Modular IT Organization in Utah State Government

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There is substantial debate inside IT circles about what model for organizing IT works best: centralized or decentralized.   I recently wrote about the need for the state to build a world class IT infrastructure. As part of that document, I wrote that I did not think that the State could afford to build more than one world-class IT infrastructure. Many interpreted this to mean that I am in favor of a more centralized IT organization structure.   In the past, centralized IT was the norm because of the cost of large corporate mainframes. As personal computers came into their own, computing was thought to be more decentralized.

My vision of IT organization is neither fully centralized nor totally decentralized. Instead it analyzes core IT activities and fits them to the most appropriate governance structures. This paper will describe what I believe we need to work toward: a modular IT organization for Utah State Government. In my opinion, this approach is the one most likely to achieve success in providing IT to the state that is both cost effective *and* world class.

IT Governance Models

There are several ways that core IT functions can be organized.[1] The following discussion describes some of the more popular models.

Centralized. In the centralized model, top-

down responsibility for solutions delivery, conceptualizing, developing and implementing IT solutions for all parts of the business is controlled by some central authority. A centralized model is economical from both a skill and an overhead standpoint, but does little to build client relationships, foster business knowledge in IT staff, or further align IT with business needs since customizing the solution to fit the business can be difficult.


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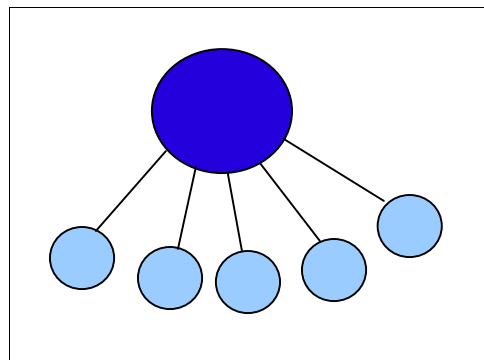
[1] See "Designing Adaptive Organizations" by Ritu Agarwal and V. Sambamurthy, CIO Insight, December 2001 (No. 08) for a more general discussion of modular organization in IT.
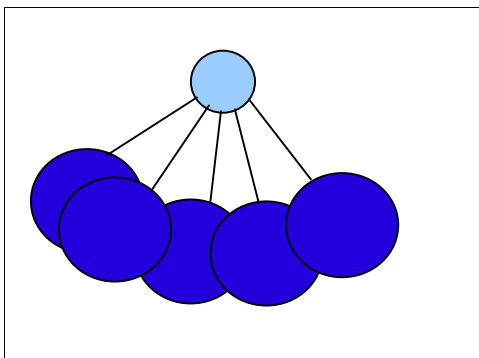
Centralized, with CRM Role. In this model, the conceptualization and delivery of IT services is still carried out by a central authority, but that authority is augmented with the addition of customer relationship managers—people who deal directly with customers on behalf of the centralized authority to mitigate some of the disadvantages of the central model. This model does much better than the pure centralized model because it aligns IT with business needs and builds client relationships. Nevertheless, it does require the additional overhead of staffing the CRM function and also requires that effective coordination to occur between the CRM staff and solution delivery teams.
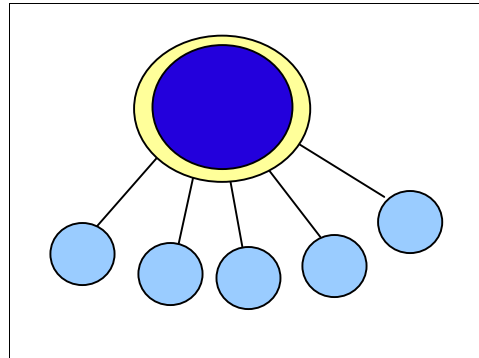
A Federated Model. In the federated model, a statewide IT unit such as the CIO's office has primary responsibility for architecture, common infrastructure and services, and standards decisions, while each agency IT department has primary responsibility for application resource decisions. Agency IT managers report into the agency director as well as the central IT organization. The federated model gives good balance between enterprise and local innovation. Also, it is quite effective at aligning IT with the needs of the business. The disadvantages of the federated model are the complexity of coordinating among so many players, the problem of dual reporting relationships, and, most importantly, the high administrative and staff costs of supporting multiple IT organizations.
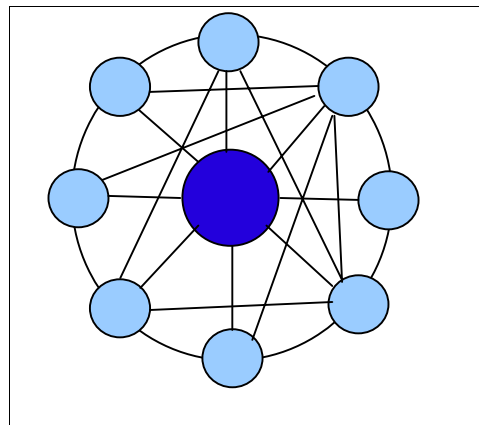
Decentralized. The decentralized model is the loosest of the organizational choices. In the decentralized model, solutions delivery is aligned with the agency line of business and IT managers report to the agency director. When coordination happens, it is achieved in IT management and executive councils. The decentralized approach gives agencies the most control over IT direction and closely aligns IT service delivery with agency needs.
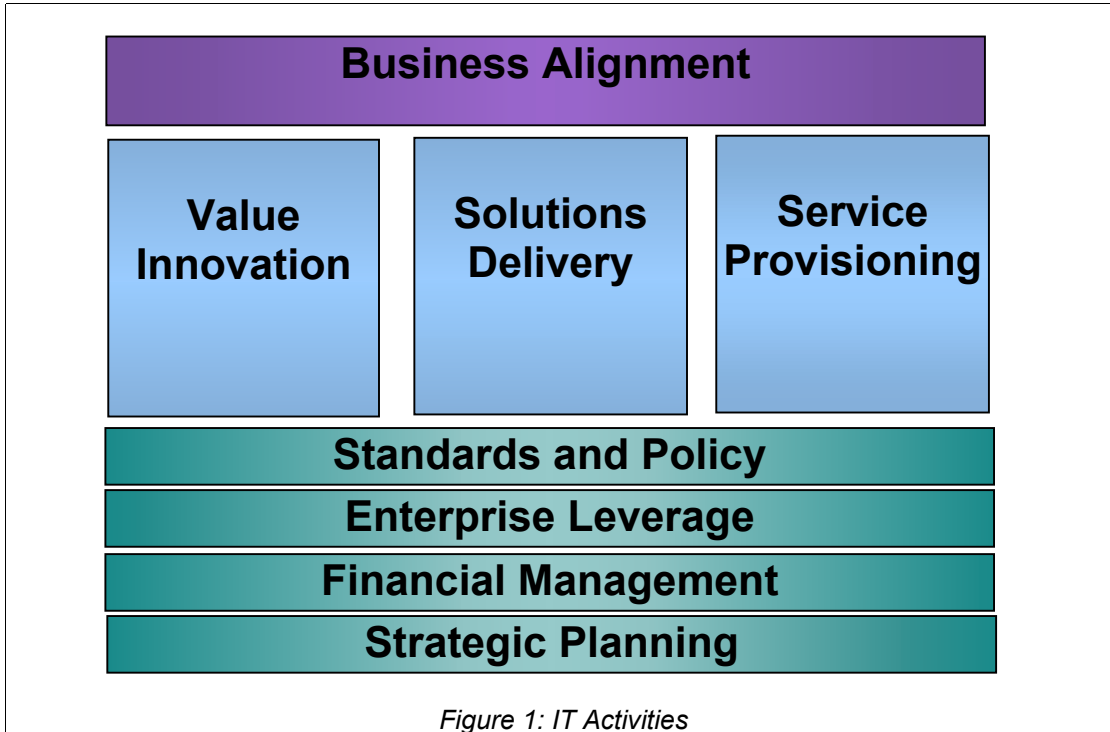
| Business Alignment |
| Value Innovation | Solutions Delivery | Service Provisioning |
| Standards and Policy |
| Enterprise Leverage |
| Financial Management |
| Strategic Planning |

Figure 1: IT Activities

The cost of the decentralized approach is high, however. This model does little to leverage enterprise knowledge, information, or processing. Duplicate IT operations are likely and, as a result, costly. A decentralized approach leads to pockets of innovation and excellence with little ability to respond to strategic initiatives. What's more, IT staff have little opportunity for career development or training because they are fragmented across a large number of separate organizations.   This also makes re-training a very costly proposition when IT staff transfer from one agency to another.

Choosing an Organizational Model

In choosing an appropriate organizational model for IT in a business or the state, one could simply pick from the above list, customize the result where necessary, pay the price of any disadvantages, and hope for the best. Another, more flexible, method is to choose all of the organizational models that fit and apply them to IT activities in a modular fashion. In doing this, we analyze each activity that IT organizations typically perform and then assign the right organizational model for each activity.

This section describes seven activities that are common to IT organizations and discusses the application of these organizational models to each.   These activities are shown in Figure 1. Three of these activities are core IT activities: value innovation, solutions delivery, and service provisioning. The other four are peripheral activities that support the core activities.

Table 1 shows the activities described in the next section and matches each to the various organizational models described above. As we discuss each activity, we'll describe the organizational models that can be successfully and economically applied to that activity. Please note that the decentralized column is empty because a fully decentralized model cannot be economically applied to any of these activities.

	Centralized	Centralized (CRM)	Federal	Decentralized
Value innovation			X	
Solutions Delivery		X	X	
Service Provisioning		X		
Strategic Planning	X			
Financial Management			X	
Enterprise Leverage	X			
Standards & Policies			X	

Table 1:Matching IT Activities to Organizational Models

Core IT Activities

Value Innovation. Value innovation occurs when an organization uses IT to change and improve how it conducts its day to day business operations. Examples might be building a system to automate some previously manual task or replacing several smaller IT systems with a larger integrated system that does the work of the smaller systems in an enhanced manner. Value innovation requires an ongoing analysis of how IT can be used to strengthen an agency's central roles and mission, enhance customer relationships, and connect with partners (other agencies, government, and even private industry). The overall goal of value innovation is to improve organizational performance by ensuring that the IT goals and activities of the organization are fully aligned with its business goals and activities.

A federated organizational model serves this activity best because while the agencies know their respective lines of business best, the enterprise has an interest in ensuring that the innovation is done efficiently, in line with enterprise wide objectives, and in accordance with enterprise standards and policies. A federal organization depends on having IT experts in the agencies who can help agency business managers understand what technology can do, how it can be applied to agency business needs, and guide agency strategic planning processes to maximize the effectiveness of IT investments. These agency IT experts need a deep understanding of agency lines of business as well as close ties to the enterprise IT organization and the products and services it offers. Agency IT experts must be well versed in technology applicable to agency business. In this activity, agency experts are most accurately seen as informed, demanding consumers of IT solutions and services.

The fact that this activity is federated implies that there is a great deal of coordination and shared governance between agencies and the CIO's office. This coordination determines where the innovation should take place, whether there is a sufficient return on investment (ROI) to justify the innovation, and the proper degree of coordination with other agencies attempting similar projects.

Solutions Delivery. Solutions delivery is the process of realizing the systems envisioned in the value innovation function. Solutions delivery is done by analyzing business needs, designing IT applications to meet those needs, and delivering the resulting applications using packaged software, internal development, or outsourced development. The goal of solutions delivery is to create and deliver IT applications that are both on-time and on-budget.

Solutions delivery can be done using a federated approach where agency personnel, the CIO's office and ITS cooperate to carry out the development, deployment and ultimate operation of a solution. Solutions delivery can also be done using a centralized strategy with strong CRM support to agency personnel who are managing the project. Note that whether the delivery is performed using a federated or centralized (CRM) model, there is always a group inside the agency, probably the group doing value innovation, who is serving as the customer and ensuring that the agency gets the solution they need.

Whether this activity is performed using a federated or centralized (CRM) model depends on a number of factors including the strength of agency IT staff, their familiarity with the required technology, time to market considerations, and the level of integration that the delivery will need with enterprise and other agency resources.

Service Provisioning. Services are IT utilities or commodities such as network connectivity, desktop computers, email and other servers, data centers, and other aspects of IT that support solutions delivery. Services are the infrastructure

that other IT activities are built on. Service provisioning is the process of deploying and operating needed services at the lowest possible cost. Since services must be reliable, cost-effective, and secure, the service provisioning organization must spend a great deal of time and effort developing and implementing processes and metrics.

Service provisioning is best done using a centralized (CRM) model for the following reasons:

- Agencies can leverage very little return by providing commodity types of services apart from ITS. At the same time, the economies of scale for these services are large and provide the state with significant savings when combined across the enterprise. Combining these two facts leaves little reason for agencies to argue for significant autonomy in this area.

- Delivering commodity services in a manner that is highly reliable, available, and secure requires large investments in people and equipment as well as the development of an organization that can respond to problems on a 24x7 basis. A large IT organization, such as ITS, can more easily field groups to deal with security, release management, capacity planning, and develop expertise in these areas. Hiring these same groups at the agency level would be ineffective from a cost standpoint since their specialized knowledge could not be effectively leveraged across the enterprise.

- Technology changes and our own goals demand that we have consistent and common infrastructure. A good example is voice over IP (VoIP) telephony. We simply cannot deploy VoIP telephones until we have a single, consistent network infrastructure from wall-plate to wall-plate.

Other IT Activities

Strategic Planning. Strategic planning, as described here, is the process of establishing the role and mission of IT in the enterprise. Strategic planning for enterprise needs in IT gives broad vision and guidance to the teams doing value innovation, solutions delivery, and service provisioning so that they can plan for upcoming needs. Such statewide activity also informs agency strategic planners as to what the agency can expect from a global IT perspective and what IT requirements the agency will need to meet in order to be in compliance with enterprise-wide business requirements.

Strategic planning is a centralized activity carried out by the CIO's office with support from ITS and input from agency IT organizations. This planning is one of the primary methods that the Governor has to affect agency IT activities and ensure that such activities are in keeping with overall enterprise goals and objectives.

Financial Management. Financial management comprises activities such as structuring service level agreements, benchmarking service levels and costs of service delivery, measuring service and financial performance, developing business cases, and building and reviewing ROI analyses of new IT investments. The goal of financial management is to ensure that the IT organization is fiscally sound and meeting the obligations given to it by management and the legislature. Financial management should provide evidence of value added to the enterprise and the agency through the use of IT.

Financial management is best carried out using a federated model because the activities and measurements are carried out at all levels of the enterprise and often cross agency boundaries. The CIO's office establishes standards for reporting performance, project, and financial data and coordinates the gathering and subsequent presentation of that information to the Cabinet, the Governor, and the Legislature.

Enterprise Leverage. "Leveraging the enterprise" is another way of saying that we must do IT better and cheaper than we have ever done before. Enterprise leverage is the process of discovering where the enterprise can take advantage of synergies that exist between agencies, departments, and divisions. It is through the sharing of expertise, the transfer of best practices, the common use of infrastructure, the sharing of application development resources, and deployment of enterprise resource planning systems (ERP) that the value is gained. The goal of enterprise leverage is to decrease the overall cost of IT while increasing service levels.

Enterprise leverage is, by its nature, a centralized activity because it involves gathering information on plans and direction, the results of the value innovation activity, from each agency and coordinating and combining those results. This activity is carried out by the CIO's office with support from ITS.

Standards and Policies. Creating standards and policies is an important IT activity that forms an architectural blueprint for guiding the building of the enterprise's overall IT infrastructure, including agency purchased or built components. Standards and policies play an important role in establishing an IT infrastructure that is highly scalable, reliable, available, manageable, and secure. Standards and policies also prevent needless delay in implementing IT applications and other improvements while ensuring that applications can work together, even when such cooperation is not explicitly foreseen.

Because standards and policies affect each agency and, in general, are ultimately supported and paid for out of agency budgets, their creation and approval must be closely coordinated using a federated model.

Organizing Utah's IT

In an earlier paper, I defined a world class IT infrastructure as having the following characteristics:

- Aligned with business needs

- High reliability, availability, and security

- High customer satisfaction

- Well established metrics

- Cost effective

- Data integrity

I believe that we cannot achieve these characteristics without the proper organization and the proper focus of attention and resources in the most effective ways. The modular IT organization, with its use of appropriate models for each IT activity, is the most cost effective way to achieve our goals.

Some may say that this is, more or less, the way IT is currently organized in the state and to a limited extent that's true. However, turf wars fueled sometimes by ego and other times by simple misunderstanding often contribute to a fear of change that keeps us from completely realizing this vision. The real rewards come in the complete realization of this model, not from merely having the right form or saying the right thing.

For example, many agencies persist in performing basic service provisioning (such as provisioning desktop computers and LAN administration) instead of turning that function over to ITS. I doubt any agency is going to sink or swim based on what brand of machines they use or what version of Windows is installed, still a lot of agency IT overhead is expended on those very issues instead of value innovation or solution delivery—two areas that agencies have a fundamental interest in performing well.

As an exercise, try going down the organizational chart of your IT organization and assigning each person in it to one of the seven IT activities mentioned in this paper. Do you agree that the proportion of expenditure in each activity is correct? Will it help the agency achieve its mission or are most of the people merely providing services that you can probably purchase somewhere else more cheaply?

The two functions that every IT organization in every agency in the state must perform in order to meet agency objectives are the value innovation and financial management pieces (everything else could be outsourced if we were so inclined). Can you clearly identify people in your organization who are responsible for these activities? Is value innovation a key, recognizable part of

the organization, or is it something that IT Directors do in their spare time after the fires of licensing, email server reliability, and other minutiae have been dealt with?

I encourage every manager and IT worker to ask themselves these questions as well as posing others that will lead to introspection on what our organizations do and how IT can be used to help them do it better and at less cost.