Minnesota Department of **Human Services**

# HealthMatch
## *Project Assessment Summary*

May 2, 2008

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# EXECUTIVE SUMMARY

## Background

DHS is the State's largest Executive branch agency with primary responsibility for developing policy and administering State human service programs such as cash and food assistance, health care, and services for the elderly and disabled. The Department serves more than 600,000 citizens with various Minnesota Health Care Programs (MHCP) including Medical Assistance (MA), General Assistance Medical Care (GAMC), and MinnesotaCare. Eligibility determination and case management for these programs is decentralized over 87 distinct county governments, tribal governments, and central DHS case-processing facilities. Decentralized administration, complex programs, complicated eligibility requirements, frequent case transfers between entities, and the ever-changing health care environment have resulted in high customer confusion with the process, task duplication for workers, and reduced utilization of services.

DHS uses two large mainframe computer systems to assist with eligibility determination and information retention for various benefit programs. Neither system was designed specifically for health care eligibility functions, resulting in the use of different systems for different programs, duplicate data entry, and a largely manual, paper-based, eligibility determination process. This is in large part due to these systems' focus on other department business and the complexity of health care programs and eligibility policy.

Recognizing the shortcomings in the existing systems, DHS established goals for improving customer service, increasing efficiency, and improving program integrity by automating MHCP eligibility determinations. In 2000, DHS contracted with KPMG Consulting to determine the best approach for automating MHCP. Based on the DHS strategic IT direction at that time, the technology of existing legacy systems, and the proposed business vision, KPMG recommended that DHS develop a stand-alone health care eligibility system that leveraged Web technology. The business vision for the system included a high degree of eligibility policy automation to improve customer service and program integrity, as well as a related public website for use by clients and community partners to apply for health care, check eligibility status, select a managed care plan, and pay applicable premiums online.

In 2002, DHS issued a Request for Proposals (RFP) for an automated health care eligibility system. Among the nine qualified responses was a proposal from SSi North America Inc. (SSi). SSi partnered with Fox Systems, a nationally-recognized Medicaid consulting firm, on their proposal. After a period of negotiations, DHS entered into a contract with SSi in June of 2003 to design, build, and implement an automated eligibility system for health care programs. The project became known as "HealthMatch." The HealthMatch system was to provide an internal work flow component for staff, a client/partner website, an eligibility rules engine, system interfaces, and a financial component for accounts receivable.

The HealthMatch contract was amended three times. The first amendment, executed in May of 2005, added new project scope, increased the budget amount, and changed the name of the development vendor from SSi to "Albion, Inc." (Albion) after the SSi development group assigned to HealthMatch separated from SSi and was acquired as a wholly-owned subsidiary of

Cambridge Solutions Limited (part of the Scandent Solutions group). The second amendment, executed in December of 2005, added project scope and included provisions for improved project management, quality support, and vendor staffing. In April of 2007, the third amendment assigned the HealthMatch contract to ACS State & Local Solutions, Inc. (ACS) following ACS' acquisition of Albion. For the purposes of this report, the term "vendor" is used to refer to the SSi/Albion/ACS contractor group.

In early March of 2008, DHS exercised its option to terminate the contract with ACS due to insufficient progress and quality concerns. On March 4, DHS commenced the required 30-day notice period for contract termination. DHS executives directed the execution of a team to conduct a concurrent 30-day assessment to determine: 1) an overall status of the project; 2) a possible future direction for the project; and 3) corrective action steps for the recovery period. HealthMatch sponsors and project leadership identified key project assessment topic areas that were evaluated against four possible project continuation options. Key assessment topic areas included:

- State of HealthMatch project management
- State of HealthMatch systems requirements
- Staffing needed to successfully complete the project
- HealthMatch alignment with Medicaid Information Technology Architecture (MITA)
- Technical review of the @Vantage framework, under license from ACS
- Status of HealthMatch progress-to-date
- Budget strategies for continuation options

The team developed four high-level project continuation options to establish a framework for assessing future direction:

**Option A**: Keep @Vantage and continue development using State staff with contractor augmentation
**Option B**: Keep @Vantage and bring in a new development vendor via the RFP process
**Option C**: Discontinue use of @Vantage and develop a new health care eligibility system
**Option D**: Discontinue use of @Vantage and develop a new integrated eligibility system for multiple programs

Most assessment topics required in-depth data gathering and analysis, while a few required only data gathering. For those requiring analysis, DHS assessed the current status of each topic, industry benchmarks, the gap between current and ideal status, and impacts of the gap against the four project continuation options. Once the individual assessments and data gathering were complete, DHS aggregated impacts across the individual assessments for each of the project continuation options and categorized them as either a benefit or risk.

The DHS assessment team reviewed the topic areas (according to both the HealthMatch project's historical context and the current status of the topic area). Other than those specifically related to the separation from the vendor, the gaps and issues documented pertain to the period when the vendor was under contract to develop HealthMatch. However, since the contract with the vendor has been terminated, the recommendations and corrective action items are directed to DHS only.

# Recommendation

The most critical step the team made in assessing continuation options was to come to a recommendation regarding use of the @Vantage rules engine. The @Vantage framework includes a number of components in addition to the rules engine; however, the rules engine is the most critical to project success. The analysis findings resulted in a unanimous recommendation to pursue Option C – discontinuing use of the @Vantage rules engine and developing a new health care system. This recommendation is predicated on the high risks associated with the @Vantage system in terms of development time frames, ability to meet project critical success factors, and alignment with federal, State, and agency strategic IT direction.

# Decision

HealthMatch sponsors (DHS' senior management) considered the 30-day assessment team's analyses and recommendations and:

- Accepted several of the recommended directions
- Required further analysis and work in some areas
- Took action on the team's project management and requirements recommendations
- Accepted the project team's recommendation to discontinue development of HealthMatch using the @Vantage rules engine logic

DHS will ensure that sufficient IT, quality and project management experience is represented on the project by DHS or DHS-contracted staff regardless of any future vendor or contractor involvement.

As portions of the team identify future technical platforms, other portions of the current HealthMatch staff will complete business requirement documentation that will be the foundation of any future solution. This work and re-work will use the thinking and problem-solving accomplished during the last four years, but will capture and document requirements using industry standard processes, resulting in business requirements that any future option will be able to reliably use. HealthMatch sponsors expect this work to be completed by October of 2008.

# INTRODUCTION

## Project Background

The work assigned under the HealthMatch contract was to design, develop, construct and implement an automated eligibility system for MHCP. The contracted vendor was charged with designing and developing the HealthMatch system to provide functionality for:

(a) Case management activities
(b) A secure enrollee data history repository
(c) Financial control activities, including calculations, collections and accounts receivable
(d) Ease in program management to allow the addition and modification of new or existing health care programs to the HealthMatch system and resulting modifications to DHS legacy systems as needed

The contract specified 16 critical requirements for system abilities so that the new system could support current and future MHCP business needs. These criteria were among the standards used in analyzing HealthMatch for the purposes of this assessment report. The following excerpt from the contract lists three of the 16 critical requirements:

- Support of frequent changes in programs and eligibility policy, including legislative mandates. System design must permit program/policy changes to be implemented within several weeks
- Flexibility to enable the subject matter experts to make program and policy changes on the system with the understanding that major large-scale, program additions or enhancements may require technical support or assistance
- Functionality to permit STATE technical staff to perform ongoing system maintenance and development upon implementation of the software. This is based on ongoing knowledge transfer between CONTRACTOR and STATE staff throughout the duration of the project

The knowledge transfer requirement and need for subject matter experts to make system changes required a joint development effort between the vendor and DHS. The vendor proposed using a team of developers at their Off-shore Development Center (ODC) in Chennai, India. A DHS and State enterprise technology and management review determined that use of the ODC would be an acceptable approach to speeding up system development; however, DHS' need for knowledge transfer required that the vendor add a second development presence on-site at workspace provided by DHS facilities in St. Paul, MN.

The vendor provided project management leads, set the project schedule, and managed the project's development activities. The vendor provided staffing for the full software development lifecycle (SDLC). DHS provided project leadership to direct State resources, provided MHCP policy subject matter experts (SMEs) to assist with system requirements, design and testing activities, and established a team of developers who would receive knowledge transfer (KT) from the vendor in order to maintain the system upon completion of the contract.

# Contract History

## Original Contract

During original contract negotiations, DHS worked with vendor leadership to ensure that system development would meet DHS business needs. As DHS determined that the development approach initially proposed by the vendor was insufficient for KT activities, the vendor agreed to enhance the KT approach by increasing on-site development. This modification increased the contract amount by $1.4 million over the vendor's initial bid. Similarly, the vendor's original proposal for a "big bang" implementation was deemed high-risk, so DHS agreed to higher costs in exchange for a longer implementation period. When the original HealthMatch contract was executed in June of 2003, the final amount was $13,029,532.

Under Minnesota State law, no more than 90% of the compensation due under a contract may be paid until the State determines that all the terms of the contract have been satisfactorily fulfilled. In addition to the 10% hold back required by law, DHS retained an additional 3% of each HealthMatch payment.

Scope under the terms of the original contract was such that HealthMatch would support those Minnesota Health Care Programs that covered families with children, with the understanding that the remaining programs covering people who are elderly and/or disabled would be added at a future date. The contract's payment schedule was performance-based, with the vendor receiving payment only upon successful submission of project deliverables. The payment schedule followed milestones phases of the standard SDLC.

Deliverables produced by the vendor identified strategies and approaches for system development activities. Some of the deliverables the vendor produced under the original contract included:

- Project initiation report
- Project plans
- Knowledge transfer plans
- Communications plan
- Deliverable review process
- Joint Application Requirement (JAR) session plans and reports
- Quality manual and quality implementation plan
- ODC development procedures and plans
- Issues tracking process

- Defect tracking process
- Change control plan
- Risk management plan
- Technical architecture plan
- Testing strategy and master test plan
- Joint Application Design (JAD) session plans and reports
- Strategy documents for conversion, training, pilot, and implementation
- Physical database design
- @Vantage software delivery

Under the terms of the contract's software licensing agreement, DHS received free, perpetual license to use the @Vantage software upon completion of the design phase of the project. @Vantage software delivery was approved on 10/11/2004. Shortly after the HealthMatch contract began, the vendor dismissed the Fox Systems personnel assigned to the project, thereby severing the relationship with the Medicaid experts who had enabled the vendor to meet minimum DHS project qualifications and leaving a significant gap in the requisite skill set.

# Contract Amendment #1

The first HealthMatch contract amendment, executed in May of 2005, incorporated changes agreed to by the vendor and the State under Change Order #001, which had been approved on 1/4/2005. The amendment changed the name of the vendor firm from SSi to Albion, extended the expiration date of the contract from 5/1/2005 to 12/31/2006, and added $2,421,732 to the contract amount, bringing the total contract amount to $15,451,264. In exchange for the additional funds, the vendor agreed to incorporate functionality for all Minnesota Health Care Programs into the first HealthMatch system implementation. Functionality added under the contract amendment was for programs covering people who are elderly and/or disabled, and were collectively referred to as "Release 1A" programs. By adding 1A programs to HealthMatch, DHS would be able to transfer all health care functionality off of the MAXIS legacy system following HealthMatch implementation.

In advance of the change order and contract amendment, and at the request of DHS, the vendor conducted an impact assessment to determine how the inclusion of Release 1A programs would affect development of the HealthMatch project. The change order stated that the vendor would "assess MAXIS support for health care coverage, including application/intake, eligibility, unsupported programs, reporting, and interface strategy to ensure that existing MAXIS functionality is appropriately transferred to HealthMatch." The approach under the change order stated that the vendor "has agreed to bring in additional staff as needed for related project activities so as not to negatively impact parallel activities in progress for the original Release 1 scope. 1A activities will take place at the DHS offices in St. Paul. No work under this change order will take place at Albion's Off Shore Development Center (ODC) in India. Knowledge transfer activities will continue as per the original project direction. The project team will follow the established project management and software development methodology for all phases of system development for Release 1A. This includes providing an updated project plan and timeline upon completion of each milestone phase of development. The approach incorporates the following phases of software development:

- Project initiation
- Requirements analysis
- Technical design
- Software build
- Testing (includes unit test, integration test, modular acceptance test, full user acceptance test, and Beta test)
- Training (modifying and implementing training plan to include Release 1A programs/functionality)
- System documentation
- Pilot, implementation and rollout
- System acceptance and closure"

The change order further stated, "If any modifications made to the HealthMatch system under this change order result in HealthMatch system defects or other such limitations in the system's effectiveness, those problems will be fixed by Albion Government Services at no additional cost to DHS." The change order specified 29 1A project deliverables that the vendor would provide to

DHS in exchange for payment. These deliverables followed the standard SDLC. As of the date of the termination of the HealthMatch contract, the vendor had submitted 19 discrete 1A deliverables, and three other deliverables that combined 1A scope with overall project scope. These deliverables were primarily for project initiation, requirements gathering and system design. Outstanding 1A project deliverables were those related to software construction and testing.

After the 1A contract amendment was executed, the HealthMatch project experienced considerable delays in the delivery of product, a high level of defects in the system code being developed, and a high turnover of vendor staff. By July of 2005, vendor staffing decreased to the point that all staff assigned to 1A had either been dismissed by the vendor for performance issues or had resigned from the vendor firm. Vendor staff explained that part of the staffing issues may have been attributable to the acquisition of the vendor team by the new parent company, Cambridge Solutions / Scandent Solutions.

In an effort to address ongoing concerns about vendor performance in the areas of staffing, project management and quality assurance, DHS and the vendor drafted language related to project improvements for a subsequent contract amendment.

## Contract Amendment #2

The second contract amendment, executed in December of 2005, stated that DHS and the vendor had "developed a clearer understanding of the complexity of Minnesota's Medicaid environment and agree on the need to increase time and effort to ensure successful implementation and rollout of HealthMatch." The amendment extended the contract expiration date from 12/31/2006 to 5/28/2008, modified system functionality to incorporate legislative and other changes to MHCP policy, decreased the number of languages supported by the client/partner website from 11 to two, and required a "Performance Proof of Concept" (PPOC) to demonstrate system performance abilities for the eligibility rules engine. It also added new provisions for project management, and enhanced the quality assurance (QA) approach by requiring quarterly checks of QA performance by an independent, third-party entity, an audit of compliance with HIPAA (Health Insurance Portability and Accountability Act) security provisions, and updates to 20 deliverable documents associated with the project's approach to quality. The amendment further made changes to the contract's key personnel provisions and added new language related to the vendor's responsibility to adequately staff the project. The amendment increased the contract amount by $6,934,289, bringing the total contract amount to $22,385,453.

The new system functionality related to legislative changes and the updates to documents required under the enhanced quality assurance provisions were collectively known as "1B" changes. Under the second contract amendment, the vendor conducted 1B Joint Application Design (JAD) sessions, completed the PPOC with the assistance of DHS staff, and updated the quality assurance deliverables. Per amendment #2, the vendor was required to submit a new project plan that met State approval on or before 1/13/2006; however, the vendor was unable to successfully submit the project plan until June of 2006. According to that plan, the vendor was to have completed construction for all functionality, including 1A and 1B eligibility rules changes, by 8/30/2006, with system defects to be resolved by 1/15/2007.

The project experienced significant problems in incorporating the policy and legislative changes

agreed to in the contract amendments, 1A and 1B system changes were not easily integrated into the original system scope as had been planned, and there were numerous delays in the delivery of HealthMatch code. The quality of code continued to be problematic. As of 5/16/2006, 2273 code defects had been identified and resolved by the on-site (St. Paul) HealthMatch team, and 930 defects remained unresolved. Given that only 35% of designs had been tested at that time, DHS management was concerned about further delays in development, and requested that the vendor take additional steps outside those dictated by the contract amendment to improve quality. While not contractually mandated, the vendor determined that the project would be better served by discontinuing use of the ODC for all HealthMatch code. In the fall of 2006, the vendor moved HealthMatch development to St. Paul, using the ODC team only for code that was specifically related to the underlying non-HealthMatch @Vantage framework.

The contract's revised payment schedule continued to be performance-based, with the vendor only receiving payments upon successful completion of project deliverables. The vendor asked DHS if the payment structure could be changed. In an effort to maintain a positive vendor-client relationship, DHS agreed to restructure payments for some deliverables under a series of Memoranda of Agreement (MOA) within the constructs of the HealthMatch contract.

### Memorandum of Agreement #1
Under the first MOA, in July of 2005, DHS agreed to breakdown the single, over-arching payment of $2,902,550 for software construction into 25 smaller amounts to allow for payment of code delivered in a modular format. The proposed schedule was based on code modules delivered according to system functionality. The vendor and DHS developed a Deliverable Expectation Document (DED) for software construction, which addressed terms for the successful delivery of code. Under MOA #1, the vendor successfully submitted one module for payment, for which the agency approved a net payment of $110,012 in August of 2005.

### Memorandum of Agreement #2
After the first module of code was delivered under MOA #1, the vendor stated that it was not practical to produce future construction deliverables based on system functionality. Instead, the vendor requested DHS pay based on delivery of system builds. These builds were comprised of code developed using project design documents (DDs) as the primary artifact. The vendor estimated that there would be approximately 550 DDs used to develop remaining HealthMatch code, and proposed that they be paid an equitable amount of $42,000 for code built from a group of 10 DDs. The Department agreed to this arrangement under the second Memorandum of Agreement, dated December of 2005. Under this arrangement, DHS paid $336,000 for the delivery of seven builds (80 DDs) in March of 2006.

### Memorandum of Agreement #3
The vendor requested that the payment associated with the enhanced quality assurance deliverables required under contract amendment #2 be broken down from one payment of $800,000 (gross) into two separate payments according to their deliverable production schedule. In December of 2006, MOA #3 was enacted to allow the vendor to be paid $600,000 gross ($522,000 net) for the first set of 18 enhanced quality assurance deliverables, and $200,000 gross ($174,000 net) for the remaining two deliverables.

## Assignment Agreement & Contract Amendment #3

In April of 2007, DHS agreed to the assignment of the HealthMatch contract by Albion to ACS State and Local Solutions. The transfer of the vendor contract was formalized by both an "Assignment and Assumption Agreement" dated 4/10/2007 and by the third amendment to the HealthMatch contract, signed by the DHS Commissioner on 4/11/2007 and by the ACS senior vice president on 4/25/2007.

## Contract for an Independent Verification and Validation (IV&V)

The original HealthMatch Advanced Planning Document (APD) and RFP indicated that DHS planned to contract with an outside entity to conduct an Independent Verification and Validation (IV&V) of the HealthMatch project. The purpose of an IV&V is to ensure that a system accurately meets agreed-upon system specifications and business requirements, and that the system is being built with sound business and IT development processes to be reliable and well-engineered. In June of 2007, the Department issued an RFP for an IV&V of HealthMatch. That contract was awarded to Deloitte Consulting (Deloitte), and IV&V activities with Deloitte commenced in October of 2007. Many of Deloitte's IV&V findings have been incorporated into the report.

## Other Changes

In the interest of mitigating continued project delays, the DHS and vendor management teams discussed options for phasing the implementation of HealthMatch functionality. The teams conducted a high-level analysis of possible ways to release one portion of the HealthMatch system in advance of full system deployment. The teams had referred to an initial system release that would deploy the eligibility rules engine and worker interface portion of HealthMatch, as "Version 1." Subsequent deployment of the client/partner website and some system interfaces was referred to as "Version 2." While this option was deliberated, DHS never formalized a request to phase implementation via either the contract amendment or change order process.

# Assessment Purpose

Following ongoing concerns about both the quality of the product and a lack of sufficient progress in system development, DHS exercised its option to terminate the contract with ACS in early March, 2008. On March 4, DHS commenced the required 30-day notice period for contract termination. DHS executives directed the execution of a concurrent 30-day assessment to determine: 1) an objective overall status of the project; 2) a possible future direction for the project; and 3) corrective action steps for the recovery period.

# Assessment Scope

The scope of this project assessment was to evaluate the HealthMatch project and current product. Given the history of the HealthMatch project, the majority of this assessment covers the time period during which the vendor was developing HealthMatch. The focus of this review is not to assign culpability, but rather to place context around development activities, assess the state of the current HealthMatch system, and determine options for project continuation.

HealthMatch sponsors and project leadership identified critical project topics for in-depth assessment activities. Assessment activities included assessing critical project topics against industry standard benchmarks as well as collecting HealthMatch specific data that would help inform a decision on a directional path for the project. Topics to be assessed included:

- State of HealthMatch project management
- State of HealthMatch requirements
- Staffing needed to successfully complete the project
- HealthMatch alignment with Medicaid Information Technology Architecture (MITA)
- Review of the HealthMatch technology
- Status of HealthMatch progress-to-date
- Budget strategies for continuation options

# Assessment Methodology

DHS assembled a 30-day assessment team to evaluate project and system needs and status as compared to the desired outcomes of the HealthMatch project *(see the Assessment section)*. Numerous individuals provided input for the assessment, including: HealthMatch project management, business and technical staff; DHS Medicaid Information Technology (MITA) team members; Health Care Operations (HCO) budget personnel; staff from the Deloitte Consulting HealthMatch Independent Verification and Validation (IV&V) project; and a representative from the State Office of Enterprise Technology (OET).

The assessment team divided the above topic areas for assessment into two types of deliverables with associated tasks. One deliverable type required data gathering, analysis, and conclusions. The other deliverable type required data gathering and presentation. In order to increase the validity of conclusions, the team developed a framework for conducting the true assessment activities. The team produced a deliverable for each assessment topic.

As a first step, the assessment team asked HealthMatch sponsors to identify the primary options for continuing system development. These options provided the framework for comparison against the current project state for each of the assessment areas. While these options are the cornerstone of the assessment methodology, they do not conclusively represent all the viable options for project continuation. The four options for project continuation are:

**Option A**: Keep @Vantage and continue development using State staff and contractor augmentation
**Option B**: Keep @Vantage and bring in a new development vendor via the RFP process
**Option C**: Discontinue use of the @Vantage rules engine and develop a new health care eligibility system
**Option D**: Discontinue use of the @Vantage rules engine and develop a new integrated eligibility system for multiple programs

The team also developed scope assumptions covering both functionality and programs as part of the overall assessment methodology.

# System Scope – Functionality

Functionality for the system falls into three primary components:

1. Eligibility rules engine
2. Workflow (worker interface)
3. Client portal (also known as Client /Partner Website, or CPWS) that would allow clients to apply on-line for MHCP and provide some limited functionality for reporting changes

Project staff had previously referred to the worker interface/rules engine as HealthMatch Version 1, and the CPWS and some interfaces as Version 2. Project continuation assumes both Versions 1 and 2 will be released jointly, along with other core system functionality for reporting, interfaces, batch process capabilities, and integration with the DHS Electronic Data Management System (EDMS).

# System Scope – Covered Programs

For Options A, B and C, the system would be developed to cover all of MHCP, as had originally been envisioned for the HealthMatch Project. For Option D, the system also would support eligibility determinations, a client portal, and worker interfaces for the cash, child care, food support, health care, and foster care programs. This chart summarizes assumptions for the options relative to project scope, management, staffing, and technical platform:

|  | **Option A** | **Option B** | **Option C** | **Option D** |
|---|---|---|---|---|
| **Project Scope** | HealthMatch Version 1 and 2 | HealthMatch Version 1 and 2 | Health Care<br>- Programs Scope<br>- Features & Functions | Departmental priority across all areas of eligibility |
| **Management** | DHS | DHS and Vendor | Unknown | Unknown |
| **Staffing** | Contractor – Staff Augmentation | DHS and Vendor | Unknown<br>- DHS<br>- DHS/ Vendor<br>- Vendor/ DHS | Unknown |
| **Technical** | @Vantage Framework | @Vantage Framework | not @Vantage | not @Vantage |

The assessment team used standardized templates in conducting activities. Team members could deviate from the standard template, if it did not meet the needs of a particular topic. The assessment team reviewed the topic areas according to both the HealthMatch project's historical context and the current status of the topic area. Other than those specifically related to the separation from the vendor, the gaps and issues that the team discovered pertain to the period when the project was jointly managed by both DHS and the vendor. However, since the contract with the vendor has been terminated, the recommendations and action items are directed to DHS only.

Once the team completed assessments for each topic area, they were able to identify benefits and risks associated with each option. The team weighted benefits and risks and tabulated an overall score to identify a recommended option for project continuation. The *Recommendations and Decisions* section of this report contains a detailed description of the recommendation selection methodology, the final recommendation, and the HealthMatch Sponsor decision.

# ASSESSMENTS

## Project management/software methodology/project metrics

### Findings

Best practices were not being enforced or adhered to consistently across all project management process areas (project governance, planning, schedule, scope, cost, management, quality management, communications management, and risk and issue management). DHS compared current project status and historical project processes against industry-standard project management best practices to determine the following recommendations:

### Recommendations

- Align HealthMatch's reporting structure with functional roles, and refine roles and responsibilities, lines of authority, and processes for rapid issue escalation and decisions
- Institute a consistent performance management framework from sponsor level to staff, tying project performance to scheduled DHS and vendor evaluations, and using defined project management and software development metrics to achieve greater accountability through performance reporting
- Create an "on-boarding" process to quickly transition new staff into fully engaged, productive team members. Include training on the business vision, general technical concepts, and project management
- Enhance the project communication plan to better inform stakeholders by:
  - Communicating performance metrics and challenges across the project
  - Sharing project plan updates across the project
  - Sharing status of mitigation strategies and tracking effectiveness
  - Incorporating more face-to-face meetings with leadership
  - Better establishing effective communication across project functions.
- Improve quality processes and artifacts by:
  - Enhancing project management and software development processes to address current gaps and improve current practices
  - Prioritizing, focusing and rewarding quality outcomes
  - Ensuring that adherence to processes is a value embraced throughout the project team
  - Institutionalizing best practices, software development methodologies and performance tracking and measurement as "standard operating procedures"
- Ensure strict software development methodology and processes
- Analyze each business requirements in the project recovery plan and lock down each requirement at close of recovery period to ensure a basis for change management and testing
- Include in the project recovery plan definitions of the processes, procedures, artifacts, metrics, trend data, etc.
- Ensure the communication plan covers processes & procedures for each team to receive project information in a consistent manner that supports status reporting and decision-making

# Requirements Lifecycle Management

## Findings

To-date, HealthMatch project requirements have been identified and documented specifically within the limitations of the ACS @Vantage framework. Existing requirements may not translate to another vendor, business model or continuation option. Because many HealthMatch requirements were captured in the context of @Vantage limitations, existing requirements need to be reviewed regardless of which project continuation option is selected.

## Recommendations

DHS has compared the HealthMatch approach to requirements management to industry best practices. DHS must identify and document a comprehensive list of requirements before proceeding with a continuation option. All continuation options rely on a complete set of reliable requirements. Recommendations for requirements lifecycle management are:

- Coordinate all efforts to get requirements identified, baselined, and approved to increase the likelihood of project success for any continuation option
- Compare existing requirements documentation with Skinners, design documents, Rational Rose models, and test cases to ensure synchronization of application code to meet DHS business needs. Then, baseline these documents. Once all requirements and design documents are in synch, the team can be confident that application code will meet DHS business needs
- Re-examine the requirements for the rules engine and hierarchy to see where improvements could be made
- Hire Requirements Analysts (industry standard 'Business Analysts') who possess the skill-set to write and manage changes to requirements
- Adopt and enforce a requirements management process that keeps requirements up-to-date as the project changes. Once this process is defined, staff can finalize the Requirements Management Plan and set up the structure in RequisitePro to facilitate requirements changes and traceability. These efforts could be accomplished during the recovery period.

Regardless of which project continuation option is chosen, these efforts will require the incorporation of new skill-sets on the project team through training and hires.

# Staffing

## Findings

HealthMatch staffing and position descriptions for HealthMatch were not adequately defined or supported to meet business requirements and timelines.

## Recommendations

To assess what skills would be required for project continuation options, DHS compared generic, industry standard job descriptions for software development activities to existing HealthMatch staff, (the team did not focus on former vendor staff skill sets). The team measured skill sets, assessed existing staffing levels, and defined gaps in skill sets. The HealthMatch project team must have the following qualities to achieve success:

- **Focus staff on the right things and the right priorities**
  Baseline all project artifacts and focus on acceptable level of requirements to meet the business need, and then enforce the change management process for scope changes. Provide clear direction for staff on tasks, milestones, role and responsibilities to re-energize the project and get staff commitment.

- **Put the right people and team in place**
  Staff the project with people with solid software development skill sets. Many hardworking individuals on the project have been placed in positions that require additional education and training to achieve the level of skills necessary on a software development project. Education and training takes time away from completing the tasks on a project plan and consequently, impacts the timeline. Going forward, it will be necessary for project senior leadership to balance the need to hit project deadlines against the need to educate staff. Skilled software development staff will be needed to mentor and train DHS staff for ongoing maintenance of HealthMatch and to achieve project milestones. There has been success with this model on the DHS development team, and it should be replicated in the business teams. As part of the project, a skills assessment methodology should be adopted to assist project management in identifying training needs for staff members.

- **Communicate HealthMatch as a project, not a DHS business unit**
  Successful software development projects have a number of staff characteristics that must be present on the project team. DHS culture sometimes carries with it a component of loyalty by division and relationships rather than loyalty to a project. For purposes of bringing success to HealthMatch, the staff members must see themselves as a team. Along with their skill sets and a competitive spirit that drives them to desire success, these staff members must be able to work longer hours, live with ambiguity, follow project management direction, be flexible, follow through on tasks, be open to change and, most importantly, view themselves as a team.

# MITA Framework & Principles

## Findings

Key components of the federally implemented Medicaid Information Technology Architecture (MITA) framework include:

- Service Oriented Architecture (SOA), a business-centric IT architectural approach that supports integrating business as linked, repeatable business tasks, or services
- Open technology and standards, to facilitate integration of commercial-off-the-shelf (COTS) solutions and the re-use of solutions within and among states, resulting in lower development costs and reduced deployment risk

To conform to the key principles of MITA, HealthMatch must be modular, extensible, and reusable. Little of the @Vantage framework is developed using MITA principles. Some components of HealthMatch code may be utilized in a re-worked eligibility determination project. DHS may be required to pay for subsequent updates to the framework.

Prior to 2005, there were no MITA standards. HealthMatch development began before 2005. Presently, there are no commercial-off-the-shelf (COTS) health care eligibility determination product solutions that are considered "MITA-standard."

## Recommendations

- Require the incorporation of MITA principles in all future DHS health care technology projects
- Determine what can be harvested to re-form the HealthMatch project into a MITA format
- Complete business requirements and rules in Unified Modeling Language (UML)/Use Case format and story boards
- Examine alternative rules engines available to compare with the @Vantage rules engine
- Utilize technology best practices and open standards
- Consider other choices within the open standards technology toolset
- Pursue MITA-aligned DHS technical standards wherever feasible

# Technical Viability of @Vantage Framework

## Findings

@Vantage is a proprietary set of components that was designed with features focused on health care, cash, and food stamp programs. A number of these features are not found in commonly-known frameworks. These features are the core strength of the @Vantage framework – it is a "ready to use" collection of features/components. However, from a technical viewpoint, some of the @Vantage components have features that are incomplete, error prone, and not always efficient to use. DHS, OET, and Deloitte have conducted separate technical reviews of various @Vantage components and features for the following criteria:

- Scalability
- Maintainability
- Reliability
- Architecture

- Performance
- Usability
- Extensibility

The team identified four industry-standard criteria. Because the @Vantage framework was not built using proven, open, or commonly used components (it is proprietary and does not comply with open standards), the first three criteria were negated. The team therefore only evaluated HealthMatch against the fourth benchmark – completeness.

Compounding @Vantage issues, the vendor implemented HealthMatch with poor quality, a lack of technical management, and at times a lack of correct use of @Vantage features. Many components of the @Vantage framework failed to meet assessment criteria. Two components – rules design and rules development – failed to meet all of the assessment criteria.

The design required by the @Vantage rules engine creates a complex and lengthy process. This process requires creating many artifacts, which greatly increases the time, cost, and error rate. HealthMatch needs a more time-affordable approach with fewer artifacts, and hence less room for error. If HealthMatch does not use the @Vantage rules engine, it is less feasible to use any other part of @Vantage.

Compared to the leading open source frameworks, @Vantage is incomplete.

## Recommendations

Acknowledge current industry trends to use free, open source, proven frameworks as much as possible in solving business' needs. Evaluative benchmark criteria to ensure that HealthMatch can employ technology that:

- Can be proven to integrate with other frameworks
- Is open (free open-source or commercial with open-standards support)
- Is commonly used, to ensure a vibrant support structure, community, and a ready pool of talent
- Is feature-rich, relatively bug-free, and is technically easy to use

# Progress to Date

## Approach and Scope

Subject matter experts (SMEs) on the HealthMatch team gathered the data for this assessment in a number of areas on the project. These areas are:

- Requirements
- Quality Assurance
- Web Software – Burn 1
- Rules – Burn 2
- Create Premiums [AR] – Burn 3
- Apply Money [AR] – Burn 4
- Case Maintenance [Simple] – Burn 5
- Case Maintenance [Complex] – Burn 6
- Case Maintenance [Intermediate] – Burn 7
- Historical Data – Burn 8

- Reports and COLA – Burn 9
- System Operations – Burn 10
- Conversion – Burn 11
- Training
- Automation
- Integration Testing
- User Acceptance Testing
- Client Partner Website
- Security

Team members examined a number of project artifacts to determine the current state of the software and the project status. The project artifacts included requirements documentation, testing scripts and results, project deliverables, project plan estimates, planning documents, project spreadsheets, code artifacts, design documents (including Skinners and detailed design [DD] specifications).

## Conclusions

A number of discrepancies were found during this assessment between the level of completion that had been indicated in the project plan and the actual findings while analyzing the project artifacts.

The team has discovered in a number of areas that the programming has not been completed to the current version level of the design document. In some cases, this is several versions behind the current design version even though the project plan tasks had been marked at 100% coding completion. The time allotted for the assessment did not allow sufficient time to examine all source code and compare to detailed design documents. To definitively estimate the level of effort remaining, time would need to be spent comparing the source code to the design documents and test scripts. The software would then require retesting to verify that all elements of the design have been coded and tested.

The development team discovered a large number of unit test defects on the Web portion (Burn 1) of the software that although present in the ClearQuest defects database, were not readily apparent, nor had ever been resolved and closed. These defects totaled 389, and ranged from level 1 to level 4 in severity. These unit test defects were not reported at the project level even though the work associated with the defect were being reported at 100% complete on the project plan. A testing effort would need to occur on the project to retest all of the screens and resolve

defects. A value for defect testing of each screen has been calculated and lowers the current representation of the project plan value for completion.

During the data gathering for this assessment, the team also discovered a number of other areas that will require further analysis to definitively estimate the level of effort remaining on a given component. The business rules team has determined that the design artifacts, such as Skinners, may not actually contain all of the 1a and 1b changes as had been reported in the project plan and would require a walkthrough to determine the level of completion on these artifacts.

The user acceptance test team discovered during their data gathering activities that all of the unit test scripts have not been updated to the current version of the software as reported. Estimated hours for this activity have been included in the level of effort remaining.

While requirements and design documents will require a project recovery period to baseline scope, these artifacts are fully usable in continuation Options A and B, which use the @Vantage framework, and follow the current project methodology.

Requirements, once reviewed and base-lined, are reusable in any of the continuation options.

In general, reusability of project artifacts is most applicable to the @Vantage framework options.

The reusability of the requirements remains high for any options chosen, but design documents will be less usable in any continuation option that brings in another vendor or different technology.

Quality assurance artifacts are reusable at this time under an ISO 9000 framework. Should another quality measurement or methodology be used on the project, there would be some rewrite on the project. In some cases, this could be significant.

All coding artifacts are reusable in Option A and Option B. The reuse declines dependant on another vendor option or a change in a technology component.

In addition to artifacts, there are reuse components on the project that may not be quantifiable, but are of value to the project. There is a great deal of knowledge that has been gained on the team, both in terms of business knowledge and software development practices.

# RECOMMENDATIONS & DECISION

## Methodology

All assessments outlined in the *Assessments* section of this report were used as inputs in developing a recommendation for continuation. As part of the validation process for decision-making, the assessment team summarized and ranked the relative importance of the benefits and risks of the various continuation options for each assessment area. The detail provided during this validation process was used to develop timelines associated with each option and more fully inform the budget analyses.

The validation and ranking process revealed patterns of risk and benefit that contributed to a final recommendation. Note that because team members were most intimately familiar with the @Vantage product and processes that would comprise Options A and B, the team was able to identify more benefits and risks with those two options. There are significantly more "unknown" associated with Options C and D, than with Options A and B. Option D has the most unknown factors associated with benefits and risks.

## Recommendations

### Summary of Assessment Conclusions

As noted above, the assessment team validated and weighted the benefits and risks associated with each continuation option. Risks and benefits were ranked on a scale from 1-3, with 3 being the highest risk or benefit. Risk totals were then subtracted from benefit totals for each option, revealing the relative viability of each option.[1] DHS weighed the risks and benefits, and determined that Options A, B and D had higher risks and lower benefits. Option C resulted in a lower risk, higher benefit rating.

### Recommended Continuation Option

The most critical step the team took in assessing continuation options was to make a recommendation regarding continuing use of the @Vantage rules engine. The technical assessment results strongly point towards discontinuing the use of the @Vantage eligibility rules engine. Additionally, the risk/benefit validation results described above illustrate that Option C – the main feature of which is continuing HealthMatch development without the @Vantage eligibility rules engine – have higher benefits and lower risks than the other identified continuation options. Based on the outcomes of the technical assessment, and informed by the risk/benefit validation results, the team's unanimous recommendation is to discontinue the use of the eligibility rules engine of @Vantage.

In the time period allowed for this assessment, the team did not have the opportunity to thoroughly assess the scope, technology, budget or timelines that would be required in order to launch an integrated eligibility system initiative (Option D). At the time of the publication of this

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[1] Since the team was able to identify more risks and benefits for some continuation options than others, they also averaged the risks. The results of these calculations were similar to those with the risks and benefit totals.

report, DHS staff were unable to find an example of a stand-alone health care eligibility system that was either recently implemented or under development. States that appear to have the most success in developing eligibility systems are taking a modular approach to development, often by putting a front-end "wrapper" around separate legacy applications. Deployment of a stand-alone health care eligibility system could be planned as the first step in an iterative approach to integrating DHS systems. An iterative, modular approach to development is recommended by Gartner.

DHS business goals for serving clients and supporting county staff would be best served by the scope presented in Option D; however, the magnitude of the scope combined with budget and timeline estimations are prohibitive. The assessment team recommends that the Department elect Option C, with a long-term goal of moving toward Option D.

# Decision

HealthMatch sponsors (DHS' senior management) considered the 30-day assessment team's analyses and recommendations. Sponsors accepted several of the recommended directions while requiring further analysis and work in some areas before defining the future path to a Minnesota automated healthcare eligibility system. In weighing the team's technical analysis of the testable portions of the technology against Minnesota's clearly defined business need for a large-scale, easily maintained, multi-user system, HealthMatch sponsors accepted the project team's recommendation to discontinue development of HealthMatch using the @Vantage rules engine logic. Sponsors assigned the team to investigate alternative technical platforms, including those currently available to the State.

Project sponsors also took action on the assessment team's project management and requirements recommendations. Prior to determination of a new technical path, DHS will orient all project staff to an industry standard project structure which will include an experienced IT Executive with singular accountability for all project (internal and external staff) performance. Reporting and roles will be transparent and supported. Performance reporting will be expected at all levels of the project, not merely the upper levels. Communications and performance metrics will be project-wide and a project "on-boarding" process will be established and maintained to ensure project quality and continuity. DHS will ensure that sufficient IT, quality and project management experience is represented on the project by DHS or DHS-contracted staff regardless of any future vendor or contractor involvement.

As portions of the team identify future technical platforms, other portions of the current HealthMatch staff will complete business requirement documentation that will be the foundation of any future solution. This work and re-work will use the thinking and problem-solving accomplished during the last four years, but will capture and document requirements using industry standard processes, resulting in business requirements that any future option will be able to reliably use. HealthMatch sponsors expect this work to be completed by October. Its completion will parallel and converge with the decision-making process regarding HealthMatch' future technical platform, the agency's health care business process redesign work and assessment of the State's administrative capacity.