CITY OF KIRKLAND
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MEMORANDUM

To: David Ramsay, City Manager

From: Brenda Cooper, CIO

Date: May 23rd, 2008

Subject: Information Technology Department Overview

RECOMMENDATION

Primarily the attached report is a briefing designed to keep Council informed of technology issues including successes, challenges, and future opportunities. We will touch on the highlights of projects that we feel are of interest to the Council and the community and not attempt to cover all of the work IT is doing. We recommend that Council read and be familiar with this overview of the IT Department and be prepared to ask any questions they would like to ask.

Note that IT intends to use the actual presentation time to discuss future tools and concepts around government use of Web 2.0 tools, rather than to reiterate this information. A copy of the PowerPoint will be provided the night of the meeting.

POLICY IMPLICATIONS

No immediate implications. Some Council decision related to Information Technology and/or the 2009/10 budget may have policy implications.

BACKGROUND DISCUSSION

Since the year 2000, when the City of Kirkland created the Information Technology Department as a separate entity, the department has grown and changed significantly. The expectations of the community about how and when they interact with government have shifted from five days a week in person to seven days a week online (in addition to traditional methods). Staff in all departments is more dependent on technology to get work done, and the City Council uses computers to read and review information at home and on the dais. Our budget and staffing have also grown (partially through combination with MMS): in 2002 and 2003, the budget for those combined years was $5,745,520 and we had 7.0 FTE's. For the 2008/9 biennium, our budget is $10,569,141 and we have 18.75 approved FTE's and an additional 6.5 one-time funded and temporary staff members.

City of Kirkland
Information Technology Department
Report for the Kirkland City Council June 3rd Study Session, 2008

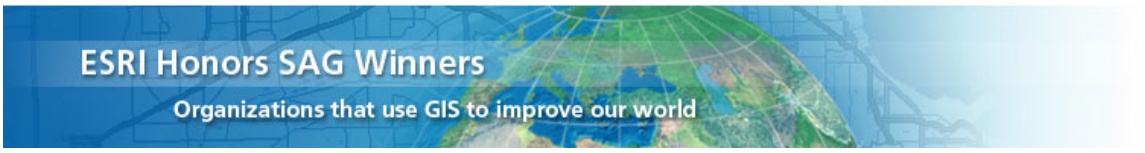
Overview

This is designed to be a policy-maker level overview. I'll touch on success stories, general information, challenges, and what you personally might see changing in your technology.

I culled out a lot of projects and topics which are keeping us busy, but which may not interest you or which are pretty much infrastructure/behind the scenes IT work. The remainder is still a lot of information. For that reason, I'm going touch on most topics in reasonably short form. Many, such as the server room challenges, staffing, or security, could have whole white papers and staff reports written just about them. If you'd like any more in-depth details about any of this information, please let me know and I'll get it for you.

Our Biggest Success Stories

Special Achievement in GIS Award



The primary vendor for GIS worldwide, Environment Systems Research International (ESRI), has selected the City of Kirkland to receive a Special Achievement in GIS award. Recipients of the Special Achievement in GIS award are submitted by ESRI staff from thousands of organizations worldwide, then personally reviewed and selected by Jack Dangermond, the ESRI Founder and CIO. This is a very prestigious international award. Even though the primary reason we earned this award is certainly our very capable GIS Administrator, Xiaoning Jiang, and her dedicated staff, the award also recognizes your support for GIS as city leaders and the support of Dave Ramsay, Ray Steiger, the rest of the city management team, and the many city staff who have embraced and use this technology daily. GIS staff includes Xiaoning Jiang, Kim Sun, Chris Mast, Hunter Barcello, and Joe Plattner (PW).

After we receive the award in August, we will add it to a Council Agenda.

Downtown Wireless

The downtown wireless program continues to be a community favorite. Some of the emails we've received in just the last few months include:

I'm using it now, and it is working great. I would use it while I await my bus, I work in Kirkland. Checking my email outside is so much better, especially in the spring-summer time. Kirkland is a wonderful city. Even now, it is keeping my lap nice and warm. :D It is one of the best things this city has done yet! Love the WiFi!

As a work from home parent, wireless access would allow me to keep working while taking the kids out for some much needed play time and fresh air.

Hi!
I just wanted to send a quick note to provide you my feedback on the wireless internet provided at Marina Park. I think it's wonderful! I'm using it right now to send this message. I needed to find a quiet location this morning with internet access for an important call that I am expecting on my cell phone. We don't have a home phone, my cell phone coverage at our home is not that great, and there is some work being on our street with a jackhammer, so I needed to find another, quieter location to wait for this call. I tried some local coffee shops, but it was too loud, so I was pleasantly surprised to find that the park had wireless internet. What a perfect location – quiet, beautiful, and with wireless internet! Thanks for this great service!

Kirkland Free Wireless:

Thank you so much for the free wireless service. I come to this park when I am in town to watch the sun set as I finish up my work day and wait for the traffic to die down before I head home. Much to my surprise I was able to get on the internet and respond to e-mails making the time spent at the waterfront that much more productive. Not that I often use the computer while I am on the boat, but I will keep in mind that wireless is here when I am boating and need to view a large attachments, etc.

Thanks,
Ben

eCityGov Alliance Procurement Portal

The City of Lynnwood used to host a shared small works roster which we (and many other cities) used to support certain types of procurement. Last year, Lynnwood announced that they would no longer provide this service, and so the eCityGov Alliance, which we are founding members of, filled the void through adapting a City of Bellevue application to a regional application in a very short period of time. This meant that the procurement teams of all of the owner cities needed to work together to solve an unexpected problem in a short period of time. Had they failed, our procurements for small works, simple professional services, etc., would have been more costly in both time and money, and local businesses who are used to this way of doing business with us would have also incurred additional costs. Barry Scott from Finance was instrumental in this effort.

Document Management

When I arrived at the city in the year 2000, Document/Records management was a funded high priority projects. As we re-prioritized based on our first IT strategic plan, the project moved out. We were finally able to fund and staff it adequately in 2006 and selected an industry-leading firm which was bought out immediately after selection in a hostile process. Luckily we hadn't signed a contract yet. That put us back out to bid, and we successfully chose a new firm and executed a contract with them before they were bought out, luckily in a friendly process. Our pilot project is complete, the classification scheme for documents has been completed and implemented, and a way for citizens to obtain certain records online will be rolled out to the public soon. As much progress as we have made, this is only the beginning of a multi-year implementation process. The specific benefits of this project include meeting legal requirements for records management and digital asset management, easier access to the right version of documents for staff, less paper storage, and reduced cost for retrieval of off-site records. The Finance Department including Tracey Dunlap, Anja Mullin, Kathi Anderson, and others have been instrumental as the customer champion of this project and Dawn Walker has supported it from IT.

Communicating With the Public

The Multimedia Division has done some fantastic work, ranging from the Art in Public Places collaboration with the Cultural Council through videos produced to support pedestrian safety, educate about elder abuse, and to keep citizens informed of the news about town. In the past few years this group has won the following awards:

- International Safety Media Awards, Silver Award, Short Film Category, "We've Got Issues – Pedestrian Safety"
- NATOA Third Place, "Currently Kirkland", News Series Category
- NATOA Third Place, "My Building Permit. Com", Community Awareness Category
- NATOA Third Place, "Kirkland Senior Council", Seniors Category
- NATOA Honorable Mention, "Currently Kirkland", News Series Category
- NATOA Honorable Mention, "KGOV21 It's for You", Municipal Channel Promotion
- AWC Gold Municipal Achievement Award, Kirkland Senior Council (video was part of submittal

While winning awards is affirmative, it's even more important that our streaming video is being watched. The top five shows for 2008 so far are:

Video	**Dates**	**Number of Requests**
City Council Meeting	05/06/08	3,176 requests
City Council Meeting	05/20/08	958 requests
City Council Meeting	04/15/08	519 requests
DRB meeting (audio)	04/21/08	519 requests
Currently Kirkland Episode 35	April, 2008	328 requests

These may be skewed from normal due to recent City Council activity of interest to Kirkland citizens. Three of the top five requests from last year were also city council meetings (the others were a Currently Kirkland issue and the Pedestrian Safety video), but they were all just over 300 requests each.

Our Internet page is also reaching citizens. In 2007 across the whole year, there were 2,282,869 page views (pages pulled up and looked at by people who are not inside city hall and not automated crawlers), and 331,780 unique visitors to the website.

The number one page is always jobs. After that, in no particular order since the rankings vary by time of year, are:

- Online Parks Guide
- Current Brochure (recreation guide)
- Police Department Home page
- Municipal Court
- Invitations to bid

Other pages that have had high interest include our city employee contacts information, Planning's home page, Neighborhood Services, the pool schedule and the city calendar.

Infrastructure Redesign and Upgrade

Since the last time that we reported out to Council, the Network and Operations Division – with the help of pretty much everyone else in IT and a few customers – completed a redesign of our server and storage infrastructure. This large behind-the-scenes project helped us to consolidate servers, develop a more flexible technology architecture and be in a better position to handle the demand for additional data storage that comes with increased use of video (such as the sewer cameras), additional development of GIS data, and implementation of new systems such as document management. It also put us in a better position to begin working on disaster resilience and recovery.

General Information about IT

Strategic Plan Status

The following matrix of high-priority projects was identified when we did our last strategic plan in 2006. In general, we are doing well against our goals in the cases where adequate staffing and funding have been available, and moving slowly in other areas. In a few cases, the technology has changed, and thus the projects have changed in scope or priority. This is our current status on projects identified when we did that plan.

APPLICATIONS		
Implement an Electronic Document Management System (EDMS)	Continue the procurement process and prepare for implementation. Execute a Discovery/Planning project to review and document key use cases associated with that function across the enterprise. Encourage a review of existing processes, and potential re-engineering based on the outcome. Deliver prioritized list of use cases for implementation - the document management roadmap - with target implementation dates.	*We have purchased a product, TRIM, from Tower Software (now owned by Hewlett Packard). Our first pilot project was to use TRIM for contracts and that was successful. We also recently completed creating a classification scheme so that we can begin filing other documents. A public-access piece to allow citizens to access ordinances and resolutions via the internet is almost operational.*

Develop a Virtual Kirkland GeoSpatial Model	Create a virtual model of the city, or parts of the city, using digital terrain models, building footprints, tree inventory, building textures, window treatments, sidewalks, and other layers to demonstrate how a development (e.g., a new commercial or office building) or policy (e.g., Zoning Code, Comprehensive Plan, etc.) will visually impact the city. This may also incorporate the ability to show changes over time.	*We successfully completed a pilot project to do the 3D mapping ourselves. One of the things we learned is that this is very staff intensive work. In the meantime, Google Earth and Microsoft Virtual Earth have been doing 3D work, and we are going to evaluate whether or not that effort can meet the city's needs.*
Analyze recruitment process and implement an online application solution	Improve and automate the process for attracting and hiring quality staff, including leveraging our regional relationships to provide a regional applicant portal. This project will be pursued jointly with regional partners and executed in two phases. Phase I will analyze areas for improvement and how technology can assist with process automation. Phase II will implement an Application Online solution based on the results of Phase I.	*This successfully became a regional project via the ECityGov Alliance. We anticipate being able to offer online job applications by the end of this year.*
Streamline permit process workflow	Perform detailed review of all permitting processes, workflow, and roles and responsibilities. This work will prepare the City to scale its permitting function to accommodate new demand post-annexation. In addition, the permit process workflow will provide guidance to the EDMS project to ensure that the system is aligned to effectively support permitting.	*The Development Services Team had already completed an evaluation of the single family permitting process by a consultant and is currently implementing recommended improvements to the process. They have also begun evaluating the subdivision and LSM permitting process by the same consultant to better document and streamline those processes.*

Receivables	Document the Accounts Receivable process for each department that currently deals with receivables. Define requirements for an Accounts Receivable system. Implement a centralized AR system (potentially Springbrook) with refined AR processes. Provide automated posting to IFAS.	*Finance has been working hard on establishing policies and procedures and hopes to complete implementation of the policies by the end of 2008. Systems work will follow the policy work.*
e-Gov	NWMaps is designed to be an online GIS mapping resource available to the public both for Kirkland-specific information and to provide regional GIS data from multiple entities into a seamless whole for specific data layers. NWProperty.net is a regional property locator service. The eCityGov Alliance Operations and Executive Boards manage the work plan for the system which facilitates decision-making for businesses looking to relocate to or within Kirkland and other eCityGov Alliance members. MyParksandRecreation.com is a single online source for regional information about parks and recreation opportunities. The website allows citizens to search and find availability of classes across the region, and connect to city sites to register for recreation classes. Particular work this year is to integrate parks, facilities, and trails information for the region with a search functionality and GIS component.	*EGov applications are going great and there is building momentum in the eCityGov Alliance. Currently active work includes:* *A regional evaluation of new Permit systems, work on trails in MyParksandRecreation.com, implementation of a salary survey shared data resource, implementation of a way to take job applications online, and a regionally coordinated orthophotography flight.*

Mobilize Remote Workforce	Develop a city-wide mobile strategy. For example, to what extent do we want to provide mobile systems, and how will we maintain connectivity? There are currently funded in-flight mobility projects to provide GIS connectivity in the field and for field inspectors in public works and building. The City already provides mobility solutions for Police and Fire (Fire's are managed by the City of Bellevue, who also dispatches Fire).	*Early this year we began providing computers in the field for inspectors from the Planning and Public Works department and also for some GIS.*

INFRASTRUCTURE		
Implement a storage area network	*Install a Storage Area Network (SAN) attached to key servers based on application storage requirements. The system will give the City a flexible central pool of data storage space that can be allocated to applications as needed. It will position the City to spend less money in the future as the need for new data storage grows.*	*Completed.*
Perform server virtualization	*Perform server virtualization to reduce the physical footprint of the servers in use (reducing electricity and cooling load), and allow the City to maintain a comprehensive testing environment, potentially reducing the number of outages due to change issues.*	*Completed.*

Improve network redundancy	*Consider entering into an agreement with the City of Bellevue to use the fiber connection between the two cities and share connections to King County as a back-up link in the event of an outage. The City of Kirkland recently established multiple pairs of fiber cable between Kirkland City Hall and the City of Bellevue's new data center. The City should also evaluate the redundancy of its phone system.*	*This is linked to our project to place servers and other infrastructure in the City of Bellevue data center.*
Implement automated system monitoring	*Select and implement automated system monitoring tools on critical City systems. There are a number of commercially available tools that can be easily implemented, would significantly reduce the time required to perform the daily checklist, and provide a real time view into the health of the infrastructure. The City IT department's current process uses a lengthy daily checklist to verify that infrastructure services are working correctly and to identify potential issues. It is a time consuming process and can benefit from automation.*	*Completed.*
Address disaster recovery needs	*Implement back-up and recovery hardware infrastructure and redundancy of various City systems. Also utilize neighboring City of Bellevue data center to store backup systems and Bellevue's connection to other agency networks to ensure connectivity during emergencies.*	*We have the funding approved to start doing this. Adequate funding to complete the work has not yet become available. We have looked for grants but have not found any to meet this need.*

ORGANIZATION		
Continue approach to regionalization and establish a strategic, rational process for regional project planning and selection	*Work with regional partners to develop a set of criteria to select projects for consideration. Convene an annual coordination meeting between key regional representatives to share annual programs, priorities, and identify synergies. Regional decision-makers should involve appropriate representation in project selection discussions. These should be individuals that can speak to implementation challenges. Continue current approach to regional project evaluation, which is to move forward if the initiative makes sense for customers, not necessarily because it is cheaper, faster, better, or easier. At times, internal, non-strategic drivers force the need to complete regional initiatives.*	*We have done much of this work through the executive and Operations Boards of the eCityGov Alliance. It is pretty much an ongoing process, and as "complete" as it will ever be.*
Introduce the role of Public Information Officer (PIO)	*Add a PIO reporting to the City Manager's Office (CMO). Tools and technology to support the PIO should reside in IT. The PIO will help the City communicate with the public more effectively.*	*Completed. The credit goes to the City Manager's Office and the City Council.*
Introduce the role of Application Team Manager	*Add a full-time application team manager with responsibilities and high demand for applications staff time for workload leveling, prioritization, issue escalation and project performance monitoring. The application team manager will be able to relieve the project management workload which will exceed existing staff capacity over the duration of the plan.*	*This has to be an FTE. We have requested this position and will continue to do so.*

Implement a project governance body or IT Project Management Organization (PMO)	*Implement a virtual project management organization to develop project management best practices and delivery standards. A virtual project management organization (PMO) is one where critical project delivery roles are primarily distributed amongst existing staff resources. The IT PMO will provide monitoring and review of projects for quality and also provide project portfolio management and prioritization. It is recommended that the proposed Application Team Manager position chair the PMO and develop an implementation plan. The implementation plan should take a phased approach that defines the PMO components (i.e. standards and best practices) and defines plans for training and resource assignment. It is further recommended that the PMO functions be piloted on major projects and focus on the most challenging aspects of project delivery as currently experienced by City of Kirkland IT, which are scheduling and resource leveling.*	*It will be easier to do this once we have the applications manager.*
Continue to add staff as appropriate and as resources allow	*Identify and address other staffing gaps such as those currently filled by one-time funded staff and those posed by future growth plans. The City should request ongoing City funding for its four one-time funded staff who are not currently built into the City's base budget and whose workloads are not anticipated to diminish. Other current staffing needs have been identified as a GIS specialist (see GIS Strategic Plan), network specialist, and an intern. As the City grows – in physical size through annexation and in associated staffing and infrastructure – the IT department should continue to assess its customers' growing needs and add staff as appropriate to help support the City's ability to run efficiently.*	*We've pretty much failed at this goal. We now have more one-time funded staff than we did in 2006. We did get a one-time windfall payment from Dell which we were able to use to fund an intern, but we are nearly out of that funding.*

These are the highest priority tasks from the IT Strategic Plan, which had over 104 projects, and which we've continued to add to. Some of those projects will be requested in the CIP and in future budget processes.

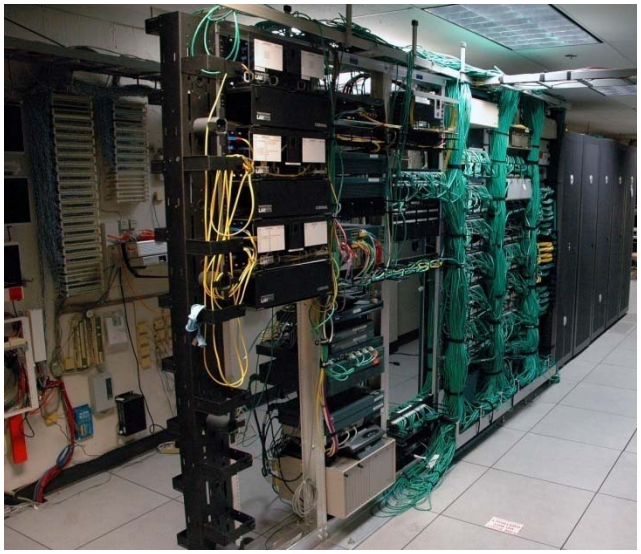
Changes in outside support provided

For the past few years, we have provided IT support for the police system components in use at the cities we dispatch for: Mercer Island and Medina. We bill that support hour for hour to those cities. This is not a significant support level – probably a tenth of an FTE or so total across the year. We expect that to continue through the point that NORCOM software is fully implemented around the end of this biennium. These are not full cost recovery contracts, although they do recover all direct costs and a portion of the associated overhead.

A few months ago, Northshore Fire approached us and asked us if we would consider providing complete IT support for them. We have developed a draft statement of work and set of fees, and will be working on an ILA for your consideration soon. This will be a full-cost recovery line of business.

Biggest Challenges

Server room



Servers, switches, and other IT equipment put out a lot of heat and use a lot of electricity. We are running out of room, cooling, and power in our server room downstairs. The equipment is overwhelming the support infrastructure it needs in order to stay cool, to stay powered in power outages and through generator on/off events, power spikes, etc. We have now had two events where one of the three air handlers that keep the equipment cool failed, and the room has overheated. We have fought off the heat death of servers by standing and holding fans pointed at them, and Facilities has helped us install better warning tools so we can start holding fans earlier, but it's probably wise to consider those two events warnings of worse to come.

Last year, Facilities planned to add a cooling unit, but the cost was prohibitive, and more than they had saved. Since the cost of having the server room overheat and damage equipment is high (a few million dollars worth of equipment plus a serious productivity hit for staff), we collectively decided to use the money facilities had set aside for the cooling unit to fund a study and get a short term plan, a long term plan, and a better idea of our collective problems (which we rightly suspected were larger than just the cooling systems; they also include power consumption, load on the UPS, and code compliance).
The preliminary cost for a three-year fix (including a design contingency but excluding taxes, building permits, final engineering, and soft costs) is just under $530,000 and the cost of doing it right (which includes expanding into the dispatch area, which police has a need for as well), is $1,280,000 in today's dollars (and $1,743,000 in 2012 dollars), and it assumes the work for the short term option has been done (the long term option by itself without the short term work will be more expensive). The real costs once everything is included are probably closer to $1,000,000 and $2,500,000.

We haven't had time to do significant option thinking yet, and without knowing the timing of a build out of this building, it's hard to say whether or not the short term option is good at all. Based on growth projections it will not be enough for much longer than 3 years, and so may not even be worth doing at this high of a cost.

We are exploring other options entirely – for example, we may be able to move some production servers to the City of Bellevue which has spare capacity in its data center.

None of our options are free, but the least expensive is almost certainly the move to Bellevue, which will have some impact on budget and staff. We cannot move our entire data center to Bellevue for various technical and risk reasons but we can probably move enough to put off the need to upgrade the server room for a few more years. It will not solve the problem indefinitely.

Security

Any computer network, including ours, is under attack from a combination of spam, email viruses, code viruses, malware, and other unsavory electronic actors. This activity grows steadily, and the work and expense of maintaining electronic doorkeepers is increasing. To give you an idea of scope, in the last 30 days we had about 2.9 million email messages sent to the city. Approximately 2.8 million of those were hostile.
We recently suffered a hostile attack called a SQL Injection Hack on our listserver software. The automated break-in originated overseas, and was probably the result of a machine trying multiple ways to get into random internet-accessible servers. The

database was cleaned up and restored, and the hack occurred again almost immediately. We stopped providing our email service since we were afraid that citizen emails could be at risk (analysis said they were compromised). The vendor firm did not convince us they were going to redo the code to make it resistant to this kind of hack, so we changed vendors and are just now in the process of rebuilding this popular service. We do not expect keeping our environment secure to become any easier over the next few years.

PCI Compliance

Related to the topic above, there are new rule sets in place for keeping citizen, customer, and staff data safe. Payment Card Industry (PCI) compliance guidelines dictate how we handle much of the data associated with credit card transactions that take place on the internet. Luckily, the eCityGov Alliance handles most of our citizen credit card tracking, but we do take some cards directly. Some of our vendors do not yet fully meet these compliance standards and we have received a few complaints about that from our more savvy citizens. We are working through these issues one by one, and it looks like we will be close to full compliance by the end of this year. This is a joint effort between IT and Finance.

Staffing

Almost a third of our staff are one time funded in one way or another – some through CIP projects, some through service packages, others through administrative choices. Even with all of the people we have in our department, there is more work than staff (which is true Citywide). Going into this tight budget season, we are concerned. We are looking for savings and creative solutions, but may not have enough rabbits in our own hat to cover the funding we need.

Replacement Funding for Major Systems

We do not currently collect money to replace our major systems as they fail. You have set aside money from time to time in good years, and we have programmed much of that toward the upcoming replacement of the permitting system and other smaller systems. We do not have effective plans for replacement of other major systems such as Finance.

Technology Sea Change Challenges

A truth about the technology industry is that rapid change is the usual state of affairs. There are two large sea changes in technology that we thought were worth bringing to your attention.

The first, called "Software as a Service," refers to the shift of application systems from our world onto the internet. Four specific examples that have affected us in the last few years are:

1. Volunteer management software: As we went to look for volunteer management software, the only place we found viable choices was in software we could only purchase on the internet.
2. When we went to replace our old listserver software after it was security-compromised, we looked for another choice we could run on our servers or host at the City of Bellevue (like our previous listserver software), but the best option was a software as a service company called GovDelivery.
3. Our video streaming software that allows Council Meetings and our television shows like Currently Kirkland to be streamed on the internet is hosted out of the San Francisco area by a company called Granicus.
4. As mentioned in our report on our strategic plan, the 3D GIS being done by commercial vendors like Google and Microsoft may mean we do not have to do the same work ourselves.

This is largely good: it avoids some costs, makes applications available from almost anywhere, and generally has built in disaster preparedness components. It does spread our data out across the world, which has some significant security worries and reduces our control over our data and our customer's data.
We expect this trend to continue. It will be some time (perhaps a decade or more) before our larger and more critical day to day systems work on this model, so this change won't give us immediate relief with our data center problem even though it is already helping us with some growth avoidance.

The second sea change worth discussing is a group of technologies often referred to as "Web 2.0," which includes social networking sites like My Space, Live Journal, LinkedIn, and Facebook, blogging, video like YouTube, and others. There are some particular challenges for governments using these technologies, such as the tension between moderating comments on blogs so that offensive or illegal material does not get posted and honoring first amendment rights.
These technologies are often more "high touch" than the one-way information transmission and simple transactions we support today. In other words, they may take more staff time to administer, largely in the departments rather than in IT.
Web 2.0 will be the primary topic of my presentation during the study session, and so we'll spend more time on it then.

Council technology: What's coming up for you?

Since your computers will not be replaced until 2011, the biggest IT change that we expect you to see personally is our impending upgrade to Office 2007. Carsten Hasse from our office will be your primary contact on that effort.

Is there anything you wish were coming up for you?