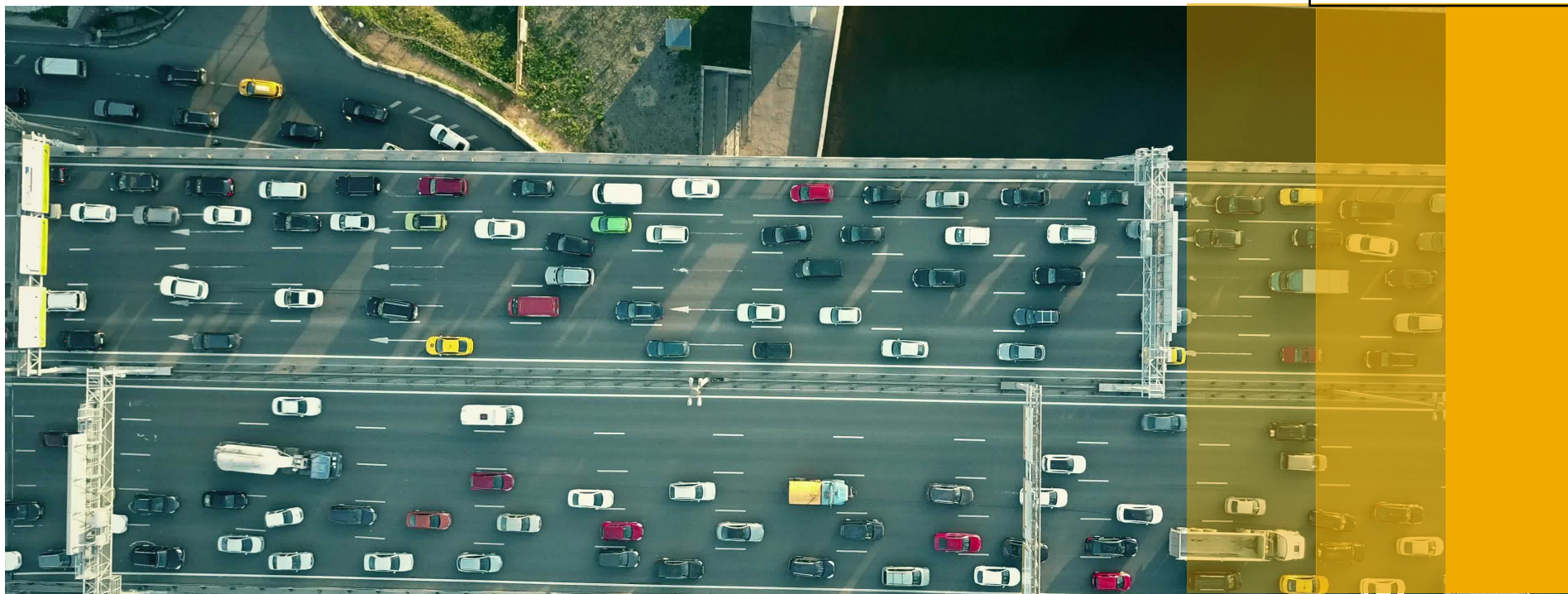




SAP Quality Assurance Services

Société de l'assurance automobile du Québec

CASA- Project – QA- (IT-4) Review: Testing strategy, approach & tools

Final Report

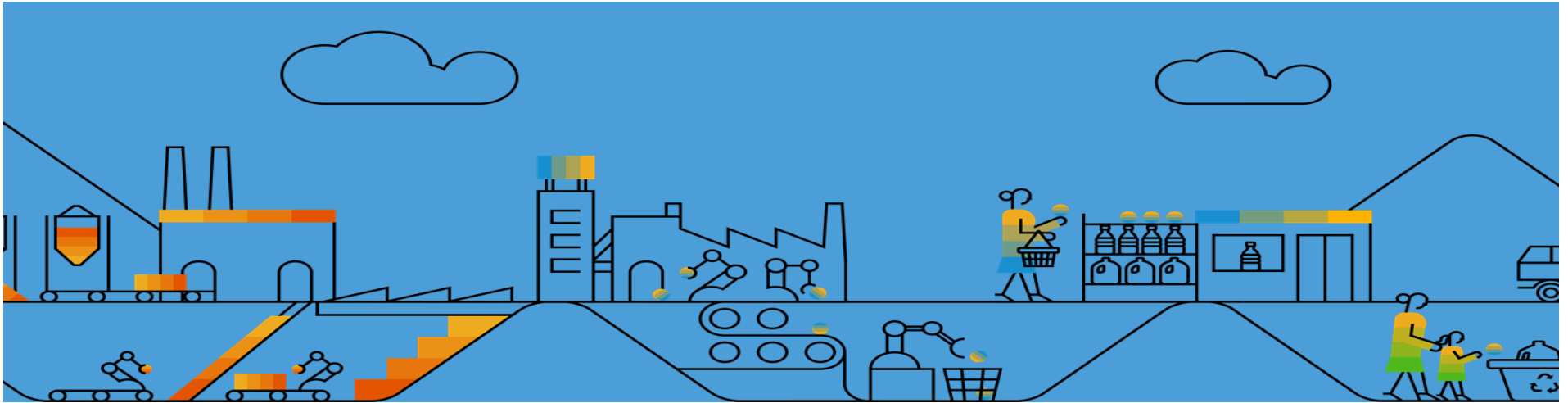
Findings, Impact, Recommendations

April 19, 2022

SAP® QA

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Agenda

- Executive Summary
- Update on recommendations from the previous report
- Detailed report
 - Scope
 - Findings & Impact
 - Key observations and Recommendations
- Questions

Overview content

Special notations

- ✓ This report represents the results of the Quality Assurance Review on testing management conducted on February 21–28, 2022 for the Realize phase of the implementation of SAP S/4HANA at Société de l'assurance automobile du Québec (SAAQ).
- ✓ This report reflects a timely analysis of the current status and readiness of future deliverables.
- ✓ This QA review on testing focuses on the following: test management, test strategy , test execution, test tool usage, defect management and the areas that impact test planning and test execution. .
- ✓ The results and recommendations are derived from information provided to SAP in Q&A sessions in which many SAAQ, IBM, and SAP employees participated.
- ✓ This report is forward-looking; it focuses on the steps that need to be taken for future operational success and only comments on project history for the sake of understanding and context.
- ✓ This document contains proprietary and confidential information from SAP and is passed as part of SAP's implementation to SAAQ. This document may not be disclosed or redistributed to any third party, in whole or in part, without the written consent of SAP.

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Overview content

Definitions and indicators

Key Figure Definitions for status



Low: Minor impact on program success that is unlikely to impact implementation or business operations.



Medium: can produce or lead to a negative outcome during implementation, including in the Extended Design and Realization phases.



High: High probability to cause or lead to negative impact during implementation or go-live. Critical topic to address, including research, follow-up, and response phases.



Not relevant/Topic not discussed: this topic did not need to be discussed at this stage of the project or was not documented enough to be discussed at the appropriate level of detail.

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Executive Summary



Executive summary (1/3)

Overall program health



Project has a High risk profile.

The following are the most important, but not all key findings. It is also important to note that many items identified as medium can easily turn high if not addressed and managed in timely manner. Minimal to no time available to react to any deviations to testing plans in place.

Scope: Scope management is in place and critical given the remaining scope to be tested.

WRICEF: Developing and testing the remaining development objects in the remaining time frame is a challenge. Need to prioritize development objects and focus on critical objects like enhancements, interfaces over additional reports.

Test Execution: The scope is not frozen / under control impacting the test execution with regular flow of new functionality scheduled to be tested for the first time in later test cycles. End2end business process testing is impacted.

The test plans for IT5 and FIT needs to include all the areas of integration with the external vendors and partners and all the end2end business processes.

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Executive summary (2/3)

Overall program health



Key Observations

Testing at HIGH RISK:

1. Development / testing has been back-ended due to objects being pushed forward from test cycle to cycle.
2. Testing was scheduled to be 90-100% complete by the time FIT starts. Given the amount of development and testing remaining this will not be achieved. Therefore, the team decided to continue testing in parallel to FIT, DR1 and DR2. This increases the overall risk of testing given changes will be introduced during final testing cycles where the system is expected to have minimal to no change.
3. The project is entering a phase where they're executing more end-to-end integration tests requiring more complex data test requirements, as well as dealing with more exceptions outside the "Happy Path" scenarios. The team is struggling with identifying and creating test data to meet the needs of the more in-depth integration tests and exception testing.
4. Maintain the integrity of successfully tested objects in L2 while moving from test cycle to test cycle and introducing a high-level of changes in the test environments.
5. The project has moved to planning the final test cycles, DR1/DR2 and go-live. This will demand additional time required from "key knowledgeable" leads, consultants and SME's/BA's to develop and execute these plans while continuing to work on testing the solution in parallel. Capacity issue for key resources on the project.

Executive summary (3/3)

Overall program health

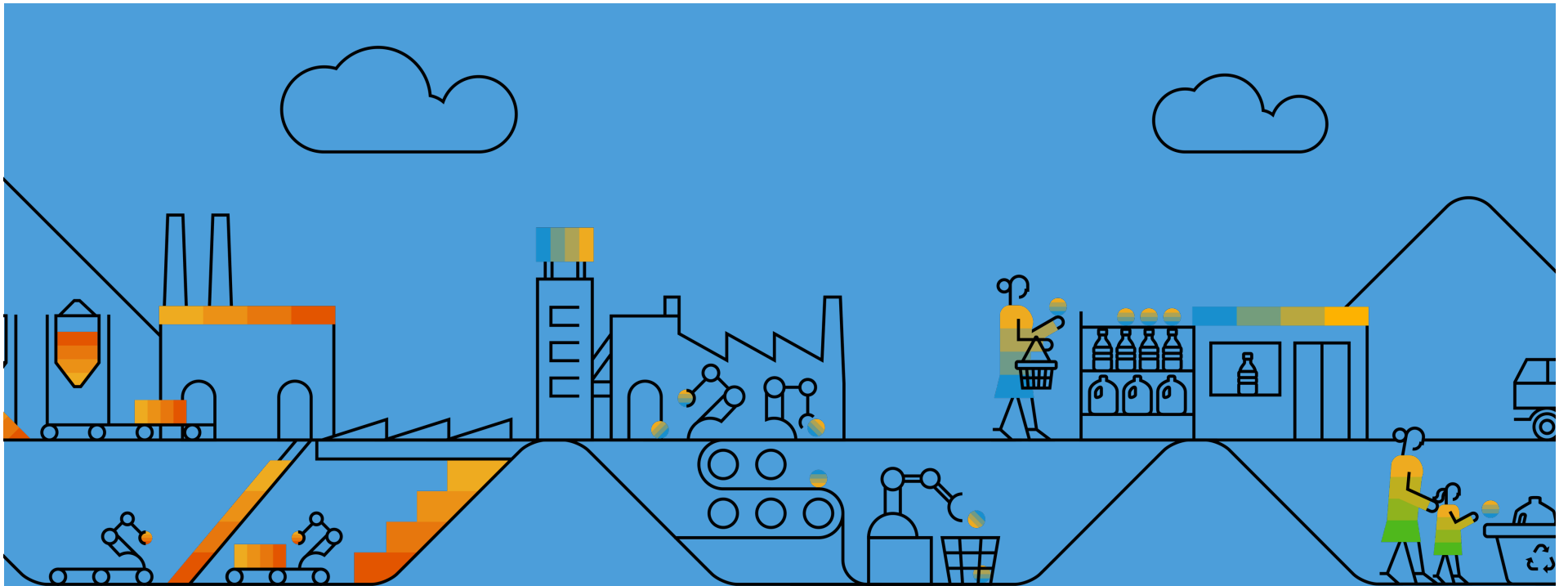


Areas reviewed	Status Indicator	Comments	Findings (Low,medium,High)			Total findings
Overall program		The program has well-established governance. Behind schedule on certain areas and has mitigation plan in some of the areas.Requirements/ scope not frozen. There is a constant flow of new scope items.			2	2
Test Management		Not all development objects are built and tested in TI-4. Some development objects will be tested for the first time in TI-5 and some objects may spill over to TIF .No regression testing cycles are planned.			3	3
Integration architecture		Integration in five broad areas in PES is not fully built and tested with real-time data. The team has a plan .		1		1
Security architecture-Authorization		There are security /authorization-related challenges. The roles are built and are tested for the first time in TI-4. 44/600 defects are related to security.		1		1
Data management		Data workstream has well defined processes. However, the constant change is affecting the data creation and update impacting the data quality and the test timelines .			1	1
Basis -Server, System infrastructure		The server architecture for1909 is in place. The performance -Volume-load and stress testing will impact the system sizing .		1		1
Development-WRICEF		For L2, a total of ~1100 development objects.200 objects yet to be developed or in progress.122 development-related defects. 152 complex objects. Turn around time is longer.			1	1
Ui-Fiori		The UI-based defects reported from TI-4 are at a very minimum. The role based security access on the UI is under progress. The UI performance is well within the defined SLA's.	1			1
Total Findings			1	3	7	11

Low Medium High

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Update on previous recommendations



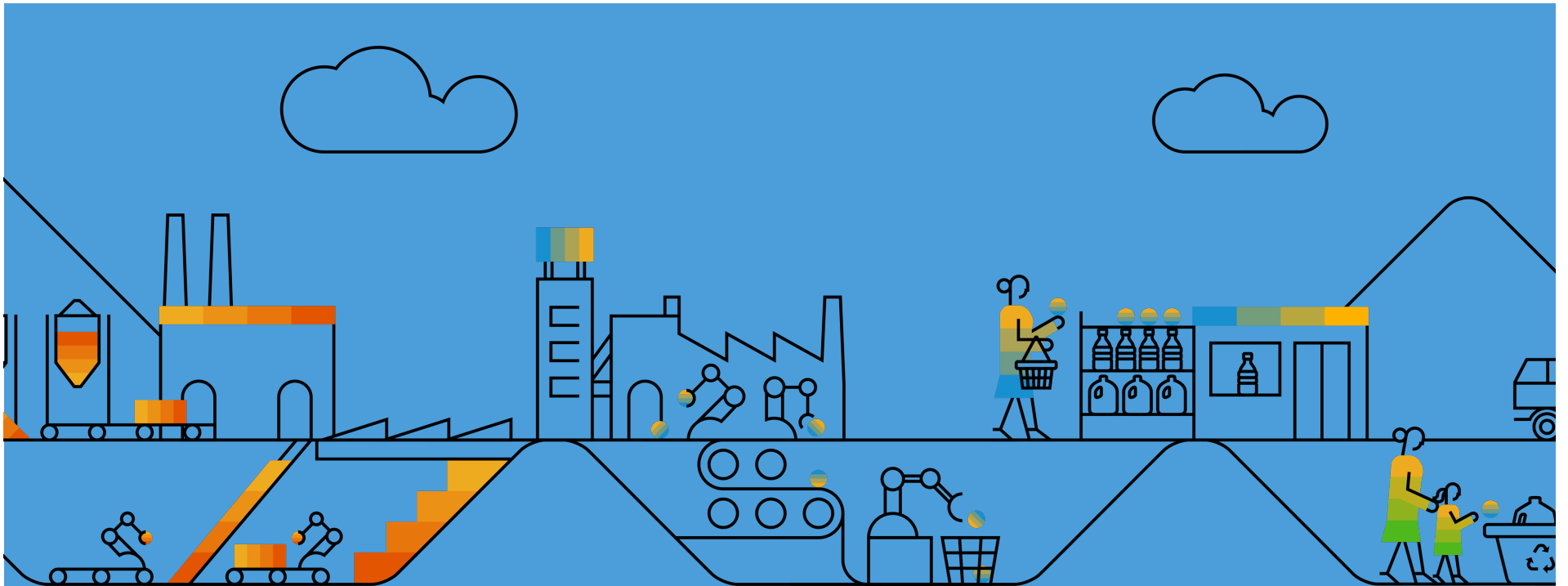
QA Review -Testing

Update on the previous recommendations made on October 28, 2020

- ✓ Interface readiness – Need a detailed plan for ensuring that the critical interfaces are developed and ready for IT3, IT4, and IT5:
 - ✓ **Mitigated** :The plan is in place for TI5 . Plan for TIF is in progress.
- ✓ The performance test plan is incomplete and missing core elements such as concurrent users and hourly usage.
 - ✓ **Mitigated** :The performance, load and stress test plan is in place for IT4 and IT5. The SLA review is in progress. The impact on the system sizing is being determined.
- ✓ A requirements traceability matrix is missing. It ensures that all the business processes are properly tested, and that no missing requirements are uncovered during Hypercare.
 - ✓ **Mitigated** :The requirements traceability matrix is in place and is being monitored.
- ✓ Security testing is currently not in scope for IT3 and is planned to be executed during the final integration testing phase –IT5. Ensure that business roles are embedded in the test cases and executed earlier in the test cycles.
 - ✓ **Mitigated** :Security testing with user roles was done in IT4 and has a detailed plan to test further currently in IT5.

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Detailed Report



QA Review -Testing

Scope

- ✓ General review and the status of the previously reviewed quality assurance topics:
 - ✓ Overall test management
 - ✓ Defect Management
 - ✓ Tool management-(Test Automation- Best practices)
 - ✓ Testing Strategy and Test Management
 - ✓ Management of requirements
 - ✓ Test cases and test design
- ✓ Global approach from testing to go-live
- ✓ Performance Testing Strategy & Approach
- ✓ Volume / stress / concurrency Testing Strategy & Approach
- ✓ Overall test management- testing Entry & Exit Criteria.

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Testing

Overall program (1/2)

Risk Level



Findings

The program has well-established governance.

Behind schedule on certain areas and has mitigation plan in some of the areas.

Time for testing is compressed because the required development effort has been extended and the plan adjusted to introduce changes late in the testing plan.

The shorter testing timelines and overlapping test schedule impact the quality of testing.

Impact

The delayed and concurrent test cycles impacts the quality of the overall solution being deployed.

It also risks the sustainability of the solution.

Recommendation

Establish test practices that allow the maximum set of scenarios and scripts to be tested in a given test cycle, and repeated as needed.

Mitigate the overall risk by re-evaluating and planning the effort to develop and test the remaining “must have” wRICEFs / configuration / interfaces and other key deliverables

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Testing

Overall program (2/2)

Risk Level



Findings

Requirement gathering is still in progress. The program scope is not frozen. There is constant flow of new scope items being added to the project. Limited time available to test issues and deal with any deviations from plan, with no buffer built between consecutive test cycles. This results in a very high risk to the overall testing quality given the amount of remaining testing yet to be executed.

Impact

The constant list of scope items added to the test plan impacts the test scenarios, scripts and the overall test execution.

Impacts the quality of testing. Impacts the program schedule and cost. Risk of go-live as scheduled if all the risk areas are not mitigated well.

Recommendation

Establish scope management best practices to control the scope.

Descope items to a later release.

Define the scope freeze so that no additional objects are added to the test scope in the middle of the test cycle or to the overall test scope of the project.

Establish strict change control procedures. Review the change control board procedures and processes.

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Testing

Test Management (1/3)

Risk Level



Findings

Test management and strategy at this stage of the project is critical to the success of the project. The WRICEF development under progress is critical to the solution.

Due to the number of remaining WRICEFs, the project has updated the testing strategy, pushing the testing of the outstanding developments and defects until the final integration test (FIT) and possibly into Dry Run 1 or 2

- approx. 250-400 RICEFs are at different stages of progress and require QA testing eventually, this represents approx. 30-40% of RICEFs developed in the past 3 years (approx. 650 have been developed and tested to-date)
- It's estimated that the current RICEF completion rate is approx. 40 per month

Impact

Test environments are not in a frozen / stable state until late in the remaining test cycle (TIF).. This adds risk to the quality of testing, time to complete tests and requires a much more rigorous process of promoting changes to the test environment during the different test cycles.

Recommendation

Ensure all remaining development are mapped to each test cycle with a BUSINESS impacting risk value assigned and corresponding mitigation plans

Implement a regression test strategy at the end of each test cycle to deal with the risk of newly promoted changes breaking a process that's already been tested or promoted to production

Increase the rigour of formally questioning "must have" requirements and defects required for go-live.

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Testing

Test Management (2/3)

Risk Level



Findings

Test management and strategy at this stage of the project is critical to the success of the project.

Due to the number of remaining RICEFs, the testing strategy/plan has overlapping testing cycles with TI5, TIF and dry runs 1 & 2 resulting in minimal maneuverability for dealing with any deviation from the estimated defects, testing completion time required and resource availability.

Impact

Go-live date probability on the current schedule is in jeopardy if risk mitigation is not done.

Key resources will be further stretched working on completing the solution and supporting multiple planning and test cycles that are overlapping and/or closely coupled with minimal buffer in-between.

Recommendation

Ensure all remaining development objects are mapped to each test cycle with a business impacting risk value assigned and mitigated.

Continue to formally question “must have” requirements and defects required for go-live.

Ensure key resources are back-filled to deal with the upcoming testing overlaps and related resource demands.

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Testing

Test management (3/3)

Risk Level



Findings

No regression testing cycles are currently scheduled or planned at the end of test cycle to ensure previously tested functionalities are not impacted by changes introduced during a test cycle.

Impact

Without regression testing, promoting functionality to production may impact the areas already in production or previously tested functionality in QA. Regression test cycles are very important to keep check on the new objects impacting the existing or deployed functionality.

Recommendation

Define regression testing areas.

Establish regression test cycles.

Analyze the impact of the additional deployment objects on the existing functionality already deployed.

Testing

Risk Level



Integration architecture (1/1)

Findings

Integration in five broad areas in PES is not fully built and tested with real-time data. A plan exists to address this. Integration areas with the external vendors, partners and the Government are key to the successful deployment of the solution beyond the enterprise.

Impact

Impacts the acceptance of the solution by the external vendors including the Government.

The external integration is an integral part of the overall solution and without properly testing the end2end integration with the vendor / partner systems the overall functionality and acceptance of the solution may be impacted.

Recommendation

Review the overall integration testing plan with real-time testing using quality data.

Review the vendor/ partner architectural design impacts.

Analyze the data flow across the external / partner systems for consistency and accuracy. Establish vendor test procedures and acceptance standards.

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Testing

Risk Level



Security architecture-Authorization (1/1)

Findings

There are security /authorization-related challenges. The security roles are built and they are tested for the first time in TI-4. Among the defects reported for TI-4 ,44/600 defects are related to security. The procedures and standards for positive and negative security testing were not available.

Impact

The risk of testing the security and authorization credentials in later test cycles may affect the post-go-live operations . The lack of a comprehensive security strategy and standards can impact overall compliance .

Recommendation

Establish a comprehensive security strategy and standards to test all roles and authorizations in at least three test cycles.

Establish security procedures that analyze and track the overall compliance and enable proactive addressing of the compliance issues.

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Testing

Data management (1/1)

Risk Level



Findings

Data workstream has well defined processes. However, the data quality and consistency is an issue from the testing perspective. Testing teams are re-active given they are made aware of changes after a change is promoted to the test environment and an issue is encountered. This adds a lot of unplanned time to the testing plan causing delays.

Impact

Late communication of functional changes requiring data updates impacts the test execution.
Any legal changes resulting in changes to the legacy system could impact the data workstream.

Recommendation

Build data governance around the new data elements for data translation / loads.
Establish standards and governance over the change control process for data management.

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Testing

Risk Level



Basis -Server, System infrastructure (1/1)

Findings
The server architecture for 1909 is in place. Sizing is in progress.
Impact
If proper sizing practices are not established, it will impact the overall system performance. Delay in the hardware procurement could delay the project.
Recommendation
Establish sizing practices. Revisit the sizing based on the results of performance and load testing results. Establish proactive procurement practices.

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Testing

Development-WRICEF (1/1)

Risk Level



Findings

For L2, a total of ~1100 development objects. 200 objects yet to be developed or in progress. 122 development-related defects. 152 complex objects. Turnaround time is longer than planned.

Impact

The open development objects could impact the schedule . The longer turnaround time impacts the test execution and delays the overall delivery of the solution.

Recommendation

Establish scope management best practices for the development objects to control the scope.

Descope items to a later release.

Add additional resources and replan the development plan to address key critical objects.

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Testing

UI-Fiori (1/1)

Risk Level



Findings

The UI-based defects from TI-4 are at a minimum. Security on the UI is a work in progress. No additional rules are built in the front end.

Impact

None at this time.

Recommendation

Monitor and control the UI defects. Implement recommendations from the performance testing.

Continue with the current practice of not building rules in the controller / front end.

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Key Observations and Recommendations



Key Observations & Recommendations



Key observation 1 & 2:

1. Development / testing has been back-ended due to objects being pushed forward from test cycle to cycle.
2. Testing was scheduled to be 90-100% complete by the time FIT starts. Given the amount of development and testing remaining this will not be achieved. Therefore, the team decided to continue testing in parallel to FIT, DR1 and DR2. This increases the overall risk of testing given changes will be introduced during final testing cycles where the system is expected to have minimal to no change.



Recommendation:

Re-evaluate the remaining development in detail vis-à-vis the testing cycles remaining to better understand the probability of successfully delivering critical “must have” processes/scenarios for go-live

Key Observations & Recommendations



Key observation 3:

3. The project is entering a phase where they're executing more e2e integration tests requiring more complex data test requirements, as well as dealing with more exceptions outside the "Happy Path" scenarios. The team is struggling with identifying and creating test data to meet the needs of the more in-depth integration tests and exception testing.



Recommendation:

In the interest of optimizing the planning and execution of upcoming e2e test case scenarios with added complexity and exceptions, the data identification, updating and creation challenges should be addressed to avoid further delays

Key Observations & Recommendations



Key observation 4:

4. Maintain the integrity of successfully tested objects in L2 while moving from test cycle to test cycle and introducing a high-level of changes in the test environments.



Recommendation:

Confirm that the current testing approach has a low risk of impacting previously tested functionality in L2.

Key Observations & Recommendations



Key observation 5:

5. The project has moved to planning the final test cycles, DR1/DR2 and go-live. This will demand additional time required from “key knowledgeable” leads, consultants and SME’s/BA’s to develop and execute these plans while continuing to work on testing the solution in parallel. Capacity issue for key resources on the project



Recommendation:

Re-evaluate “key” resource time requirements in lieu of the additional time demands expected as the project moves into the final test cycles, DR1/DR2 and go-live planning and execution.

Questions



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Appendix

Interview Attendees

interviewees	
Langelier, Alex	Chinnaian, Rajendran
ST-Onge, Marilyn	Vasquez, Ana
Bracken, Brigitte	Desai, Parth
Simard, Jean-François	Chagouri, Imane
Lauriault, Guy	Simard, Sonia
El Hosni, Nabil	Casgrain, Marie-Hélène
Kojakian, Zaven	Bellerose, Luc
Boucher, Mario	Chea, Say Sanne
Vernon, Franck	Lauriault, Guy
Kojakian, Zaven	Chahine, Imane
Yuen, SaiHo	Chiluveru, Sunil Kumar
Papaioannou, Peter	
Sansregret, Robert	

Documents reviewed*

- ✓ QA review report-October 2020
- ✓ Essais de performance et de charge - strategie globale et execution
- ✓ Plan de TI4
- ✓ Stratégie des essais avec les interfaces V0.5
- ✓ Stratégie essais de charge & performance (1)
- ✓ Stratégie essais PES 2.0
- ✓ Strategie - resume executif.