THE CENTERS FOR MEDICARE & MEDICAID SERVICES (CMS):
ENHANCING
HEALTHCARE.GOV AND THE FEDERALLY FACILITATED MARKETPLACE

accenture
The Patient Protection and Affordable Care Act (ACA) created new health insurance exchanges, at both the state and federal level. These exchanges are public-private marketplaces where Americans can shop for health insurance plans and apply for a tax subsidy, across insurance companies. HealthCare.gov, the website for the federal exchange, is the front door for the Federally Facility Marketplace (FFM).

Many people are aware that the initial launch of HealthCare.gov had a number of challenges, which received extensive coverage and political, media and public scrutiny. People may not be aware, though, that the FFM is much more than just a website. It includes:

- A plan management system for loading healthcare plans onto the website
- Interfaces with state and federal systems
- Interfaces with insurance companies for enrollment, premium payment and reinsurance programs to support premium price stabilization and accurate payments
- Interfaces with the IRS for the tax subsidy
- The new Small Business Health Options Program (SHOP)

A rescue of the website began in November 2013, and in January 2014, the federal government hired Accenture Federal Services as the prime development contractor, with responsibility for stabilizing and improving the website and finishing development of the additional systems and interfaces.

In just six weeks, Accenture mobilized more than 500 skilled professionals to transition the project at an unprecedented speed. Within eight weeks, Accenture delivered significant technical improvements to the website, stabilizing it during the peak of HealthCare.gov’s initial enrollment period. This enabled millions of Americans to enroll in health insurance, many for the first time.

The Accenture team continues to work hand-in-hand with CMS and with insurance companies to deliver an excellent consumer experience, a robust and fast enrollment system, accurate calculation of tax subsidies and accurate payments to insurance companies for program integrity.
BUSINESS CHALLENGE

The initial launch of the HealthCare.gov website was historic—yet it had its share of challenges. CMS urgently needed help navigating to a successful outcome. Not only was CMS transitioning from an incumbent to a new contractor during a critical time, the agency also was transitioning to a new data center provider, the overall program was complex with multiple stakeholders, the customer base was demanding, there were issues with the underlying technology and the project was under high scrutiny.

CMS chose Accenture Federal Services to rescue, stabilize and enhance HealthCare.gov to build a positive experience for consumers. Accenture created a collaborative and comprehensive transition plan that mitigated the transition risk and enabled Accenture to begin hands-on delivery immediately.

CMS also needed Accenture to build new software for IRS tax forms, risk adjustment and re-insurance payments to insurance companies, and small business enrollment.

“From day one, Accenture was a true partner that focused on helping us solve our most difficult challenges. It was clear they understood how to support us in achieving our organizational objectives and evident they had our interest in mind. Accenture brought the full support of their entire company. They were transparent across the board—told us what we needed to hear, not always what we wanted to hear—and took on significant risk to make our program successful.”

Dave Nelson, Chief Information Officer, CMS
HOW WE HELPED

Work began on day one to manage this ambitious transition. Key components of the project included:

Quick transition. Using an innovative workcell transitioning approach, Accenture ramped up more than 500 people in just over six weeks. Critical to the transition was successfully gathering knowledge from multiple organizations internal and external to CMS.

Accenture conducted more than 450 knowledge transfer sessions to capture over 700 knowledge artifacts. The team also hosted 16 days of intensive—requirements “lock-in” sessions that included Accenture developers, testers, business architects, technical architects and CMS business executives. The team captured 3,300 testable and traceable requirements.

This successful transition—unprecedented in its scale and sense of urgency—reduced risk and positioned the team to start hands-on delivery and rescue activities as soon as possible. The entire transition of the program from incumbent to Accenture took eight weeks...four weeks faster than originally proposed.
Successful operations during peak enrollment. To stabilize the site, Accenture completely took over maintenance and operations during the peak period of the 2014 open enrollment. The team tackled defects and delivered urgently needed fixes ahead of schedule, thereby maintaining the operations throughout the peak enrollment period. The effort included:

- Stabilizing the notices infrastructure and software to generate 2.9 million notices with a daily peak of more than 340,000 notices.
- Significantly improving Account Transfer performance, reducing the response time for inbound transfer by 99.8 percent.
- Stabilizing the FFM application in preparation for an expected enrollment surge. On March 31, 2014—the last day of the first open enrollment—the FFM supported a peak of more than 185,000 concurrent users with fast response times. For the second and third open enrollments, there was no unplanned downtime for any components for which Accenture was responsible. The Accenture team also accelerated online response times to under a quarter of a second.

To keep the system fully functioning, especially during peak enrollment, Accenture provided continual monitoring and reporting for HealthCare.gov. Each week, the team delivered multiple software releases, with significant enhancements.

Small Business Health Options Program (SHOP) delivery. Accenture quickly mobilized a team to take over SHOP. In just eight months, the team started with requirements analysis and successfully delivered a commercial off-the-shelf (COTS) package. This included customization, performance testing, functional testing, security auditing and integration with other CMS systems. Accenture collaborated closely with the COTS manufacturer to launch a new line of business for the marketplace in this very short time period, with a smooth go-live and very low defect count.

Innovative, cloud-based technology solutions. The new federal and state health insurance exchanges created new marketplaces for insurance companies to sell new insurance products to new consumers. To stabilize the pricing of risk, the ACA included new reinsurance and risk adjustment programs. The former helped offset larger-than-expected claims, and the latter helped transfer payments from issuers that took on lower-than-expected risk to those that took on higher-than-expected risk.

These programs required gathering confidential claims information from 800 different insurance issuers and then performing complex, risk stabilization calculations and analytics. CMS needed to provide a solution where issuers maintained control of their confidential claims information, as input to the risk calculations, but CMS controlled the risk algorithms, software and reference data.
Accenture developed a cutting-edge solution that provides issuers a complete data processing environment, which each issuer owns and operates. The “EDGE” system uses Amazon Web Services (AWS) to connect with more than 800 issuers, to share and process claims information in the cloud according to the CMS analytical algorithms. Issuers maintain complete control of their proprietary claims and pricing data; CMS has visibility to the outputs, but not the inputs, of the algorithms. Additionally, 135 issuers elected to participate as AWS-deployed servers, using a fully automated environment provisioning process that has successfully and securely processed the issuers’ data without requiring internal infrastructure investment. The other issuers used an on-premise deployment model, which still took advantage of the same software images and upgrade processes.

The EDGE system enables CMS to create a level playing field for all issuers. It provides consistent software and data version management across the universe of independent installations. EDGE simplifies and expedites deployment for issuers, reducing time from several days in a standard software distribution and configuration model to as little as 15 minutes, while enabling hands-free software upgrades and execution of remote commands.

**Program integrity.** Millions of Americans count on the integrity of their enrollments and tax subsidy calculations. And the 800 issuers count on the integrity of how their plans are displayed on HealthCare.gov, how their enrollments are processed, and how they get paid for reinsurance and risk adjustment. Accenture worked with CMS to build in program integrity. We built an entirely new system for policy-based payments, to make sure the tax subsidy payments to issuers resolved to the penny, for each and every enrollment in the FFM. In addition, CMS hired an independent contractor and auditor to vet the EDGE system for reinsurance and risk adjustment payments. That contractor determined that billions of dollars in payments were accurately calculated.

At a detailed level, we built in logging and auditing capabilities for all key transactions. And we worked with CMS to build a robust security program, which proactively detects potential vulnerabilities. Our joint security team achieved Authority to Operate (ATO) on schedule, for all of the systems that Accenture built and maintained.

**Technology, delivery and operations discipline.** Rescuing the website required immediately instilling technology discipline, along with significant investment in automation and tooling. To improve the fully manual test and release process, the Accenture team created fully automated, regression test suites at all levels:

- 15,500 unit test cases in Java
- 1,400 functional tests, end-to-end, for the user interfaces
- 15,400 functional data validation and batch validation tests
- 990 transactions tested in a comprehensive, end-to-end performance suite, reflecting a real-world transaction mix

This comprehensive regression suite runs on a regular basis, and provides automated emails and executive dashboards for monitoring.
Accenture got in the trenches with us immediately, sharing accountability for results, and applying all of the resources at their disposal to help us make clear-eyed, fact-based assessments. Accenture worked with us as a partner, making sure that everyone understood the impact of decisions made and providing advice when appropriate. It was tremendously helpful to our decision making and creating a more stable program. It helped us arrive at the right decisions together and do right by all of our stakeholders.

Karen Shields, Deputy Center & Operations, Director, CCIIO, CMS
The automated functional testing consists of more than 300,000 test steps and is typically executed five times per week. The automation of this functional testing saves over 50,000 hours per year in manual testing. This high level of automation has allowed the team to dramatically improve the quality, reliability and speed of new software builds.

Accenture also created automated build and deployment scripts, not only for the software, but also for the software environments. Development and testing teams can now “click a button” to automatically provision new environments in AWS. They can also click a button to deploy software releases to those environments. This includes checking out the versioned code from the repository, building the software, checking code quality, running it through a battery of automated tests, validating performance and moving the software items into the environment. We have moved from fully manual processes, which are time-intensive and error-prone, to a fully automated Development and Operations (DevOps) capability.

Moreover, Accenture created a robust operations monitoring stack. The stack includes a suite of monitoring tools and dashboards that integrate with:

- Automated paging software for the operations team, with built-in, automated escalations if a team member does not respond quickly
- Detailed transaction and log information
- Interactive chat tools used by the operations teams, where the monitoring tools also posts automated updates

In addition to monitoring live traffic on the site, down to the level of individual transactions, the stack also monitors the performance of synthetic transactions. The synthetic transactions run every few minutes, around the clock, to proactively uncover production issues before consumers do.

**Multi-speed IT: Moving to incremental delivery and then full agile methods.**

Beyond just the technology, Accenture also brought methodology discipline to the program. This included introducing delivery techniques to make sure CMS realized business benefits incrementally, over time, without having to wait for a full-blown or big bang solution.

Additionally, Accenture and CMS together created an enterprise-ready agile approach, for new development. Accenture combined its proven, enterprise agile methods with CMS’ Expedited Life Cycle (XLC) system development process. This approach blends the benefit of agile with government requirements for documentation, auditing, traceability and independent verification. In sum, this approach enabled efficient delivery with sound risk management and proven software delivery practices.

CMS embraced agile, with actively engaged product owners, who represented multiple stakeholders and made decisions quickly. After each three- to four-week sprint, Accenture demonstrated the updated software for CMS acceptance, giving CMS real-time visibility into progress of the software build. This built confidence and allowed agile teams to incorporate feedback and re-prioritize along the way. The program’s use of agile has also helped improve collaboration between IT and the business on strategic system initiatives.
Architecture simplification. HealthCare.gov, as originally built, had technical debt built up from the complexity of the software design and architecture. The Accenture team innovated and simplified the technical plumbing of HealthCare.gov and other related systems. This had multiple business benefits:

- Accenture saved CMS more than $4M per year in software licenses, data center costs and other labor; Accenture significantly reduced the number of servers required
- The website is now faster; response times went from roughly half a second to a quarter of a second
- The website is now easier to maintain and extend

This approach was so successful that another contractor is considering doing architecture simplification on its software, for similar benefits.

Cloud First Approach. Accenture delivered the new EDGE software in the cloud, as mentioned. That is not the only use of the cloud – Accenture has taken a “cloud first” approach, wherever using the cloud makes sense and meets CMS’ security needs. For example, the suite of automated functional tests is run from servers in the cloud, which can scale up or scale down, as necessary. As another example, the new environments for new software capabilities are deployed in AWS. Accenture made it as simple as literally pushing a button: provisioning a new environment plus the COTS middleware plus the application software is fully automated.

Cloud-based Customer Relationship Management (CRM). Accenture recommended using salesforce.com to quickly build a CRM solution that would help improve collaboration and outreach with issuers. The initial prototype was deployed within weeks; the full solution was complete and operational in four months. The unified CRM solution replaced dozens of disassociated email templates, contact lists and Excel spreadsheets. Email generation improved from 30 minutes to 10 minutes. Issuer lookup and update time improved from 20 minutes to 1 minute. Reporting time improved from 30 minutes to 2 minutes. These results all occurred on a platform that is now more accurate and easier to use.

Cloud-based DevOps. Accenture implemented full DevOps processes and technologies to accelerate development and deployment. Automated tasks across environments include code checkout, build and packaging; code quality scanning; security scanning; unit testing, functional testing and initial performance testing; software deployment; and release smoke testing. The team used tools such as Junit, github, Amazon Web Services, Splunk, JIRA Software (including Jira, Confluence and HipChat), Fortify, Python and Bash to support continuous delivery.

The DevOps approach has significantly reduced manual errors, improved software release quality and allowed the team to deliver faster.
**Culture.** Transforming HealthCare.gov required a shift in culture. Team members adopted a “one team, one goal” mindset and created a blame-free environment where everyone would succeed or fail together. It was not a client/vendor relationship that had clear lines of separation. Rather, it was one cohesive team that worked collaboratively and transparently. Everyone was open about schedules, risks and defects, and all worked together to share knowledge and solve problems proactively. Instead of finger pointing, people were rewarded during daily meetings for candidly acknowledging, “This isn’t working... and here’s what we need to do to fix it.”
Accenture has worked around the clock since the project began in January 2014, bringing the right people for this monumentally important federal program. The Accenture team worked with CMS, stakeholders and other CMS vendors in a highly collaborative “badge-less environment” to make sure everybody worked toward the same goals and vision.

The team included deeply skilled technology architects, functional experts, performance engineers and professional business analysts who brought industry-proven practices, reusable technology frameworks and strong architecture principles. Accenture also brought in a team of business architects who had direct experience and insight into state exchanges, Medicaid eligibility, issuer operations, broker operations and health policy.

This enabled Accenture to hit the ground running, fix the software, deliver new software and help the client establish new processes and an Open Enrollment command center. Finally, Accenture helped CMS transform how it runs large programs. CMS is now recognized as a leader among federal agencies for pivoting to the new: using agile techniques, DevOps and next-generation architectures in the cloud to deliver meaningful digital experiences for consumers.

"Accenture has been an essential member of our team as we focused on delivering a positive consumer experience through HealthCare.gov. We are pleased that Accenture will continue to support HealthCare.gov, as we work together to help millions of Americans sign up for quality, affordable health insurance."

Karen Shields,
Deputy Center & Operations, Director, CCIIO, CMS
RESULTS BY THE NUMBERS

The joint team, along with CMS, made significant progress quickly. Highlights of the work include:

- Mobilized **500 people** with the requisite industry, functional and technical skills in **6 weeks**.
- Accenture created a transition plan with the incumbent that included **450 formal knowledge transfer sessions**.
- Closed critical defects, resulting in a **significant reduction of error rates**.

- Delivered **256 releases**, **99%** on time with the remainder delivered no more than **7 days** after the planned release date.
- Generated more than **18 million notices**, **2.9 million** inbound account transfers and **1.7 million** outbound account transfers during the 2015 enrollment period.
- Improved the loading time for healthcare plans by **98%** for small business consumers; load time went from ~**200 plans per day** to ~**420 plans per hour**.

- Implemented the **first-ever automated** policy-based payments process, for program integrity.
- Worked with CMS and issuers directly to successfully on-board and conduct outreach for more than **800 issuers** for the Risk Adjustment / Reinsurance program, using the EDGE solution.
- Implemented Salesforce in a matter of weeks, ensuring more than **1,200 issuers** received high levels of assistance in tasks related to their acceptance of marketplace policies and tools.
The stability of the website and the overall program helped contribute to year-over-year increases in enrollment.

For 2016 open enrollment, Healthcare.gov enrolled and re-enrolled 9.6 million consumers in 38 states.

The team noted other significant improvements in the 2015 enrollment period, including:

- J.D. Power released a study, which found that compared to new enrollees in 2014, satisfaction among new enrollees for the 2015 enrollment period increased +55 points.

- There were no unplanned outages for or due to the Eligibility and Enrollment (E&E) application.

- Average page load time is 98.9 milliseconds—less than a quarter of a second.

- Supported CMS with an increase in the number of issuers +49%.

- Supported CMS with an increase in the number of plans on the site +50%.

- Successfully integrated 38 states on the individual marketplace, 33 states into Small Business Health Options Program (SHOP).
NOTES


ABOUT ACCENTURE FEDERAL SERVICES

Accenture Federal Services is a wholly owned subsidiary of Accenture LLP, a U.S. company, with offices in Arlington, Virginia. Accenture’s federal business has served every cabinet-level department and 30 of the largest federal organizations. Accenture Federal Services transforms bold ideas into breakthrough outcomes for clients at defense, intelligence, public safety, civilian and military health organizations.

ABOUT ACCENTURE

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions—underpinned by the world’s largest delivery network—Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With approximately 384,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com.