A NEW APPROACH TO DIGITAL TRANSFORMATION

Packaged business capabilities let agencies modernize quickly and incrementally.

To keep pace with citizen demand for new services — and to address unexpected disruptions like the COVID-19 pandemic — state and local governments need to become more agile and resilient. But that can be a tall order for the many agencies that still run legacy applications and rely on manual, paper-based workflow processes.

Implementing new digital services can be the answer, but the high cost of modernization projects and disruptions caused by these upgrades mean wholesale rip-and-replace transformation may not be feasible or even desirable for the public sector. Financial considerations are more important than ever in the aftermath of COVID-19, which has strained state and local budgets. Government officials must balance the need for new services with severe funding restraints.

As a result, upgrading to new commercial software applications, such as enterprise resource planning (ERP) suites, may be financially prohibitive because of high upfront costs. In addition, pre-built applications rarely suit the unique needs of individual agencies and government programs. That means organizations often incur additional expenses to customize applications to their specific requirements.

But now government agencies have an alternative, one that enables their teams to incrementally roll out modern digital services at a pace that balances citizen needs with budget realities. Known as packaged business capabilities, or PBCs, these lightweight application building blocks can be created by government IT departments or third-party partners to address specific business functions. Once built, individual PBCs can be deployed independently, integrated with current systems to enhance or replace existing functionality, or be combined with other PBCs to create completely new applications or application suites.

Because PBCs are smaller units of functionality, they address the budget realities of the COVID-19 era. Agencies can modernize specific components of larger systems without the financial burdens and disruptions caused by large-scale upgrade efforts. Government organizations in Wisconsin and other areas are already taking advantage of PBCs in case management systems and other resources.

This report explains the benefits of PBCs, and it shows how agencies can tap into this low-risk, minimally disruptive IT modernization option. The report also identifies what building blocks are necessary to support this approach.

INSIDE PBCS AND COMPOSABLE APPLICATIONS

PBCs focus on the needs of a particular government function, like onboarding a new enrollee for public assistance or gathering performance data to meet reporting requirements for a federally funded program. A PBC contains all the necessary components to perform a service, including the data, the application programming interfaces (APIs) and event channels, the user interface (if required) and perhaps an associated mobile application.

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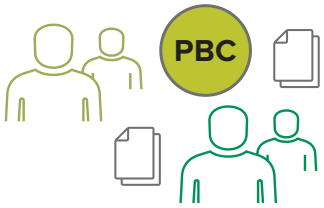
Portability and interoperability are hallmarks of PBCs. They can be plug-ins for large enterprise systems. They also can be small, purpose-built programs designed to address a targeted business need. In addition, multiple PBCs can be combined to create composable applications that let government agencies offer new end-to-end services without making a huge investment in a new system.

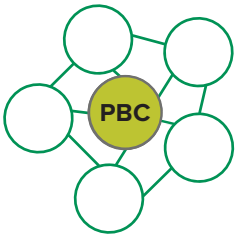
Highly tailored PBCs and their mix-and-match reusability for composable apps can help agencies reduce development time and costs for modernization projects. And they enable government organizations to respond to citizen needs faster. PBCs can also be valuable for meeting federal initiatives, such as the Center for Medicare and Medicaid Services' Medicaid Information Technology Architecture, which is designed to promote greater integration of business and information technology.

PBC MODERNIZATION APPROACHES



Standalone Implementation

A PBC replaces manual or paper-based processes, in part or fully



Legacy Modernization

A PBC replaces and upgrades functionality within a larger legacy system

System Enhancement

A PBC extends the functionality of an existing system

"With the modular approach of PBCs, you don't have to tear down the whole house to do a major home improvement," says Michael Cerniglia, senior vice president of platform technology at Tyler Technologies. "You can remodel your kitchen — install new cabinets and appliances — without having to stop cooking. And then when you're ready, move on to the next room."

This incremental approach represents a clear contrast to traditional software modernization practices where legacy applications are completely rebuilt or replaced when new capabilities are needed.

The concepts of microservices and composability have been around for a while, but the approach is gaining momentum with the rise of public cloud offerings and the variety of robust services they offer. Using PBCs to create applications that are hosted in the cloud gives government agencies a rapid and low-cost approach for modernizing important services and systems. That helps explain why organizations across all industries are embracing the idea of giving their team members the building blocks to create the applications they need. The technology research firm Gartner forecasts that 40 percent of working professionals will orchestrate their business application experiences by 2023. Business units or IT departments will make capabilities available so employees can create their own "playlist."

HOW WISCONSIN BENEFITS FROM PBCS

Although PBCs are relatively small application building blocks that can be developed quickly, they are having a big impact on state and local governments. Wisconsin's Department of Health Services (DHS) uses PBCs in a variety of programs, and citizens and state employees are seeing the benefits.

Legacy Modernization

For example, a PBC solution supports data analysis and reporting for DHS administrators who oversee IRIS (an acronym for Include, Respect, I Self-Direct), a sprawling Medicaid home- and community-based services 1915(c) waiver program. Wisconsin's Department of Health Services provides approximately $500 million to enable eligible adults to choose what long-term services they receive in their homes and communities to meet their needs. IRIS assists nearly 22,000 Wisconsin residents who are elderly or have functional and developmental disabilities.

The PBC is part of the Wisconsin Self-Directed IT System (WISITS), which streamlines eligibility reviews and participant enrollment activities. Prior to WISITS, acceptance into IRIS took as long as six months because consultants who work with applicants had to gather and submit data needed for accurate baseline assessments of the prospective client's needs.

"There's a lot of onboarding and background checks that happen to validate that the providers are trustworthy and meet all the compliance requirements," says Jordan Humpal, section manager of enterprise architecture and integration support for DHS.

Wisconsin DHS is creating PBCs using Tyler Technologies' Entellitrak, a web-based platform that offers a modular, interoperable architecture for modernizing legacy applications in state and local government.

The PBC was created using Tyler Technologies' Entellitrak, a web-based platform that offers a modular, interoperable architecture for modernizing legacy applications in state and local government. Wisconsin DHS uses the platform to streamline existing workflows, including the IRIS onboarding process. IRIS clients are now seeing their services and reimbursements arriving within two or three months, Humpal says.

The PBC approach also benefits the department's technical staff. The web-based modernization platform lets IT staff tailor and update backend capabilities quickly when changes are needed. In addition, it helps ensure the IRIS program's integrity by providing advanced reporting and detailed audit capabilities.

"We can make sure that when participants submit claims and receive services, they're doing so legally and not abusing their funds and budgets," Humpal explains. "We're able to track all their activity, including the events they were performing and what records within the system they've accessed. There aren't many cases where someone has tried to maliciously access the system, but if someone does, we can react swiftly because we have the records right there."

IRIS is just one of many long-term care programs being administered by Wisconsin DHS. These programs are run by multiple organizations within the department using separate case management systems, making it hard to gather comprehensive data.

"There are a lot of other bureaus and sections that depend on having up-to-date information to prevent fraud, waste and abuse," Humpal says.

Using the PBC platform, the IT department can meet the data gathering and advanced reporting requirements of these bureaus "without having to develop a complex, backend solution for exchanging data among multiple state systems and internal or external parties," he says.

"Now, if someone says, 'Can you get me this information I need?' we can say, 'Absolutely, just give us 30 minutes,'" Humpal explains. "We've been able to really streamline data exchanges and reports that other bureaus and divisions need."

HELPING FAMILIES

Wisconsin DHS also used PBCs to improve the eligibility process for another program that enables children with long-term disabilities or complex medical needs to receive medical care at home instead of an outside facility. The program, known as Katie Beckett Medicaid, helps families that otherwise wouldn't qualify for public healthcare assistance. In Wisconsin, it supports more than 8,000 children with special needs.

Standalone Implementation

Wisconsin DHS used Tyler's Entellitrak platform to streamline the program's eligibility process in early 2020. The state previously used a manual, paper-based process that collected and distributed client eligibility information "through snail mail and carrier pigeon," quips Deborah Rathermel, director of Wisconsin's Bureau of Children's Services.

REDUCING FINANCIAL REPORTING RISKS

Wisconsin isn't the only state that's taking advantage of PBCs and composable applications. One Rocky Mountain state's Department of Public Health and Human Services will use this approach to meet federal financial reporting requirements associated with Medicaid programs.

Previously, program administrators managed reporting processes using complex calculations in a spreadsheet application. Because the process was manual and labor intensive, the risk of human error was high. Now the state is working with a software vendor to create a PBC which will standardize and automate reporting activities and provide auditability to reduce the chance for errors.

System Enhancement

The PBC's development is part of a larger effort that began when the state issued an RFP for a population health analytics platform. State officials sought deeper insights to improve healthcare programs. To do that, they wanted a system that could combine state Medicaid eligibility and claims data with clinical information and data about the social determinants that influence citizen health.

The software vendor Cerner initially addressed these needs with an enterprise data warehouse and a big data application for population and health management. Then, the state made an additional request — it asked the company to include a federal reporting module within the overall solution. To do that, Cerner is creating a PBC using Tyler's Entellitrak modular development architecture.

One of the capabilities state officials want from the PBC is the ability to update and edit data. Because of the state's complex rules and unique workflow, legacy systems are not able to make multiple, real-time adjustments to data. So staff members import data into a spreadsheet where they can make updates and changes.

"Among the risks of using spreadsheets is that someone could make a change to the data, and no one else would know who did it or what type of change was made," says Jake Engle, a Cerner director. "Moving to the Entellitrak solution helps impart additional rigor by enabling tighter permissions around who can make changes."

The PBC is due to be completed by mid-2021, and it will be deployed without requiring an overhaul of the state's core software platforms.

Paper forms were used to gather large volumes of intake information, which was then stored in a lightweight database program. The old approach "was fraught with risk — every piece of the process had to work perfectly for a child to get from 'ask' to an answer regarding eligibility," Rathermel says.

The process began with field staff gathering the necessary client data, including complete healthcare records, and mailing the information to the central Wisconsin DHS office, where a staff member would scan the materials into the database and create a paper case file. The workflow was not only slow and labor intensive, some applications and healthcare records got lost in the mail over the years.

"We needed a more stable and interactive platform," Rathermel says.

"We have implemented temporary shared case responsibilities a few times due to maternity leaves, vacations and elevated [case] numbers in a particular region. CPIP ensured timely communication occurred and families didn't fall through the cracks."

— Laura Knott, Wisconsin DHS staff member

That need spawned the Children's Program Intake Platform (CPIP), an electronic portal that supports field staff under contract with the state who interact directly with children and families to determine eligibility for the Katie Beckett program. Today, field staff simply upload the necessary information and any relevant notes directly into CPIP during the application process. Once information is in the system, it's available to any authorized staff member, so questions about the status of an application or an appeal of an eligibility decision can be answered easily and quickly.

"Field staff have reported they like the application and have found it helps them communicate among each other, both within their own regional office and with those in other regions," says Laura Knott, a Wisconsin DHS staff member. "We have implemented temporary shared case responsibilities a few times due to maternity leaves, vacations and elevated [case] numbers in a particular region. CPIP ensured timely communication occurred and families didn't fall through the cracks."

CPIP is now bringing similar efficiencies to intake activities for other programs, such as the Children's Long-Term Support (CLTS) Waiver program, a home- and community-based Medicaid service that supports children and young adults under the age of 22 who have significant developmental, physical or emotional disabilities. As with the Katie Beckett program, CLTS formerly relied on time-consuming, manual application processes. Now, standard workflows guided by CPIP let the state assess waiver applications and appeals faster.

"This solution has the capacity to support use of this intake functionality statewide for any of our children's programs running in all of our counties," says Autumn Knudtson, deputy director of the Wisconsin's Bureau of Children's Services.

BUILDING BLOCKS FOR GOVERNMENT AGILITY AND MODERNIZATION

To capitalize on PBCs and composable applications, agencies need a solid foundation built on the right technology and government expertise. Start by focusing on five critical considerations.

1. FIND A SOFTWARE DEVELOPMENT PLATFORM THAT SUPPORTS PBCS AND COMPOSABLE APPLICATIONS.

Look for solutions that support interoperability and portability. These capabilities provide functions unique to composable applications — namely the ability to combine PBCs into a larger application.

A solution should also let your organization model the data, define the workflows and embed security policies associated with creating and managing PBCs. Look for role-based security tools so agency officials can assign various levels of authorizations to access data and make changes to the information. For example, a supervisor might have access to all case

files, while a case worker can only see data for his or her own clients. Similarly, an internal auditor may see financial information about a program, but not the personal health records of citizens.

Finally, the platform should include tools and an infrastructure framework to deploy and manage PBCs.

2. TAKE ADVANTAGE OF LOW-CODE DEVELOPMENT TOOLS.

These tools let seasoned developers and department staff alike use drag-and-drop menus to create new applications. The tools should have the ability to embed an agency's established security policies into the software and let staff manage the new applications once they're released to end users.

Low-code solutions accelerate software development and can help reduce work for the programming staff. Low-code solutions also give government officials flexibility around how they approach software development projects. One option is for the vendor of the development platform to work with agencies to define their project needs and then use its team of programmers to create and implement the application.

A second, similar option is to hire a systems integrator or other third party to do the hands-on development work. Finally, agencies with enough internal resources can choose to write their own PBCs.

3. CHOOSE PLATFORMS THAT ARE HOSTED IN A LEADING PUBLIC CLOUD.

The eligibility component for Wisconsin's IRIS program runs in the Amazon Web Services (AWS) Cloud. This lets the state easily scale the application as the program grows.

"AWS also defines a formal release process, so as a program expands, we get the benefit of having a repeatable process for deployments," says Jeremy James, vice president of professional services at Tyler Technologies. "In addition, public clouds provide resiliency and safeguards against data loss or data corruption."

James adds that self-service capabilities included with the AWS Cloud enable contractors to help governments manage and optimize their applications.

4. EVALUATE DEVELOPMENT-PLATFORM VENDORS BEYOND THEIR CORE TECHNOLOGY OFFERINGS.

The best vendors have long track records in the public sector and offer consulting and development services tailored for government modernization.

"Vendors should have technical people who understand the needs of government staff, such as inspectors and investigators in the field, and what they need to do their

work," Cerniglia says. "The vendor also must understand your organization's existing business processes to ensure the PBC effectively manages the underlying data."

Humpal, the section manager involved with Wisconsin's IRIS PBC, also values expertise in agile software development practices that were provided by the state's development-platform vendor.

"Using the agile methodology, we were able to quickly engage with our vendor to gather requirements," he says. "We collaborated to rapidly produce enhancements and changes to the system to further increase the productivity of users."

5. FIND AN ECOSYSTEM.

Leading development platforms anchor a marketplace of third-party developers who offer PBCs that government organizations can use to create new apps or acquire existing solutions, Cerniglia says.

FROM 'GREEN SCREEN' TO GREATER VALUE

The need to modernize and improve legacy applications has been a driving force in state and local government for years. Officials want to provide new and innovative digital services to meet rising citizen expectations and improve internal efficiencies. But large investments in legacy technologies mean agencies can't easily replace current systems or invest in large-scale modernization projects that are costly, time consuming and disruptive to their core missions.

Flexible PBCs and composable applications let public sector officials modernize at their own pace, as staff and budget resources allow.

Fortunately, there's a practical alternative. Flexible PBCs and composable applications let public sector officials modernize at their own pace, as staff and budget resources allow.

"PBCs and the composable-application model offer a way to incrementally modernize an application instead of waiting for the whole application to be built," Cerniglia says. "You can even hook a PBC into a legacy green-screen application using common integration patterns and APIs so users see value quickly, and you don't take on the risk of building a massive new application."

This piece was written and produced by the Center for Digital Government Content Studio, with information and input from Tyler Technologies.

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