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Office of Secretary of State, Georgia Archives

Business Case  
for the

Digital Archives of Georgia (DAG)

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## 1.0 Business Case Identification:

**Project Name:** Digital Archives of Georgia

**Project Owning Division/Office:** Georgia Archives, Records & Information Management Services unit

**Business Owner:** David Carmicheal

**Executive Sponsor:** Karen Handel, Secretary of State

**Total Project Cost:** @\$200,000

**Project Priority:** critical

**Business Case Point of Contact (POC):** Amelia Winstead, Project Manager

<b>Business Case Version:</b>	1.0
<b>Effective Date:</b>	August, 2007

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## 2.0 Executive Summary:

Digital information has become an integral part of the governance of society and our cultural heritage. Increasingly, ordinary citizens are confronted with documentation of their legal rights, historical events, and other information that is only in electronic form. The rapid pace of digital technology obsolescence, both in hardware and software, poses a major challenge to the availability and preservation of that small percentage of records deemed historical. Equally, the rapid pace with which state agencies are implementing e-government applications has not been reflected in corresponding changes in the processes or technological capabilities of the Georgia Archives. Until now, the Archives has failed to expand its capabilities into the preservation of historical digital records<sup>1</sup>.

The Archives must play catch up in order to limit the loss of the historical digital records of the twentieth and twenty-first centuries. This catch up, however, must be achieved within the limits of existing budgets and, ideally, leverage existing technologies (already in use by government) to implement an economical **and** sustainable methodology to preserve historical digital records. It must also comply with the Open Archival Information System (OAIS) reference model<sup>2</sup> which describes the concepts and functionality of a digital archives system and the state's enterprise technology standards.

The overall goal of this project is to develop the capability to acquire, preserve and provide access to historical digital records of state government. Specific objectives for the DAG are solutions that provide:

- Simple, reliable, persistent methods to capture, identify, index, store, and retrieve digital objects.
- Cost-effective means to retain and maintain, through migration processes, the readability and accessibility of the historical record of state government.
- Public access to the collection(s) so that citizens and government officials have the ability to search and retrieve information and historical records to explain the role of government in the state of Georgia, ideally via remote access.

The outcome of this project will be a publicly-accessible general purpose (i.e. records of a variety of types and sources) digital archives system based on commercial-off-the-shelf (COTS) products. Successful completion of this project will enable the Georgia

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<sup>1</sup> The Georgia Archives is not alone in this situation; most state archives find themselves unable to address the needs of digital preservation.

<sup>2</sup> ISO 14721:2003: *Space data and information transfer systems – Open archival information system – Reference model*.

Archives to acquire, preserve, and provide access to the historical digital records of Georgia state government, thereby achieving its legislative mandate.

### 3.0 Business Need/Problem:

Increasingly, Georgia government does business by computer. To the extent that agencies rely on information technology in the course of business, they must also be able to rely on the digital records that are the by-products of this business. Continued access and use of the records by agencies enables long-range planning and decision-making. Citizens must be able to rely on the records to define and assert their rights, and to hold public officials accountable. Long after the needs of current government have been met, the historical records serve the interests of future generations in understanding our state's history. Yet, these records in digital form can be read only if the proper hardware and software exists, and the pace with which technology changes make it unlikely that today's records will be readable in even twenty or thirty years, let alone 200 years. Just 25 years ago, eight-inch floppy disks were still a common method of storing electronic files. Today, no computer in state government is capable of processing such a disk; and such a computer, if one were found, would no longer contain the software needed to read the files. As the state's official archives, the Georgia Archives holds the responsibility of ensuring that historical records in all formats and media are preserved for future generations.

The Georgia Archives was established in 1918 by public law 434 (now codified as O.C.G.A. §45-13-40 et seq.). As the official archives for the state of Georgia, the Georgia Archives is responsible for the effective and efficient management, preservation, and use of public records of state government. To continue to fulfill its mandate, the Georgia Archives must respond effectively to the challenge posed by digital records. To that end, the Archives staff has worked with government IT professionals over the past year to develop model business processes, identify best practices, and issue standards impacting the creation of records, and utilizing technology solutions common to state government. These efforts are directed towards the creation of archives-ready records that meet the requirements of digital preservation from creation, enabling the implementation of an economical means of preserving records. As part of that process, we are developing a digital archives system at the Archives, to acquire, preserve and provide access to permanent digital records.

By working from the beginning of a records lifecycle through to its preservation, the Archives has established a methodology to ensure the continued maintenance of **reliable, authentic** records in an **economical, sustainable** way that enables success. This methodology centers on the Microsoft Office system, which is in common use in

Georgia government.<sup>3</sup> As the release date for Microsoft Office 2007 approached, the Archives recognized an opportunity to further facilitate the creation and preservation of archives-ready records using a tool to which each agency in Georgia government would soon upgrade.

#### 4.0 Project Objectives:

The overall goal of this project is to develop the capability to ingest, preserve and provide access to historical digital records of state government. The specific objectives for the DAG are solutions that provide:

- Simple, reliable, persistent methods to capture, identify, index, store, and retrieve digital objects.
- Cost-effective means to retain and maintain, through migration processes, the readability and accessibility of the historical record of state government.
- Public access to the collection(s) so that citizens and government officials have the ability to search and retrieve information and historical records to explain the role of government in the state of Georgia, ideally via remote access.

The outcome of this project will be a publicly-accessible general purpose (i.e. records of a variety of types and sources) digital archives system based on commercial-off-the-shelf (COTS) products. As part of the project, the determination will be made whether this system should serve as the State's perpetual archives or whether it will be combined with other archives systems that might be developed by the National Archives & Records Administration, the Washington Digital Archives, or others.

#### 5.0 Recommended Solution:

**Description:** Leveraging COTS products, which are on existing statewide software contracts, implement a digital archives system.

**Scope:** A project team will implement the needed workflow processes and business rules to successfully ingest, preserve, and access permanent digital records. The system will automate many of the lifecycle processes and make it easier to deliver digital objects in formats suited to customers' needs. A project of this nature will require multiple iterations. The first iteration of this project, the DAG Release 1.0, is due by December 31, 2008. This time frame requires assertive scope management. The Georgia Archives will consider ideas for improvements and increased functionality in subsequent releases.

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<sup>3</sup> ENT-02-001-STD establishes Microsoft products as a common desktop and laptop/notebook platform for state agency employees.

**Approach:** The DAG project is divided into six phases of completion. The DAG project encompasses Phases **III, IV, V, and VI**. Phase I included the development of the basic concept, vision, and pilot of transfer processes. This has been completed and the project document made available to the archival community via the web.<sup>4</sup> Phase II encompassed the development of a Concept of Operations document.<sup>5</sup> The ConOps served as a means to communicate high-level system characteristics of the envisioned system to the user, buyer, developer, and other stakeholders. Phase II is completed and the Concept of Operations document is in final draft and available on the Archives web page.<sup>6</sup> **Phase III** consists of the identification of technical requirements for the project. Phase III is underway. **Phase IV** includes the bulk of implementation planning. During this phase, the identification of technology requirements and completion of necessary infrastructure upgrades lead into full implementation of the digital archives system. Development of business rules and workflow processes for the automation of ingest, processing, and descriptive procedures are also part of Phase IV work. **Phase V** is the actual implementation of DAG. This phase includes the purchase and installation of additional hardware and software to add to existing storage capabilities. **Phase VI** encompasses beta testing and rollout of the DAG system.

**Impact:** Successful completion of this project will enable the Georgia Archives to acquire, preserve, and provide access to the historical digital records of Georgia state government. Successful completion will also impact user groups as well as the technical infrastructure within the Archives. These impacts are discussed below.

<i>Impacted Category and Type of Impact</i>	<i>Impact Description</i>	<i>Mitigation Approach</i>
Customers	Project will alter the interface the public has with the historical record	Provide ample opportunity for customer feedback and modification of product
Staff	Aging staff not comfortable with use of computers	Provide ample training and feedback opportunities to include staff in process
Business Process	Alteration of work processes will accompany implementation of electronic work flow processes	Provide easy to use portal for staff interface with system.
Technology	Current technology infrastructure designed for internal processes only – not storage of vast amounts of data	Conduct growth estimates to adequately plan and anticipate the need to replace and/or add additional infrastructure

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<sup>4</sup> Information on the development of the Digital Archives of Georgia can be found at: [http://www.sos.state.ga.us/archives/who\\_are\\_we/rims/digital\\_History/default.htm](http://www.sos.state.ga.us/archives/who_are_we/rims/digital_History/default.htm).

<sup>5</sup> IEEE 1362-1998, IEEE Guide for Information Technology – System Definition – Concept of Operations (ConOps) Document.

<sup>6</sup>The Digital Archives of Georgia Concept of Operations document can be found at: [http://www.sos.state.ga.us/archives/who\\_are\\_we/rims/digital\\_History/default.htm](http://www.sos.state.ga.us/archives/who_are_we/rims/digital_History/default.htm)

Failure to meet the objectives of the project will result in the loss of key historical records from the 20<sup>th</sup> and 21<sup>st</sup> centuries, resulting in the failure of the Archives to meet its statutory mandates.

### Customer Impact

Customers of the Georgia Archives include two groups – citizens of the state who access records and agencies of government that transfer records to the Archives. Implementation of a digital archives system will alter the methods these agencies use to transfer records. Currently, agencies transfer a physical medium, paper or microfilm, to the Archives. The digital archives system will increase this option to include digital objects. In conjunction with system development, agency records management officers (RMOs) must be notified of pending changes and provided training in new processes. Communication with and feedback from agency RMOs will be critical to system development, providing much needed comment during beta testing and rollout. Development of the agency access portal will rely in large part on the feedback and opinions of RMOs and other agency staff who utilize government information.

The Archives provides access to records in its custody not only to other government agencies, but to businesses and individuals as well. A number of benefits will accrue to anyone who requires access to records:

- Agencies will have immediate access to historical data for long-term decision making and strategic planning purposes.
- Geographically dispersed users will have remote access to data.
- With web technology, users will have access to web-enabled data twenty-four hours a day, seven days a week, rather than the 5 days a week the Archives is currently open for research.
- Creation of a centralized web-enabled access portal will encourage increased use of collections.

### Employee Impact

The Georgia Archives is examining current policies and business practices and may have to develop and/or modify these policies and practices as system analysis and design progresses. The depth and breadth of the organizational impact is unknown at this time. Information with respect to the following has not been provided for this reason and includes such items as the number of personnel, skill levels, position identifiers, and locations. Additionally, the interaction of personnel with the system may necessitate revising position descriptions to reflect the anticipated changes in the Archives' business practices.

With this in mind, the Georgia Archives has identified a number of possible organizational impacts, as described below:

- An assessment of how the system will fit organizationally within the Archives and how the system will relate to other Archives components and/or the agencies they interact with;
- The commitment of resources (e.g., funding, time, staff) by the Archives to establish working relationships with other government agencies as the system moves into production;
- The need for cross-functional, inter-disciplinary staff teams;
- The development of education and increased training for both Archives staff and end users;
- The possible need for a help desk facility for Archives staff and end users (such a function may require adding staff); and,
- Improved opportunities for career development for Archives staff.

#### Business Process Impact

As stated above, the Archives is examining current policies and business practices and will likely develop and/or modify these policies and practices as system analysis and design progresses. Ultimately, the system should provide decision support for the Georgia Archives management processes for the content management lifecycle processing of all content. This additional capacity includes supporting processes such as records appraisal, records description and metadata collection, and record preservation. Development of a digital archives system literally from the ground up, offers a tremendous opportunity to evaluate workflow practices in a paper-based archives to improve the speed of certain processes while increasing the capabilities of customers to use the records in new ways.

#### Technology Infrastructure Impact

The current technology infrastructure located at the Archives offices in Morrow, GA, is limited in a number of ways. There are nine servers with Storage Area Network (SAN) connectivity of three terabytes of data, which support the programs of the Georgia Archives with a fractional DS3 communication line of 10 Mbps connecting the building to the statewide MPLS network. One additional server with a SAN that can scale up to 2 terabytes is dedicated to the DAG.

Completion of the digital archives system, DAG, will necessitate a dramatic expansion in the existing infrastructure, particularly as it impacts storage capabilities. As with the current paper-based archives, storage capacity is and will continue to be an on-going challenge. Currently, the Georgia Archives houses approximately 100,000 cubic feet of paper and film-based records covering over 200 years of the state's history. Translating this into digital object storage results in multiple petabytes of volume, requiring up-front

planning to ensure that the solution selected is scalable and capable of handling large amounts of data.

**Anticipated Project Start Date:** October 15, 2007

**Estimated Implementation Timeframe:** 18 months

**Timeline/Project Schedule:**

**Milestones**

The table below indicates the DAG Project's major milestones identified by the Archives for the project duration.

Milestone Date	Description	Comments/Deliverables
10/15/2007	Phase 3: Initiation Phase <ul style="list-style-type: none"> <li>- PM hired</li> <li>- Setup SME team</li> <li>- Preliminary Requirements defined</li> </ul> Initiation includes project planning; resource planning (budget confirmation, identification and assignment); scope and budget confirmation	Budget confirmation delayed by NHPRC until end of Nov.  Deliverables: Project manager PO and statement of services, concept of operations documents, preliminary requirements, policy and procedural documents
1/31/2008	Phase 4: Implementation Planning Phase <ul style="list-style-type: none"> <li>- Integrator selected</li> <li>- IV&amp;V vendor selected</li> <li>- Final Requirements Release 1.0 defined</li> </ul> Planning includes project control documentation; detailed project plan and schedule; and project kick-off meeting	High level business process is completed, SME review continues.  Deliverables: Project Charter, Project Plan; Preliminary Requirements Documents, Integrator statement of work; internal procedures and standards approved
3/31/2008	Phase 4: Analysis Stage: Planning <ul style="list-style-type: none"> <li>- Technical Operating Environment ready (Dev, test, and prod)</li> <li>- High Level Technical Architecture documented</li> <li>- Business Processes defined</li> </ul>	Deliverables: Architecture documents; operating environments established



May – June 2009	<p>officers and other agency staff authorized to transfer and access agency data.</p> <p>End-user (public) training (access module). Training scope includes members of the public who utilize archival collections.</p>	
June 30, 2009	<p>Closing Project is expected to close on June 30, 2009</p> <p>Closing includes: system 'live' with no critical issues; no integration critical issues; support plan in place for handover</p>	<p>Deliverables: Lessons learned document, support/handover plan, issue log</p>

**Constraints:**

Number	Description
1	Schedule
2	Staff availability
3	Funding - portions of funding are grant based; consistent levels of program funding must be achieved for sustainability

**Challenges:** Addressing the potential variety of file formats in which permanent digital records are stored. Governor’s correspondence files, e-mails, press releases, and Executive Orders; laws passed by the General Assembly (which shortly will be created and processed in electronic form); Department of Transportation maps and plans; even the photographs used by Tourism agencies to document and advertise the state—photos which have always provide a historical record of changing Georgia—are now created in electronic form and may well disappear within decades.

**Assumptions:** Four assumptions form the basis of the project:

1. The project will focus on the ingest, preservation, and accessibility of two file formats – PDF and TIF. The DAG will be expanded to preserve additional file formats upon completion of the project.
2. The Archives will seek to limit the number of file formats approved for use by state government so that industry standard, non-proprietary file formats are utilized for the creation of permanent records.
3. The Archives will preserve a minimum of three copies of every permanent digital object (record): a) original bit stream b) preservation copy c) presentation copy.

The original bit stream of any permanent digital object will be preserved so that emulation or other technologies could be used to visually render the original file format of any record. The preservation copy, a duplicate of the permanent record made in a sustainable file format, will be migrated to new technologies as needed so that a copy of the record can always be visually rendered using current technologies. The presentation copy will provide a redacted version of confidential information for public viewing. Two or more presentation copies may be maintained to provide agency un-restricted access and public access to the same information.

**Benefits Description:**

**Tangible Benefits: Not Applicable**

<i>Benefit</i>	<i>How to Measure</i>	<i>Current Value</i>	<i>Expected Value</i>	<i>When will Expected Occur</i>

**Intangible Benefits:**

<i>Benefit</i>	<i>How to Measure</i>	<i>Current Value</i>	<i>Expected Value</i>	<i>When will Expected Occur</i>
Preservation of state history	Comparison of actual to estimated acquisitions on Budget Performance Measures	0 (no digital records accepted)	records of all executive branch preserved	Upon implementation
Increased access to public records	Reference rates on records	9000 researchers per year	Increase use of collections due to availability on-line	Within 6 months of implementation
Staff efficiency	Reduced processing time for new accessions	3-6 months processing required	Reduced to 20 days	Within 1 month of implementation

**Benefits Assumptions:**

Benefits assume that agencies will cooperate with the Archives and transfer records and that publicity will ensure that researchers locate the DAG web page and use it.

**Summary of Financial Information:**

6.0 Risks/Critical Dependencies:

The following risks have been identified as possibly jeopardizing the successful completion of the project:

- Lack of adequate IT staffing may place digital archives system at risk.
- State agencies may be reluctant to cooperate and alter established business processes in order to facilitate the creation of archives-ready records
- Archives may be unable to import and preserve some legacy data due to outdated technology
- Historical digital records will be centrally stored in a mass storage system, creating a critical need for business continuity and disaster planning for the system
- Failure of the state to maintain the use of technology neutral standards
- Lack of funding source to maintain and expand the digital archives system as needed to ensure use of current technologies

These risks are rated in the table below as to their possible impact and likelihood of occurring.

<b>Risk</b>	<b>Impact</b>	<b>Occurrence</b>	<b>Mitigation Plan</b>
Lack of IT support for DAG	High	Medium	Provide for transfer of project memory from integrator to member of SOS/Archives IT staff. May necessitate hiring or contracting with additional staff.
State agencies reluctant to cooperate	High	Medium	By partnering with GTA and others, the Archives is hoping to ensure that this does not happen and result in the loss of historical records
Unable to import and preserve legacy records	Low to medium	High	At a minimum, DAG will be able to convert data to the lowest common denominator (ASCII). The Archives realizes that access (through contracts) to legacy systems and conversion labs may be necessary.
Failure to conduct adequate BC/DR	High	Low	The Archives has a long history of

planning			planning for disasters both large and small. Initial discussions regarding disaster planning are already underway even though the system is only in the design phase. Current plans are to back the system up (to the extent possible) using analog media, such as microfilm, as a failsafe against complete system failure.
Failure of the state to maintain the use of technology neutral standards	Medium	Low to medium	The Archives currently participates on the state's technology standards bodies. This participation is unlikely to change in the near future and ensures that digital preservation is a consideration in the adoption of standards.
Lack of sustainable funding source	High	Medium to high	Storage costs are and will continue to be the Archives major funding challenge. It will be critical for the Archives to build and maintain awareness of funding needs as administrations change at all levels – within the SOS, General Assembly, Governor's Office, and executive branch agencies