



**North Carolina  
Government Business Intelligence  
Competency Center  
Program**

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## Executive Summary

Business Intelligence (BI) is a process that allows an organization to gather, analyze and report key information to improve business outcomes. BI focuses not only on the business process, but also on integral components that impact the business process including customers, employees, and key business stakeholders. Integrated, useful and accessible data about these key elements help an organization make effective, efficient and informed business decisions.

In Session Law 2007-323, HB 1473, the North Carolina General Assembly directed the Office of the State Controller (OSC) to develop a strategic plan for the integration of the State's databases and sharing of information among State agencies and programs. Since 2008, OSC has managed the Statewide Data Integration Program, including the design, development and statewide implementation of the Criminal Justice Law Enforcement Automated Data Services (CJLEADS) criminal justice data integration program, and in 2011, initiated efforts for the development of an enterprise process to detect fraud, waste and improper payments across State agencies. Session Law 2012-142, HB 950, expanded the authority of the data integration and business intelligence initiative and provided statutory language directing greater data sharing for statewide enterprise initiatives and created the OSC Government Business Intelligence Competency Center (GBICC).

Enterprise business intelligence for North Carolina government-wide operations is a significant undertaking with unique and dynamic challenges. North Carolina meets the needs of its citizens through the combined efforts of the three branches of State government. The Executive branch, with cabinet agencies, independent offices, university, component units, and over 322,000 employees, provides a broad range of services to its citizens. These services range from K-12 public education, higher education, health and human services, economic development, environment and natural resources, public safety, transportation, agriculture, and general government services. The Legislative Branch enacts laws, raises revenue, and establishes rules and regulations governing the conduct of our citizens. It is supported by administrative support units with 499 FTE. The Judicial Branch, consists of the Appellate, Superior, and District courts, employs 6,420 judges, district attorneys, clerks of court, magistrates and other court support and administrative personnel, and manages over 3.4 million civil and criminal cases annually.

North Carolina's government has been challenged by the impact of population growth during the last 10 years. This growth has resulted in increased enrollment in our public schools, universities, and community colleges, greater demand to meet health and social service needs, expanded public safety services including offender incarceration and supervision, and higher demand for other state infrastructure and resources. As these needs have grown, the State's resources to meet these needs have not grown at a corresponding pace. The State must continually find ways to serve its citizens through greater operational efficiencies and program effectiveness.

In 2012, the Legislative Research Commission (LRC) report on Efficiencies in State Government defined business intelligence as *“the integrated use of computer technology, statistics, and operational research which can be used to improve efficiency and to measure performance across State government. Among the goals of its user are to align outcomes with program or service goals and to provide broad-based access to consistent information, thereby*

*increasing transparency and accountability in government.*”<sup>1</sup> Total Information Technology (IT) expenditures (excluding the Office of Information Technology Services (ITS)) were \$1,283,114,224 for fiscal year 2012. Of this amount, \$725,879,486 was funded with General Fund resources. IT expenditures for ITS totaled \$161,354,169 during the same period. The public and other State government stakeholders have an expectation that services, including technology-based services, will be delivered efficiently and effectively. An impediment to satisfying this expectation is the State’s historical and on-going management of data in silos, limiting the consistency, quality and ability to share the State’s data for key decision making. In the past, a comprehensive enterprise BI strategy has not been designed and implemented, in part, because of competing priorities and limited commitment to a statewide strategy. Without a commitment to an enterprise approach and a strategic plan to guide the agencies, many agencies filled this void by developing programs and processes to meet their own unique operational needs without consideration of the possible future integration or enterprise use of “their” data.

The vision for the North Carolina BI initiative is to transform existing data assets into an information utility for the State’s policy and operational leaders for their use in determining program investment, managing resources, and improving financial programs, budgets, and results. While technology plays a key role in effective BI, the successful development of statewide analytics depends upon State stakeholders who must be “on board,” supportive and engaged, demonstrating their belief that enterprise BI will provide a sufficient return on investment in either dollars saved or that outcomes achieved will outweigh the cost of such projects. Strong communications and the ability to manage change and make the initiative relevant to the stakeholders requires significant effort to ensure the advantages of the program make clear “what’s in it for them” to the agencies and end users.

The LRC report recommended a “phased approach towards expanding the State’s business intelligence capabilities in a manner that creates efficiencies while preserving privacy and transparency.” Consistent with OSC’s past data integration efforts which have been “scoped to success”, the GBICC initiative will follow the principle of beginning with a targeted focus and incrementally expanding the scope of applications as expertise and capacity grows. Currently, the GBICC is engaged in three areas of analysis, development, and support:

- The GBICC development and implementation of program management and governance policy and procedure as well as the initiation of two pilot areas of business intelligence capabilities
- The North Carolina Financial Analysis and Compliance Technology System (NC FACTS) automated enterprise fraud, waste and improper payments detection project
- The Criminal Justice Law Enforcement Automated Data Services (CJLEADS) integrated criminal justice application

### **The GBICC**

The GBICC initiative is currently focused on establishing a plan of action to guide the management and implementation of the GBICC. A plan of action will provide the requirements, objectives, and vision of the program’s implementation and value to the State. A significant challenge in establishing the enterprise GBICC program is raising the awareness of the program

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<sup>1</sup> LRC Report page 16

throughout State government and implementing program policies that manage financial resources, project prioritization and operations. In the early phases of the GBICC, a clear focus on building support and adoption with the agencies is critical to the long-term success of the program. To sustain an enterprise program, funding for permanent full-time program personnel and on-going support of analytics software and hosting must be appropriated.

The GBICC Phase I activities included an inventory of existing data analysis processes and State agency data needs. Survey responses from 60 different State agencies, Universities and organizations showed that many agencies leverage data from transaction systems for basic reporting and analysis, but fewer organizations reported examples of integration of data from multiple agencies and the use of advanced analytic tools. Respondents reported a variety of challenges associated with data sharing including legal, regulatory, and privacy considerations that impede data sharing, lack of awareness of available data sources, and lack of data quality, consistency, and availability. When asked about the vision for enterprise analytics, however, respondents indicated the successful enterprise would enable:

- Improved efficiency in service delivery and management of state programs
- Better use of data
- Increased transparency
- Fewer points of entry for data discovery

The GBICC will work on key areas of program management to facilitate improved data sharing and analytics including:

- Building consensus and agency “buy-in” for the emerging GBICC initiative to ensure that efforts are focused on appropriate priorities and adding value to the agencies
- Establishing working groups of business stakeholders
- Establishing a registry of available data for use by all State organizations
- Establishing governance policies, procedures, and guidelines to broker data sharing agreements including the creation of a legal advisory group of subject matter experts on state and federal privacy, disclosure and security regulations
- Establishing data and metadata standards based on national standards and industry best practices and determine how enterprise data model management and standards will be implemented

The GBICC has initiated two pilot areas of focus:

- Workers’ Compensation Insurance Fraud and Employee Misclassification – in collaboration with the Joint Legislative Committee on Workers’ Compensation Insurance Compliance and Fraud Prevention and Detection and the Employee Misclassification Taskforce, the GBICC has initiated meetings with the North Carolina Industrial Commission to develop business intelligence capabilities focused on the areas of employee misclassification and workers’ compensation insurance fraud.
- State Health Plan of North Carolina - the Department of State Treasurer, Information Technology Division, currently manages the SHPNC data and analytics repository using SAS software. The SHPNC analytics repository is experiencing technical challenges that are impacting performance and ability to meet the SHPNC’s analytics

needs. Because the NC FACTS fraud analytics and the SHPNC program analytics require much of the same data, the GBICC is working with the SHPNC to migrate the existing repository capabilities to the GBICC. As the SHPNC begins working with new and updated data extracts associated with new health plan contracts that take effect on July 1, 2013, the combined GBICC repository will eliminate redundant development of new data extracts as well as reducing licensing and storage costs.

The Government Business Intelligence Competency Center section of this document provides more detailed information regarding the GBICC effort and next steps.

### **NC FACTS**

NC FACTS continues efforts to develop automated fraud, waste and improper payment detection capabilities. While data sharing and agency commitment continue as significant challenges, NC FACTS is making progress towards gaining access to key data sources. Significant effort has been directed at the Department of Commerce - Division of Employment Security (DES) employer tax compliance and benefit payment analytics. The NC FACTS team is working closely with DES staff to review and verify the data analysis to ensure that analytic models are accurately interpreting data and generating results.

With the execution of a data sharing agreement with the Department of State Treasurer (DST) – State Health Plan of North Carolina, health plan member eligibility and claim data efforts have begun. The NC FACTS team is working closely with SHPNC to identify data and business requirements to support health plan fraud analysis. A data sharing agreement was also executed with the Administrative Office of the Courts and the NC Division of Motor Vehicles (DMV) to provide driver license and vehicle registration information for analytic purposes. Work continues on data sharing agreements with the DST – Retirement System and Department of Health and Human Services for additional data sources. This data will serve as the foundation for the pilot fraud detection efforts.

The NC Financial Accountability and Compliance Technology System (NC FACTS) section of this document provides detailed information about its development activities.

### **CJLEADS**

CJLEADS continues application support and enhancement activities to provide criminal justice professionals with access to comprehensive offender information. More than 25,500 users have been trained and are using CJLEADS statewide. The latest release of CJLEADS provided the ability to execute NC DMV partial plate searches to assist with investigations. Work continues on the real-time interface to the Statewide Warrant Repository, confidential tag alerts, and access to federal information through an interface with the NC Department of Justice's Division of Criminal Information network.

The Criminal Justice Law Enforcement Automated Data Services (CJLEADS) section of this document provides detailed information about CJLEADS application support and enhancement activity.

# Government Business Intelligence Competency Center

## I. Background

### Legislation

Business data is a valuable resource for organizations in government and the private sector. Data enables organizations to analyze historical behavior, predict future trends and make decisions based on business facts rather than intuition and supposition. Over the years, however, data has been gathered and stored in siloed data systems that were built to meet the business needs of individual organizations. When data is stored in varying formats and technical platforms, the process of gathering information from different lines of business can be complicated, time consuming, expensive and difficult.

In Session Law 2007-323, HB 1473, the North Carolina General Assembly recognized this challenge and directed the Office of the State Controller (OSC) to develop a strategic plan for the integration of databases and sharing of information among State agencies and programs. Since 2008, OSC has managed the Statewide Data Integration Program, including the design, development and statewide implementation of Criminal Justice Law Enforcement Automated Data Services (CJLEADS) criminal justice data integration program.

Session Law 2011-145, HB 200 provided further direction for OSC to expand the data integration program by developing an enterprise process to detect fraud, waste and improper payments across State agencies. This effort fosters collaboration and partnerships among State agencies with an interest in leveraging integrated data to detect incidents of fraudulent, wasteful or improper payments in their business areas. While progress has been made, significant legal and management challenges to data sharing have inhibited major development during the past year.

Session Law 2012-142, HB 950, expanded the authority of the data integration and business intelligence initiative and provided statutory language promoting greater data sharing for statewide enterprise initiatives and created the new Government Business Intelligence Competency Center (GBICC). The GBICC will manage CJLEADS and NC FACTS, and will include a comprehensive evaluation of existing data analytics projects and plans in order to identify data integration and business intelligence opportunities that will generate greater efficiencies in and improved service delivery by State agencies. This effort includes all State agencies, departments, and institutions in the three branches of government.

Copies of the enabling legislation can be found in [Appendix A](#).

### What is Business Intelligence?

Business intelligence (BI) is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data that helps users make better



business decisions. BI applications, often called decision support systems, include the activities of data mining, query and reporting, online analytical processing (OLAP), and statistical and predictive analysis.

Successful BI provides the information needed to make informed decisions and take action based on information rather than intuition or belief. The ability to effectively provide information depends on understanding agency and enterprise business needs, functions, and goals and providing quality, consistent data to support those needs. As a result, business owners are integral stakeholders in driving involvement and support of data analysis and BI processes.

BI should align people, processes, technology and business culture to achieve:

- Better collaboration between Business and IT;
- Better data quality and reporting;
- Increased use of data analytics in the organization;
- Elimination of redundant functions, data and processes;
- Quality customer support and service;
- Oversight, transparency, and accountability; and
- Response to procedural mandates.

Data analytics and BI can be developed at the micro level to support specific agency business needs. Enterprise BI, however, fosters collaboration between business entities, sharing of key sources of data for use across lines of business, and use of standard data formats, technologies and processes to ensure consistency and efficiency in sharing, analyzing and reporting information.

### **GBICC Vision Statement**

The GBICC will foster interagency collaboration among and between the branches of governments and their sub-units to establish statewide standards for BI initiatives and to improve data quality and consistency. It will facilitate identification of enterprise technologies and tool-sets, seek to improve efficiency and effectiveness in enterprise BI efforts and help prioritize BI project implementation.

The role of GBICC for the State's BI initiative will be to:

- Research current BI efforts and identify BI needs;
- Manage data governance to resolve inhibitors to and facilitate interagency data sharing;
- Recommend an enterprise BI strategic plan with priorities to ensure BI projects support enterprise efforts;
- Facilitate implementation of solutions to BI needs, according to the strategic plan;
- Establish standards for data and tools that foster interagency sharing and data consistency; and

- Conduct and/or foster continuing research on BI alternatives for better decision-making.

## **II. Requirements of the GBICC Initiative**

The GBICC, as directed by Session Law 2012-142, HB 950, shall:

- Continue and coordinate on-going enterprise data integration efforts, i.e., CJLEADS and NC FACTS.
- Identify technologies currently used in North Carolina that have the capability to support the initiative.
- Identify other technologies, especially those with unique capabilities, which could support the State's BI effort.
- Compare capabilities and costs across State agencies.
- Ensure that implementation is properly supported across State agencies.
- Ensure that data integration and sharing is performed in a manner that preserves data privacy and security in transferring, storing, and accessing data as appropriate.
- Immediately seek any waivers and enter into any written agreements that may be required by State or federal law to effectuate data sharing and to carry out the purposes of this section.
- Coordinate data requirements and usage for State BI applications in a manner that limits impact on participating State agencies as those agencies provide data and business knowledge expertise, and assists in defining business rules so the data can be used properly.
- Recommend the most cost-effective and reliable long-term hosting solution for enterprise-level State BI as well as data integration.

Phase I of the GBICC began August 1, 2012. The initial phase of the initiative includes:

- An inventory of existing State agencies and BI projects both completed and under development.
- A plan of action that does the following:
  - Defines program requirements, objectives, and end-state of the initiative;
  - Prioritizes projects and stages of implementation in a detailed plan and bench-marked timeline;
  - Includes the effective coordination of all of the State's current data integration initiatives;
  - Utilizes a common approach that establishes standards for BI for all State agencies and prevents the development of projects that do not meet the established standards;
  - Determines costs associated with the development effort and identifies potential sources of funding;
  - Includes a privacy framework for BI consisting of adequate access controls and end user security requirements; and

- Estimates expected savings.
- An inventory of existing external data sources that are purchased by State agencies to determine whether consolidation of licenses is appropriate for the enterprise.
- A determination of whether current, on-going projects support the enterprise-level objectives.
- A determination of whether current applications are scalable and could meet the needs of State agencies.

Phase II of the GBICC initiative includes:

- Identification of redundancies and determine which projects should be discontinued.
- Determination of where gaps exist in current or potential capabilities.

Phase III of the GBICC initiative includes:

- Incorporation or consolidation of existing projects, as appropriate.
- Elimination of redundant BI projects, applications, software, and licensing.
- Implementation of steps necessary to ensure data integration is developed in a manner that adequately protects privacy.

This report provides a summary of activities since the October 1 report.

### **III. GBICC Activities**

In September, 2012, the GBICC completed the Phase I inventory focused on gathering information from state agencies, organizations and universities to gain an understanding about data analytic processes currently in operations or in development through North Carolina state government. A summary of the inventory process and results of the agency, organization, and university responses are available in the October 1, 2012 GBICC Legislative Report ([http://www.osc.nc.gov/GBICC/GBICC\\_October\\_2012\\_Legislative\\_Report.pdf](http://www.osc.nc.gov/GBICC/GBICC_October_2012_Legislative_Report.pdf))

To determine North Carolina's BI needs and to make recommendations for moving the State toward more efficient and effective BI, it is important to understand the various levels of BI maturity, the State's readiness for implementing BI capabilities, and the needs identified by the inventory effort. [Appendix B](#) provides an overview of the Business Intelligence Maturity Model as well as a summary of the State's BI readiness.

Based on the review of the inventory responses and a more defined understanding of the State's readiness for business intelligence, the GBICC has identified areas of program management and agency support activities to further define and structure the GBICC program for support of current and future data integration and business intelligence initiatives. These program management activities will provide the foundational components to continually improve the State's approach to providing access to key data resources for State decision making.

In addition, GBICC program resources have identified several areas of business needs and have begun initial pilot project efforts to meet these analytic needs.

### **GBICC Program Management Activities**

The GBICC legislation directs the GBICC program to establish a plan of action to guide the management and implementation of the GBICC. One of the most significant challenges with establishing the enterprise GBICC program is raising the awareness of the program throughout State government and implementing program policies that manage financial resources, project prioritization and operations.

The plan will provide detailed information of the program's requirements, objectives, and impact of the program's implementation and value to the State. To further plan the development efforts, the GBICC is researching data integration and business intelligence efforts of other states and the private sector and is working to identify best practices and key components of enterprise programs. In the early phases of the GBICC, focus will be on building support and adoption by the agencies which is critical to the long-term success of the program. To sustain an enterprise program, funding for permanent full-time program personnel and on-going funding to support analytics software and hosting must be appropriated. The GBICC program resources will develop a business case to ensure each business intelligence initiative meets the enterprise program objectives and demonstrates benefits, in terms of program metrics, process efficiencies and/or cost savings, to justify the cost to design, develop and support the associated analytics.

Program management activities will include:

- Definition of a GBICC Mission Statement and Key Objectives

The GBICC is a program activity that brings value to the State through efficient, effective data sharing and business intelligence efforts. The purpose of the initiative is to support the effective and efficient development of State agency business intelligence capability in a coordinated manner and reduce unnecessary information silos and technological barriers. The initiative is not intended to replace transactional systems, but is instead intended to leverage the data from those systems for enterprise-level State business intelligence. As the GBICC matures, demonstrates positive results, and brings value to State business users, the vision is to create a program where business owners seek guidance and support from the GBICC for enterprise analytic efforts.

To clearly define an action plan providing program requirements, objectives and end-state of the GBICC, the mission of the GBICC must be clearly understood by stakeholder agencies and organizations. The GBICC has met with key individuals and groups including presentations to the state agency CIOs to ensure that the GBICC program is being established with guiding principles focused on facilitating business intelligence that assists the State's agencies and workforce.

Short-term objectives include:

- Defining the GBICC Mission Statement and Key Objectives
- Updating web content and expanding awareness of the GBICC
- Establishing policy and procedures for governance and data standards
- Initiating pilot business intelligence efforts

Long-term objectives include:

- Establishing governance support to include analytics end user communities and advisory groups
- Institutionalizing governance and data standard policies and procedures
- Identifying sustainable program resources and funding
- Identifying future business intelligence areas of focus

- Establishment of Program Standards, Policies and Procedures

Achieving efficiencies in developing BI and ensuring that solutions meet the business needs, requires program level standardization. GBICC resources will use research results to develop program policy, procedures and best practices. Areas of focus for program management include:

- Clear and consistent messaging about the GBICC mission and objectives

To ensure the long-term success of the GBICC program, agency and organization stakeholders must clearly understand the purpose of the GBICC and how the GBICC can support their business needs. This will require ongoing communication and input from stakeholder agencies to frame the creation of the GBICC and establish priorities. The GBICC will continue one-on-one meetings with senior leadership to ensure that agencies, especially those in transition with the new administration, are aware of the GBICC mission and objectives. In addition, GBICC personnel are currently developing web content to provide information to stakeholder organizations, and efforts will be directed at establishing key advisory groups and end user communities to provide input and feedback on GBICC program efforts.

- Data Inventory and Standards

Data inventory, standards, and management are critical to the ability to provide quick, agile, and consistent data content to meet dynamic business needs. GBICC personnel are researching industry standards and approaches to the concepts of data inventory, master data management, and data standardization. These concepts, once defined for the GBICC, will ensure that data integrated into the GBICC analytics repository provide reliable, timely information in clearly defined formats so that all stakeholders can analyze and interpret the data with common understanding. The challenge with establishing data standards is that legacy, stand-alone systems store data in a variety of methods and standards vary

widely across these applications. While the GBICC can set standards for data integrated into the enterprise repository, it would be time consuming and costly to attempt to retrofit legacy systems to new data standards. As new systems are proposed, however, these standards can guide the State's development toward enterprise data consistency.

The State Controller has proposed the creation of a State Data Officer, to work in concert with the GBICC, to set data standards, ensure quality control, facilitate the interaction of cross-department discussion to enable sharing of data and oversee the strategic business application of the State information assets enterprise-wide.

- Governance

The legislation directs the GBICC to include a privacy framework for BI consisting of adequate access controls and end user security requirements. Governance policies and procedures provide clear definition to the protection of confidential information protected by federal or State rules and regulations, defines the use of the data and determines requirements for auditing, backup and recovery and other controls. Leveraging lessons learned from CJLEADS and NC FACTS, the GBICC will define governance documents and protocols for data security and privacy. Governance for data security will include among other things:

- Physical security controlling physical access to technical infrastructure and data centers
- Virtual security controlling remote access to information in the GBICC technical environment
- Encryption/transmission security to protect data in transit and storage
- Backup and retention to prevent data loss or corruption
- User authentication using NCID
- Role-based security to control access to specific data tables or fields
- Auditing capabilities to track and monitor access to and usage of GBICC data
- Penetration testing to assess and resolve any technical infrastructure or application vulnerabilities
- Intrusion detection/unauthorized access monitoring to detect and stop any malicious or abnormal activities
- Service level agreements to ensure technical environment and application meets business operations requirements
- Personnel background check and certifications as needed

Governance is also required to ensure that business intelligence efforts throughout the State meet the State's established standards. Governance related to program management will include:

- Guidelines and procedures for collaboration work and oversight of business intelligence efforts throughout the State

- Project prioritization guidelines to determine the most effective allocation of GBICC resources
  - Standardized methods to develop business case justification, cost/benefit analysis and program metrics to ensure State resources are most effectively utilized as well as on-going impact assessments
  - Regular oversight and review of State licensing and BI capabilities to reduce redundancy, ensure consistency in standards and technology, and to achieve economies of scale
- Refinement of the Technical Infrastructure and Analytics Capabilities

The ability to support enterprise analytics requires quick, reliable and accurate access to data in a standard, consistent format. Enterprise efficiencies begin to be achieved when data, integrated, cleansed and analyzed for one business purpose, is available to provide more robust information for other purposes. Throughout the State today, agencies are sharing information, and the lack of an enterprise repository results in multiple agencies expending resources to extract, analyze and store multiple copies of the same information to support business needs.

As anticipated, the data being integrated to support criminal justice and fraud, waste and overpayment, through the data integration programs, CJLEADS and NC FACTS, respectively, establishes a foundation of information for a wide variety of analytics. Because of this, OSC negotiated with SAS to combine these project technical infrastructures to support all GBICC program efforts. As a result, the GBICC will work with SAS to refine enterprise technical architecture to support all GBICC initiatives. Enterprise architecture provides the ability to:

- Reduce redundant extract, transmission, cleansing and storage of data needed for agency analytics
  - Define and manage the security and control of data in a single environment
  - Define and manage end-user access through a consistent user administration process
  - Ensure that all technical support personnel with access to data are consistently vetted and authorized for project work
  - Audit all access to and usage of data across the enterprise business intelligence capabilities
- Project Reporting

Business intelligence and data analytics is a unique combination of applying known business rules and knowledge as well as performing creative, “what if” analysis to understand how data can support business decisions. Business intelligence projects do not follow normal project management processes. Business intelligence is often an iterative, sometimes trial and error approach to understanding the data and how it can support dynamic changing business needs.

The GBICC will work closely with the new State Chief Information Officer and the State Enterprise Project Management Office to consider alternative approaches to reporting GBICC project definitions, schedules, resources and cost/benefit analysis.

### **GBICC Project Management Activities**

As directed by the GBICC legislation, the program executed a contract amendment to extend licensing and provide analytics services to support GBICC program efforts. The cost savings associated with leveraging the NC FACTS technical infrastructure for GBICC efforts will provide additional analytics services capacity for multiple project priorities.

### **Worker's Compensation Fraud and Employee Misclassification Detection**

Session Law 2012-135, H.B. 237, Section 8.(a) created the Joint Legislative Committee on Worker's Compensation Insurance Coverage Compliance and Fraud Prevention and Detection to study matters related to worker's compensation and ensure that measures are being undertaken to enforce compliance with providing appropriate worker's compensation coverage and detecting and preventing fraud.

In addition, Executive Order 125 established an Employee Misclassification Taskforce to address concerns that North Carolina employers are allegedly misclassifying employees resulting in wage and hour issues, lack of worker's compensation insurance coverage, and other related issues. The taskforce, chaired by the North Carolina Commissioner of Insurance, focused on enhancing communication and coordination between State agencies and identifying mechanisms to address unlawful practices that harm the State's workers.

Worker's compensation fraud and employee misclassification are closely related and both result in exposure to the State, its economic and business environment, and its workforce. Employee risk is high when businesses fail to properly report their employees and provide worker's compensation coverage. An employee injured in a work-related event may find that they are not properly covered and incurs unexpected medical expenses and lost wages. When these workers have no insurance coverage and no means to pay, the State incurs the costs of medical treatment and social services. The failure of some businesses to properly report their employees and pay for worker's compensation coverage results in a competitive advantage over a business that complies with State law and must build the cost of coverage into the cost of their products and services. Conversely, when employees inappropriately or fraudulently receive a worker's compensation benefit, the employer and insurance companies bear the cost of the fraudulent expenses.

The GBICC presented to both the Joint Legislative Committee and the Employee Misclassification Taskforce to share its mission and objectives. Key testimony from various presenters in these meetings as well as efforts underway in other states have made it clear that access to and the ability to analyze data across State agencies can help the



State identify potential areas of workers compensation fraud and employee misclassification activities. The Joint Legislative Committee and the Employee Misclassification Taskforce expressed interest in a GBICC initiative to develop worker's compensation fraud and employee misclassification analytics.

The success of this effort will be based on the active participation of key stakeholders including:

- The Department of Commerce, Division of Employment Security
- The Department of Justice
- The Department of Insurance
- The Department of Labor
- The Department of Revenue
- The Department of Secretary of State
- The North Carolina Industrial Commission
- The North Carolina Rate Bureau

The GBICC held initial meetings with the NC Industrial Commission to develop preliminary scope of work and identify short and long term priorities. As soon as data access and usage agreements are executed, the project team will initiate project development activities.

#### State Health Plan Analytics Repository

North Carolina State Health Plan for Teachers and State Employees (SHPNC) relies on data warehousing to support their business operations. Currently, third party vendors manage membership, and claims processing. SHPNC receives regular extracts from the third parties to support reporting and analytics. The Department of State Treasurer, Information Technology Division, manages the SHPNC data and analytics repository using SAS software to support program metrics analysis and reporting. The SHPNC repository is experiencing technical challenges that are impacting performance and the ability to meet the SHPNC's analytics needs. These technical challenges, and the need to update the data warehouse and report capabilities to accept new data derived from the new health plan contract resources, result in additional costs to support the expansion of the technical environment and the modification of reports.

SHPNC is working closely with the NC FACTS program to establish fraud analytics related to member eligibility and claims processing. The NC FACTS fraud analytics and the SHPNC program analytics require much of the same data available in the SHPNC data repository.

Bringing the SHPNC analytics repository into the GBICC environment allows the State to resolve the current technical issues and to perform data integration and analysis work once to support both analytic needs. In addition, consolidating the SHPNC analytics into the GBICC allows the State to reduce licenses and avoid duplicate data storage and technical infrastructure and support costs.

Initial project kick-off activities will begin in February to ensure the migration of this repository is complete to meet the SHPNC's key deadline of July, 2013.

### Education and Workforce Data

The legislation directs the GBICC to coordinate individual-level student data and workforce data from all levels of education and the State workforce. The GBICC program resources have researched the P20W Longitudinal Study as well as the Common Follow-up Program to understand the State's current efforts in these business areas. The GBICC program will work collaboratively with these programs to ensure an enterprise approach to leveraging these key data sources to the State's benefit. Educational programs and valid objective results, whether related to vocational training, industry-specific training, university level programs, or a community's K-12 options, are all important factors in strengthening the economy of the State in its various communities. This education information may generate interest from strong companies that can offer long term economic diversity, improvement and commitment to the State. This information may assist state and local economic development programs by providing reliable information about educational programs that demonstrate the strength of specific institutions that support prospective company interests. A company considering relocation, for example, may use local educational options as a component of quality of life considerations. Education information can also assist local educational agencies and regional programs in working to improve specific programs to provide greater parity among the State's educational programs and offer opportunities to optimize resources among the various entities. The State Controller has designated the GBICC Program Manager to act as his designee on the North Carolina Longitudinal Data Systems Board.

## **IV. Next steps**

The GBICC will continue the implementation of key GBICC Program Management components to enable the development of the GBICC Plan of Action. Top priorities for GBICC program management include:

1. Building consensus and agency "buy-in" for the emerging GBICC initiative to ensure that efforts are focused on appropriate priorities and adding value to the agencies. The ability to build consensus will depend on developing a clear concept of the GBICC and how it will bring value to the agencies.
2. Establishing working groups of business stakeholders to assist with business needs assessment and project prioritization and user community members to provide feedback on analysis needs, techniques and tools.
3. Establishing a register of available data – using the inventory responses, the GBICC will identify a process to register data sources and data source owners for use by all State organizations.
4. Establishing governance policy, procedures, and guidelines to broker data sharing agreements across organizations including the creation of a legal advisory group

- of state and federal privacy, disclosure and security regulations subject matter experts who can provide guidance on data sharing issues and agreements
5. Establishing data and metadata standards based on national standards and industry best practices and determine how enterprise data model management and standards will be implemented
  6. Other program areas for consideration include:
    - a. Contract and license management.
    - b. Support/Help desk.
    - c. Technology, architecture and infrastructure.
    - d. Production system management.
    - e. Training and Change Management – enhancements, upgrades, and scope expansion.
    - f. Consulting to business units.

The GBICC’s project activities for the initial areas of analytic focus include:

1. Workers compensation fraud analysis and employee misclassification
2. North Carolina State Health Plan analytics repository migration to the GBICC

In addition, the GBICC will continue to evaluate the inventory results and work with State agencies to identify business needs and priorities for future development efforts.

## **V. Funding and Expenditures**

Session Law 2012-142, HB 950 appropriated \$5 million in non-recurring funds to support the enterprise BI program. Of that amount, the OSC may use \$750,000 for the administration of the program. The remaining funds are reserved for initiatives recommended to and approved by the General Assembly.

The GBICC executed a contract with SAS to initiate business intelligence projects under the GBICC program. The contract provides analytics service resources and will leverage the NC FACTS technical infrastructure. The GBICC contract provides analytics licensing and services through December, 2013. The following chart shows the expenditures as of December 31, 2012.

<b>Estimated FY 2013 as of December 31, 2012</b>	<b>FY 2012-2013 Budget</b>	<b>Available Balance</b>
<b><u>GBICC Funding</u></b>		
Program Initiatives	\$4,250,000	
Program Administration	\$750,000	
	<u>\$5,000,000</u>	
<b><u>GBICC Expenditures</u></b>		
Total Project FY 2012-2013		
State Project Team Expenditures	\$47,873	
	<u>\$47,873</u>	
<b>GBICC Total</b>	<b><u>\$47,873</u></b>	<b><u>\$4,952,127</u></b>

The OSC must hire additional full-time staff to support the on-going GBICC efforts. Recurring funding is necessary to establish permanent positions for the skilled program resources needed to support enterprise BI efforts. In addition, funding to support the analytics licensing and development services will be required to sustain the GBICC program efforts.

# **NC Financial Accountability and Compliance Technology Systems (NC FACTS)**

## **VI. Background**

Session Law 2011-145, HB 200, directed the Office of the State Controller (OSC) to develop an enterprise process to detect fraud, waste and improper payments throughout state government. Session Law 2012-142, HB 950 placed the NC FACTS program under the Government Business Intelligence Competency Center (GBICC) also managed by the Office of the State Controller. This was done to support the effective and efficient development of State agency business intelligence capability. Additional statutory language to facilitate greater data sharing for enterprise initiatives was also adopted.

The OSC contracted with SAS to design, develop and host the North Carolina Financial Accountability and Compliance Technology System (NC FACTS). This contract is a public private partnership with each party contributing to the successful integration and analysis of the State's data for fraud detection. NC FACTS will apply advanced analytics to the integrated data to create alerts about suspected fraudulent, wasteful, or improper payment activity. Using key identifying and demographic information, NC FACTS will be able to develop relationships and linkages among multiple data sources to indicate potential collusion and/or criminal activity. Because confidential data is critical to the ability to perform fraud analysis, NC FACTS will implement the appropriate technical architecture, security, and user access parameters to protect data in accordance with federal and state regulations. NC FACTS is designed to use the North Carolina Identity (NCID) management application to allow users to authenticate to NC FACTS using their existing state-issued user identification and password.

NC FACTS continues to experience challenges in gaining agency stakeholder commitment and access to data. The project team has focused on identifying agencies most interested in participating in the NC FACTS initiative, developing data sharing best practices, and addressing inhibitors to data sharing. While some agencies have expressed interest in being involved in the development and use of fraud analytic capabilities, others have been slow to partner with the NC FACTS project team in support of the development effort. It has been observed that agency operational priorities and resources are often cited as a limitation on the committing resources to assist NC FACTS. Agencies, accustomed to managing data within their siloed applications, struggle with balancing their duty to protect the privacy of "their" data with the need to share data to ensure that tax dollars are appropriately used to provide the best value and services for the citizens of North Carolina.

This report highlights the activities of the NC FACTS program since the October 1, 2012 report.

## **VII. Program Requirements**

To develop an enterprise program to detect fraud, waste, and improper payments across state government, OSC is partnering with state agencies to identify business needs in the area of fraud, waste and improper payment analysis, detection, and reporting. Data integrated to support one agency's business needs will likely add value to fraud analysis for other agencies and the enterprise. Agency partnerships include data governance agreements that define the data to be shared, technical and user access security protocols, auditing requirements, and more, are critical to North Carolina's enterprise business intelligence efforts.

To develop NC FACTS, OSC entered into a two-year contract with SAS, with a maximum cost of \$8 million. The contract defines a public-private partnership with the State's data integration vendor contributing resources in the amount of \$5 million in each of the two contract years (FY11-12 and FY12-13). This partnership ensures active participation and commitment from the State and the data integration vendor and focuses on providing a strong return on the State's investment. The parties will coordinate efforts to report benefits realized for each area of fraud, waste or improper payment analysis.

While the program will expend considerable effort on data collection and integration, support for the business programs responsible for analyzing and investigating the identified fraud incidents is critical. This effort, in collaboration with the business area, will identify the business processes and resources required to recover fraudulent or improper payments, to prevent future incidents of fraud, waste and improper payments, and to ensure that the analytics used to identify these incidents are continually being improved and refined to more accurately evaluate risk and fraud patterns.

## **VIII. Program Activities**

The development of risk analysis and fraud detection at the enterprise level is significant undertaking and an iterative process. Agencies participating in the program may realize "quick hits" based on verification of known business rules within the first few months of the sharing of data. Development of mature analysis, however, will evolve over time as North Carolina's integrated data is used in developing more sophisticated analytic and predictive models, filters, and network analysis. These analytic tools will be further refined based upon analysis, verification and feedback on the fraud alerts generated by the system.

For more information about the program approach to analytics development, the technical infrastructure and the governance model, please see [Appendix C](#).

## **Data Sharing and Analytics Activity**

The NC FACTS program team is continually working with the agencies to promote the value of data integration, the capabilities of the fraud framework, and benefits to the agency and state. Several pilot areas of focus are underway:

### **The Department of Commerce - Division of Employment Security**

In early October, 2012, the Division of Employment Security (DES) began transmission of critical data related to employer wage and tax filings and benefit claims and payments. Access to this information had been delayed due to resource constraints associated with the implementation of the federal Treasury Offset Programs and the development of a multi-state RFP to replace outdated operations systems. During the interim before receiving the data, the NC FACTS team worked closely with the business owners to develop a clearer understanding of business processes and challenges in dealing with potential unemployment insurance fraud, waste and improper payments.

Analytic efforts for Division of Employment Security will be focused on two different business areas. The first is analysis of employer wage and tax reporting with the focus on identifying areas of suspect information and/or activity that may indicate fraudulent or improper representation of employees, wages, and associated unemployment taxes as well as potential fictitious businesses established either for the purposes of avoiding UI tax payments or fraudulent collection of UI benefits. The second area of analysis will focus on benefit eligibility and payment information to identify fraudulent or improper UI benefit payments.

After receiving the data from the DES, the NC FACTS team has been working to develop a comprehensive understanding of the data files and fields to ensure that the analytics properly interprets and evaluates the information. Initial data evaluation includes:

- Extract, transformation, and loading (ETL) of information into the NC FACTS technical environment - this step includes security, encrypted transmission of data from the source agency, DES, to the SAS environment. During this process, the data is cleansed and standardized as it is loaded into NC FACTS data tables for analytic evaluation.
- Data evaluation – after ETL process loads data into the NC FACTS environment, data analysts review the data content to develop a clear understanding of the content and meaning of each data element. The NC FACTS team works closely with DES to resolve any questions about content and meaning of the data elements.

The first step of analysis begins with “quick hit” scenarios where the data fails to adhere to known business rules. NC FACTS, initially using historical data, started quick hit analysis on the following unemployment insurance benefit payment scenarios:

- Comparison of unemployment claimants against the Social Security Death Master Index to identify potential payments made to deceased individuals

- Comparison of unemployment claimants to prison incarceration data to identify potential payments made to individuals incarcerated at the time of payment
- Comparison of unemployment claimants to jail custody data to identify potential payments made to individuals in jail at the time of payment
- Comparison of unemployment claimants to BEACON payroll data to identify potential payments made to individuals employed and paid by the State
- Comparison of unemployment claimants to quarterly wage reports to identify potential payments made to individuals employed and paid by businesses at the time of payment

NC FACTS continues to work with DES to identify additional known business rule analysis related to benefit eligibility and “work and draw” scenarios where individuals are receiving unemployment insurance benefits inappropriately.

In addition to benefit payments, analysis is progressing on the employer compliance business area as well. This analysis utilizes more sophisticated analytical methods to identify possible fictitious businesses or collusive activity among claimants and business. Initial analysis being conducted includes:

- The number of claimants who have been identified as working for a business and drawing benefits from a previous position combined with the current business’s responsiveness to requests for wage verifications; and
- The acceleration of claimants against a company in comparison with the number of years in business and cumulative unemployment taxes paid.

Initial analysis of the historical data, based on the above mentioned business scenarios, has resulted in material results. The NC FACTS team is currently validating these results with DES by:

- Vetting the source data information to confirm that the NC FACTS analytics are correctly matching and interpreting the data.
- Vetting results on a case-by-case basis with the business owner to ensure business rules have been correctly applied to the data. This step refines the analytic models to improve results and minimize false positives.

Based on the validation of these initial results, NC FACTS will work with DES to operationalize these initial analytic models by:

- Running analytic models against current data. Access to the most current data has been delayed due to competing priorities for DES technical resources
- Establishing regular, recurring data loads to automate data updates to support the analytic models
- Developing the NC FACTS user interface to provide online access to analytic results for review and evaluation
- Prioritizing results based upon defined criteria to assist DES investigative resources in focusing efforts on the most critical cases



- Developing a mechanism to track and report results of the investigation, recovery and prevention of identified fraud incidents

As these initial areas of analysis are operationalized, the NC FACTS team will work with DES to implement real-time validation based on the “quick hit” analysis. For example, if real-time access to data can detect that an individual requesting unemployment insurance benefits is currently in jail or prison, DES may be able to stop a payment rather than having to attempt to recoup the funds at a later date.

Additionally, the NC FACTS team will begin to expand analytics into areas of statistical analysis and anomaly detection, predictive analysis and social network analysis.

### **The Department of State Treasurer – State Health Plan of North Carolina**

The SHPNC works to identify fraud in areas such as provider billing for improper or unnecessary procedures, falsifying diagnoses, and billing for services not performed. Consumer fraud may include filing claims for services or medications not received or falsely claiming dependent eligibility. Better access to information and tools may aid in identifying these types of improper payments.

In September, 2012, the SHPNC signed a Data Access and Usage Agreement (DAUA) to allow NC FACTS to receive and analyze health plan data. The NC FACTS team has worked with SHPNC to identify the necessary data files and elements and requests are being submitted to the SHPNC vendor partners to develop data extracts. The SHPNC vendor partners conduct fraud analysis as part of the contractual agreements associated with the plan. NC FACTS, therefore, will focus initial efforts on fraud areas that are not currently being addressed by the vendor efforts. The NC FACTS team will work closely with both SHPNC and its vendor partners to avoid duplication of effort.

As noted in the GBICC section of this report, the SHPNC currently leverages a SAS analytics reporting repository. Recognizing that the NC FACTS program and the SHPNC program analytics require many of the same data feeds, it was determined that integrating the SHPNC analytics repository into the GBICC environment will allow the State to reduce licenses and avoid duplicate data storage and technical infrastructure and support costs.

The SHPNC is preparing for new and updated vendor relationships under the new health plan contracts that take effect in July, 2013. The GBICC and NC FACTS team will work with the SHPNC to coordinate the modification of existing data file extracts and development new data extracts to support both the fraud analytics with the SHPNC analytics repository.

## **Department of State Treasurer - Division of Retirement**

The Department of the State Treasurer (DST) administers the Teachers and State Employees and Local Governments pension plans for North Carolina's 850,000 public employees and retirees.

The management team from the DST Retirement section has indicated interest in the capabilities of NC FACTS and the integration of retirement data for the detection of suspect fraud, waste and overpayments. A draft DAUA has been shared with DST and is under review and consideration.

### **Cross Agency Analytics**

While conducting analysis for fraud, waste and improper payments, the NC FACTS and partner agency team members are identifying additional ways to support key business needs using data that has been integrated to support the fraud analysis. Session Law 2012-170, H.B. 1173, states that the, *"court may order the suspension of any public assistance benefits that are being received by a probationer for whom the court has issued an order for arrest for violation of the conditions of probation but who is absconding or otherwise willfully avoiding arrest. The suspension of benefits shall continue until such time as the probationer surrenders to or is otherwise brought under the jurisdiction of the court. For purposes of this section, the term "public assistance benefits" includes unemployment benefits, Medicaid or other medical assistance benefits, Work First Family Assistance, food and nutrition benefits, any other programs of public assistance under Article 2 of Chapter 108A of the General Statutes, and any other financial assistance of any kind being paid to the probationer from State or federal funds."*

During the DES unemployment insurance analysis comparing benefit payments with individuals who were incarcerated during the period of benefits, NC FACTS also found individuals who were receiving unemployment benefits and were identified in CJLEADS as absconders. Incorporation of other public assistance benefit data, along with the unemployment insurance information in the GBICC/NC FACTS environment, may be able to assist the courts in identifying individuals absconding from probation for whom public assistance benefits can be suspended. In addition, the ability to identify absconders, and their associated public assistance benefits, may offer the opportunity for key stakeholder agencies, working collaboratively, to re-establish contact with individuals who are violating the terms of their probation.

While the NC FACTS team works with data source agencies to verify the accuracy of these initial data matches of absconders and unemployment insurance payments, the team will also initiate discussions with the courts and other social service organizations to understand how this data analysis may be able to support the efforts associated with Session Law 2012-170, H.B. 1173.

## **P-card Analysis**

During evaluation of North Carolina Accounting System (NCAS) data, the NC FACTS team began analysis of procurement card data (P-card). By incorporating Bank of America transaction detail, the analysis of this procurement data provided insight into the ways P-cards are used by authorized agency users. While data analysis did not identify areas of suspected fraud, the data did provide information to initiate a review of P-cards from an internal control perspective to ensure that all P-card use adheres to State procurement and cash management policies and procedures. OSC is working closely with Department of Administration procurement to complete this review.

## **The Department of Health and Human Services**

The Department of Health and Human Services (DHHS) provides some form of services for one out of every six North Carolinians. With an annual operating budget of \$14 billion to meet these needs, the potential for fraudulent, erroneous and wasteful payments exists. Recognizing the possibility for fraudulent activity to occur, DHHS has instituted many initiatives and programs to commence and support investigations.

During interagency discussions related to DHHS anti-fraud efforts, DHHS, OSC, and SAS recognized considerable synergies between the current DHHS Eligibility program and the NC FACTS initiative. With similar data needs, software licensing and hosting requirements, working collaboratively on these two projects offers the State the opportunity to save resources while achieving a common goal. DHHS, OSC and SAS continue to discuss tasks and timelines to merge these efforts.

In addition, OSC continues to work with DHHS to gain access to key sources of data, including vital records and eligibility data, and to identify areas of focus within DHHS that are not being addressed by current fraud efforts. The team recently met with the SmartCard project team to understand how the NC FACTS and GBICC might be able to provide access to key data for the SmartCard pilot.

DHHS continues to review the necessary Data Access and Usage agreements as well other information security policies to enable data sharing to support the analysis of eligibility for services and payments across the enterprise.

## **Department of Transportation – Division of Motor Vehicles**

The Division of Motor Vehicles maintains vehicle registrations and driver license data for North Carolina citizens. This information has been identified as data which can be utilized to support analytical model development associated with various business areas.

The DMV, recognizing the value of DMV data, agreed to participate in the NC FACTS program. A DAUA has been executed to provide access to the DMV data. While the

data extract will currently provide only partial Social Security Numbers, the data will still provide key information to support enterprise analytics.

### **Future Analytics**

While working with data to conduct fraud analytics, the NC FACTS and partner agency teams have recognized that data integrated and evaluated for fraud provides a valuable repository for other potential agency program analytics. The single GBICC repository, therefore, provides a mechanism to reduce duplicate data integration design and development work, data storage and repetitive maintenance and support. For example, once the State Health Plan's data is incorporated into the NC FACTS repository for fraud analytics, the same data, coupled with other data available within the enterprise repository, provides valuable information for other State Health Plan analytics. As a result, the NC FACTS technical infrastructure will provide the foundational environment for the GBICC program and associated projects.

The enterprise repository allows the GBICC to perform data integration activities of extracting, transforming and loading the data once, then using the data for multiple purposes. The enterprise repository provides a shared environment with common security, user access, improved usability and consistent look and feel. A shared repository will also allow for shared business services including training, help desk support and user administration.

While there are benefits of a shared repository, the enterprise nature of the repository will create additional complexity in the areas governance, security and cost allocation.

For a list of other data sources currently integrated into the enterprise repository, see [Appendix D](#).

## **I. Challenges**

### **Agency Commitment**

NC FACTS offers state agencies potential tools to provide added value to their fraud, waste and overpayment identification efforts using integrated statewide data. While agencies see value in the NC FACTS concept and express interest in participating in this enterprise initiative, they note that operational priorities inhibit their ability to commit resources to share their data and implement these business processes. Consequently, the pace of development of analytics to support their organizational anti-fraud efforts has not been at a level satisfactory to this Office.

### **Resource Limitations**

There is no doubt that some agencies are limited from sharing data because of statutory, regulatory or legal challenges, but even when there are no legal impediments, limited agency resources continue to present a challenge with providing data. Despite the fact

that executed data access and usage agreements are in place, the lack of agency staff resources to develop data extracts and provide business knowledge to support the essential analysis, continues to delay work effort toward developing fraud, waste and improper payment detection models.

To lessen the impact on technical resources within agencies, the NC FACTS program team has suggested that agencies consider the use of existing data extracts wherever possible. Existing extracts may not be as comprehensive as developing NC FACTS specific extracts, but they may include sufficient data to begin analysis and can be adapted as additional data needs are identified. The Division of Employment Security and the Department of Transportation are currently evaluating leveraging this approach.

### **Data Sharing**

The data needed for effective enterprise analysis includes highly sensitive and secure information. The ability to protect Personal Identifying Information (PII), adhere to security and compliance requirements for the Health Information Portability and Accountability Act (HIPAA), and meet the constraints associated with other state and federal laws and regulations associated with tax information and employment data, is critical to sharing information across the enterprise. NC FACTS works closely with agencies to develop the required policies, procedures, contractual agreements, and memorandums of understanding or agreement necessary to define the parameters associated with data sharing of this key information within the State's fraud initiative.

Stringent application security, including physical security, user authentication, role-based security, and data encryption among others, are key components in the implementation of the enterprise fraud detection system. The ultimate success of this initiative is dependent on state agencies that partner and strive to find and implement appropriate policies and controls to enable data sharing. Some of the agencies who serve as data stewards of key data sources have determined that statutory or regulatory provisions prevent the ability to provide or share state data in their possession with this statewide initiative:

#### **Department of Revenue**

The Department of Revenue (DOR) houses sensitive information related to business and individual income, revenue, sales and tax information. This information is critical to analyzing a variety of areas including validating business and individual identities, reviewing provider claims and payments, analyzing recipient eligibility, and recognizing inconsistency in operations across the State's business areas. The Department of Revenue, in response to a data sharing inquiry, indicated that state statutes and regulations, specifically G.S. § 105-259, limits the disclosure of tax-related information. Tax information, defined in that statute, includes information contained on a tax return or obtained through an audit, information on whether or not an individual has filed a tax return or tax report, and a list of names, addresses, social security numbers, or similar information concerning taxpayers. Further, DOR indicated that federal regulations including Section 6103 of the Internal Revenue Code requires that federal returns and return information must be kept confidential except as specifically defined by statute.

DOR noted that many of the State's data files co-mingle federal and state data which further complicates the ability to share information with the NC FACTS initiative. Section 7213 of the Internal Revenue Code provides that the unauthorized disclosure of tax information is a felony and is punishable by a fine of up to \$5,000 and imprisonment of up to five years. Unauthorized inspection of tax information is a felony and is punishable by a fine of up to \$1,000 and imprisonment of up to one year. The Department of Revenue believes that legislation is required to allow the use of State tax information in the fraud, waste and improper payment detection initiative. With the new data sharing legislation in Session Law 2012-142, HB 950, OSC will work with DOR to determine how DOR data may be incorporated into NC FACTS.

#### Department of Health and Human Services

Department of Health and Human Services (DHHS) stores key information about medical service providers, recipients, and claims, as well as other social services information. DHHS expressed concern about the NC FACTS initiative placing additional burden on their current fraud detection program resources. While NC FACTS may not engage in detailed fraud analysis within Medicaid, the data and results from current Medicaid efforts are vital to enabling linkages and an enterprise view of businesses and individuals. The NC FACTS team recognizes that regulatory requirements related to HIPAA protected information must be addressed.

#### **Program Resources for NC Fraud, Waste and Improper Payment Efforts**

NC FACTS will provide data integration and analytics to identify suspect behavior, pattern anomalies, and errors in processing as the basis for detecting, investigating, recouping, and preventing fraud, waste and improper payments. A broader vision, however, is needed to develop a State culture focused on fiscal responsibility and accountability at all levels of State government.

North Carolina State Government serves its citizens and is responsible for ensuring that tax payer dollars are used in a fiscally appropriate manner. A focus on fraud, waste, and improper payment detection and prevention begins with the development of a culture within State government focused on accountability and transparency. To support this effort the following recommendations are provided:

#### **Code of Conduct**

Some, but not all, of North Carolina's State agencies have adopted an employee code of conduct. Consideration should be given to establishing a uniform North Carolina state employee code of conduct to ensure all state employees have a common, clearly defined set of guiding principles under to which to operate. The code of conduct sets the tone for employees and makes clear the expectation of a high standard of professional conduct.

## **Fraud Reporting**

While data integration and analytics will provide the ability to systematically detect fraud through statistical analysis, pattern evaluation, and anomaly detection, information from other sources will continue to provide valuable information on fraudulent activity. Review of existing hotlines and tip reporting should be conducted to ensure that state government employees and the public have easy access to provide key information to state fraud program resources for review and investigation.

Consideration must also be given to the protection of state employees who provide information that they consider to be reasonable evidence of activity involving fraud, waste or improper payments. Consideration of additional language providing “whistle-blower” protection may be necessary to ensure the willingness of employees to report suspect behavior to the appropriate authorities.

## **Agency Resources**

As the NC FACTS application identifies suspect data for review, agencies and the NC FACTS enterprise program must have the necessary resources to verify the accuracy of the findings, to determine the cause of the finding, and to identify and recommend resulting program changes to prevent future incidents. The Office of Internal Audit in the Office of State Budget and Management and the Statewide Internal Control Program in OSC have both identified the need for additional resources to support agencies and provide greater oversight for disbursement of state funds.

## **Incentives**

As the automated fraud detection system is implemented and expanded throughout State business units, OSC anticipates an increase in the number of incidents and types of fraud identified. Identifying fraud is only one step in the process of improving government operations. The ability to investigate and recover funds that were improperly expended -- and more importantly the ability to prevent future incidents of fraud -- is critical to achieving measureable success in improving government operations.

Except for the Courts, consideration should be given to providing a portion of the funds recovered from fraud, waste and improper payment analytics and recovery efforts to the employees, agencies and organizations as an incentive for the agency to provide the resources, equipment, and programs to analyze, investigate, and recover improperly expended funds. This funding could assist agencies with the essential resources required to adapt business policy and procedures, and improve information technology systems to identify and prevent improper payments.

### **Measurement of Benefits Realized**

As previously mentioned, a number of fraud detection initiatives exist throughout state government. It will be a challenge to clearly distinguish benefits associated with the implementation of the enterprise fraud detection initiative from existing efforts. In order to accurately measure and report on benefits realized, OSC will work closely with partner agencies and organizations to identify ways to supplement existing detection efforts with access to enterprise data and analytics and how newly created tools and capabilities may enable additional fraud detection activities.

As fraud detection improves the ability of state agencies to adapt processes and controls to prevent fraud, quantitative reporting of prevention efforts may be challenging. Estimated benefits will consider historical fraud statistics as well as measured payments that were flagged and stopped prior to payment.

### **Maintenance of Analytical Models**

Enterprise data and robust analytical tools will identify data patterns and anomalies in order to detect fraudulent and improper payments. With advanced analytics, it is likely that the number of identified data anomalies will increase significantly. Because State agencies and organizations have limited resources to review, investigate and recover improper payments, it is critical that the automated fraud detection system provide a feedback mechanism to continually refine the analytic models. As investigators determine which cases involve actual fraud from cases that involve erroneous payments, the models can be adjusted to better identify high risk cases. Feedback will also allow the models to be refined so that suspect criteria are more specific leading to a reduction in the number of “false positive” cases. The feedback can also provide information to stop suspect payments for a review process prior to expending funds.

As the State improves its ability to detect and prevent fraud, individuals who commit fraud will find alternative methods of gaining improper access to payments and services. All analytic models must be flexible and easy to modify to ensure the State’s fraud detection ability maintains pace with the creativity of those trying to defraud the State.

## **II. Budget**

Session Law 2011-145, HB 200, authorized funding of \$9 million in the biennium budget for the development of an automated fraud, waste and improper payment data integration program. These funds support OSC’s state project team staffing and expenses (\$1,000,000) as well as contractual services for the design, development and implementation of data integration and business analytic models for fraud detection (\$8 million). To ensure the public-private partnership of this initiative, the State’s data



integration vendor is required to contribute resources in the amount of \$5 million over the next two years (\$10 million total). The vendor contribution will provide hosting hardware and technical environment infrastructure, software, support and services for design, development and implementation of data integration and business analytic model development.

Because data sharing challenges significantly inhibited data analysis and development in FY 2012, to ensure adequate progress is being made toward reaching the General Assembly’s public/private partnership mandate, OSC negotiated a contract extension with the vendor for an additional full year at no additional cost. Payments have been delayed accordingly.

To support the fraud analytics initiative, however, recurring funding is necessary to establish permanent positions for the skilled program resources and to support the analytics licensing and development services will be required to sustain the automated fraud detection program efforts.

**Projected Budget**

	FY 2012	FY 2013
<b><u>Fraud Detection Funding</u></b>		
State Funding	\$1,500,000	\$7,500,000
Vendor Financial Contribution	5,000,000	\$5,000,000
	<u>\$6,500,000</u>	<u>\$12,500,000</u>
<b><u>Fraud Detection Expenditures</u></b>		
State Project Team Expenditures	\$500,000	\$500,000
Vendor Contracted Services Payment - December, 2011	1,000,000	
Vendor Contracted Services Payment - July, 2012*		3,000,000
Vendor Contracted Services Payment - December, 2012*		3,000,000
Vendor Contracted Services Payment - June, 2013		1,000,000
Vendor Hosting, Software and Contracted Services Contribution	5,000,000	5,000,000
	<u>5,000,000</u>	<u>5,000,000</u>
<b>NC FACTS Total</b>	<b><u>\$ 6,500,000</u></b>	<b><u>\$ 12,500,000</u></b>

\* Vendor Service payment delayed

## Actual Expenditures/Vendor Contributions

As of December 31, 2012	FY 2012 Actual	FY 2013 Actual
<b><u>State Fraud Detection Funding</u></b>		
State Funding	\$1,500,000	\$7,500,000
Carryover from FY Year 2012		497,228
<b>Total Budgeted Funds Available</b>	<b>\$ 1,500,000</b>	<b>\$ 7,997,228</b>
<b><u>Expenditures</u></b>		
State Project Team Expenditures	\$2,772	\$146,570
Vendor Payments	1,000,000	
<b>Total Expenditures</b>	<b>\$ 1,002,772</b>	<b>\$ 146,570</b>
<b>Total Budget Funds Remaining</b>	<b>\$ 497,228</b>	<b>\$ 7,850,658</b>
<b><u>Vendor Fraud Detection Contribution</u></b>		
Vendor Financial Contribution - Planned	5,000,000	5,000,000
Carryover from FY Year 2012		768,355
<b>Total Planned</b>	<b>\$ 5,000,000</b>	<b>\$ 5,768,355</b>
Vendor Fraud Detection Expenditures - Actual	4,231,645	6,268,490
<b>Total Contributions Remaining</b>	<b>\$ 768,355</b>	<b>\$ (500,135)</b>
<b>Total Budget Funds and Vendor Contribution Remaining</b>		<b>\$ 7,350,523</b>

## Budget Expansion

The NC FACTS program budget funding is funded through June 30, 2013. A budget expansion request was submitted to support the continued development and expansion of the program through the next biennium.

## III. Next steps

- Continue work on the NC FACTS pilot program areas:
  - Operationalize and expand the unemployment insurance benefit and employer filing fraud analysis
  - Initiate State Health Plan of North Carolina data feeds, business requirements definition and analysis
  - Execute data sharing agreements with the Department of State Treasurer – Division of Retirement
  - Continue analysis of integrated data
    - SOS information

- SSA Master Death File
  - NCAS vendor and payments data
  - BEACON payroll and time data
- Provide program recommendations for recovery and prevention of identified incidents
- Report benefits realized
  
- Identify data sharing statutory and regulatory challenges and recommendations for addressing these challenges.
  
- Identify additional business areas of interest and plan for program expansion.

# **Criminal Justice Law Enforcement Automated Data Services (CJLEADS)**

## **IV. Background**

In 2008, the North Carolina General Assembly initiated the Criminal Justice Data Integration Program with the mandate to create a statewide crime data system designed to save time, save money, and save lives. Since the project's inception, the Office of the State Controller (OSC) has managed CJLEADS and has worked with SAS as a vendor partner and in collaboration with North Carolina's criminal justice organizations to develop and implement the Criminal Justice Law Enforcement Automated Data Services (CJLEADS) system.

Consistent with the General Assembly's intent to serve criminal justice professionals and improve the safety of North Carolina's citizens, CJLEADS has two primary objectives:

1. To provide a comprehensive view of an offender through a single application, allowing for positive identification of an offender through a photographic image.
2. To provide an "offender watch" capability to alert criminal justice professionals when an offender has a change in status.

Primary statewide deployment activities were completed on schedule by June 2012. The CJLEADS Business Operations team continues to on-board agencies and train users throughout the state, and provides 24x7 help desk support for all agency users and user administrators. Feedback from organizations using CJLEADS continues to be extremely positive.

Continuous improvement of the CJLEADS application ensures that CJLEADS provides law enforcement and the courts with a comprehensive, robust tool that helps reduce crime, prosecute offenders and keep North Carolinians safe. As CJLEADS works with the courts, corrections and law enforcement personnel throughout the state, technology and activity associated with public safety, criminal investigations, and other law enforcement activities is constantly changing. While IT systems typically complete the design and development lifecycle and move into the operations and maintenance phase where project resources are focused primarily on day-to-day application support, the systems can lose relevancy and quickly become obsolete. Because of this technology effect and the concurrent elevation in risk to the public associated with law enforcement's use of dated technology, it is critical for the State to adopt a different project management approach for CJLEADS and continue system enhancement activities in parallel with operations and maintenance.

Future enhancement efforts are focused on:

1. Critical data to be incorporated in the CJLEADS application including:
  - Access to Division of Criminal Information (DCI) network for federal data for DCI certified users as well as Hot File status for all law enforcement users

- Access to incident-based information from the North Carolina Data Exchange (NC-DEX) being developed by the NC Department of Justice.
2. Critical CJLEADS development to ensure the application can support new and improving technology including an interface to allow users to capture images in the field and leverage the Division of Motor Vehicles facial recognition technology to quickly provide identification.

OSC has maintained tight fiscal control over the CJLEADS to ensure that state funds have achieved maximum value. During the challenging economic conditions of the last three years, OSC has minimized operating expenses while committing to provide excellent support and development effort with the resources available. At the end of FY 2011-2012 and the completion of the statewide deployment, CJLEADS project development and deployment expenditures were \$24,620,475, approximately 9% under the original budget estimate of \$27,000,000.

In FY 2011-2012, CJLEADS recurring funding was reduced from \$9 million to \$6,632,737. OSC reduced expenditures in FY 2011-2012 by delaying hiring and eliminating key support positions, maintaining a very tight training budget, reducing development hours, and using one-time data integration funds to add critical data and functionality to the system that year. Recognizing the critical nature of the CJLEADS mission, S.L. 142, H.B. 950 authorized \$2,379,000 in non-recurring funding for the FY 2012-2013 budget to support a migration to a more robust enterprise-capable database system, the development of key data interfaces, and to ensure that the OSC can adequately support the current operations to meet the General Assembly's mandate. Moving forward, stable, recurring funding to support CJLEADS operations and maintenance as well as continued development is critical to protect the State's investment in CJLEADS and ensure the improved safety of North Carolina criminal justice professionals and citizens.

This report provides detail on the accomplishments and future activities of the CJLEADS program.

## **V. CJLEADS Statewide Operations**

### **A. CJLEADS – Business Operations**

Statewide deployment activities were completed in June 2012. The CJLEADS Business Operations team continues to assist any remaining agencies with establishing access to CJLEADS. Since June 2012, 34 new organizations or additional divisions of already established organizations were added to CJLEADS for a total of 510 organizations or 92 percent of the federal, state or local criminal justice organizations in North Carolina. The CJLEADS Business Operations Team continues to contact the remaining criminal justice organizations to offer assistance in completing their on-boarding process. Training classes will continue throughout FY 2013. In addition to training, Business Operations provides online and phone support for all current and prospective users and user administrators. Business Operations assists with over 100 inquiries weekly and provides after hours on-call support.

As of January 31, 2013:

- 510 state, federal, or local law enforcement organizations are licensed to use CJLEADS.
- Over 25,500 end users have been trained in more than 2,036 CJLEADS classes, including classroom, web-based classes and night classes. The end user community includes:
  - Over 7,300 users in 13 State agencies consisting of law enforcement, judges, prosecutors, clerks, magistrates, probation and parole officers
  - Over 800 users in 25 federal agencies consisting of law enforcement, judicial roles and probation officers
  - Over 17,400 users in 472 local agencies and public universities consisting of law enforcement officers and law enforcement support staff
- The CJLEADS “Train-the-Trainer” program has certified 76 trainers; these trainers have conducted 689 classes for their organizations.
- CJLEADS trainers have traveled over 84,016 miles throughout the State to provide regional training for law enforcement and courts personnel.

### **B. CJLEADS Usage**

Usage of CJLEADS continues to grow. Since initial deployment in June 2010, criminal justice professionals have conducted over 10.5 million searches and accessed nearly 13.4 million offender and DMV records. Users are finding innovative ways to leverage data in CJLEADS to assist them in the application of their day-to-day criminal justice activities.

### **C. Auditing**

Following the completion of the CJLEADS statewide deployment, the CJLEADS Business Operations team began, consistent with CJLEADS policies, conducting annual audits of all licensed end user organizations. Each agency receives a packet containing CJLEADS user lists, usage reports, and agency contact update forms. Agencies review the CJLEADS usage and end user reports, verify their authorized end users and notify CJLEADS of any suspect usage or access. For the current annual audit cycle, 412 audit

packets have been distributed to CJLEADS end user agencies and 409 responses have been returned. The Business Operations team is now completing the 2011 audit cycle with the distribution of audit packets to the Administrative Office of the Courts. In February, CJLEADS will begin the 2012 usage audit cycle.

In addition to the annual audit process, the CJLEADS Business Operations team periodically receives audit investigation requests from agencies related to possible fraudulent usage of the system. These requests may also be related to an agency's internal investigation process. To date we have assisted with 21 such requests.

#### **D. CJLEADS Feedback**

OSC continues to receive positive feedback from users who recognize the value and benefit of CJLEADS and offer suggestions for system refinement and enhancements. Recent examples of CJLEADS making a difference for criminal justice professionals include:

- Yadkinville Police Department comments on productivity:  
“CJLEADS has dramatically increased the productivity of our officers. With decreased budgets, this option has allowed us to maintain a satisfactory level of information services in the field to effectively serve the community.”
- Cabarrus County detective used the new public watch list feature:  
“An alert another officer at another agency had placed on an offender helped us connect the dots between cases we worked in our own jurisdiction without knowing the other existed until running the subject's name in CJLEADS. Once this link was established, we were able to share our case information which resulted in the positive identification of the subject, leading to 4 felony warrants to be obtained for his arrest.”
- Raleigh Police Department used CJLEADS Mobile to shut down a drug lab:  
“Assisted in Meth Lab investigation on {date and case number}. CJLEADS Mobile version was utilized for information gathering in the field during surveillance that ultimately led to vehicle stops and PC [probable cause] for a search warrant that recovered precursors and a small lab. CJLEADS was instrumental in the field and assisted in shutting down this Meth Lab which was a danger to the community.”
- Local and federal law enforcement collaborate using the public watch list feature:  
“By utilizing the public watch list option, I can identify those offenders presently under federal supervision. When local law enforcement encounters someone on my caseload, they are providing instant notification through CJLEADS which can facilitate a federal violation much sooner than in the past. This has occurred on several occasions.”

- Franklinton Police Department officer assesses CJLEADS value to the criminal justice community:

“CJLEADS combines, in a way never before, multiple pieces of information that at one time could have taken days to find. This can never be translated into dollars, but it can certainly translate into a safer state.”

- Moore County Sheriff’s Deputy summarizes his use of CJLEADS:

“CJLEADS has provided valuable information on almost every investigation which I have conducted since receiving access to CJLEADS. I refer to this system on every case in order to receive the most detailed information prior to making decisions concerning offenders. I can quickly look at a summary of an offender's life and know what kind of person I am dealing with, or whether or not I may be looking at the wrong person as an offender. I have saved hundreds of man hours so far in research of offenders. I have also been able to locate numerous offenders which I may not have been otherwise able to locate without CJLEADS. I can't express how valuable this system is to me. I don't know anyone at this agency who has a different opinion.”

- Eden Police Department Detective cites the usefulness of the watch list feature:

“I am all the time using it to look up suspects. I love the watch feature, there are so many times that I enter warrants on individuals and they get arrested by other agencies and I never found out about it. So using this watchlist I get instant notifications right to my phone when people I'm looking for had been arrested or if people that I am just watching an investigation if they had new charges added to them. I have been a criminal investigator for approximately 12 years and this is by far one of the best tools that came along a long time...”

- Raleigh Police Officer says the Partial Plates Report was helpful:

“I have often found other addresses under the offender search that have proven to be helpful. The DMV partial plate lookup is fairly new and I have had a need for it once. It proved to be extremely helpful and aided in locating the suspect we were looking for.”

- Wildlife Officer uses CJLEADS Mobile to help find a felonious offender:

“Specifically, a month ago, I was investigating a misdemeanor charge and found the subject to have two outstanding felony warrants. When I contacted the Sheriff's Office they said they had been looking for him for a month. Without CJLEADS mobile I would have issued a citation and moved on.”



- Statewide collaboration (NC State Highway Patrol, Sheriff's Department, City Police Departments) using the public watch list:

“The watch list group when made public by an officer is a great tool. I recently had an encounter with an individual from the Wake County area that was a known gang member. Had the officer not been able to put this person on a public watch list, I wouldn't have known this. That was important info due to the fact this encounter was in the western part of McDowell County. Basically we have a way to track gang activity across the state with multiple agencies’ involved.”

## VI. Application Releases

The CJLEADS Project team continues to work with end users, data source agencies, and SAS to incorporate data and enhance functionality deemed critical to meeting the mission of providing a reliable, complete, and simple-to-use application to serve law enforcement and the courts and thereby improve the safety of our State, its communities, and citizens.

**Release 8** was deployed on December 6, 2012. Release 8 enhanced existing functionality and refined key reports.

1. **DMV Partial Plate** –A report was added to CJLEADS to allow users to search for vehicles using a partial license plate match. The report also enhanced the ability to search for a partial Vehicle Identification Number (VIN). Before this new feature in CJLEADS, partial plate searches were manually processed by DMV staff using mainframe programming taking considerable time and staff resources to complete. Because witnesses often remember only parts of the license plate during a traffic or crime incident, this ability to search partial plates online enhances law enforcement officers’ ability to respond to incidents more quickly. Several officers have provided positive feedback about this new feature.
2. **Group Watch List Alerts Report** – This report displays information for offenders in a given group watch list who have court cases within a specified date range.
3. **Felony (FEL) Warning Icon** – This icon feature provides a warning that an offender has been convicted of a felony offense. This information may be critical, for example, to officers handling domestic violence calls who would like to know if an offender has any prior felony convictions before entering the house.
4. **Night Vision/Day Vision Toggle Button** – This enhanced feature allows users to quickly and safely transition the application from day to night vision screens (or vice versa)

## VII. CJLEADS Database Upgrade

The CJLEADS application is currently based on Asterdata database technology. After several years of operation, the experience with the CJLEADS application has highlighted technical limitations of the technology resulting in increased support issues, performance

deficiencies during defined periods of the day, and limited ability to work with large data sets. The Asterdata technology was also recently acquired by another technology vendor and the future of the product is somewhat uncertain.

Following an evaluation of database options, Oracle Exadata was determined to provide the most robust solution and provide a reliable foundation for future enterprise data integration efforts. The migration to the Oracle technology will provide improved performance, support, security and auditing capabilities.

The original contract for the hosting and support of CJLEADS provided that if either SAS or OSC, in the exercise of reasonable judgment, determined that continued use of the Asterdata product presented a material risk to the long-term viability of the CJLEADS, SAS would complete the re-architecture and migration of CJLEADS to the new database technology at no additional cost. OSC will be responsible for additional hosting and operations costs associated with the Oracle database infrastructure and licensing. Work on migration to the Oracle database platform has begun and is scheduled for completion by the end of June, 2013.

## **VIII. CJLEADS Application Enhancement**

Consistent with the legislative mandate to provide a comprehensive profile of an offender, development will continue to incorporate enhanced functionality and sources of critical criminal justice information for law enforcement and the court's use.

The following functionality will be deployed in upcoming releases of CJLEADS:

### **Release 9 – Scheduled for Spring 2013**

This spring, a primary focus of CJLEADS will be on the CJLEADS database transition from AsterData to Oracle Exadata. In addition to the Oracle upgrade, the following application enhancements will be completed:

- 1. Statewide Warrants Repository Interface** – Law enforcement and the courts have indicated that real-time access to time-sensitive information in the on-line statewide warrant system is critical to CJLEADS. To provide this capability, CJLEADS is partnering with the AOC to develop a web service query that will allow users to search outstanding processes in the statewide warrant repository whenever a CJLEADS query is run. In addition, a link to allow users to quickly log on to NCAWARE will improve law enforcement efficiency.
- 2. Other functionality enhancements include:**
  - A custom group watch list for Community Corrections to support oversight and management of probation and parole absconders;
  - Updated AOC offense codes based on new changes in the law;

- An export button to the “more” screen which allows a CJLEADS user the ability to view all the individual data records that comprise an offender’s complete profile; and
- A link to the Appris JusticeXchange application for authorized JX users.

### **Future Functionality**

The following areas are being reviewed and/or preparatory work has begun for future functionality of the CJLEADS application:

#### **1. Federal Interface – Division of Criminal Information (DCI)**

Since the inception of CJLEADS, both the courts and law enforcement have emphasized the critical need for a federal interface to allow users access to federal and other states’ information via CJLEADS. There are a number of security and policy issues that must be addressed to allow CJLEADS to develop an interface to federal systems. CJLEADS, collaborating with the State Bureau of Investigation, North Carolina’s CJIS Security Agency, and the North Carolina Department of Justice (NC DOJ) Information Technology Division, is developing policies and protocols to allow access to information from the Criminal Justice Information System (CJIS) via the DCI switch.

CJLEADS and the NC DOJ are conducting biweekly discussions to address technical and business issues in order to develop a solution to incorporate a web service between DCI and CJLEADS. DCI would control access from the CJLEADS application by verifying the CJLEADS user against the DCI certification database. Only DCI certified users would be allowed to submit inquiries to the DCI message switch for federal information. CJLEADS would audit all initiated searches, but DCI would audit and control the data transmitted back to CJLEADS users through the message switch. DCI will continue to require that all users utilizing this access be trained and certified for DCI use.

In addition, the development of the DCI interface will allow for Hot File status (a flag to indicate whether or not there is or is not information about wanted persons, stolen vehicles and stolen weapons on file with the DCIN) to be available for all CJLEADS law enforcement officers, regardless of DCI certification.

A critical component to deploying the DCI web service is Advanced Authentication (AA). Effective September 30, 2013, CJIS policy mandates access to CJIS information from non-physically secure locations must be governed by Advanced Authentication. CJIS policy also indicates that law enforcement vehicles will no longer be designated as a physically secured location. AA – also known as Strong Authentication – requires that two forms of credential are presented before access to the CJIS network. Most often this is “something the user knows” (username/password) and “something the user has” (a security token, key fob, PIN that is delivered via text or email upon request to log in, etc.).

## **2. NC-DEx**

CJLEADS is partnering with the NC Department of Justice Information Technology Division to establish a web interface between the North Carolina Data Exchange (NC-DEx) – formerly known as CAPTURES. This interface to the comprehensive incidents database will enable the accurate and timely sharing of law enforcement data and allow authorized NC-DEx users to log into that system from within CJLEADS.

3. **Alert for Confidential License Plates** – Law enforcement has requested an alert mechanism to enable automatic notification anytime a DMV vehicle check is run against a confidential license plate.

## **4. Facial Recognition**

The ability to positively identify a suspect, offender, or unknown person in the field is critical to law enforcement. The CJLEADS team, in collaboration with DMV, is evaluating the ability to capture a photograph in the field and find potential matches for identification purposes by leveraging the existing DMV facial recognition technology.

## **5. Juvenile Case Records**

Finalization of business requirements for the data, security and auditing is still pending. AOC has indicated that their current resources are not sufficient to undertake and complete this development task.

## **6. Business Analytics**

With the data integrated into CJLEADS, there is great potential to mine the data for statistical analysis and reporting. Court and law enforcement personnel have suggested many opportunities to leverage the information in CJLEADS to improve efficiencies and effectiveness throughout the criminal justice community. The project team will work with business users to determine requirements for data analytics.

The State project team continues development of these reports, and each report will be deployed in system releases as they are completed. Examples of potential reports and business analysis include risk assessment of offenders based on historical data and statistical analysis. Also a report analyzing offender relationships and connections with other offenders will be prepared and released.

# **IX. CJLEADS Challenges**

The integration of data across multiple and often disparate applications brings with it many challenges. The following issues have been identified:

## **A. Funding Availability**

The original CJLEADS three-year cost estimates, including initial pilot startup costs in FY 2008-09, were \$27 million to support 30,000 criminal justice professionals statewide. Including FY 2011- 2012 costs of \$6,971,497, the total cost of statewide deployment is

\$24,620,475, approximately 9% under budget. Estimates of annual operations and maintenance costs are estimated at \$8 million.

**Actual/Estimated Costs**

	FY 2008-2009	FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014
	Actual	Actual	Actual	Actual	Estimated Cost	Estimated Cost
<b><u>SAS Hosted Solution</u></b>						
State Operations	\$128,091	\$390,601	\$1,415,978	\$1,594,888	\$2,361,737	\$1,950,000
Development/Hosting/Software	\$2,000,000	\$7,252,426	\$6,460,491	\$5,378,000	\$6,650,000	\$6,050,000
<b>Total</b>	<b>\$2,128,091</b>	<b>\$7,643,027</b>	<b>\$7,876,469</b>	<b>\$6,972,888</b>	<b>\$9,011,737</b>	<b>\$8,000,000</b>

The FY 2012-2013 recurring appropriation for CJLEADS is \$6.6 million. Recognizing the critical nature of the CJLEADS mission, S.L. 142, H.B. 950, appropriated \$2.38 million in non-recurring funds to enable the Oracle database upgrade and continued application enhancement. The continuation budget should be adjusted in future years to meet increased cost requirements for operations and maintenance with the new database technology. The following chart provides an explanation of the funding and expenditures:

**Funding/Expenditures**

As of December 31, 2012	FY 2012-2013		
	Budget	Actuals	Available Balance
<b><u>CJLEADS Funding</u></b>			
Recurring Funding	\$6,632,737		
One-time Project Funding	\$2,379,000		
	\$9,011,737		
<b><u>CJLEADS Expenditures</u></b>			
Total Project FY 2012 - 2013			
State Project Team Expenditures	\$2,413,737	\$815,497	
Hosting Contract Services	1,550,000	1,550,000	
Development/Support Contract Services	2,048,000	1,382,400	
SAS ELA Renewal	2,000,000	2,000,000	
Oracle Upgrade Hosting Costs	1,000,000		
<b>CJLEADS Total</b>	<b>\$ 9,011,737</b>	<b>\$ 5,747,897</b>	<b>\$ 3,263,840</b>

The CJLEADS application and the data integrated thus far represents a solid foundation for the support of criminal justice agencies and their personnel, but a tremendous amount of work remains to fully meet the mission and objectives established by the North Carolina General Assembly. Completing the integration of real-time North Carolina information, adding an interface for federal information, fully leveraging the DMV

interface capabilities and providing additional reporting is critical to serve law enforcement with a single robust and reliable source of information.

### **Budget Expansion Request**

Reduced funding adversely impacts the project's ability to enhance the functionality of CJLEADS for additional real-time data access and reporting capabilities, as well as addressing changing technology needs. The non-recurring funding for FY 2012-2013 provided funds to continue enhancements and complete the Oracle database upgrade this year. A budget expansion request was submitted to restore the recurring CJLEADS appropriation to \$8 million. The additional funds will be needed for the increased hosting and support costs with the more robust data base technology, on-going operations, and protection of the State's investment in CJLEADS by minimally funding continuing enhancements to the application to keep pace with evolving technology.

### **Return on Investment**

The value of the CJLEADS data and functionality to the State, the courts and law enforcement is significantly greater than the development and operations and maintenance costs. Return on investment is found as intangible benefits of improved efficiency, better informed decision making, and improved safety for law enforcement and the public. The ability to access integrated statewide information in a single web-based application allows the courts and law enforcement to save valuable time researching information and focus their efforts on more important public safety specific job responsibilities. These benefits permit criminal justice professionals to be safer, more effective and more efficient.

Intangible benefits for FY 2011-2012, based on actual usage of the application are approximately \$15.8 million. Future annual benefits, based on usage statistics of the trained CJLEADS user population in May, 2012 with a 10% growth in FY 2013, are estimated to be approximately \$21.7 million. For detailed analysis of the ROI, please see [Appendix E](#).

## **B. Infrastructure**

With the budget reductions noted earlier in this report, there are several concerns related to Information Technology costs and services to support CJLEADS.

As the project team evaluates options for incorporating federal information into CJLEADS, the program will be required to implement more stringent security protocols, including two-factor or advanced authentication. Two-factor authentication involves "something the user knows" and "something the user has" in order to access the system. For example, the user knows his user ID and also provides an access code from a physical or virtual token to which only he has access. Using these two factors, the application provides a higher level of access security than simply using a user ID which may be compromised.

Currently, CJLEADS is leveraging the State's standard identity management system, NCID. A number of agencies, including some local law enforcement agencies and

federal organizations, do not readily meet the NCID user-type categories. While the CJLEADS team has worked with ITS to establish an interim solution for these groups, a long-term resolution for these sworn law enforcement organizations is required from ITS.

### **C. JWISE**

The integration of JWISE data remains a priority for CJLEADS. JWISE data will serve as an indicator for AOC and the Division Juvenile Justice (DJJ) authorized criminal justice professionals that juvenile court records are available. While significant work toward defining the business requirements for the inclusion of JWISE has been completed with AOC and DJJ, the progress on JWISE data has been impacted as resource constraints at AOC prevent finalizing the business requirements and developing the data extract to provide data to CJLEADS.

### **D. No Cost for Law Enforcement**

Throughout the term of this project, local law enforcement officials have expressed concern about limited local government budgets and increasing costs associated with ensuring public safety. The OSC agrees with the General Assembly's position that there should be no usage fees for law enforcement to access the CJLEADS application. CJLEADS provides valuable, much needed access to the statewide library of data through a single, secure system. To ensure wide-spread adoption and usage of CJLEADS, OSC recommends that the General Assembly continue to fully fund and support the CJLEADS program for sworn law enforcement organizations with an operational presence in North Carolina. In addition, OSC strongly recommends that there be no cost for the administration of NCID user accounts for non-state law enforcement organizations.

## **X. Next Steps**

1. Release 9 – Scheduled for Spring 2013
2. Continue planning for future enhancements
3. Continue vendor hosting and support
4. Business Operations will:
  - a. Continue training
  - b. Complete the next cycle of auditing
  - c. Continue to provide after-hours customer service support
5. Document areas for continuous improvement and future enhancements for the CJLEADS application

## **XI. Appendices**

### ***Appendix A***

#### ***Session Law 2012-142, HB 950***

#### **ENHANCE ENTERPRISE-LEVEL BUSINESS INTELLIGENCE TO INCREASE EFFICIENCY IN STATE GOVERNMENT**

##### **SECTION 6A.7A.(a) Creation of Initiative. –**

- (1) Creation. – The enterprise-level BI initiative (initiative) is established in the Office of State Controller. The purpose of the initiative is to support the effective and efficient development of State agency BI capability in a coordinated manner and reduce unnecessary information silos and technological barriers. The initiative is not intended to replace transactional systems, but is instead intended to leverage the data from those systems for enterprise-level State BI.

The initiative shall include a comprehensive evaluation of existing data analytics projects and plans in order to identify data integration and BI opportunities that will generate greater efficiencies in, and improved service delivery by, State agencies. The Office of State Controller may partner with current vendors and providers to assist in the initiative. However, to limit the cost to the State, the Office of the State Controller shall use current licensing agreements wherever feasible.

- (2) Application to State government. – The initiative shall include all State agencies, departments, and institutions, including The University of North Carolina.
- (3) Governance. – The State Controller shall lead the initiative established pursuant to this section. The Chief Justice of the North Carolina Supreme Court and the Legislative Services Commission each shall designate an officer or agency to advise and assist the State Controller with respect to implementation of the initiative in their respective branches of government. The judicial and legislative branches shall fully cooperate in the initiative mandated by this section in the same manner as is required of State agencies.

##### **SECTION 6A.7A.(b) Government Business Intelligence Competency Center. –**

- (1) GBICC established. – There is established in the Office of the State Controller the Government Business Intelligence Competency Center (GBICC). GBICC shall assume the work, purpose, and resources of the current data integration effort in the Office of the State Controller and shall otherwise advise and assist the State Controller in the management of the initiative. The State Controller shall make any organizational changes necessary to maximize the effectiveness and efficiency of GBICC.
- (2) Powers and duties of the GBICC. – The State Controller shall, through the GBICC, do all of the following:
  - a. Continue and coordinate ongoing enterprise data integration efforts, including:
    1. The deployment, support, technology improvements, and expansion for CJLEADS.



2. The pilot and subsequent phase initiative for NC FACTS.
  3. Individual-level student data and workforce data from all levels of education and the State workforce.
  4. Other capabilities developed as part of the initiative.
- b. Identify technologies currently used in North Carolina that have the capability to support the initiative.
  - c. Identify other technologies, especially those with unique capabilities that could support the State's BI effort.
  - d. Compare capabilities and costs across State agencies.
  - e. Ensure implementation is properly supported across State agencies.
  - f. Ensure that data integration and sharing is performed in a manner that preserves data privacy and security in transferring, storing, and accessing data, as appropriate.
  - g. Immediately seek any waivers and enter into any written agreements that may be required by State or federal law to effectuate data sharing and to carry out the purposes of this section.
  - h. Coordinate data requirements and usage for State BI applications in a manner that (i) limits impacts on participating State agencies as those agencies provide data and business knowledge expertise and (ii) assists in defining business rules so the data can be properly used.
  - i. Recommend the most cost-effective and reliable long-term hosting solution for enterprise-level State BI as well as data integration, notwithstanding Section 6A.2(f) of S.L. 2011-145.

**SECTION 6A.7A.(c) Implementation of the Enterprise-Level BI Initiative. –**

- (1) Phases of the initiative. – The initiative shall commence no later than August 1, 2012, and shall be phased in accordance with this subsection. The initiative shall cycle through these phases on an ongoing basis:
  - a. Phase I requirements. – In the first phase, the State Controller through GBICC shall:
    1. Inventory existing State agency BI projects, both completed and under development.
    2. Develop a plan of action that does all of the following:
      - I. Defines the program requirements, objectives, and end state of the initiative.
      - II. Prioritizes projects and stages of implementation in a detailed plan and benchmarked timeline.
      - III. Includes the effective coordination of all of the State's current data integration initiatives.
      - IV. Utilizes a common approach that establishes standards for BI initiatives for all State agencies and prevents the development of projects that do not meet the established standards.
      - V. Determines costs associated with the development effort and identifies potential sources of funding.

VI. Includes a privacy framework for BI consisting of adequate access controls and end user security requirements.

VII. Estimates expected savings.

3. Inventory existing external data sources that are purchased by State agencies to determine whether consolidation of licenses is appropriate for the enterprise.
4. Determine whether current, ongoing projects support the enterprise-level objectives.
5. Determine whether current applications are scalable, or are applicable for multiple State agencies, or both.

b. Phase II requirements. – In the second phase, the State Controller through the GBICC shall:

1. Identify redundancies and determine which projects should be discontinued.
2. Determine where gaps exist in current or potential capabilities.

c. Phase III requirements. – In the third phase:

1. The State Controller through GBICC shall incorporate or consolidate existing projects, as appropriate.
2. The State Controller shall, notwithstanding G.S. 147-33.76 or any rules adopted pursuant thereto, eliminate redundant BI projects, applications, software, and licensing.
3. The State Controller through GBICC shall complete all necessary steps to ensure data integration in a manner that adequately protects privacy.

(2) Commencement of projects. – Subject to the availability of funds, and subsequent to the submission of the written report required by sub-subdivision a. of subdivision (1) of subsection (e) of this section, the State Controller shall begin projects to carry out the purposes of this section no later than November 1, 2012. The State Controller may also expand existing data integration or BI contracts with current data integration efforts, as appropriate, in order to implement the plan required by this section in accordance with the schedule established and the priorities developed during Phase I of the initiative, and may use public-private partnerships as appropriate to implement the plan.

**SECTION 6A.7A.(d) Funding. –**

(1) Allocation. – Of the funds appropriated from the General Fund to the General Assembly for the 2011-2013 fiscal biennium, the sum of five million dollars (\$5,000,000) shall be used to fund the initiative established by this section. The Office of the State Controller shall use up to seven hundred fifty thousand dollars (\$750,000) to cover the cost of administering the initiative.

(2) Federal funds. – The Office of State Controller, with the support of the Office of State Budget and Management, shall identify and make all efforts to secure any matching funds or other resources to assist in funding this initiative.

(3) Use of savings. – Savings resulting from the cancellation of projects, software, and licensing, as well as any other savings from the initiative, shall be returned to the General Fund and shall remain unexpended and unencumbered until appropriated by the General Assembly in a subsequent fiscal year. It is the intent of the General Assembly that expansion of the initiative in subsequent fiscal years be funded with these savings and that the General Assembly appropriate funds for projects in accordance with the priorities identified by the Office of the State Controller in Phase I of the initiative.

**SECTION 6A.7A.(e) Reporting. –**

(1) Routine reports. – The Office of the State Controller shall submit and present the following reports:

a. By no later than October 1, 2012, a written report on the implementation of Phase I of the initiative and the plan developed as part of that phase to the Chairs of the House of Representatives Appropriations and Senate Base Budget/Appropriations Committees, to the Joint Legislative Oversight Committee on Information Technology, and to the Fiscal Research Division of the General Assembly. The State Controller shall submit this report prior to implementing any improvements, expending funding for expansion of existing BI efforts, or establishing other projects as a result of its evaluations.

b. By February 1, 2013, and quarterly thereafter, a written report detailing progress on, and identifying any issues associated with, State BI efforts.

(2) Extraordinary reports. – The Office of the State Controller shall report the following information as needed:

a. Any failure of a State agency to provide information requested pursuant to this section. The failure shall be reported to the Joint Legislative Committee on Information Technology and to the Chairs of the House of Representatives Appropriations and Senate Base Budget/Appropriations Committees.

b. Any additional information to the Joint Legislative Commission on Governmental Operations and the Joint Legislative Oversight Committee on Information Technology that is requested by those entities.

**SECTION 6A.7A.(f) Duties of State Agencies. –**

(1) Duties of State agencies. – The head of each State agency shall do all of the following:

a. Grant the Office of the State Controller access to all information required to develop and support State BI applications pursuant to this section. The State Controller and the GBICC shall take all necessary actions and precautions, including training, certifications, background checks, and governance policy and procedure, to ensure the security, integrity, and privacy of the data in accordance with State and federal law and as may be required by contract.

b. Provide complete information on the State agency's information technology, operational, and security requirements.

- c. Provide information on all of the State agency's information technology activities relevant to the State BI effort.
- d. Forecast the State agency's projected future BI information technology needs and capabilities.
- e. Ensure that the State agency's future information technology initiatives coordinate efforts with the GBICC to include planning and development of data interfaces to incorporate data into the initiative and to ensure the ability to leverage analytics capabilities.
- f. Provide technical and business resources to participate in the initiative by providing, upon request and in a timely and responsive manner, complete and accurate data, business rules and policies, and support.
- g. Identify potential resources for deploying BI in their respective State agencies and as part of the enterprise-level effort.
- h. Immediately seek any waivers and enter into any written agreements that may be required by State or federal law to effectuate data sharing and to carry out the purposes of this section, as appropriate.

**SECTION 6A.7A.(g) Miscellaneous Provisions. –**

- (1) Status with respect to certain information. – The State Controller and the GBICC shall be deemed to be all of the following for the purposes of this section:
- a. With respect to criminal information, and to the extent allowed by federal law, a criminal justice agency (CJA), as defined under Criminal Justice Information Services (CJIS) Security Policy. The State CJIS Systems Agency (CSA) shall ensure that CJLEADS receives access to federal criminal information deemed to be essential in managing CJLEADS to support criminal justice professionals.
  - b. With respect to health information covered under the Health Insurance Portability and Accountability Act of 1996 (HIPAA), as amended, and to the extent allowed by federal law:
    - 1. A business associate with access to protected health information acting on behalf of the State's covered entities in support of data integration, analysis, and BI.
    - 2. Authorized to access and view individually identifiable health information, provided that the access is essential to the enterprise fraud, waste, and improper payment detection program or required for future initiatives having specific definable need for the data.
  - c. Authorized to access all State and federal data, including revenue and labor information, deemed to be essential to the enterprise fraud, waste, and improper payment detection program or future initiatives having specific definable need for the data.

d. Authorized to develop agreements with the federal government to access data deemed to be essential to the enterprise fraud, waste, and improper payment detection program or future initiatives having specific definable need for such data.

(2) Release of information. – The following limitations apply to (i) the release of information compiled as part of the initiative, (ii) data from State agencies that is incorporated into the initiative, and (iii) data released as part of the implementation of the initiative:

a. Information compiled as part of the initiative. – Notwithstanding the provisions of Chapter 132 of the General Statutes, information compiled by the State Controller and the GBICC related to the initiative may be released as a public record only if the State Controller, in that officer's sole discretion, finds that the release of information is in the best interest of the general public and is not in violation of law or contract.

b. Data from State agencies. – Any data that is not classified as a public record under G.S. 132-1 shall not be deemed a public record when incorporated into the data resources comprising the initiative. To maintain confidentiality requirements attached to the information provided to the State Controller and GBICC, each source agency providing data shall be the sole custodian of the data for the purpose of any request for inspection or copies of the data under Chapter 132 of the General Statutes.

c. Data released as part of implementation. – Information released to persons engaged in implementing the State's BI strategy under this section that is used for purposes other than official State business is not a public record pursuant to Chapter 132 of the General Statutes.

**SECTION 6A.7A.(h)** G.S. 75-66(d) reads as rewritten:

"(d) Nothing in this section shall:

(1) Limit the requirements or obligations under any other section of this Article, including, but not limited to, G.S. 75-62 and G.S. 75-65.

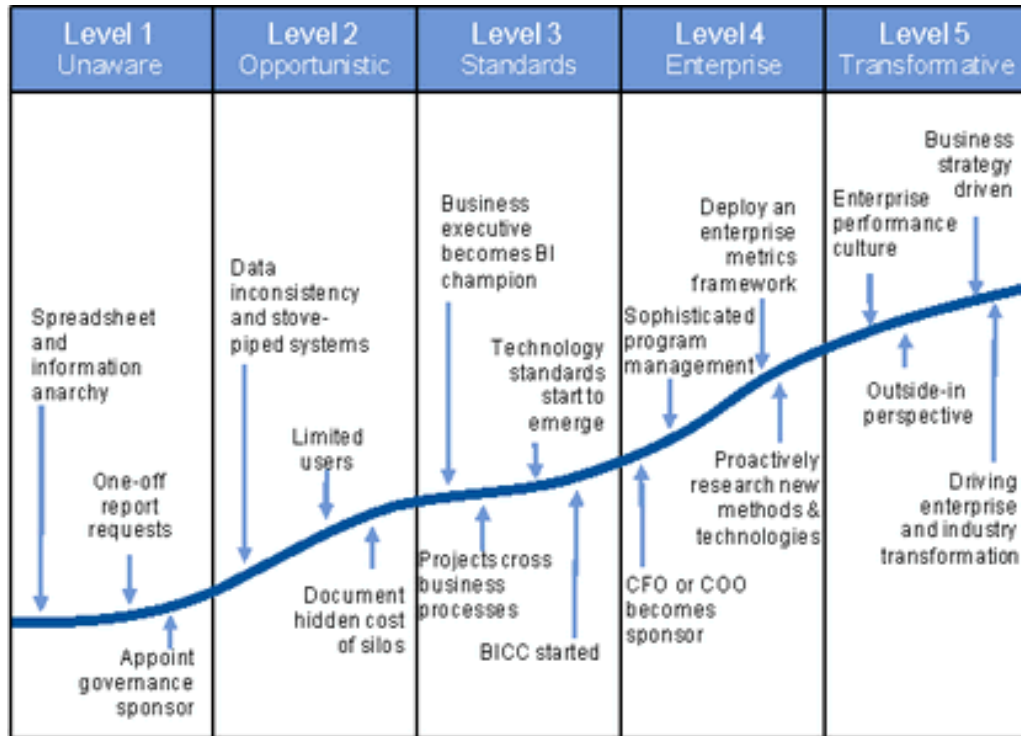
(2) Apply to the collection, use, or release of personal information for a purpose permitted, authorized, or required by any federal, State, or local law, regulation, or ordinance.

(3) Apply to data integration efforts to implement the State's BI strategy as provided by law or under contract."

## Appendix B

### The Business Intelligence Maturity Model

The BI Maturity Model defines the normal progression organizations follow in transitioning from their current state of data analysis to an organization leveraging BI to drive business decisions. The following Gartner diagram depicts the levels of BI maturity.



BI = business intelligence  
BICC = BI competency center

Source: Gartner (August 2010)

#### Level 1 – Unaware

Level 1 represents the most basic level of data analysis, where organizations collect data in a variety of ad-hoc methods. Often these organizations rely on a few key individuals using basic tools like spreadsheets and simple reporting. In Level 1 organizations, there is little standardized reporting and most information requests are handled as special one-off activities. The focus is often retrospective, historical analysis, asking “what happened.” These efforts are often labor-intensive, duplicative and may not provide consistent, accurate information.

Based on the Gartner BI Maturity Model shown above, organizations need a governance sponsor to improve their BI maturity. In North Carolina, the legislature has appointed OSC as a governance sponsor to guide the State in expanding data sharing and analytics and moving toward Level 2 maturity.

#### Level 2 – Opportunistic

Level 2 represents organizations that recognize the value of analytics within their specific own domain. Each individual project is focused to optimize a process or tactical decision. Data, however, remains stove-piped within transaction systems and data across the organization may

be inconsistent in terms of definition, technology, and content. There is little business sponsorship and access to analytic tools remains limited to a few “IT” users with skills and expertise to use such analytic tools. The focus generally remains retrospective but begins to answer questions of how many, how often, and where is the problem. Tools capabilities include standard reports, ad hoc reports and some ability to “drill into” the data.

The Gartner diagram indicates that the legislature and the agencies must understand the hidden cost and complexity of data silos and limited analytics to envision the benefits of advanced analytics in order to progress to Level 3.

### Level 3 – Standards

At Level 3 the State will have begun to develop coordinated processes and technologies, have successfully focused on a specific business need, and have business executives championing BI. Funding is provided on a project-by-project basis and projects begin to cross organizations and lines of business and decisions are made based on multiple streams of data. BI begins to provide alerts to the organization (what action is needed) as well as statistical analysis (why is this happening).

Based on the Gartner maturity model, the State’s GBICC would add value through standardization of data, technology and governance allowing the departments to progress to Level 4.

### Level 4 – Enterprise

The Maturity Model’s Level 4 describes organizations that are vested in BI. The agency CFO or agency head become the business sponsor of the initiative. Enterprise standards are implemented and efficiencies are achieved through repeatable development processes, improved governance and data sharing, and value-add to the organization’s operation and decision making. BI is able to provide forecasting and predictive modeling, allowing the agency, the State, or the enterprise to anticipate trends and future events. BI tools are made available to analysts, business managers, and senior executives. To manage the increased demand for data and tools, the State must maintain staff with high level skills in many areas including technology, program and change management.

Continuous improvement, research of new technologies, and enhanced data sharing allows the organization to progress to Level 5.

### Level 5 – Transformative

Finally, according to the Maturity Model at Level 5 the State’s focus would be performance based and allow BI to be driven jointly by its strategic business and IT organizations. Data would be fully utilized to perform retrospective, statistical, and predictive analysis to allow business leaders to respond to changing business conditions with current, easily understood, and easily accessed information for fact-based decision making.

Based on an evaluation of the survey responses, the State’s efforts remain primarily in Level 1 and Level 2 of the business maturity models, with most efforts managed within a business domain, supporting specific business objectives to organizations. The State, with the General Assembly’s direction, is moving toward Level 3 with initiatives such as CJLEADS, NC FACTS, and NC FAST. These efforts are focusing on cross organization applications where decisions are made based on multiple agency sources of information, support multiple agency user communities and support enterprise decisions. The

GBICC will leverage the lessons learned with these efforts to establish standardization and governance to support future enterprise BI efforts.

## **BI Readiness**

To implement a successful BI program, the State must have a realistic understanding of its readiness to adopt and implement enterprise BI. An organization's readiness for BI is based on several key criteria:

1. **Current Information** – does the organization have access to all the information needed to manage the business decision(s)?

While the State should, in theory, own all of the State's data, with agencies acting as the stewards of that data, most agencies have indicated that the ability to obtain data needed to make the most informed business decisions is usually very challenging. Survey results indicate that federal and state laws, regulations and policies, real or perceived, prevent access to key information. It is critical that these barriers to sharing data be identified and eliminated.

2. **Current BI Capability and Application** – does the State have access to the tools and expertise needed to transform existing data into knowledge?

The key to comprehensive BI is the ability to transform data into actionable information. Enterprise BI requires tools to extract, transform, and load (ETL) data into repositories for access by BI applications. BI applications may include decision support systems, ad hoc query and reporting, statistical analysis, forecasting and predictive analysis, data mining and management dashboards.

Survey results indicate that most agencies are using basic reporting and analysis, many leveraging MS Excel and MS Access, in conjunction with their transaction systems. While data from transaction systems is valuable, often the complexity of the systems and methods for extracting data requires expertise from IT personnel to obtain the correct view of the data. That data is often downloaded into a variety of tools for manipulation, summarization and evaluation by a business user. Often this effort is time consuming, manual, and may provide varying results depending on the method of evaluation. Consistent, easy-to-use BI tools improve the ability of an organization to leverage its data.

3. **Timeliness and Data Quality** – is the data needed for data analytics available in an acceptable timeframe and of sufficient quality that makes it usable for decision making?

The ability to make well-informed decisions is clearly dependent on high quality, timely information. Data content, quality and consistency affect the ability to match and integrate data from different sources, the ability to compare and contrast data values, and the ability to analyze data across lines of business.

Timeliness of data determines the ability to make decisions proactively rather than reactively. While some information needs can be met with data that are days, weeks, or even months old; other analysis may require real-time access to current data. Survey results indicate that the technology of our legacy and transaction systems may impact the ability to control data currency.



4. Business Need – is a clear business need defined to establish the scope and requirements for a BI effort?

BI success is dependent on a clear understanding of business need. Identifying the key business stakeholders and understanding how information will allow those stakeholders to provide excellent customer service, act as better stewards of state financial and natural resources, and ensure transparency in government business, will enable the BI program to bring value to State organizations.

## *Appendix C*

### **NC FACTS Project Approach**

The development of risk analysis and fraud detection at the enterprise level is an iterative process. Agencies participating in the program may realize “quick hits” based on verification of known business rules within the first few months of the sharing of data. Development of mature analysis, however, will evolve over time as North Carolina’s integrated data is used in developing more sophisticated analytic and predictive models, filters, and network analysis. These analytic tools will be further refined based upon analysis, verification and feedback on the fraud alerts generated by the system.

Agencies participating in the NC FACTS program will work with the project team to define their business needs and discuss possible integration points. The following steps will be undertaken.

- **Data Governance** – Each of the agency stakeholders, OSC, and SAS will work together to review available data and applicable governance rules. The parties will develop a Data Access and Use Agreement (DAUA) that defines the data to be shared, how it can be used, the security rules for data access and any unique requirements associated with the data.
- **Data Analysis** – The NC FACTS project team will work with each agency to identify the details about the agency’s data to be shared, including data definitions, technical formats, transmission options and frequency of update. After agency data is transmitted to the NC FACTS environment, the SAS technical team will perform preliminary analysis on the data content to determine how to integrate it with the enterprise data for analytical processing.
- **Business Operations Analysis** – The NC FACTS project team will work with each agency to understand its business processes by reviewing existing documentation, participating in meetings and, where appropriate, shadowing business activities, to determine how data captured by the business operation is used to make business decisions.
- **Quick Hits** – When agency data is initially integrated in NC FACTS, preliminary analysis will identify areas where the data does not meet known business rules. The analysis during this phase will enhance current edits in the agency source system by using data integrated from other sources in NC FACTS. A quick hit, for example, might identify individuals who are deceased or incarcerated and are still receiving payments or services.
- **Iterative Development** - Using information gathered from this analysis of data, the NC FACTS team will prototype and develop analytic models to support the agency’s business needs. The model development will include:
  - Systematic verification that individuals or business entities are who they say they are;
  - Validation that the individual or business entity is complying with rules and regulations;
  - Identification of anomalies and peer group pattern analysis; and
  - Identification of relationships and associations between entities within and across program areas.

## Technical Environment and Application Development

The NC FACTS technical infrastructure continues to be developed in the SAS hosted environment. To ensure the appropriate implementation of agency specific data governance rules, the technical design provides the ability to segregate data as needed to meet federal regulations, while permitting business process analytics for that area to use both the segregated data as well as other sources of data. For example, unemployment insurance (UI) data, as defined in the data sharing agreement, must be segregated and used only for UI fraud analysis or other specific business purposes as approved by the data source agency, but other sources of data may be combined to provide a complete analysis for business purposes.

The NC FACTS application will support both point of service and retrospective analysis, and the application will be able to provide “on-demand” verification prior to disbursing funds or validating eligibility for services. Retrospective analysis will review past program activities and payments across the mass of integrated data to identify patterns and anomalies that may indicate suspect activity for investigation.

Access to NC FACTS will be limited to authorized users as identified by the business owners. Business stakeholders will define specific role-based security to authorize access to the integrated data. All end user activity will be logged and available for standard audit reporting.

NC FACTS will use the State standard North Carolina Identity management (NCID) for user authentication. This allows NC FACTS users to access the system with their existing user ID and password. An enterprise authentication application, NCSEAT, has been developed to support any State application hosted at SAS. NCSEAT facilitates the integration of new applications with NCID with minimal impact and additional development work for either the State or SAS.

The development environment infrastructure has been completed and is being used to analyze the data currently available in the NC FACTS environment. The technical infrastructure is expanding to add testing and production environments to allow for analytic model testing and eventual deployment to end users.

## Governance

The NC FACTS team worked closely with legal counsel from the State’s Attorney General’s Office and the affected agencies and SAS to develop a governance model to secure and protect data integrated for this initiative. Using this governance model allows agencies providing data to NC FACTS to define data access and usage requirements

A Data Access and Usage Agreement (DAUA) template has been developed and is available to assist in the development of data sharing agreements between the agencies and the NC FACTS program. The DAUA may be modified to meet each agency’s specific data sharing needs and concerns.

DAUA agreements are in place with the following departments and agencies to share “their” data with NC FACTS.

<b>Date</b>	<b>Department/Agency and Data Source</b>
03/07/2012	Secretary of State Data

05/29/2012 Social Security – Master Death File  
06/20/2012 Commerce – Division of Employment Security Data  
07/01/2012 Office of State Controller – BEACON Payroll Personnel Data  
07/01/2012 Office of State Controller - NC Accounting System Payment Data  
08/08/2012 Department of Public Safety – CJLEADS – Incarcerations and Probation Data  
09/20/2012 Department of State Treasurer – State Employees Health Plan Data

The NC FACTS team is working with the following departments and/or agencies to develop a DAUA which defines their specific data governance needs.

**Agency**

Department of State Treasurer – Retirement

Administrative Office of the Courts – CJLEADS Criminal Case Records

Department of Justice – CJLEADS, Sex Offender, Concealed Handgun

Department of Health and Human Services – Vital Records Death Records

Department of Transportation – Division of Motor Vehicles Data

## *Appendix D*

Data sources currently included in the NC FACTS pilot program:

### **The Social Security Administration - Master Death File**

The Master Death File has been purchased from the Social Security Administration (SSA). This file was originally transmitted to NC FACTS in June 2012 and is updated monthly. The Master Death File is available to all of the State's data integration and business analytics initiatives.

### **The Department of Secretary of State**

The Department of Secretary of State (SOS), is responsible for the oversight and stewardship of information on businesses operating in the State of North Carolina. The SOS manages corporate registration, Uniform Commercial Code, Charitable Solicitation licensing, and Notary Public commission data.

The SOS corporate data was the first data source shared with NC FACTS. Preliminary analysis of this data did not indicate substantial findings as information in the data warehouse was limited solely to SOS data and lacked historical data necessary for corporate identity theft analysis.

NC FACTS anticipates SOS data analysis will improve as additional state data sources with business and entity information are incorporated into the system and a historical repository of information is captured over time.

### **The Department of Commerce - Division of Employment Security**

The Department of Commerce, Division of Employment Security (DES) executed a DAUA with NC FACTS on June 20, 2012. At that time, DES Information Technology (IT) was experiencing resource constraints due to activity associated with the federal Treasury Offset Programs and the development of an RFP to replace their outdated operations systems, delaying the ability to provide data to the NC FACTS program.

Given the DES IT resource constraints, the NC FACTS project team focused on a review of DES' business processes through meetings and business process overviews with both the benefit payment and employer tax compliance operations.

To minimize the impact on the DES IT resources, the NC FACTS team suggested DES IT review current production extracts to determine if a combination of these programs could support NC FACTS data requirements and avoid the need to develop a new data extracts for NC FACTS at this time. After examining this option, DES IT provided data associated with employer tax compliance on September 28, 2012. NC FACTS expects the delivery of benefit payment information in early October.

### **The Office of the State Controller**

The Office of the State Controller manages the North Carolina Accounting System (NCAS) and the BEACON HR/Payroll System. Both systems contain information beneficial to the NC FACTS program.

NCAS manages a statewide vendor list which identifies the vendors that can be paid from the accounting system. This vendor file is currently used to perform debt set-off with the Department of Revenue and will be a valuable data source for NC FACTS to assist in linking vendors throughout state business areas.

The BEACON HR/Payroll system has employee payroll and time information. As NC FACTS works with the State Health Plan on member eligibility, this data will assist in confirming member eligibility and status.

The NC FACTS program has received data associated with both BEACON and NCAS. This data is currently being analyzed and integrated within the NC FACTS program.

### **CJLEADS**

CJLEADS integrates criminal records from the Department of Public Safety, Administrative Office of the Courts and Department of Justice to provide a comprehensive view of an offender. Currently an agreement is in place with each agency stakeholder to allow their data to be shared and integrated for use within CJLEADS environment and be made available for criminal justice purposes.

The integration of CJLEADS data in NC FACTS has been identified by many agencies as an immediate business need. The knowledge of prior criminal convictions and/or incarcerations can directly impact service and payment eligibility. NC FACTS has requested approval from the data source agencies to share their CJLEADS integrated data with NC FACTS.

A CJLEADS specific DAUA has been drafted for each agency for their review and comment. The Department of Public Safety has executed a DAUA to allow their data to be shared with NC FACTS. The Administrative Office of the Courts and Department of Justice have agreed in concept but have yet to execute their agreements and proceed with data sharing.

## Appendix E - Return on Investment Analysis

ROI Source									FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	
Actual																	
	Total Active Users (as of June 2012)	Actual Number of Records Accessed (FY 11-12)	Annual Records Accessed Based on May 2012 Usage	Annual Records Accessed (Estimated Usage Based on 10% Growth)	Research Time Saved per Record Accessed (minutes)	Hours Saved (FY 11-12)	Annual Hours Saved (Projected Years)	Hourly Rate									
<b>Improved Efficiency and Automation</b>																	
<b>Judicial Staff</b>																	
Judicial	171	6,584	12,168	13,385	10	1,097	2,231	\$30			\$ 15,840	\$ 32,920	\$ 66,924	\$ 66,924	\$ 66,924	\$ 66,924	
Clerks	532	19,602	32,940	36,234	10	3,267	6,039	\$30			\$ 44,790	\$ 98,010	\$ 181,170	\$ 181,170	\$ 181,170	\$ 181,170	
Magistrates	358	35,059	49,788	54,767	10	5,843	9,128	\$30			\$ 100,800	\$ 175,295	\$ 273,834	\$ 273,834	\$ 273,834	\$ 273,834	
Prosecutors	681	72,961	120,264	132,290	10	12,160	22,048	\$30			\$ 114,570	\$ 364,805	\$ 661,452	\$ 661,452	\$ 661,452	\$ 661,452	
<b>Sub Total</b>	<b>1,742</b>	<b>134,206</b>	<b>215,160</b>	<b>236,676</b>		<b>22,368</b>	<b>39,446</b>				<b>\$ 276,000</b>	<b>\$ 671,030</b>	<b>\$ 1,183,380</b>	<b>\$ 1,183,380</b>	<b>\$ 1,183,380</b>	<b>\$ 1,183,380</b>	
<b>Law Enforcement Staff</b>																	
Law Enforcement	16223	4,777,599	6,592,896	7,252,186	5	398,133	604,349	\$25			\$ 1,777,435	\$ 9,953,331	\$ 15,108,720	\$ 15,108,720	\$ 15,108,720	\$ 15,108,720	
Law Enforcement Support	1315	122,938	172,296	189,526	5	10,245	15,794	\$20			\$ 24,765	\$ 204,897	\$ 315,876	\$ 315,876	\$ 315,876	\$ 315,876	
<b>Sub Total</b>	<b>17,538</b>	<b>4,900,537</b>	<b>6,765,192</b>	<b>7,441,711</b>		<b>408,378</b>	<b>620,143</b>				<b>\$ 1,802,200</b>	<b>\$ 10,158,228</b>	<b>\$ 15,424,596</b>	<b>\$ 15,424,596</b>	<b>\$ 15,424,596</b>	<b>\$ 15,424,596</b>	
<b>Corrections Staff</b>																	
Probation	2306	272,298	358,776	394,654	5	22,692	32,888	\$20			\$ 6,378	\$ 453,830	\$ 657,756	\$ 657,756	\$ 657,756	\$ 657,756	
Prison Intake & Support	64	1,177	1,177	1,295	5	98	108	\$20			\$ 892	\$ 1,962	\$ 2,158	\$ 2,158	\$ 2,158	\$ 2,158	
<b>Sub Total</b>	<b>2,370</b>	<b>273,475</b>	<b>359,953</b>	<b>395,948</b>		<b>22,790</b>	<b>32,996</b>				<b>\$ 7,270</b>	<b>\$ 455,792</b>	<b>\$ 659,914</b>	<b>\$ 659,914</b>	<b>\$ 659,914</b>	<b>\$ 659,914</b>	
<b>Juvenile Justice Staff</b>																	
Court Counselors	25	2,640	2,640	2,904	5	220	242	\$20			\$ 4,533	\$ 4,400	\$ 4,840	\$ 4,840	\$ 4,840	\$ 4,840	
<b>Improved Efficiency &amp; Automation Sub-total</b>	<b>21,675</b>	<b>5,310,858</b>	<b>7,342,945</b>	<b>8,077,240</b>		<b>453,755</b>	<b>692,826</b>				<b>2,090,004</b>	<b>11,289,450</b>	<b>17,272,730</b>	<b>17,272,730</b>	<b>17,272,730</b>	<b>17,272,730</b>	
<b>Improved Safety - Cost Avoidance</b>																	
				<b>Number of Potential Lives Saved Annually</b>				<b>Value of a Life</b>	<b>Total Value</b>								
Post Pilot - Save four lives with integration of offender information				4				\$ 1,125,000	\$ 4,500,000			\$ 2,250,000	\$ 4,500,000	\$ 4,500,000	\$ 4,500,000	\$ 4,500,000	
<b>Total Improved Efficiency and Automation and Improved Safety</b>											<b>\$ 4,340,004</b>	<b>\$ 15,789,450</b>	<b>\$ 21,772,730</b>	<b>\$ 21,772,730</b>	<b>\$ 21,772,730</b>	<b>\$ 21,772,730</b>	
<b>Development Cost</b>																	
<b>ANNUAL</b>																	
Actual Development Costs											\$ 2,128,091	\$ 7,643,027	\$ 7,876,469	\$ 7,876,469			
Estimated Development Costs														\$ 7,705,737	\$ 7,996,377	\$ 7,996,377	
<b>Total Costs</b>											<b>\$ 2,128,091</b>	<b>\$ 7,643,027</b>	<b>\$ 7,876,469</b>	<b>\$ 7,876,469</b>	<b>\$ 7,705,737</b>	<b>\$ 7,996,377</b>	
Estimated Implementation Savings											\$ 4,340,004	\$ 15,789,450	\$ 21,772,730	\$ 21,772,730	\$ 21,772,730	\$ 21,772,730	
<b>CUMULATIVE</b>																	
<b>Total Costs</b>											<b>\$ 2,128,091</b>	<b>\$ 9,771,118</b>	<b>\$ 17,647,587</b>	<b>\$ 25,524,056</b>	<b>\$ 33,229,793</b>	<b>\$ 41,226,170</b>	<b>\$ 49,242,547</b>
Estimated Implementation Savings											<b>\$ 4,340,004</b>	<b>\$ 20,129,453</b>	<b>\$ 41,902,183</b>	<b>\$ 63,674,913</b>	<b>\$ 85,447,643</b>	<b>\$ 107,220,373</b>	
<b>Return</b>											<b>\$ (13,307,583.25)</b>	<b>\$ (5,394,602.67)</b>	<b>\$ 8,672,390.17</b>	<b>\$ 22,448,743.00</b>	<b>\$ 36,205,095.83</b>	<b>\$ 49,961,448.67</b>	
<b>Improved Efficiency and Automation</b>	Efficiency savings for law enforcement is based on the actual number of DMV and offender queries during the month of May, 2012, with a 10% growth in FY 2013. Conservatively, if each inquiry saves a law enforcement officer has 5 minutes of research time, Courts personnel have indicated that they are saving 33% of the resource time required to research information, approximately 10 minutes per investigation. Savings associated with courts usage is based on the actual number of DMV and offender queries run																
<b>Improved Safety</b>	The cost of a human life is estimated at 1.125 million. Computation of Human Life value requires a detailed analysis of many factors. For simplicity if an individual is murdered at 35 and has 30 years of future income of which 75% is spent on his/her family then the value of the life would equal (30*(50,000*.75)) The value of a human life would equal 1,125,000																

### **Return on Investment**

Return on investment is found as intangible benefits of improved efficiency, better informed decision making, and improved safety for law enforcement and the public. The ability to access integrated statewide information in a single web-based application allows the courts and law enforcement to save valuable time researching information and focus their efforts on more important public safety specific job responsibilities. These benefits do not provide monetary budget savings, but do permit criminal justice professionals to be more effective and efficient.

Intangible benefits for FY 2011-2012, based on actual usage of the application are approximately \$15.8 million. Leveraging the average usage statistics based on the trained CJLEADS user population in May, 2012 with a 10% growth in FY 2013, estimated annual benefits of CJLEADS are approximately \$21.7 million. These projected intangible benefits, based upon FY 2010–2011 current usage, include:

- CJLEADS will provide a more efficient method for offender searches providing a wider and more inclusive base of information through a single search process. Efficiency savings for law enforcement assumes a 10 percent growth to full capacity. Conservatively, if each inquiry saves a law enforcement officer five minutes of research time, the estimated saving are \$15.4 million annually.

This does not represent a reduction in workforce, but improved efficiency as well as improved information and decision making by law enforcement officers. For example, if a law enforcement officer can more quickly access and review information about individuals involved in a motor vehicle accident, he will be able to return to managing traffic flow, resolving the incident and resume normal patrol activities in a timely manner.

- Wake County Clerk of Court personnel indicated that they are saving 33% of the resource time required to research information, approximately 10 minutes per investigation. Savings associated with actual courts usage in FY 2011-2012 are approximately \$671,000. Assuming an expected 10 percent growth in courts users, and that each inquiry saves 10 minutes of research time, the estimated savings are \$1.18 million annually. This efficiency should allow court personnel to complete research in less time, helping them better manage the ever-increasing court system case load resulting in better administration of justice and service for the State's citizens.
- Other CJLEADS users, including probation and parole officers, prison intake officers and juvenile court counselors, are estimated to save an average of five minutes for each offender or DMV record accessed. Based on expected growth of 10% for corrections and juvenile justice staff, the estimated annual savings are \$659,000. This will allow probation and parole officers, prison intake officers, and juvenile court counselors to quickly access information about offenders under their supervision and to better focus their efforts on interaction and supervision activities.



- Similar to an appraisal of the value of life in court cases, based upon life span and earning potential, an average actuarial estimate of the value of a life saved is stated at \$1.125 million. If the use of CJLEADS when fully deployed statewide saves four lives annually, the benefit to the State would be \$4.5 million per year.

Comparing these intangible benefits to project costs, the return on investment analysis, based on just the largest North Carolina counties, CJLEADS yields a project break-even point of four years, or during the second full year of operations.