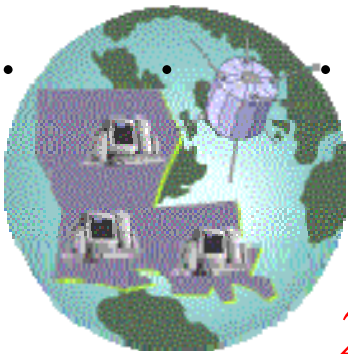


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# Louisiana Technology Innovations Fund



*2007 Annual Report*

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# Louisiana Technology Innovations Fund

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## *Annual Report to the Legislature*

### **Executive Summary**

As of April, 2007 seventy-three projects have been received by the Technology Innovations Fund Council for consideration. To date, thirty were selected for funding. They are as follows:

<b>Log #</b>	<b>Project</b>	<b>Agency</b>	<b>Funding Approved</b>	<b>Amount Paid</b>	<b>Status as of 04/01/07</b>
98-003	Point of Sale Hunting and Fishing	Wildlife and Fisheries	\$864,671	\$775,684	Complete
98-005	On-line Insurance Reporting	Public Safety	\$98,888	\$98,888	Complete
98-007	Distance Learning	Military	\$607,000	\$607,000	Complete
98-007c	Skycell Satellite	Military	\$544,000	\$544,000	Complete
98-009	Patient Biometrics	LSU Medical Center, NO	\$862,500	\$3,588	Terminated
98-010	High Performance Computing System	LSU, BR	\$989,383	\$962,297	Complete
98-016	Campus Walls	LSU, Eunice	\$176,422	\$176,422	Complete
98-017	Multi-media Internet	Wildlife and Fisheries	\$67,410	\$54,461	Complete
99-001	Internet-based Video Conferencing	LSU Medical, Shreveport	\$765,000	\$765,000	Complete
99-004	Louisiana Treasures	LSU, BR and UNO	\$198,078	\$184,974	Complete

<b>Log #</b>	<b>Project</b>	<b>Agency</b>	<b>Funding Approved</b>	<b>Amount Paid</b>	<b>Status as of 04/01/07</b>
99-005	Lab for Info Technology and Spatial Analysis	UNO	\$449,700	\$448,178	Complete
99-006	OCDD Telemedicine	Health and Hospitals	\$956,982	\$895,160	Complete
99-012	LA E-mail	Division of Administration	\$925,000	\$923,591	Complete
99-014	Web-based Data Warehouse	Education	\$1,000,000	\$991,000	Complete
99-015	X-Band Satellite Ground Station	LSU, BR	\$970,795	\$970,795	Complete
99-016	Training Today's Students for Tomorrow's Work Environment	LSU, BR	\$275,000	\$274,060	Complete
01-001	Mobile Data Terminals	Wildlife and Fisheries	\$1,000,000	\$1,000,000	Complete
01-002	Saving Lives and Enhancing Efficiency: Managing Medications and Medical Supplies	LSU, Shreveport	\$950,000	\$950,000	Complete
01-003	A Prototype Enterprise Application Hosting Service	LSU, BR	\$431,900	\$431,718	Complete
02-001	State Trooper Mobile Office	Public Safety	\$361,400	\$361,400	Complete
02-002	Fire Marshall Information Management System	State Fire Marshall	\$1,000,000	\$829,679	Complete
02-010	LouisianaMAP	E-Services	\$472,175	\$327,058	Complete
02-011	Louisiana e-Government Portal	E-Services	\$998,590	\$974,169	Complete

Log #	Project	Agency	Funding Approved	Amount Paid	Status as of 04/01/07
02-013	Statewide Learning Management System	CPTP	\$386,000	\$287,545	Complete
02-014	Prototype for Centralized E-Mail	OIT	\$949,200	\$922,966	Complete
03-003	Exploiting Linux Services in Louisiana	LSU	\$999,768	\$996,838	Complete
03-006	Development of Business Continuity and Disaster Recovery Plans	DEQ, DNR, DOTD	\$281,250	\$191,704	Complete
03-008	Internet-based Wireless Diagnostics and Predictive Modeling System	DOTD	\$291,350	\$256,350	Terminated
03-013	Towards an Integrated Juvenile Justice Information System (IJJIS)	Louisiana Children's Cabinet	up to \$335,000	\$82,945	In Process
06-001	Completing the Integrated Juvenile Justice Information System	Louisiana Children's Cabinet	\$124,950	\$0	Not Started

## Accomplishments

- The Council membership during this time period was:
  - Rizwan Ahmed, CIO
  - Dominic A. Cali, IT Director, Department of Transportation
  - Jerry Guillot, Chief of Staff, Senate Office
  - Bob Harper, Undersecretary, Department of Natural Resources
  - Butch Speer, Clerk of the House, House of Representatives
- During 2006:
  - One new project was approved for funding.

- Three projects changed from a status of “In Process” to “Complete.” To date the total number of funded projects completed within or under budget is 26.
- The LTIF Web site, which is accessible on the Internet at <http://www.doa.louisiana.gov/ltif/index.htm> under *Info Louisiana* is updated regularly to reflect current progress status and progress reports for each project.

## Budget Status

<b>Fund Balance as of April 1, 2006</b>			<b>\$334,789</b>
<b>Increases in Revenue/Income</b>			
	Interest Earnings	\$36,334	
	Act 17 of 2006 Budget	<u>\$0</u>	
<b>Expenditures /Obligations</b>			
	Expenditures	(\$100,274)	
	Obligations	<u>\$67,800</u>	
<b>Fund Balance as of March 29, 2007</b>			<b><u>\$338,649</u></b>

## Project Summaries and Highlights

The LTIF was established to support innovative and exemplary projects that significantly contribute to the state's technology infrastructure and/or provide creative and concrete solutions for improving citizens' services.

A summary description and highlights for those projects that had activity during 2006 follows. For projects that were completed between 2001 and 2006, post-implementation updates are provided.



**LSU Health Science Center, Shreveport –  
Managing Medications and Medical Supplies**

Log #: 01-002

Status: Completed Spring 2005

The goals of this project were to: (1) Save patient lives by avoiding adverse drug reactions resulting from medication errors. Such reactions can occur because known allergic reactions go unnoticed, because other medications prescribed for the patient interact detrimentally, or because incorrect dosages or medications are administered. Adverse drug reactions may increase the patient's length-of-stay in the hospital, also increasing the expense of caring for the patient (2) appropriately charge medications and supplies to the patient, and reduce pilferage. Furthermore, to create a "perpetual inventory system," greatly reducing the need for both standing inventories and the space to house these inventories. Through enhanced automation, the cost of procuring and distributing medications and supplies will be reduced. (3) improve efficiency and reduce errors by interfacing and exchanging information electronically; (4) use barcodes on all medications and supplies to eliminate most manual data entry and enable workforce reduction or re-allocation. Pharmacists will be freed from many manually intensive tasks and can spend more time assisting and advising physicians, a more efficient use of pharmacist expertise.

The following outcomes are reported for the period March 1, 2005 to February 28, 2006:

Highlights

All proposed implementation for this project was completed in February, 2005. The following outcomes are reported for the period February 28, 2006 to January 24, 2007.

**Goal 1:** The system is effective in reducing and preventing errors that may cause adverse drug reactions. However, average patient length of stay (LOS) has still not decreased. LOS is an index that is affected by a number of complex factors, only one of which is an adverse drug reaction. A better measure of severity is Diagnosis Related Group (DRG) Weight, but this measure is more complex to calculate and is still affected by many diverse factors. At this time, we know that we are continuing to decrease adverse drug events, and we will continue to investigate methods to correlate the reduction in adverse drug reactions to a decrease in the severity of the patient's condition.

Unfortunately, another factor that has affected LOS and DRG severity has been the disasters of Hurricanes Katrina and Rita, causing the University Hospital for LSUHSC-S to receive patients from throughout the state who have illnesses that are so severe that treatment is unavailable anywhere else in the state.

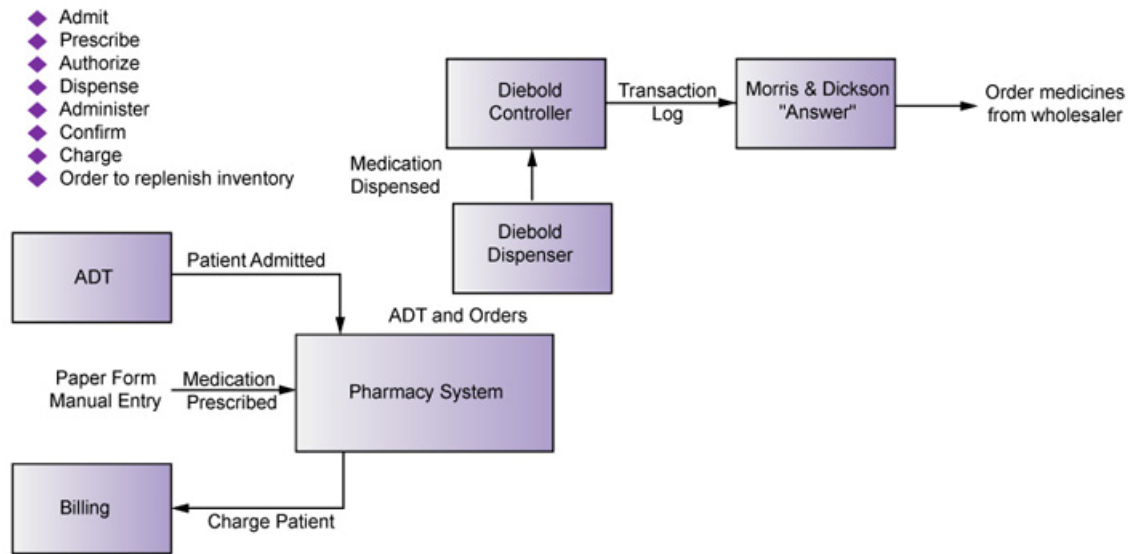
**Goal 2:** Nearly all medications are now bar-coded by the manufacturer. At the end of 2006, all pharmaceutical manufacturers we required to comply with Federal law and barcode all medications. Bar-coding, combined with just-in-time delivery of all pharmaceutical products, has dramatically reduced the cost of procuring and distributing medications. We still expect to upgrade our surgery scheduling and management system, and we expect to further reduce costs by enhancing our ability to procure and manage surgical supplies.

**Goal 3:** All standalone systems identified in the original proposal were interfaced (as shown in Figures 1 and 2.) All manual data entry that was required to move data between the stand-alone systems shown in Figure 1 has now been eliminated.

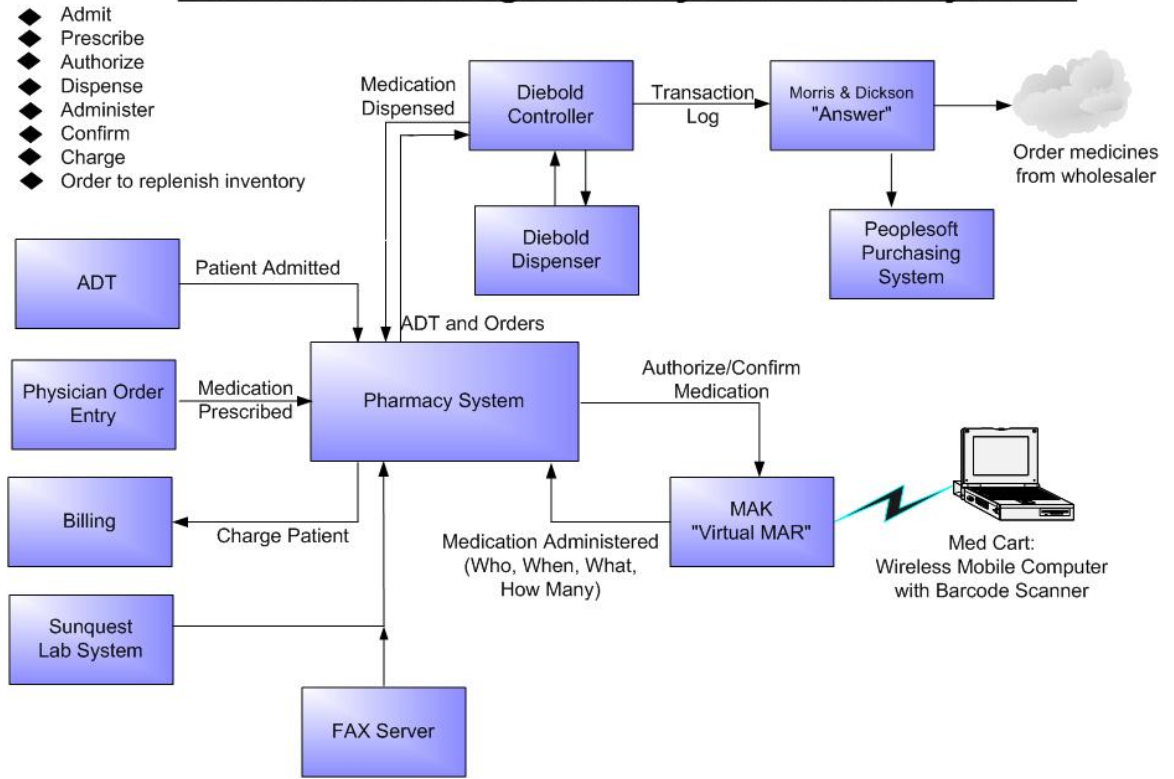
**Goal 4:** As indicated, by the end of 2006, all medications were required by Federal law to be bar-coded by the manufacturer. The manual data entry and manual bar-coding required of pharmacists has been almost completely eliminated. In theory, Pharmacist should now be spending more time improving compliance because the new, integrated systems provide better tools for monitoring errors. At this time, however, the new systems have simply enabled the Pharmacy to manage a 16% increase in the volume of dispensed medications without the need to hire additional staff. A new FAX server has also been added that will eliminate the transfer and much of the processing of paper medication orders. In the coming year, these new enhancements may help to enable the reallocation of pharmacists to assist physicians directly on the hospital wards.

**Figure 1**

**Medication Management System April, 2001**



**Figure 2:  
Medication Management System: January, 2007**



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**Louisiana State University**

**A Prototype Enterprise Application  
Hosting Service**

Log #: 01-003

Status: Completed in 2003

The Enterprise Application Hosting Service provides researchers, educators, and students across the State of Louisiana, and across the U.S., with access to Enterprise Applications from the Global market leader, SAP, including: enterprise resources planning (ERP), customer relationship management (CRM), supply chain management (SCM), strategic enterprise management (SEM), supplier relationship management (SRM), and Portals.

As the hosting entity that provides these valuable services, LSU plays a leadership role in academic hosting, enterprise systems curriculum, and enterprise systems research. As an official SAP UCC hosting site, LSU is host to a number of SAP faculty workshops for SAP

University Alliance members, as well as host to an annual ASUG (SAP User's Group) meeting attended by numerous business professionals in Louisiana and Texas.

Through this service, researchers, educators and students at LSU and their hosted clients, are able to 1) access the above mentioned SAP enterprise systems for academic purposes, 2) leverage these systems to support innovative curriculum development, and 3) leverage these systems to support research initiatives.

These goals of this project have been realized, and will continue to be realized, through the SAP UCC Program established between SAP AG and LSU's E.J. Ourso College of Business Administration.

#### Highlights:

- The Hosting Services operation is self-supporting and requires a relatively low level of resources and capital. It provides access to a full suite of ERP and e-Business applications for educational purposes serving the following 17 Universities:
  - Louisiana State University
  - Southern University
  - Louisiana Institute of Technology
  - University of New Orleans
  - University of Florida
  - Georgia Institute of Technology
  - University of Houston
  - Villanova University
  - Kansas University
  - Oklahoma State University
  - Miami University of Ohio
  - Youngstown State University
  - Southern Illinois University at Edwardsville
  - Pennsylvania College of Technology
  - Washington College
  - University of Akron
  - University of Alabama at Huntsville
- The hosting center operation hosts a series of annual SAP Faculty workshops for University faculty members of the SAP UA program. These faculty come from the above schools, as well as 80 other Universities in North America. More information on this program is available from the following URL:  
<http://www.sap.com/usa/company/alliances/index.aspx>.
- The Hosting Service is one of ten SAP Global University Competency Centers, five of which are located in the U.S. (University of Wisconsin-Milwaukee, Drexel University, California State University at Chico, University of Missouri, and LSU), two in Germany (University of Passau, University of Magdeburg), one in Australia (Queensland Institute of Technology), one in the Netherlands (University of Amsterdam), and one in Japan (Aoyama Gakuin University).
- SAP AG continues to sponsor the UCC by providing Enterprise Application software at no charge, providing subsidy to support UCC operations (\$250,000 per year), and providing subsidy to support hardware requirements.

- Recent Publications:
  - Strong, D. M., Fedorowicz J. , Sager, J. , Stewart, G. , & Watson, E. (2006). Teaching with Enterprise Systems. Forthcoming in *Communications of the AIS*.
  - Noguera, J. & Watson, E. F. (2006). Response Surface Analysis of a Multi-Product Batch Processing Facility Using a Simulation Metamodel. Forthcoming in *International Journal of Production Economics*.
  - Hu, J. ., Watson, E. , & Schneider, H. (2005). Approximate Solutions for Multi-Location Inventory Systems with Transshipments. *International Journal of Production Economics*, 97 (1), 31-43.

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**State Fire Marshal**

**Fire Marshall Information Management System**

Log #: 02-002  
 Status: Completed in 2005

The project is being implemented to provide the ability for the Louisiana Architectural, Engineering, and Construction community (“AEC”) as well as the general public to submit and review plans through a web based portal; to provide the State Fire Marshall the ability to perform construction inspections while in possession of the most current information on that specific project; the capability to provide the citizens and businesses of the State of Louisiana electronic communication with the State Fire Marshal’s Office via the web; the means of producing quicker and more cost effective correspondence with the AEC and Louisiana citizens; and the implementation of a program that can potentially be interconnected with other state agencies and local municipalities around the country.

Implementation of this project provides many progressive changes in technology for the Office of the State Fire Marshal and their access to the Louisiana Architectural, Engineering, and Construction community (“AEC”) as well as the general public.

Highlights

- Finalization of the Web Portal allows submittal of electronic documents, applications and other forms to Fire Marshal Divisions: Access to historical records on projects by authorized submitters; Up to date project review status tracking of the project by the submitter through the review process.
- Web Portal, additionally, establishes a platform for the receipt of online payment of any SFM fee and submittal of electronic plans for review during the project submittal process, as these features become practical and available.
- Creation of a common database for Plan Review and Inspections assures more accurate and available information to the interconnected divisions, allowing more rapid and accurate coordination and performance of the work for both units.

- Implementation of “automated” inspection reports and other documents within all work units frees up data entry personnel for use on other more productive work, and increases the ease and rapidity of modification and correction of records from the field.
- Expanded databases allow more detailed and efficient reporting for administrative staff, allowing improved projections of cost, staffing, scheduling and other vital decision making functions.
- Expanded Licensing and License Complaint programs and historical databases allow more efficient and cost effective administration and handling for the thousands of licensed Fire Protection Contractors working in the state.
- Oracle Database allows for future interconnection with other state or municipal databases to share and expand information and services.

#### Implementation Review and Assessment:

Problems encountered and delays discussed in previous reports continue in varying degrees, preventing implementation of the new systems throughout the Fire Marshal’s Office. Chief among these current delays is the programming for interfaces necessary for the required manual and automated functions of the agency’s interface with Fiscal Operations.

This application and its interface have required rewrite of the initial outdated financial programming for the FMIM system to incorporate automatic reporting and submittal interfaces for the existing DEPCON and ARC (Automatic Revenue Classification) systems now being used by Fiscal Operations, and the creation of new GUI’S (graphic user interfaces) for access by Fiscal Operations Staff access to records, and manipulation of records and data fields within the Fire Marshal financial databases.

Each division of the Marshal’s office requires modifications and interface with this new financial programming prior to implementation so that proper financial reporting and records are created and maintained. This programming continues to be finalized, for most of the agency’s divisions, however, MSF (Mechanical Safety/Fireworks/Amusements) was implemented and began live use in late fall, 2006, with the core of the new financial programming.

Other new requirements of the system, requiring significant additional programming, and contributing to the delays in implementation, were mandated by legislation passed in 2006.

Act 12 enacted during the 1<sup>st</sup> Special Legislative Session mandated that the Fire Marshal’s Office begin code enforcement activities in connection with the newly created LSUCC (Louisiana State Uniform Construction Code), for any municipal agency requesting our assistance.

This legislation was originally enforced (During 2006) in the 13 parishes identified for hurricane relief at the most southern portion of the state. SFM was able to manually perform and track these reviews on this limited basis. As of January 1, 2007, code enforcement was mandated across the entire state, and our list of contracts for enforcement grows daily.

Modifications required for the incorporation of these reviews into the FMIM system include new review types for proper tracking, fee tables, letter templates, inspection events, etc. This work is currently anticipated to be performed through the issuance of an RFP, sometime this spring.

Other legislation, enacted under the 2006 Regular Session as Act 307, completely revised the Fire Marshal’s Licensing division, effective January 1, 2007, making the current FMIMS application obsolete. All fire protection licensing was reorganized under a single license numbering system, existing fee structures were abandoned and re-conceptualized, and renewal policies were unified. The work of redesign, production and implementation of

this system module is anticipated to be performed through the issuance of an RFP, sometime this spring.

Work is currently ongoing in this division thanks to modifications of the SMART system applications that were able to be modified with the assistance of the Data Center staff. This application will be replaced by the FMIM system once modified for the new requirements.

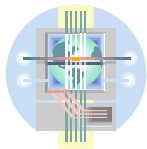
**Performance Goals:**

The requirement to provide additional features in the originally designed interface with DPS Financial Operations, to keep up with improvements in their system, came to light during initial attempts to implement the FMIM system. Modifications are in process of being implemented, and are not insignificant in their scope and impact on the completed system design.

As a result of this lack of a compliant interface with Fiscal Operations, full implementation of the FMIMS system has not been possible, to the extent that the measurement and comparison of proposed performance goals has not been possible. The statement in the original project proposal continues to hold, that by utilizing FMIMS, the SFM will, at minimum, decrease the time spent in review of all commercial construction documents and increase both the number and quality of inspections performed for those commercial projects.

Overall, the goal is for FMIMS remains to facilitate the Fire Marshal's Office ongoing work to minimize the delays in construction caused by the inaccurate or incomplete information available to the personnel of this office, and the public. By minimizing delays caused by inaccurate or incomplete information, construction projects can proceed in a timely fashion thereby stimulating the state's economic growth.

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**Office of E-Services**

**LouisianaMAP**

Log #: 02-010

Status: Completed in 2005

LouisianaMAP was a 24-month project to revolutionize e-government in Louisiana by providing a reliable, consistent geographic information and services component. The project consists of three tightly coupled initiatives. The first is a comprehensive state plan for production, acquisition, and management of key geographic framework information. An initial version of this plan, known as the Implementation Team Geospatial Framework Data Plan (I-Team Plan), was released to the Governor in September 2003 and the official version was published to the web in November 2003. The second release of the I-Team Plan was completed in August 2004 and submitted to the Governor in September 2004.

This plan will be continually maintained to reflect the current government needs, missions, priorities and major geospatial technology advancements.

The second component of LouisianaMAP is the web-based geospatial portal that was launched in November 2003. The portal provides state and local government decision makers, academia, and the general public access to and dissemination of the geographic framework data. The Portal also supports analysis of user-supplied information in the context of the geographic framework data.

The third component of the project, the LouisianaMAP Academy, provides training for the use of the data and geographic services provided through the portal. Academy sessions commenced in April 2004.

### Highlights

The LouisianaMAP geospatial portal provides a single-source, reliable, and cost-effective Internet based mapping application designed to generate customized maps and deliver advanced geographic data services for Louisiana at no cost and without restrictions on use. By utilizing existing interoperability capabilities, LouisianaMAP serves data maintained both locally and by the Louisiana Department of Environmental Quality and seamlessly combines the resources from various data providers. LouisianaMAP makes map production easy. Internet clients are able to quickly and efficiently access geospatial information using basic map functionality, while advanced developers and data users can easily integrate LouisianaMAP functions and services directly within their own applications. Since its official public release in November 2003, LouisianaMAP has been accessed more than one-million times per month, generating approximately 200MB of map data per week. LouisianaMAP clients/users include: citizens (hunters and fishermen, property owners, and tourists); businesses (real-estate, economic development and business locators); public services /governments (decision-makers, service providers, planners, and resource management professionals); and colleges and universities. Examples of mapping applications which can be integrated within an agency's Web site with little or no overhead are:

- Louisiana Department of Culture Recreation & Tourism: state and public parks and recreation centers; tourist locations such as plantation homes, museums, cultural centers; and sporting events and fairs and festivals.
- Office of the Secretary of State: voter district, precinct, ward locator (Where do I vote?); political and election districts.
- Louisiana Department of Economic Development: site-selection applications, favorable growth centers, available infrastructure; urban and rural, commuting patterns, educational attainment, population demographics.
- Louisiana Department of Education: primary and secondary schools and districts, test scores, bus routes, community resources.
- Louisiana Department of Health & Hospitals: hospitals, nursing homes, and health centers; 24 hour emergency rooms; ad hoc campaigns (*e.g.* West-Nile Encephalitis cases by parish).
- Louisiana Department of Homeland Security and Emergency Preparedness: hurricane and emergency evacuation routes; flood maps; emergency response centers (Police/Sheriff/Troopers, Fire, EMS, *etc.*)
- Louisiana Department of Social Services: parish and regional service centers; head-start and day-care centers; population demographics.

The I-Team initiative has evolved into the LouisianaMap project for the coordination and management of the state's geospatial data. This project has also launched an initiative to develop a comprehensive statewide strategic plan for the implementation and management of GIS technology and geospatial assets.

The LouisianaMap Academy has remained active in outreach and training. Training sessions are provided on an ongoing basis for state staff and local government. Training is coordinated with federal government resources as well. The LouisianaMap Academy has been successful in securing federal grant funding to expand its capability to deliver these services.

The Office of Electronic Services launched a project in the fall of 2006 to migrate the existing LaMap web based portal to a new technology platform. This project is scheduled to be completed in the summer of 2007 and will provide the ability to host a greater range of services for both state agencies and the general public.

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### **Office of E-Services**

### **e-Government Portal**

Log #: 02-011

Status: Completed in 2005

This project has established an enterprise level State e-Government Portal focused on ensuring that Louisiana can meet the increasing demands of its constituents for immediate, comprehensive access to state government. The project includes:

- A hardware/software infrastructure to host the State Portal and extensible to agency web sites in a platform consistent with the enterprise security architecture standard.
- An operational e-Government Portal.
- A content management system allowing agencies to better manage their information assets.
- A Citizen relationship management system ensuring that needs and concerns of users of the state portal are addressed accurately, timely, and consistently.
- An Enterprise Search capability that can be utilized by all state agencies.
- Integration of eServices using eCommerce capabilities of the software infrastructure.

### Highlights

In October 2003, INFO Louisiana gave way to Louisiana.gov, the state enterprise portal; its goal is to provide citizens and businesses a single point of access to state services and information resources. The enterprise portal was redesigned with a branded look and feel. Enhancements and upgrades were implemented-- an intuitive organizational structure, content management, and a robust search application-- to enable users to readily discover the relevant information they need without knowing the organizational structure of state government. In the last three years, traffic on the Louisiana.gov site increased 14%. The most heavily-trafficked sites were: the Louisiana Employees Online (LEO), LouisianaMap, vendor and contract search on the Web site of the Office of State Purchasing, state jobs

database, Louisiana Services Directory, Louisiana Government phone directory, birth certificate orders, searching the State Register, population maps at the State Census Data Center, information resources for students, and the Legislative web portal. For calendar year 2006, the traffic volume for the Louisiana.gov portal was in excess of 6 million hits monthly with an average of over 136,000 user session per month. Over the past year the Louisiana.gov portal has been accessed by individuals from over 170 countries across the world. The application environment for Louisiana.gov has proven to be very robust and reliable. Up time for the Louisiana.gov portal during the past year has been 99.9%.

The Louisiana.gov portal implemented RightNow Technologies's constituent relationship management application branded as Ask Louise. The ASK Louise knowledgebase contains the top level or most frequently asked questions about state services and information resources. Users can ask their questions through e-mail if answers to their questions are not found on this knowledgebase, and answers are e-mailed back promptly. Based on user access data, ASK Louise answered a definite need. The number of sessions (which allows users to view the answers), increased 264% in the last three years from 23,910 sessions in 2002 to 87,270 sessions in 2006. Answers in the ASK Louise database are categorized, and the records in these categories had the highest user access: General Information (unclaimed property, do not call program, genealogy resources, hurricane and weather-related emergency information); Licenses, Permits, and Certifications; Business; Government (legislators, taxes, bids, and grants); and Health Care and Social Services.

eCommerce capabilities have been integrated into the Louisiana.gov portal environment via the Louisiana E-Mall and the Payment Gateway applications. Use of the Payment Gateway has increased steadily since initial implementation in 2002. In 2003, the number of transactions handled for the same applications increased by 40% per month over 2002 with a total of more than 150,000 transactions for the year in 2003. In 2004 the E-Mall environment was migrated from an outsourced hosting service into the Louisiana.gov portal application. At the same time the total number of transactions increased by approximately 28% to over 190,000. With the expansion of Payment Gateway participation and the addition of new functionality such as electronic check processing, the Payment Gateway supported a volume of approximately 350,000 transactions in 2006, with a dollar volume in excess of \$21 million. Continued growth is expected with this service as additional agencies web enable their applications. This service has experienced an average annual growth of over 30% percent per year in transaction volume.

Enterprise Search capabilities are supported in the Louisiana.gov portal through the Verity Ultraseek search application. Enterprise Search is hosted by OES and provided as a service free of charge to state agencies. Agencies may take advantage of this service to provide customized, context related search capabilities for their web assets. During the previous year the Enterprise Search service averaged over 87,000 user queries per month.

In the fall of 2006 a project was launched to refresh the design of the presentation layer and the taxonomy of the Louisiana.gov portal. This project is anticipated to be completed in the summer of 2007.

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## **Comprehensive Public Training Program (CPTP)**

### **Statewide Learning Management System**

Log #: 02-013

Status: Completed in 2005

This project was to acquire and implement a centralized statewide Learning Management System (LMS) to consolidate existing but separate State employee training databases into one repository for all state employee training data. This created the foundation for an e-learning environment that will allow CPTP to plan, deliver, track, manage and report all types of employee training, offer a full range of content via custom web-based courses and commercially available courses, and create web-based tests and assessments.

#### Highlights

- The LMS has been set up to allow it to be the statewide repository (database) for all state employee training data. The database has multiple layers of secured access. Employees are able to self-register for classes. Other departments can use it for their course and employee skills tracking. All courses, regardless of delivery method, can be distributed through the LMS to allow for tracking and evaluation. Curriculums can be developed based on career management.
- Training can be accessed from any computer with access to the Internet.
- The Gap Analyzer tool can be used to plan, track, and evaluate training for individuals and groups, as well as identify competency gaps and forecast demand for training programs. Gap Analyzer's exception analysis capability is useful in tracking certification and compliance with regulatory requirements.
- There were no awards, commendations, or nationally published recognition for this project during 2006.

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## **Office of Information Technology**

### **Prototype for Centralized E-Mail**

Log #: 02-014

Status: Completed in 2005

Historically, individual state agencies have been responsible for providing their own e-mail service, which entails significant hardware, software, personnel and training expenses (or outsourcing), and results in service quality that varies drastically between departments, and provides no integration of e-mail or free/busy scheduling between state departments. This

project seeds the implementation of a statewide e-mail line of service based on a cost recovery model. It entails one centrally managed standard e-mail offering to replace the three primary e-mail software packages currently deployed statewide, and provides one common e-mail directory and calendaring tool that can be shared by all State employees while at work or via the Web. Agency subscribers are charged a set price-per-seat that is lower than the costs associated with managing their individual, distributed sites statewide, and quality of service will improve.

Other key benefits anticipated are: 1) to implement an IT line of service that can provide immediate benefit to core business function that encompasses a large base of the state's workforce; 2) to develop a statewide deployment plan that can be used for this and other enterprise services to be offered in the future; 3) to build the technical and support framework through which other desktop lines of service can be offered.

Highlights:

- The statewide email project now supports 6,000 state employees in the following agencies for messaging functions:
  - o Division of Administration
  - o Department of Economic Development
  - o Governor's Office
  - o University of Louisiana Systems
  - o Department of Education
  - o Civil Service
  - o Department of Natural Resources
  - o Department of Environmental Quality
  - o Public Service Commission
  - o Department of Revenue and Taxation
  - o Board of Regents
  - o Recovery School District
  
- The statewide email system is very tightly integrated with the Office of Telecommunications Management's Blackberry Enterprise Service.
- ISIS Payroll / Personnel workflow uses statewide email to deliver the online leave approval system.
- Statewide Email provides a means of centrally securing email for multiple agencies under the ever-growing threat of malicious code attacks by using multi-vendor solutions for both perimeter and internal virus and SPAM protection.

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- Lowered monthly fees from \$14 to \$6 per mailbox.
- Wireless synchronization support has expanded to include not only Blackberry, but Windows Mobile devices as well.
- Email archiving services will be implemented to help agencies meet record retention requirements.
- Exchange 2007 upgrades will provide agencies with more wireless, calendaring and web access features.
- Public Safety and Social Services have submitted budget requests to join Statewide Email.

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## Louisiana State University

### Exploiting Linux Services in Louisiana

Log #: 03-003

Status: Complete

LSU was awarded this project to develop a robust, scalable environment to accelerate and facilitate the evaluation and deployment of Linux services and applications within public-supported entities in Louisiana. The move to open standards and open source is changing the world of information technology in the public and private sectors and in higher education. Linux, once considered “disruptive technology” by IBM, is the leading example of open source software that implements open standards. Linux is now widely available on multiple hardware platforms and is an option for many proprietary applications. Linux combined with virtualization technology offers a possible opportunity to combat the growing cost of supporting burgeoning, complex information technology infrastructures and the increasing dependence on a proprietary software platform. Recently, Linux was characterized in Computer World as a “Microsoft license killer.” Louisiana has been slow in embracing this emerging technology. The intent of this project is to maximize the opportunity to accelerate innovation with Linux, to limit dependence on proprietary systems and to focus on total cost of ownership issues.

#### Highlights:

A key component of this project is the ability to create new Linux servers as needed by state agencies to test out new applications, technologies, and concepts. By providing a virtualization architecture, we could respond quickly to requests for new servers without buying additional hardware. The IBM mainframe and its z/VM operating system provided this architecture.

Early in the project LSU developed a series of z/VM REXX scripts that “clone” new Linux virtual machines from a standard template. The template selected for cloning was actually a Linux virtual machine installed with either a 32 bit or 64 bit version of SuSE Linux Enterprise Server V8 or V9 configured with a typical complement of server utilities. Since disk storage is presented to the virtual machines as z/VM minidisks, we could take advantage of the flashcopy utility in our Storage Area Network (SAN) to make disk image copies of the minidisks almost instantly. The result was the ability to issue a command to create a new virtual machine by providing a TCP/IP address, machine name, SuSE version, and 32 or 64 bit configuration, and have the system create the new virtual machine within a couple of minutes. No need to go buy a physical computer, connect it to power and the network, then configure it for use. In their opinion, this is the single best benefit of this architecture.

Since the Linux operating system is open sourced, there are no licensing costs associated with propagating copies of the base system as many times as needed. At various stages of the project we had deployed around 60 virtual Linux machines, each dedicated to specific functions and utilities.

LSU was able to create an internal management network using NFS and TCP port signaling to run arbitrary commands on any virtual z/Linux machine without having to actually log into the machine. This was handy for applying updates, running queries, and generally issuing various system management tasks among the machines. Monitoring tools from Velocity Software gave us a comprehensive overview of all the virtual machines and the underlying z/VM platform itself, making system administration more efficient for many virtual machines. We could do more with fewer resources.

By configuring one of the virtual Linux machines as a TCP/IP router and using the z/VM guestLAN virtual networking ability, LSU was able to create internal virtual LANs with the router as a “gatekeeper” for the network traffic destined for the machines. By adding some custom monitoring scripts to manipulate the router’s network filters, LSU automated firewalling the machines from ssh probes, scripting attacks, and other intrusive malware attempts originating from external sources. Using some of the cost-based parameters in the routing software, LSU was able to provide failover for a critical web application to an external Intel/Linux server elsewhere on campus.

LSU was able to identify some mainframe-specific characteristics that impact the efficiency of the Linux operating system. Early experiments comparing the Linux distributions from Red Hat and SuSE showed that the SuSE distribution was better suited to the IBM z800 mainframe environment. The standard Linux kernel comes configured to interrupt the processor 100 times per second to determine if timer related events are due. SuSE provided a workaround to this “timer pop” in their s390 binaries to avoid activating idle virtual machines under the z/VM operating system, reducing overall system load.

LSU also implemented direct access to SCSI/Open disk architectures provided by our SAN units, bypassing the z/VM virtualization of disk into “minidisks” derived from count key geometry. This gave them access to storage other than traditional 3390 style mainframe disks.

Several times over the course of the project LSU was able to download the source code of some application we wished to run and it compiled, installed, and ran successfully on the mainframe hardware platform. Linux on the mainframe architecture is still just Linux at the source code level. Pre-compiled binaries (typically for Intel architectures) will not run because of the machine instruction differences, but if the source code is available, it compiles and runs just fine. This becomes even more relevant with the popularity of the open source movement in our industry.

#### Benefits Achieved/Expected:

Server consolidation and increased efficiency from deploying Linux virtual machines on a single mainframe platform. At various points during the project we had deployed between 50 and 60 Linux servers across the production and development partitions. The equivalent in physical servers would have had a significant impact on the use of rack space, power, environmental, and floor space in our data center, not to mention the additional personnel time needed to monitor and maintain the machines.

Much faster response when new Linux servers are needed, typically minutes instead of days or weeks. On several occasions LSU was able to respond to an unanticipated need from our user community for a new server within an hour. Usually, a web or application server had crashed and they were unable to purchase a replacement in a reasonable amount of time. In other cases, an internal need for a new server as a demo system or as a new development platform was addressed by a new virtual server in the mainframe, alleviating the need for purchasing yet another box.

Increased stability and reliability from deploying Linux virtual machines on the mainframe architecture. In over three years LSU did not have any outages attributable to the mainframe platform or the underlying z/VM virtualization operating system.

LSU was able to realize cost savings when deploying open source solutions for various needs, such as the Zebra/Quagga routing system, Tomcat application server, OpenSSH for secure connections, the full Apache suite of products for web site serving, etc.

Overall system performance of the IBM z800 mainframe system was excellent. With over 60 Linux virtual machines running, we saw an average of about 25% cpu utilization in each of the two partitions. In worst case incidents where a virtual machine would try to monopolize the cpu because of poor programming (infinite loops) or incorrect configurations, the underlying z/VM operating system minimized the impact on the other virtual machines so they could continue providing acceptable service levels.

Pitfalls Encountered:

A major concern for this project was the lack of interest on the part of state agencies to participate and use our hosted virtual Linux servers for their own needs. LSU gave numerous seminars to various agencies to introduce the technology early in the project, but were unable to generate much interest.

Some barriers to wide deployment of the IBM mainframe platform for this purpose include the lack of personnel familiar with the mainframe architecture and its z/VM operating system and various support utilities and languages. Fortunately, LSU had some internal experience which helped in the initial deployment.

The ongoing cost of the mainframe platform for maintenance and support is higher than some roughly equivalent functionality provided by Intel hardware and any of several virtualization products currently on the market, such as VMware.

Some applications are not available as open source and their binary distributions for the Linux operating system are typically compiled for Intel architectures, locking them out of the mainframe environment.

No significant pitfalls were encountered that directly related to the Linux operating system technology itself. It continues to be a viable and attractive application hosting environment regardless of the physical hardware architectures used.

Recommendations to Agencies Planning to use this Technology:

Overall, LSU's recommendation to state agencies is to implement virtualization technologies to maximize the use of existing and planned computing resources and provide the ability to quickly respond to additional resource requests as needed. Due to cost and improved technologies, LSU currently does not recommend the IBM mainframe and z/VM operating system for this purpose, but would suggest the use of VMware on Intel hardware with SAN storage for the underlying disk space. They plan to migrate the virtual Linux machines used in this project to that technology over the coming year and retire the IBM z800 platform.

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**Department of Natural Resources,  
Department of Transportation and Development,  
Department of Environmental Quality**

**Development of Business Continuity and Disaster  
Recovery Plans**

Log #: 03-006

Status: Completed in 2006

During this project a Business Impact Analysis was completed by each agency. This project had each agency complete and document a disaster recovery plan. All agencies input their plans into the Division of Administration's Living Disaster Recovery Planning System software. Recommendations were made to agencies concerning viable recovery solutions. DNR and DEQ performed a disaster recovery exercise. A report was generated on all findings.

Executive Summary of Findings:

Agencies will continue to update their plans on the recommended time intervals. Each Business Unit has a coordinator who will be in charge of keeping the plans updated. Each Agency has a Business Continuity Coordinator who will be keeping the crisis management plans updated and the business units coordinators updated. Disaster Recovery plans will be maintained by the Information Technology sections of each agency.

Accomplishments:

The project team completed the Business Impact Analysis, identified crisis management teams and Business Continuity team leaders, identified recoverable tasks, and determined the approach to be used after disaster declaration. Contractor trained employees on the LDRPS software and the process/order of inputting the plans. Input all plans into the LDRPS systems. Performed a Disaster Recovery Exercise. Determined a schedule for plan updates.

Benefits Achieved/Expected:

Each Agency now has a completed plan. Audit findings can now be satisfied. During the event of disaster, critical applications, critical employees, critical call lists and critical timelines will have already been identified. Agencies will be better prepared during a time of disaster.

Problems Encountered/Action Taken or Planned:

Hurricane Katrina slowed the progress down due to lack of available employees to work on the project. Contractual issues with the main contractor slowed down the process as well. All of these issues are being resolved and the project was resumed as of March 15, 2006. DOTD did not perform a Disaster Recovery Exercise and instead opted to use the contractor time for more training on the inputting of the plans into the system. The agency will be given the scenario used by DNR and DEQ and perform a exercise at a later date with no help from the Contractor.

Recommendations to Agencies Planning to use this Technology:

It is imperative that any agency have the full cooperation of upper management to get these projects done in a timely manner. The biggest issue we faced was getting employees to complete tasks associated with the project while they were having to perform normal job duties as well. When upper management supports the project and makes it a priority things will go more smoothly.

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**Department of Transportation and Development**

**Internet-based Wireless Diagnostics and Predictive Modeling System**

Log #: 03-008

Status: Terminated in 2005

A primary DOTD function is to ensure the operational health of its mission critical vehicle and equipment assets, which account for nearly 25% of the State’s total vehicle fleet. Inadequate maintenance is the primary cause of premature wear and unscheduled downtime, both of which result in significant costs. The proposed system utilizes patent-pending technology to wirelessly flow in-vehicle diagnostics to a centralized fleet management system, designed to monitor onboard parameters and diagnostics. If necessary, the fleet system responds to incoming vehicle data by appropriately notifying operators, maintenance and management personnel, and relevant vendors via the Internet and field-based hardware devices. All data is stored in a central data warehouse for interrogation and predictive modeling.

Highlights

- DOTD hired an electrical contractor to install the appropriate electrical service and to run the telecommunications network lines via underground conduit to the appropriate buildings at the Central Repair Shop campus where the installation of this technology is located. This effort was completed in early December, was paid by DOTD, and did not use TIF funding.
- Three (3) wireless antennas were installed at this campus to ensure coverage, making it much easier to remove the antenna and relocate it if necessary.
- Several vehicle data modules were installed but the vendor was not able to provide working Vehicle Data Modules. The project was officially terminated on August 17, 2005 and remaining funds returned to LTIF.

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**Office of the Governor / Children's Cabinet**

**Towards an Integrated Juvenile Justice Information System**

Log #: 03-013

Status: In Process, 25% Complete

The Children's Cabinet, in partnership with the Louisiana Commission on Law Enforcement (LCLE), the Office of Youth Development, Department of Public Safety and Corrections, the Supreme Court, and various district courts, will implement an integrated, web-based Juvenile Offender Information Network (JOIN) system based on national standards to enable data sharing among statewide and local juvenile justice agencies involved with juvenile delinquency, traffic, formal FINS, probation, detention, and corrections.

The integrated Juvenile Offender Information Network (JOIN) system will be installed and tailored to meet the needs of at least two pilot sites within 21 months of the date of grant award. Thereafter, it will be a goal to install and tailor the system to meet the needs of at least three additional pilot sites per year or a minimum total of fifteen sites in five years.

Each pilot site will begin reporting data as required by the Children's Cabinet, the Louisiana Commission on Law Enforcement, the Legislature, and perhaps other entities within one year after the installation of each system.

The JOIN system will be merged and integrated with the stand-alone systems being developed by the Supreme Court and potentially other users into the Integrated Juvenile Justice Information System (IJJIS) within two years of the completion of this grant and the first year of installation of the offender system within the pilot sites.

ACCOMPLISHMENTS:

All LCLE funds to support this initiative have been expended. Software development for JOIN-IJJIS has been completed with the exception of the changes that relate to the individualization in the pilot sites. The following pilot sites have been selected: 26<sup>th</sup> JDC (Bossier and Webster parishes and the city courts of Bossier and Minden), 4<sup>th</sup> JDC (Ouchita parish only), Orleans Parish Juvenile Court, and possibly Caddo Parish Juvenile Court. These sites will become operational in May 2007 or earlier. Also, three additional sites will continue to use their existing systems for two years until they transfer operations to the IJJIS. However, these sites will begin reporting data through the IJJIS beginning in 2007. Furthermore, the Supreme Court has completed software development for the Informal FINS component, the Child in Need of Care component, and the Juvenile Drug Court component, all of which will be installed with the JOIN-IJJIS component in each pilot site.

PROBLEMS ENCOUNTERED:

The project was significantly delayed by Hurricane Katrina which disrupted work for several months. Also, the need to secure additional funding for start-up activities until the entire TIF grant was made available delayed implementation.

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**Office of the Governor / Children's Cabinet**

**Completing the Integrated Juvenile Justice Information System (IJJIS)**

Log #: 06-001  
Status: Not Started

The Children's Cabinet, in partnership with the entities listed below, will complete the Integrated Juvenile Justice Information System (IJJIS) by linking previously developed components of the system to the JOIN-IJJIS functionalities developed under a previous LTIF grant and by developing a general case management component to address all remaining case types of the IJJIS. The system will be based on national standards and will enable data sharing among statewide and local juvenile justice agencies.

### **Project Progress Reports**

The LTIF guidelines stipulate that each award recipient provide progress reports indicating the status of the project, accomplishments by milestone, and expenditure of funds. The latest progress reports for each of the funded projects can be found at [www.doa.louisiana.gov/ltif/tifprop.htm](http://www.doa.louisiana.gov/ltif/tifprop.htm)