



Memorandum

TO: Public Safety, Finance and
Strategic Support Committee

FROM: Randall Murphy
Chief Information Officer

SUBJECT: Citywide Business Technology Update **DATE:** November 1, 2007

Approved

Ray Wines

Date

11/5/07

RECOMMENDATION

It is recommended that the Public Safety, Finance and Strategic Support Committee accept this report on Citywide Business Technology, including Electronic Content Management (ECM) and Geographic Information Systems (GIS).

BACKGROUND

On April 20, 2006, the Information Technology Department (ITD) presented a list of critical technology needs to the Making Government Work Better Committee. While this list illustrated a gap and fragmentation that had occurred in the City's technology infrastructure, it also represented the challenges and opportunities to provide cost effective solutions across the organization that are consistent and focused on meeting the strategic needs of the City. Enterprise Content Management (ECM) and Geographical Information Systems (GIS) are two key examples of supporting business technologies that the City has successfully implemented in a localized manner that would now benefit from a wider-based Citywide approach.

These projects have provided greater degrees of service to the public and will provide even more significant benefits in the future. One of the obstacles continues to be the lack of specified funding, and the current utilization of a funding strategy that allocates resources for single business needs. This strategy has prevented the City from fully leveraging these systems across departments, limiting the organization in the realization of technological benefits. Greater cross-department project coordination and a re-examination of technology funding would assist the City in achieving consistency, standardization and a more efficient use of limited technological and staff resources. This memo examines the current status and issues associated with Electronic Content Management and Geographical Information Systems from a Citywide business technology perspective.

ANALYSIS

Enterprise Content Management

Enterprise Content Management is a group of technologies used to capture, manage, store, preserve, and deliver content and documents related to organizational processes. ECM tools and strategies allow for the management of an organization's unstructured information, wherever that information exists. Two primary functions of ECM are to provide electronic document management capabilities and web content management.

Document management systems are computer systems used to track and store electronic documents and/or images of paper documents. Document management systems commonly provide functionality such as storage, versioning, and security with indexing and retrieval capabilities. Where existing business process are well defined, document management systems can be implemented with workflow rules and more advanced functionality creating an additional level of efficiency for those creating and managing documents.

Web content management refers to software systems used for the organization of information contained on websites. Web content management systems provide support for relatively large number of contributors and have additional features to ease the tasks required to publish web content to web sites.

The current state of document management and web content varies greatly across the business areas within the City. From a web content standpoint, the organization has largely adopted a strategy that content update and management is owned within each department. The skills and abilities of the departmental "web" coordinators vary, partially due to the needs of individual departments, but also because they work independently of each other resulting in noticeable disparities from site to site.

Document management *systems* also vary across the organization. A few locations use a fairly sophisticated application, Filenet, to meet requirements for document management. This is a very capable product and supports departments well when used. However, due to the cost of the product and the resources needed for implementation, it is not in use across a broad base of clients. Typically, many departments use a less structured approach to maintaining electronic documents based on a combination of e-mail and shared files. This approach can work, but usually results in inconsistent administrative practices that lead to difficulties in versioning and retention schedule compliance. In addition, the ability to search is typically limited to an individual or work group.

Business Drivers and Benefits:

With good reason, the Sunshine Reform Task Force's Technology Subcommittee has identified Document and Content Management as an essential tool in meeting the goals of its reform efforts. The need for increased visibility of documents, along with the timely and wide availability of documents is paramount to providing access to local government. The intent of

the recommendation is to ensure that documents and information be available across a wide range of City activities and services, not limited to a few departments or specific operations.

At a very high level, the benefits of a Citywide approach to ECM can be summarized into three categories: (1) the *quantity* of available document information, (2) the *quality* of available document information, and (3) the *efficiency* of preparing and presenting the available information. A consistent organization-wide approach to ECM will provide tangible benefits in numerous ways:

1. Quantity of available document information
 - A robust collection of pertinent external content across a wide range of subjects
 - A consistent set of internal documentation that is available and shared across all departments
2. Quality of available document information
 - Consistent organization of web-based information that is intuitive in its navigation
 - “Branding” that is recognizable and respected with the user
 - Content that is timely, accurate and current
3. Efficiency of preparing and presenting available information
 - The ability to have all City users work electronically with standardized collaborative tools that enhance teamwork and participation
 - Reduction in the amount of time and redundancy allocated to content administration, preparation and management
 - Improvement in workflow support automating the different document creation processes within the organization

In order to address the Citywide need for content management it is necessary to focus on the following key areas:

- Understanding clearly the (functional) requirements and expectations for each of the City departments and the workgroups associated with them
- Exposing and remedying areas where existing policies and procedures need review, updating and/or adjustment
- Prioritizing project implementation so that it is based upon strategic significance, focusing first on the needs of the external customer
- Providing transitional training and support for technology and functional staff supporting these systems
- Organizing and working cooperatively with City staff to provide tools that have the ability to make standardized content more accessible and complete
- Continuing to work on resolving policy and practice issues such as digital signatures, records retention, search and retrieval capabilities

Currently in Progress:

The following are projects are currently underway in the Information Technology Department (ITD), working with stakeholder departments to progress toward a Citywide Electronic Content Management System:

- An RFP for consultant services has been released, and an award of contract is anticipated by early 2008. This effort will extend the breadth and detail of content management needs through out the organization, as effective use of technology must begin with a clear definition of functional business requirements and benefits. The RFP will result in the selection or confirmation of tools necessary for content management and provide a technological architecture framework for the City.
- The Electronic Document Management System pilot for City Clerk's Office is near completion. This is part of the interim strategy in support of limited "stop-gap" needs.
- The ITD central web team is working toward a transition to provide internal technical consulting services.
- Efforts are underway to examine of the governance and business process management necessary for implementation of an effective ECM program. The governance structure will examine issues such as the updating policies and procedures, and other governance issues that need to be addressed to support effective prioritization and consistent practice throughout the organization.

Current improvements in the dynamic field of ECM technologies will enable the City to realize significant benefits, not previously considered viable options, at relatively stable or reducing costs.

Geographical Information Systems

Geographic Information Systems (GIS) combine traditional database information such as address or property owner names with mapping features such as streets, parcels or pipelines. Often called "mapping software," GIS links attributes and characteristics of an area to its geographic location. GIS functionality is used in a variety of applications and provides a rich and powerful environment for such uses as complex demographic analyses, dispatching, and map making. GIS software is used by many City departments in such diverse areas as the issuance of building permits, routing emergency response vehicles, and managing the City's infrastructure of sewers, storm drains, streets and parks. In total, eight City departments (Airport, DOT, ESD, ITD, PBCE, PD, PRNS, and PW) have their own GIS staff providing GIS functionality and services to their department and share data Citywide. However, the beneficiaries of the City's GIS program are not limited to our internal customers. Staff has worked with the County of Santa Clara, Santa Clara Valley Water District, and local cities on several important regional programs. Using satellites and aerial photography, the U.S. Geological Survey and other organizations have developed digital maps of most of the world, and unlike paper maps, digital maps can be combined with layers of information.

In September of 2005, the Information Technology Planning Board (ITPB) approved an Enterprise GIS Strategy for the City of San José that included a core GIS infrastructure management by a central IT organization. In March of 2006, the CIO provided a memorandum to City Manager Les White, outlining the City's GIS strategy including goals, infrastructure and next steps. This strategy moved the City toward its then objective of "sharing GIS within the City of San José and among other regional partners, and allow for the maintenance and coordination of this information in a timely and accurate manner."

Recently, the City's GIS Technical Advisory Committee (GIS-TAC), a multi-departmental representation of GIS professionals throughout the City, recommended two important improvements to the GIS program:

- Establish a "GIS Coordinator" position with an operating budget, responsible for GIS strategy and oversight
- Implement an Addressing Re-Engineering Project (ARP) to streamline, enhance and coordinate the City's property maintenance processes and data, particularly addressing.

GIS Coordinator

City GIS projects have largely been tactical in nature, and undertaken at the departmental level. Departments address their GIS needs with resources available at the time of the project. There is a degree of peer-to-peer collaboration within the GIS-TAC, but the Committee realizes the need for a more comprehensive, cohesive and strategic approach. A GIS Coordinator would act as the liaison between the City's GIS community and business stakeholders. He/she will represent business requirements as it relates to the GIS program, represent GIS capabilities to business leaders, and be responsible for developing an enterprise-wide GIS strategy for the City. The net result will be a high-value strategic plan with supporting projects based on cost benefit analyses.

The Coordinator position will also be responsible for capitalizing on GIS investment opportunities with cross-departmental project cooperation in areas such as shared software licensing, GIS grant applications, and other funding strategies. The current "fund as you go" method has resulted in some areas being well-funded, while others have no funding at all. By implementing a formal funding framework, the City would have greater control in ensuring that GIS dollars are provided to projects of highest priority based upon need and return on investment, rather than current resource availability. The GIS Coordinator will serve as the City's unified "voice," developing and advancing one GIS Master Plan that merges the individual GIS plans of the participating departments.

The City would benefit in other ways from this enhancement to the GIS governance model. Although the GIS-TAC is an effective group, it is primarily a peer-to-peer information sharing group. The GIS Coordinator would serve in the much-needed role of San José representation in regional public and private partnership GIS programs. Regional public cooperation is critical for such programs as combined emergency response. Private partnerships are an opportunity to enhance San Jose's reputation with cutting edge technologies. Significant progress *has* been

made on the regional and private levels; however, progress has been the result of intermittent, exceptional efforts made within departments with no overall strategy approved by a governing board. The GIS Coordinator will be responsible for representing San José at the regional and private GIS level, with reporting responsibilities to a governance board.

Addressing Re-engineering Project (ARP)

The highest priority project identified by the GIS-TAC is the Addressing Re-engineering Project. Property addresses are a key data element in numerous City business systems. Any business process that requires locational attributes for functions such as billing, noticing, inspecting or public safety response relies upon current, high quality addressing. The City's address processes have improved significantly over the past several years. The Integrated Development Tracking System (IDTS), Computer Aided Dispatch (CAD), Enterprise GIS (E-GIS), and the Integrated Billing System (IBS) are all examples of mission critical address-based systems in use at the City. Still, there exist process inefficiencies and data quality issues that should be resolved.

The primary source of City addressing is the new construction records entered into IDTS by the Building Section of PBCE. Unfortunately, new construction does not account for all addresses needed at the City. For example, since annexations are not considered new construction, they are absent from the IDTS addressing database. As a result of these types of deficits in the addressing database, competing address sets have emerged throughout the City. This translates into redundant processes as competing sources of similar information must be maintained. In addition to redundant efforts, our multiple address databases have led to inconsistent customer service. Different computer systems use different address databases, so it is not unusual for them to show different results. Delivery of high quality, comprehensive customer service has suffered from this lack of consistency.

The primary goal of the Address Re-engineering Project is to develop a single, highly accurate source of address and associated locational attributes. This "master address" database will then be shared by multiple business applications including public safety, reducing the amount of redundant and inconsistent data and data maintenance. A significant part of this project is a GIS address entry application "hub" designed so that locational attributes are entered once into a user-friendly interface and shared out to client applications. Since addresses will be entered only once into an intuitive GIS interface and shared to our important address applications immediately, major improvements in timeliness, comprehensiveness, consistency and accuracy will result. In addition to improved data and process quality, the City has the opportunity to realize staffing efficiencies by addressing redundant workflows. In order to increase end user satisfaction and addressing accuracy, a Citywide data correction and alerting system will be developed, enabling address end-users the ability to advise the addressing unit of potential errors.

Next Steps

- Staff is currently in the process of conducting a cost/benefit analysis of the ARP project. Stakeholder input has been solicited from multiple departments in order to document and quantify some of the benefits that will result from this project. Preliminary data analysis

indicates that the City would realize an even return on investment in approximately four years, with ever-increasing benefits as we continue to enjoy streamlined and consolidated addressing. Staff will be completing the cost/benefit analysis which will be provided to the City Manager's Office during the budget process and to the Public Safety, Finance and Strategic Support Committee at later updates.

- The Information Technology Department will be submitting a "Request to Add a Position" for the GIS Coordinator during the budget process. The City has already invested in several mission critical systems across a wide range of business areas that are heavily dependent on address related information. This position will serve as the strategic manager of current and future GIS investments, and lead the Addressing Re-engineering Project.

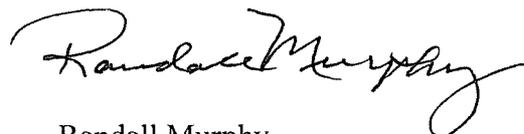
Many critical City functions depend on accurate, location-based information. Spatial data, in general, is becoming much more widespread in the City and our region each year. It is essential that we become proactive in linking our address systems together with an open architecture that lays the foundation for future growth. The City will be much better positioned to conduct business in a secure, efficient, unified and comprehensive manner now and in the future.

CONCLUSION

Implementing technology applications across the enterprise provides the organization with a uniform, consistent level of technology. It leverages the implementation lessons learned in one workgroup by enabling the next workgroup to avoid pitfalls and implement improved practices.

Citywide business application technologies will improve City services by offering standard technologies that can be replicated throughout the organization at reducing costs. Rather than each department building, implementing and supporting their own technologies, a standard pool of expertise will provide better skills and more experience, improving the quantity and quality of offered services.

The next status report will be presented to the Committee in December, 2007 and will include a review of the Departmental Business Technology efforts. If you have any questions, please contact Steve Turner, Deputy Director of Business Applications, at 793-6971.



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