



*What will the software industry look like in 3, 5, even 10 years from now?*

I believe that we'll see a great change in the industry with respect to state and local government (SLG). SLG lags much of the market in cloud adoption but in time the software industry will provide great value and transformation.

The first phase of cloud adoption, Software as a Service (SaaS) has begun but primarily in the form of core business applications as demonstrated by the competition between Microsoft and Google to deliver SaaS office applications to SLG. These applications provide significant and immediate savings for agencies but drive little government process improvement.

As SLG sees maturing cloud security and compliance more agency infrastructure will be moved to Infrastructure as a Service (IaaS) providers. This second phase of cloud adoption will provide great efficiencies but, again, little process transformation.

The third phase, over the longer term, will be utilization of Platform as a Service (PaaS) offerings that are positioned to meet the unique needs of SLG. The adoption and evolution of SLG PaaS has the potential for monumental cost savings, operational efficiencies, and service improvements.

*What customer demands and business trends will drive changes in software products, how they're developed, and the industry that provides them?*

State IT has the advantages of large scale, great opportunity for reuse and consolidation across the enterprise (the State), and energetic, creative individuals collaborating with a common purpose. Despite these advantages realizing scale efficiencies across states is an elusive challenge and huge amounts of money are wasted every year. This will change radically over the next ten years as the cloud provides the carrot of efficiency and autonomy as opposed to the stick of legislation and regulation.

Four core components of SLG IT will drive development and adoption of cloud technologies in the coming decade: infrastructure, applications, data, and security. Here's where needs in each of these areas taking us.

Infrastructure - Consolidation is underway in many states. Many states are in the process of consolidating many data centers into fewer, achieving costs savings in hardware, power, personnel, and real estate. The trend will be toward moving these consolidated data centers into cloud IaaS. Less sensitive data will move first and highly sensitive data later as public clouds become more secure and private clouds emerge.

Applications - We have a long way to go in the SLG software application arena. Large scale implementations are problematic; many statewide IT projects have failed, interrupting services, costing states tens of millions, and resulting in lawsuits and broken careers. On the other end of the scale, municipalities spend large amounts of money and time every year procuring systems that replicate functions but cannot leverage each other or share information due to disparate platforms and data models. Consortia are formed and states promote shared services but local decisions are understandably dictated by local economics, preferences, and politics. The cloud is an opportunity to align these local priorities into a common approach providing a common solution meeting the needs, budgets, and political landscape of the locals.

I predict we will see huge advantages coming through statewide PaaS systems. Industry will provide the platform, government agencies will create the applications. Applications will be built in a matter of days rather than procured in months or years. Changes made in house rather than through vendor change orders. All local needs will be met, no matter how arcane, eliminating paperwork and improving process efficiency across all levels of SLG. Custom mobile applications will be built, in collaboration with users, automating the mobile workforce.

Applications will be shared between all agencies of the State through web-based application repositories.

Imagine the cost savings when agencies throughout each state share free applications, solving a wide spectrum of problems, paying only for the shared cost of the cloud services.

Data - State PaaS systems will utilize a pre-defined data set. The data definition will be expansive, so as not to restrict its use, but will ensure a common model for applications across the state. This will be a great benefit for statewide analysis and transport of information. State agencies collecting local data will receive electronic records without the need for transcription or transformation. Locals will retain control of their data, defining which data remains local, which is transferred for state use, and which is allowed public access. Web services will provide access to the data deemed accessible to the public. This will facilitate the "open government" initiatives as well as efforts such as "apps for democracy" that are crowdsourcing access to government information.

Security - Although security is currently a barrier to cloud adoption it will become one of the major forces moving SLG to the cloud. Larry Kettewell, Chief Information Security Officer for the State of Kansas describes the current "federation" of state IT security as a challenge. Although each state sets standards for security the structure for management, oversight, and funding is complex and multi-layered. Not all concerns of cloud security have been alleviated but the cloud allows states to focus on security standards, compliance, and audit within a single state system rather than trying to manage disparate systems across the state.

Predicting the impacts of technology is difficult and this is but one vision. Still, it is indisputable that states with the vision, planning, and execution will realize transformative benefits from the cloud in the near future.

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