REALIZING E-Government

INSIDE
A technology framework for today and tomorrow
Realizing e-Government

Electronic government is more than a Web site. It is connecting a government with its stakeholders on a scale that until now has been unimaginable. It is leveraging the Internet to simplify government. It is that simple and that profound.


In this study installment, we investigate electronic government at the micro level: the technologies that allow governments to move beyond “brochureware” — Web pages with little to no interactive capabilities — and into a world where citizen service and the operations of government are reformed within a robust technical e-government enterprise platform.

Where e-Government Is

Electronic government, with a few exceptions, has not yet become reality. What has been occurring with increased frequency is “government online.” Government online consists mainly of preliminary forays onto the Internet, which usually take the form of static, non-interactive Web sites. These ventures are often dubbed “portals” but seldom offer citizens more than an aggregation of agency sites — each of which remains a silo of agency Web pages.

These Web pages, in turn, typically consist only of general agency information and telephone contact information. The boldest offer a small helping of e-transactional applications, such as tax payment. Even these few software applications, however, are often buried layers deep, requiring a citizen to navigate through the sites of multiple agencies to find the desired application. Most governments have yet to realize the vision of a personalized, citizen-centric, feature-rich government Web presence.

Given the nascent state of electronic government, the limitations in recent government Web endeavors are understandable; after all, many private-sector stalwarts have only recently realized that the power of e-business is more than a Web page deep. However, it is critical that governments recognize the strength and breadth of technology options in the electronic space. Web pages of static HTML should be considered just the beginning of e-government.

Where e-Government Will Be

Imagine a small-business owner receiving via e-mail an automatic “tickler” reminding her that it is time to renew her business license. The e-mail provides the basic details of her business and hyperlinks directly to her government’s online software application for business
license renewal. On the site, the business owner reviews the details of her current business license and notes that the mailing address on file is out of date. She amends the address, confirms her changes and proceeds to remit electronic payment for the license renewal.

The government’s database is updated to reflect the amended address and license renewal, effective as of the timestamp of payment submission. The business license is fully renewed for another year. Minutes later, the business owner receives a second e-mail, confirming her license renewal and payment amount. This e-mail also provides a hyperlink directly to an online payment confirmation screen that provides basic details about her renewal, such as amount paid and date and time paid. She may also choose to print this “receipt” for her files.

Later, following a decision to expand into complementary businesses, the owner decides to investigate licensing requirements for these new ventures. She logs into her government’s central Web page and is presented with a personalized view of information, events and a menu for small-business owners (information is organized by the user need, not the government’s functions). Selecting the appropriate menu item, she finds concise information on new business licensing and a direct link to a software application for securing a new business license. This software application manages the process for applying for a new business license from beginning to end, prompting the owner with a series of questions about the type of business, ownership, etc.

Based on her responses to each of these questions, the software application customizes the appropriate form fields. Business logic within the form ensures that field entries are appropriate (e.g., proper length, within acceptable numeric ranges, etc.). If there are points in the application process where government intervention is required, such as the scheduling of an inspection, this also can be requested online. The appropriate agency is automatically notified and can use the same software application for workflow management — tracking across departments the scheduling, assignment, execution and results of the inspection.

The business owner is automatically notified via e-mail when the inspection is complete and, to resume the application, may link directly to the software application where she left off. Similarly, she may track her progress in the business license application — reviewing which steps are complete, which are yet to be complete and who is responsible (e.g., herself, a government agency, a third party) for each.

Following completion of all required steps, the owner may review the completed license application online and submit it with payment electronically. The end result is a new business license, delivered electronically and printable for paper records.

THE PERFECT HOME: CREATING A PROPER E-GOVERNMENT FRAMEWORK

The scenario described above is a step beyond e-transactional payment applications and a technological leap over a uni-directional, information-only government Web site. As such, the e-government technologies that power such a vision extend considerably further than HTML, JavaScript and other Web page implements common to most current government online initiatives.
The simplest way to explain the nature and capability of robust electronic government technologies is by analogy. Consider the construction of a house, which begins with infrastructure elements such as the foundation and plumbing, proceeds with framework such as pre-built trusses and pre-assembled cabinetry, and is revealed to the homeowner as a variety of usable rooms. Short-sightedness in foundation design or weaknesses in the framework platform will result in a house that can't "expand" with the owner (i.e., will not support additional floors) or in rooms with insufficient lighting. Finally, several doors provide access to the home. The same principles apply when creating the proper technological framework for e-government or, as we call it, an "e-government technology platform."

A proper technological foundation including robust message brokering and system management supports a variety of software components such as search capabilities, workflow engines, payment processing and electronic forms. These components, in turn, power e-government software applications such as online business license applications, permitting, tax remittance and ticket payments. These software applications may be accessed via the Web, wireless devices, public kiosks or telephone.

Figure 1 depicts this analogy between house construction and construction of an e-government framework.

In the following sections, we will explore the technologies that compose an effective e-government technology platform.

### E-Government System Infrastructure

A sound system infrastructure provides many things: session management, systems management (audit and logging), scalability, etc. Yet because the e-government space promises considerable change over the next few years, perhaps the most important quality of an e-government system infrastructure is flexibility.

Fortunately, most of the technologies that drive the e-space, such as Java, are predicated on a system of open standards. A system infrastructure based upon open standards ensures a high degree of interoperability between different hardware, software and vendors. If the "foundation" of the system is centered on open standards, it follows that the software components and software applications that run atop this system infrastructure will observe open standards as well. This, in turn, means flexibility — or, more specifically, the ability to evolve with the electronic government space.
e-Government Software Components

SOFTWARE COMPONENTS: THE ENGINES OF THE E-GOVERNMENT FRAMEWORK

While the foundation of a house essentially outlines its shape and provides the platform upon which rooms may be built, it remains short in “functionality.” The elements that provide a house's functionality include plumbing and electrical wiring. Just as wiring lights a room and enables its use, e-government software components power the software applications used by citizens, businesses and government employees. A software component is defined as: “a nontrivial piece of software, a module, a package, or a subsystem, that fulfills a clear function, has a clear boundary and can be integrated in a well-defined architecture.”

Consider again our scenario of the business owner. In the first instance, she renews an existing business license online. This software application consists of an online inquiry to retrieve the details of her license, presentation of the license for review, and payment processing. There is likely one software component, the payment engine, involved in this renewal application.

The functionality needed to support the business owner’s later application for a new business license is more complex. As such, securing a new business license requires more software components to power the software application. In addition to the payment engine component, the new business license software application would be powered by the following software components:

* A workflow management engine
* Personalization
* Electronic forms

Properly developed e-government software components provide governments the technological muscle to power almost any variety of e-government software applications. As such, well-built software applications may employ one or more e-government software components to achieve desired functionalities with greater flexibility.

CHARACTERISTICS OF GOOD E-GOVERNMENT SOFTWARE COMPONENTS

A sound e-government software component exhibits two primary characteristics. First, as with system infrastructure, it should be developed around “open standards.” An open standard is a published standard that is owned by no one and is used universally. This will ensure a high degree of interoperability with other software components and the software applications they power. Consider again the analogy of a home: If the builder constructs the window frames to a standard size, the homeowner may purchase the windows from any variety of stores. In contrast, if the builder ignores standard window sizes when building the frames, the homeowner must have custom

A SOFTWARE COMPONENT: EXAMPLE: THE PAYMENT ENGINE

Electronic payment processing is an integral component of the overall e-government framework. As discussed, an e-government payment engine should be built on open standards and provide the payment processing functionality specific to government. Such a component also should include the following:

* Ability to process credit/debit and e-check payments in real-time
* A reliable, scalable and secure solution that secures data during its transmission and storage
* Reliable, secure leased-line connections to its acquiring processor
* A confirmation number for every successful payment
* Online payment tracking
* Financial reports of all payments
* Complete audit trail of a transaction through the entire payment cycle
* Proactive notification to the consumer and government agency of all chargebacks
* Ability to provide fee-mapping of all interchange, processing or convenience fees to separate bank accounts
* Transaction splitting — ability to take one transaction and map to multiple bank accounts

windows built to fit the frame. The use of open standards in software components allows a government greater choice and flexibility, as well as quicker implementation, in the types of software applications it chooses to deploy.

It is not enough, however, that a software component be built around open standards. While open standard software components such as payment engines have been deployed across e-business, the needs of e-business are not the needs of e-government. As such, attempts to re-purpose software components from the private sector into the government sector may lead to forced-fits and poor feature functionality. Therefore, the second primary characteristic of sound software components is that the software component must be built specifically for the government space.

e-Government Software Applications

Software applications, similar to the rooms of a house, serve as the destination of citizens, businesses and government employees seeking online service. As the rooms of a house must be well laid out, easily accessible and available 24 hours a day, e-government software applications must be rich in functionality, easy to find, intuitive to use and available all day, every day. Of course, while the rooms of a house are designed for a small group of “users” (say, a family of four), the software applications of an e-government framework must provide service for a group of users (citizens, businesses, government employees) numbering in the hundreds of thousands or millions — not an easy task.

For an IT government leader, it is difficult to predict all the software applications a constituency will demand. It is, however, possible to anticipate the core features that these software applications must offer — payment processing, digital certificates, electronic forms — and secure the appropriate software components. If the software applications selected are, like the software components, built on open standards specifically for the e-government space, this will help ensure that the e-government framework can grow and change with constituency demand.

The relationship between component and application is represented graphically in Figure 2.

Based on this diagram, an e-government platform with a payment engine software component will support software applications that collect money, such as one that allows payment of parking tickets, but do little more. For a more advanced software application, such as one that provides user accounts and remembers user preferences, the framework would require an additional software component for personalization.

With both the personalization and payment engine software components, the e-government platform would support software applications that allow users to login, store
preferences such as payment method, and remit payment. So, citizens use software applications to remit payments to government on a frequent basis — perhaps as business owners purchasing certain monthly reports — they would not need to re-enter their payment information each time. In this manner, e-government software components may be added as the needs of new software applications exceed the capabilities of the existing components.

**e-Government Points Of Access**

The final important aspect of a sound e-government framework is the point of access: Web, IVR, wireless, kiosk, etc. All e-government software applications should be accessible from multiple access points, or “delivery channels.” This means that if a citizen pays a property tax bill through a telephony channel such as IVR, they should be able to confirm payment through another delivery channel, such as the Web.

Just as a house without a wheelchair ramp will exclude certain visitors, a narrow choice of access points for e-government software applications will exclude some users. Toward that end, every software application should be designed and developed to ensure the site’s compatibility with assistive technology software.

**The EzGov FlexFoundation**

The leading example of an e-government technology platform is the EzGov FlexFoundation™. Centered on open standards and created especially for governments, this e-government technology platform incorporates highly scalable and highly available architecture and provides the foundation for integrated, cross-agency solutions. It includes the infrastructure, software components and applications necessary to power effective e-government.

**Conclusion**

A well-planned and flexible electronic government platform is imperative if governments are to meet the growing demands for services delivered via the Internet and future delivery channels. This framework should consist of a sound system infrastructure, robust e-government software components, functionally rich software applications and a breadth of access points that complement the inclusive character of government. In this manner, governments will be well-positioned to manage the evolving electronic government space and to enjoy the benefits of true e-government.

Please visit www.ezgov.com or call us at (877)-EZGOV4U if you have any questions about the EzGov FlexFoundation or how to bring e-government to your government.

2. The EzGov FlexFoundation™ is the definitive e-government technology platform allowing integration across government agencies. For more information on the EzGov FlexFoundation and how EzGov can enable your government to achieve its e-government vision visit www.ezgov.com or call 1-877-EzGov4U.