BC Ferries Automated Customer Experience (ACE) Program Review

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BC Ferries Response
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Executive Summary

British Columbia Ferry Services Inc. (BC Ferries) is undertaking a large, complex set of initiatives to enable transformational change in the business operating model of the ferry service. The Automated Customer Experience (ACE) Program is aligned with BC Ferries strategic direction and is a necessary enabling platform in a larger change program to improve customer experience, grow ridership, increase value-add revenue and reduce operating costs through demand management. The computer systems currently in use by BC Ferries are not able to accommodate these transformational changes.

By its very nature, the ACE Program has a high risk profile – a large, multi-year, IT-enabled, business transformation program. Key success criteria in such a program include:

- Effective two-way communication across all levels

- Attention and timely response by management

- Adequate business engagement and representation

- Well-structured and skilled program and project management functions and processes

- Well-structured and skilled system delivery functions and processes

- Effective and sustained organizational change management.

Each of these dimensions was examined in some detail during the program review. The review identified significant areas of strength in the current program execution including:

- An aligned and actively engaged leadership team

- Excellent business engagement during the requirements phase

- The addition of a business co-director and a strengthened focus on organizational impact analysis and operational readiness

- Experienced program and project leadership

- A solid enterprise and solution architecture for the program

- A phased implementation plan that significantly reduces the risks in roll-out of the program.

The review also identified a number of key structure/role adjustments that should be implemented as the program transitions into the design and delivery phase, as well as a set of leadership recommendations to strengthen project processes and address other risk elements.

The report is structured with a summary of the program strengths, weaknesses and key recommendations. More detailed technical analysis and management guidance for implementation of the recommendations is contained in Appendix A.

Review Objectives

The BC Ferry Commission carries the mandate to oversee major capital investments by BC Ferries t0 ensure that investments are aligned with longer term strategic goals and will deliver value to ferry service users and BC taxpayers. Under this mandate, the BC Ferry Commission engaged the services of PwC, an independent third-party consulting firm, and initiated a review of the ACE Program on October 23, 2013.

The objectives of the Program review were to:

• Validate the progress of the ACE Program

• Identify program/project risks and opportunities to enhance program delivery and reduce delivery risk

• Provide a report on findings and recommendations to the BC Ferry Commission in respect to identified risks and opportunities.

Scope & Approach

The scope of the program review included:

• Review and assess the business case of the ACE Program and all sub-projects

• Review and assess key assumptions, cost estimates/potential benefits and determine their reasonableness

• Review system and vendor selection process

• Review key contract provisions or negotiation strategies

• Assess organizational capability to design, integrate and implement all projects within ACE

• Assess organizational program and project management capabilities

• Review and assess project implementation plan and determine its reasonableness

• Review and assess key project risks and mitigation strategies

• Review and assess project governance model (including governance around customization)

• Review and assess change management and communications strategy.

Out of scope for the review were:

• Re-structuring the fundamental model for delivery of the program

• Solution architecture and solution design review

- Vendor capability validation.

The review was carried out through:

- Review of key program documentation

- Self-service survey of project internal stakeholders addressing the business environment, program and project management and solution delivery

- On-site interviews with key project stakeholders at all levels of the organization.

Background

British Columbia Ferry Services Inc. (BC Ferries) is undertaking a large, complex set of initiatives to enable transformational change in the business operating model of the ferry service. The first phase of this transformation, the ACE (Automated Customer Experience) program, is designed to replace core IT systems used for customer booking, ticketing, and check-in, consolidate payment processing and streamline vehicle and passenger traffic at terminal sites. The ACE Program will also provide a new platform and business processes designed to enable the BC Ferries to understand and segment their customers, provide targeted marketing and value-add services, establish a strong loyalty program and enable future implementation of demand management through increased advanced purchase incentives and price flexibility.

It is anticipated that BC Ferries will bring forward a business case for a subsequent project to enhance the customer experience that will include components that:

- Provide a pricing engine to test scenarios and establish dynamic pricing set-points to the new booking system

- Provide customers with mobile device access to the new booking, ticketing and check-in system

- Increase the capacity and robustness of the BC Ferries web site to handle online web and mobile traffic

- Implement a series of business transformations to provide enhanced service offerings to customers

- Transition the majority of customer sales at major terminals from "show and go" to pre-booked reservations.

The ACE Program is a consolidation of a number of separate IT initiatives identified as far back as 2007 to address business risks due to technology obsolescence and to remove technology barriers to desired business change. BC Ferries is acting as the overall program manager and system integrator and has engaged three external vendors to deliver specific application components of the program.

The program is nearing completion of requirements analysis and system(s) selection phase and is transitioning into the design phase. A recent gap analysis between business requirements and vendor package capabilities for the booking, ticketing and check-in component of the program has resulted in further definition of the program and a re-estimation of the total cost and schedule to complete. The ACE Program is currently forecast to complete on March 31, 2017 with a total cost of $56.7 million. This cost includes all costs incurred to date, estimated costs based on a March 31, 2017 completion including contingency.

The majority of the benefits expected from the ACE Program are in reduced business risk from technology obsolescence and enablement of a future business operating model. The future business model is expected to significantly improve customer experience, drive increased ridership, increase ancillary revenue and reduce operating costs through demand management.

Direct financial benefits are expected from the ACE Program including:

- Increased revenue from the new gift card program ($250k in year one increasing to $650k by year two)

- Increased revenue on major routes from travel incentives through use of the Customer Relationship Management (CRM) system ($1.4 million in year one increasing to $2.8 million by year six).

Findings and Recommendations

Colour index:

    Green: Best practice is being clearly demonstrated. No corrective action required.

    Yellow: Caution, corrective action will improve likelihood of program success.

    Red: Significant risk to the success of the program. Corrective action required.

#	Best Practice	Findings	Implications / Risks	Recommendation	BC Ferries: Response
Business environment					
1	Business case is aligned with corporate strategy.	Strongly aligned – a critical initiative to achieve BC Ferries operational integrity, customer satisfaction and revenue goals.	None		
2	Business case addresses all components needed to realize desired outcomes.	Partial – realization of full benefits of the ACE 'platform' will require a number of additional components planned in a subsequent project(s).	Risk: Reduced business value if subsequent project is not implemented.	Timely review and approval of subsequent project.	*BCF agrees with the findings and recommendation.* *BCF is currently finalizing a Business Case, to enhance our website and provide a revenue management support system. BCF will be seeking Board approval of the business case and authorization to proceed with a Section 55 application to the Commissioner.*

#	Best Practice	Findings	Implications / Risks	Recommendation	BC Ferries: Response
3	The program will deliver value for money.	The current technical environment is complex, rigid, and built on obsolete technology. The current system locks in an old business operating model that is preventing BC Ferries from reacting to current business imperatives. The program is designed to deliver value both by reducing technical risk and by enabling a new customer focused business model.	None		
4	Regulatory restrictions have been appropriately considered.	Appropriately considered. The program will enable variable pricing and allow BC Ferries to set both higher and lower prices, responding to different customer segments, while meeting regulated average price constraints.	None		
5	Major transformational business programs have a senior executive business sponsor.	The program is currently sponsored by the head of information technology (CIO).	Risk: The program fails to appropriately balance business and technical issues leading to major implementation problems.	Transition program sponsorship to a member of the senior executive team while maintaining appropriate accountability for the CIO.	*BCF agrees with this recommendation, and in fact, prior to the issuance of this report, has made changes in program governance to ensure the program appropriately balances business and technical issues. BCF's CFO has assumed responsibility as Program Executive Sponsor while BCF's CIO remains part of the Steering Committee as well as chairs the ACE Technical Advisory Committee and retains responsibility from an IT perspective for all technical aspects of the solution.*

#	Best Practice	Findings	Implications / Risks	Recommendation	BC Ferries: Response
6	Leadership engagement.	The program is actively supported by business leaders across the organization.	None		
7	Business unit subject matter experts are actively engaged throughout the project lifecycle.	Business subject matter experts have been actively engaged in the requirements phase and are now being re-assigned to organizational readiness activities, with planned engagement during acceptance testing. There is a gap in business expert participation in the solution design and delivery phase.	Risk: The solution will be delayed due to time to obtain business input, or the solution may not meet business requirements due to missed input.	Assign dedicated business subject matter expert(s) to each project during design and development: BTC project CRM project Integration project Business readiness stream.	*BCF agrees with the findings and recommendation.* *BCF is conducting a full bottom-up review of the project streams, updating project charters and finalising the integrated program plan. This review includes resource alignment taking this recommendation into account.*
Program and Project Management Framework					
8	Vendor selection follows a rigorous evaluation and selection process.	A rigorous and comprehensive process is in place and has been followed for vendor selection.	None		

#	Best Practice	Findings	Implications / Risks	Recommendation	BC Ferries: Response
9	Appropriate program governance framework is in place.	The program has a strong governance structure, composed of four committees with defined mandates and large cross-functional (and somewhat overlapping) membership. Committees meet monthly.	Risk: Project decisions are delayed due to long time delays between governance committees.	Streamline the current governance structure and process Transition Risk and Security committees to an advisory / implementation support role.	*Due to the critical nature of the program's success BCF strongly supports the position that reporting of the Risk Committee should remain at Steering Committee level.* *As the Privacy and Security Committee is also sufficiently important to the program's success, BCF supports this committee continuing to report to the Steering Committee.* *BCF understands the underlying issue in streamlining the governance process to ensure the objective of making timely decisions is met. Hence BCF is developing procedures to ensure the efficiency of decision making and reporting on a more frequent basis.*
10	A formal project management methodology is in place.	The corporation has a formal project management office and practices. Defined projects have a dedicated project manager, project charters, defined deliverables framework and regular reporting.	None		

#	Best Practice	Findings	Implications / Risks	Recommendation	BC Ferries: Response
11	The priority between project cost, schedule and scope is clearly defined.	No clear priority has been set between cost, schedule and scope. Projects are attempting to keep all three fixed, leaving quality as the only variable.	Risk: Project managers have limited options to manage unplanned events. Quality issues will ultimately result in cost and schedule overruns.	Provide clear direction to project managers on the relative priority of cost, schedule and scope.	*BCF's project management framework includes quality as an integral part of scope. Scope (including quality thereof) must be delivered or appropriate authorization must be obtained for deviations from approved scope. This framework is reinforced with Program Teams and program/project charters which outline detailed scope, schedule and budget deliverables. This confirms quality of deliverables*
12	Project managers are adequately empowered to deliver the project.	Experienced project managers are in place for the defined projects. Project managers have limited control of their own budget, contingency, resourcing strategy and realistic schedule estimates. Project managers are challenged in timely decision making and taking action to address project risks. Program has experienced high turn-over in project managers.	Risk: Project managers are unable to take the necessary and appropriate actions in a timely fashion to be successful.	Increase empowerment of project managers to deliver the project within defined governance and change control mechanisms. Recommended governance adjustments will allow streamlined decision making.	*BCF acknowledges the findings and recommendations.* *Project Managers are in the process of completing bottom-up validation of project stream scope, schedule and budget. Once this validation has been completed the scope, schedule and budget for which they are to be held accountable will be set.* *BCF's Project Management Framework and Guidelines requires any deviation from the agreed scope, schedule and budget to be approved through BCF's normal escalation process. Within the Program the escalation procedure for deviations to scope, schedule or budget will be directly through the Program Directors to the Owners, Sponsor and Steering Committee.* *In the event that the currently authorized program budget and/or schedule is proving to be inadequate, BCF management will present options to the BCF Board of Directors detailing required changes to budget and/or schedule and potential de-scoping (including impact thereof) that would allow the program to remain within the currently authorized budget and/or schedule.*

#	Best Practice	Findings	Implications / Risks	Recommendation	BC Ferries: Response
13	Formal change control practices are in place.	The program has structured processes for scope, cost and schedule changes. The project is aware of the risks / impacts of customization and has review practices to justify and minimize the number of customizations.	None		
14	A quality assurance function has been established and integrated into project teams.	Quality assurance practices are being defined at a corporate level. A comprehensive test strategy has been developed for the ACE Program. The QA lead position on the project is vacant. The project teams have no dedicated personnel to develop test plans and drive the quality assurance activities.	Risk: The quality strategy is not effectively implemented Quality issues are not discovered until the end of the project resulting in project delays or failure.	Hire an experienced quality assurance lead reporting to the project executive sponsor and an adequate team of QA analysts to work directly with each project.	*BCF agrees with, and is in the process of implementing this recommendation. A Test Manager with a QA background has been added to the program and efforts are currently underway to source a separate QA oversight resource to report to the Program Executive Sponsor.*
15	An overall integrated schedule has been created for the program and projects.	The program has an overall schedule and individual projects schedules implemented in a leading project management tool (Primavera). The program and project schedules are maintained by the project management office. The schedule for each project contains a detailed work breakdown structure (WBS) and key milestones, as well as integration points to the overall program schedule.	None		

#	Best Practice	Findings	Implications / Risks	Recommendation	BC Ferries: Response
16	The program schedule is accurate and is actively used to manage the program.	Project managers use their own project schedule tools and report updates to the master program schedule bi-monthly. The Primavera program schedules contain many gaps and inconsistencies. Current status reports are not adequate to visualize and understand the overall schedule status. The program has a large number of project and work-stream interdependencies. Visualizing and assessing the status of interdependencies is difficult and time-consuming.	Risks: Program interdependencies are not managed and leadership does not receive timely warning on schedule issues.	Assign accountability for program schedule accuracy on each project and work stream. Provide schedule status reporting at the program and project level, based on the master Primavera schedule. Provide a consolidated Red/Yellow/ Green status report on each project schedule, with drill down to the project WBS level. Improve the tracking and consolidated reporting of program inter-dependencies.	*BCF agrees with the findings and recommendation.* *Project Managers are currently completing bottom-up validation of project stream charters and project plans for their respective project streams. A Release Manager is planned for the program. The primary responsibility of the Release Manager is to build, manage and maintain the integrated program plan, including all interdependencies as well as the tracking and resolution/escalation of any conflicts. An additional Administrative Support position has been added to assist Project Managers in updating program and project schedules.* *Integrated program plan update is in progress for finalization in February 2014. Updates were completed in Primavera (resources, work breakdown structure and timelines with milestones) with a focus on identification of and subsequent tracking of program interdependencies.* *Current Primavera structure has been configured for and will provide the recommended Red/Yellow/Green status report for each project at the Work Breakdown Structure level.*
17	A formal risk management plan has been established.	The program has a formal risk register and strong practices of risk identification, prioritization and assignment of accountability for mitigation.	None		

#	Best Practice	Findings	Implications / Risks	Recommendation	BC Ferries: Response
18	Timely and effective action is taken to mitigate major program risks.	Risks remain on the risk register for extended timeframes without being mitigated, particularly those related to resourcing. Risk mitigation accountability is typically set at the senior management level.	Risk: Project cost, quality and schedule impacts from unmitigated risks.	Empower project managers to take mitigation actions Enhance reporting of unmitigated risks.	*BCF agrees with the findings and recommendations.* *In order to mitigate risk and promote accountability and empowerment; Project and ACE Managers are completing a bottom-up validation of scope, schedule and budget.* *Program governance structure has been implemented and decision making process is being monitored by Program Directors.* *In addition, a complete risk register review for program and projects has recently been completed with a view to resetting accountability for mitigation at the appropriate management level (i.e.: Manager level for Project Risks and at the Director level for Program risks).*
Project Design and Delivery					
19	Package software meets business requirements and the Vendor has the capabilities to deliver necessary customizations: Booking Ticketing & Check-in (BTC) system.	The BTC vendor has a standard product offering for eBooking and a well-established software design and development methodology. Substantial software development is required to extend the product for point-of-sale (POS) functionality. Additional effort is needed to define and then design the POS functionality. The Vendor is a small firm based in Italy. A mitigation plan is defined in the contract documents to take over development by BC Ferries if required.	Risk: POS functionality does not meet customer usability and business functional requirements. The vendor fails under the load of the program.	Carry out a thorough review of POS ticketing and check-in business requirements, leveraging other industry's experience. Co-locate key BC Ferries personnel with the Vendor (software analyst, software developer, finance/POS subject matter expert).	*BCF agrees with the findings and recommendations. BCF has carried out a thorough and complete review of POS ticketing and check-in business requirements. In order to ensure we leverage other industry's experience we have engaged the services of experts with relevant experience.* *Concerns with respect to the size of the BTC vendor are an important issue for BCF. Accordingly, we are working together with the vendor on building a strong and healthy long term relationship while at the same time mitigating risk by working with the vendor to ensure a complete and timely knowledge transfer takes place. BCF acknowledges the value of co-locating key BCF and vendor personnel and are determining the most cost effective manner to accomplish this.*

#	Best Practice	Findings	Implications / Risks	Recommendation	BC Ferries: Response
20	An overall integration architecture has been developed.	Program has well-developed enterprise, solution and data architectures to guide integration efforts.	None		
21	The level of effort and approach to integrate solution components has been adequately addressed.	The integration design and development work is the largest and most complex aspect of the ACE Program and will use technologies and methods new to the IT department. BC Ferries is using internal resources to carry out the integration work. This work is currently under-resourced for the task and has limited visibility in terms of accountability, management reporting and dependency management	Risk: High risk to program schedule. Large learning curve to develop the methods, standards and competencies.	Charter and establish a formal project structure for data and systems integration, under the leadership of an experienced software delivery project manager. Supplement the current in-house team with experienced design and development resources skilled in the new technologies and methods.	*BCF acknowledges the findings and recommendations and is in the process of establishing a formal project structure for data and systems integration under the direction of a Technical Manager wh0 has experience with software delivery project management.* *BCF has recently engaged the services of several resources with requisite experience in design and development as well as skills in new technologies and methods.* *In the event that the currently authorized program budget and/or schedule is proving to be inadequate, BCF management will present options to the BCF Board of Directors detailing required changes to budget and/or schedule and potential de-scoping (including impact thereof) that would allow the program to remain within the currently authorized budget and/or schedule.*
22	The network and hardware infrastructure underlying the proposed solution has been established based on business requirements.	The ACE Program requires a complex technical environment. No formal project management framework exists for this work. Delivery is being carried out by part-time operational resources, with no dedicated project staff. Delivery of the technical environment is behind schedule.	Risk: High risk to program schedule. Adequate resources are not available to design, provision, and support the project technical environment.	Charter and establish a formal project structure for infrastructure. Supplement the current part-time staff with dedicated resources including a technical architect, database analyst, server /platform analyst and change coordinator.	*BCF agrees with the findings and recommendations and is in the process of establishing a formal project structure for the complex network and hardware infrastructure. This function is coordinated by an experienced Technical Manager with requisite skills. BCF also recognizes the need for adequate full-time dedicated resources and is completing a bottom-up validation and resourcing requirement review.*

#	Best Practice	Findings	Implications / Risks	Recommendation	BC Ferries: Response
23	Team members have a shared sense of confidence and accountability for delivery. Teams are effectively engaged within and across projects through collaboration and two-way communication.	Concerns at the delivery staff level are not always heard. Management decisions and directions are not always understood at the team level. Team building efforts are missing.	Risk: High staff turnover and / or and low productivity.	Enhance open communication channels across all levels of the program. Invest in regular team building activities.	*BCF agrees with the findings and recommendation.* *Project Managers are currently completing a bottom-up validation of project stream scope, schedule and budget to promote accountability and empowerment. To enhance open communication channels across all levels of the program, this validation effort is communicated by the Project Managers to the Steering Committee, providing visibility, direct communication and accountability to the Project Managers.* *Additional focus to be placed on communication through regular team meeting sessions (including Program Sponsor and Steering Committee members) to promote two-way communication channels and to celebrate program milestone achievements.* *BCF will continue investing in team building activities, team effectiveness and personnel development using the Insights methodology.*

#	Best Practice	Findings	Implications / Risks	Recommendation	BC Ferries: Response
Organizational Change Management					
24	Required changes to business operations have been clearly defined in a future state business model.	The program has obtained input from customers on desired changes and has completed a conceptual design of the future customer experience. Extensive business requirements to support new business operations have been defined. Some business requirements have been defined at a rather high level. The future business process, roles and accountabilities, at an operational level, have not yet been defined.	Risk: Potential gaps between identified business requirements and the future operating needs.	Hire an experienced business analyst (BA) lead to support the existing BAs. Develop business and system use cases and process models at a level meaningful for operations. Validate CRM system business requirements against these use cases.	*BCF recognizes the need for adequate full-time dedicated resources and is completing a bottom-up validation and resourcing requirement review, including Business Analyst Lead requirements.* *A dedicated organization change management expert has been retained to develop and implement the Change Management Strategy. Dedicated resources with business process mapping expertise have been hired to complete end-to-end business process mapping. Business use cases will flow from the business process mapping as will validation of business requirements and unidentified gaps. In addition, project plans include use of models and pilots for CRM and BTC, to validate and confirm business cases and ensure business requirements are met.*
25	Training requirements have been identified and training plans developed.	The program is developing comprehensive training plans to support project implementation.	None		
26	A benefits realization plan with measurements and accountabilities for each benefit stream has been established.	A benefits realization plan has not been developed.	Implications: Benefits are maximized when actively managed post implementation.	Establish a formal benefits realization plan and baseline current performance.	*Benefits realization has been reviewed with recent program budget approval prior to submission to the BCF Board* *Further review is being scheduled and a formal plan established.*

Financial Implication of Recommendations

The financial impact of the recommendations primarily relates to resource levels. This is consistent with the review findings that clearly point to a need for supplemental resources to deliver the project.

At a high level we estimate that fully implementing the identified recommendations will require 18 full time equivalents (FTEs) in year one and 14 FTEs in year two. At a nominal fully loaded cost of $125,000 per year, this would cost $4,000,000.

While this is within the current program contingency budget, we would recommend a budget adjustment for a portion of the estimated cost.

BCF RESPONSE: As indicated in our detailed responses, BCF is in the process of establishing detailed plans and resource allocations from the bottom up, and will endeavor to properly resource these plans from within the currently authorized program budget. In the event this does not prove to be possible, BCF management will present options to the BCF Board of Directors detailing required changes to the budget to deliver the full scope of the program, and potential de-scoping (including impact thereof) that would allow the program to remain within the currently authorized budget.

Recommendations for On-going Monitoring

The recommendations contained in this report are designed to provide BC Ferries management with the structures, tools and practices to improve their internal risk management practices on the ACE Program.

In addition, we recommend regular external third party checkpoint reviews of the program every 6 to 12 months as follows:

Timeframe	Review focus
Q3, 2014	• An overall risk review to measure improvements as recommended • A design & development focused review of Release 1
Q1, 2015	• A design & development focused review of Release 2
Q3/Q4, 2015	• A post-implementation review of Release 2
Q1, 2016	• A design & development focused review of Release 3
Q3, 2016	• A go-live readiness review of Release 3

Appendix A: Technical Assessment & Guidance

Business Environment

The business case for the ACE Program is clearly aligned with the overall strategic direction of BC Ferries and supports the BC Ferry Commission's recommendation # 15 and # 20 arising from the review of BC Coastal Ferry Act (traffic forecasting, upgrades to reservation and point of sale systems, ancillary revenue).

The ACE Program is best thought of as delivering a platform that provides multiple levers to increase ancillary revenue, lower operating cost and increase ridership. These levers are missing in the current legacy systems at BC Ferries. The ACE Program, by itself, will only deliver moderate direct revenue improvement as detailed in the business case.

Realization of the full potential offered by the ACE Program will require subsequent project components that:

- Provide a pricing engine to test scenarios and establish dynamic pricing set-points to the booking system

- Provide customers with mobile device access to the booking, ticketing and check-in system

- Increase the capacity and robustness of the BC Ferries web site to handle online web and mobile traffic

- Implement a series of business transformations to enhance the service offerings to customers

- Transition the majority of customer sales from "show and go" to pre-booked reservations.

While senior management is clear on the distinctions between the ACE Program and subsequent project components (ACE Transformation?), there are signs of confusion at lower levels in the organization. Greater clarity in communications across the program would be useful.

BCF RESPONSE: Please see Findings and Recommendations #2. In addition to this response, additional focus to be placed on communication across the program to ensure clarity between the ACE Program and subsequent projects.

Regulatory Environment

As a regulated entity, the BC Ferries Service is subject to significant public scrutiny. The program is paying extra ordinary attention to the protection of privacy. The approach to privacy protection must be established in a way that meets the obligations under the FOIPP Act, but does not disable BC Ferries ability to understand their customer base and enable targeted service offerings and improved customer experience.

The BC Ferries Service is also regulated in their ability to control price. The average price for a fare is set in regulation. Ultimately, once the ACE Program delivers the technical capability for variable pricing, any increase in fare price to one segment of customers will need to be offset with decreased prices in another segment. This will support increased net revenue for the BC Ferries only to the extent that variable pricing provides incentives for more people to take the ferry.

Note that there are other significant benefits to using variable pricing coupled with advanced booking to shape demand, reduce line-ups and waiting times for customers and reduce the need / cost of standby ships (discretionary sailings) to accommodate unpredictable traffic volume.

BCF RESPONSE: Please see Findings and Recommendations #2

Stakeholders

There is broad support across the organization for the ACE Program, including strong commitment and active engagement from the leadership team. There is a growing recognition that the business stakeholders need to be more consistently involved to ensure success in the program. The recent addition of a Program Business lead to supplement the Program Technical lead has been a positive move.

Extensive effort is now underway to define and plan the organizational training requirements of the program. Some 1,000+ staff will require training as part of the roll out. There is a significant risk that the timing and availability of the staff for training may not align with the current timing and roll-out of the program, with likely schedule impacts. The program is aware of this risk and is currently attempting to align project delivery and training schedules. Caution should be exercised in any planned adjustments to not adversely affect system delivery quality or the viability of the vendor providing the BTC application.

BCF RESPONSE: Please see Findings and Recommendations #11.

Sponsorship

The Information Technology organization is currently sponsoring the program.

The ACE Program is significantly transforming the core technology platform at BC Ferries, moving the organization from an aging, tightly coupled, object-oriented architecture to a modern, loosely coupled, service-based architecture. This represents a major shift in the technical environment and will require significant re-tooling and training of the internal technology development and technology support staff.

However, the ACE Program is also defining and enabling transformation business capabilities that will impact the daily operations across the organization. Assignment of the program sponsorship role to Information Technology does not align with best practices for a transformational business project. Placing Information Technology in the dual role of balancing business outcomes with technical delivery excellence is a known high risk, not to mention a rather uncomfortable position for anyone to be in.

It is our strong recommendation that BC Ferries transition the program sponsorship to a senior business executive having a mandate to deliver the business outcomes across multiple business areas. This puts the business clearly in charge of controlling trade-offs in cost, schedule and scope, without impacting quality, and signals the importance of the ACE Program to BC Ferries future. In turn, the program and project managers should be directly accountable to the executive business sponsor for delivery in order to align accountabilities and enable overall program alignment.

The CIO role remains critical to the program success and should be freed up to focus on the major integration and infrastructure delivery components of the program, while also providing ongoing support for the technical solution delivery and preparing the support organization for the technical transformations that will be delivered by ACE.

BCF RESPONSE: Please see Findings and Recommendations #5.

Governance

The ACE Program has an extensive governance structure with multiple governance committees (Steering, Risk, Technical, Privacy and Security). Each committee has a documented mandate. The governance committees meet once per month and track actions and decisions in a formal log.

While potentially effective for aligning multiple stakeholders and gaining broad consensus on decisions, the current structure is much heavier than typical and presents a significant risk to the program in timely decision making. We are concerned with the program governance being "top heavy", and that the decision-making authority may not be distributed effectively from leadership through to project managers.

We recommend that BC Ferries take steps to streamline the governance structure and to empower the program and project management to deliver the program within project guidelines and approved requirements. Transition the risk and privacy committees to an advisory / implementation support role as needed to assist the program / project managers.

BCF RESPONSE: Please see Findings and Recommendations #9 & #12.

Quality Assurance

Quality Assurance (QA) practices are in their infancy stage at BC Ferries. Resources and plans are identified for final business acceptance testing and a QA strategy and plan is under development for IT as a whole. However, there are no assigned QA resources on the various projects, nor a dedicated hands-on QA lead on the program to guide and implement the corporate QA strategy.

The projects are primarily being delivered using waterfall development methodologies. With this methodology, the cost to remediate quality issues increases by an order of magnitude as the project moves from requirements through design, development, acceptance testing and into production. Best practice is to carry out quality assurance reviews at each of these phases to identify and rectify issues as early in the delivery process as possible. A quality assurance role should be built in as part of the delivery team, not as a bolt on at the end.

We strongly recommend identifying and recruiting an experienced, dedicated QA leader for the program as well as an adequate, dedicated team of QA analysts to work directly with each project and stream. These QA resources should be involved in supporting the delivery teams with QA reviews of requirements, specifications, design, coding, documentation, processes, and assisting business analyst's in acceptance testing. The program QA leader should report directly to the project executive sponsor, with dotted line to the corporate IT Quality Assurance lead.

This change is critical to avoid back-end discovery of quality issues and the resulting negative impact on cost, schedule and system acceptance.

BCF RESPONSE: Please see Findings and Recommendations #14.

Risk Management

Formal risk management is a relatively new capability in IT project delivery at BC Ferries. The ACE Program has established a strong practice of risk identification, logging and remediation planning and has a formal risk management committee. Efforts have recently been started to collaborate across project teams in risk identification and planning.

Risk management has not yet reached the level of sophistication where contingency is assigned to each risk and then released when a risk has passed or has been mitigated.

Opportunities were identified for improvement in the mitigation of risk. Major risks tend to remain on the risk register for a number of months, and accountability for remediation is often assigned too high in the organization for effective action. Accountability for high impact and high probability risks needs to be assigned to the right level and then action taken to reduce the risk to an acceptable level.

High impact risks that linger without effective mitigation should be reported in the program and project status reports.

BCF RESPONSE: Please see Findings and Recommendations #18.

Vendor Selection

Overall, BC Ferries' approach to application vendor selection is comprehensive; the organization has gone through the full Request for Proposal (RFP) process, evaluated the marketplace, and conducted due diligence prior to vendor selection.

Program Management - Prioritization

There are four variables a program or project manager has to work with: quality, cost, schedule and scope. Best practice establishes non-negotiable standards for quality, and allows the project manager to work within the "priority triangle" of cost, schedule, and scope. Unforeseen events within a project are addressed by adjustments in either the cost, schedule or scope, with the relative priority of these three set my management.

At present, project managers are attempting to hold all three variables (scope, cost and schedule) constant, and quality is, by default, the variable that moves.

We recommend reviewing the priority triangle and establishing management direction on the relative priority between these factors to alleviate the downwards pressure on quality.

BCF RESPONSE: Please see Findings and Recommendations #11 & #12.

Project Management – Project Manager Role

The ACE Program has experienced project managers. These resources can be better enabled if they are provided with increased ownership of their respective budgets (including some contingency allocation), and more authority to set timelines, acquire resources and to set schedule estimates in agreement with their project teams. Project managers should be accountable to the executive business sponsor for delivery of their portion of the program and should be empowered to take the necessary actions to deliver their project within defined scope, schedule and cost change control mechanisms.

In summary, the program needs to increase the empowerment of project managers to deliver the program on behalf of the program sponsor. Provide each project manager with clear indication of the priority of scope/schedule/cost and delegate direct control over their budget (including contingency), schedule and resourcing within defined scope and cost change control mechanisms.

In addition, detailed implementation plans need to be communicated and validated with delivery staff to provide clarity regarding accountabilities and to establish consensus on the duration of tasks and the required resource timing and capacity.

BCF RESPONSE: Please see Findings and Recommendations #12 & #16.

Project Management - Team Cohesion

Cross-team and cross-project collaboration will be critical to the success of the program. There are clear signs of communication breakdowns between management, business and technical resources. Communication related to each project, such as achievements, shorter team project plans and priorities, and key decisions will be valuable to align stakeholders and establish a real sense of team. Improved integration of leaders, subject matter experts, project managers, architects, business analysts and developers will be valuable and will improve trust,

communication and confidence in each team's ability to deliver.

We recommend allocation of funding and specific action by project managers to improve team cohesion including collocation of resources, regular communication of program achievements, priorities and decisions. Joint celebration of project milestones, a grass roots recognition program as well as social activities should be held to open up lines of communication and build a strong sense of team.

BCF RESPONSE: Please see Findings and Recommendations #23.

Project Schedule

BC Ferries has invested in a sophisticated program scheduling tool (Primavera) with powerful resource planning and scheduling capabilities suitable for a complex program environment. A detailed review of the Primavera schedule showed significant gaps between planned and actual start dates and multiple disconnects in the plan. There are indicators that the overall integrated program schedule is not easily accessible or widely communicated through the program teams. Most project managers have established their own project schedule in a more accessible tool. Work is required to align the project schedules and to establish clear ownership for maintaining the integrated project schedule. Additional scheduling resources may be required to support program scheduling and impact analysis.

BCF RESPONSE: Please see Findings and Recommendations #16.

Project Delivery – Resourcing

Within the technical delivery organization, there has been a "resource pool" concept across the multiple projects, which is not conducive to effective project management and team structures. Below the project manager level, there is a lack of clear structure, accountability and role assignments. Further effort is required to structure the delivery projects and streams and establish clear roles and accountabilities.

In several areas key project roles are being filled with part-time resources that are balancing their regular, day to day workload with ACE Program responsibilities, and there is high risk of burnout and increased turnover. Every effort should be made to back-fill operational responsibilities and enable full-time assignments.

Specific recommendations are made for each project area below.

Business Engagement in Project Delivery

Continued dedicated business resources are required to support the design and delivery of the ACE Program. The completion of gap analysis represents a significant milestone but continued business engagement is required in the following project delivery areas:

Business Readiness Stream

Significant business and technical resources are required to develop business and system use case definitions that reflect the refined business requirements captured during gap analysis.

BCF RESPONSE: Please see Findings and Recommendations #24. In addition to this response a detailed business resource requirement document has been produced for the life of the program as part of the bottom-up project validation effort. This document will be shared with senior business leaders to align program and business resourcing needs/requests.

BTC Project

There is a need for continued engagement of a finance and/or terminal operations subject matter experts to support further definition and development of the point of sale software functionality.

BCF RESPONSE: As mentioned immediately above, a detailed business resource requirement document has been produced for the life of the program as part of the bottom-up project validation effort. This detailed resource requirement document includes all areas of the business including Finance and Terminal Operations.

CRM Project

There is a need for business subject matter expert engagement to further define the target business operating model and refine the CRM system requirements.

BCF RESPONSE: Please see Findings and Recommendations #24, as well as the response above regarding detailed business resource requirement documentation.

Integration Project

There is a need for continued business engagement to support the integration effort. See the integration recommendations below.

BCF RESPONSE: Please see Findings and Recommendations #24, as well as the response above regarding detailed business resource requirement documentation.

Customer Relationship Management (CRM) & Card Services Application

BC Ferries has pre-selected an industry leading software platform (Siebel) for their CRM and card services application functionality. Design, configuration and extension of this base platform has been awarded to Tech Mahindra, an onshore / offshore software development firm. Within the vendor contract, there are some price signals (penalties) for missing milestones, but the schedule is re-baselined after each slippage, so these penalties may have limited impact. The vendor contract has not been finalized pending completion of the gap analysis and impact assessment. The project is currently behind the original program schedule due to the extended duration of gap analysis and contract negotiations.

There are early indicators that Tech Mahindra design specifications are not well crafted; stakeholders have indicated there is a fair amount of recycle, iteration and design work being completed by BC Ferries staff. This may be due to the level of the business requirements for the CRM functionality and a lack of experienced resources with domain knowledge on the Tech Mahindra team. Additional BC Ferries business and business analyst resources may be required to fill this gap.

High level customer experience has being defined, but this has not been detailed into a future business operating model for BC Ferries, as the organization is planning on holding off on major operating model changes until after Release 3 of the program.

Although many of the explicit actions to improve the customer end-to-end experience have been deferred to a subsequent project, we recommend immediate work to further identify and prioritize those customer interactions that will enhance the customer experience and drive increased ridership and loyalty. These priorities should then be used to further define the BC Ferries future state business operating model (processes, roles and application requirements) at a level that is meaningful to operational staff.

The outputs from the future state operating model should be used to cross-check against the current CRM functional requirements.

BCF RESPONSE: BCF is working closely with Tech Mahindra to ensure alignment of timelines and capabilities. With respect to BCF future state operating models, in addition to the efforts detailed in response #24, plans are being put in place to validate existing high-level CRM functional requirements with further defined BCF future state business operating model.

Booking, Ticketing and Check-in (BTC) Application

The booking, ticketing and check-in application functionality has been contracted to eDea, a specialized software firm with a pre-existing eBooking application. The vendor is undertaking a major enhancement to its standard product to address ticketing and check-in functionality. BC Ferries is responsible for all integration work to incorporate this application into the broader ACE solution environment.

Within the BTC vendor contract, there are no price signals; this is perhaps reasonable given the vendor's size (they are a small vendor with limited ability to carry BC Ferries). The contract document alludes to BC Ferries intention to mitigate this risk by incorporating key staff into the vendor's software development team, but it is unclear that this has been actioned in any meaningful way. Lessons learned from past projects should be applied to ensure the continued viability of this vendor and to ensure that external demands for schedule improvement and/or functional changes do not overwhelm the vendor team.

The ticketing and check-in software will need to support both electronic Point of Sales (POS) and the physical POS system at the Ferry terminals. Field operation staff input has been provided into the user interface requirements for the physical POS system. The overall requirements were rushed in development and will need to be revisited, which will also increase the need for business resources and may result in timeline delays. Project budget contingency has been set aside for this uncertainty.

We recommend co-locating key project roles, including at least a senior software analyst, software developer and Finance/POS subject matter expert, with the vendor for knowledge transfer and business and technical risk mitigation.

BCF RESPONSE: Please see Findings and Recommendations #19.

Terminal Automation

The Terminal Automation project is planned to automate vehicle length measurement, provide kiosks for streamlined ticketing and check-in for foot passengers, enable baggage taking and provide turn boarding control. With the exception of the automated vehicle measurement system, the majority of the Terminal Automation project has been deferred to a later phase in the ACE Program in order for the teams to focus on priority activities and projects.

The integration between the ticketing and check-in software and the passenger kiosk system is unclear at this time. It may be useful for BC Ferries to investigate state-of-the-art check-in kiosks used in the airline industry (WestJet) as a potential reference for this aspect of the solution.

BCF RESPONSE: BCF currently has self-ticketing automated ticketing and check-in kiosks in operation at its major terminals. The Terminal Automation project contemplates the acceptance of additional forms of payment (cash), as well as the ability to print baggage tags. BCF is currently working with a kiosk vendor to investigate state-of-the-art kiosks currently in use by various transportation companies including airlines, bus lines and other ferry operators.

Infrastructure and Technical Environments Stream

The ACE Program requires a complex technical environment. This stream of work is at significant risk compared to other program areas. From a management perspective, there is poor visibility within the stream, no direct budget accountability and the stream has not been chartered.

This stream has been challenged to deliver with part-time operations staff that are often pulled away by other projects or day to day operational activities. Key resources need to be assigned to the project on an ongoing basis to sustain the project environment and coordinate technical change management.

The infrastructure work has five main aspects:

- Design, build, test and maintain the development, unit test, integration test and acceptance test environments for the SOA platform, payment services, BTC, CRM and legacy systems

- Design, build, maintain and refresh the test data required to support development and testing

- Coordination with other IT projects delivering network and data center redundancy to support the ACE Program

- Design, build and coordinate the roll-out and staged transition of the production environments (central data center and terminal locations)

- Change control coordination for all environments throughout the duration of the program.

We strongly recommend that this stream be transitioned into a formal project and supported by the recommended change in CIO focus. Charter and establish a formal project structure for infrastructure and technical environment design and delivery. Supplement the current part-time operational staff with a dedicated team including an infrastructure technical architect, a database analyst, a server/platform analyst and a technical change coordinator

BCF RESPONSE: Please see Findings and Recommendations #20, #21, and #22. In addition the provisioning of infrastructure is coordinated with the Executive Director, IT Operations to ensure on-time delivery of technical environments and inclusion of the database and network requirements. This is further supported by the CIO focus on the BCF enterprise architecture, technical delivery and support.

Integration Stream

The ACE Program is integrating disparate customer-related systems as well as replacing the core Booking, Ticketing and Check-in systems, all of which require a complex set of integration points to each other and to multiple legacy business and terminal operating systems. The current system is inflexible and fragile in the face of change. The program has developed a solid enterprise and solution architecture to transition the underlying technical environment to a modern, flexible service-based architecture.

The program will demand a step change in the technical support capabilities required at BC Ferries as they transition from a legacy PowerBuilder development environment with point-to-point integration to a service oriented architecture (SOA) / Java based environment. Internal standards, practices and staff skill-sets in these new areas are at their infancy.

While BC Ferries has taken steps to enhance resources and capabilities, (e.g. adding a consultant resource from Sierra), the integration remains a high risk area within the ACE Program. Integration requirements and efforts appear to be more significant than initially anticipated. From a management perspective there is poor visibility within the stream, no direct budget accountability and the stream has not been chartered.

The integration work has three main aspects:

- Data integration to support a common view of the customer

- Application integration of the new CRM and BTC applications using an SOA platform

- Integration with the terminal operation systems and design of a new set of Terminal Operating Services.

The integration work is the largest and most complex component of the project, yet is currently under-resourced for the task and has limited visibility in terms of accountability, management reporting and dependency management. Technical assistance and mentoring will be required for successful delivery.

We strongly recommend that this component of the work be transitioned into a formal project and supported by the recommended change in CIO focus.

Charter and establish a formal project structure for systems integration under the leadership of an experienced software delivery project manager. Segregate this work package from the infrastructure stream. Supplement the assigned staff resources with team members, including an integration architect, senior SOA analyst/developers, senior Java software analyst/developers, and quality assurance resources, experienced in SOA analysis, design and implementation and in custom software development in a real-time enterprise Java environment.

In addition, supplement the technical team with business subject matter experts to assist with interface definition, setting enterprise data standards and ensuring business alignment.

BCF RESPONSE: Please see Findings and Recommendations #20 and #21. The data conversion and integration is managed by a project manager of the BCF data readiness stream in collaboration with the CRM and BTC application Project Managers. Deployment of the solution is coordinated with the Terminal Subject Matter Experts and Operations Management. This is further supported by the CIO focus on the BCF enterprise architecture, technical and operations support.

BC Ferries Response February 14 2014