Review of Phase 2 of the Electronic Document Management (EDM) Project: Automation of the Personnel Action Form (BC-102-102)

February 18, 2008
Report No. 08-07

Office of the County Auditor
Evan A. Lukic, CPA
County Auditor
Executive Summary

This report presents the results of our review of the Electronic Document Management (EDM) project, specifically Phase 2: Automation of the BC-102-102 Personnel Action Form. A blank form is included at Attachment 1, page 13.

The EDM project represents a significant effort to bring automation to Broward County. The pilot BC-102-102 automation project was intended to establish a methodology and toolkit to enable automation of additional County forms, without additional vendor assistance.

The County commenced the pilot BC-102-102 automation project in February 2005 with issuance of final vendor acceptance in September 2006. Staff subsequently placed further project efforts on hold in July 2007.

The County expended $512,832 for vendor software and services to automate a standard internal form. The resulting system has not been successfully implemented as of February 2008.

We identified the following contributing factors:

A. The complexity of the project required significant collaboration between the County and the vendor. Staff from the Office of Information Technology (OIT) did not fulfill their responsibilities as set forth in the Statement of Work.

B. The delivered EDM Phase 2 system is not fully functional because OIT staff did not complete assigned tasks.

C. A comprehensive test of the delivered solution remains deferred until completion of outstanding development tasks.

D. OIT staff did not develop an adequate level of technical EDM skills during system implementation to enable ongoing maintenance and support of custom system forms and workflows.

E. The project lacked adequate senior management involvement to ensure completion of collaborative efforts and satisfactory implementation of the EDM concept.

As the project status is on-hold and there are no immediate plans for deployment, we recommend the Board of County Commissioners direct the County Administrator to:

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1 Effective October, 1, 2007, the Office of Information Technology was established as Enterprise Technology Services (ETS).
Executive Summary (continued)

1. Provide a cost-benefit analysis to support a recommendation to either complete the BC-102-102 Personnel Action Form automation project or terminate project efforts.

In order to facilitate the completion of projects, we further recommend that the Board of County Commissioners direct the County Administrator to:

2. Require business justification for technology projects, to help ensure investments in technology are linked to increases in process efficiency or other measurable improvements.

3. Establish an IT Steering Committee to review project justifications and monitor progress towards attainment of project objectives.

Our report provides a complete discussion of project status along with our findings and recommendations for the EDM Phase 2 project.
Scope

The scope of our review focused on the implementation of Phase 2 of the Electronic Document Management (EDM) project.

Phase 2 comprised a joint vendor/staff pilot project to automate a single County form, the BC-102-102 Personnel Action Form. A blank form is included at Attachment 1, page 13.

Objectives

The objectives of our review of the EDM Phase 2, Automation of the BC102-102 Personnel Action Form, are to:

- Determine whether purchased services and systems were received.
- Determine whether contract requirements were met.
- Determine the existence of “gaps” in functionality.
- Determine the level and extent of staff involvement in development, delivery and use of the automated form and workflows.
- Review project management and contract administration to identify areas for improvement.

In order to determine the viability of the County’s investment in the automated form technology, we:

- Observed a staff demonstration of the BC-102-102 electronic form and underlying system.
- Worked with staff to identify delivered functionality and deficiencies between the defined requirements and the delivered application.
- Worked with staff to identify incomplete project tasks.

Procedures

Our review procedures included the following:

- Review of contract documents, including the statement of work, requirements analysis, deliverables and payment schedule and final acceptance criteria, to obtain an understanding of the contract requirements for Phase 2 services.
- Observation of system processing and programmed workflows to substantiate the delivery of contracted application software.
- Comparison and analysis of stated requirements and delivered system functionality.
- Review of staff’s assessment of outstanding project tasks.
- Review of compliance with acceptance checklist criteria and formal user sign-off.
- Review of test plans and results of actual testing.
- Review evidence of project management and contract administration efforts throughout the project, to understand adherence to project schedules, objectives, and staffing.
Background

The EDM project was presented to the Board on June 3, 2003. As detailed in the background section of the agenda item, the multi-phased, $2.4 million project was intended to accomplish the following:

- Provide a system to assist in converting all records produced by County agencies to electronic formats.
- Provide for secure document archival, for the duration of required retention periods.
- Significantly reduce the amount of paper transferred between County offices, as well as the time it takes to move paper between locations.
- Reduce the problem many agencies currently have with separate systems that cannot talk to each other.
- Provide a working solution, easily adaptable to different business needs, enabling other County agencies to utilize [the system] with minimal customization.

Phases 0 and 1 resulted in the implementation of a box management system to replace the legacy system, commonly referred to as “GAIN”. The resulting RCAM (Records Center and Archive Manager) system, which was custom developed for the County, addresses physical handling and storage of boxed records. Record conversion and archival of electronic records were not implemented. Global 360 services and software licenses of approximately $1.2 million are attributed to Phases 0 and 1.

The scope of Phase 2 provided for the automation of a single form used by all County agencies, the personnel action form BC-102-102. This initial form was a pilot for automation of additional forms in the future. To date, the electronic form has not been deployed for use. Services and software licenses of approximately $512,832 are attributed to Phase 2.

Global 360 was not engaged for Optional Phase 3 services to develop a Statement of Work for the Permitting and Licensing Integration Project (PLIP). These optional services were estimated at $125,000.

Optional services of approximately $80,000 were purchased under the authority of the Director of Purchasing for Global 360 support of an operating system upgrade and hardware swap.

Project costs above exclude significant commitment of staff time across multiple agencies. In addition, the EDM project included approximately $500,000 in capital costs for server hardware and operating software.

Contractual services of $1.7 million were funded as follows:

<table>
<thead>
<tr>
<th>Fund</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Capital Fund</td>
<td>66%</td>
</tr>
<tr>
<td>Public Records Modernization Trust Fund</td>
<td>33%</td>
</tr>
</tbody>
</table>

Vendor ownership changed during the project, as did the vendor name. All references to the vendor are based on the current legal entity name, Global 360.
Summary of Project Status

As of February 2008, the automated BC-102-102 Personnel Action Form and underlying system have not been deployed, either in pilot or for general use.

The core project team, comprised of resources from the Office of Information Technology, Human Resources and Accounting Payroll, issued final vendor acceptance in September 2006. The BC-102-102 Personnel Action Form automation project was placed ‘on hold’ as of July 2007. The following timeline illustrates the duration of the EDM Phase 2 efforts and actions taken since final acceptance:

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
</table>
| September 2006| Final acceptance issued for phase 2, as indicated by approval of a milestone payment of $480,922 for software/services and $31,910 retainage. Cost of Phase 2, $512,832.  
         | Pilot implementation of the electronic BC-102-102 solution deferred until after the close of the fiscal year. |
| December 2006| HR staff raised concerns that the test environment did not mirror production processing. |
| January 2007 | Amendment 3 was negotiated for $25,600 in optional services to upgrade the test servers and ‘swap’ hardware between the test and production environments. |
         | Payroll Section staff provided remaining Cyborg screen layouts to enable development of data maps required for automating the update of the Cyborg HR/Payroll system using the electronic form. |
| July 2007    | BC-102-102 project efforts placed ‘on-hold’, with no plan for system implementation. |

The following list provides a summary of incomplete key project tasks. The identified tasks are required either for deployment or to ensure the application will function as designed.
Summary of Outstanding BC-102-102 Project Tasks

High Importance: Required to Deploy the Electronic BC-102-102 Personnel Action Form

- Re-verify system performance and configuration.
- Re-verify user access security and roles defined in the workflows.
- Determine the appropriate level of support and maintenance required, and establish resources, whether from the vendor or internal staff.
- Finalize and execute the implementation plan for pilot and enterprise deployment.
- Finalize and execute the communication plan to prepare staff for the deployment.
- Develop and deliver a user training program, including training materials and a course schedule.

Medium Importance: Required for application to function as designed; not required for initial deployment

- Develop formatted files to enable automated update of Cyborg HR/Payroll data for 19 incomplete change reasons and perform testing of same.
- Address workflows for seasonal employees.
- Develop sub-process within workflows to permit the user to select a particular HR approver for individual routing.
- Develop modified workflow for department/division directors to require County Administrator approval.
- Configuration change to sort attachments alphabetically.
- Configuration change to increase the graphical size of the user's inbox window.
- Configuration change to link applicable activity codes with change reasons and salary change types.
- Review and update links between document categories and change reasons.

Low Importance: Enhancements Improving Efficiency and Effectiveness

- Enable automated processing of mass changes through the use of form BC-102-102 for documentation purposes, as necessary for processing annual collective bargaining provisions.
- Develop additional interfaces with existing systems, such as HR Recruiter and Risk Management, to enhance seamless flow of BC-102-102 Personnel Action Form.
Findings

The County expended $512,832 for vendor software and services to automate a standard internal form. The resulting system has not been successfully implemented as of February 2008.

A. The complexity of the project required significant collaboration between the County and the vendor. OIT staff did not fulfill their responsibilities as set forth in the Statement of Work.

The pilot BC-102-102 automation project was intended to provide the County with a methodology and toolkit to enable ongoing automation of County forms, independent of a software vendor. To that end, the EDM project was designed as a collaborative effort between Broward County and Global 360. According to the Statement of Work\(^5\), Appendix D, three levels of collaboration were required to develop the automated workflows:

**Figure 1.** Required collaboration efforts and related workflow assignments\(^6\).

<table>
<thead>
<tr>
<th>Required Collaboration</th>
<th>Workflows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative effort with Global 360 leading</td>
<td>New Hire, Separation, Pay Adjustment</td>
</tr>
<tr>
<td>Collaborative effort with Broward County leading</td>
<td>Working out of class, Reclassification, Promotion, Demotion</td>
</tr>
<tr>
<td>Broward County Implementing</td>
<td>LGFS Charge Point, Leave of Absence, Location Change, Suspension/LOA Return, Lateral Transfer, Status Change</td>
</tr>
</tbody>
</table>

For each of the workflows assigned to the County above, staff were to perform system development and configuration tasks as follows:

**Figure 2.** Required development and configuration tasks.

- Assist with the configuration of the solution set.
- Assist with the writing of interfaces to communicate with the necessary applications such as the Broward County Cyborg Payroll System.
- Assist with the development of the workflow and e-forms.
- Assist with the testing of the installed solution set and any customized code or interfaces

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\(^5\) Appendix D, BC-102-102 Workflows
\(^6\) Ibid.
In order to fulfill the County’s responsibilities for leading and implementing collaborative efforts, staff from the Office of Information Technology\(^7\) (OIT), Human Resources and the Accounting Payroll Division comprised a core project team. In addition to the core project team, OIT staff were assigned to the project to provide system development and configuration resources.

Our review of project related documents, such as progress meeting minutes and project acceptance checklists indicates that core team efforts were appropriately focused on data gathering, coordination of tasks, and project management. However, there was no evidence to indicate that vendor-trained OIT staff participated in or performed the required system development and configuration tasks noted in Figure 2, page 7, for County assigned workflows.

Despite an apparent lack of participation by OIT resources, an electronic BC-102-102 form was developed and configured for all workflows noted in Figure 1, page 7. It appears that Global 360 consultants performed system development and configuration activities in excess of the agreed-upon division of responsibilities.

Attachment 2, page 14, provides a list of available system features and functionality of the BC-102-102 system as delivered by Global 360.

**B. The delivered EDM Phase 2 system is not fully functional because OIT staff did not complete assigned tasks.**

The primary objective of Phase 2 of the EDM project was to automate the BC-102-102 Personnel Action Form, up to and including the electronic update of personnel data into the Cyborg HR/Payroll system (Cyborg).

In a hands-on demonstration of the BC-102-102 system, we observed that an electronic BC-102-102 form was developed for 43 various “change reasons.”\(^8\) A review of user testing documentation indicated the following:

- 21 change reasons were successfully tested by staff through update of personnel data into Cyborg in a test environment.
- 19 change reasons were successfully tested up to the point of Cyborg update. Data mapping files required to enable automated updates to Cyborg

\(^7\) As of October 1, 2007, the Office of Information Technology (OIT) name changed to Enterprise Technology Services (ETS).

\(^8\) A change reason is the basis for a personnel action. For example the Reclassification workflow is represented by three change reasons: 1) Change: Reclassification (Downward); 2) Change: Reclassification (Lateral); and 3) Change: Reclassification (Upward).
were not developed for these change reasons. As a result, this functionality is not available.

- 3 change reasons were successfully tested up to the point of Cyborg update; however, these 3 change reasons were not planned for automated update to Cyborg. Updates for these change reasons will continue to be manually input to Cyborg.

A review of responsibilities set forth in the Statement of Work, indicates that the 19 incomplete change reasons were related to workflows assigned to Broward County noted in Figure 1, page 7. As a result of incomplete tasks, the EDM BC-102-102 system cannot electronically update Cyborg as intended.

C. A comprehensive test of the delivered solution remains deferred until completion of outstanding development tasks.

County staff from eleven pilot agencies, including Human Resources and the Accounting Payroll Section performed extensive testing of the delivered BC-102-102 automated solution. Testing documents indicate that available system features were functioning as intended. Based on the achievement of successful test results, the core project team issued final acceptance of vendor deliverables in September 2006.

Our review and comparison of the system with the Software Requirements Document\(^9\) indicated one functional gap, related to incomplete development tasks noted in Finding B, page 8. Until these tasks are completed, a comprehensive system test cannot be performed.

In addition, the BC-102-102 form and underlying system have not been implemented in pilot or for general use. Until the application is deployed in pilot, it cannot be determined that the application will successfully function concurrently with the County Records RCAM EDM system.

D. OIT staff did not develop an adequate level of technical EDM skills during system implementation to enable ongoing maintenance and support of custom system forms and workflows.

The EDM project went forward on the premise County staff would develop technical skills during system implementation. It was contemplated that County staff, using the acquired technical skills, would provide ongoing maintenance and support of custom developed forms and workflows. This approach avoids incurring the expense of additional vendor hourly fees for maintenance and support of custom developed software.

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\(^9\) The Software Requirements Document (SRD) was prepared by core team staff and Global 360 consultants. The SRD is a detailed specification document of required system features, based on requirements analysis.
The County normally obtains software maintenance by executing fixed fee multiyear maintenance agreements with each software vendor. However, the maintenance agreements typically exclude maintenance coverage for custom work products. The EDM vendor’s, Global 360, Software License Agreement contains the typical exclusionary terms for custom software. The EDM Phase 2 project includes County specific custom developed electronic BC-102-102 form and corresponding workflows. The custom form and workflows are therefore excluded from the maintenance and support provisions of the software license agreement.

Due to the lack of technical resource involvement as noted in Finding A, page 7, OIT staff did not obtain hands-on experience and knowledge of the system. As a result, County staff are unable to perform ongoing maintenance and support of custom system forms and workflows. Further, OIT staff are unable to complete the remaining tasks noted in Finding B, page 8. The County therefore remains heavily dependent on vendor assistance for support and further system development. We were unable to ascertain from staff a probable cost for additional services from the EDM vendor.

E. The project lacked adequate senior management involvement to ensure completion of collaborative efforts and satisfactory implementation of the EDM concept.

The core BC-102-102 management team comprised the following:

- Former County CIO – contract administrator
- Former Director of Application Services
- Director of Human Resources – co-sponsor
- Director of Accounting – co-sponsor
- One Assigned Project Manager from Human Resources
- One Assigned Project Manager from the Office of Information Technology

In addition to the core team, staff from multiple County agencies participated in the requirements definition and testing of the delivered solution. The EDM project was a significant effort to bring automation to Broward County. The complex project required extensive management involvement and oversight due to two primary factors:

1. Development Methodology: The BC-102-102 project evolved through use of an “iterative development” process. The iterative development process relies on identifying a business model through a succession of working iterations culminating in a completed system. Iterative development therefore commences based on a concept rather than implementing a predetermined detail application design. As such, the

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10 Software License Agreement 8.4.11, June 3, 2003.
iterative development process is difficult to manage. The process requires continual management review to assess progress of iterations towards meeting system development objectives.

2. **County Interagency Collaboration:** The project design required significant County inter-agency collaboration. The following agencies participated in defining system requirements and testing the resulting BC-102-102 automated solution:

- Aviation
- Community Services
- Libraries
- Parks and Recreation
- Mass Transit\(^{11}\)
- Finance and Administrative Services
- Accounting-Payroll
- Enterprise Technology Services (ETS)
- Human Resources
- Compensation and Records
- Labor Relations
- Risk Management
- Environmental Protection
- Human Services
- Office of Management and Budget
- Port Everglades
- Public Works
- Fleet Services
- Highway & Bridge Maintenance Division
- Water and Wastewater Services
- Urban Planning

In our review of project documents, we noted that the core management team monitored and tested vendor delivered services and systems prior to acceptance. However, we found missing a comparable level of project management monitoring and evaluation of staff project efforts. Significant staff effort by participating County agencies was evidenced by the volumes of project documentation, which included progress meeting minutes, data gathering interviews, requirements analysis documents, design documents, executed test plans, and completed checklists.

Upon review of key internally generated project documents, such as the communication plan and the implementation plan, we noted an absence of management review and approval. For example, the last available project progress report from the January 2006 meeting of the core project team was maintained as a DRAFT document and noted incomplete project tasks. No additional documentation was available to indicate management response or direction towards resolution of outstanding tasks.

The lack of authoritative project management oversight of inter-agency staff appears as a primary causational factor in the findings of this report. The achievement of the goals established for the EDM project depended upon successfully managing the required County inter-agency collaboration.

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\(^{11}\) Effective October 1, 2007, the Mass Transit Division was established as the Office of Transportation.
**Recommendations**

In order to address the significant investment in EDM technology to automate the BC-102-102 Personnel Action Form, we recommend that the Board of County Commissioners direct the County Administrator to:

1. Provide a cost-benefit analysis to either recommend completion of the BC-102-102 Personnel Action Form automation project or termination of efforts.

In order to facilitate the completion of projects, we recommend that the Board of County Commissioners direct the County Administrator to:

2. Require business justification for technology projects, to help ensure investments in technology are linked to increases in process efficiency or other measurable improvements. Such projects should include:
   - Specific, applicable performance goals which define project objectives.
   - Requirements for a project risk, cost, and benefits assessment.
   - Requirements for periodic project management progress reporting to the County Administrator and/or the Board of County Commissioners.
   - Requirements for post-implementation review to assess attainment of project goals.

3. Establish an IT Steering Committee. The IT Steering Committee should:
   - Be established at the highest level of management.
   - Include adequate stakeholder representation.
   - Be empowered to provide oversight for investments in information technology and communication. Oversight activities should include:
     - Reviews of business justification in the conceptual stage, prior to presentation of projects for Board approval
     - Monitoring of project progress toward attainment of objectives
   - Be informed in IT industry developments, to ensure adherence to good business practices.
   - Be actively involved in advancing projects toward completion.
**Review of EDM Phase 2: Automation of the BC-102-102 Personnel Action Form**

**Attachment 1**

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**BROWARD COUNTY BOARD OF COUNTY COMMISSIONERS**  
Division of Human Resources  
PERSONNEL ACTION FORM (BC102-102)

<table>
<thead>
<tr>
<th>SSN</th>
<th>Last Name</th>
<th>First Name</th>
<th>MI</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Effective Date</th>
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</table>

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<th>Section Name</th>
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<table>
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<tr>
<th>Fund</th>
<th>Org</th>
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</table>

<table>
<thead>
<tr>
<th>Scheduled Hrs</th>
<th>Hourly Rate</th>
<th>Type of Salary Change (HR11)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Probation End Date</th>
<th>Anniversary Date</th>
</tr>
</thead>
</table>

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### CHANGE/APPOINTMENT

- Promotion
- Demotion (County Action)
- Demotion (Empl. Choice)
- Reclass/Block Budget
- Transfer
- Pay Adjustment
- Status
- Relocate BPN

**New Hire**

**Re-Hire**

**Reinstatement**

**Recall**

**Acting**

**Parallel Appointment**

**Work Out of Class**

**Other:**

**Certificate No.** (if applicable)

### SEPARATION

- Resignation
- Retirement
- Dismissal
- Layoff
- Deceased
- Disability Termination
- End of Assignment
- Other

**Salary Increase** %

- Add to Base
- Cash Equivalent – if current hourly rate at maximum or above.

**Bonus $**

- As Cash

### PERFORMANCE APPRAISAL

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### LEAVE OF ABSENCE:

<table>
<thead>
<tr>
<th>Start Date</th>
<th>Proposed Return Date</th>
<th>Actual Return Date</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Reason</th>
<th>Physical:</th>
<th>Required</th>
<th>Waived</th>
<th>Authorized By</th>
</tr>
</thead>
</table>

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### AUTHORIZED SIGNATURES

- County Administrator: Date
- Department Director: Date
- Division Director: Date
- Budget: Date
- Human Resources: Date

**Remarks by Requesting Office:**

**Human Resource Use:**

Form revised May 2003

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Office of the County Auditor  
13
### Summary of Features and Functionality of the Automated BC-102-102 Personnel Action Form

<table>
<thead>
<tr>
<th><strong>Electronic Form and Related Workflows</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Formatted data files for 21* of the 43 change reasons, to enable automated update of Cyborg HR/Payroll data via the approved electronic BC-102-102 form.</td>
</tr>
<tr>
<td>• A standard workflow and eight customized* variations. The customized variations were developed to accommodate existing manual approval processes used by the pilot agencies.</td>
</tr>
<tr>
<td>• Workflows that mirror manual processes for hierarchical approval/rejection of forms.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Interfacing Systems</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cognos database. Reduces need for manual keying by enabling auto-population of data fields on the form and allowing searches of existing employee data.</td>
</tr>
<tr>
<td>• Cyborg HR/Payroll system. Enables automated update of employee records for the approved BC-102-102 changes.</td>
</tr>
<tr>
<td>• MS Outlook. Enables auto-generated emails be sent to the originator to notify of activity related to the form in process.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Application Features</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Auto-emphasis of changes to auto-populated fields to facilitate review and approval.</td>
</tr>
<tr>
<td>• Capability to attach electronic documents, such as scanned copies of identification cards to a BC-102-102 form.</td>
</tr>
<tr>
<td>• Built-in “tickler” initiates reminder emails if no action is taken following three days from the last activity.</td>
</tr>
<tr>
<td>• Form management tools provide the capability to search for pending employee actions as well as track the progress of submitted forms.</td>
</tr>
<tr>
<td>• Final approval of all BC-102-102 forms required by Payroll, prior to auto-update.</td>
</tr>
<tr>
<td>• Auto-generate success/failure of the automated Cyborg update to Payroll staff.</td>
</tr>
<tr>
<td>• Security configured to restrict user access, based on the user’s role.</td>
</tr>
<tr>
<td>• Use of “password digital signature” to recorded the approver’s name with the system date and time of approval.</td>
</tr>
<tr>
<td>• An audit history of form approvals is created for each form.</td>
</tr>
<tr>
<td>• All approved BC-102-102 forms and related audit history can be archived electronically.</td>
</tr>
<tr>
<td>• Several management reports were configured, such as “BC-102-102 Forms Processed.” The application also includes management reporting tools to develop ad-hoc reports.</td>
</tr>
</tbody>
</table>

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12 As delivered by the vendor and observed in a hands-on system demonstration by staff.

*These vendor deliverables appear to be beyond the original project scope.