

Louisiana Division of Administration

Office of Technology Services (OTS)

IT Consolidation and Enterprise Architecture

Category: State CIO Office Special Recognition

Sponsor

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State	Louisiana
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Executive Summary

Louisiana’s IT architecture, like that of many states, grew organically from a federated model of provisioning and managing services across the departments in the governor’s jurisdiction. While this approach afforded departments the maximum amount of latitude in architectural decision making and resource allocation, it also lacked sufficient checks and balances on technical decisions and suffered from the inability to achieve economies of scale across departments.

The state recognized the gravity of this situation and in November 2013 began a multi-year program to realign statewide IT under CIO Richard “Dickie” Howze’s Office of Technology Services (OTS). The program was rolled out in two phases:

- **IT Consolidation.** An ambitious plan backed by one of the first bills of the 2014 Louisiana Regular Legislative Session. Under this bill (<http://reinventit.la.gov/legislation/>), OTS was granted the authority to transfer functions, contracts, staff, facilities, and other assets between departments to optimize IT resource allocation. This led to the consolidation and centralization of all IT functions across the state’s departments under OTS.
- **Enterprise Architecture (EA).** Louisiana’s enterprise architecture project established a standard set of processes and technologies to be leveraged across the Louisiana IT enterprise. The EA enabled departments to consume a set of centralized and standardized IT services supported by an equitable cost allocation process that attributes costs to the consuming departments based upon service utilization. These centralized IT services enable cross-department initiatives such as single sign on and master data management for increased state-wide data quality.

This program enabled the state’s departments to migrate to a model of utility-based IT resources and services that simply would not have been feasible 5 years earlier. OTS enabled this transformation of their IT service model through the visionary use of the technologies specified in the following table.

Technology	Impact on Program Goals
Service Oriented Architecture (SOA)	The use of centralized services based upon a SOA enabled OTS to offer a consistent set of service interfaces for use across departments and to measure and satisfy service level expectations.
Utility Cost Allocation	Cost allocation enables OTS to support a utility computing model where consuming agencies are charged for what they use with the benefits (economies of scale) passed along to consuming systems.
Software-Defined Datacenter	Louisiana elected to go with software-defined computing, networking, and storage. This change supported the consolidation of disparate compute, network, and storage teams and platforms.

Technology	Impact on Program Goals
Virtualization and Cloud	A 100% virtualized platform enabled Louisiana to maximize the utilization of its hardware resources, minimize provisioning overhead and enabled a seamless move to the cloud for elastic capacity.

Concept

To understand the change that has been ushered in through the IT consolidation and EA program in Louisiana, it is helpful to look at what IT project onboarding looked like *before* consolidation and centralized IT services:

- **Consolidation.** IT assets were not consolidated and each department had to make IT selection and purchasing decisions on their own, leading to inefficiencies and redundancy.
- **Standardization.** IT assets, services and resources were department-level decisions that were not standardized and fungible, leading to siloes of resources and assets across the state.
- **Utilization.** Resource utilization was segregated by department, prohibiting the realization of economies of scale across the state. If utilization was measured, it was done at the department level, missing the efficiencies that could be gained by shared services.
- **Quality.** Significant technical debt had accrued across department IT systems with significant time being spent paying interest on that debt, detracting from the State’s ability to support new business functions.
- **Interoperability.** IT services were not developed with reuse in mind; sharing data between agencies was a cumbersome and largely manual or ad-hoc process.

Louisiana’s IT Consolidation set the stage for significant improvements in IT resource consolidation, standardization and utilization. The state’s Enterprise Architecture then codified these reusable assets and supported them with a straightforward process, illustrated in the figure below.



This process represents a radical departure from the past as articulated at the beginning of this section. The process enables OTS, as the central IT organization, to engage with department-level IT projects through every step of the process. Organizationally, dedicated OTS agency relationship managers (ARMs) are responsible for outreach and interaction with the departments, effectively acting as the glue that binds OTS and the department program leads together to employ and enforce the process.

Significance

Louisiana's IT Consolidation and Enterprise Architecture buildout are organizational capstones for the state's CIO and his organization, OTS. The impacts of the program are far-reaching, intersecting with a number of key stakeholders as described below:

- **State Executives.** Executive stakeholders, including the legislative and executive offices, are monitoring the progress of these important programs that are setting direction for the OTS organization.
- **State Departments.** Departments in the governor's jurisdiction now follow a significantly different process for IT project onboarding and receive integration assistance, feedback, and reporting on their systems' integration with the state's enterprise architecture. Data can be shared among departments using standard processes that employ shared services and architectures.
- **OTS Staff.** Under the IT consolidation, OTS staff now have significant shared service responsibilities that require more interaction with the department management teams and stakeholders.
- **Vendors.** The centralization and standardization of the state's enterprise architecture establishes expectations for IT vendors including standard integration protocols, open technologies, and cloud readiness required to operate in the state's IT ecosystem.
- **Citizens.** A citizen-centric focus that emphasizes a streamlined user experience is a cornerstone of the program. This is supported by a unified view of citizen data across programs (using master data management), establishing a single user identity for all applications (using single sign on) and monitoring and fine-tuning the user experience on state applications.

The timing of this program intersects with other key environmental trends within the state's administration, in alignment with current IT procurements, and in conjunction with industry trends such as the move towards cloud computing. This intersection magnifies the impact of this program through the multipliers illustrated in the image below.

Legislative Support	Legislation to establish OTS, with the CIO provided authority to oversee and coordinate IT systems and services within the Governor’s jurisdiction.
System Renewals	IT consolidation and establishment of the enterprise architecture align with the large-scale, multi-year system renewal efforts, enabling the maximum amount of reuse and value.
Architecture Standardization	The State established of a modular, service-based architecture built on COTS products and predicated on the principle of configuration over customization.
Enterprise Cloud	Louisiana's new enterprise architecture is build on a software-defined, cloud-ready platform to enable the state to maximize their use of public cloud service to extend their EA.

Louisiana’s IT Consolidation and Enterprise Architecture directly with NASCIO’s state CIO top 3 priorities for 2017 as described in the table below.

NASCIO CIO 2017 Priority	Louisiana IT Consolidation and EA Alignment
Security and Risk Management	Centralized Security Information and Event Management (SIEM) under the office of the new state CISO, with SIEM information feeding into the central Security Operations Center (SOC).
Cloud Services	The move towards software-defined networking, storage and compute across multiple active data centers enables the State to integrate with commercial cloud infrastructure and software as a service offerings.
Consolidation / Optimization	Consolidation and optimization of data center services, a SOA architecture and a governance and cost allocation methodology benefits all the State’s IT consumers.

Impact

NASCIO’s stated criteria for measuring impact “the project leads to substantial and measurable changes; it makes state government better” could not ring truer for Louisiana’s IT Consolidation and Enterprise Architecture program. By following a path based upon goals of consolidation, standardization, efficiency, transparency, and preparedness for technology changes, CIO Richard “Dickie” Howze and his team have made a significant impact in moving the needle of Enterprise IT in the state of Louisiana. The table below summarizes the most salient of these impacts.

Impact	Before IT Consolidation and EA	With IT Consolidation and EA
Consolidation	<ul style="list-style-type: none"> IT staff dispersed across 16 state departments. Fragmented and inconsistent departmental IT leadership. 	<ul style="list-style-type: none"> Consolidated IT staff under OTS, reducing 92 positions without any layoffs. Consolidation of IT leadership under a single Office of the CIO, Richard “Dickie” Howze.
Centralization / Standardization	<ul style="list-style-type: none"> IT equipment spread across departmental data centers and supported by dedicated resources. Software licensing agreements and equipment warranties siloed across 16 state agencies. 	<ul style="list-style-type: none"> Consolidation of all IT equipment into 2 data centers and transition to a shared services model. Right-sized licensing and restructured warranty agreements to align with a single IT organization. Consolidation, right-sizing, and restructuring contribute to \$75 million in savings for Louisiana.
Cost Allocation / Transparency	<ul style="list-style-type: none"> Limited virtualization and IT infrastructure cost allocation. No centralized SOA services. 	<ul style="list-style-type: none"> Software-defined datacenter with the ability to provision and cost allocate infrastructure at a granular level. Centralized EA SOA services and the ability to cost allocate service utilization as a utility by the call. More than 60 SOA services across 7 EA components enable reuse and collaboration among customer departments.
Augmentation / Elasticity	<ul style="list-style-type: none"> Adding IT capacity meant buying dedicated on premise compute and storage. Adding skilled IT resources meant budgeting for and adding new positions, a time-consuming process. 	<ul style="list-style-type: none"> The EA hyper-converge platform allows fine-grained resource addition without significant up-front costs. Louisiana’s participation in the VMWare cloud on AWS program allows the extension of their EA compute fabric into the AWS cloud. IT resources specializing in a number of domains can be acquired from a resource master service agreement as needed.