

North Carolina Digital Transformation of NC.Gov

Enterprise IT Management

North Carolina

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Executive Summary

“Digital: Applying the culture, practices, processes and technologies of the Internet-era to respond to people’s raised expectations.” – Tom Loosemore.

North Carolinians expect great experiences when engaging with state government. In fact, according to Accenture, “85% of citizens expect government digital experiences to be equal to or higher than the private sector.” North Carolina must deliver well-designed services, resources, and information anytime, anywhere, and on any platform or device.

In 2014, the state’s web and digital presence was not optimized to meet citizen, business, and other constituent needs:

- Information architecture was based on government units and “silos” rather than user needs.
- Few sites were optimized for mobile devices.
- Communicators relied on IT support for content updates.
- Accessibility and needs of disabled users were not widely considered.
- Multiple content management systems and technology stacks were expensive, duplicative, and inefficient.
- State government websites lacked web and digital standards as well as governance.
- State government communicators lacked community and knowledge sharing across state government.

It was clear that solving this problem was more than a matter of implementing a new technical solution or even a standardized digital content platform. As with any digital transformation initiative, it would require a strong focus on people, process, and technology – not just IT.

The last two administrations have focused on ease-of-use and digital modernization. In 2014 the DIT Digital Solutions team, along with partners in cabinet agencies, the Innovation Center, and vendor partners initiated the [Digital Commons](#) project. The purpose of Digital Commons was to deliver a better experience to citizens, businesses, and constituents seeking information and services from state government. The state was also seeking to increase efficiencies by delivering digital content on a unified platform, reduce costs by aligning to a common toolset, design, development and content management process, and simplify digital content management for the business.

By October 2018, the state’s web and digital presence had been transformed:

- Digital strategy, governance and operational support was centralized under the Department of Information Technology (Digital Solutions unit).
- Digital Solutions partnered with the business and communication units of key agencies to ensure business’s digital needs are met.
- A centralized digital platform powers almost all Cabinet agency websites on the Drupal framework. As a well-supported, open platform, it is continuously evolving to meet end-user needs and adapt to emerging communication channels (i.e. voice, chatbots).
- A user-focused design includes new brand, streamlined information architecture, and layout consistency but also provides flexibility for communicators to meet their unique needs.
- All data, files, and resources were stored the cloud increasing efficiencies and cutting hosting costs.
- Web and digital presence are informed by standards, including need for accessibility.

Concept

In 2014, North Carolina began a journey to transform its web and digital presence to better meet agency business goals and the needs of constituents. At the time, the state’s web and digital presence included an information architecture based on the government’s “org chart,” and content was not centered on the needs of users. Most state agencies maintained the full stack of technologies required to deliver critical information and services (i.e. infrastructure, content management systems, web development tools, and so on). Managing web content typically required government IT staff support and communications professionals had to send support tickets for website changes. This extra friction contributed to poorly organized websites with outdated information.

North Carolinians, like people around the world, were using their smart phone, tablets, and other devices to access websites for shopping, research, banking, playing games and more. Yet, no NC government website was truly optimized for mobile devices. A true transformation was required to meet their needs. Our vision was that interacting with the government should be as user friendly as checking the latest scores or shopping on a smartphone.

The DIT Digital Solutions team, along with colleagues in the Governor’s Office, cabinet agencies, the Innovation Center, and vendor partners initiated the Digital Commons project to expand on earlier efforts to revamp the state portal, NC.Gov. Given that most citizen-facing services, resources, and key information were located on agency sub-domains (e.g. <https://www.ncdhhs.gov/>) it was critical that the initiative address the holistic customer experience across multiple key sites and services.

Two cross-agency workgroups were established to guide the project from both an architectural and technology perspective and to guide the information architecture and content strategy. The workgroups selected the open-source digital platform, due to its ubiquity in the government space and success in states such as Georgia.

Phase 1 – Platform Development

To stand up the new platform, design the NC.Gov user experience, and transition key cabinet agency web properties, state officials worked with two vendors:

- Phase 2, which had experience with the White House, Georgia state government, and were well-regarded in the Drupal space; and
- Raleigh-based design agency, Atlantic BT

The two vendors worked collaboratively with the workgroups and Digital Solutions teams to develop a user-focused strategy that combined the strengths of both vendors. This approach resulted in the development of an enterprise-level Drupal framework that utilized the “Open Public” distribution to leverage shared components, modules, and code to deliver common services and resources (e.g. web forms, press releases, blogs, media galleries, how-to pages, etc.) across state government websites.

To ensure that that platform was hosted on secure, modern, cloud-based infrastructure, North Carolina partnered with Red Hat and leveraged the OpenShift Platform-as-a-Service solution, running in the Amazon Web Services public cloud.

In addition, the project team worked closely with colleagues in the communications office at the Department of to integrate their new State of North Carolina brand and identity system into the platform.

Phase 2 – Site Migrations

The second phase included site redesigns and platform migrations for the Governor’s Office, top-level NC.Gov, cabinet agencies such as Health and Human Services, Environmental Quality, Public Safety, and related key web properties. The teams worked in “sprints,” transitioning multiple agency sites over a period of two to three months. Each sprint included both a Content Strategy and Design phase, Development, and Integration.

The Content Strategy and Design phase focused on activities and workshops for the following areas:

- Personas
- User tasks
- Information architecture
- Page description diagrams
- Site governance

Deliverables included sitemaps, content inventories, document maps, wireframes and high-fidelity mockups. These deliverables were then used to for the implementation phase – a much more technical integration of content, documents, media, and other files into the Drupal platform.

Phase 3 – Migrations and AWS Cloud

The third phase included rolling migrations of other key state government websites. These included Council of State agencies, such as the Department of Labor (<https://www.labor.nc.gov/>), programs (Rebuild NC - <https://www.rebuild.nc.gov/>). Dozens of additional web properties were refreshed and onboarded to the platform, following a consistent approach in terms of design patterns, navigation structures, call-to-action cards, and other design elements.

In parallel, we determined that additional cost savings, security enhancements, and opportunities to innovate could be found by hosting directly in the Amazon Web Services environment. During this phase, we architected an AWS hosting solution that was FedRAMP compliant, incorporated content delivery networks (CDN), advanced distributed denial of service (DDoS) mitigation services, and many more capabilities which enabled us to spin up servers and resources more quickly.

Phase 4 – Agile Transformation

As new sites were onboarded to the platform, it was clear that our process needed to evolve to handle scale, iterate the platform based on feedback from the business and end-users, and continuously monitor and adapt the content strategy to meet changing user behavior and interests. The traditional “waterfall” approach worked well for the initial phase and site onboardings but limited our efficiency and adaptability as we learned more about what was working, what could be improved, and emerging opportunities to innovate and collaborate (e.g. integrations with other state platforms, data visualization features, targeted marketing and communications campaigns).

The fourth phase of the Digital Commons project represented a transition to a more agile and “DevOps” oriented development process. The team attended Scrum certification trainings, hired an Agile coach, and shifted its workflow to be run in two-week sprints. A “backlog” was established and maintained in a modern software development tool (Jira). The backlog was continuously updated with tasks related to new features, security patches, Drupal updates, bug fixes, and site launches. In the months ahead, the team embraced a process that included two-week sprints, many which resulted in code deployed to production. Put simply, the fourth phase was about getting high-value work done efficiently while handling the challenges of scaling to support new agencies and customers. By the end of Phase 4, over 500 development tickets were completed over a series of 30 sprints.

Significance and Impact

The Digital Commons project has not only transformed how websites are designed, produced, maintained, and hosted, but has represented a key part of fundamental digital transformation for the state. In addition to increased efficiencies, cost savings, and improved government interactions for end-users, it has been a catalyst for substantial culture change, collaboration, and digital innovation.

- **Improved User Experience.** Perhaps the most important outcome has been an improved experience for citizens, businesses, and other customers when interacting with state government. For example, by obtaining quantitative data (analytics) across the spectrum of NC.gov digital properties, we are equipped with important insights into user expectations for content. We know that topics such as the DMV, finding jobs, starting businesses, and food and health assistance remain very popular. These insights become very powerful when combined with a modern, consolidated platform. We are able to better design more streamlined end-to-end experiences and customer journeys.
- **Cost Savings and Increased Efficiencies.** Prior to Digital Commons, state agencies typically required multiple full-time employees to manage their web presence. This included highly technical roles (System Administrators), developers, and content specialists. As a result of Digital Commons, state IT and Communications staff roles have evolved and adapted to better meet agency and end-user needs. Legacy web content management systems, such as LifeRay and DotNetNuke, have either reached end-of-life status or have a much smaller footprint. Shifting to Amazon Web Services has saved hundreds of thousands of dollars annually in hosting and infrastructure support costs. Agencies can focus “up the stack” on their content and not worry about the infrastructure, middleware, and application maintenance.

The most salient examples of increased efficiencies are illustrated in times of sudden need to deploy content, services, accessibility enhancements, and features across the network of Digital Commons websites. For example, when Hurricane Florence struck the state in September 2018, the Digital Commons platform played an instrumental role in the state’s response:

- The flexibility and simplicity of the platform’s administrative environment enabled our Department of Public Safety to deliver content, resources, services, maps, and visual data rapidly in a high-pressure, fluid environment.
- The underlying Amazon Web Services environment dynamically scaled to adapt to a huge spike in web traffic.

- When the Governor’s Office announced a donation program, a call-to-action donation button, centralized donation form, promotional banners, and related digital marketing pieces were deployed across dozens of state government websites *within a few hours* of his announcement.
- **Collaboration in State Government.** The transition to Digital Commons has contributed to increased collaboration between state agencies, organizational units, and cross-agency staff who may not have worked closely with each other in a previous era. This is manifested in several ways, including:
 - We connect multiple agency and organizational staff to deliver cross-agency content on NC.Gov. For example, our highly popular “How to Start a Business in North Carolina” section requires input from multiple units and roles yet must be communicated in a manner that is user-focused and abstracts the organization from the content delivery.
 - The Digital Solutions team conducts training and informal lunch-and-learn activities that connect staff across organizations units including IT teams with other key units in their organizations such as Communications, Program Managers, Project Managers, and others.
- **Collaboration with other States.** A collaborative relationship was formed early on between the State of North Carolina and the State of Georgia, which had forged a similar path using Drupal and a cloud-based managed service provider. This collaboration has grown to include other states, such as Massachusetts, Arizona, and Texas, and the states meet annually at the DrupalCon “State Government Summit” to strategize on collaboration opportunities such as standardizing on content type structures (e.g. Event – Content Types).
- **Broader Digital Transformation.** The Digital Commons project has been a linchpin for broader digital transformation efforts. As an open source platform, we have leveraged APIs to interoperate with other digital products and services such as ESRI for mapping and data visualization.

The Digital Solutions team conducts a bi-annual digital transformation event called “[We Are NC Gov.](#)” We Are NC Gov brings together over 100 state personnel, across dozens of agencies and divisions, to learn, share, and explore opportunities together in the digital space. These events typically focus on a theme, such as “Optimizing Digital Experience for Citizens.” Many of these topics are relevant to a range of staff roles (e.g. IT, Communications, Project Managers, and so on) who have not previously had an opportunity to approach them in a setting that brings together their colleagues in other disciplines.