APPROVAL

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Title of Project: Service Innovation: an Effective and Collaborative Enterprise Web Portal for Health Care Providers

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ABSTRACT

The objective of this report is to analyse the impact and feasibility of establishing a self-service enterprise web portal to serve WorkSafeBC’s health care provider customer segment. First, the six critical factors to enterprise portal success in the health care industry are determined, specifically authentication, authorisation, privacy, collaboration, governance, and content. In turn, a critical evaluation of the first five factors against WorkSafeBC’s business and technical competencies and constraints confirms its overall readiness for a provider portal implementation. The sixth and primary success factor, content, is the focus of the remainder of this report. Notwithstanding the impact of the other five success factors, providing access to the information and services (i.e. content) most important to health care providers is essential to portal success. Thus, a robust content feasibility study identifies, evaluates and selects the primary content to deliver by means of a provider portal.
EXECUTIVE SUMMARY

WorkSafeBC is a statutory agency responsible for administering the Workers Compensation Act in British Columbia. The organisation is undergoing significant business and technical change as it prepares for the implementation of its massive Claims Management System (CMS) in late 2008. CMS will redesign and refocus the organisation’s core business processes and systems with the goal of improving the service experience for workers and employers, capturing and using data more effectively, and establishing new electronic channels to exchange information with customers.

Notably absent from the CMS vision is a focus on improving the customer experience with health care providers – the third primary customer segment along with workers and employers. This report fills that gap and explores the opportunity to share relevant CMS data with health care providers via an enterprise web portal. This provider portal exclusively targets the health care provider segment and compliments the existing employer and worker focussed portals. The intent of the provider portal is to improve the health care provider experience and improve operational efficiency.

An enterprise portal is a single sign-on electronic gateway to customised content, functionality, information and services. The portal concept is somewhat vague and is difficult to describe due to the versatility of the concept. In this situation, an enterprise portal refers to an external facing self-service portal to facilitate information sharing between WorkSafeBC and its health care provider customer segment. It provides
anytime, anywhere access to personalised content intended to increase collaboration and speed of access, while simultaneously increasing productivity.

The six critical factors to establishing a successful health care provider portal are authentication, authorisation, privacy, collaboration, governance, and content. A portal readiness evaluation measuring WorkSafeBC’s business and technical abilities against the first five factors confirms its capacity to leverage its expertise, technology, business processes, and governance structure to deliver a successful health care provider portal. WorkSafeBC’s authentication and authorisation technology and processes are reputable, reliable and easily able to control provider access in order to maintain the privacy of medical information. Moreover, senior members of the organisation capably govern the overall information technology and health care portal vision, as well as the authentication process. In addition, the expected culmination of the Channel Director role only enhances this leadership and governance model. Lastly, the content under investigation establishes a somewhat collaborative information-sharing environment with the ability to both send and receive health care information and interface directly with CMS.

Content, the sixth success factor, ultimately drives the quality and success of an enterprise portal. Rationally, the most important factor to creating a successful enterprise portal is to establish self-service access to the most critical information and services. Thus content identification, evaluation and selection shape the focus of this report.

A series of brainstorming sessions with senior health care and information technology directors identify the payment remittance statement, medical referral and medical disclosure business processes as the focus for this content feasibility study. The payment remittance statement indicates the status of recent payment items billed by the
provider for health care services rendered to injured workers with accepted WorkSafeBC claims. A medical referral provides the injured worker with access to WorkSafeBC’s external provider network in order to receive specialised diagnosis and treatment. Lastly, medical disclosure is the provision of medical records to the health care provider, pertaining to the injured worker referred for diagnosis or treatment.

A comprehensive analysis of the proposed portal content validates the problem statements and determines root causes. Business process re-engineering techniques are utilised to design the portal delivery of this content in order to resolve the root causes. This allows for benefit measurement, both in terms of productivity and customer value.

Finally, decision analysis techniques determine the specific content to deliver by means of a provider portal. Relevant information identified throughout the portal strategic analysis, content analysis, customer analysis, and industry analysis combine to establish the nine decision criteria. Decision criterion relate specifically to portal strategy, business productivity drivers, customer value drivers, and feasibility drivers. The decision analysis process assigns weights to each of the criterion and allocates a relative score to each of the three business processes that ultimately determines a total score.

The end-result of this comprehensive content analysis suggests the payment remittance statement and medical disclosure processes are ideal content to include in the provider portal, whereas the medical referral process provides no tangible portal benefit. This compliments existing content considered for aggregation into the provider portal – such as the Claim Status application and provider-specific reference material including service contracts and fee schedules – and positions WorkSafeBC for ongoing success with its provider portal initiative.
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1: INTRODUCTION

1.1 WorkSafeBC

WorkSafeBC, established in 1917 as the Workers’ Compensation Board of British Columbia, is responsible for administering the province’s Workers Compensation Act. This act enshrines the historic compromise of mutual protection that provides injured workers the right to compensation for injuries sustained on the job, and employers with immunity from lawsuits filed by injured workers. The employers of British Columbia, through the payment of insurance premiums, fund this no-fault insurance system.

WorkSafeBC is an independent statutory agency serving 2.3 million workers and 190,000 employers. Governed by a Board of Directors appointed by the Government of British Columbia, it is ultimately accountable to the public under the responsibility of the Ministry of Labour and Citizens’ Services. WorkSafeBC’s ultimate vision is workers and workplaces safe and secure from preventable injury, illness, and disease. Its mandate is to collaborate with the workers, employers and medical community of British Columbia to:

- Promote the prevention of workplace injury, illness, and disease;
- Rehabilitate those who are injured and assist with timely return to work;
- Provide fair compensation to replace workers' loss of wages while recovering from injuries; and
- Ensure sound financial management for a viable workers' compensation system.
1.2 Background

In the execution of its mandate, WorkSafeBC collaborates with the medical community to leverage their services and expertise in order to facilitate the injured worker’s successful return to their pre-injury health and employment. An annual $245M health care spending budget supports WorkSafeBC’s service driven health care strategy, resulting in the receipt of 6M reports and invoices and the issuance of 2M payments annually to health care providers. Although WorkSafeBC is smaller player in British Columbia’s health care industry, any incremental improvement to its operations and service model nevertheless has a lasting and significant affect on its citizens.

The primary strategic pillar that supports WorkSafeBC’s business model is its commitment to continuous service improvement, specifically to improve satisfaction, accessibility, and public confidence. In 2005, WorkSafeBC commissioned the Claims Management Solutions (CMS) initiative as part of its commitment to improve operations and customer service. Completing in late 2008, this initiative will redesign and refocus the organisation’s core business processes and systems with the goal of improving the service experience for workers and employers, capturing and using data more effectively, establishing new electronic channels to exchange information with customers, and enhancing the organisation’s financial systems.

Notably absent from this vision is a focus on improving the customer service experience with health care providers. Granted, several projects are currently underway to do just that, specifically in the realm of electronic reporting and invoicing, however these initiatives have a long-term view and are several years away from implementation. This missed opportunity provides a significant near-term option to leverage relevant
CMS data in order to provide specific business processes via an enterprise web portal and thus to improve the health care provider experience.

1.3 Objective

The purpose of this project is to analyse the impact and feasibility of implementing an enterprise web portal for health care providers at WorkSafeBC. The objectives of this report are to:

- Ascertain the key success factors in implementing a successful enterprise web portal in the health care industry;
- Understand WorkSafeBC’s competencies and constraints with respect to these key success factors, in order to understand its ability to implement a successful enterprise web portal;
- Identify, document, verify and measure the specific business processes that can be feasibly provided via an enterprise web portal;
- Determine the operational efficiencies and customer value that can be achieved by providing this content online;
- Understand the challenges of uptake and adoption to estimate actual benefit realisation; and finally to
- Recommend which business processes to incorporate into an enterprise web portal.

In the pursuit of these objectives, a methodology including both primary and secondary sources is utilised. A succinct literature review provides the necessary secondary information to understand the enterprise portal concept, the key success factors in implementing an enterprise portal, and the expected portal adoption rate. In addition, the analysis of primary information – collected by means of a series of structured
interviews with staff and managers at WorkSafeBC – provides the necessary information to fulfil the remainder of the objectives. The interviews series included a broad spectrum of key health care and information technology resources such, including the Director of Health Care Services, Director of Health Care IT Strategy, Manager of Health Care Programs, Health Care Statistics Analyst, Account Manager (E-Business and Health Care), Registration Representatives, and Payment Officers.

1.4 Scope

This report is conducted in accordance with the WorkSafeBC’s web portal vision. It specifically examines opportunities to realise near-term benefits within the health care provider customer segment. Hence, it does not investigate portal opportunities for the worker or employer segments. Furthermore, this report does not discuss long-term health care portal concepts such as the electronic health record, or electronic invoicing and report submission as this framework is under the purview of the provincial government’s Office of the Chief Information Officer and its inter-organisational task forces.

This report specifically investigates the feasibility of delivering the following content online to health care providers:

- Payment remittance statement;
- Medical referral; and
- Medical disclosure.

The scope of this report is an opportunity analysis / feasibility study. This report demonstrates the benefit of an enterprise web portal and lays the foundation for forthcoming activities that lead to implementation. However, it does not discuss the
implementation of an enterprise web portal, nor develop a business case and secure funding to do so.

1.5 Structure

The next chapter of this report describes the enterprise portal concept and its key benefits and features, in order to provide a common understanding of the portal concept as it applies to this feasibility study. The enterprise portal concept, with respect to the health care industry, is examined in chapter 3. This chapter defines the key success factors in portal implementation in the health care industry and evaluates WorkSafeBC’s position given its existing competencies and constraints.

Chapter 4 describes the content proposed for delivery through an enterprise portal. It defines each of the business processes and their metrics, validates the initial problem statement, and determines the root causes of the problems. In addition, chapter 4 focuses on business process reengineering and the expected benefits of delivering this content via an enterprise portal.

Chapter 5 captures the decision analysis process and evaluates the specific content to include in the provider portal. It summarises WorkSafeBC’s portal strategy and segments the customer base to understand how a provider portal delivers customer value. Moreover, it critically examines benefit realisation based on expected uptake and lessons learned from existing portal initiatives in the worker and employer customer segments. Finally, it identifies the relevant decision criteria and their weights in order to perform the decision analysis process. Chapter 6 summarises the recommended content to include in the health care provider portal, and summarises the project objectives and outcomes.
2: ENTERPRISE PORTALS

An enterprise information portal is a single entry-point electronic gateway to customised content, functionality, information and services. At first thought, this may seem a simple and straightforward concept; however, the enterprise portal concept is multifaceted and its diverse manifestation has created confusion in literature, industry and general society. At this stage, it is helpful to arrive at a common understanding of the concept before further exploring the WorkSafeBC health care provider opportunity.

2.1 Origins

The enterprise information portal (enterprise portal) traces its origins to the web portal concept that emerged in the mid-1990’s to provide structure to the chaotic World Wide Web. The web portal is the evolution of the simple search engine. It aggregated web content and services (portlets) such as email, weather, shopping, calendar, search, and stock reports into a single web page for easy reference. Web portals, such as Yahoo! and AOL, had tremendous success providing users with customised content at their fingertips under a common banner.

By the turn of the millennia, corporations began to take notice and recognise the opportunity to share information and applications with their customers by means of the web browser. This led to the development of specialised portal software packages that now primarily operate on a Java-based standard framework. Today, enterprise portals are
a highly effective communication media for sharing information and performing business transactions with staff, customers, vendors, partners, and government.

2.2 Description

Describing a typical enterprise portal is difficult because of the versatile solutions that portals provide to business. In fact, no fewer than seven types of enterprise portals exist today, each that endeavour to address a different set of business objectives (Byrne, 2007). For the most part, the seven types of enterprise portals can be categorised as either delivering internal facing content or external facing content. The internal facing portals focus on B2E (business to employee) interactions, whereas external facing portals focus on B2B (business to business) and B2C (business to consumer) interactions. The seven basic types of enterprise portals are categorised and described in Table 1.

Table 1: Enterprise Portal Scenarios & Descriptions

<table>
<thead>
<tr>
<th>Portal Scenario</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal Facing – Business to Employee (B2E)</strong></td>
<td></td>
</tr>
<tr>
<td>Collaboration Portal</td>
<td>Provides collaboration features that enable groups of users to self-organise and share information and ideas.</td>
</tr>
<tr>
<td>Enterprise Integration</td>
<td>Focus on providing application functionality and moving beyond simple content portals (intranet).</td>
</tr>
<tr>
<td>Enterprise Intranet</td>
<td>Aggregates enterprise content (documents and textual information) from many sources throughout the enterprise.</td>
</tr>
<tr>
<td>Web Application Development</td>
<td>Combines separate applications into a co-operating federation of applications to achieve greater efficiency.</td>
</tr>
<tr>
<td><strong>External Facing – Business to Business (B2B) / Business to Consumer (B2C)</strong></td>
<td></td>
</tr>
<tr>
<td>E-Business Portal</td>
<td>Provides e-commerce capabilities with external trading partners, suppliers, and customers.</td>
</tr>
<tr>
<td>Self-Service Portal</td>
<td>Enables customers to help themselves to corporate information, applications, and services on their terms.</td>
</tr>
<tr>
<td>Web Publishing</td>
<td>Publish web content to customers through a corporate website, including forums and survey applications.</td>
</tr>
</tbody>
</table>

Data compiled from CMS Watch (Boye, 2006; Byrne, 2007) and Oracle BEA (Laird, 2008)
WorkSafeBC is working its way up the ladder with its external facing B2B enterprise portal offerings. The organisation has offered the Health Care Provider Centre\(^1\) on its web site (web publishing) for several years, and is inching towards the realisation of its long-term e-business portal strategy over the next decade by collaborating with the provincial government on electronic invoicing and report submission initiatives. In the near-term, and for the purposes of this analysis, the organisation is pursuing a self-service portal strategy to deliver specific content to health care providers.

Naturally, an organisation may provide its customers with electronic self-service functionality through alternative means such as an e-business portal or an integrated voice recognition based system. However, for the purpose of this report the enterprise web portal is the recognised solution. The self-service enterprise portal concept also aligns with the vision of senior health care management.

### 2.3 Benefits

A key feature of any type of enterprise portal is its ability to provide integrated access to information, applications, and services from multiple sources through a single sign-on point of entry. Paramount to this integrated access is the ability to customise or personalise the content delivered to customers, based on customer preferences, attributes, and permissions. This allows an organisation to personalise the delivery of information and provide specific customers with only the information that is relevant and permissible to them, in a format that is both appealing and usable as defined by the customer.

\(^1\) http://www.worksafebc.com/health_care_providers/default.asp
A key value-add of an enterprise *self-service portal* is its ability to aggregate content from multiple sources, eliminating the customer's need to track down information from multiple locations and login to several sources. This improves customer loyalty, and reduces transaction costs by effectively providing online access to services traditionally delivered less inefficiently (Laird, 2008). Self-service portals also speed the customer’s access to services – no waiting on hold, no waiting for return calls, and no waiting for postal correspondence – simply immediate access to services any time, anywhere. The fundamental features and key benefits of a self-service enterprise portal are summarised in Table 2.

**Table 2: Self-Service Enterprise Portal Key Features & Benefits**

<table>
<thead>
<tr>
<th>Fundamental Features</th>
<th>Key Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Single sign-on authentication capability</td>
<td><em>Enterprise benefits:</em></td>
</tr>
<tr>
<td>□ Integration of information, applications, and services from various sources</td>
<td>□ Lower costs to deliver services</td>
</tr>
<tr>
<td>□ Personalised display of content based on customer preferences or attributes</td>
<td>□ Coordination and collaboration with partners, suppliers, and customers</td>
</tr>
<tr>
<td>□ Federation of content and portlets provided by other portals</td>
<td>□ Increased customer loyalty</td>
</tr>
<tr>
<td>□ Ability to provide or limit content based on customer access permissions</td>
<td></td>
</tr>
<tr>
<td>□ Java-based portal software standard</td>
<td><em>Customer benefits:</em></td>
</tr>
<tr>
<td></td>
<td>□ Increased speed of access to services</td>
</tr>
<tr>
<td></td>
<td>□ Any time, anywhere access</td>
</tr>
<tr>
<td></td>
<td>□ Personalised delivery of content</td>
</tr>
<tr>
<td></td>
<td>□ Improved collaboration with enterprise</td>
</tr>
</tbody>
</table>

Data compiled from CMS Watch (Boye, 2006; Byrne, 2007) and Oracle BEA (Laird, 2008)

This chapter provided a common understanding of the enterprise (self-service) portal concept, and its key features and benefits, as it relates to the health care provider opportunity at WorkSafeBC. The following chapter narrows the scope of this portal description to appreciate its relevance in the health care industry. This health care context provides a framework in which to evaluate WorkSafeBC’s ability to establish a self-service health care provider portal, given its competencies and constraints.
3: HEALTH CARE PORTAL IMPLEMENTATION

3.1 Health Care Industry Perspective

The health care industry has four main players: providers, payers, patients and suppliers. Health care providers, such as physicians and physiotherapists, provide health care services to patients. Health care suppliers provide supplies, such as bandages and needles, to health care providers. Health care payers, such as Pacific Blue Cross and MSP, pay the providers, suppliers and patients for the cost of the services and products incurred. WorkSafeBC falls into the category of payer and is responsible for reimbursing health care providers for the cost of authorised services provided to injured workers.

The vast majority of self-service health care portal cases available in the literature focus on either health care providers delivering self-service content via an enterprise portal to their customers (patients), or health care providers providing self-service portal functionality to staff and physicians internal to the provider organisation. The case of a statutory agency providing enterprise portal content to its customers (health care providers) is much more unique and is virtually absent from the literature. Nonetheless, useful and relevant insight still exists to assist WorkSafeBC in understanding the key factors in implementing a successful enterprise portal.

The primary driver for implementing an enterprise portal in the health care industry is to establish efficient information sharing to allow for effective collaboration amongst health care providers, subsequently facilitating the delivery of timely and high quality patient care at the lowest possible cost. However, such accessibility leads to
privacy and security concerns. Therefore, with numerous individuals accessing the enterprise portal to share information, it becomes crucial to secure the privacy and confidentiality of patient information to ensure that health care providers have access to only the information and data permitted to them (Zickmund, 2007).

3.2 Health Care Portal Success Criteria

Unmistakably, the most important factor to implementing a successful enterprise portal is to establish self-service access to the information and services that are most critical to the health care provider. This content identification is the focus of the majority of this report. However, it is useful at this time to also explore and understand the other significant factors. As suggested in the previous section, a succinct literature search identifies five key issues to implementing and managing a successful health care provider portal. These are authentication, authorisation, privacy, collaboration, and governance.

Figure 1: Health Care Provider Portal – Key Success Factors
Authentication allows the health care provider to access the enterprise portal by entering unique credentials, known only to them, such as an identification name/number and password. This information is necessary to establish their identity (Ferrer-Roca, 2008). Typically, authentication is single-factor based on a personal identification number or password. Two-factor authentication is rarer due to the administrative and technological complexity of introducing schemas such as a challenge-response security token.

Authorisation works in tandem with authentication by enabling access control to information and services contained within the enterprise portal. Authentication establishes the legitimacy of the health care provider, while authorisation controls what information and services are available to access. This ensures the privacy of patient and provider information, and allows for the customised delivery of content based on provider demographics and preferences.

Privacy is paramount to electronic health technology. Given that the impending use and acceptance of enterprise portal systems in health care is quickly approaching, organisations that ignore the impact of privacy in the implementation of portal solutions will undoubtedly experience negative consequences (Pearson, 2001). Privacy of health information is enshrined in physician-patient confidentiality and abuse of this paradigm is potentially damaging to the credibility of any portal offering. Patient disclosure and portal authorisation play a huge role in limiting the scope of information that a health care provider is permitted to view about a citizen of British Columbia. In the case of WorkSafeBC, it becomes just as important to maintain the privacy of all claim and
compensation related aspects of our worker records and provide the health care provider with access to only relevant and authorised medical information.

Collaboration is the fourth key issue to implementing and managing a successful health care provider portal. In fact, it was the dominant theme at the most recent Gartner Portals, Content & Collaboration Summit where forecasts predicted the extent to which two or more individuals will work together to make decisions will increase by 50% over the next few years. This is due to increasing complexity in the health care environment and the need for multiple parties to coordinate efforts to solve problems and address new opportunities (White, 2007). This suggests that a one-way information dissemination channel is insufficient to leverage the full value of an enterprise portal in the health care industry. The basic premise of the health care model at WorkSafeBC is to partner with health care providers in order to generate synergies and facilitate value-added rehabilitation services for injured workers. Only a two-way collaborative information-sharing portal will realise the full benefit of such an investment.

The final dimension, governance, also materialised at the recent Gartner Portals, Content & Collaboration Summit in which Gartner suggested the primary reason for the failure of portal projects is poor governance from the outset (White, 2007). Governance, in this respect refers to the leadership and processes that are in place to control and drive the project to its successful completion. For example, this could include a governing body or individual to coordinate efforts and champion cross-functional activities that traverse diverse stakeholder expectations. Strong governance will facilitate the successful implementation and ongoing management of health care provider portal.
3.3 WorkSafeBC Portal Readiness Assessment

This section explores WorkSafeBC’s e-business, information technology, and business environment in order to understand its competencies and constraints. This information is utilised in order to evaluate WorkSafeBC’s ability to capitalise on the five fundamental factors to establishing a successful health care provider portal. As mentioned previously, the critical issue of content identification and selection completes this health care specific framework and is explored in subsequent chapters of the report.

Portal development projects have been underway at WorkSafeBC since the turn of the millennia. WorkSafeBC has a long-standing customer facing web-publishing portal at www.worksafebc.com, which includes the Health Care Provider Centre. This website also provides the gateway to its self-service employer portal that allows employers to perform numerous activities, for example to report injuries, report payroll, pay insurance premiums, and request clearance letters. This is a two-way communication self-service portal offering, secured through a single-factor authentication SecureConnect gateway.

Authentication

SecureConnect is the infrastructure security service controlling all access to WorkSafeBC e-business applications. A one-time registration process is necessary to acquire a username and password, used to authenticate the customer’s credentials at each subsequent logon. SecureConnect currently operates as the authentication gateway to WorkSafeBC’s employer portal. Recent SecureConnect enhancements now allow the application to act as a universal gateway that can be seamlessly adapted to either a worker or health care provider portal.
SecureConnect provides a proficient means to authenticate health care providers interested in accessing the provider portal. It provides a proven single-factor authentication gateway - credentialed by means of a username and password - that is adaptable to the provider portal due to its universal capacity. WorkSafeBC is poised to leverage this existing solution to address its authentication requirements.

WorkSafeBC also employs a “lite” security model in cases where the privacy and confidentiality of worker information remains confidential. For example, the Claim Status application allows health care providers to determine the claim decision details, injury details, and treatment details of a specific injury claim. The provider needs only to enter the claim number provided by the injured worker. This type of “lite” access does not contain any information about the worker, their employer, or the circumstances of injury to prevent unscrupulous users from randomly entering claim numbers and connecting this information to any specific injured worker. Depending on the type of content made available via the provider portal, a “lite” authentication model may also be utilised; however, this is less likely given that the aim of the provider portal is to share information, such as medical reports and diagnosis, and work collaboratively with the health care community to deliver improved medical services to injured workers.

**Authorisation**

As previously established, authentication ascertains the legitimacy of the health care provider, while authorisation controls what information and services are available to access. The username and password provide access to a specific portal account, which has access to relevant information and services. In the case of the employer portal, the employer number is utilised to authorise access to the specific employer’s information.
The employer number is an index number provided to each employer that uniquely identifies that organisation.

Similarly, in the health care provider industry, a unique key known as the billing number is an appropriate authorisation credential. The billing number identifies both the specific health care provider and their provider type allowing access control at either level. For example, all physiotherapy providers can be authorised for specific portal access, with further access rights granted at the provider level for the injured workers currently under their treatment.

Authorisation, similar to authentication, is controlled through WorkSafeBC’s SecureConnect application. In addition to the authorisation features described above, SecureConnect provides logic to allow the health care provider to authorise specific access to individual staff within its organisation. For example, the provider administrator may provide full medical authorisation to its physicians but limit the scope of access to its administrative or support staff.

In summary, SecureConnect is a robust application that allows WorkSafeBC to meet its authentication and authorisation requirements with regard to a health care provider portal. It allows for customised authorisation at three levels and places WorkSafeBC in a strong position to leverage substantial value from a provider portal solution. Moreover, the SecureConnect gateway is universal in nature, allowing it to be adapted to the provider portal at no further investment.
Privacy

It is crucial to secure the privacy and confidentiality of patients to ensure that health care providers have access to only the information and data permitted to them (Zickmund, 2007). For this reason, authorisation and authentication work in tandem to limit access control to information and services contained within the enterprise portal. This precaution is necessary in order to ensure both the privacy of patient and provider information. As described in the previous sections, the SecureConnect application provides an excellent framework to control portal access and promote privacy and confidentiality. Moreover, WorkSafeBC operates its security model on the principle of least privileges. The goal of this principle is to provide access to only the information and services the user needs to complete their legitimate work. The totality of this analysis suggests that WorkSafeBC employs the existing technology and business processes to provide the appropriate privacy and confidentiality necessary for any information sharing activities performed via a health care provider portal.

Also worth disclosing, WorkSafeBC has established an Authentication Committee to ensure the privacy and confidentiality of the information contained within its electronic systems. This committee is comprised of members of the Freedom of Information and Privacy Protection Office, IS Security, Internal Audit, and senior operational management. The committee is responsible for reviewing the authentication and authorisation schema of each external facing application to ensure that it is lawful and maintains the privacy and confidentiality of customers.
Collaboration

Complexity is significantly increasing in the health care environment due to the need for multiple parties to coordinate efforts to solve problems and address new opportunities (White, 2007), which suggests that only two-way collaborative information-sharing is sufficient to leverage full value from a provider portal. It is somewhat difficult to evaluate WorkSafeBC’s ability to implement a collaborative portal without a solid understanding of the proposed content discussed in the following chapters of this report. However, evidence suggests that WorkSafeBC will strive towards a collaborative portal, whether or not this is a reality of the initial manifestation of the provider portal.

One of WorkSafeBC’s strategic health care goals is to partner with health care providers to deliver high quality rehabilitation services to injured workers. Despite the fact that its existing Health Care Provider Centre web-publishing portal is a simple one-way information dissemination channel, the initiative to implement an interactive self-service provider portal based on the employer portal model is evident. The employer portal allows employers to both submit and receive information, and provides tools to simulate financial scenarios in order to understand the impact to future premium payments. In a similar vein, the long-term vision of the health care provider portal is to allow providers the opportunity to submit and receive information and to collaborate on diagnosis and treatment issues. Notwithstanding this vision, the initial iteration of the health care provider portal is likely to facilitate only minimal collaboration.
Governance

The primary reason for the failure of portal projects is poor governance from the outset (White, 2007). Establishing the appropriate leadership and processes facilitates the successful implementation and ongoing management of a provider portal. WorkSafeBC is growing new competencies that will only continue to mature over the coming years.

WorkSafeBC’s information services division is governed by the Information Systems Review Committee (ISRC), which adheres to strict policies ensuring that IT investment delivers value and aligns with corporate strategic initiatives, goals and objectives. The ISRC is also the primary body responsible for funding and prioritising information technology projects. This body is led and primarily comprised of members of the Senior Executive Committee; and has been in operation for more than a decade.

Beyond the ISRC, e-business related work funnels through the E-Business Account Manager within the Planning, Architecture and Analysis group of the IT department. The account manager is responsible for strategic planning and providing governance throughout the IT project validation and approval process. Moreover, this account manager is also responsible for governing health care projects, providing a nice synergy and single point of contact within the account management team.

Unique to the health care functional area is the Health Care IT Strategy Director situated within the business rather than the IT department. This individual is responsible for the future vision of the health care delivery model and the supporting IT infrastructure and applications. This role is absent in the other functional areas of the business and provides the health care team with solid experience, vision and governance in the planning and implementation of all IT investment; positioning the health care provider
portal for success. Ultimately, along the same lines, the organisation is exploring the opportunity to create a Channel Director role that spans across functional areas to govern all electronic channel activity including portals, Teleclaim, interactive voice recognition, web service e-business, corporate website and more. While the scope of this role is currently under consideration, its impending manifestation will surely improve the coordination, leadership and governance of WorkSafeBC’s portal environment.

The result of this analysis into WorkSafeBC’s ability to capitalise on the key factors to establishing a successful provider portal is summarised in Table 3. This also includes a somewhat subjective readiness score based on the preceding analysis to reflect WorkSafeBC’s relative ability to capitalise on each factor.

Table 3: WorkSafeBC Portal Readiness Evaluation

<table>
<thead>
<tr>
<th>Key Factor</th>
<th>Summary of Analysis</th>
<th>Readiness Score</th>
</tr>
</thead>
</table>
| Authentication| ☐ Existing universal SecureConnect security gateway  
☐ Authentication with username and password  
☐ Flexible “lite” authentication model      | ★★★★★          |
| Authorisation| ☐ Existing universal SecureConnect security gateway  
☐ Three-tier authorisation – health care provider type, specific provider, individual provider staff | ★★★★★          |
| Privacy      | ☐ Established by authentication and authorisation  
☐ Principle of least privileges security model                             | ★★★★★          |
| Collaboration| ☐ Strong collaboration legacy with employer portal  
☐ Long-term goal of health care collaboration  
☐ Short-term functionality likely much more limited                      | ★★             |
| Governance   | ☐ Senior level Health Care IT Strategy Director  
☐ Cross functional Authentication Committee  
☐ Exploring and defining new E-Channel Director role                      | ★★             |

Created by author with data compiled from interviews with WorkSafeBC staff

Overall, WorkSafeBC is positioned for success. Its authentication and authorisation technology and processes are reliable, able to control access, and maintain the privacy of information. In addition, senior members of the organisation ably govern
the information technology and health care portal vision. Moreover, this leadership and governance model is only improved if the Channel Director role comes to fruition. The most significant uncertainty in WorkSafeBC’s ability to leverage these factors lies with better understanding the collaborative ability of the provider portal. Largely this is unknown; however, given its strategic health care goal to collaborate with providers to deliver services to injured workers, in conjunction with the employer portal’s collaborative track record, it seems reasonable to anticipate the provider portal will eventually react to this portal success factor.

3.4 Portal Content Focus

WorkSafeBC is positioned to leverage its existing expertise, technology, business processes, and governance structure to deliver a successful provider portal. Despite this fact, it is premature to delve into a technology pilot or implementation plan without understanding the content earmarked for delivery via the provider portal, and the resulting impact to WorkSafeBC’s operations and service levels. Ultimately, content drives the quality of the portal, and its relevance, usability and integrity to users, which manifests itself as increased customer engagement (Sena, 2006). Responding to the five success factors is necessary to establish a successful portal presence. However, establishing self-service access to the information and services that are most critical to the health care provider ultimately determines success or failure. Hence, the following chapters explore content identification, evaluation and selection with respect to a provider portal.
4: PORTAL CONTENT EVALUATION

Continuing the analysis of the previous chapter, content is the sixth and final key success factor to delivering an effective self-service enterprise portal. Moreover, it is the primary driver of portal success. Hence, this chapter explores the impact of delivering specific content via an enterprise portal. It focuses on content identification and evaluation, with the following chapter focusing on content selection.

This chapter identifies and describes three business processes under consideration for portal delivery. For each process, its current state is analysed to understand the problem and root causes. Metrics such as work volumes, transaction costs and productivity are derived to understand the magnitude of the current situation. Next, business process reengineering techniques design the future-state business process intended for delivery using an enterprise portal. This analysis provides insight into how the portal content will address the root causes and concludes with an investigation into the feasibility of such a solution. Finally, the future-state business process is analysed to determine the potential benefits of portal delivery, specifically process productivity and customer value.

4.1 Business Process Identification

A series of initial brainstorming sessions attended by three senior level health care directors and two information technology managers identified three business processes with solid potential for delivery by means of a provider portal. The business processes
included in this content feasibility study are the payment remittance statement, medical referral, and medical disclosure.

The reason for identifying this content relates to either productivity or customer service. Table 4 summarises the baseline problem statement for inclusion in the content feasibility study. The remaining sections of this chapter validate the problem statements and identify root causes of each opportunity.

Table 4: Portal Content Feasibility Context

<table>
<thead>
<tr>
<th>Business Process</th>
<th>Description / Problem Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment remittance</td>
<td>Description: Remittance statement delivered to the health care provider indicating the payment status of each billed service. Problem Statement: WorkSafeBC receive hundreds of calls each month on its toll-free billing line; is there an opportunity to provide payment information via a self-service portal to reduce calls.</td>
</tr>
<tr>
<td>Medical referral</td>
<td>Description: Referral to rehabilitation programs in the external provider network to facilitate the delivering of specialised rehabilitation services to an injured worker. Problem Statement: Wasted effort to confirm appointments with providers, resulting in delayed appointments.</td>
</tr>
<tr>
<td>Medical disclosure</td>
<td>Description: In conjunction with the medical referral, appropriate medical information pertaining to the injured worker is copied and mailed to the health care provider. Problem Statement: The medical disclosure often fails to arrive prior to the provider’s initial visit with the injured worker.</td>
</tr>
</tbody>
</table>

Created by author with data compiled from interviews with WorkSafeBC staff

4.2 Information Gathering Methodology

This section describes the information gathering methodology used to provide the facts necessary to evaluate the proposed health care portal content. A broad search of the organisation’s knowledge management system provided sufficient information to form an initial understanding of each business process. This information was utilised to develop a
high-level business process diagram for each process; and to generate the agenda and interview questions for the interview series.

An initial interview, conducted with two Health Care Program Managers, validated the current-state business process diagrams and identified a list of staff contacts to provide more detailed process metrics. The Health Care Statistics Analyst provided the annual transaction volume for each business process based on data recorded in health care information systems. Process workers directly involved in the execution of each business process provided the majority of the process metrics such as processing time and waiting time. In order to determine accurate process metrics, staff recorded transaction logs over a two-week period. Finally, the Collective Agreement and third party vendor contracts provided the remaining information, such as resource remuneration rates, necessary to determine the process metrics.

With a solid understanding of the current-state of each business process, the two Program Managers were interviewed a second time to validate the problem statement and formulate the root causes of each problem. Following this root cause analysis, a third interview session conducted with the Program Managers designed the ideal future-state delivery of the business processes via an enterprise portal. This session provided the vision to generate the future-state business process diagrams, estimate the subsequent impact to process metrics, and understand the positive affect on the root causes identified in the previous interview session. Overall, this analysis provides the necessary information to determine the benefits, in terms of process productivity and customer value, of delivering this content through an enterprise portal, and ultimately the feasibility
of a health care provider portal strategy. The remainder of the chapter describes and evaluates the proposed portal content.

4.3 Content Evaluation 01: Payment Remittance Statement

The payment remittance statement indicates the status of recent payment items billed by the provider for health care services rendered to injured workers with accepted WorkSafeBC claims. The health care provider receives the remittance statement twice per month by either electronic or paper means, corresponding to the media in which the provider submitted the invoice. The payment remittance process, and its associated problems, is inextricably linked to the number of inquires received on WorkSafeBC’s toll-free billing line.

4.3.1 Current State Analysis

Business Process Description

The majority of health care providers electronically submit invoices to WorkSafeBC via the MSP TelePlan service operated by Health Insurance British Columbia (HIBC). The remainder submit paper invoices, which WorkSafeBC digitise through a manual data entry process before routing to HIBC for processing. HIBC conducts a pre-edit and eligibility edit to ensure the invoice is complete and in valid format. WorkSafeBC then matches the invoice to a specific claim and verifies the billed service is allowable, in order to authorise payment. The authorised invoice undergoes a final adjudication phase at HIBC to ensure it is payable under the broader Medical Services Plan (MSP) rule-set.
At the middle and end of each month, HIBC consolidates the authorised payment items to each provider and issues payment on behalf of WorkSafeBC. Approximately four days earlier, HIBC issues a payment remittance statement to the health care provider advising of the payment to be made on the remittance date. The remittance statement is delivered via TelePlan to all HIBC enrolled providers, whereas the remainder of health care providers receive a paper remittance statement by postal mail.

Twice monthly, HIBC provides a payment reconciliation statement to allow WorkSafeBC to update its Claims Management System (CMS) to reflect any payment adjustments made by HIBC during its final adjudication process. This ensures that WorkSafeBC has an accurate payment of record. At the same time, HIBC invoices WorkSafeBC for the total amount dispersed to health care providers on its behalf. The invoice processing and payment remittance process is diagrammed in Appendix A.

To recap, HIBC provides a payment remittance statement to health care providers twice per month outlining the payment status of each invoice item submitted to WorkSafeBC during the billing period. The statement specifies for each item the service date, invoice date, amount billed, amount paid, and all appropriate coding to indicate the reasoning for billing refusal or billing amount amendment. Finally, the remittance statement indicates the total sum to be paid and the payment date. Invoices submitted by non-HIBC enrolled providers undergo manual processing by WorkSafeBC staff, with the payment and remittance statement delivered by bi-monthly on paper.

The high-level business process diagram describing the existing payment inquiry process is illustrated in Figure 2. This simple three-step process begins with the health care provider calling the WorkSafeBC billing line to make an inquiry and concludes with
the provider receiving a response to their billing related questions. The time recorded
underneath each process reflects the processing time, i.e. the effort to complete the
process. Whereas the time recorded between processes indicates waiting time, for
example, the health care provider typically waits five minutes in the telephone queue
before WorkSafeBC answers the phone. Overall, a typical inquiry is resolved within
fifteen minutes and requires five minutes of actual effort.

Figure 2: Billing Inquiry – Current State Business Process

<table>
<thead>
<tr>
<th>Health Care Provider</th>
<th>WorkSafeBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a. Submit billing inquiry by telephone</td>
<td>1b. Understand customer needs</td>
</tr>
<tr>
<td>5 mins</td>
<td>1c. Investigate billing situation</td>
</tr>
<tr>
<td>1d. Provide response to billing enquiry</td>
<td>1e. Receive billing response</td>
</tr>
<tr>
<td>2 mins</td>
<td>2 mins</td>
</tr>
<tr>
<td>10 mins</td>
<td>1 min</td>
</tr>
<tr>
<td>0 mins</td>
<td></td>
</tr>
</tbody>
</table>

Total processing time: 5 mins
Total waiting time: 15 mins

Business Process Metrics

Despite the distribution of payment remittance, HIBC’s TelePlan Support Centre
primarily deals with questions related to payments and refusals. The number and impact
of these calls is academic to this feasibility study; however, it is worth mentioning that
HIBC absorbs much of the call volume that otherwise would be directed to WorkSafeBC.
Notwithstanding HIBC’s efforts, WorkSafeBC receives 11,000 billing inquiry telephone
calls per year, primarily regarding payment rejection and fee codes.
The main resource consumed in this business process is staff effort. Taking into consideration the Payment Officer’s remuneration rate, the transaction cost is $2.38 per billing inquiry. Given the annual transaction volume, the annual cost to respond to billing inquiries is nearly $27,000, roughly the full time equivalent (FTE) of a half Payment Officer. The transaction volumes and costs are summarised in Table 5.

Table 5: Billing Inquiry Transaction Costs

<table>
<thead>
<tr>
<th>Resource</th>
<th>Usage</th>
<th>Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff: Payment Officer</td>
<td>Pay Grade: U04 S04</td>
<td>Pay Rate: $28.60/hr</td>
<td>Transaction Cost: $2.38 per call</td>
</tr>
<tr>
<td></td>
<td>Effort: 5 minutes</td>
<td>Volume: 11,436 calls</td>
<td>$27,256 per annum</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Staff Utilisation: 0.5 FTE</td>
</tr>
</tbody>
</table>

Created by author with data compiled from interviews with WorkSafeBC staff

Problem Validation and Root Cause Identification

The initial problem statement indicates that WorkSafeBC receives hundreds of billing inquiries per month, which is validated by the transaction volume described herewithin. In other words, health care providers call WorkSafeBC for generic billing information, more effectively delivered by other means. The opportunity to deliver self-service billing information via an enterprise portal is expected to drastically reduce this call volume.

The financial impact of this problem is insignificant in comparison to the customer service impact. The primary complaint of health care providers is the frustration with having to call WorkSafeBC to obtain this information. The provider must call within WorkSafeBC’s normal operating hours to obtain information and contend with typical telephone delays such as busy signals, hold, and voicemail. Moreover, if the inquiry cannot be answered immediately, WorkSafeBC personnel may need to perform further investigation and call the provider back with the resolution, introducing further delay.
The *Five Whys* technique was utilised to identify the root causes of the problem, as illustrated in *Figure 3*. This method starts by defining the problem statement and then asking *why* five times to drill down to the root causes. Typically, the exercise is complete before the fifth *why* is reached. Regarding the billing problem, the root causes link to infrequent timing of the remittance statement, difficulty understanding the billing coding, and confusion regarding the billing period cut-off. Payment remittance is delivered to the provider only twice per month and many calls are related to invoices to be included on the subsequent statement. In addition, the billing coding on the remittance statement is cryptic and does not provide the necessary information to understand the reasons for billing amendments and refusals. Finally, the billing cut-off period is unclear so providers often call to determine whether certain invoices were received.

*Figure 3: Billing Inquiry – Root Cause Identification (Five Why’s Method)*

<table>
<thead>
<tr>
<th>Problem: WorkSafeBC provides a payment remittance statement, yet Health care providers are bombarding WorkSafeBC with billing inquiries.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Why is the payment remittance statement insufficient and result in a telephone inquiry?</td>
</tr>
<tr>
<td><em>Payments are missing from the remittance statement.</em></td>
</tr>
<tr>
<td>- Why are payments missing from the remittance statement?</td>
</tr>
<tr>
<td><em>The invoice was submitted subsequent to the billing period included in the remittance statement.</em></td>
</tr>
<tr>
<td>2. Why is the payment remittance statement insufficient and result in a telephone inquiry?</td>
</tr>
<tr>
<td><em>The remittance statement is delivered bi-monthly but the health care provider requires more dynamic access to billing information.</em></td>
</tr>
<tr>
<td>3. Why is the payment remittance statement insufficient and result in a telephone inquiry?</td>
</tr>
<tr>
<td><em>Payment amounts do not match the amount billed.</em></td>
</tr>
<tr>
<td>- Why do payment amounts not match the amount billed?</td>
</tr>
<tr>
<td><em>WorkSafeBC or HIBC may amend the amount payable based on payment rules such as invoice timeliness and electronic submission premiums.</em></td>
</tr>
<tr>
<td>- Why does this billing amendment become an impediment?</td>
</tr>
<tr>
<td><em>The remittance statement uses cryptic and difficult to understand codes to describe the reasoning for billing amendments and invoice refusals.</em></td>
</tr>
</tbody>
</table>

Created by author with data compiled from interviews with WorkSafeBC staff.
4.3.2 Future State Portal Design

Business Process Description

The opportunity to deliver payment remittance information through a self-service enterprise portal will significantly reduce call volume on WorkSafeBC’s billing line. The future-state billing inquiry process, in conjunction with the self-service portal delivery, is diagrammed in Figure 4. In essence, the provider portal delivers billing information to the health care provider at anytime time of the day, from any location with an internet connection and web browser. It links to payment tables within CMS to deliver synchronous access to critical payment information similar to that included in the paper remittance statement; specifically, the invoice date, service date, amount billed, amount paid, payment status, payment date, and all appropriate coding to indicate the reason for billing refusal and amendments. In contrast to the paper statement, the portal coding includes “tool tips” on mouse-over that concisely describe the coding. The portal also provides search and filtering to assist the provider in identifying the appropriate payment items, and the ability to print the remittance statement for a user specified time-period.
The health care provider utilises the self-service provider portal as the mechanism for investigating its billing issue. The provider is able to easily access the necessary payment information to satisfy their billing inquiry. The provider has “anytime, anywhere” access to the self-service provider portal and is able to self-sufficiently resolve its billing issue in a matter of moments with no waiting time.

Created by author with data compiled from interviews with WorkSafeBC staff

**Business Process Improvement**

It is readily apparent how the portal delivery of billing information improves the customer experience. Foremost, billing information is available to access anytime, anywhere. Moreover, information synchronously links to CMS payment tables providing instantaneous, rather than bi-monthly, access to billing information. In addition, the myriad of billing codes and explanations is refined and succinctly described in a comprehensible format using tool-tip technology. Hence, the portal delivery of the payment remittance statement, in comparison to the existing paper process, resolves the existing problem and root causes, as summarised in Table 6. It is worth mentioning that the portal process will supplement rather than replace the existing paper process and allow the provider the opportunity to opt-out of paper delivery.
Table 6: Billing Inquiry – Portal Impact

<table>
<thead>
<tr>
<th>Today</th>
<th>In Provider Portal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Billing inquiry access restricted to normal operating hours</td>
<td>✓ Anytime, anywhere access to portal with an internet connection and web browser</td>
</tr>
<tr>
<td>Normal telephone delays</td>
<td>✓ Instantaneous access to provider portal</td>
</tr>
<tr>
<td>Bi-monthly remittance frequency</td>
<td>✓ Synchronous billing information linked to CMS payment tables</td>
</tr>
<tr>
<td>Cryptic and ambiguous billing coding</td>
<td>✓ Tool tips provided on mouse-over to succinctly explain billing codes</td>
</tr>
<tr>
<td>Billing cycle impacts payment items</td>
<td>✓ Billing cycle is rendered meaningless with instant access to billing information</td>
</tr>
<tr>
<td>included in remittance statement</td>
<td></td>
</tr>
</tbody>
</table>

Created by author with data compiled from interviews with WorkSafeBC staff

Business Process Feasibility

Not only does this solution resolve the provider’s existing billing inquiry problems, it is also highly feasible and relatively simple to implement. The necessary payment data is already available within CMS and only needs to link to the portal server for delivery to the health care provider. The CMS data model remains unchanged and all aspects of the provider portal process remain within the portal’s span of control.

The one aspect of feasibility that may become an obstacle is the fact that billing status can change over time. WorkSafeBC may authorise an invoice for a certain amount and publish that information to the portal. Subsequently, HIBC may amend the invoice based on its unique payment rules. This impact will not show in CMS until WorkSafeBC receives the reconciliation statement from HIBC. Consequently, the provider may observe a different payment status on the same payment item at different times. Thus, the portal process design will need to keep the impact of this potential predicament in mind.
4.3.3 Expected Benefits

The *production theory* of information technology suggests that IT investment establishes more, or better, output for a given input as measured by its marginal benefit to the firm; whereas the *consumer surplus approach* suggests the benefits of information technology are ultimately passed on to consumers (Hitt, 1996). This provides a solid framework to understand the benefits of any information technology investment. In principle, the investment must provide some internal benefit to the organisation in terms of process efficiency and return on investment, which subsequently correlates to some external benefit in the form of consumer (or customer) value. In the case of a health care provider portal, the *productivity* (internal) benefits arise from delivering portal content at the same, or lower, cost than the conventional method; and *customer value* (external) subsequently arises from customer recognition of improved service delivery, which is linked to enduring customer satisfaction.

Content delivered via a web portal is essentially provided at zero marginal cost, beyond the initial information technology investment to establish the portal and create the necessary logic to share the appropriate content. Hence, the entire cost of responding to telephone billing inquires is recoverable if that traffic is redirected to the provider portal. Therefore, the productivity benefit stemming from the delivery of the billing remittance statement by means of a provider portal is equivalent to $25,000 per annum, or 0.5 FTE.

Accordingly, customer value should equal or exceed $25,000 per year. While it is not possible at this juncture to determine the quantitative impact to the health provider community it is readily apparent that several qualitative benefits exist, foremost of which is speed of access. Providers access the portal anytime from anywhere with an internet
connection and web browser, and do not have to wait on hold or leave voice messages, instead they are provided with immediate access to synchronous billing information. Finally, the quality of information is improved using tool-tips, and search and filtering technology. The payment remittance content evaluation is summarised in Figure 5.

Figure 5: Billing Inquiry – Content Evaluation Summary

<table>
<thead>
<tr>
<th>Portal Content: Payment Remittance Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong> The payment remittance statement indicates the status of recent payment items billed by the provider for health care services rendered to injured workers with accepted WorkSafeBC claims.</td>
</tr>
<tr>
<td><strong>Problem:</strong> Providers are calling WorkSafeBC to obtain billing related information that is more effectively delivered by other means. Providers are frustrated with the existing remittance statement and the timeliness of obtaining billing related information.</td>
</tr>
<tr>
<td><strong>Root Cause:</strong> Bi-monthly remittance frequency, cryptic billing coding, and the billing cycle.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2007 Process Metrics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual volume: 11,436</td>
</tr>
<tr>
<td>Transaction cost: $2.38</td>
</tr>
<tr>
<td>Processing/waiting time: 5 mins / 15 mins</td>
</tr>
<tr>
<td>Staff utilisation: 0.5 FTE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimated Portal Impact:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual volume: unchanged</td>
</tr>
<tr>
<td>Transaction cost: $0.00</td>
</tr>
<tr>
<td>Processing/waiting time: 2 mins / 0 mins</td>
</tr>
<tr>
<td>Staff utilisation: 0.0 FTE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefit of Portal Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productivity:</strong></td>
</tr>
<tr>
<td>➢ $2.38 per billing inquiry (staff wages)</td>
</tr>
<tr>
<td>➢ 0.5 FTE staffing utilisation</td>
</tr>
<tr>
<td>➢ $27K annual operating costs</td>
</tr>
<tr>
<td><strong>Customer Value:</strong></td>
</tr>
<tr>
<td>➢ Anytime-anywhere access</td>
</tr>
<tr>
<td>➢ Reduced waiting time</td>
</tr>
<tr>
<td>➢ Synchronous availability of data</td>
</tr>
<tr>
<td>➢ Improved quality of information</td>
</tr>
</tbody>
</table>

Created by author with data compiled from interviews with WorkSafeBC staff

4.4 Content Evaluation 02: Medical Referral

WorkSafeBC issues a provider referral to allow an injured worker to access the specialised services provided by its external network of contracted health care service providers. This provider network includes the structured rehabilitation programs, psychology and home care services. WorkSafeBC establishes annual contracts with individual providers within this customer segment. The contract then allows the provider to become part of the provider network and able to treat WorkSafeBC clients. This is in contrast to the traditional medical practitioner segment that treats patients without a
contract or medical referral. This segment is governed according to a generic contract and fee schedule negotiated with their professional organisation.

4.4.1 Current State Analysis

Business Process Description

The claim owner initiates the medical referral to a health care provider. The claim owner is the disability management expert with ultimate responsibility for a given worker’s injury claim. The claim owner completes and submits a referral form to Provider Referrals, where the Registration Representative then formalises the referral and issues the request for medical disclosure.

In order to establish a referral, the Registration Representative must determine the appropriate program in which to enrol to the worker. This is usually specified by the claim owner but is sometimes left to the discretion of the Registration Representative to determine the best alternative. Telephone is the primary communication channel between WorkSafeBC and the provider. WorkSafeBC calls the provider to determine general availability for the initial appointment. At that time, the provider calls the injured worker to establish an appointment and secure their admission into the program. Once an appointment is established, the provider calls WorkSafeBC to confirm the appointment date and time, at which point WorkSafeBC faxes the provider the official referral form and initiates the request for medical disclosure to the provider.

Figure 6 depicts the high-level medical referral process. This process varies somewhat depending on the health care program; however, it provides suitable commonality for the purposes of this analysis. Based on information gathered from
Provider Referrals, a typical medical referral is complete within a single workday and requires approximately seventeen minutes of actual effort.

**Figure 6: Medical Referral – Current State Business Process**

**Medical Referral (Current State)**

<table>
<thead>
<tr>
<th>Health Care Provider</th>
<th>1a. Determine need for medical referral</th>
<th>1b. Complete referral form</th>
<th>1c. Determine referral program and medical disclosure option</th>
<th>1d. Telephone health care provider to arrange referral</th>
<th>1e. Accept WorkSafeBC referral</th>
<th>1f. Fax referral form to provider; notify worker and physician</th>
<th>1g. Make arrangements with worker</th>
<th>1h. Confirm appointment with WorkSafeBC</th>
<th>1i. Request medical disclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration Representive</td>
<td>60 mins</td>
<td>2 mins</td>
<td>10 mins</td>
<td>5 mins</td>
<td>0 mins</td>
<td>5 mins</td>
<td>0 mins</td>
<td>5 mins</td>
<td>0 mins</td>
</tr>
</tbody>
</table>

Total processing time: 17 mins
Total waiting time: 310 mins

Created by author with data compiled from interviews with WorkSafeBC staff

**Business Process Metrics**

WorkSafeBC fulfils roughly 31,500 medical referrals per year to specialised health care providers through its Provider Referrals team, which equates to approximately 125 medical referrals per workday. The principal resource consumed in this business process is staff effort. The Registration Representative receives $23.14 per hour remuneration, including salary and an eleven per cent benefit uplift. Given the seventeen-minute processing time stated earlier, the transaction cost to provide a single referral is $6.56, which corresponds to an annual cost of more than $200,000; nearly the full time
equivalent (FTE) of five Registration Representatives. The transaction volumes and costs associated with the medical referral process are summarised in Table 7.

### Table 7: Medical Referral Transaction Costs

<table>
<thead>
<tr>
<th>Resource</th>
<th>Usage</th>
<th>Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff: Reg Rep</td>
<td>Effort: 17 minutes</td>
<td>Transaction Cost: $6.56 per referral</td>
<td>$206,525 per annum</td>
</tr>
<tr>
<td>Pay Grade: U02 504</td>
<td>Volume: 31,500 referrals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pay Rate: $23.14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Created by author with data compiled from interviews with WorkSafeBC staff

**Problem Validation and Root Cause Identification**

The initial problem statement providing the basis to include the medical referral process in this content feasibility study suggested that WorkSafeBC spends a lot of time waiting for the health care provider to telephone and confirm the injured worker’s enrolment in the program, and the date and time of the initial appointment. Moreover, this waiting time in turn delays the appointment and the workers recovery. Ultimately, it is felt that a portal interface provides the opportunity to reduce this waiting time and allow the worker to enrol in the rehabilitation program more quickly.

The current-state analysis and process diagram confirm that WorkSafeBC does in fact wait a significant amount of time for the health care provider to schedule the worker’s initial appointment and confirm the appointment details. However, the leap to suggest this waiting time impacts the workers enrolment in the rehabilitation program is unfounded. A root-cause exercise conducted during the interview session with the Registration Representatives confirms no link between this waiting time and delays in program enrolment. In fact, the exercise reveals that the existing process, where the health care provider contacts the injured worker to establish their enrolment, is more...
effective than WorkSafeBC performing that task itself. The result of this root-cause identification exercise is depicted in Figure 7.

**Figure 7: Medical Referral – Root Cause Identification (Five Why’s Method)**

**Problem:** Appointment for an injured worker are often delayed by the medical referral process?

**Why** does this delay happen?

*WorkSafeBC is waiting for confirmation from the medical provider regarding the date and time of the initial appointment.*

**Why** must WorkSafeBC wait for confirmation?

*The health care provider is responsible for scheduling the initial appointment with the injured worker.*

**Why** does the provider arrange the appointment?

*It is more efficient for the provider to directly book the meeting than for WorkSafeBC to act as the go-between.*

**Why** is it more efficient for the provider to arrange the appointment?

*The provider manages its own appointments and direct contract with the injured worker is the best way to meet their needs.*

In addition, a data report compiled by the Health Care Statistics Analyst suggests that WorkSafeBC enrolment performance is four days better than the industry average. The report measures the median number of days between the referral date and the date of the initial appointment. It compares WorkSafeBC’s enrolment performance against the overall industry performance, which includes medical referrals to rehabilitation programs by other industry players such as ICBC and family physicians. In essence, this indicates the medical referral process is operating at high efficiency, likely due to the strong partnerships formed through the structured contracts and close working relationships with the provider network. Ultimately, the initial problem statement is unfounded. However, delivering the medical referral process by means of a provider portal may yet provide an opportunity to improve the existing telephone/facsimile channel and thereby improve operational performance and customer value.
4.4.2 Future State Portal Design

Business Process Description

The future-state business process diagram depicts a medical referral delivered through the provider portal, as illustrated in Figure 8. Two key interactions exist that can be conducted via the provider portal. In first interaction (1d.), WorkSafeBC contacts the provider to confirm their general availability and arrange the referral; and in the second (1h.), the provider contacts WorkSafeBC to confirm enrolment and the date and time of the initial appointment. In essence, WorkSafeBC is able to provide medical referral information to the health care provider by means of the provider portal; and providers are able to submit referral confirmation, that in turn automatically updates CMS.

Figure 8: Medical Referral – Future State Business Process

Medical Referral (Portal Delivery)

1. Health Care Provider
   1.1. Accept WorkSafeBC referral
   1.2. Make arrangements with worker
   2. Health Care Provider
   3. Registration Representative
      3.1. Determine referral program and medical disclosure option
      3.2. Contact health care provider to arrange referral
   4. Claim Owner
      4.1. Determine need for medical referral
      4.2. Complete referral form

Total processing time: 17 mins
Total waiting time: 420 mins

1. WorkSafeBC utilises the provider portal to inform the health care provider of the impending medical referral and to understand the provider’s ability to accommodate the injured worker. Results in an increase in waiting time.

2. The health care provider enrolls the worker in the program and establishes their initial visit, then confirms the appointment date and time with WorkSafeBC by means of the provider portal.

Created by author with data compiled from interviews with WorkSafeBC staff.
**Business Process Improvement**

The intended productivity improvement is speed of service but the portal channel does little to affect the primary source of service delay – the provider/worker interaction. Moreover, the discussion-rich conversations that facilitate a successful referral are replaced with vague transactional data that is more likely to create a negative impact. For example, WorkSafeBC would no longer telephone the provider to arrange the referral but instead provide referral details online for the provider to read at their leisure.

Naturally, it makes more sense for this process to remain telephone focused. That said, it remains possible to retain the second component of the portal process where the provider submits enrolment confirmation to WorkSafeBC through the portal. The main issue with this concept is that it benefits WorkSafeBC but not the provider. WorkSafeBC is more than happy to receive information in a self-service format that automatically and synchronously updates its core CMS solution; however, this productivity benefit is not passed to the provider in the form of customer value. It arguably makes more sense for the provider to telephone or fax their confirmation details to WorkSafeBC.

**Business Process Feasibility**

It is perfectly feasible to deliver medical referral information by means of a provider portal. The existing CMS data model contains referral tables that store the necessary information to create the referral, and record referral details and appointment information. It seems relatively inexpensive and straightforward to link this existing data to the provider portal and create the necessary interface to publish and capture referral information. However, while this proposed content is technically feasible, it makes little business sense to implement.
4.4.3 Expected Benefits

The principal resource consumed in this business process is staff effort with the current-state analysis establishing that the annual cost of providing medical referrals is roughly $200,000, which is nearly the full time equivalent (FTE) of five Registration Representatives. Despite this significant expense, the future-state analysis established that no productivity benefit can be claimed by delivering this process through a provider portal. Subsequently, the health care provider is unable to claim any customer value from the proposed inclusion of the medical referral content. The summary of the medical referral content evaluation is summarised in Figure 9.

Figure 9: Medical Referral – Content Evaluation Summary

<table>
<thead>
<tr>
<th>Portal Content: Medical Referral</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong> WorkSafeBC may refer an injured worker to a health care provider in the external provider network for further assessment and treatment. A referral is necessary to enrol the injured worker in either a structured rehabilitation program, home care or psychology services.</td>
</tr>
<tr>
<td><strong>Problem:</strong> WorkSafeBC spends a significant amount of time waiting for the provider to confirm the injured worker's enrolment in the program and the date and time of the initial appointment. Hence, delaying the initial appointment and the worker's recovery.</td>
</tr>
<tr>
<td><strong>Root Cause:</strong> None, the problem statement was proved to be invalid.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2007 Process Metrics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual volume: 31,500</td>
</tr>
<tr>
<td>Transaction cost: $6.56</td>
</tr>
<tr>
<td>Processing/waiting time: 17 mins / 310 mins</td>
</tr>
<tr>
<td>Staff utilisation: 4.8 FTE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimated Portal Impact:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual volume: unchanged</td>
</tr>
<tr>
<td>Transaction cost: $6.56</td>
</tr>
<tr>
<td>Processing/waiting time: 17 mins / 420 mins</td>
</tr>
<tr>
<td>Staff utilisation: 4.8 FTE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefit of Portal Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productivity:</strong></td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td><strong>Customer Value:</strong></td>
</tr>
<tr>
<td>None</td>
</tr>
</tbody>
</table>

Created by author with data compiled from interviews with WorkSafeBC staff

4.5 Content Evaluation 03: Medical Disclosure

As already indicated, WorkSafeBC refers injured workers to its external provider network for further medical assessment and treatment. Once the provider referral is confirmed, WorkSafeBC may elect to deliver to the health care provider – all or some
portion of – its medical records pertaining to the injured worker. This provider network includes the structured rehabilitation programs, psychology and home care services.

4.5.1 Current State Analysis

Data accuracy and data availability are two of the greatest challenges facing healthcare providers today (Lau, 2004). These problems, in turn, directly affect the delivery of quality health care services (Poston, 2007). In the case of WorkSafeBC, data availability is a far more important problem than data accuracy. WorkSafeBC employs highly skilled disability management and medical professionals to interpret medical findings and arrive at rational independent conclusions. These professionals are easily able to sift through erroneous data and focus on the key elements, however it is critical that they have substantial medical evidence available in order to confidently perform their duties. Similarly, data availability is the most significant issue affecting WorkSafeBC’s external provider network. The timeliness in which WorkSafeBC medical records are disclosed to the health care provider directly affects the quality of service the provider is able to deliver to the injured worker.

According to the American Medical Association, the two leading data availability problems are time lag issues and a lack of readily available data. Time issues create lags in acquiring the necessary medical history needed for treatment decisions, which results in premature treatment decisions and delayed treatment. Similarly, the lack of readily available data results in wasted time to search for and locate information, repeated tests and treatments, and harmful decisions that complicate care and recovery (Berner, 2005). This evidence reflects the critical impact of WorkSafeBC’s medical disclosure process.
Business Process Description

The medical disclosure process is essentially an extension of the medical referral process described in the previous section. The medical referral process concluded with WorkSafeBC initiating the request for medical disclosure to the health care provider. The Registration Representative then determines the medical documents to disclose and creates a task within the CMS that automatically messages Symmetry with the necessary information needed to perform the disclosure.

Symmetry is a third party vendor under contract with WorkSafeBC to perform the entirety of its disclosure processes. Upon receipt of the medical disclosure request, Symmetry staff will download the appropriate medical files from CMS and copy them to a compact disc. The CD is then packaged with a disclosure letter specifying the contents of the CD and the details of the disclosure. Finally, the medical disclosure package is mailed to the health care provider by priority post. On occasion, the health care provider will contact Symmetry directly to request a facsimile of the medical disclosure, typically to speed the delivery of the medical documents.

Figure 10 depicts the high-level medical disclosure process. Based on the information gathered from Provider Referrals and the Operations Manager responsible for WorkSafeBC’s external partnerships, a typical request for medical disclosure is complete within a single workday and delivered to the health care provider in approximately four working days. The total processing time (effort) per medical disclosure request is forty-five minutes.
Business Process Metrics

WorkSafeBC, through its Symmetry partnership, fulfil approximately 18,500 medical disclosures per year to specialised health care providers, equating to roughly 75 medical disclosures per workday. In comparison, WorkSafeBC issues roughly 31,500 medical referrals per year. This suggests that roughly 60% of medical referrals also include the disclosure of medical documents, a substantial ratio that will only continue to grow as additional provider types are integrated into the provider network.

Numerous resources are consumed in the execution of the medical disclosure process including wages, postage, and materials such as printers, CDs, and envelopes. Symmetry is remunerated a disclosure fee that varies depending on factors such as the number of documents disclosed and the postage rate. The median disclosure rate paid
over the previous twelve-month period is $54.93 per disclosure, which results in an annual expenditure of roughly $1,000,000. Given that the service is outsourced, this outcome has no impact on WorkSafeBC staffing (i.e. FTE). The transaction volumes and costs associated with the medical disclosure process are summarised in Table 8.

Table 8: Medical Disclosure Transaction Costs

<table>
<thead>
<tr>
<th>Resource</th>
<th>Usage</th>
<th>Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Party: Symmetry</td>
<td><strong>Effort:</strong> 45 minutes</td>
<td><strong>Transaction Cost:</strong> $54.93 per disclosure</td>
<td>$1,019,802 per annum</td>
</tr>
<tr>
<td>Resources: Labour,</td>
<td><strong>Volume:</strong> 18,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>materials, and postage</td>
<td>medical disclosures</td>
<td></td>
<td><strong>Staff Utilisation:</strong> 0.0 FTE</td>
</tr>
</tbody>
</table>

Problem Validation and Root Cause Identification

The initial problem statement providing the basis to include the medical disclosure process in this content feasibility study suggested a disclosure timeliness issue. Specifically, the medical disclosure often fails to arrive prior to the provider’s initial visit with the injured worker, likely a result of the mailing component. Referring back to the American Medical Association data presented earlier, this delivery failure creates a time lag data availability issue, which impacts diagnostic and treatment decisions, results in repeated tests, and ultimately affects the injured worker’s care and recovery.

Metrics provided by the Quality Assurance Supervisor responsible for the Provider Referrals team indicate that roughly twenty percent of all medical disclosures arrive subsequent to the initial appointment. Health care providers are typically booking the initial appointment five to ten days following the medical referral, dependant on the specific rehabilitation program. On the other hand, medical disclosure typically arrives three to seven days following the medical referral, including the time to establish the referral, and then furnish and deliver the medical documents. Using a random number
generator to select one thousand pairs of data points falling into the two corresponding date ranges determines that roughly twenty percent of medical disclosures arrive on or after the initial appointment date precluding the provider’s timely medical review. The root causes of this problem statement are depicted in Figure 11.

Figure 11: Medical Disclosure – Root Cause Identification (Five Why’s Method)

Problem: The delivery timeliness of medical disclosure to the provider often results in delivery subsequent to the worker’s initial visit.

Why does the disclosure arrive late?

WorkSafeBC is waiting for enrolment confirmation from the medical provider prior to disclosing medical documents.

Why must WorkSafeBC wait for confirmation?
The enrolment may not materialise and it is a breach of FIPPA regulation to provide confidential medical information to unauthorised sources.

Why may the worker’s enrolment not be fulfilled?
The worker may not be able to attend the specific clinic, or WorkSafeBC may rescind the referral or suggest an alternative provider.

⇒ 1-2 day delay

⇒ 1-4 day delay

Why does the disclosure arrive late?
Postal delivery requires the physical movement of goods that is time-dependent on the geographic location of the health care provider.

This root-cause exercise reveals two distinct causes of the problem. First is the one-to-two day delay while WorkSafeBC is awaiting enrolment confirmation as part of the medical referral process described in the previous section. Second is the one-to-four day delay due to the postal delivery of the medical disclosure. The later root cause is within WorkSafeBC’s span of control to change, whereas the former root cause is an unavoidable cost of doing business in British Columbia’s regulator environment and is not within WorkSafeBC’s capacity to influence. Hence, the primary root cause of this delivery timeliness issue is due to the postal delivery service.
4.5.2 Future State Portal Design

Business Process Description

The opportunity to deliver medical information to health care providers through an enterprise portal is expected to reduce disclosure timeliness and ensure that medical disclosure is available preceding the workers initial appointment. The interview sessions revealed two distinct portal disclosure opportunities. In the first alternative, Symmetry receives the disclosure request, as is done today, but rather than copying the medical documents to CD-ROM and providing the disclosure by mail, Symmetry instead creates a PDF document that is loaded onto the provider portal. While this option does improve disclosure timeliness, its drawback is that it fails to significantly reduce the cost model.

In contrast, the second alternative bypasses Symmetry altogether and discloses medical information directly from medical tables within CMS. In this scenario, the Registration Representative completes the medical referral and receives enrolment confirmation from the health care provider, and then generates a task within CMS to disclose the medical records. This task automatically executes an algorithm to copy the necessary medical data and reports to the portal server and make the information available to the health care provider. This is the preferred solution and corresponds to the future-state business process diagram illustrated in Figure 12.
Business Process Improvement

The preferred medical disclosure process simultaneously maximises the speed of information delivery, while minimising the cost of delivery. Granted, this alternative requires a larger information technology investment than the Symmetry PDF alternative, however its benefits are dramatically superior. It also unmistakably addresseses the root cause of process failure attributed to postal delays by avoiding postal delivery altogether.

In addition, productivity and customer value are both dramatically improved. Processing time decreases from forty-five minutes to less then a minute – simply the time it takes to click a button in CMS to generate the disclosure task. Moreover, the waiting time diminishes from roughly four days to a matter of minutes. A simple conduit between

*Figure 12: Medical Disclosure – Future State Business Process*
CMS and the provider portal allows medical information to synchronously flow to the portal server. Furthermore, this solution provides the opportunity to provide dynamic medical disclosure that continuously discloses incoming medical information, in contrast to the existing static, point-in-time, medical disclosure process. Hence, the portal delivery of medical disclosure, in comparison to the existing physical disclosure process, resolves the existing timeliness problem and its root cause, while providing several other benefits.

The portal impact is summarised in Table 9.

**Table 9: Medical Disclosure – Portal Impact**

<table>
<thead>
<tr>
<th>Today</th>
<th>In Provider Portal</th>
</tr>
</thead>
<tbody>
<tr>
<td>WorkSafeBC manually messages Symmetry with necessary disclosure information</td>
<td>CMS user interface prompts staff to select medical disclosure option at time of referral</td>
</tr>
<tr>
<td>Symmetry creates a CD or prints medical information to disclosure medical records</td>
<td>CMS medical tables are directly ported to the Provider Portal; greening impact</td>
</tr>
<tr>
<td>Medical disclosure delivered by postal service; 1-3 day delivery time</td>
<td>Medical disclosure published to Provider Portal; same day disclosure</td>
</tr>
<tr>
<td>Static, point-in-time disclosure</td>
<td>Dynamic, synchronous disclosure</td>
</tr>
</tbody>
</table>

*Created by author with data compiled from interviews with WorkSafeBC staff*

**Business Process Feasibility**

This simple and effective solution not only resolves the existing root-cause in order to deliver improved productivity and customer value, but also is highly feasible and relatively straightforward to implement. The necessary medical data is available within CMS, as is the supporting task management logic and the sophistication necessary to bundle the appropriate medical information. The only tangible work remaining is to link the medical disclosure to the portal server in order to deliver medical information to health care providers.

The one aspect of the process that may provide some difficulty is providing dynamic disclosure. The task architecture is designed to execute the disclosure task once.
Further investigation and investment is required to understand the feasibility of executing an “update disclosure” task on an ongoing basis once the initial disclosure is furnished.

4.5.3 Expected Benefits

As previously established, content delivered by means of a provider portal is essentially provided at zero marginal cost. Accordingly, the full amount of the annual $1,000,000 fee paid to Symmetry is avoidable and an attributable productivity benefit of delivering medical disclosure through a provider portal. Moreover, customer value, in terms of speed of access, is dramatically improved. Providers have anytime-anywhere access to crucial patient records minimising the impact of time lag data availability problems, such as repeated tests and delayed treatment. Naturally, some of this customer value also spills over to the injured worker in the form of improved medical care and recovery. The summary of this medical disclosure evaluation is provided in Figure 13.

Figure 13: Medical Disclosure – Content Evaluation Summary

<table>
<thead>
<tr>
<th>Portal Content: Medical Disclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong> WorkSafeBC refers injured workers to health care providers in the external provider network for assessment and treatment. At the time of the referral, WorkSafeBC may elect to provide all, or some portion of, its medical records pertaining to the injured worker.</td>
</tr>
<tr>
<td><strong>Problem:</strong> The provider receives the medical disclosure subsequent to the worker’s initial visit (=20% of the time). This results in service delays, duplication of medical tests, and other inefficiencies that increase claim cost and duration, and delay recovery.</td>
</tr>
<tr>
<td><strong>Root Cause:</strong> Delay due to postal delivery (1-4 day delay).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2007 Process Metrics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual volume: 18,500</td>
</tr>
<tr>
<td>Transaction cost: $54.93</td>
</tr>
<tr>
<td>Processing/waiting time: 45 mins / 3-7 days</td>
</tr>
<tr>
<td>Staff utilisation: 0.0 FTE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimated Portal Impact:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual volume: unchanged</td>
</tr>
<tr>
<td>Transaction cost: $0.00</td>
</tr>
<tr>
<td>Processing/waiting time: 1 minute / 0 mins</td>
</tr>
<tr>
<td>Staff utilisation: 0.0 FTE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefit of Portal Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productivity:</strong></td>
</tr>
<tr>
<td>$55 per medical disclosure</td>
</tr>
<tr>
<td>$1M annual medical disclosure costs</td>
</tr>
<tr>
<td>Alignment with greening initiatives</td>
</tr>
<tr>
<td><strong>Customer Value:</strong></td>
</tr>
<tr>
<td>Speed of access (reduce by 2-6 days)</td>
</tr>
<tr>
<td>Ease of access (anytime-anywhere portal access)</td>
</tr>
</tbody>
</table>

Created by author with data compiled from interviews with WorkSafeBC staff
4.6 Complimentary Portal Content

In addition to the more formalised portal content evaluated in this chapter, Health Care Services has the opportunity to leverage the provider portal framework to share additional information such as key performance indicator reports, service contracts, fee schedules, memorandums of understanding, and news bulletins. Each of these items is unique to each provider type and is not part of the public domain. Hence, the authentication and authorisation model incorporated into the provider portal presents an ideal channel through which to securely share this information with its intended audience. While it is not within the scope of this report to evaluate this proposed content, it seems reasonable to include relevant provider specific content such as this.

Similarly, the Claim Status application provided on the www.worksafebc.com website is another promising candidate for inclusion in the provider portal. This application allows health care providers to determine the claim decision details, injury details, and treatment details of a specific injury claim. Health care providers, such as physiotherapists, use this application to validate the “accepted” status of a worker’s claim before providing their services to ensure they receive remuneration for the service. It seems a natural extension of the portal concept to co-locate health care related information and incorporate this content into the provider portal.
5: DECISION ANALYSIS

Whereas the previous chapter focused on identifying and evaluating the impact of specific content delivered through an enterprise portal, this chapter focuses on content selection and determining the most effective information to include in such a portal. In essence, this chapter describes the decision analysis process utilised to evaluate the specific content to deliver through the provider portal. At the outset, it reiterates the WorkSafeBC portal strategy and segments the customer base to understand how an enterprise portal provides customer value. In addition, it critically examines the determinants for successful content delivery and benefit realisation based on industry portal uptake and lessons learned through WorkSafeBC’s existing portal initiative in the employer customer segment. This information establishes decision criteria, which ultimately indicates the specific content to include in the provider portal.

5.1 WorkSafeBC Portal Strategy

Strategy is about positioning and reflects the decisions made to offer particular products or services in particular markets; it provides vision and direction for the organisation (Mintzberg, 1994). This diverges somewhat from Porter’s traditional view of competitive strategy, which focuses on differentiation and competition (Porter, 1985). Mintzberg’s definition of strategy better aligns with the WorkSafeBC competitive environment, which is more-or-less devoid of competition due to its statutory nature. Strategy at WorkSafeBC identifies how to deliver value to customers. It focuses on
improving productivity and efficiency to drive down costs and reduce employer premiums, and it focuses on delivering the best possible customer service.

The Mintzberg definition of strategy provides a solid framework to explore the health care services and provider portal strategy at WorkSafeBC, and to understand the significance of this feasibility study examining potential portal content. WorkSafeBC’s health care channel strategy is to provide communication channels that enable timely and data-rich information exchange with the health care community. The primary strategic initiative supporting this strategy is to provide self-service alternatives for the health care community through web portal access – seamlessly exchanging information with CMS. The long-term strategic objective is to shift WorkSafeBC’s interactions with health care providers from a paper to data-centric environment.

The fundamental aspects of this portal strategy are its focus on self-service capabilities, establishing electronic information exchange with CMS, and improving speed of access. The self-service enterprise portal concept discussed throughout this report supports each of these three portal strategies. Hence, these components will be included in the decision criteria in order to ensure that relevant content is selected that supports the overall portal strategy.

5.2 Customer Analysis

Customer segmentation is the practice of dividing a customer base into groups of individuals that are similar in specific ways relevant to marketing, such as age, gender, interests, spending habits, and so on. Using segmentation allows companies to target groups effectively, and allocate marketing resources to best effect. In the case of health
care providers, several distinctive customer groups materialise to help segment the myriad of individual provider types. This exercise identifies manageable customer groups, identifies the important attributes, needs and wants of each segment, and determines the impact of the provider portal on each segment in order to understand how the enterprise provider portal affects these distinct segments and provides customer value.

An interview with the Health Care Statistics Analyst and Health Care Program Manager identified the fundamental demographics for each provider type, such as transaction volume, program structure, communication channel, and e-commerce comfort. The analysis of this demographic information identifies seven distinct health care provider segments; specifically, structured rehabilitation provider, physiotherapy, medical practitioner, hospital, private facility, psychology, and medical apparatus. The main demographics of each of the seven provider segments are included as Appendix B.

Neither the psychology nor the medical apparatus segment – which includes hearing aids, orthotics and prosthetics – prove to be attractive segments. These two segments are neither large, represent any significant share of the transaction volume, conduct business in an electronic environment, nor demonstrate any propensity to adopt the enterprise portal concept. Hence, catering to these segments is not a priority.

Conversely, the remaining five segments do present an opportunity for WorkSafeBC to deliver customer value and elicit a provider response. Notwithstanding this opportunity, the target segments can be narrowed further to establish a more focused customer strategy. The customer segmentation map, Figure 14, measures the provider segments based on six focal criteria. The upper three criteria measure the magnitude of
the segment size, whereas the remaining three criteria measure the factors that influence whether the segment will respond to a provider portal.

**Figure 14: Customer Segmentation Map**

The customer segmentation map clearly defines three divergent segment groupings. The medical practitioner segment is enormous in terms of the number of providers and the volume of transactions, however due to its size and diversity this segment is distant, impersonal, and generally uninterested in collaboration techniques. The medical practitioner segment spans family doctors, massage therapists, chiropractors, optometrists, acupuncturists and naturopaths: providers that may not see a benefit to sharing information with each other. The hospital segment is significant in terms of the heath care costs; however, the hospital is a unique entity that encompasses an incredible variation of health care services and medical specialties that is difficult to target and
influence. These two segments provide only a moderate opportunity for WorkSafeBC to deliver customer value and elicit a provider response, and thus are removed from further consideration. Hence, the three customer segments most likely to value a provider portal are the structured rehabilitation provider, physiotherapist, and private facility.

The structured rehabilitation provider segment, which provides customised care for victims of traumatic workplace accidents such as amputees, is very small in terms of number of providers and transaction volumes but massive in terms of health care costs (see Appendix B). Providers in this segment provide contracted services to WorkSafeBC. Subsequently, the nature of the work is very personal resulting in long-lasting relationships and a trend to collaborate with WorkSafeBC in initiatives such as a provider portal. Conversely, the physiotherapy segment is large and somewhat impersonal. However, voice of the customer data suggests this group is highly responsive to an electronic information-sharing channel. Somewhere in the middle of the structured rehabilitation provider and the physiotherapist, is the private surgical and diagnostic facility segment. Overall, the results of this analysis identify the structured rehabilitation provider, physiotherapist and private facility segments as the three preeminent opportunities to target when considering the appropriate content to deliver through a health care provider portal.

5.3 Industry Analysis

The purpose of industry segmentation is to divide the entire industry into strategically relevant components such as product and customer groups, and then use this information to identify the potential segments where the firm should compete (Porter,
1985). As previously established, the health care provider industry is comprised of seven customer groups. Figure 15 illustrates the intersection of each customer segment against the potential portal content under consideration, including the existing claim status application, in order to reveal the competitive scope of WorkSafeBC’s health care provider portal.

The industry segmentation matrix largely suggests that a customer specialisation focus is the most appropriate method to establish initial success with a provider portal. A customer specialisation focus suggests that WorkSafeBC deliver a variety of information and services (portal content) to the structured rehabilitation providers and focus primarily on catering to the needs of this customer group. As additional portal content is identified, it seems appropriate that it delivery customer value to the target customer segments.

Figure 15: Industry Segmentation Matrix

Created by author with data compiled from interviews with WorkSafeBC staff
As a secondary strategy, the matrix reveals the opportunity for a product specialisation focus by delivering payment remittance information (portal content) to the vast majority of customer groups. In practice, the successful delivery of the payment remittance content may establish the attractiveness of a provider portal, and hence open the door for future portal content offerings to the broader provider base. Moreover, the availability of payment remittance and medical disclosure information may appeal to the traditional paper-based psychologist customer segment and influence their behaviour. Overall, the customer analysis and industry analysis confirm the potential portal content under consideration fits the competitive environment. Thus, each content offering remains within the scope of the forthcoming decision analysis.

5.4 Enterprise Portal Uptake

Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 2003). Portal uptake more-or-less corresponds to Roger’s diffusion of innovation theory. Diffusion is the rate in which enterprise portal usage spreads through the health care industry, whereas uptake is the measurement of portal usage at a particular point in time. For the purposes of this analysis, the assumption is that portal uptake is measurable in 2009, corresponding to the most-likely implementation timeframe of the provider portal.

Statistics Canada suggests that 86.7% of health care businesses in Canada used the internet for information and communication technologies in 2007, growth of 11% over the past five years.\(^2\) Presuming this growth rate continues at a steady rate, it should reach 90% by 2009 reflecting the medical community’s substantial capacity to utilise the

\(^2\) http://www40.statcan.ca/l01/cst01/econ146b.htm?stid=internet
health care provider portal. Rationally, the capacity to use and willingness to use the provider portal are not equivalent, thus it is not reasonable to assume that 90% of health care providers will make use of the self-service enterprise portal.

A recent study on the uptake of electronic medical prescriptions in the health care industry reports portal uptake between 30% and 42%, depending on factors such as age of the medical practitioner, size of the practice, and transaction volume (Fisher, 2008). These results are on par with the results WorkSafeBC currently experiences through its employer portal. Employer portal statistics indicate approximately 3,000 application launches per day; and at its current growth rate is likely to reach 3,500 launches per day in 2009. It is difficult to aggregate the usage of a dozen online services into a meaningful uptake measurement and relate this to expected provider portal uptake. Instead, it is more relevant to understand the content delivered through the portal and then grasp the number and type of providers likely to utilise such a channel. Hence, further investigation and analysis is required in order to understand the impact of uptake on the provider portal.

5.5 Benefit Realisation

The benefits specified in the previous chapter reflect the maximum achievable benefit and necessitate 100% portal uptake. Undeniably, such uptake is not practical to expect. Hence, adjusting these benefits is necessary to determine a feasible benefit realisation threshold based on 40% portal uptake in 2009.

Table 10 summarises the maximum benefits of the potential portal content under evaluation and estimates the actual benefit that is reasonable to claim based on common portal uptake in the health care industry. In the case of medical referral and medical
disclosure content, the full benefit is retained as these processes are within
WorkSafeBC’s span of control. WorkSafeBC pushes this content exclusively through the
provider portal channel and is able to enforce portal usage through its contract process
and discontinue the existing telephone and postage processes. Conversely, the health care
provider pulls the payment remittance content through the portal channel and it is
therefore subject to the behaviour that shapes adoption and uptake.

Table 10: Provider Portal Benefit Realisation (Estimated on 2009 Portal Uptake)

<table>
<thead>
<tr>
<th>Content</th>
<th>Maximum Benefit</th>
<th>Benefit Realisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment remittance</td>
<td>$27,000 operating costs 0.5 FTE</td>
<td>✓ $11,000 operating costs ✓ 0.20 FTE</td>
</tr>
<tr>
<td>Medical referral</td>
<td>$0 operating costs 0.0 FTE</td>
<td>✓ $0 operating costs ✓ 0.0 FTE</td>
</tr>
<tr>
<td>Medical disclosure</td>
<td>$1,000,000 operating costs 0.0 FTE (3rd party provider)</td>
<td>✓ $1,000,000 operating costs ✓ 0.0 FTE (3rd party provider)</td>
</tr>
</tbody>
</table>

Created by author with data compiled from interviews with WorkSafeBC staff

5.6 Decision Criteria

The critical decision to answer is to determine the appropriate content to deliver
to health care providers by means of a self-service enterprise portal. This report has thus
far validated the enterprise portal concept, and identified and evaluated the potential
content to deliver through the provider portal. Throughout this analysis, several decision
concepts and criteria have become apparent that establish the basis of the decision
analysis. This section identifies, describes and weighs each criterion, and the following
section uses these criteria to select the ideal portal content.

Selection criterion is organised corresponding to four critical facets that contribute
to portal success, specifically, portal strategic drivers, business productivity drivers,
customer value drivers, and feasibility drivers. The criteria corresponding to portal
strategy, as identified in section 5.1, are delivering self-service capacity, establishing an
electronic information interface with CMS, and improving customer speed of access. The
business drivers are to create a productivity benefit and to provide a positive financial
benefit. The customer value drivers are customer fulfilment, measured in terms of
satisfaction, and expected portal usage. Finally, the feasibility drivers are the cost to
implement the portal content and the magnitude of potential technical barriers.

Table 11: Content Selection Decision Criteria

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Description</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic CMS interface</td>
<td>The content seamlessly integrates with CMS to share information with the provider.</td>
<td>10</td>
</tr>
<tr>
<td>Speed of access</td>
<td>Time to access portal content is minimised.</td>
<td>4</td>
</tr>
<tr>
<td>Productivity benefit</td>
<td>Content delivery maximises business process productivity; measured by FTE impact.</td>
<td>8</td>
</tr>
<tr>
<td>Financial benefit</td>
<td>Content delivery minimises financial cost of executing the business process.</td>
<td>5</td>
</tr>
<tr>
<td>Customer fulfilment</td>
<td>Recognition of improved service delivery, linked to enduring customer satisfaction</td>
<td>6</td>
</tr>
<tr>
<td>Expected portal usage</td>
<td>Maximise potential portal uptake.</td>
<td>7</td>
</tr>
<tr>
<td>Cost to implement</td>
<td>Minimise business and information technology investment to implement portal content.</td>
<td>4</td>
</tr>
<tr>
<td>Potential technical barriers</td>
<td>Minimise potential technical barriers that may contribute to reduced impact of portal delivery.</td>
<td>1</td>
</tr>
</tbody>
</table>

Subsequent discussion identified the self-service criterion as a must objective.

Fundamentally, any content provided by means of a self-service portal must be self-
service in nature. The remaining criteria are want objectives indicating they are desirable,
but not mandatory. This must versus want categorisation stems from the Kepner-Tregoe
decision analysis technique.³ Table 11 describes each of the want decision criterion and

its associated weight as determined though the decision analysis process performed in conjunction with the health care management team.

5.7 Content Selection

As established throughout this report, content is the primary success factor in delivering an effective self-service enterprise portal. Providing access to the information and services that are most important to health care providers is critical to enterprise portal success. Hence, the need to identify, evaluate, and ultimately select the appropriate health care content to deliver through a provider portal.

Chapter 4 identifies and evaluates the proposed content earmarked for delivery via a self-service enterprise portal. The results of this analysis was presented to the health care management at the outset of the decision analysis process, in order to establish a common understanding of the proposed content, the existing problems and root causes, and the expected productivity and customer value generated by delivering this content through a provider portal. Chapter 5 summarises WorkSafeBC’s portal strategy and segments the customer base to understand how a provider portal delivers customer value to each unique provider segment. The sum of this information establishes the basis of the decision analysis process. Figure 16 reveals the solution selection matrix to determine the initial content to provide by means of a self-service health care provider portal.

The solution selection matrix scores each of the proposed portal content against the eight want decision criteria, which are categorised by driver. The weight and total score is hidden during the decision analysis process so as not to influence the decision process. For each criterion, participants assign a relative score to each of the three content
processes, with a higher score indicating a superior outcome. The total score is the cross-multiplication of each individual score against the criterion weight. The total score then suggests the ideal content to integrate into a provider portal in order to deliver an effective enterprise portal to health care providers.

**Figure 16: Content Selection Matrix**

<table>
<thead>
<tr>
<th>Portal Strategy</th>
<th>Payment Remittance</th>
<th>Medical Referral</th>
<th>Medical Disclosure</th>
<th>Weight</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic CMS interface</td>
<td>10</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>Existing payment tables and medical docs synchronously connect to provider portal</td>
</tr>
<tr>
<td>Speed of access</td>
<td>10</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>Determined by the relative process waiting time reduced by portal delivery</td>
</tr>
<tr>
<td>Productivity benefit</td>
<td>10</td>
<td>1</td>
<td>6</td>
<td>8</td>
<td>Determined by the relative FTE impact of portal delivery; Symmetry FTEs included</td>
</tr>
<tr>
<td>Financial benefit</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>Determined by the relative cost savings attributed to portal delivery</td>
</tr>
<tr>
<td>Customer fulfilment</td>
<td>8</td>
<td>1</td>
<td>10</td>
<td>6</td>
<td>Determined by relative ability of portal delivery to address problem root-causes</td>
</tr>
<tr>
<td>Expected portal usage</td>
<td>5</td>
<td>1</td>
<td>10</td>
<td>7</td>
<td>Medical disclosure only available via portal; remittance score close to projected uptake</td>
</tr>
<tr>
<td>Cost to implement</td>
<td>8</td>
<td>10</td>
<td>6</td>
<td>4</td>
<td>Referral process implemented with least portal design implications; then remittance</td>
</tr>
<tr>
<td>Potential tech. barriers</td>
<td>6</td>
<td>10</td>
<td>8</td>
<td>1</td>
<td>Concern re. impact of HIBC reconciliation statement; and disclosure vetting process</td>
</tr>
</tbody>
</table>

Based on the existing criterion weights, the highest possible score is 450 and the median score is 225. Two of the proposed portal content processes clearly score in the upper-most quartile, while the medical referral content only scores in the second quartile. Thus, the decision analysis process reveals that the payment remittance statement and

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medical disclosure processes are the ideal candidates to design into the provider portal. This nicely compliments the existing content planned for aggregation into the provider portal, specifically the Claim Status application and the provider-specific reference material such as key performance indicator reports, service contracts, fee schedules, memorandums of understanding, and news bulletins.
6: SUMMARY & RECOMMENDATION

6.1 Recommendation

This report identified six key factors to implementing and managing a successful health care provider portal, specifically authentication, authorisation, privacy, collaboration, governance, and content. WorkSafeBC’s business and technical competencies and constraints – measured against the first five factors – confirm the organisation’s capacity to leverage its expertise, technology, business processes, and governance structure to deliver a successful health care provider portal.

However, the sixth factor, content, ultimately drives the quality and success of an enterprise portal. Understandably, the most important factor to implementing a successful enterprise portal is to establish self-service access to the most critical information and services. Thus content identification, evaluation and selection became the focus of this report. The end-result of this comprehensive analysis indicates the payment remittance statement and medical disclosure processes as ideal content to include in the provider portal, whereas the medical referral process provides no tangible portal benefit.

The target customer segments in which to market the provider portal concept are the structured rehabilitation provider, physiotherapist and private diagnostic and treatment facility segments. The structured rehabilitation provider in particular provides the opportunity for a customer specialisation focus in order to establish initial success with the provider portal. This strategy suggests delivering this identified content, and potentially additional content, to the structured rehabilitation provider segment and
focussing primarily on catering to their needs while the portal concept gains traction and grows its appeal across the remainder of target segments, and eventually spreads to the entire health care provider industry.

The structured rehabilitation provider segment is very small in terms of number of providers and transaction volumes but massive in terms of health care costs. It provides ample benefit in which to pilot the provider portal concept in anticipation of delivering future content that serves providers as a whole. Providers in the structure rehabilitation segment provide contracted services to WorkSafeBC. Subsequently, the nature of the work is very personal resulting in long-lasting relationships, a trend to collaborate with WorkSafeBC, and an openness toward embracing electronic information sharing.

6.2 Epilogue

The introduction to this report began by stating its purpose, namely to analyse the impact and feasibility of implementing an enterprise web portal for health care providers at WorkSafeBC. Furthermore, the introduction contains six specific objectives that support the goals and purpose, each of which is thoroughly analysed throughout the report. This epilogue provides the opportunity to revisit those objectives in order to evaluate how well they were satisfied and to understand the achievements of this report. The results of this reflection are summarised in Table 12, which restates each of the six objectives, evaluates its outcome based on the analysis contained within the report, and indicates the section the reader can reference for further details regarding the objective. Predominantly, this report is successful in satisfying each of the six objectives and achieving its overall goals and purpose.
<table>
<thead>
<tr>
<th>Objective</th>
<th>Outcome</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascertain the key success factors in implementing a successful enterprise web portal in the health care industry</td>
<td>Authentication, authorisation, privacy, collaboration, governance, and content</td>
<td>3.2</td>
</tr>
<tr>
<td>Understand WorkSafeBC’s competencies and constraints with respect to these key success factors, in order to understand its ability to implement a successful enterprise web portal</td>
<td>WorkSafeBC is positioned to leverage it existing experience, technology, business processes and governance structure to establish a successful health care provider portal</td>
<td>3.3</td>
</tr>
<tr>
<td>Identify, document, verify and measure the specific business processes that can be feasibly provided via an enterprise web portal</td>
<td>Current-state and future-state business process diagrams, process metrics, and problem and root cause validation is provided for each business process</td>
<td>4.3, 4.4, 4.5</td>
</tr>
<tr>
<td>Determine the operational efficiencies and customer value that can be achieved by providing this content online</td>
<td>Internal facing process productivity and external facing customer value metrics is provided for each business process</td>
<td>4.3.3, 4.4.3, 4.5.3</td>
</tr>
<tr>
<td>Understand the challenges of uptake and adoption to estimate actual benefit realisation</td>
<td>WorkSafeBC’s employer portal stats, and secondary data, suggest it is reasonable to expect roughly 20-42% portal uptake</td>
<td>5.4</td>
</tr>
<tr>
<td>Recommend which business processes to deliver by means of the self-service enterprise health care provider portal</td>
<td>The decision analysis suggests to include the payment remittance and medical disclosure content; and exclude the medical referral content</td>
<td>5.7</td>
</tr>
</tbody>
</table>
APPENDICES

Appendix A: Invoice Payment Business Process

Invoice Processing & Payment Remittance Statement

Health Care Provider

1a. Submit invoice

fail

HIBC TelePlan

electronic

c. Perform pre-edit and eligibility edit to validate invoice

d. Perform eligibility edit to validate invoice

pass

Claims Mgmt. Solutions (CMS)
electronic

e. Match invoice to claim

Elan Data Makers

paper

b. Data enter invoice fields into electronic format

1. Receive payment and remittance statement

1. Send payment reconciliation and invoice

1. Reconcile invoice payment records

1. Disburse consolidated payment

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## Appendix B: Provider Segmentation Demographics

<table>
<thead>
<tr>
<th>Segment</th>
<th>Contract</th>
<th>Transaction Volumes</th>
<th>Provider Ratios</th>
<th>Channel</th>
<th>Portal Comfort</th>
<th>Provider Types</th>
</tr>
</thead>
</table>
| Structured Rehabilitation Provider     | Unique contract with each service provider | Providers: 120  
Transactions: 97,963  
Cost: $47,227,498 (27%) | 816 transactions  
per provider  
$394K invoiced  
per provider | Facsimile  
Telephone | Medium – High | ➢ ASTD  
➢ Amputee  
➢ Functional Capacity  
➢ Hand Therapy  
➢ Head Injury  
➢ Home Care  
➢ Occupational Rehab  
➢ Pain Management |
| Psychology                             | Contract with each provider             | Providers; 125  
Transactions: 23,655  
Cost: $4,176,785 | 189 transactions  
$33K invoiced | Mail  
Telephone | Low | ➢ Psychologist |
| Physiotherapy                          | Generic contract with professional organisation | Providers: 1,200  
Transactions: 496,173 (29%)  
Cost: $17,539,738 | 413 transactions  
$15K invoiced | Electronic  
Facsimile  
Telephone | High | ➢ Physiotherapist |
| Medical Practitioner                   | Generic contract with professional organisation | Providers: 9,050 (90%)  
Transactions: 870,173 (50%)  
Cost: $26,541,414 | 96 transactions  
$3K invoiced | Electronic  
Facsimile  
Telephone | Medium – Low | ➢ Acupuncture  
➢ Chiropractor  
➢ Massage Therapist  
➢ Naturopathy  
➢ Optometry  
➢ Physician  
➢ Podiatrist |
| Hospital                               | No contracts                            | Providers: 100  
Transactions: 150,782  
Cost: $34,387,425 (20%) | 1,503 transaction  
$343K invoiced | Mail | Medium | ➢ Hospital |
| Private Facility                       | No contracts                            | Providers: 33  
Transactions: 23,927  
Cost: $14,870,890 | 725 transactions  
$450K invoiced | Facsimile  
Telephone | High | ➢ Surgical  
➢ X-Ray  
➢ Radiology / MRI |
| Medical Apparatus                      | Generic contract with professional organisation | Providers: 194  
Transactions: 63,011  
Cost: $30,760,725 | 325 transactions  
$159K invoiced | Facsimile  
Telephone | Medium | ➢ Hearing Aid  
➢ Orthotic  
➢ Prosthetic |
REFERENCE LIST


White, R. (December 2007). Donne and Lennon Said It So Well, E-Content 30(10), 20.
