

The demand for change and innovation often puts political appointees and senior managers at odds with the IT organization because the two available paths to change both carry significant risks. The first approach, modifying legacy code, can create serious problems that can't be predicted in advance. The second approach, rip-and-replace, is complicated, risky and historically fails to accomplish the changes that were expected. Both of these approaches are expensive as well.

One state's efforts to upgrade its legacy child support enforcement system to a decentralized, server-based approach is an example of just how risky rip-and-replace projects can be. After investing roughly a decade and hundreds of millions of dollars in the project, the state has no results, and its legislature is contemplating cutting off all further funds. Fortunately for the children involved, the incumbent mainframe-based system continues to function properly.

What IT needs is a risk-free path to modernization that can leverage the data, business logic and user workflows residing in legacy systems, while also providing modern interfaces and integration capabilities that allow organizations to streamline processes and deliver simpler access to services for the community.

The Freedom for Legacy solution equips IT teams with the tools they need to achieve their agency's modernization goals while avoiding the cost and risks of a rip-and-replace approach. In simple, high-level terms, it allows developers to unite the old with the new to better serve the citizens of the 21st century. In terms of execution, it gives developers simple ways to access the data and business logic of legacy systems while also improving the user experience.

The Data Key

The reason legacy data is sometimes viewed as being "in jail," (i.e., unavailable for purposes beyond the legacy

system itself) is because legacy systems don't easily share data or services. For example, mainframe data files often don't allow access via SQL, the most important language associated with data operations for the past several decades.

Freedom for Legacy enables SQL access to legacy data in real time. In addition, it lets developers join data from multiple sources. This means that data can be delivered to modern desktop applications ranging from Excel® to sophisticated analytics packages. Legacy data can also participate in event streams and big data initiatives, join data lakes and data hubs, and be part of cloud services and artificial intelligence efforts. Governments are becoming more sophisticated in the use of reporting and analytics to improve citizen services. Access to legacy data makes those analytics that much stronger.

Users can get instant, convenient access to the data they need to do their job from what appears to the user to be a single source, with no need to log into half a dozen different systems.

Modern web, mobile and cloud-based applications making use of these capabilities can also lead to a much improved experience for citizens. Today, citizens must

in many cases make a telephone call and speak to an employee who knows how to navigate green screens in order to deal with anything from their property taxes to a parking ticket. Real-time access to legacy data allows the information citizens need to be packaged in a familiar, web-based interface and made available on a self-service basis, not only during the work day, but on evenings and weekends as well. In addition to increasing citizens' convenience, this approach can free up employees to perform other tasks.

The same solution that allows users to easily access legacy data works in the opposite direction as well; that is to say, it simplifies the process of entering data into a legacy system. State and local governments all have employees who work in the field and collect information that must ultimately be stored in a legacy system by someone who can navigate green screens. Freedom for Legacy lets agencies build web-based systems that enable direct entry into a mainframe, a process that is less costly and inherently more accurate.

Freedom for Legacy also enables data to be shared through data integration, migration and replication. Imagine the valuable services government could deliver if it could share data across agencies and take a holistic view of the citizen with insights into housing, education, health, human services, etc. This possibility now exists, and it has tremendous potential for the future of government services.

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The Business Logic Key

The business logic in legacy systems has typically been developed over many years in order to meet the needs of a specific agency. All too often, modernization means abandoning that business logic and starting from scratch. In contrast, Freedom for Legacy allows developers to call procedures from a mainframe. Through API enablement, these procedures can be encapsulated and seamlessly integrated into a web-based application – or any application, for that matter – eliminating the need to re-invent the wheel. When necessary, Freedom for Legacy can allow integration with REST API, Java and .NET services.

The ability to call proven procedures from legacy applications enables developers to use those procedures as building blocks for new applications that can automate processes to improve agency efficiency, or even give citizens new ways to connect with their government with web-based applications.

The User Experience Key

The user interface is where constituents, employees and partners experience your legacy application.

Do they say "Give me freedom from this outdated user interface! I can't recruit users to work with it; training people takes forever."

Freedom for Legacy eliminates the need for terminal emulation and easily transforms green screens into modern, user-friendly web-based interfaces that can often integrate multiple legacy functions. It's also possible to add new data sources and modernize the user experience with new workflows and design innovations.

This gives developers the freedom to imagine new approaches that better serve the public and lays the foundation for a culture of innovation improving the user experience, boosting productivity, accelerating end-user training and increasings customer satisfaction.

A New Approach to Modernization

To move forward, the senior managers who want change and the IT professionals charged with making it happen need to be on the same page, and this means dialog. The figurative "wall" that exists between IT and the application business users needs to come down. The Freedom for Legacy solution makes this possible because it eliminates the risk factors associated with change.

Instead of arguing over feasibility, leaders have the freedom to ask bold questions:

- What if there was one single point of contact for all social services requests?

- What if the exchange of information between agencies was automated to eliminate endless back-and-forth e-mail requests?

- What if case workers could find all the records needed to determine a person's eligibility for benefits in one place?

- What if home owners could go online to get all the information they need about everything from property taxes to parking permits?

The Freedom for Legacy solution provides all the tools necessary to leverage legacy data, business logic and user workflows to address questions like these, but IT organizations need more than tools; they need a strategy for putting those tools to work. They need a strategy that allows for innovation yet is agile and sustainable.

Take an agile development approach

When it comes to IT innovation on a project-by-project basis, the agile development approach continues to gain momentum. Its program of two-week "sprints," multiple iterations and close back-and-forth between developers
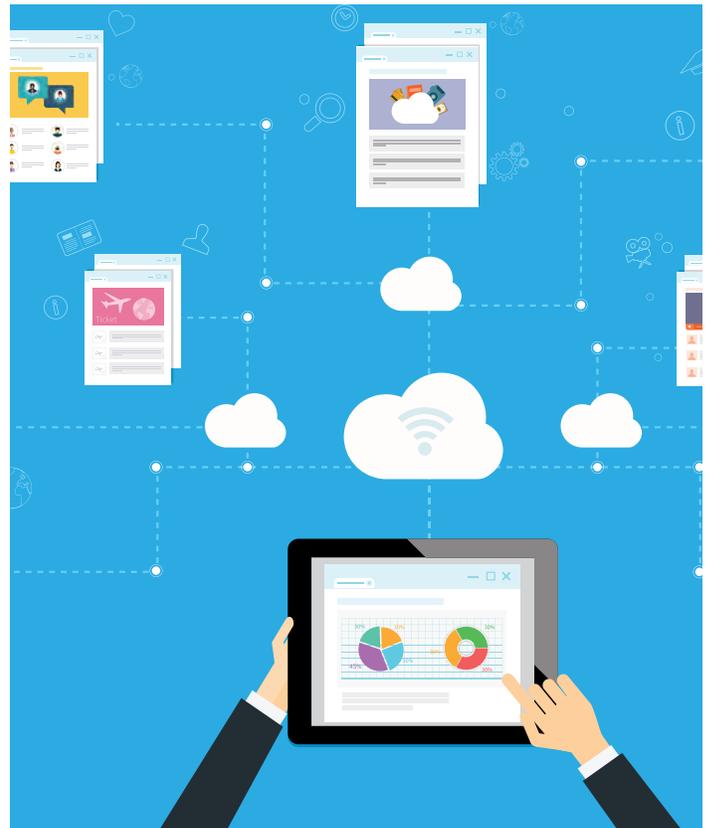
and internal clients has proven itself, and in fact has become, the new norm. In a recent survey of more than 600 software developers, 67 percent were either using pure agile methodology or leaning toward it, in contrast to 9 percent in the waterfall camp. (Twenty-four percent used a hybrid development model.)

In the public sector, however, the ultra-high-speed Silicon Valley approach to innovation, with slogans like "Fail quickly!" and "Break things!" is neither welcome nor appropriate. These slogans need modifications.

Instead of two-week sprints, government agencies should consider eight week pulses, with a quarterly horizon for goal-setting. This pace allows for more careful coding and a more thorough proof-of-concept process – one that's appropriate to organizations that aren't racing

competitors to launch the newest smartphone app or online game, but rather are committed to maintaining reliable services with gradual improvement.

With the Freedom for Legacy approach, Software AG breaks down the modernization challenge into smaller steps that show value and progress on a regular basis. Application Business users should also participate in the modernization process. These users are vital to helping organizations identify at least some of the data sets and business logic that will be required in multiple contexts, and these can be targets for systematic modernization. One best practice is to build a library of APIs and leverage these resources over time. In this way, organizations can further build the foundation for sustainable innovation.

Innovate for the future

Change is a constant process, and IT should be able to look out 10 to 15 years with a plan for managing that change — a plan that takes the organization from "This is where we are" to "This is where we want to be." Obviously, no organization can predict the precise demands that will be placed on it 10 years into the future, but there are several fundamental trends that IT cannot afford to ignore, such as cloud opportunities, the rise of the mobile culture (80 percent of households below the poverty line have cell phones), or IoT for the monitoring and management of traffic and utilities in the "smart cities" model.

How will fundamental legacy-based processes that are unlikely to change, like the issuing of drivers' licenses, interact with new processes, like those related to smart

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parking meters? This is one of hundreds of scenarios that IT needs to think about on an agency-by-agency basis.

Fortunately, Software AG has been a bold innovator for 50 years. The company is at the forefront of delivering new integration technologies for legacy, such as ApplinX, ConnX and EntireX, that spark business transformation and enable rapid innovation so you can pioneer differentiating business models. As a reliable partner who provides predictable results with security always a top priority, Software AG has earned strong customer confidence — especially from government agencies.

With the wisdom gained working with hundreds of global industry leaders and governments, small and large, Software AG understands the challenges of making your valuable legacy systems work with innovative new technologies.

Freedom for the Future
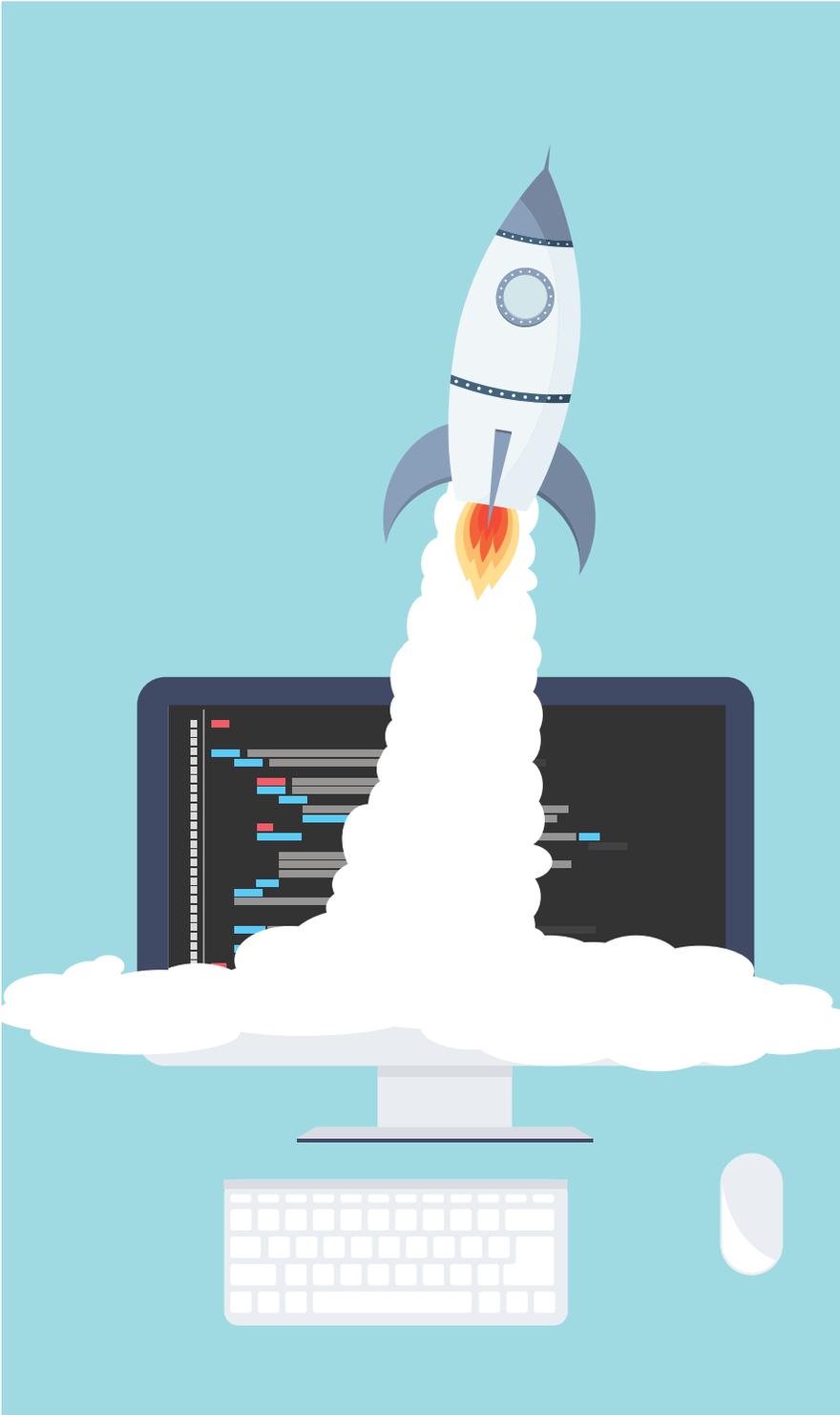
Citizen demands, political pressures, technology advances and the shrinking labor pool for legacy systems have made modernization a priority for state and local governments.

The Freedom for Legacy solution gives IT organizations a method for achieving that modernization by opening their legacy data, business logic and user workflows instead of starting from scratch. It promotes collaboration with the agencies' business users to ensure that the new services delivered fulfill the agency mission and support its citizens.

Freedom for Legacy is the fastest and most cost-effective solution available. Results can be achieved in hours or days and it's offered as a service, so that IT organizations can choose to pay only for what they actually use.

With Freedom for Legacy, the daily needs of citizens can be met with superior services while the systems of record and reliability of legacy systems remain a stable foundation. It also means freedom for developers and agencies to imagine innovations that wouldn't be possible in a pure legacy environment. Ultimately, Freedom for Legacy will change the lives of our citizens—giving us better protections and the freedom to do more, be more and live more fulfilling lives.

For information on taking the next step, visit https://www.softwareaggov.com.