



City of Houston CSMART III Independent Assessment

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1 Background

In approximately 2001, the City of Houston (CoH) Municipal Court began to transition from a mainframe system case management system to a client/server commercial off-the-shelf (COTS) solution. The replacement system encountered operational and technical challenges and CoH took measures to replace it with a City-developed system. Starting in 2007, CoH sought the services of The MITRE Corporation to conduct independent assessments that address problems or issues resulting from efforts to procure automated solutions for the Court's operations. These independent assessments were performed at different stages of the products' life cycles and covered different assessment factors.

MITRE's first independent assessment, conducted in 2007, consisted of an end-to-end performance assessment of the COTS integrated case management system. MITRE identified significant issues with the design and implementation of this system.¹ In December 2010, MITRE performed an "early-look" independent assessment of the Courts System Management and Resource Technology (CSMART) system engineering approach, processes, software development methodology, quality assurance (QA) plans, business readiness, and technical risks. At that time, MITRE concluded that the CSMART project would likely achieve Go Live in September 2012 if identified risks were mitigated and specified concerns addressed.²

In November 2011, at CoH's request, MITRE conducted a "progress and program performance" assessment of the CSMART project. MITRE concluded that the major concerns and risks identified in the previous assessment remained largely unchanged and identified specific problems concerning resources, planning, schedule, and staffing. MITRE believed that continuing the CSMART project under CoH's leadership offered the best alternative for CoH to provide the automated capabilities required to support the Municipal Court operations. However, this recommendation was contingent on CoH's willingness and ability to make strategic and final decisions on the performance, schedule, and cost of the CSMART project.³

The project is now near completion and the CoH executed an agreement with a contractor, Sogoti USA, LLC, to complete the development of the CSMART software and then maintain it. CoH requested MITRE acquisition and technical to review the contract terms and to assess the risk they might entail.

1.1 Scope

The work statement in The MITRE Corporation "CoH CSMART Contract Evaluation" describes the scope of this independent assessment as follows:

- MITRE will review and assess the technical requirements and process requirements of the contract and the effectiveness of CoH in providing direction to Sogeti and monitoring Sogeti's performance.
- MITRE will assist CoH in evaluating Sogeti's technical and systems engineering capabilities to meet the specifications identified in the proposed CSMART Support contract and to determine the major technical and cost risks.

¹ City of Houston Municipal Court Case Management System Performance Assessment, The MITRE Corporation, September 2007.

² City of Houston CSMART Assessment, The MITRE Corporation, March 21, 2011.

³ City of Houston CSMART Assessment II, February 2012.

2 Contract Review and General Observations

MITRE interviewed the teams and staff identified in Appendix A. MITRE also reviewed the “Third Amendment to the Agreement for a Case Management System for Municipal Courts” as well as other documents provided by CoH and Sogeti. These interviews and documents provided MITRE with a framework for assessing the current status of the effort and predicting the likelihood of future success.

MITRE still believes that CSMART represents the optimum solution to meet CoH’s needs for a new case management system to support Municipal Court operations. While the development costs are higher and implementation is taking longer than CoH originally estimated, MITRE believes that the Municipal Court operations will benefit from the system. This opinion is based on the progress CoH has made in resolving past issues and risks as well as the positive change in the perception of outcomes expected from CSMART. MITRE noted that CoH has mitigated many of the prior risks and concerns identified in the prior assessment. In this document, MITRE presents new considerations and risks, but concludes that CoH and Sogeti can complete the steps necessary to mitigate them.

2.1 Contract Review

CoH and Sogeti documented the agreement terms and statement of work in multiple city ordinances. The first ordinance established the system design and development services that Sogeti would provide,⁴ while the fourth ordinance changed the contract from one based on time and material to a fixed-price instrument.⁵

The scope of the Sogeti support, including the fixed-price structure, is based on the Product Backlog in the agreement. The third amendment of the agreement states that “CoH is engaging Sogeti to complete development and provide post production support and maintenance of CSMART.” The amendment identifies two phases: a development and production phase and a production support and maintenance phase. A Product Backlog and Release Map contain the prioritized requirements and the anticipated grouping of those requirements into Sprints and Releases.

MITRE identified three areas in the contract that may present challenges in the development and maintenance of CSMART. These areas include implementation of some of the roles and responsibilities, aggressive scheduling, and definition of defects.

2.1.1 Roles and Responsibilities

The agreement identifies CoH’s and Sogeti’s roles and responsibilities, including the key staff. In Phase 1, the project governance includes an Executive Steering Committee for strategic oversight and direction, project sponsor team for functional oversight, and a Project Management Office (PMO), led by CoH and Sogeti Program Directors, to handle the daily management of the project. For Phase 2, the project governance changes to an engagement structure.

MITRE believes that both CoH and Sogeti clearly understand the roles and responsibilities. The Executive Steering Committee and the PMO appear to be meeting the objectives and fulfilling the roles assigned to them. However, as past independent assessments revealed, CoH and Sogeti continue to face difficulties in retaining the quality personnel necessary to fill some of the

⁴ Ordinance No. 2009-0863, City of Houston

⁵ Ordinance No. 2013-0132, City of Houston

management, technical, and business process roles. MITRE specifically noted challenges with the project sponsor team and Business Analysts (BAs). The members of the project sponsor team do not clearly understand their roles, and some of the BAs have limited experience and knowledge of court operations. MITRE also noted that the agreement did not establish an overall system integrator or systems engineer who would manage and monitor the technical and programmatic aspects of both CoH and Sogeti activities and responsibilities.

2.1.2 Schedule

Sogeti is using an iterative development process that features a 13-week release cycle. This cycle includes four weeks for requirements validation, five weeks for development, and four weeks for testing of the release. The project includes two major development and production releases. During Phase 1, a 12-week User Acceptance Test (UAT) phase follows integration testing; during Phase 2, an 8-week UAT phase will follow integration testing. The schedule in the agreement shows that Sogeti will complete Release 6 by November 2013 and sign-off for Phase 1 will occur in June 2014. For Phase 2, Release 9 is shown as being completed in November 2014.

MITRE noted that Sogeti has not achieved the 13-week release cycle and believes that this schedule is not realistic without major changes to the current processes and/or a significant increase in the number and availability of Product Owners (to refine requirements and perform testing). The CSMART team has modified the release schedule, but has not modified the agreement between CoH and Sogeti to reflect this change. CoH and Sogeti are conducting an analysis to confirm that no items in the backlog assigned to Release 6 (the final release before Phase 1 code is complete) are actually required for Go Live, and that all of those items could be deferred to Phase 2 without impacting the original planned Phase 1 Go Live date.

2.1.3 Defects

The Agreement includes a 30-day warranty period. Sogeti is required to correct all deliverables and defects identified during this warranty period. Defects are defined as “a discrepancy between the actual and expected results of a test performed to exercise functionality in the system during the quality assurance process. Defects do not include any mutually agreed upon change to the design.”

In the agreement, for Phase 1:

Acceptance will be based upon passing City’s predefined test scenarios and related test cases with no Level 1 defects and Level 2 Defects. Upon completion of the 4-week Acceptance period, CoH shall have three days to review, inspect, accept or reject the deliverables and such acceptance or rejection by CoH shall be in writing. Any exceptions must be logged as defects or backlog item to be included in the project backlog.

For Phase 2, acceptance is limited to the deliverables.

MITRE believes that the definition and interpretation of defects will be critical to the implementation and acceptance of CSMART. During the interview process, some CoH interviewees expressed concern that Sogeti personnel do not always understand or at times misinterpret the requirements provided to them. Some of the Sogeti interviewees expressed concern that CoH at times changes requirements. Both CoH and Sogeti agree that requirements elaboration and validation has proven to be an iterative process, making it difficult to lock down

requirements early. This, in turn, has led to rework during design, development, and testing. MITRE is concerned that this dichotomy could lead to potential disputes between CoH and Sogeti on the identification of defects.

2.2 General Observations

In contrast to past interviews, MITRE noted that a high percentage of City interviewees have greater trust and belief in CSMART. This perception is carried through all departments. MITRE also noted the mitigation of previously identified risks and improvements in some of the operations. In this section, MITRE identifies the areas that may present the greatest impediments to the development and deployment of CSMART.

2.2.1 Work Plan

The concurrent work plan involves overlapping business analysis, development, and testing is taking place under extremely tight timelines, and MITRE believes that it is overly aggressive. In addition, Sogeti may lack adequate resources to meet the schedule.

When asked to identify the most significant (positive) change in the process, most staff identified the new plan to have the BA team support the test script development earlier in the release process. The staff also said that this did not consistently happen (successfully) because of the contention for resources created by the concurrent activities. MITRE also noted the following findings which will likely impact the success of the concurrent work plan:

- The management team recognizes many of the challenges posed by the aggressive work plan and appears to be actively addressing the issue.
- The current project release schedule does not focus on feature completion, which limits the full testing of a feature by the users.
- Some of the users, for example the judges, are not informed when other factors make “feature completion” impossible. This creates scheduling problems for the users when planning test support.

Data provided to the Executive Steering Committee in August 2013 showed the following with regard to the concurrent work plan:

- Release 2 (R27) is six weeks behind schedule. This was just the second release, and demonstrates that Sogeti is not meeting the schedule.
- Release 3 (R28) will require an additional three weeks to complete.
- None of the seven major features is complete and five still require significant development.
- 77% of the hours of effort have been accepted with another 12% “In Progress” and 12% remaining. Since the 12% “In Progress” has caused a schedule slip of between 6–9 weeks and Sogeti has indicated that the remaining 12% involves an increasing number of features and development hours, the remaining releases will also experience a schedule slip⁶.

⁶ The Municipal Court and Houston IT Services, CSMART Project, Executive Steering Committee Meeting, Aug 9, 2013

2.2.2 Business Needs

Participants are capturing business needs, but not in the most timely and efficient manner. MITRE found the following positive points when reviewing the business needs.

- Sogeti has assigned feature leads who provide a single point-of-contact for each major CSMART feature.
- CoH has identified the “must-have” features for Go Live, which allows the users and developers to focus on the critical features.
- CoH is planning on funding for post-Go Live features and maintenance which will be needed for ongoing support and upgrades to the CSMART features.

MITRE found the following negative points when reviewing the business needs:

- Communications problems exist between CoH and Sogeti with regard to how requirements are provided to and interpreted by the developers.
- The CSMART team does not ensure/enforce the involvement of all groups (Process/Product Owners, QA/test staff, data modelers, etc.) in the business analysis/approval process, which causes requirements changes and delays the testing and approval of each release.
- The CSMART team does not ensure the QA team is involved in the development of the business needs and approval of the requirements document, which causes requirements changes and delays the testing and approval of each release.
- CoH and Sogeti do not have a standard approach to ensure they are prepared for the business analysis phase, which forces the users, Process Owners, and Product Owners to spend additional time on defining the requirements for each release.

2.2.3 Quality and Performance

To achieve the quality and performance required for CSMART, the CSMART team is modifying the schedule and work hours. MITRE found the following positive points when reviewing the quality and performance:

- CoH and Sogeti have changed their schedule to better align feature completion with the release schedule, which gives users better insight into the implementation of each major feature.
- CoH has established “drop-in” training locations for users, which allows the users to become familiar with CSMART functionality.
- The CSMART team ensures that the Executive Steering Committee receives timely and detailed information about the status of the project, which enables them to respond to issues in a timely manner.

MITRE found the following negative points when reviewing the quality and performance:

- Sogeti does not capture metrics to improve its processes, which impacts the quality of the software.

- Sogeti does not currently use the data extracted from CourtView to test each CSMART release, which may lead to changes in the software and data structure.
- Sogeti has not developed a detailed plan for correcting the defects identified prior to Release 26 (R1 of current schedule), which may shorten the time allocated to UAT.
- The CSMART team and Sogeti have not established a sound process for managing changes to the data schema, which may lead to disparate development, test, and production environments.
- Page 3 of the Executive Steering Committee Meeting document contains the following relevant statement “The script development, testing, tracking and reporting process has grown more complicated with the larger number of scripts and the large number of off-site resources involved – contributing to project delays.”
- Page 4 of the Weekly Project Status Report, 2 August 2013, indicates that the CourtView data has been converted, but is not currently used for testing.
- Page 4 of the Weekly Project Status Report, 2 August 2013, indicates that no real images from CourtView are available for testing (only dummy images).
- Defect list, 27 August 2013, indicates that 158 Severity 1 and 2 defects prior to Release 1 (R26) must be fixed prior to the start of UAT.
- Defect list, 27 August 2013, indicates that 72 Sev 1 and 2 defects have been identified for Releases 1 and 2 (only 29 came from Release 1, which indicates the defect rate is increasing with each release). This may account for the increase in the amount of work.

2.2.4 Integrated Master Schedule

The key parties do not use a single Integrated Master Schedule (IMS) to identify critical external dependencies for meeting the CSMART Go Live date. CoH has not designated a group to develop and maintain such an IMS. This may lead to changes in the software, data structure, and Go Live date.

2.2.5 Production Environment

Although the CSMART production environment is critical to meeting the Go Live date, CoH has not defined it, which limits the ability to test the performance of CSMART. MITRE found the following points when reviewing the product environment:

- CoH plans on using the HP test suite, which should provide data to determine the production environment.
- The CSMART team is working closely with Houston Information Technology Services (HITS) group to leverage their knowledge and infrastructure capacity and capabilities, which should contribute to a more efficient implementation of the CSMART production environment.
- The CSMART team has not determined the availability of the critical IT components supporting the CSMART system, which may cause performance and support issues.

3 Risks

This section describes a set of high-risk factors that MITRE derived from the observations described earlier. Each risk is expressed in the form of a *Risk Statement* using the following format:

Risk statement: **IF** [event], **THEN** [impact]

Each risk includes a risk analysis that *estimates* the likelihood that the event will occur and the corresponding severity of impact if the event does occur. The risk analysis uses the following format:

Likelihood of risk event: {Low | Medium | High}

Impact if risk event occurs: {Low | Medium | High}

Quantifying the impact of these risk factors in terms of detailed cost or specific schedule delays is beyond the scope of this quick-look assessment. However, the assessment for each risk factor includes a detailed discussion that spans rationale (i.e., supporting evidence) and recommended mitigations.

3.1 Summary of Risk Assessment

MITRE used a similar format to that in the February 2012 assessment, in which MITRE identified specific risk factors associated with requirements management, organizational structure, data migration, and system performance. The observations from the current assessment led MITRE to conclude that CoH had effectively mitigated the high-risk factors identified in February 2012. For the present assessment, MITRE identified the high-risk factors shown in Figure 1. The following sections provide a detailed assessment of each risk.

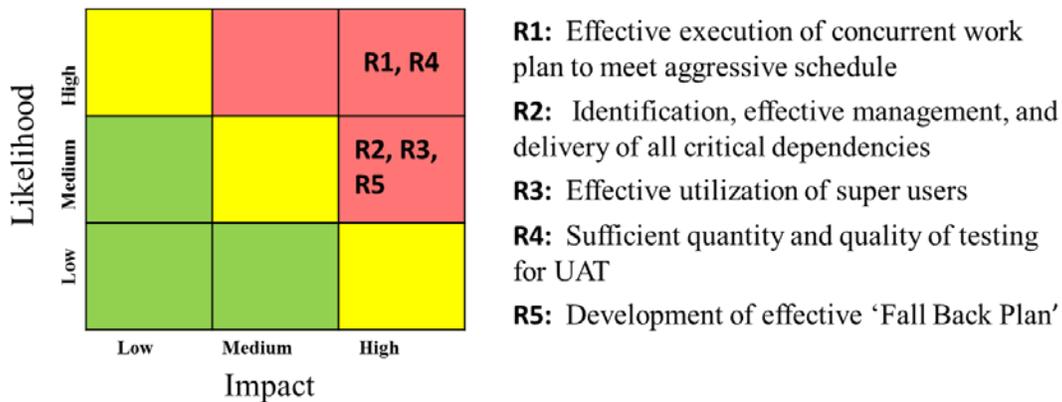


Figure 1 - Risk Profile

3.2 Detailed Assessment

3.2.1 R1: Effective execution of concurrent work plan to meet aggressive schedule

Risk Statement:

IF the current Analysts, Developers, and Acceptance (Test) team resources cannot *effectively* support three concurrent (overlapping) release sprints – *at the level required to remain on schedule for UAT and Go Live* – **THEN** one or more of the following impacts may result:

- The time available for UAT may be reduced, which would limit the effectiveness of this critical, operationally focused test event and potentially have a direct impact on CSMART’s ability to meet business needs;
- Go Live may be delayed, which could create increasing cost-based pressures for Sogeti and/or potentially create conflicts regarding the root cause of the schedule delays (with contract and cost implications);
- Schedule pressure may lead to hasty, incomplete analysis, development, and/or testing, which could have a direct impact on CSMART’s ability to meet operational business needs, and might significantly increase the cost of change associated with late-cycle fixes.

Risk Analysis:

MITRE understands the rationale behind the concurrent work plan and concurs with the fundamental aspects of this pipeline strategy. This approach is commonly used to achieve the highest velocity possible with multiple teams focused on separate stages of the process. However, a variety of problems appear to limit the team’s current ability to effectively execute this type of work plan, and MITRE does not believe the CSMART team has sufficient time to improve execution without making some immediate course corrections.

Likelihood of risk event (*cannot effectively support concurrent work plan*): **High**

Impact if risk event is realized: **High**

Supporting Evidence:

- The CSMART ‘Project Management Office Meeting’ notes dated 6 August 2013 show a current 6-week total schedule delay, which includes multiple-week delays for R27 and R28. Discussions with key staff indicated that one of the root causes is the inability to effectively distribute the necessary resources from analysis, development, and acceptance teams across three concurrent releases (per the work plan).
 - Several staff noted that concurrency was not actually occurring (successfully) because of the contention for personnel resources created by the overlapping activities. For example, the BAs are supposed to work more closely with the test script writers, but actual collaboration has been limited.

- The new BAs lack experience with the Houston Court system, which creates inefficiencies in the analysis phase of the release Sprints by placing a greater burden on the few BA resources and Process Owners who have the experience needed to define accurate, detailed requirements.
- According to various comments, the two experienced CoH Bas and the Process Owners lack the authority to exert significant influence on the efficacy of the release process (at least the analysis phase), and the developers and testers are not developing and testing the requirements as defined. By contrast, the Sogeti team believes that the “requirements keep changing” and that the limited availability of Process Owners, etc., creates bottlenecks. MITRE suspects that these conflicting views may stem from communication problems resulting from the contract structure and the corresponding division of responsibilities (and associated authority).
- Sogeti believes that it has a large pool of development and testing resources from which it can pull to maintain high velocity, but cannot do so because of the limited number of Process Owners. CoH believes that the Process Owners can handle a much higher workload, but that the efficiency gained from adding additional developers is limited. Consequently, these perceived limitations continually throttle the release process. The release schedule does not appear to take this into account (as indicated by the experience with R26 and the challenges of accomplishing effective overlap between R27 and R28).

Risk Mitigations:

- **Avoid:** MITRE concurs with the mitigation steps being considered, which include: 1) postponing Phase I R6 until after Go Live; and 2) adding schedule margins to the analysis and testing periods within each release. However, MITRE believes the schedule margins will most likely not suffice, given the observations above.
- **Control:** Set up a meeting between key Sogeti release managers and Bonita Tolbert *to understand and fix* the apparent communication problems associated with the analysis portion of each release (e.g., development and test team members state ‘*requirements keep changing,*’ while Process Owners state that “*developers and testers are not developing and testing the requirements being defined*”). The objective of this meeting should be to measurably increase the efficiency and effectiveness of the analysis phase, which is critical for minimizing the release times.
- **Monitor:** Intensify oversight by using appropriate release metrics and status reviews to ensure that the steps above actually increase the release velocity by improving the ability to execute the concurrent work plan effectively.
- **Accept:** Increasing cost pressures may create contract implications if the final release experiences significant delays. The CSMART team should establish a critical schedule-delay threshold for elevating this problem to an “issue” (likelihood = 100%) and develop a plan to manage the consequences.

3.2.2 R2: Identification, effective management, and delivery of all critical dependencies with direct impact on critical path

IF any of the critical dependencies, including the verified installation of the production IT infrastructure, *are not available* by their critical need-by dates, **THEN** UAT and/or Go Live could be delayed, creating potential conflicts regarding the root cause of delays – with potential cost and contract implications, depending on the cause.

Risk Analysis:

Likelihood of risk event (*dependencies not available*): Medium

Impact if risk event is realized: **High**

Rationale:

- MITRE did not find Need-By or Provide-By dates in any of the schedules.
- MITRE could find no evidence that the CSMART team employs an IMS to ensure proper alignment of all the Providers and Receivers and full understanding (and documentation) of the consequences of delays. An IMS would clearly identify the critical path to Go Live (full production environment).
- The CSMART team will use the HP Test Suite to define many of the detailed specifications for the IT infrastructure. This testing was originally scheduled to take place in July 2013, but is currently scheduled for September 2013. This may not leave enough time to acquire, install, configure, test, and verify the IT infrastructure for the CSMART production environment, and to ensure the infrastructure is ready in time for UAT.
 - The HP testing will use R26 with 13 months of migrated data, but this data has not been tested. This may delay the testing.
- The project does not appear to have a “lead integrator” or systems engineering role for managing the integration challenges that may arise when the CSMART application is installed on the production IT infrastructure. Sogeti is responsible for the CSMART application, and CoH is responsible for the IT infrastructure and data conversion. MITRE’s experience on similar integration efforts indicates that this may lead to problems, which in turn might require difficult decisions that could result in significant impacts on either party (i.e., increase cost). Such a situation tends to create bias regarding optimal solutions.

Risk Mitigations:

- Monitor: Identify and document the “Need-By” dates for all critical dependencies. The “dependencies” include all factors and products outside the control of the CSMART development team on which CSMART depends to operate in the production environment. The dependencies include the verified installation of the IT infrastructure.
- Monitor: Document, distribute, and continually update the Need-By and Provide-By dates for all critical dependencies in an IMS. The team should regularly assess the probabilities of meeting these Need-By and Provide-By dates.

- The Need-By date for the tested-and-verified production IT infrastructure ensure that the final UAT takes place in the final production environment.
- Control: Each party involved, including the Providers and Receivers, should develop a dependency-specific mitigation plan to reduce the probability and/or impact of not providing and/or receiving the necessary items. This may have contract implications for which the team should plan (e.g., CoH has responsibility for dependencies such as IT infrastructure, where delays could require additional cost).

3.2.3 R3: Effective utilization of Process Owners

IF the CSMART team cannot effectively exploit the talents of the single super-Process Owner (Bonita Tolbert), who is apparently the only CSMART super user with a sufficiently broad and deep understanding of the complete end-to-end business processes, or if CoH loses this resource, **THEN** there will be a direct impact on the schedule and on the ability to capture the business requirements accurately.

Risk Analysis:

Likelihood of risk event (cannot effectively exploit ‘über-user’): Medium

Impact if risk event is realized: **High**

Supporting Evidence:

- According to comments from CoH and Sogeti staff, Bonita Tolbert is the only CSMART team member who has a complete end-to-end understanding of the business processes. Most, if not all, other Process Owners have only a limited understanding covering one particular aspect of operations.
- As a critical Process Owner with the best understanding of requirements, Bonita Tolbert has a significant level of responsibility, but does not appear to have a corresponding level of authority to increase the effectiveness and/or efficiency of her contributions.
- Some of the Process Owners claim that developers and testers are not developing and testing the requirements being defined during the analysis stage, which suggests an ineffective use of the Process and Product Owners. (As noted previously, some of the developers and testers claim that the requirements constantly change, so obviously an underlying problem is impacting the efficiency of the release process).
- MITRE suspects that the new contract that establishes a separation in responsibilities may have created boundaries that affect the balance between responsibilities and the authority required for optimal productivity (e.g., Process Owners may have lost the authority they need to maximize efficacy).

Risk Mitigations:

- Control: MITRE concurs with the emerging plans to make the test systems more easily accessible to the super-users and other users. However, MITRE’s observations indicate that these users do not have the time to perform timely, adequate reviews, and that the small number of Process Owners and their limited availability create the primary bottleneck for the release process.

- The CSMART team should consider all possible strategies for minimizing the time required for users to access the test systems.
- The CSMART team should provide better coordination of activities within test environments. MITRE was told about situations in which the scenario setups created by the Process Owners were torn down without warning, requiring a great deal of time-consuming rework.
- Control: Identify and fix the root causes that lead to the contradictory descriptions of the problems plaguing the release process.
 - This should be accomplished using an open, honest, and productive discussion focused on identifying and fixing the underlying problems that limit the ability to capture and verify requirements – not on assigning blame.
- Control: Ensure the lead Process Owner has the appropriate level of authority to exercise responsibility with respect to the accurate capture of end-to-end business operational requirements.

3.2.4 R4: Sufficient quantity and quality of testing for UAT

IF the relevant CSMART end users *cannot provide the sufficient quantity and quality of testing during the UAT period*, **THEN** the final, fully integrated CSMART release may not meet operational business needs.

Risk Analysis:

Likelihood of risk event (*cannot effectively support UAT*): **High**

Impact if risk event is realized: **High**

Supporting Evidence:

- UAT will represent the first time that the entire end-to-end CSMART system will be available for review.
- Verification of fully integrated, end-to-end business processes presents a challenge which requires more careful consideration of the final operational business needs.
- CoH users have a critical responsibility during UAT. Specifically, UAT will offer the last opportunity for the Process Owners and other users to review the CSMART system before the Go Live event.
 - While the Process Owners may understand the importance of UAT, the judges and their representatives did not seem to understand the implications, and, according to our discussions, have not yet made the necessary cost/schedule allocations to provide adequate support for this critical test event.
- Process Owners and other users are currently unable to spend the time required for timely, adequate reviews of releases. We would expect this problem to continue unless the underlying causes change (e.g., Process Owners dedicate more time for review; test systems become more accessible to reduce the overhead associated with reviews).

Risk Mitigations:

- Avoid: Allocate the appropriate level of ‘user’ resources to accomplish a successful UAT event. Assume a time period ≥ 5 months. Ensure CoH resources are available to support the intensity and duration required for this critical test event.
- Control: Start developing effective plans for making test systems more available to all relevant users.
- Control: Intensify the efforts to communicate the UAT concept to all relevant users who will be involved in UAT, including the judges and their representatives (who appeared to be unfamiliar with the concept or details of UAT).

3.2.5 R5: Development of *effective ‘fallback plan’*

IF a Go Live ‘*fallback plan*’ is *not carefully considered and/or clearly defined* and CSMART cannot meet operational business needs on or after Go Live *for any reason*, **THEN** Court operations may be severely hampered (e.g., significant operational delays may occur or, in the worst case, CoH may call for shutdown of the CSMART application).

Risk Analysis:

Likelihood of risk event (*no effective fallback plan in place*): Medium

Impact if risk event is realized: **High**

Supporting Evidence:

- MITRE heard a variety of different ideas about the concept of a “fallback plan” in case CSMART encounters *any* type of problem that would require termination of the application.
- MITRE could not identify a specific, detailed fallback plan. Some interviewees mentioned falling back to “paper processing,” but this raises questions about exactly how CSMART would effectively synchronize the information obtained during the ‘down’ time once the system is restored.
- Any system attempting to ‘*start a new business day*’ with a completely different IT infrastructure and business application should have a clearly defined fallback plan to support continuity of operations given the non-zero chance of any termination condition.

Risk Mitigations:

- Avoid: Define a detailed, effective fallback plan.
- Control: Verify the fallback plan to ensure it can support business operations. Verification could take the form of testing and/or detailed reviews with stakeholders to ensure that: 1) all critical activities associated with business operations can be sustained, and 2) all the critical information (data) obtained during the ‘CSMART shut down state’ can be synchronized with the CSMART system when it returns to operation.

4 Summary

The CSMART project continues to make progress and is nearing completion. The project should meet the goals established for it to replace the current Court case management system and to improve Court operations. The project has encountered schedule delays and increased costs, but these do not appear unusual for the scope and complexity of this software development. MITRE focused on identifying the major contractual and other risks that could impact the success of the CSMART project. As a result of its study, MITRE believes that the CoH and Sogeti can complete the steps necessary to mitigate the concerns and risks identified in this assessment.

The signed agreement between CoH and Sogeti establishes a fixed-price contract whereby Sogeti has primary responsibility for development, delivery, and maintenance of the software, while CoH is responsible for the business aspects, testing, infrastructure, and data migration of the CSMART effort. MITRE identified the following major challenges based on its review of the agreement and how it is being implemented:

- Although CoH and Sogeti roles and responsibilities are integrated, the agreement does not define an overall system integrator or systems engineer role. Furthermore, successful development depends to a large degree on the expertise of particular individuals and on eliminating barriers to communication.
- The project does not make optimum use of the BAs and Project Steering Team.
- The CSMART development schedule calls for a 13-week cycle. The initial releases and projection of future releases indicate that Sogeti is not meeting this schedule, which will impact the timeline specified in the contract and therefore system acceptance.
- The definition of defects is based on “a discrepancy between the expected and actual results of a test performed to exercise functionality of the system.” Some CoH interviewees believe that Sogeti does not understand or is misinterpreting requirements, while some Sogeti interviewees believe the CoH constantly changes requirements. This dichotomy may impact release and system acceptance.

MITRE reviewed documentation provided by CoH and Sogeti and conducted on-site interviews with CoH and Sogeti staff (see Appendix A). On the basis of this information and MITRE’s prior experience with the project, MITRE identified the major remaining challenges that could affect the development, acceptance, and deployment of CSMART. These challenges include:

- The 13-week release schedule is very aggressive and requires a concurrent, overlapping work plan. The contention for resources created by the concurrent schedule may impact the quality of the software developed and lengthen the schedule.
- Business needs are being captured, but not in the most timely and efficient manner.
- To obtain the quality and performance required for CSMART, the schedule and work hours are being modified.
- The team does not use an IMS to identify and manage the CSMART schedule. Therefore, critical external dependencies, including infrastructure improvements, the requirements management system, and the external interface timelines, have never been discussed holistically.
- The production environment has not been defined, even though that environment is critical to the Go Live date.

MITRE identified risks that could impact CSMART development and deployment. They include:

- **IF** the current Analysts, Developers, and Acceptance (Test) team resources cannot *effectively* support three concurrent (overlapping) release sprints – *at the level required to remain on schedule for UAT and Go Live* –**THEN** one or more of the following impacts could result:
 - The time available for UAT may be reduced, which would limit the effectiveness of this critical, operationally focused test event and potentially have a direct impact on CSMART’s ability to meet business needs.
 - Go Live might be delayed, which could create increasing cost-based pressures on Sogeti and/or potentially create conflicts regarding root cause of the schedule delays (with contract and cost implications).
 - Schedule pressure might lead to hasty, incomplete analysis, development, and/or testing, which could have a direct impact on CSMART’s ability to meet operational business needs, and might significantly increase the cost of change associated with late-cycle fixes.
- **IF** any of the critical dependencies, including the verified installation of the production IT infrastructure, *are not available* by their critical need-by dates, **THEN** UAT and/or Go Live could be delayed, creating potential conflicts regarding the root cause of delays – with potential cost and contract implications, depending on the cause.
- **IF** the relevant CSMART end users *cannot provide sufficient quantity and quality of testing during the UAT period*, **THEN** the final, fully integrated CSMART release may not meet operational business needs.
- **IF** a Go Live ‘*fallback plan*’ is *not carefully considered and/or clearly defined* and CSMART cannot meet operational business needs on or after Go Live *for any reason*, **THEN** Court operations may be severely impacted (e.g., significant operational delays or, in the worst case, CoH might call for shutdown of the CSMART application).

Appendix A Interview Schedule

Date	Time	Topic	CoH Attendee(s)
Wed 8/21/13	8:00a-9:30a (1.5 hr)	General Discussions	Tony Padon Guy Fugate
	9:30a-11:00a (1.5 hr)	Program and Project Management	Gigi Tran Eli Luna
	11:00a-Noon (1 hr)	Infrastructure	Sheriff Kareem
	Noon-1:00p	BREAK	
	1:00p-5p (4 hr)	Architecture and Development Database and Software Security	Rudy Hollenbach Martin Kastenbaum
Thurs 8/22/13	8:30a-9:30a (1 hr)	Processes	Bonita Tolbert (Process Owner Lead)
	9:30a-10:30a (1 hr)	Business Analysis	Brad Irwin
	10:30a-11:30a (1 hr)	QA and Testing	Rama Subbraman
	11:30a-12:30p (1 hr)	Data Conversion	Abdi Sadeghi
	12:30p-1:30p	BREAK	
Thurs 8/22/13 cont'd	1:30p-2:30p (1 hr)	Project Sponsor Team Executive Steering Council (ESC)	Judge Maria Casanova Judge Elaine Marshall Charlotte Booker Judge Barbara Hartle (via phone)
	2:30p-3:30p (1 hr)	Training and OCM	Lisa Tilton
	3:30p-5:00p (1.5 hr)	Product Owners	Judge Berta Mejia Greg Prier Randy Zamora
Fri 8/23/13	8:30a-9:30a (1 hr)	RMS Project	Jeff Snell
	9:30a-11:00a (1.5 hr)	Funding & Wrap Up	Tony Padon Guy Fugate
Telecon week of 8/12	(2 hrs)	Overview and Status	Tony Padon Guy Fugate
Telecon Fri	11:30a-12:30a (1 hr)	Municipal Courts	Rex Billings

8/16/13			
Telecon Tues 8/27/13	7:00a-8:00a CST (1 hr)	Off-Site Team	Milind Sahasrabudhe Yogesh Pagare Jessie Panikareth Janie Ryden Rama Subbramanan Guy Fugate
Telecon 8/22/13	1:30p-2:30p during PST meeting	Executive Steering Committee	Judge Barbara Hartle