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BEST OF TEXAS

Presented by: CENTER FOR DIGITAL GOVERNMENT

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Written by
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Table of Contents

Introduction

Since the Texas State Legislature last met two years ago, the world has changed. Sept 11, for example, the war in Afghanistan, an economic downturn and budget pressures squeezing government programs and priorities. Even though the Legislature will most likely find itself confronting a backlog of unpleasant but vital business -- ranging from homeland security to making ends meet -- there is good news as well. Texas government agencies have shown themselves to be resourceful and innovative, developing and implementing a list of electronic government, telecommunications and enterprise IT projects that build partnerships as well as infrastructure, reduce redundancy and provide better service to citizens and constituents.

These projects not only deliver higher-quality government services, they also provide a foundation of digital development so essential for solving whatever governance challenges await.

The Best of Texas Award program is about the application of information technology to governance. But even more important, it is about talented and innovative public servants who create a compelling vision of "a better way." San Antonio, for example, had a problem: development was threatening the city's aquifer on which the entire region depends. The interests of environmentalists, developers, businesses and government were in conflict. The city used GIS to weave a vision of a 'better way" from the tangled threads of seemingly conflicting agendas and complex environmental and geological data. The city did so well in reconciling those demands and presenting a unified vision, said Joe Chapa, the city's GIS director, that the public approved a bond issue to fund the purchase of land for the greenbelt -- the only bond issue to pass, out of four on the ballot.

As Chapa pointed out, technology is becoming more complex, and most people don't understand it. Technologies like GIS can make complex information understandable. And that lesson can help bridge the gap between technical and non-technical, government and public, problem and solution.

This report is dedicated to government staff who conceived these projects, galvanized resources in their support, drove their execution through the inevitable obstacles, and made them happen. The Center for Digital Government presents the Best of Texas award winners for 2002.

Texas Online

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Summary

- TexasOnline was established by the Legislature as an intergovernmental solution and was mandated to provide online government services for state and local government entities.
- Government entities are not required to use TexasOnline, but the benefits of doing so has resulted in broad use.
- In addition to a full list of online services and transactions, an enterprise-filing project is under way for the judiciary.

In 2000, Texas launched TexasOnline, the official website for state and local government. The website was the front end of an enterprise strategy designed by the Legislature to provide citizen access to all levels of government information and services. In order for it to be effective, however, government entities must decide to participate. According to Managing Director Gary Miglicco, that required offering some selling, as well as listening to what they needed. "It's completely voluntary," he said. "We have to go out and sell it and its value to them. We look for opportunities to serve our local governments as well as state agencies every day."

Miglicco says it's going well, and the next step is serving smaller jurisdictions. "The enabling legislation that created TexasOnline says 'serve all state agencies and local governments,' not just the big ones. Some local governments are as small as 1,000 or 2,000 people. We're going to be doing a number of statewide focus groups ... to hear what they need and how we could serve them."

So how does one go about connecting large and small entities, while meeting their needs and allowing some independence? "They are all hosted on the same infrastructure," said Miglicco, "behind the same network and firewall, so we can get a consistency of communication. We'll get a common look and feel without taking away their ability to customize their site with graphics and colors and things to make it look the way they want." He said they use XML standards on the back end, a common search engine and a standard metatagging methodology. "The fact that they're residing on one infrastructure allows us to do that."

Running common XML standards and other technology conventions allows diverse hardware and software solutions. "We run, for example, Oracle, SQL Server, Sun, IBM, Compaq and HP hardware," said Miglicco. "So the way technology is today, the types of hardware and software aren't as important. We can manage all of that now."

Miglicco says that TexasOnline competes with off-the-shelf solutions, especially with much smaller jurisdictions. "They can get things in the marketplace that are so inexpensive," he explained, but those lack safeguards such as redundancy. "We're thinking of offering a Web-hosting capability, where they will get all the firewall management, etc."

Texas Online is self-funded and has a positive cash flow that covers developments, so Miglicco isn't too concerned about the January legislative session or any potential revenue shortfalls. In fact, the financial situation makes the services of TexasOnline even more attractive to cash-strapped jurisdictions. "They can get things done through us that they don't have the budget to do themselves," said Miglicco.

TexasOnline is beginning to roll out a statewide justice e-filing system. "It will be the largest statewide solution in existence," Miglicco said, "especially in a state that has 3,000 independent elected courts and judges. We've got the Supreme Court, Attorney General, Office of Court Administration, all signed off and on board with us."

Behind most successful intergovernmental projects reside an effective governance model, and TexasOnline exemplifies that. The Legislature created the TexasOnline Authority, which is a governor-appointed board, with a certain number of fixed positions for citizens, businesses, local governments, and state agencies. "They are geographically dispersed," explained Miglicco, "so we have a good cross-section of the state on that board, that represent all our users. Department of Information Resources provides contract management for the state of Texas and basically nothing goes up online unless the TexasOnline Authority approves it. They establish the policy direction, and approve the budgets."

Miglicco, when asked what lessons he's learned from TexasOnline, said: "We all underestimate the need for communication. Just because you build it doesn't mean anyone knows it's out there. Bringing in good marketing, communication talent, folks from the consumer marketing industry, advertising and public relations, has become very critical to what we do. In essence, this is a consumer product on the Internet, that is competing with many other consumer products."

GIS Model for Land Acquisition

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Summary

- Development threatened a 10-county water supply.
- Competing demands of government, business, developers and environmentalists clashed.
- GIS created a clear picture based on objective evidence that helped to resolve the dispute and bring a solution.

San Antonio had a problem. The Edwards aquifer is the only source of underground water in a 10-county region. But as development moved north from the downtown area, it began to encroach on the aquifer recharge areas, where surface water sinks into the ground to replenish the underground water supply. To protect the aquifer, the city decided to establish green belts over the recharge areas. It wasn't that simple, however. "The developer can come in and vest his land rights," said Joe Chapa, the city's director of GIS. "The developer has up to 20 years to develop that land. Because they know the city and county are putting in stricter regulations and guidelines, they lock in their land rights ... so they are exempt from the new regulations. It is kind of like a game."

Part of the difficulty was getting all parties to look beyond their own immediate interests. The game wasn't about winning or losing, it was to bring about understanding and a solution that would consider everyone involved. For that considerable task, the city employed GIS. "We worked with the USGS [United States Geological Survey]," said Chapa. "We mapped out where all the sinkholes were, soils, vegetation, endangered species, watershed, subtributaries, development, as well as what's being proposed and built. From there we looked at different slopes and other things, to see what areas we needed to go after."

The city put together two teams. The first was the Scientific Evaluation Team -- made up of scientists, environmentalists, naturalists, preservationists -- who looked at the issues from a scientific standpoint. The second group was the Community Action Board consisting of developers, citizens and government agencies. The Scientific Evaluation Team selects a site for evaluation based on all the factors. "Once they come up with a

selected site," said Chapa, "it is passed through the Community Action Board ... and they look at that and say: 'We have a freeway extension coming through here.'"

Once all parties had access to accurate information and could contribute to the process, the problem still remained of how to deal with existing land rights. The solution was something called "mitigation rights." If developers had land rights to areas proposed for the greenbelt, the city gave them mitigation rights to the land which could be used elsewhere for development. "It helps us preserve the recharge area, and allows us to establish those greenbelts," explained Chapa.

But one more hurdle remained. The solution required funds for land purchase to effect the mitigation rights plan. "We went to the voters, citizens of the committee, and said we would like to assess the citizens a 1/8 cent tax for the next 10 years to help us accumulate land for the aquifer. They passed it. There were four bond referenda, and that was the only one of the four to pass."

The key to providing accurate information, working out the solution and funding it, said Chapa was GIS technology. "Without the GIS, I don't think we could have done this," he said. "Through the GIS we were able to pull in the different groups. Not only the scientific group, but the developers, business groups, citizens and local governments. And through that we were able to show the benefits."

Chapa said that the ability to visualize and compare complex sets of information was the value of GIS, and it helped all sides understand the issues. "People were able to see this with the visualization tool, the GIS. We heard over and over again, that scientists use big words and get carried away with it, and it's very hard for the average person to visualize what they are saying. The business community is pushing their agenda, but it's hard to visualize that as well. And we are able to marry both those views with GIS.

University of Texas and Texas A&M Statewide Collaborative Network

http://www.tamu.edu/
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Summary

- The University of Texas and Texas A&M have many campuses across Texas and are long-time rivals.
- Telecommunications costs drove them to cooperate.
- Since then, unexpected advantages have accrued far beyond the scope of the two universities.

The University of Texas and Texas A&M are located within 100 miles of one another, and since 1894 the institutions have carried on one of the most intense and long-lived football rivalries in the nation. Such rivalries carry into other areas as well -- just ask an Aggie or a Longhorn. So it might seem a bit like treason to begin to cooperate and share telecommunications and network infrastructure. According to Walt Magnussen, however, it was the logical thing to do. Magnussen, associate director of telecommunications for Texas A&M, said it began with Internet connectivity. Both university systems were paying lots of money, and bandwidth was scarce. "So we got together and said 'well, we have to have connections between each other anyway, why don't we buy a 45-meg link and share it.'" That was years ago, and the relationship keeps growing, even during football season.

Then several years ago, both universities began to convert to Asynchronous Transfer Mode, or ATM, technology. That offered an unexpected benefit. "It looked like we were going to be able to use the capabilities of ATM to create separate paths and not actually have to mix the routes," said Magnussen. "We could share the bandwidth but not have to re-address both of our networks. We've got about 11 universities and they have eight and they're all connected on this. We'll have four universities connected in Dallas, and they have two connected in Dallas. They have three in San Antonio, and we've got three coming through San Antonio. If you look at it, it got to be pretty much the logical thing to do. You had to have a technology that would let you share the bandwidth, and do it in such a way that each partner knew what they were able to support, in terms of meeting their customer's needs."

Since then, another opportunity to build bridges, improve service and save money appeared. "Whenever there was an educational interest in supporting Internet access for

other components," said Magnussen, "we create what we call affiliate connections, and so does UT. So most of the school districts in the College Station area are data affiliates of ours, and we've got affiliates in Houston and Dallas, and UT has a larger number of affiliates than we do. Buying the access and the bandwidth between the cities, the higher the volume the lower the per unit costs, so what we are able to do is aggregate it, buy it at higher volume and pass that cost savings back to the users. A lot of the aggregation in the state goes on between the educational service centers also, and we are looking at putting peering between the A&M and UT networks and all the education service centers in the state. At that point, we should have a true K-20 educational intranet."

There were some financial and operational issues to be worked out, which took a light touch given the traditional rivalry. "We had to put together a financial MOU [memo of understanding] that dealt with transferring funds every month. That's not too complicated, because you are doing an inter-agency agreement with another state agency. So it's easier to get your legal and financial folks on that and it's easier to get one of them through than a contract with an outside vendor. Were still working on the operational MOU."

The agreement gets a bit more complex on the operational side. "What you've got," explained Magnussen, "is ATM switches to both sets of routers. Some of the links are ordered and operated by UT, some are ordered and operated by us, but if theirs go down it kills our customers, and if ours go down it kills their customers. So the operational procedures had to include who gets notified, how they get notified, when do they get notified, and before any changes are [carried out] what parties have to be involved. You are co-managing a network with two completely separate organizations. And that is a challenge. A lot of times technicians tend to be ego-driven and concentric on their own institutions, but fortunately, both the AM and UT guys have been able to put the common good above that. I won't say there haven't been rocky times, like when we'd rather go with one product, and they'd rather go with another, but we just pretty much sit down and agree to meet until consensus is reached, and once that is done we just march forward.

"At A&M there are three separate groups that make up our side of it," said Magnussen. There's a LAN group that handles the College Station campus. The Trans Texas Video Network group handles the wide area network, and Telecommunications facilitates the links between the institutions. "We've got a wide area working group that

encompasses the associate director or director of each of those groups, and we meet weekly ... we reach consensus on the A&M side, and then we work as a team with the UT team, so there's really several layers of teams on this. We don't have a converged shop at A&M, and are separate voice, video and data, but work informally as one group so the end users don't see an advantage to a convergence. We maintain separate budget centers which helps stop cross-subsidization. The separate voice, video and data can be problematic if there's duplication of effort," he explained, "so we've chosen to sit down and work together. That part was driven by the associate provost of computing and information technology, and it seems to work pretty well.

"Next year we're planning to work out the dark-fiber arrangement between the five major cities and convert the OC3s up to lamda (optical light wave) connections. You actually lease the use of the fiber, instead of leasing services on top of the fiber. It's being done in California and North Carolina. It takes quite a bit of money to do that -- the optical equipment is the same as the telephone companies use. So it's very expensive. Neither of our two institutions could do that alone, but we're pretty confidant that working together we can get this accomplished."

Another area of cooperation is with Internet 2. Both UT and A&M are Internet 2 members, said Magnussen, but it's costly to have full membership. "Internet 2 formed a process where universities can sponsor the rest of the state, so at that time every K-12 school in the state will be able to route their traffic to Internet 2, all the community colleges, etc. -- not just the large research institutions. We have a proposal in to the telecommunications infrastructure fund, and we are anticipating approval at the January board meeting. We've been working on this plan for about 18 months now. If that happens, every educational institution in the state will be attached to Internet 2. That will be great for realtime time-sensitive applications like videoconferencing, that the commodity Internet has a difficult time supporting." The guiding principle of the network strategies, said Magnussen, is "additional bandwidth at no additional cost."

Bandwidth needs will continue to increase, said Magnussen, because of distance learning, and such high-end applications as remote access to telescopes in which astronomers send high-resolution images over the network "Over the last 10 years our bandwidth has gone from 1.5 million bps to 155 million bps. The next step is probably going to be 622 million bps. So we've had a hundredfold increase in bandwidth over the last 10 years. The applications are pushing the network harder, end users are counting

more on the network, and redundancy is more important now than it used to be." Magnussen said that while prices have been dropping, bandwidth requirements have been increasing faster than the reductions in price. "So our networking budget increases every year."

A&M is also networking internationally, currently working at the National University of Mexico installing a link that will carry DSS-quality video between Mexico City and institutions in the U.S. "A&M has an agreement with the minister of agriculture in the Dominican Republic to get a number of masters and doctorate students educated over the next 10 years," said Magnussen. "They fund scholarships to get the education level up and those agreements typically involve faculty members traveling to another country, and students traveling to the U.S." Heavily augmenting it with technology keeps the costs down. "Sending a student from Mexico or the Dominican Republic to the U.S. for four years is pretty costly.

"Over the last five years," said Magnussen, "we've worked on distance ed projects in Chile, Peru, Bolivia, Columbia, Venezuela, Nicaragua, El Salvador, Dominican Republic, Costa Rica, Barbados, etc. I go out and find out what type of links are available to support the stuff. I look at the capabilities of the Internet there, what do satellite links cost, etc. At that point we come forward with a package to decide what's the best way of supporting business out there."

In Mexico, Magnussen is the coach of the voice-over-IP working group. "We're peering our PBXes with one another. So for example, I was at the UNAM campus, I dialed star eight out of the PBX and I can call College Station and it's over an IP trunk so there are no long-distance charges. And it's all trunked over the Internet 2 network." In addition, A&M sent Magnussen to Australia, and projects are planned for Nairobi in January and Chechnya in February.

All this traveling, and all these cooperative projects has made Magnussen very diplomatic. Ask him to comment on A&M's rival, the UT football team, and he'll change the subject. After all, he's in the business of cooperation.

Dallas Voice Over IP

http://www.dallascityhall.com/dallas/eng/html/communication_and_information_.html
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Summary

- Dallas had disparate systems and a dream to put all forms of communication into a single digital pipe.
- The vision was articulated in a strategic plan.
- Today, the city has voice over IP, a new 911 system, and a VoIP compliant 700-MHz radio system.

After being behind the technological eight-ball for many years, Dallas is doing just fine today. The city's website won a Best of the Web Award, its Voice Over IP system (VoIP) won a Best of Texas Award and according to CIO Dan McFarland, the list of priority IT projects has been funded and the majority are implemented. The VoIP is 90 percent complete said McFarland, and is only waiting for the new Police Department headquarters to be finished. But VoIP is only once piece of the city's strategy to put all forms of communication into a single digital pipe.

"I'd like the city of Dallas to literally perform any of the City Hall functions over the Internet," said McFarland, "I'd like to have all the programs that need to be distributed throughout the city. Today there are systems that do not talk to one another. Those need to be replaced with an integrated system with a common database. Today we have inefficiencies from disparate programs, things that won't work together, groups that are separated, they basically do things manually. We really want to increase the technology level within the city and make people aware that technology can improve their employment. That's really what our goal is. To make it a better place to work and a far better place for citizens to try and get things done."

When McFarland started with Dallas, the city put together a strategic plan, which has helped solve problems and set a course for the future. From the strategic plan evolved the tactical plan with included applications such as 311, HRIS payroll, VoIP, ERP and more. Some of the projects were completed so smoothly, that users didn't realize something had evolved. "We put in a brand new 911 system seamlessly," said McFarland, "and most people don't even know we put it in because it didn't even have a hiccup. That was a $6 million project."

McFarland credits his staff with much of the progress. "I have some good project managers," he said, "and they completed projects on time and on budget. We completed some of these big projects with literally only one or two people in charge of them. That's extremely difficult. We hold the vendors' feet to the fire by putting together scopes of work, by tracking the scope of work, and tracking the contract to make sure they are delivering what they say they will deliver."

In a recent teleconference with the Center for Digital Government, and in an interview following the Best of Texas win for the city's Voice over IP system, McFarland talked about a long list of projects under way or completed, including a 700MHz radio system. "It will give full high-speed digital data," he said. "It's also VoIP compliant, and IP addressable. Both the data network and voice network is all IP addressable. That's what makes it a lot different from the standard voice network. We'll be able to interface directly to the 700MHz radio system by IP address. For example, you should be able to call a handset from your telephone at the office, or send them a message directly from your PC. It will probably be another two years until all the frequencies will be released. That's exactly where we want to go." He'd like to work out a regional 700MHz system.

The city's enterprise document system is another of the projects that McFarland gives high marks. "We reduced about three million pages of print last year by automating all those reports and putting them online. That saved us about $200,000. Not a lot of money in the whole scheme of things, but that's less than we had to spend before, and it made it a lot quicker and more convenient for people.

"Technology is becoming more and more advanced," said McFarland," and people don't understand it. You can't get your hands on it. But people understand better government. What you can do with [technology] is what it's all about."

Electronic Compliance and Permission

http://www.rrc.state.tx.us/electronic_filing/electronic_filing.html
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Summary

- Licensing oil and gas drilling is a complex process requiring information from many sources.
- Paper-based systems were slow and costly for drilling companies.
- A Web-based permitting system now aggregates information, handles the workflow and can turn around a permit in 24 hours complete with license printing at the well site.

The Texas Railroad Commission has the unusual task of regulating oil and gas drilling in the state. To handle the documentation, research, permitting and workflow, the commission developed ECAP, the Electronic Compliance and Permission system. Hope Morgan, director of information technology services, Mary Ann Benavides, technical lead for ECAP, Debbie LaHood, assistant director of permitting and production services in the oil and gas division, and Bobby Heith, public information officer, met to brief the Center for Digital Government on how the system works.

ECAP is a Web-based drilling-permit application system, said Benavides, who outlined the steps involved in obtaining a permit:

- We have to make sure that the person filing the drilling permit is registered with the commission as a designated and recognized operator who has maintained a good status. Operators renew their applications annually.
- The applicant must then scan in and attach a plat [a surveyed planning map] showing the area where they want to permit.
- They list the fields they propose to drill through.
- Based on the location where they want to drill, we validate against the rules for that field. They must be in compliance with spacing, density, etc. We do the automatic validations for that. A field information subsystem was built, said Benavides, that people can access from the website whether or not they're using ECAP, but it is integrated into the ECAP processing over the Internet, or you can get detailed field rule information.
- They then pay for the application by credit card.

LaHood said the volume of permits fluctuates based on the economy, but said currently about 12,000 permits a year are processed. "People who have used the system have liked it," she said. "It has expedited turnaround time and it has made our jobs a lot

easier. On average, it would take 4-5 business days with the paper process, but with ECAP we've been averaging 24-hour turnaround."

On the earlier paper-based system, said Benavides, applicants would describe the field rules and then the staff would review the application and compare what was said in the application with data in the Commission's mainframe system. "What we have done with ECAP is extract the information from the mainframe. We have it in Oracle, and so when they put in the field, they no longer need to give us the information, we know what it is. They tell us where they are going to be, and so we compare to the rules and see if it's OK."

The system pilot was developed collaboratively with six teams including project management, business needs, technical security, financial, publicity, and legal records. It also included input from the companies and other interested parties.

To be in compliance, drillers must post a copy of the permit at the well site. Instead of Commission staff printing and mailing the permit, operators can now download and print the permit themselves when their application has been approved. In addition, a workflow component was added that routes the permit application through the different queues for review and approval. Upon final approval an automatic e-mail is generated that says, "Your application has been approved, you can print your permit."

The system has attracted interest from other states and from the Minerals Management Service of the Bureau of Land Management. The BLM deals with oil and gas resources on federal lands. According to Commission staff, the BLM, the state of New Mexico, and Pennsylvania have implemented some Internet-based filing processes and ECAP information has been shared with California, which will soon have its own system online.

"The biggest thing with ECAP was getting all the parties involved on the front end," explained the staff, "making sure the drilling permit process was designed as close as possible to the business process. ECAP was funded by the DOE as well as the Texas Legislature. We're required to share information with other states, and we have tried to do that. At the very beginning we had a regional electronic compliance and approval process, where we pulled in people from all the different states and we all talked about our processes, legal constraints of doing the process online, talked about managing the

records that have been submitted electronically, that are now on paper, how do you manage that, how do you know what something looked like when it was born digitally? How do you preserve that? We participated in multi-party phone calls. Also, energy regulators came together and shared processes."

ECAP and the Railroad Commission have been the subject of editorial cartoons in a Midland, Texas newspaper. But they are *good* cartoons, lauding the system and its ability to turn the permit application around in a day, so that drilling rigs aren't laying on the ground for four or five days at a cost of $10,000 per day. As the Midland paper said, the Texas Railroad Commission is making a difference.

Public Education Information Management System (PEIMS) EDIT+

http://www.tea.state.tx.us/peims/about.html
Contact: Brian Rawson,
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Tel: 512-463-8110

Summary

- The Texas Legislature mandated an information system to help it oversee public education.
- Collecting information on four million students from 1,200 independent school districts was a daunting task.
- Support from the top and a strong governance model helped make it a reality.

The Texas Education Agency's "Public Education Information Management System" (PEIMS) was mandated years ago to assist the Texas Legislature oversee public education. The system has gone through various upgrades and the newest version is a heterogeneous mainframe system, as well as a Web-based system. "The edit+ project is the Web-based piece of the system," said Brian Rawson, CIO of the Texas Education Agency. "It allows data collection from 1,260 school districts, 7,800 campuses, and four million students. Edit+ allows us to capture these records across all school districts. It will capture and perform data edits and data validity checks through Web-based technology."

The project has a difficult task, and not just because of the number of participants. "School districts are independently governed and managed by their own school boards," said Rawson, "and a couple of hundred charter schools as well. One of the reasons we nominated this project is the collaboration amongst entities, and obviously -- working with over 1,200 independently governed school districts, and 20 independently governed and managed regional education services -- it was a truly collaborative effort."

The legislative mandate for a strong public education accountability system helped get cooperation initially, said Rawson. "We have the stick, but there is also a … real commitment from the top down -- policy makers and education administrators -- for good-quality education data. That really permeated this initiative, and it has really made this a success. We have a governance structure set up called PEIMS [pronounced "Peems"] coordinators, for every school district in the state. Each of the 20 education service centers also has a PEIMS coordinator. We have routine PEIMS coordinator sessions, training, listservs and change management meetings. That type of setting is a wonderful venue for communicating and disseminating information." Rawson said that a

lot of hard work went into bringing it this far, but the governance model was key to making it work.

Texas recently implemented a data warehouse, and under the state's public access initiative, PEIMS data is merged with other information, including budget, finance, student performance, report cards, etc. "All that is aggregated," said Rawson, "assimilated, summarized, and made available to school administrators, school business managers, teachers and the general public. All of that is publicly accessible in a wide variety of formats."

While Rawson says other states have similar systems, he doubts they can match the comprehensiveness of Edit+.

Greater Austin Area Telecommunications Network

http://www.gaatn.org
Contact: Patrick Jordan, chairman of GAATN
Jon Harris deputy CIO for Austin.

Note: Technical terminology is defined at the end of this section using definitions from the "Computer Desktop Encyclopedia" by Alan Freedman.
http://www.computerlanguage.com

Summary

- The Austin Independent School District wanted to save money on telecommunications services.
- Six other governmental agencies partnered with AISD to build their own telecom system.
- Governance was based on network rights or strand-miles and a technological solution allows independence of architecture.

In the early 1990s, the Austin Independent School District (AISD) thought it could save money by owning its own telecommunications system, rather than leasing lines from commercial companies. The idea attracted interest from six other government entities -- Travis County, the City of Austin, the State of Texas, Austin Community College, the University of Texas and the Lower Colorado River Authority -- and their collaboration resulted in the Greater Austin Area Telecommunications Network (GAATN).

The collaboration is spelled out in an interlocal agreement http://www.ci.austin.tx.us/gaatn/interlocal.htm, said Patrick Jordan, GAATN chairman and Austin's representative on the Board of Directors. "The interlocal agreement spells out in detail the method of operation and accounting for shared expenses and common equipment in the network," he explained.

"The first major act of cooperation is that the city of Austin offered its rights of ways and electric utility infrastructure -- poles and some downtown conduits, manholes and access to streets -- without charging for any permit for construction or ongoing right-of-way access fees." That contribution was valued at $3.2 million, said Jordan, and in return Austin was granted access to 12 strands of the network.

"So we have about 320 miles or more now of network," said Jordan, "and the city has 12 strands of fiber in its own buffer tube, throughout that entire cable. That represents about a 25 percent network right. Network rights are computed according to the

interlocal, based on the number of sites and the number of strand-miles that each entity owns in the network. The calculation of network rights translates into voting rights for each member of the Board of Directors. Our voting right is equal to our network right when we're making joint decisions. The annual GAATN budget is contributed to by each of the entities based on their network right, and the network rights are recalculated each year prior to the budget planning in order to account for expansion of the network and new sites. So that makes network rights an ongoing variable."

Since each participating entity owns its own individual strands in the network, each has the flexibility to use a different network architecture, for all layers above one in the ISO reference model.

"At layer one," said Jordan, "we have a common sheath and follow a common path. But as you move up the layers, we have independence above that. While the city started out with an FDDI technology [1] around their rings, and they implemented on their other strands a SONET [2] to take care of their TDM traffic [3]. We're now migrating toward an IP-over-SONET architecture and also increasing bandwidth over the network. So if the city of Austin requires an architecture that requires OC-48 bandwidth [4] and another entity, say for example the University of Texas, decided to implement a wave division multiplexing [5] scenario, with multiple lights, then they are independently free to do that. Because they occupy separate strands.

"Anywhere where any signal is connected requires a piece of electronics that would allow the entities to integrate a signal from one entity to the other. So there is isolation and control for independent architectures across all seven entities. That was important for us to have a collaborative effort and maintain flexibility and independence for each of the taxed-based entities in the network."

Jordan thinks this is the only network of its kind on the planet, but admits he's biased. Jordan said there are number of factors that enabled the cooperation which may be unique to Austin. One advantage, for example, is that all the partners are headquartered in Austin. "And we have the advantage of the city owning the whole infrastructure of the Austin Electric Utility. So that could be made available as part of the partnership under the agreement. That separates us from a good collection of cities."

And then there's the interlocal agreement which was enabled by the state in order to promote cooperative projects and cut costs. And the timing was right. Jordan said, with the telecom boom beginning in the early 90s. "We had enough vision to recognize that the requirements for fiber were coming."

Combined with the educated population, the city is served by Southwestern Bell, which rolled out ISDN and DSL service, and Austin was the home of Time-Warner's first Roadrunner cable modem service. "We also have an overlay network builder," said Jordan. "Grande Communications is now building out a citywide fiber network to deliver services to businesses and homes. So we're a very very active telecommunications location … with very active entities and an active population that understands the requirement for this."

Terminology:

1. FDDI: Fiber Distributed Data Interface is a LAN and MAN access method that had its heyday in the mid-1990s. It is an ANSI standard token-passing network that uses optical fiber cabling and transmits at 100 Mb/sec up to 10 kilometers. FDDI provides network services at the same level as Ethernet and Token Ring (layers 1 and 2).
2. SONET: Synchronous Optical NETwork. A fiber-optic transmission system for high-speed digital traffic. Employed by telephone companies and common carriers, SONET speeds range from 51 megabits to multiple gigabits per second.
3. TDM: Time Division Multiplexing. A technology that transmits multiple signals simultaneously over a single transmission path. Each lower-speed signal is time sliced into one high-speed transmission. For example, three incoming 1,000 bps signals (A, B and C) can be interleaved into one 3,000 bps signal (AABBCCAABBCCAABBCC). The receiving end divides the single stream back into its original signals. TDM enabled the telephone companies to migrate from analog to digital on all their long distance trunks.
4. OC-48: The SONET transmission rate of 2488.32 Mbps.
5. Wavelength Division Multiplexing: A technology that uses multiple lasers and transmits several wavelengths of light (lamdas) simultaneously over a single optical fiber. Each signal travels within its unique color band, which is modulated by the data (text, voice, video, etc.). WDM enables the existing fiber infrastructure of the telephone companies and other carriers to be dramatically increased.

Texas Department of Protective and Regulatory Services Childcare Licensing Automation Support System (CLASS)

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Summary

- The Texas Department of Protective and Regulatory Services has the very important job of safeguarding children and ensuring that child care facilities are up to standard.
- A mainframe system was inadequate and provided mostly statistical information.
- The new CLASS system has an intranet component for staff access, and an Internet component for public access to information on licensed facilities.

The Texas Department of Protective and Regulatory Services (TDPRS) provides a host of services to protect children and disabled or elderly adults who reside at home or in residential facilities, day care centers, etc. The department's Child Protective Services investigates reports of abuse and neglect of children; places children in foster care or adoptive homes and provides a host of other services.

With 22,000 facilities to license and monitor -- with a capacity of about 800,000 children -- having a good information-system backup was essential. But early systems were inadequate. "We had one big mainframe system," said Scott Silverthorne, TDPRS functional project manager for the Childcare Licensing Automation Support System. "And all we kept in it were dates and non-compliance numbers, but no information like what the non-compliance was about. It wasn't captured in the system. It was really a statistical reporting system. And then we had these disparate systems all around the perimeter, not connected. So to get information out of the system was really difficult."

The department wanted a system that would combine all the previous systems and allow a sort of electronic case-file format. The system had to be easy to use and maintain, and it had to be flexible enough to accommodate changing needs or legal requirements. In addition, the system should allow access to parents and the public.

The new Childcare Licensing Automation Support System (CLASS), built in partnership with Accenture, has changed the way the department does business. It has both intranet and Internet components. The intranet application allows staff to process applications and permits of childcare facilities and homes as well as document monitoring and fee collection. The Internet application http://www.txchildcaresearch.org allows public access to child-care facilities. Parents, for example, can research child-care facilities by location and services. "They can go online and find out what happened at a facility [during the last] inspection. What non-compliances they found and some details about it. And you can get a map of where facilities are located."

Inspection reports are very detailed. One inspection violation selected at random, for example, said that the first aid kit contained only one bandage.

And there is another benefit to public access. Since staff know their inspection reports will be posted on the Web and available for scrutiny by providers and parents, the quality and consistency of reports has improved, said Silverthorne. "That drives our staff to do better." In addition, since detailed information is readily available, it is used more often for decision making, as when parents select a day-care facility.

CLASS is also piloting mobile reporting, in which licensing representatives can download inspection information. They can complete a facility inspection, enter the information into the hand-held device and print out the results. "It will improve efficiency by taking the tools out into the field," said Silverthorne. "Some day they will be able to enter the information on the hand-held and not have to go back to the office and enter it." This should help, since most of the department's 400 staff are constantly in the field driving between facilities. "They're spread out all over the state."

For fairness, inspection reports do not go immediately onto the Web. "When they complete the inspection," said Silverthorne, "they will meet with the director of the facility, and go over the non compliances. Then when they get back to the office, they will mail a paper copy. If the facility disagrees with the inspection they have 15 days from receipt of the inspection report to ask for an administrative review of our findings. The information won't go out onto the Web until the results of the review are decided.. That gives them some peace of mind, because they know they have the ability to protest it.

"We built it and we own it," said Silverthorne of CLASS. "I used to work with the previous system to do reporting, and it was so difficult to get any changes made, or to get information out of the system. It's so nice to be able to get information for people quickly."

Texas Health Alert Network

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The Texas Health Alert Network is not only a Best of Texas Award winner, but was chosen to receive the overall Excellence in Technology award, as the collaborative project that exemplifies the very best of Texas IT.

Summary

- In 1999 it was found that many local health departments did not have computers, Internet or e-mail.
- The ability to communicate quickly is essential to contain contagious diseases, and after Sept. 11, the need to deal with bioterrorism became crucial.
- Today, the Texas Health Alert Network is in the center of cooperative communication projects among federal state and local agencies and first responders.

In 1999, a physician with the Texas Department of Health called a local health department to ask for their e-mail address so she could send them some information. She discovered that, like many others in the state, they had no e-mail, computers or Internet access. The ability to communicate rapidly in the event of an infectious disease outbreak can be a matter of life or death, and so the state launched an ambitious plan to build what eventually became the Texas Health Alert Network (HAN).

The project received an initial grant from the Centers for Disease Control, and later received $4 million from the state's Telecommunications Infrastructure Fund (TIF). The events of Sept. 11, 2001, showed the necessity for such a network, and the state then received a CDC grant of $51 million, $3 million of which went to support HAN.

HAN's purpose is to disseminate health alerts associated with bioterrorism events and to deliver distance-learning programming associated with bioterrorism awareness, detection and response. The network now links some 70 state and local health organizations, carrying video and data communications, but according to Mike Mastrangelo, project director for the TIF Board, there is a lot more to do.

"We just met with some legislative staff," he said. "Here in Texas our Legislature meets every two years. In January they'll be going into the first session since Sept. 11, 2001, so this will be their first opportunity to do anything about homeland security or bioterrorism or terrorism.

"What we're proposing is to give the TIF board a legislative mandate to build out the communications infrastructure to do effective homeland security. And we'd like to carry along the CDC requirement that says you have to cover 90 percent of your population with connectivity to first responders, and they specifically list hospitals, health

departments and law enforcement. So we are proposing the Legislature take up this issue, give the TIF Board this mission. … They give out about $200 million a year in grants to public agencies, to do telecommunications infrastructure. … They have until 2005 as far as their lifespan goes, and another half billion to spend. So we're saying: 'Do it in a coherent way.' Have in mind what the state's communications infrastructure needs to look like in 2005, in order to do the communication for homeland security. We're talking about redundancy, reliability, backup, security, etc."

To accomplish that, HAN has collaborated statewide. "We're also looking at some of the problems that local law enforcement has, HazMat, fire, emergency management, etc. about radio frequency interoperability issues with neighboring jurisdictions. They're not on the same frequencies so it's difficult for them to respond to the same event. So if TIF can be given this mission, one of the issues they should be dealing with is radio frequency interoperability. And the way to deal with that is to have a coherent statewide, networked standards-based communication system. So no matter what kind of radio you have or what frequency you are operating on, if you can communicate with the network through your radio, you can communicate to any radio in the network. That's what we're looking at."

To build communications and redundancy, HAN is installing 36 satellite downlink sites throughout the state, said Mastrangelo. "We're also in the middle of doing an HF radio backup capability, so that our network could communicate with CDC in Atlanta if it had to, and with other states' departments of health if the phone system went down." A purchase order has already been issued for iPAQ wireless devices, to enable directors of local health departments to have access to alerts wherever they are.

Mastrangelo says the most important application that can run over the network is disease surveillance to give an early warning of a covert bioterrorist event. The Texas Association of Local Health Officials (TALHO) is running a series of surveillance pilots with the Texas Department of Health. "We are going to pilot test five or six different systems on different areas in Texas, and measure their capability to improve disease surveillance.

"There are a variety of software vendors that provide surveillance assistance," he explained. "In our view they are somewhat unproven at this point."

The pilot results will go to the Texas Department of Health, as they develop a system based on the National Electronic Disease Surveillance System. "Our data will help them decide what kind of system to use," said Mastrangelo. "We have to take advantage of the installed base that's already here. Many hospitals are already using some systems, that can be readily adapted to disease surveillance. And for a state as big as Texas, one size won't fit all, so having data interoperability will be a key feature."