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Innovative self-service practices

A Study Commissioned by the Institute for Citizen-Centred Service on behalf of the Research Committee of the Public Sector Service Delivery Council and the Public Sector Chief Information Officers Council – Canada

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Executive summary

Introduction to the report

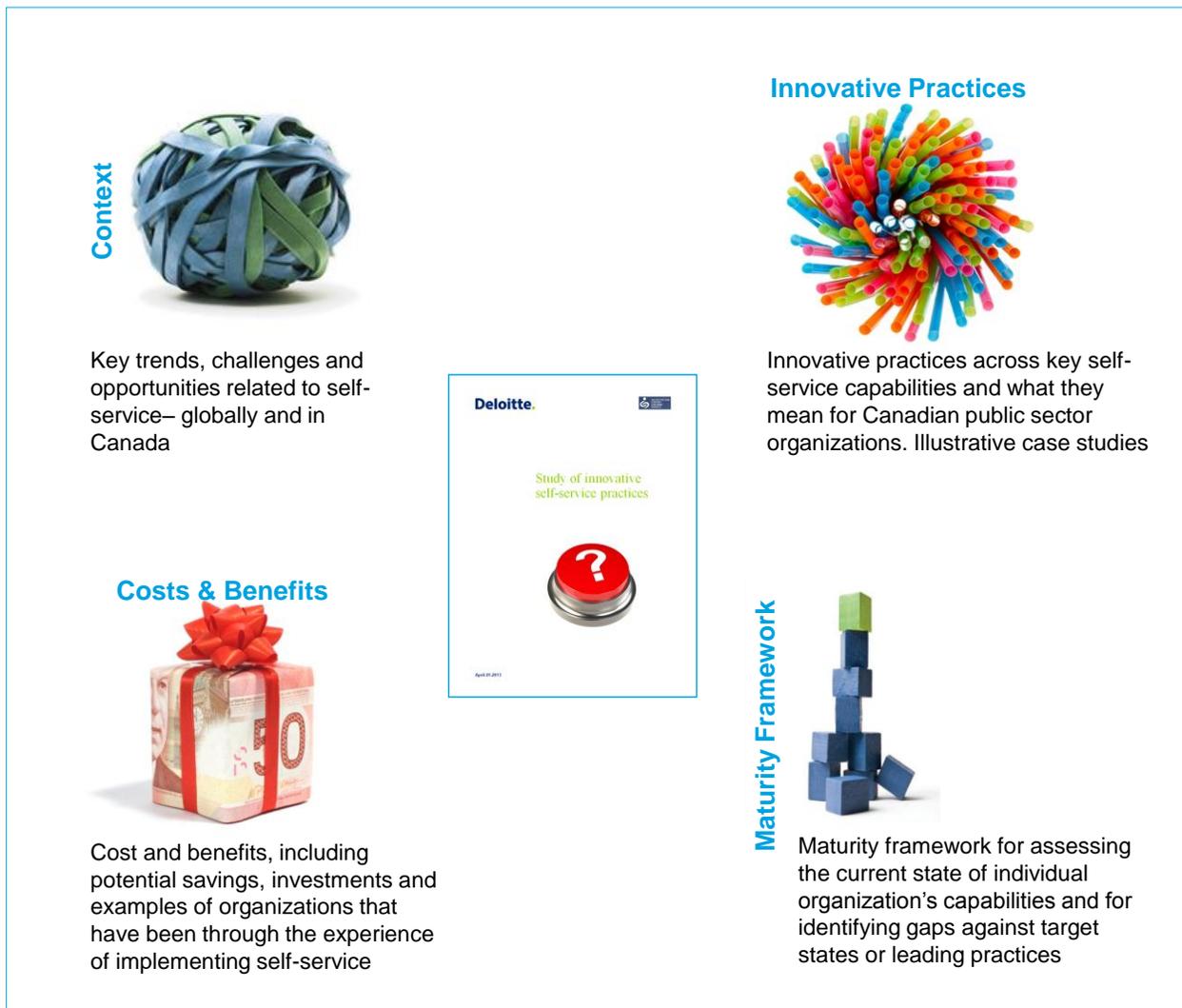
In recent years a perfect storm has been changing the way in which public and private services are being consumed. Both advances in technology and unrelenting fiscal pressures are forcing all types of organizations to reconsider how they deliver services to their clients. On the one hand, an ongoing technology revolution has accelerated with the exploding popularity of smart-devices and social media. On the other hand, aftershocks from the 2008 financial crisis continue to be felt by the economy as a whole, and specifically by governments that are operating under the augur of deficits and growing debt loads.

Given such an environment, the significantly lower cost of delivering services through technology-enabled self-service channels is a value proposition too compelling to ignore. For clients, too, the benefits of such channels is equally attractive— they will primarily benefit from process and attitude changes that will motivate service providers to become more client-centric. The growing interest in self-service is therefore not surprising. Neither is the desire to understand what has made some initiatives successful and others less so—across industries and around the world.

While this study addresses that interest by providing a broad survey and selected case studies of global self-service initiatives, it is intended to be more than an academic review. Specifically, it aims to discuss self-service leading practices in the context of the Canadian public sector, including an examination of implications, relevance and applicability in Canada. Additionally, we have drawn on the innovative practices we identified to create a maturity model and tool that can be used by organizations to assess their own progress and identify gaps between current and desired states of maturity. Once completed by individual jurisdictions, this maturity framework could provide a powerful dataset and baseline for measuring progress and for benchmarking.

This study is organized into four key sections, as described below. Of these sections, the one on costs and benefits is of particular interest to both the organizations we interviewed as well as senior executives in government. Costs and benefits of self-service are very case-specific and difficult to generalize and difficult to obtain. Nevertheless, we have attempted to obtain and present as much detail as possible on this topic. Specifically, we have included several examples of the types of investments that have been made, as well as results achieved. We believe that this can serve as a starting point for individual organizations to develop their own policy options and business cases.

What this report contains



How to use it?

1. Understand the context for self-service—the drivers, expectations and constraints
2. Learn about what others have done or are doing to leverage the power of self-service
 - a) Consider the implications, challenges and opportunities for your own organization
3. Consider the potential costs and benefits of implementing self-service models, including alternative financing and service delivery
4. Assess your progress against leading practices, determine a desired maturity level and identify the gaps between where you are and where you want or need to be
5. As a starting point for articulating and implementing both a Canadian and regional/local vision of self-service in order to advance the policy agenda

Leading practices

Self-service is best defined as an interaction between a service provider and a consumer, wherein the consumer can obtain information or complete a transaction without the intervention of a live agent. While this describes the purest form, self-service can also be seen as a continuum, which includes both unassisted, “pure”, self-service and “assisted self-service,” where the consumer is supported by live agents – in-person, over the internet, or on the phone. Further, a self-service interaction can easily turn into a full-service one, as when a benefits application is completed and adjudicated automatically but the service is ultimately fulfilled in person through a case worker.

In general, self-service interactions are enabled by one or more automated processes and client access is typically through an array of “devices,” including computers, mobile devices, kiosks, and interactive voice response (IVR) systems. We chose the term “devices” because channels and devices tend to be conflated, causing confusion, especially as many channels are available on multiple platforms, owing to better technology integration and interoperability. Thus, it may be more useful to think of latter-day channels as “touch points” along a continuum, rather than as discrete service points.

Starting with these definitions, we identified a number of practice areas on which to focus our primary and secondary research. These topics and brief descriptions of them are depicted in the figure below.



Through interviews with more than 20 public and private sector organizations around the world, as well as reviews of academic and trade publications, we extracted examples of innovative self-service practices within each area, and have attempted to articulate the relevance of such practices to Canada, including notable examples from the Canadian banking and loyalty sectors, as well as digital government initiatives in Denmark, Estonia and the UK, among others. While there may be a case for declaring one or more practice areas as (e.g., integrated authentication and identity management) being more important than the others, we believe that these are all equally critical—and to some extent need to be implemented in a coordinated fashion—in order to achieve self-service objectives.

	Category	Leading practices	Examples – Global and Canada & Relevance
1	Integrated Authentication & Identity Management	<ul style="list-style-type: none"> Federated identities Multi-factor ID data verification Biometrics – retinal scans, vein readers, and voiceprint recognition systems Role-based data access 	<ul style="list-style-type: none"> NEM ID – Denmark SecureKey Concierge – Canada <p>Relevance: key building block for self-service, potentially enabled by partnership with private sector</p>
2	Channel Migration & Adoption	<ul style="list-style-type: none"> Mandatory digital services Price discrimination 	<ul style="list-style-type: none"> Price Discrimination – Singapore Land Transport Authority Paperless billing promotions – BC <p>Relevance: Need to consider policy changes to accelerate channel migration</p>
3	Assisted Self-Service	<ul style="list-style-type: none"> Service centres Video and phone support Agent/volunteer support 	<ul style="list-style-type: none"> Social Assistance Applications – State of Florida Agent Incentives – BC Hydro <p>Relevance: Need to strategically use assisted self-service as a means to divert traffic to lower cost channels</p>
4	Seamless Multichannel Management	<ul style="list-style-type: none"> Channel markers Social data mining Speech analytics 	<ul style="list-style-type: none"> Social Media Mining – AutoTrader Channel Markers – Major Canadian Bank <p>Relevance: Highlights the need to develop and implement a holistic approach to channel management</p>
5	Client-focused Service Integration & Bundling	<ul style="list-style-type: none"> Client segmentation Life/business events vs. program focus Common technology platform and processes 	<ul style="list-style-type: none"> Gov.uk Portal – United Kingdom Integrated birth registration – Newfoundland; Service bundling – Nova Scotia <p>Relevance: Need to consider incentives for all levels of government to integrate/bundle services</p>
6	Robust Business Architecture	<ul style="list-style-type: none"> Reference architecture Centralized task forces Partnerships Mobile access 	<ul style="list-style-type: none"> Danish Digital Taskforce – Denmark Strategic Reference Model – Gov. of Canada <p>Relevance: Points out the advantages of integrating more services across all three levels of government through common governance models, delivery mechanisms and processes/technology.</p>
7	Enhanced User Experience	<ul style="list-style-type: none"> Personalized web portals & user content Rapid, dynamic search Speech recognition Automated notifications 	<ul style="list-style-type: none"> Automated Notifications– CVS pharmacy Re-designed web gateway – ServiceOntario <p>Relevance: Opportunity to enhance self-service adoption by increasing stickiness to digital channels</p>

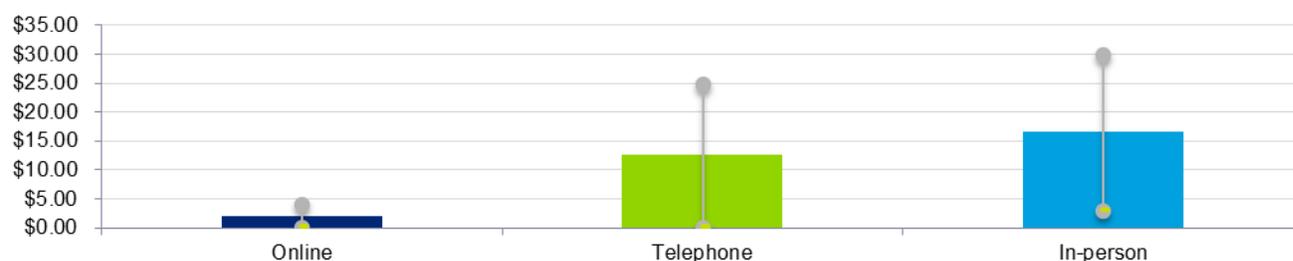
Costs & benefits

While the benefits of self-service have long been touted, the costs—both direct and indirect—are less well-understood, at least by anyone outside of the actual implementation teams. Even then, not many organizations keep accurate records to be able to report benefits realization against the original business case, with the exception of alternative service delivery or public-private partnership agreements, where the contract requires such details to be recorded.

Specifically, investments to enable self-service capabilities are difficult to pin-point because each organization has a different starting point and target state, and it is the gap between the two that will ultimately determine the magnitude of investment. Further, in most instances, implementing self-service is not a matter of buying off-the-shelf components but rather an exercise in prioritization and program portfolio management to allocate resources in a way that are optimal and palatable for a given organization. With those caveats, this report does provide a number of examples of costs and benefits realized by various self-service initiatives around the world

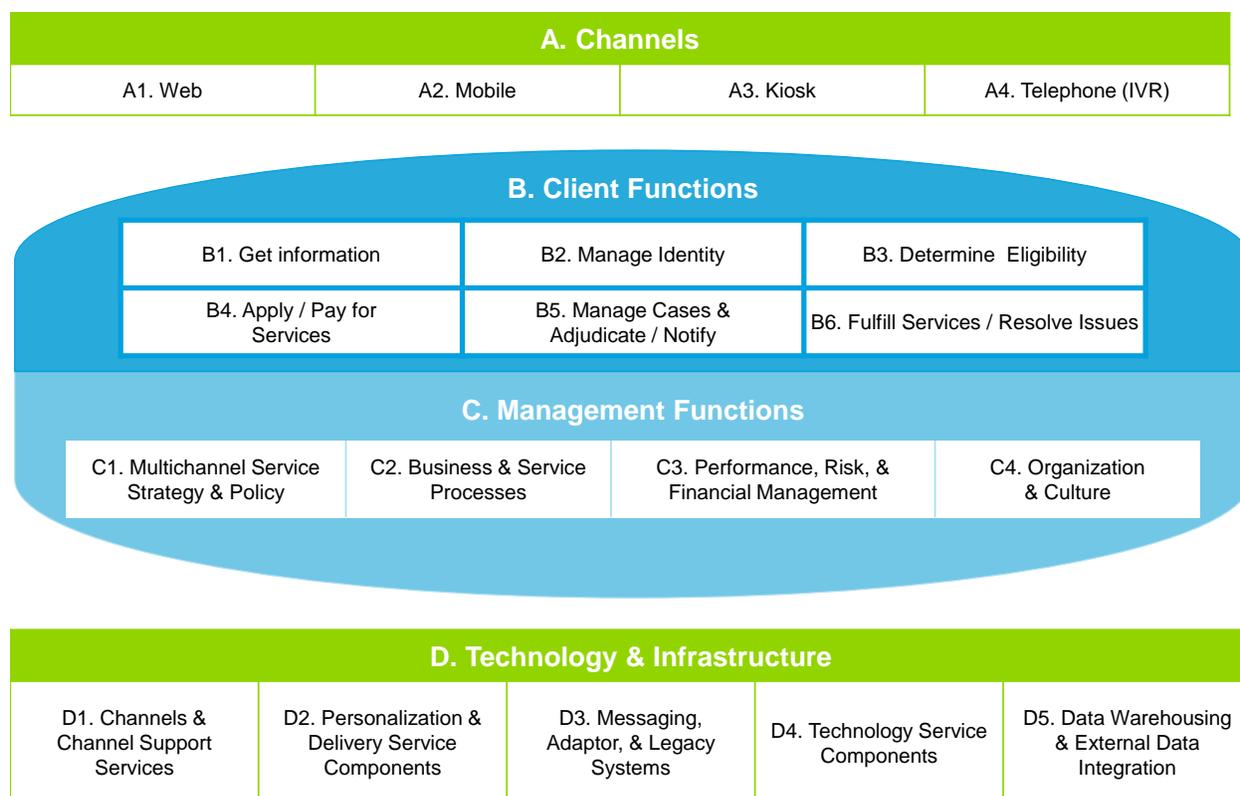
Organization/Project	Investment and/or Annual Operating Costs	Estimated Benefits (Quantitative)	Benefits Qualitative	Source of Benefits
UK NHS Direct Health & Symptoms Checkers	£2.5 – 3.5M (operating cost)	£25 to £50M annually	Shorter wait lines, reduced congestion in emergency rooms	Cost avoidance from patients not visiting hospitals. NHS 111 call costs £6.5. Older and now decommissioned call centre: £20 per call. Health and symptom checker: £0.11 and £0.15/interaction.
Texas.Gov	~US\$30 M+	US\$80 M+ (on original investment); US\$183 M expected from new contract over 7 years	Greater convenience and accessibility	Common platform for all levels of government, including payment gateway Self-funding model with initial financing by private sector
Australian Government – Smart Forms	AU\$6.2M+	10.5:1 ROI	Reduced time to complete forms, number of forms and turnaround time. Fewer errors; improved accuracy and security	Collaboration among 30 local councils and municipal association. Direct cost and time savings for local businesses and citizens that use the forms

Once an investment in self-service is made, the resulting savings are typically from two sources—reduced cost-to-serve within any given channel or migration of more interactions to self-service. In both instances, cost per transaction is the key metric that helps to determine both the savings and the competitiveness of a particular channel or service. However, that cost per transaction varies from country to country and service to service. On average, on-line services appear to be between \$0.10 and \$4.00/transaction, with the majority of services costing less than \$1/transaction to deliver. On the telephone channel, costs range between \$0.11 and \$25, with the lower end representing self-service transactions through an IVR or virtual agent and the higher end representing technical support calls. Finally, within the in-person channel, informational services typically cost about \$3 per transaction while more complex interactions go up to \$30 or more per transaction. These figures are averages based on a handful of service types; and there are always outliers that may cost more or less than the specified range for a given channel.



Self-service maturity framework

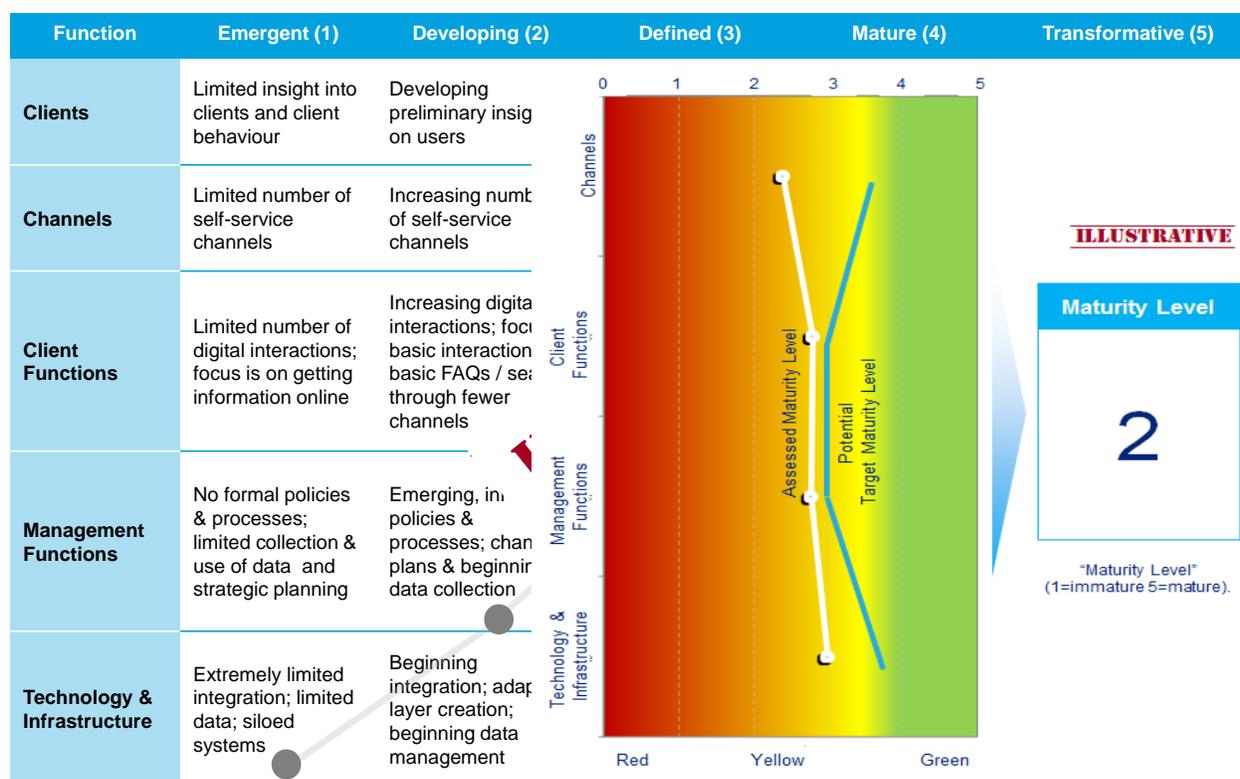
Based on our survey of leading practices and trends, we have developed a self-service maturity framework designed to help organizations assess their own maturity against each of the key functions defined in the self-service model, depicted below.



The model represents the fundamental building blocks for enabling self-service within most organizations. As a starting point, organizations can compare themselves to the model in order to determine whether any of the key components are missing within their respective environments. As a second step, they can proceed to assess the maturity of those components that they do have.

The results of the self-assessment—completed by using the Excel tool accompanying this report—are plotted on a “heat map”, which can help to identify gaps between current and target levels of maturity. However, it is important to note that different organizations will have and will want to achieve differing levels of maturity within each self-service function, although there are some areas, such as technology and infrastructure, where a higher-level of maturity is desirable and advisable. Additionally, it is also important to have higher levels of maturity for sub-components of certain functions, such as identity management and system/data integration.

This tool is likely to become more valuable as more and more jurisdictions complete an assessment and share the results in order to create a Canadian baseline, which could be further segmented into municipal, provincial and other categories.



Conclusions and recommendations

This study of innovative self-service practices and implications aimed to understand trends, approaches, costs and benefits at a specific and detailed level wherever possible. Although such details were not always available or sharable, the report nevertheless presents a comprehensive view of the current state of self-service and includes illustrative case studies of organizations that have implemented many of the cited practices.

Even as the rest of the world makes progress in government-to-constituent service delivery, Canadian jurisdictions' commitment to self-service among is not in doubt. However, Canada does risk falling behind, as evidenced by the latest UN eGovernment survey, if more specific action is not taken to advance the self-service agenda with politicians, the public, employees and other stakeholders.

Overall, we recommend the following collective and individual actions in order to realize public policy goals and once again position Canadian governments as leaders in service delivery generally and self-service in particular:

1. **Adopt a coordinated and collaborative approach within and across jurisdictions by establishing a pan-Canadian task force to focus specifically on self-service.** The existing Public Sector Service Delivery Council (PSSDC) and Public Sector Chief Information Officer Council (PSCIOC) provide a framework and starting point and have had notable success on issues such as the single business number. However, what's needed is a more tactical approach and an operating body with a mandate to define, implement and govern specific joint initiatives such as identity management.
2. **Through the new task force and individually, jurisdictions should create and deliver a campaign and engagement plan to promote self-service.** It is important to have a frank discussion with politicians, constituents and public servants about both the costs and benefits of self-service. Such a conversation needs to address issues such as closure of in-person offices, staff reductions and accommodations/alternatives for specific populations and services. As well, the benefits need to be clearly communicated, including ones such as new career opportunities for staff, along with better, faster service and higher citizen/business satisfaction levels. There also needs to be acknowledgement and acceptance that not all benefits will be realized in the short-term and that

appropriate resources will have to be allocated to help realize any benefits—including support for marketing, outreach, and incentives.

3. **Establish and publish a transaction cost methodology in order for individual jurisdictions to calculate and report transaction costs**, by channel and type of service, in a consistent and comparable manner. Also consider compiling and publishing a “benchmark” survey of transaction costs for use by both Canadian and global jurisdictions. Not only will this allow for more apples-to-apples comparisons and facilitate identification of opportunities to improve costs and efficiencies, but by publicly releasing such a framework, Canada can take the lead in addressing an issue that both other governments and the private sector are struggling with.
4. **Create and adopt a strategy and plan for implementing service bundles** using existing blueprints such as the one in Nova Scotia. These bundles should be built around a common life and business event framework and incorporate services from all levels of government, including municipalities.

Additionally, at an individual level, jurisdictions should:

1. **Develop and publish a multichannel service delivery strategy, with a focus on self-service and channel migration** in order to begin articulating a business case for the necessary investments. These individual strategies will also be a starting point for stakeholder engagement and can be used to communicate the ultimate vision and benefits of a transformed service delivery model.
2. **Assess the potential for using alternative financing and delivery models to develop and operate self-service channels**, similar to what has been done in more than 20 U.S. states. While there is some justified skepticism about the benefits of partnering with the private sector, appropriately structured deals, which include obligations for governments as well as partners, have been shown to work, including in U.S. states like Texas
3. **Segment both their clients and services in order to understand and address barriers to self-service adoption**, especially among vulnerable populations. Develop risk mitigation plans to address both these and other, more traditional, risks such as those related to technology implementation and channel adoption. Also understand and address public perceptions of privacy risks associated with integrated service delivery, drawing on experiences such as the BC Services Card and the UK National ID program, as well as through direct engagement of citizens and business via surveys, focus groups, etc.
4. **Commit to support and adopt national standards developed by a central task force**, including potential standards for service categories/tiers, service bundles, performance metrics and cost measurement, among others. This could also include a commitment to complete and share the results of their respective self-service maturity assessments.

Context

Even as cultural, demographic and technological changes are providing an impetus for rising adoption of self-service, public sector organizations in Canada and around the world are saddled with a diverse set of challenges – from an ageing technology infrastructure to growing client expectations—that are impacting their ability to deliver services efficiently and cost-effectively. Some of the key challenges are highlighted below:

#	Challenge	Description	Related Trends
1	Rising Client Expectations 	There is a demand for better, more convenient services, increased transparency, and more responsive government. At the same time, it is important to address the needs of those without access to self-service channels, including some seniors, the disabled and low-income citizens	Channel choice is primarily driven by convenience and access – web, mobile, kiosk and telephone channels are preferred to different degrees in different settings. Personalization increases user satisfaction and service/channel “stickiness”.
2	Fiscal Pressures 	Canadian public sector budgets are under significant pressure from lingering effects of the recent economic downturn and rising cost of service delivery.	Public-private partnerships are being used by some governments to advance service delivery without immediate public sector investment
3	Fragmented Programs & Services 	Services and programs across all three levels of government are fragmented, siloed, redundant and inefficient.	Integration enables a seamless experience that contributes to improved customer satisfaction.
4	Technology Obsolescence 	Governments' systems and processes have failed to keep up with rapid changes in technology.	Platforms that support any device improve accessibility and reduce cost to serve.
5	Growing Client Sophistication & Diversity 	Increasing demographic diversity; and growing technology savvy, regardless of age or economic status.	Control is empowering and reassuring; and allays user privacy and security concerns. Community support reinforces channel choice and encourages repeat use.

1. Rising client expectations

The retail, travel and banking sectors are often cited as leaders in client-centred services and there is a desire among many government leaders to replicate these service delivery models for public services. However, government-to-citizen and government-to-business service delivery is often more complicated than commercial relationships because citizens are both “shareholders” and clients, and tend to demand high service levels without necessarily being prepared to pay the associated costs through higher fees or taxes. Additionally, the legislative frameworks underlying government services also add a layer of complexity that introduces numerous and sometimes inconsistent business rules, which cannot be circumvented to provide an easier client experience.

The willingness to pay, though, is intricately linked to perceptions of value. Similar to how price discrimination is applied to branded commercial goods and services, public services can also be differentiated in the minds of citizens and businesses. However, this entails making services accessible,

convenient, intuitive and adaptive, which has always been difficult to do in a government context but will become even more so as public expectations continue to evolve.

Aside from the question of paying for improved services, government—unlike the private sector—cannot choose its customers or decide to not offer services or channels to those outside a target market. Consequently, public sector services providers need to ensure that all eligible citizens and businesses have equal access to government services.

Finally, the era of open data and digital democracy has also raised expectations for government transparency and accountability. Indeed, with governments such as the UK's releasing detailed data on service volumes and costs, the urge to compare and benchmark will only increase the pressure to demonstrate cost-effectiveness and value for money.

2. Fiscal pressures

All over the world public sector revenues have been falling—often as a result of decisions to cut or not raise taxes—while expenses have been rising—often because of a desire to not reduce services, and the need to pay the interest costs of ballooning debt loads. In this fiscally challenging environment, governments have been wrestling to control one of their largest costs: labour. This is an especially important element in any discussion of self-service, the primary intent of which is to reduce costs associated with providing agent support – in-person or by other means.

The financial benefits of self-service cannot be fully realized without migrating users to digital channels and reducing full-time equivalents. However, such reductions are only possible with the full cooperation of labour unions—to trim staff levels—and politicians—to reduce in-person service delivery in their constituencies. While the quantitative argument may be an easy one, the impact on jobs and communities is a more difficult issue, which nevertheless needs to be discussed and considered.

Beyond costs, the revenue side of the equation also needs to be examined. Governments of all political stripes have been reluctant to increase service fees or taxes, which are often a reliable source of funding for the investments necessary to achieve self-service objectives, which will ultimately yield even greater benefits.

3. Fragmented programs & services

Canada's unique version of federalism has resulted in the distribution of core service responsibilities across three different levels of government. Even within each of these levels, differences in policies and programs have resulted in silos that not only drive costs up and create inefficiency but also cause client confusion. Adding different technology platforms, levels of maturity and inconsistent business rules to this only exacerbates the challenges of enabling service integration and seamless customer experiences.

The current, fragmented nature of government service delivery is largely a legacy of incremental decisions over a period of decades: as new programs and Ministries were created, the focus was not always on avoiding redundancy or optimizing operations but rather on expediency. However, those historical decisions, combined with evolving privacy legislation have led to rules and policies that prevent data sharing among programs, Ministries and service providers. Many Canadian jurisdictions cite privacy and data sharing legislation and policies as a key constraint to improve service delivery, though this may perhaps be more perception than reality.

For instance, privacy policies appear to be a barrier to “pushing” information to clients based on integrated case histories or making recommendations based on user demographics or psychographics. As many ministries and departments still don't share data among each other, clients are forced to submit the same information again and again for each program. There may, however, be ways to comply with privacy legislation and improve client services by ensuring that there is a better understanding of privacy requirements before a new program is rolled out, as the province of British Columbia has done for its Integrated Case Management program (see case study later in this document).

Even if privacy barriers could be removed, citizens who seem unconcerned about sharing personal information on social networks are deeply suspicious of government collecting and retaining their information. According to a recent survey, most Canadians feel that their knowledge of personal privacy rights is “poor” (36%) or “neither good nor bad” (33%). Additionally, “almost two thirds of Canadians (65%) agreed that protecting the personal information of Canadians will be one of the most important issues facing the country in the next ten years.”¹ Incidents such as the recent loss of a hard drive containing the personal information of more than half a million clients of the Canada Student Loans Program and of employee data by Human Resources and Skills Development Canada (HRSDC) continue to fuel distrust of public sector privacy and security measures.² Of course, incidents of privacy breach are not confined to the public sector, there have been several high profile recent incidents including at companies like Yahoo and LinkedIn. But overcoming this distrust will be a key to ensuring the success of technology-enabled self-service initiatives within government.

4. Technology obsolescence

Legacy technology systems remain a significant hurdle to seamless, multichannel, integrated service delivery. While progress has been made in web-enabling many of these systems, they still tend to operate largely in isolation from other systems necessary to provide a complete view of the client or useful levels of personalization for users. For front-line staff, too, the lack of common platforms means that they often have to use multiple terminals or applications in order to service clients in a single-window model.

While front-office solutions are often described as relatively easy to develop and implement, the lack of integration with back-end processes and systems can create bottlenecks that impede efficient service delivery. Without a holistic and collaborative approach to technology modernization, silos persist and interoperability suffers, ultimately impacting the enterprise business case for self-service initiatives.

The current state of technology in many public sector organizations is a significant issue because of overall demographic and cultural trends, which show fast-growing adoption of mobile devices, especially among young people. Without investments to support such devices and the type of consumption they promote, there is likely to be more and more dissatisfaction with government services.

5. Growing client sophistication & diversity

Clients around the world are becoming more accustomed to using an array of digital channels and technologies to access services. Their sophistication is evident in how they are seeking information, comparing services and service providers, and demanding accountability. This behaviour cuts across demographic and economic segments, especially in a country like Canada that has relatively high Internet penetration rates.

At the same time, the diversity of the client base has never been greater for many public sector organizations. The variety of languages, cultures and preferences that need to be served adds yet another layer of complexity, especially in the realm of social services where technology may be constrained to parts of the end-to-end process and self-service options not as easily availed or promoted. In addition to client diversity, some segmentation is also driven by the types of services offered—for children, seniors, unemployed, etc.—none of which are discretionary and many of which are interrelated. This diversity of services and populations also impacts the types of channels that may be usable and appropriate for a given interaction.

Canadian governments at all levels have been responding to these challenges for some time, with varying degrees of success. Starting almost twenty years ago, entities such as Service New Brunswick, Service Canada, ServiceOntario, and Service BC were created to offer one-stop, integrated service delivery. Service New Brunswick was an early, successful example that was recognized and studied

¹ Office of the Privacy Commissioner of Canada, 2011 Canadians and Privacy Survey (2011).

² Office of the Privacy Commissioner of Canada Website, Information for individuals regarding the loss of the HRSDC hard drive (2013).

around the world, including for the way it partnered with the private sector to accelerate modernization/automation efforts.

Similarly, at the municipal level, the last few years have seen the rise of 311 services, which have sought to integrate at least one service delivery channel and make it easier for citizens and businesses to access city services without having to understand the complexity of municipal administration. Toronto, Calgary and Peel have had notable success with their 311 services, along with 13 other Canadian municipalities. Toronto has even implemented an integrated service request system that can be accessed through the 311 website or call centre.

At the federal level, “My Account” functions have emerged within select departments (e.g., Canada Revenue Agency and Service Canada) in order to personalize service delivery for citizens and businesses. Service Canada, for example, provides single-window access to programs from 14 different federal departments. With the “My Service Canada Account”, citizens can view and update information related to Employment Insurance (EI), Canada Pension Plan and Old Age Security. In 2010-2011, Service Canada received 96.9% of all EI applications and 99.7% of eligible biweekly reports electronically. In the same year, the organization partially or fully automated the processing of over 40% of all initial claims and almost 60% of all renewal claims. The long-term vision is to automate 70% of EI initial, renewal and revised claims by 2014.³

These type of success stories have led to Canada being viewed as a worldwide leader in eGovernment, with a 3rd place ranking in the 2010 United Nations E-Government Survey⁴. However, the country has since dropped to 11th place (6th place in government online service delivery) and lags South Korea, the U.K. and Denmark, which have accelerated their digital service efforts. The drop is perhaps the result of the rapid pace of innovation in the last few years as well as a reflection of the challenges noted above. Regardless of the root cause, it highlights the need to keep pace with changing public expectations.

While individual services or organizations have indeed kept pace, service systems as a whole have not, and that is not unique to Canada. Indeed, as the 2012 United Nations E-Government Survey report puts it: “While it is important to continue with service delivery, governments must increasingly begin to rethink in terms of e-government – and e-governance – placing greater emphasis on institutional linkages between and among the tiered government structures...”⁵ Our research supports this from a citizen and business perspective as well, suggesting that Canadians are primarily interested in three key aspects of service delivery: cost, convenience, and control. Their choice of channel is in turn driven by lower costs, greater convenience and more control over the services that they consume.

³ Human Resources & Skills Development Canada, Employment Insurance Report (2010).

⁴ United Nations, E-Government Survey 2012: E-Government for the People (2012).

⁵ Ibid.

Innovative practices

From both the primary and secondary research that informed this study, it became clear that there are a number of categories of capabilities that are essential to create a robust and sustainable self-service model. Within each of these categories, there are a number of leading or innovative practices—discussed below—that demonstrate the extent to which self-service is being implemented across organizations and around the world.

#	Practice Area	Description	Examples
1	Integrated authentication & identity management	Verification, management, and maintenance of common client identities across services. Privacy/security systems and rules that protect client data and information.	<ul style="list-style-type: none"> • Multi-factor ID data verification • Federated identities • Biometrics • Role-based data access
2	Channel migration & adoption	Strategies and tools to encourage client migration from higher to lower cost channels, with a focus on self-service adoption.	<ul style="list-style-type: none"> • Mandatory digital services • Price discrimination
3	Assisted self-service	Assistance provided to clients within primarily self-service channels, designed to promote use of lower cost channels.	<ul style="list-style-type: none"> • “Crowd support” public forums • Virtual agents • Live chat/click-to-call • Video tellers
4	Seamless multichannel management	Seamless delivery of services and client experience across channels, including analysis and insights into how, when and why clients choose to move from channel to channel.	<ul style="list-style-type: none"> • Channel markers • Social data mining • Speech analytics
5	Robust business architecture	The articulation of key organizational elements, including integrated information technology components, to enable end-to-end service integration and self-service delivery.	<ul style="list-style-type: none"> • Centralized digital strategy and teams • Common digital service components • Intake wizards and smart forms • Mobile payments and wallets • Facebook banking
6	Client-focused service integration & bundling	End-to-end integration and bundling of services based on life/business events across programs and multiple levels of government.	<ul style="list-style-type: none"> • One stop shop web portals • Client segment “franchises”
7	Enhanced user experience	Customization of channels and service experience to meet client needs.	<ul style="list-style-type: none"> • Personalized web portals & user content • Rapid, dynamic search • Speech recognition • Automated notifications

In the discussion below, we have illustrated each of these capabilities through a number of examples (detailed case studies are provided in Appendix B Leading practice case studies), identified the challenges and opportunities of adopting similar practices in Canada and attempted to articulate what this means for public sector service delivery organizations.

1. Integrated authentication & identity management

Identity management is widely seen as being core to self-service enablement. The ability to verify that someone is who they say they are without human intervention is a key to giving clients access to sensitive information and allowing them to complete confidential transactions in a self-service environment. Generally, higher levels of identity assurance are needed for services related to health, justice or immigration but ultimately, each organization must balance the appropriate level of authentication against the services and/or information being sought.⁶

- **Federated identity management.** Many organizations are presently deploying federated identity management solutions in order to support single sign-on access to a range of services. It entails sharing a common authentication platform, which can be integrated with different service providers and systems.
- **Multi-factor ID data verification.** Other authentication solutions rely on multi-factor ID data verification and can offer similar level of interoperability to federated identity management. This method relies on multiple types of information (something you have, something you are, something you know, etc.) to verify identity.
- **Biometrics-based authentication** can be used to uniquely and securely identify an individual. Iris scanners, palm or finger vein readers, and voice print recognition systems are being deployed to provide access to automated banking/teller machines (ABMs/ATMs) and within contact centres. While biometric scanners are still relatively expensive, costs continue to fall and they also help to increase throughput and productivity.
- **Role-based access services.** If client information is being captured and stored within data warehouses, and is intended to be shared and used across multiple client segments, departments, and/or service partners, role-based access services define who, when, where, and why certain data attributes can be accessed, shared, and used. This enables the customized presentation of information or authorization to complete transactions based on a specific user and business process. Ultimately, the emphasis is less on common identifiers and more on service integration and convenient access to services through mechanisms that safeguard privacy

- In Denmark, the government has worked with the country's banks to create joint login and digital signature systems called NemID and Nem Log-in, respectively, which can be used to access both government and financial services. Approximately 80% of Danish citizens have a NemID and 66% have activated the digital signature component.
- Australia's greenID—jointly developed by Deloitte and the Global Data Company—relies on matching client supplied information with up to five trusted government data sources. It can be customized to meet different levels of assurance, depending on specific requirements for a service or client base.
- The Nexus self-clearing system at Toronto's Pearson Airport allows qualified travellers to the United States to speed through immigration by simply scanning their Iris.
- In Estonia, the "X-Road" environment enables secure Internet-based data exchange. Citizens access X-Road services through portals, which allow them to maintain their personal information in various government databases. Government officials have restricted access to X-Road data and services based on their specific role.

⁶ Austrian Academy of Sciences, National Electronic Identity Management: The Challenge of a Citizen-Centric Approach beyond Technical Design (2010).

Challenges/Key issues	Opportunities/Benefits
<ul style="list-style-type: none"> • Getting agreement across levels of government, programs, as well as associated investment commitments • Establishing trusted data sources and appropriate privacy protections • Agreeing on a common identifier; potential public resistance to use of common identifier across all programs • Cost of technology • Consistent collection of biometric data across target population • Complexity of business rules to support role-based access • Need for manual processes to support automated ones within certain client segments or when an automated process is insufficient 	<ul style="list-style-type: none"> • Single sign-on mechanisms and a common identifier enables better client experience through personalization • Joint-initiatives can facilitate cost sharing for major investments without compromising privacy or controls • Improved accuracy and fewer false positives • Biometrics eliminate the need for passwords or other codes and improve the efficiency of high volume services • Role-based data access streamlines data management while still offering a high degree of security • Roles can be used to personalize information for both internal (agent) and external (client) users

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What it means

- As federal and provincial legislation evolves to support electronic identity verification, mechanisms such as federated identity management and role-based access are becoming more and more feasible
- The federal government is already collecting biometric data for immigration purposes (e.g., Nexus), which could be leveraged for other programs with appropriate safeguards and client consents
- Several federal agencies, including the CRA and HRSDC have adopted the SecureKey Concierge Service which uses online banking credentials to provide access to government services. Broader adoption of this service would create a near-universal authentication mechanism for services from any level of government
- As of February 2013, the federal Privacy Commissioner is sponsoring an assessment of the regulatory environment associated with the BC Services Card as well as an evaluation of emergent ID card technologies. Expanding such assessments and getting the support of Privacy Commissioners is crucial to the success of any new identity management program.
- Many of the pieces of the identity management puzzle are coming together but there needs to be an agreement on common standards and approaches across the country in order to avoid duplicate effort, optimize existing investments and accelerate adoption

⁷ Under new legislation documents used for electronic identity verification are required to: Be issued by a provincial, territorial or federal government agency; contain a unique identifier number; and cCan include birth certificate, driver's license, passport, record of landing, permanent resident card, including the social insurance number (SIN).

⁸ Changes in Canada: Electronic Identity Verification and Know Your Customer (KYC) (2012).

⁹ The Caribbean Camera, Biometric scans for visas (2012).

2. Channel migration & adoption

One of the central issues in self-service today is that of creating the right environment for clients to adopt and use lower cost (usually digital) channels. While convenience is the primary driver of channel migration, other aspects of the service experience such as personalization, speed, consistency, and service levels may be factors as well. Although adoption can be rapid and almost automatic among some demographics, a mix of incentives, disincentives, marketing and promotion is necessary to motivate the majority of clients.

- **Policy changes/mandatory adoption.** A “strong arm” tactic for driving high levels of migration to lower cost/self-service channels is to mandate the use of digital services, often accompanied by a closure or restriction of other channels, such as in-person or mail.¹⁰
- **Price discrimination.** Charging varying fees for conducting the same transaction in different channels creates a powerful combination of incentives and disincentives to encourage channel migration.¹¹⁺¹²⁺¹³ While credit card and convenience fees could be a potential barrier to adoption, they have not proven to be so for services such as Texas.gov and paytickets.ca
- **Service guarantees** represent a non-monetary mechanism that signals the benefits of using a self-service channel rather than the disadvantages of a higher cost one¹⁴⁺¹⁵.
- **Marketing and communications**, including social media and broad-based traditional media campaigns are powerful tools to increase citizen awareness of self-service options. Messages must explain what digital services are available, where they can be found, how they work and what safeguards are in place to protect personal information. Clients can also be engaged through contests and “crowd sourcing” which encourage use of a web site, social media or other platforms to draw attention to online options^{16+17+ 18}

- The Danish eGovernment Strategy 2011-2015 states that “over the next four years, the use of more and more online self-service solutions will become mandatory. For instance, since 2012, citizens have been required to go online to sign up children for school and daycare, apply for medical cards, register a change of address and manage their student loans.
- Singapore’s Land Transportation Authority’s (LTA) Easi ERP m-service charges a S\$4 transaction fee if a motorist pays via the mobile channel for the outstanding cash card violation. The fee is S\$10 over the counter or S\$8 via the Internet.
- The Internal Revenue Authority of Singapore (IRAS) has long used “lucky draws” as a tactic for promoting online tax filing as well as participation in electronic payments (GIRO).
- The Standard Chartered Bank guarantees to process online credit card applications and deliver the card within a specified time. Similarly, ServiceOntario offers a refund if it does not meet its Service Guarantee for delivering birth certificates or personalized license plates within a specified time.

¹⁰ Deloitte Interview, Office of the Revenue Commissioners (2013) and Revenue Online Services Website (2013).

¹¹ Singapore eGov iGov2010 > Mobile Government Website (2012).

¹² Inland Revenue Authority of Singapore, GIRO Promotion Website (2013).

¹³ Deloitte Interview, Inland Revenue Authority of Singapore (2013).

¹⁴ TradeArabia, StanChart guarantees 8-minute teller service (2012); Standard Chartered Bank Website, 8 Minute Service Guarantee (2013).

¹⁵ ServiceOntario, Personalized licence plate service guarantee (2012).

¹⁶ SpringWise.com, Bank taps customers for co-developed ideas (2011).

¹⁷ Forrester, Industry Innovation: U.S. Federal Government (2011).

¹⁸ Deloitte Interview, BC Hydro (2013).

Challenges/Key issues	Opportunities/Benefits
<ul style="list-style-type: none"> • Creating differential fees and closing down service centres may not be politically palatable • Use of social media in marketing and promotion often requires the creation of specific social media policies in order to manage political risks • Incentives/disincentives may be viewed as inappropriate spending or as a tax on services, which could trigger a political backlash • Given that ~20% of the Canadian population does not have access to the Internet, it will not be possible to move all clients to self-service channels, especially seniors, those with disabilities and those with low incomes. Other mechanisms will have to be made available to support these populations 	<ul style="list-style-type: none"> • Channel migration is perhaps the biggest source of potential savings for most service delivery organizations • Digital channels can help to improve service efficiency and effectiveness • Marketing programs can yield significant returns on investment by creating general awareness of alternative and more convenient options • Active citizen engagement in government issues—including service delivery ones—can also promote desirable behaviours with respect to self-service • Adopting online payments and accepting credit cards may be more cost effective than manually processing transactions

What it means

- Canadian public sector organizations may need to be more aggressive in promoting self-service options, including through citizen engagement and political discourse in a variety of forums in order to clearly communicate the benefits of self-service
- While there have been some efforts to encourage online adoption, there is a need for bolder policy changes, including ones entailing reducing in-person services or attaching disincentives to them in order to achieve higher rates of adoption. There are already examples from the CRA and Canadian Consulates that have eliminated in-person services for payments and visa processing, respectively
- Price discrimination needs to be considered more seriously, including higher cost for in-person than self-service transactions, with appropriate safe guards to ensure affordability and access for disadvantaged clients
- Impending demographic shifts will help but a multi-pronged approach that employs a variety of strategies is necessary to achieve success in channel migration. Such a coordinated strategy (e.g., office closures, incentives, aggressive marketing, policy changes) is not evident in most Canadian jurisdictions

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¹⁹ Cape Breton Post, “Revenue Canada no longer offering in-person payment and counter service” (2012).

²⁰ Canada Citizenship and Immigration Website, Visas & Immigration (2012).

3. Assisted self-service

Although the level of direct interaction can vary, assisted self-service is an important capability that serves to optimize the allocation of resources to different channels by minimizing contact wherever feasible. This includes interaction with real people through live chats on a web site, crowd support public forums or video conferencing. It may also involve the use of virtual agents in a contact centre or online. The importance of assisted self-service is evidenced, for instance, by statistics that say three-quarters of consumers move to another channel when online customer service fails. This channel escalation is estimated to cost online retailers an average of \$22 million a year.²¹

- **Live chat** is a real-time support mechanism that can be used to link clients to contact center staff through an online interface. Clients can use the live chat feature to ask questions of a live agent while continuing their transaction in a lower cost channel. Live chat is less expensive than email or phone and is estimated to reduce telephony volume by up to 12% and also cost 25% less than telephone contact.²²
- **Virtual Agents** engage in automated conversations with customers in self-service environments by using natural language and speech recognition. When the virtual agent determines that it cannot answer a particular question, it can provide an escalation path to live chat or the call center. Some financial services clients have seen up to 30% call deflection rates from using virtual agents.²³
- **Video tellers and conferencing** presents an opportunity for organizations to consider workforce virtualization. This can help to increase utilization of available in-person resources, locate service agents in less costly areas, increase workforce flexibility and reduce accommodation costs.
- **“Crowd support” public forums** build on the power of social networks to engage the client community to support their own, often within a moderated environment.

Challenges/Key issues	Opportunities/Benefits
<ul style="list-style-type: none"> • Cross-training of live agents to support multiple channels • Understanding how to adapt workforce management strategies and processes, including the creation of a more flexible workforce • Labour relations and negotiations based on changing employee tasks/expectations • Development of a logical, high-quality knowledgebase that accurately reflects the information needs of clients and agents • Identifying the client/market segments who require assisted support and ensuring availability of the right service supports • Investment in integrated communications/telephony, account/customer relationship management, and desktop solutions for agent support 	<ul style="list-style-type: none"> • Cost savings from keeping clients within digital channels – one assisted service interaction today might become self-serve in the future • Avoiding channel escalation (from low to high cost channels) as a result of negative client experiences • Better personalization of services based on knowledge of user context (e.g., assisted browsing) • Better utilization of call centre agents who support users across multiple channels • Ability to transform the workforce and location model, based on virtual/digital platforms – potential cost savings from reducing real estate requirements, improved productivity, etc. • Effectively using assisted support strategies and practices to bridge the digital divide – getting more clients comfortable with accessing digital services and channels

What it means

- There are limited Canadian public sector examples of assisted support beyond the use of “PC kiosks” for online service transactions. For instance, Service Ottawa uses live chat agents to support its Teletypewriter (TTY) service channels for deaf or speech impaired citizens. However, this service is not available to the broader public. There is an opportunity to expand assisted support to include mechanisms such as virtual agents, “crowd support” forums and live chats.
- Canadian public sector organizations can learn from banks and telecommunications companies, which are successfully using assisted support strategies such as live chat, virtual agents and assisted browsing
- The adoption of assisted support practices could be accelerated by training clients and/or incenting employee through contests or other promotions.

²¹ Forrester, *Navigate The Future Of Customer Service* (2013).

²² RightNow Guide: *Best Practices for Chat Deployments* (2010).

²³ Creative Virtual, *The Impact of Intelligent Virtual Agents on Financial Services* (2011).

4. Seamless multichannel management

Multichannel management enables an integrated approach to service delivery regardless of the channel being used. It allows clients to start, stop or continue using a service anytime and anywhere. Additionally, developing visions and strategies that are tailored to each channel is a way to optimize both the client experience and value for money. The following table lists key elements of effective multichannel management.

Key features	Description
Cross-channel consistency	Provide consistent information and services to clients across all applicable channels
Channel-agnostic account or profile management	Clients should be able to access their account information and service history, regardless of channel.
Seamless handoffs between channels	Clients should be able to move from channel to channel during an interaction, without having to provide information they have already provided in another channel.
Channel-appropriate communications	Marketing and communications need to be tailored to the characteristics of the channel being used.
Matching the service with the best channel & device	Services should be matched to channels, based on suitability and in order to encourage clients to use the most efficient access point

The benefits of a multichannel approach to service delivery primarily accrue from a number of specific practices, including optimization of channel deployments—especially since not all channels will be suitable for all services—customer relationship management to effectively document, track and manage client interaction; analytics to understand interaction patterns and motivations and social data mining, in order to add insights and move towards a proactive service delivery environment.

- **Multichannel strategies.** More and more jurisdictions are developing formal multichannel strategies that span the enterprise and which attempt to patch the common gaps in service delivery created by fragmentation of programs and services. Specifically, these strategies incorporate elements such as: an overall vision for service delivery; channel specific and cross-channel strategies focused on optimizing each access method; a governance framework for different organizational units to coordinate services; channel specific performance metrics and targets for channel migration, among others (see case studies of the Australian Government and BC Hydro in Appendix B
Leading practice case studies.
- **Channel optimization.** Digital service channels are growing in popularity for many services, with the primary exception being services where in-person interaction improves outcomes (e.g., social services) or where a physical product is being “dispensed” (e.g., a boarding pass).

- IVR is also being deployed more strategically than in the past and some organizations are setting targets for IVR “containment,” that is, the ability to complete a transaction without having to transfer the call to an agent²⁴

- Vanguard, a US-based investment company, listens to its clients through a variety of “active” and “passive” feedback mechanisms, including speech analytics, surveys, focus groups and interviews. Vanguard’s Client Insight (CI) Department provides actionable insights to business units in order to support customer experience and service delivery improvement initiatives. Between 2007 – 2009, CI has helped to save ~ \$6.9 million through cost reduction or avoidance
- The UK’s National Health Services (NHS) Direct online and mobile health and symptom checker generates transcripts of online interactions so that call centre agents can assist clients with more complex issues without asking them to repeat information. By linking interactions across channels, NHS Direct can reconstruct and audit interactions; and gain insights into channel movements. This in turn has been used to improve knowledgebase algorithms that support both clients and contact centre agents.

²⁴ Forrester, Leveraging Emerging Technology To Up The Ante On Customer Engagement (2012).

- Part of channel optimization is determining which services are suited to self-service and which are not. Typically the following criteria help to make this kind of determination

Characteristic	Description
Volume	<ul style="list-style-type: none"> • Given the high fixed costs of creating self-service channels, greater volume will make the channel more economically viable
Standardization of process	<ul style="list-style-type: none"> • Self-service is less viable if there are too many unpredictable demands.
Real-time need for information	<ul style="list-style-type: none"> • The greater the need for real-time information, the better suited a service will be to self-service delivery.
Complexity of information	<ul style="list-style-type: none"> • Personal contact is generally more appropriate when dealing with more complex information or transactions.
Need for the “human touch”	<ul style="list-style-type: none"> • Services requiring sensitivity or human judgment are more appropriately delivered in person.
Propensity of client to self-serve	<ul style="list-style-type: none"> • Clients have differing levels of knowledge and varying access to self-service channels. Their propensity to self-serve often correlates to distinct demographic characteristics such as age or economic status.

- **Customer Relationship Management** systems are being deployed to generate integrated case histories for seamless and consistent service delivery²⁵ They often alleviate the problem of having to assemble a client profile from multiple legacy systems, which are difficult and expensive to synchronize and maintain²⁶
- **Customer analytics.** Innovations such as channel “markers” are being deployed to better understand customer behaviour across channels and refine multichannel strategies. Additionally speech and web analytics are being used to understand why clients choose or abandon certain channels
- **Social data mining.** In order to understand client preferences, personalities, and life events, many organizations are moving beyond using social networks as a broadcast medium. They are using personal profiles or the content of personalized feedback (e.g., “tweets”) to discern user preferences and trends.²⁷

Challenges/Key issues	Opportunities/Benefits
<ul style="list-style-type: none"> • Effective integration of legacy systems to enable multichannel delivery • There may be resistance to adding IVR to “live answer” services such as 311, although several municipalities are considering this • Reliable tracking of client interactions and information from channel to channel • Understanding the right information to collect to analyze multichannel behaviours and access patterns • Creating a single view of the client across multiple interactions, services and technologies • Creating standardized processes for receiving client feedback across all channels • Responsibility for different channels may lie in different parts of an organization, making integration more challenging 	<ul style="list-style-type: none"> • Improved client satisfaction from being able to seamlessly access services across channels • Ability to effectively measure performance for all channels and generate a single view of the client • Gaining insights into client behaviour and preferences on a channel by channel basis – e.g., where and when clients get frustrated, channel-based interaction preferences, etc. • Ability to use data and insights from one channel to help clients in another one

²⁵ Forrester, Enable Customer Obsession with Cross-Channel Campaign Management (2012).

²⁶ Forrester, CRM And eCommerce Converge In A World of Multiple Touchpoints (2011).

²⁷ Forrester, 2009 Voice Of The Customer Award Nomination Form(2009).

What it means

- Government organizations already collect a lot of data that can support better multichannel management—they need to apply data analytics techniques to cross-reference and draw insights from this wealth of information
- Existing measurements such as channel volumes are not effectively informing multichannel strategies. Leverage client feedback mechanisms to probe the rationale for channel shifting or for preferring one channel over another
- There is a significant opportunity to continue to develop and expand proactive client management capabilities by using speech, web, mobile, IVR, service trend, and access analytics
- A common platform across all channels is essential to enable truly integrated and seamless services

5. Robust business architecture

Business architecture bridges the gap between enterprise strategy and the day-to-day operations of a business or service. It provides “a blueprint of the enterprise” and creates a “common understanding of the organization” that can be used to “align strategic objectives and tactical demands.”²⁸ A well-defined business architecture will help to articulate the key service delivery strategies, roles, responsibilities, and capabilities that will translate into defined outcomes for both the organization and its clients. In the context of self-service, business architecture is essential to create a common operating platform upon which a successful service delivery model can be built, both at an individual jurisdiction and at an inter-jurisdictional level.

- **Service mapping.** It is important to have a comprehensive understanding of the services, processes, people and systems that are involved in delivering a service. Service mapping achieves this and has the added benefit of helping to identify common processes and potential duplication and efficiency/service enhancement opportunities. This could lead to better integration of services, joint investments and reduced costs.
 - **Centralized digital service teams.** Many organizations use central teams that focus on the integration of public services and development of common capabilities across service delivery partners. They serve as advocates and influencers across multiple levels of government, working to identify and implement innovations in a coordinated fashion.
 - **Common technology/digital service components.** A number of jurisdictions are focusing on identifying, developing and deploying common digital service components (for identity management, data exchange, content management, communications, payments etc.) that facilitate the integration of services across diverse service delivery partners. These technologies are developed and designed to be flexible, scalable, and interoperable.
 - **Intake wizards and smart forms.** Not all processes associated with a particular service need to be automated. A number of organizations are enabling self-service for specific components of a service. For instance, they are automating the intake of information but not the delivery of the service. This allows them to free-up clerical resources and invest in tailoring services based on the information collected in order to improve overall outcomes.
 - **Mobile information, banking, payments and wallets.** Recent innovations such as mobile banking, contactless payments (NFC), and information availability “on the go” can be easily translated into solutions for the public sector in order to avoid in-person visits and encourage greater self-service.
- Both the governments of Saskatchewan and Alberta have recently undertaken service mapping exercises, either enterprise-wide or within specific areas such as human services. These initiatives are intended to help create a better understanding of and improve service delivery to both citizens and businesses
 - In Denmark, all public authorities are required to use relevant public sector solutions developed by the Agency for Digitalization (within the Ministry of Finance) in order to avoid duplication and waste. The Ministry is also responsible for engaging in annual transfer payment discussions with regions and municipalities and for adjusting such payments based on savings achieved through self-service initiatives.
 - The Florida Department of Children and Families has introduced “My Access Account”, which automates intake, eligibility determination and other processes for a range of social benefits programs.
 - Australia’s Westpac bank has begun trials for a mobile contactless payment application. Clients will be able to pay for items by tapping their phone on a contactless near field communications (NFC) Paypass terminal in participating stores.

²⁸ Object Management Group’s Business Architecture Working Group Website, Definition of Business Architecture (2013).

Challenges/Key issues	Opportunities/Benefits
<ul style="list-style-type: none"> • Identification of high value services (or aspects of services) to migrate into digital services and channels – matching the right services to the right channels • Developing flexible, interoperable, digital components which can be shared across service delivery networks • Effectively architecting and integrating digital services across service delivery partners • Incenting organizations to use centrally developed solutions • Clearly defining the governance and ownership of IT services and solutions which are shared by many parties • Development of MOUs to support shared service agreements and role-based access 	<ul style="list-style-type: none"> • Streamlining business processes, including one or more aspects of end-to-end services – improved service handling • Increased efficiency based on faster digital business processes and decreased cycle time • Improved platform for dynamic information sharing with users and service partners, without relying on live agents • More reuse of foundational service components (e.g., payments, inbox, etc.) • Development of an enterprise-oriented architecture that will support a broad suite of integrated digital services

What it means

- Many Canadian public service organizations are already working towards innovative digital service enablement, including ServiceOntario, Service BC, Service Ottawa, Services Quebec. The next step is to integrate more services across all three levels of government through common governance models, delivery mechanisms and processes/technology.
- Presently, many Canadian public sector organizations are not making any significant investments in the mobile channel. While it will continue to be important to understand what services are best suited to this channel, mobile needs to become an integral part of every organization's channel strategy.
- In order to maintain or improve its global standing in eGovernment, Canada needs to consider a centralized digital taskforce devoted to aggressively pursuing self-service opportunities and "selling" the associated benefit to stakeholders. While the PSSDC and PSCIOC already have similar mandates, a more tactical team could work on identifying and implementing specific initiatives, including the allocation and management of related resources

6. Client-focused service integration & bundling

More and more service providers are going beyond the boundaries of their programs or organizations to build services around a client's life or business events and lifecycle. Such integration and bundling of similar services is intended to not only create synergies but also improve the client experience and promote the use of self-service options, which are highly customized to individual circumstances and needs. It reflects a paradigm shift in service delivery--both in Canada and globally—which puts clients, rather than programs, at the centre of service design, while hiding but addressing the administrative complexity of the underlying processes and systems. When built around strong governance, systems and processes, it is a major strategy for incenting customers to adopt self-service options.

- **One-stop shops.** The one stop shop service environment enables citizens and clients to have a single point-of-access to information and transactions across programs and levels of government. Such initiatives could also involve NGO's that receiver transfer funding and are responsible for some aspect of service delivery or support
- **Service bundling based on client segments.** Service bundles allow service delivery agencies and partners to offer unique and customized service packages based on factors such as client segment (e.g., immigrants), life events (e.g., birth or death), or service type (e.g., vehicle services) among others. Service bundles can be designed and deployed through a variety of mechanisms, including personalized web portals. Customer relationship management systems can also draw on case history and personal information and preferences to suggest services or products. Other service bundles may be presented based on logical need-based integration (e.g., bundling of air ticket and travel insurance).

- The U.K. government launched its centralized web portal (GOV.UK) in 2012, to replace multiple, disparate web portals to provide a single, scalable, modular open source platform to support diverse government departments. GOV.UK is predicted to cost U.K. taxpayers up to £70M less per year than the services that the website replaces.
- South Australia's eGovernment Directorate has developed a governing model for development of discrete client segment and service "franchises". This model allows the content on sa.gov.au to be developed and managed in separate segments. Working collaboratively across relevant government agencies, the franchise defines the scope and the people it will provide information and services for (i.e., market segment); the services and information that the market segment wants to receive; and the government agencies which need to contribute to the franchise content.
- Service Nova Scotia has introduced a birth event bundle along with kiosks at hospitals for parents to apply for a birth certificate and health card at the same time. Additionally, a service bundling blueprint was developed in 2010
- Integration of service to business have had some success in Canada, including the BizPal program which involves all three levels of government

Challenges/Key issues	Opportunities/Benefits
<ul style="list-style-type: none"> • Collaboration across service delivery partners to meet the needs of a specific market segment • Evaluation/identification of services to create user-centric service bundles that are logical and useful • Establishing appropriate governance structures and mechanisms to address operations, investments and gain sharing associated with service bundling and/or integration initiatives • Seamless front-end presentation of services and information, regardless of backend systems • Integration of siloed applications into a unified one, which may require exchange of data among backend systems and/or service partners 	<ul style="list-style-type: none"> • Improved navigation for users on centralized web portals and in service environments • Decreased cost for individual programs based on bundled applications and service fulfillment processes • Development of streamlined, clear governance structures that span traditional organizational boundaries • Information exchange facilitated by integrated backend systems

What it means

- Within Canada, government service agencies, such as ServiceOntario, have emerged to meet the need for integrated service delivery across traditional ministerial service siloes. However, the integration of services across all three levels of government – municipal, provincial, and federal – remains relatively limited at this time. There is an opportunity to change this through more collaboration and manual, or preferably automated, integration of processes and systems
- Examples of service bundling across Canada (16 online service categories in ServiceOntario; Bundled Birth Service launched by the Govt. of Newfoundland and Labrador; Service Bundling Blueprint in Nova Scotia) demonstrate the appetite for integrated and bundled services. However, today there is no centralized web portal for cross-Canadian government service delivery. With the emergence of key elements such as federated identity, it is becoming more and more feasible to offer one-stop, personalized shopping for government-to-constituent services. Significant policy and business processes changes would also create an incentive for government bodies to move their services into an integrated environment.^{29 30 31}

²⁹ Under new legislation documents used for electronic identity verification are required to: Be issued by a provincial, territorial or federal government agency; contain a unique identifier number; and cCan include birth certificate, driver's license, passport, record of landing, permanent resident card, including the social insurance number (SIN).

³⁰ Changes in Canada: Electronic Identity Verification and Know Your Customer (KYC) (2012).

³¹ The Caribbean Camera, Biometric scans for visas (2012).

7. Enhanced user experience

An enhanced user experience is critical to self-service adoption as it reduces “channel friction” and increases “stickiness”. A citizen-centric approach to user interface design ensures that functionality will be aligned with citizen and business needs and preferences.

- **Efficient and user friendly service.** Without attention to design, self-service options can be difficult to use. Nearly half of U.S. online consumers (45%) say they would abandon their online purchase if they cannot find a quick answer to their questions and 66% say that valuing their time is the most important thing an organization can do to provide them with good service.
- **Suitable functionality.** Citizen’s expectations of self-service functionality have been increasing in recent years as the retail, financial and consumer sectors have begun offering more and more services through self-service channels. Ideally, self-service options should be designed and developed in collaboration with end-users to ensure that clients’ needs are met.
- **Optimized search capabilities.** Being able to rapidly and easily find information and content is a foundational element of good user design.
- **Personalized content.** Content personalization can include personalized information or automated notifications based on user preferences or status. Personal and location information is currently being used by some organizations to suggest products and services based on demographics, preferences and shopping or browsing history.
- **Proactive service.** Automated notifications or recommendations via email and SMS text can be used to proactively send updates, reminders and notifications to clients based on changes to a case, client preferences, or other triggers. For example, if a client has completed an online application for a benefit, the system may send her a text, email, or automated telephone message with the adjudication results. Such automated notifications not only increase client satisfaction, they also help to divert contacts away from higher cost channels.

- The Virginia Department of Taxation reduced web-related calls by 70% as a result of launching an online chat function.
- If a client pauses on a particular webpage on HSBC’s Business Banking website for some time, they will be prompted to start a live conversation with a Business Account Advisor through an online chat interface.
- New Zealand’s ASB Bank has developed a video teller service that enables customers to talk to specialist staff from their PCs. The service also offers the ability to securely share documents
- Telstra, Australia’s leading telecomm provider, launched its “Crowd Support” website to “provide Telstra customers with a central place to ask customer service questions. These questions can then be managed/answered by both Telstra employees and/or other community members.”
- Access Florida leverages a broad network of Access Community Partners (e.g., seniors’ centres, libraries, community centres, etc.) to provide “PC kiosks” as well as assisted training for digitally challenged clients in the community

Challenges/Key issues	Opportunities/Benefits
<ul style="list-style-type: none"> • Balancing the cost and effort to create personalized service offerings and content/interface personalization with outcomes • Perceived privacy issues with personalization • Ability to link the impact of proactive notifications to reduction in channel contacts—associated business cases may need to be inferential rather than directly measurable 	<ul style="list-style-type: none"> • Higher adoption rates for self-service options • Increased user satisfaction due to improved efficiency, alignment with needs, personalization, and service consistency • Diverting user contacts from higher cost channels based on “pushing” information proactively, reducing the need for users to “seek” • Improving service efficiency by using the information and service capabilities that are in place today – many organizations already have the ability to use automated notifications, but have not implemented it

What it means

- Several public service organizations across the country have been working to personalize services by enabling “My Account” functionality, such as the “My Service Canada” account. However, there is a significant opportunity to improve dynamic personalization of content or services as a means to increase adoption rates
- Service Ottawa plans to integrate intelligent presentation of services within its online service portal, such as the “In My Neighbourhood” website, which will be customized to display services based on client segment (e.g., what are the volunteering opportunities for seniors in the neighborhood.). Other Canadian jurisdictions should consider adopting similar location-based services to increase “stickiness” to self-service channels
- There are a few examples of automated notifications used in the Canadian public sector, such as ServiceOntario’s new license renewal reminder e-mails. Greater emphasis on personalization and automated notifications is needed to proactively reduce contacts through non-digital channels.
- It will be necessary to gauge citizen’s reactions to improved or new self-service experiences through online surveys, focus groups, usability testing, etc. in order to accurately measure and continually enhance the client experience. The UK and Europe have been doing more in this regard than Canada appears to be.

Costs & benefits

One of the biggest questions for most organizations pursuing a self-service strategy relates to the associated costs and benefits. While the operational savings of self-service delivery are well-documented, the investments needed to get there and the payback periods are less clear. Comprehensive, detailed business cases are not readily available, either because they don't exist or because many organizations are reluctant to share such documents. A further complication arises from the fact that starting points are often so different—in terms of business processes, degree of service integration, technology and service scope and complexity.

It is also important to note that not all of the self-service initiatives that are profiled in this study were the result of rigorous analysis—in many instances they were reactions to market conditions or were implemented because someone thought there was an idea worth pursuing. That said, savings ranges of 70% to over 90% have been reported by those organizations that have managed to track such metrics. These are corroborated by a number of examples, including from major chartered banks, government service delivery agencies and others. In general, though, self-service options must be of high-quality in order to meet client needs and achieve savings—if they ultimately and unnecessarily lead to an in-person contact, then overall costs would go up, not down. Indeed, a single high cost contact can sometimes be less expensive than several unsuccessful low cost contacts.³²

While there are potential savings—primarily from migrating transactions to lower cost channels—investments are required to realize those savings. Both the investments and ongoing operating costs tend to originate from a small number of areas, including technology modernization/integration, workforce transition (including severance, re-training, etc.) and business process improvements. Where available, this type of information has been included, with the caveat that it may not be indicative of the actual costs that would be incurred by any given self-service initiative.

Comparative cost-to-serve

The range of costs associated with different channels is quite broad, and varies based on a number of factors including complexity of transaction, infrastructure and legislative requirements, etc. The table below captures these ranges and attempts to provide a further level of detail on the costs associated with different types of interactions within each channel.³³ Regardless of the range, it is evident that digital transactions or interactions typically cost much less than telephone or in-person contact; and self-service options in all channels cost the least

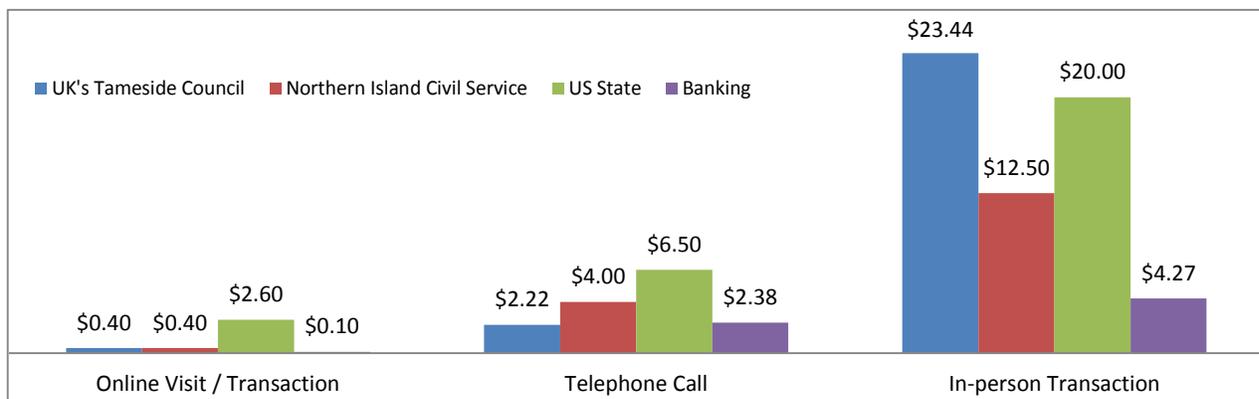


³² Kenneth Kernaghan, *Anywhere, Anytime, Any Device: Innovations in Public Sector Self-Service Delivery* (2012).

³³ Forrester, *Selecting Online Customer Service Channels To Satisfy Customers And Reduce Costs* (2010).

Client service channel	Approximate cost per contact
Contact centre (Phone & E-mail)	
Call center technical support	\$12 to \$25
Live chat or click-to-call	\$5 to \$6
Automated speech response	\$0.50 or less
IVR touchtone response	\$0.30 or less
Virtual agent	\$1 or less
Email response	\$2.50 to \$5
Online	
Web self-service (transaction)	\$1 to \$4
Web self-service (information)	\$0.10 or less
In-person	
Information/low complexity	\$3 to \$5
High-complexity/transactional	\$6 to \$30

Note that the lower end of the range typically represents private sector organizations in industries such as retail, banking and loyalty, while the higher-end generally represents public sector organizations. In the private sector, the growing adoption of services such as online banking has been driving down the cost per transaction, primarily because of the scalability of existing investments, which go up in a step-wise—rather than linear—fashion as volumes rise.³⁴ Below are some specific examples of costs by channel from various organizations around the world.^{35,36,37}

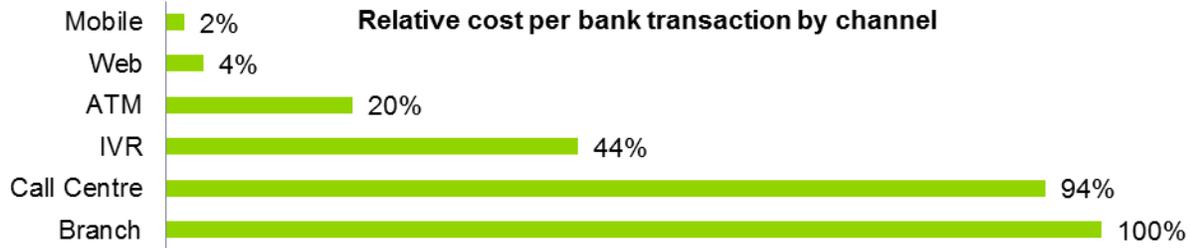


³⁴ Deloitte Research and Client Engagements.

³⁵ Deloitte, *Choosing Channels: Optimising the Channel Mix in the U.K. Public Sector* (2007).

³⁶ Northern Ireland Civil Service, *Channel Strategy* (2009).

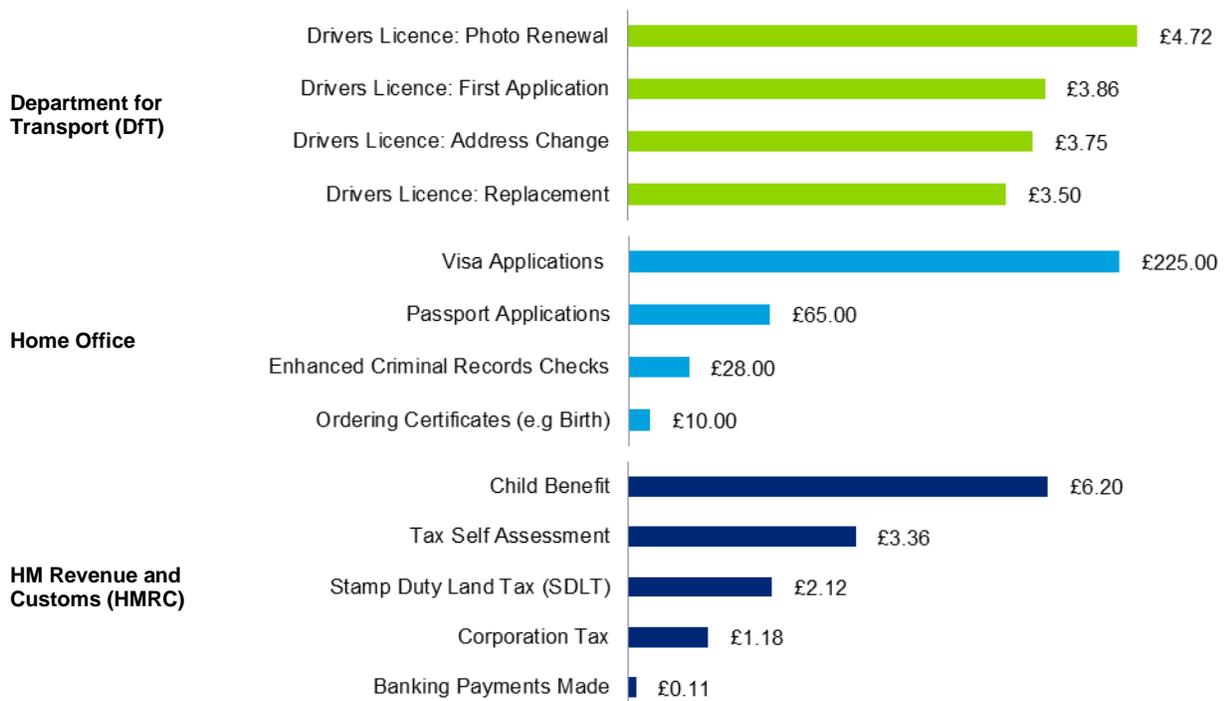
³⁷ Confidential Deloitte Project for a U.S. State (2006).



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The caveat here is that these numbers cannot always be compared on a like-for-like basis. This was particularly emphasized when the U.K. released detailed transaction costs for 44 different services, representing almost 90% of the government’s total transaction volume. The “transaction explorer” which provides the public with detailed information about these services also points out that because of the varying complexity, the most expensive service—on a cost per transaction basis—is not necessarily the least efficient one. For example, the Passport Applications service costs £64.68 per transaction, but is a highly complex process involving identity checks, secure printing of passports, postage and multiple channels, both online and offline. The Statutory Off-Road Notification (SORN) service, on the other hand, is a much simpler transaction that can be done completely online and costs just £0.47 per transaction.³⁹ Also hampering accurate comparison is the problem of methodology—there is no global or even national standard for calculating cost per transaction, even in as mature a channel as the telephone. The only alternative is to compare rates charged by outsourcing companies, but their pricing strategies (which may include cross-subsidization) do not always reflect true costs.

Regardless of these challenges, what is not in dispute is that electronic self-service transactions cost less—often much less—than in-person ones; and the ability to shift those interactions from higher to lower cost channels will ultimately determine the magnitude of savings.



³⁸ Source: Tower group

³⁹ UK Cabinet Office, Government publishes costs of transactional services for the first time (2013).

In spite of the caveats, we can say with confidence that there are significant operational savings to be had from channel migration. We can generalize the potential savings as in the following table, which attempts to address both the complexity of the transactions and the variability in costs.

Shifting from	to	Potential savings			
		Low	Medium	High	
In-person	→	Online/Mobile	87%	88%	98%
In-person	→	Telephone	6%	24%	96%
Telephone	→	Online/Mobile	16%	40%	55%

Generally, we can expect savings to be higher for more complex transactions than for less complex ones. However, this will vary based on the specific jurisdiction, business processes, degree of automation and other factors.

Investments and Return on Investment

As noted earlier, the specific magnitude of investments and the return on those investments varies widely from organization to organization and it is difficult to say that a given quantum or type of investment will yield a consistent set of quantitative or qualitative benefits. However, based on our primary and secondary research, most public sector organizations appear to have launched an initial self-service enablement program with investments between \$10 and \$15 million and realized benefits within the first few years of operations. Ongoing investments also vary quite widely but appear to be on the order of 10% to 20% of the original investment. The resulting benefits and the timing of benefits are ultimately driven by the speed of migration to and adoption of self-service channels. This in turn is driven by a host of factors that have already been discussed, including marketing, incentives/disincentives, policy changes (including active diversion of traffic and potential reduction of in-person service) and demographics, among others. The ongoing benefits are most clearly evident in the reduced cost per transaction, which incidentally, also points to the likely magnitude of operating costs after the implementation of self-service.

While the return on investment is a relatively straightforward calculation, it is important to note that business case methodologies do differ from jurisdiction to jurisdiction. More often than not, however, the analysis entails some type of net present value calculation as well as consideration of ROI and payback periods. Qualitative benefits, risks and stakeholder impacts are also being factored into business cases and decision-making processes in order to take a more comprehensive approach to cost/benefit analysis. In many ways, business cases for self-service initiatives are no different than business cases for any other corporate investment and often follow the same processes that are used for project portfolio management.

Organization/Project	Investment and/or annual operating costs	Estimated benefits (Quantitative)	Benefits qualitative	Source of benefits
UK Cabinet Office Digital Service Strategy (2013 to 2015) <small>⁴⁰</small>	£4 billion (operating cost)	£1.2 billion annually	Increased customer convenience; ability to reallocate staff to other priorities	Channel migration. Does not include back-end technology or process changes

⁴⁰ UK Cabinet Office, Government publishes costs of transactional services for the first time (2013).

Organization/Project	Investment and/or annual operating costs	Estimated benefits (Quantitative)	Benefits qualitative	Source of benefits
UK NHS Direct Health & Symptoms Checkers	£2.5 – 3.5M (operating cost)	£25 to £50M annually	Shorter wait lines, reduced congestion in emergency rooms	Cost avoidance from patients not visiting hospitals. NHS 111 call costs £6.50. Older and now decommissioned call centre: £20 per call. Health and symptom checker: £0.11 and £0.15/interaction.
Utah.Gov	< US\$10M (est., privately funded)	\$4.1M annually + \$61 million cost avoidance over 5 years + \$15 million (self-funding model)	Greater efficiency, same work done with less effort	High adoption rates. Reduced work week—government services reduced to 4 days per week
Texas.Gov	~US\$30 M+	US\$80 M+ (on original investment); US\$183 M expected from new contract over 7 years	Greater convenience and accessibility	Common platform for all levels of government, including payment gateway Self-funding model with initial financing by private sector
Australian Government – Smart Forms	AU\$6.2M+	10.5:1 ROI	Reduced time to complete forms, number of forms and turnaround time. Fewer errors; improved accuracy and security	Collaboration among 30 local councils and municipal associations. Direct cost and time savings for local businesses and citizens that use the forms
Colorado Department of Revenue	N/A	8,732%	Reduced call center and email volumes, and improved the accuracy and consistency of information	Channel migration/increased self-service

The table above illustrates the variability in both investments and benefits, but it also clearly shows that many organizations that have undertaken self-service initiatives have been successful in realizing some or all of the anticipated benefits. Even with a proven business case, public sector organizations often face the constraint of not being able to make the initial investment necessary to generate future benefits. This is where alternative financing and delivery models have had some success over the last twenty years.

A number of different outsourced service providers have partnered with governments to design, build, finance and operate self-service portals on behalf of their clients. Often, the initial investment is financed by the service provider themselves, either through operating cash flow or through third-party equity or debt financing. The service provider then recoups their investment by generating incremental revenue (typically by charging convenience fees) or savings against an established baseline of costs. Although, many governments are reluctant to charge convenience or credit card processing fees, the public reaction is rarely that strong and even if the fees were to be absorbed by the service provider, the cost of doing so would be offset by savings from not having to manually process payments and transactions.

Regardless of how they are generated, incremental benefits are typically shared between the government client and the service provider, with a larger share going to the service provider until the capital investment is paid off. Subsequently, government typically takes a larger share of incremental benefits, with the service provider retaining sufficient funds to cover operating costs and profits.

Texas.gov

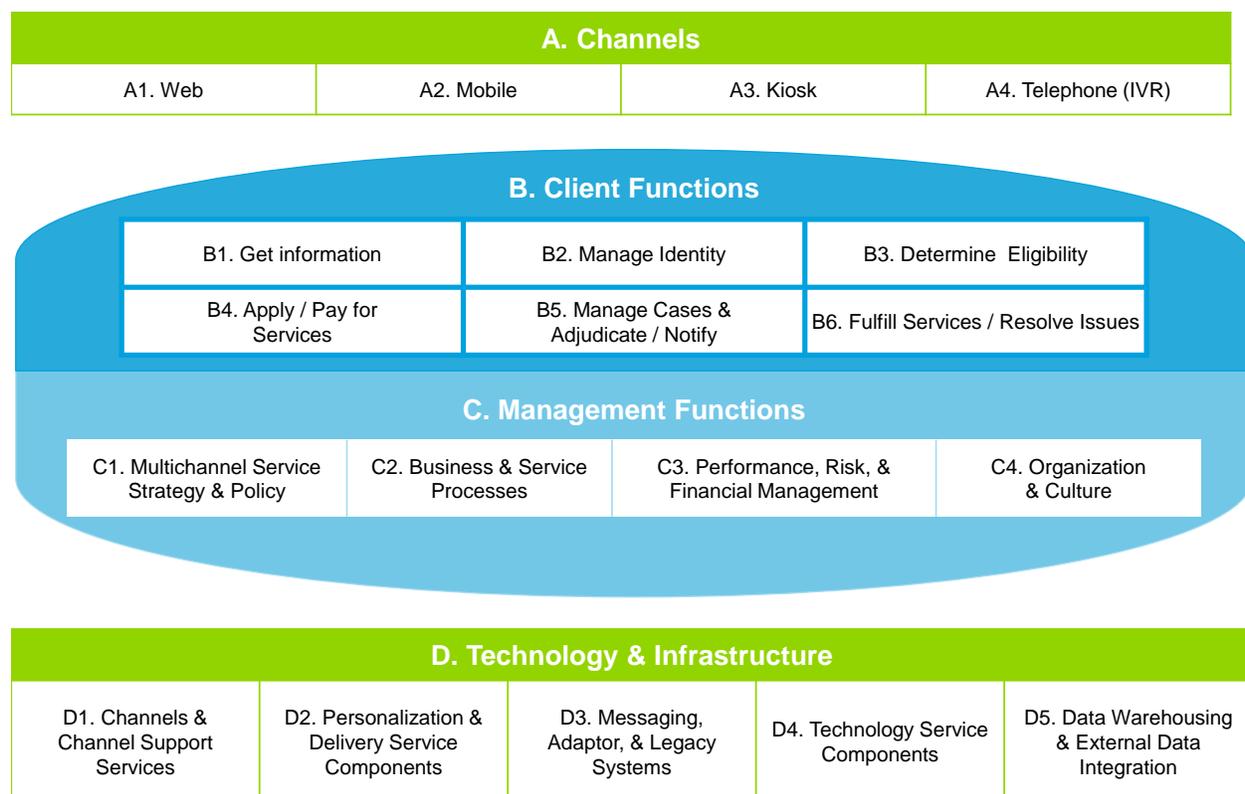
- August 2000: First launched TexasOnline, in collaboration with BearingPoint; NIC took over management in 2009 under a new 7 year agreement. Offers partners a secure, accessible, and cost-efficient place to conduct eGovernment business, and provides technology management, application development, payment processing, marketing, customer service, and training
- Transaction fees introduced and accepted by users in exchange for convenience. End-users are charged a service fee of 2.25% of the statutory fee plus 25 cents to cover credit card/bank fees
- Model is self-funding and (i) subsidizes provision of non-revenue generating services, and (ii) capital investment to support new services. Revenue sharing: In 2012, 40% of revenue collected returned to the state of Texas, while 60% was used to sustain the portal and provide revenue to the service provider
- In some instances, partner organizations elect to cover some or all of the fee for end-users to encourage adoption of the online channel, in which case partners are charged the equivalent amount per transaction
- For occupational licensing services, the licensing fee is calculated to include a surcharge to fund Texas.gov, which is charged to end-users regardless of whether they access online or in-person
- The model has been very successful in attracting new services within the state – now processing 1.5 m transactions per month. More than 1,000 online services are offered, including over 300 citizen services, business and professional services, and Government services, for over 100 publicly-funded customers
- Similar, successful models in 23 states, and over 3,000 agencies

Self-service maturity framework

The Self-Service Maturity Framework is a practical tool for public sector organizations to objectively assess their maturity against best practices. The maturity framework defines key self-service capabilities within four primary categories:

1. Channels
2. Client Functions
3. Management Functions, and
4. Technology & Infrastructure.

Within each of these categories are the key self-service capabilities that need to be in place to support not only self-service but effective service delivery. The figure below depicts client access points – channels – and the client and management functions typically associated with self-service delivery, along with the foundational technologies and infrastructure which are necessary to enable self-service interactions.



The four core elements of the self-service operating model – A. Channels, B. Client Functions, C. Management Functions, and D. Technologies & Infrastructure – are described below. The maturity framework defines five levels of maturity and describes the types of capabilities found in each element and at each level of maturity (please refer to Appendix D Self-service maturity framework definitions and the Self-service Maturity Assessment Tool for details).

Core element	Description
Clients	<ul style="list-style-type: none"> • Clients are the citizens and businesses who access information, services, and products • Clients can be segmented based on key characteristics, channel access history, or account and case information
A. Channels	<ul style="list-style-type: none"> • Channels are the access points for clients who are seeking information or services • Channels are ideally integrated for seamless service
B. Client Functions	<ul style="list-style-type: none"> • Client functions represent the key types of activities supported by self-service • Client functions within self-service channel environments are digital by default and are supported and delivered by technology solutions and capabilities.
C. Management Functions	<ul style="list-style-type: none"> • Management functions represent the internal and external managerial activities that enable and support self-service • These functions constitute the operational framework within which client-facing self-service options are envisioned, designed, developed, and executed
D. Technology & Infrastructure	<ul style="list-style-type: none"> • These provide the underlying infrastructure that makes self-service possible • These capabilities reflect the <i>digital by default</i> requirements for enablement of multichannel self-service options for clients.

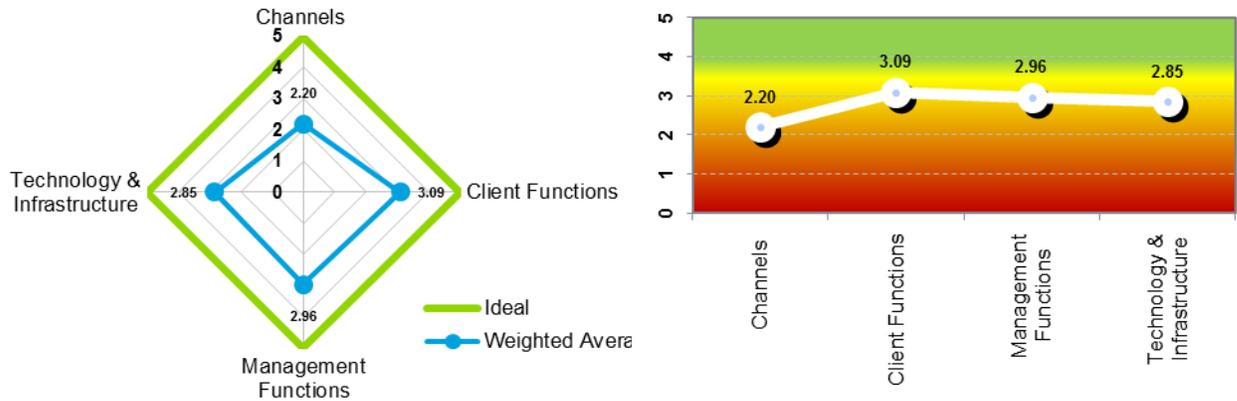
Self-service maturity framework: Maturity levels

The Self-Service Maturity Framework highlights five progressive levels of maturity (defined below) which are related to each of the key elements and associated activities defined above. These levels incorporate leading and innovative practices including the ones discussed in this report, especially at the higher levels of maturity.

Stage	Maturity level	Description
#1	Emergent	<ul style="list-style-type: none"> • Digital services, channels, strategy and program efforts are limited or non-existent. Formal practices and processes are not implemented.
#2	Developing	<ul style="list-style-type: none"> • Digital services, channels, strategy and program efforts are being planned and developed. Practices are implemented with some level of formality but still lack consistency.
#3	Defined	<ul style="list-style-type: none"> • Digital services, channels, strategy and program efforts are being implemented. Practices are implemented with formal procedures and policies that are consistently applied and are aligned with organizational strategies.
#4	Mature	<ul style="list-style-type: none"> • Digital services, channels, strategy and program efforts are being expanded and refined, with an increasing focus on the client. Practices are continuously refined and are systematically measured with a focus on efficiency, effectiveness, and achieving value.
#5	Transformative	<ul style="list-style-type: none"> • Digital services, channels, strategy and program efforts are optimized and client-centric, including high levels of integration. Practice is sustainable and performance targets are consistently achieved or exceeded.

Self-service maturity framework: Intended use & outcomes

The Self-Service Maturity Assessment framework is intended to help organizations assess their own maturity against each of the key functions of the framework. Results of self-assessment—which can be completed by using the accompanying maturity assessment tool—are plotted on a “heat map” that highlights areas of high and low maturity, as well as contrasting a given organization’s current state with best practices associated with each framework dimension.



Self-service maturity framework assessment results

Different organizations will have and will want to achieve differing levels of maturity within each of the self-service framework functions. However, it is advisable to have higher levels of maturity for sub-components of certain functions such as identity management and technology infrastructure, which are generally considered key enablers for self-service and service delivery integration.

The maturity assessment framework and tool are not meant to say whether a particular organization's current state is good or bad. Rather, they provide a mechanism to understand what is possible, determine where the organization wants or needs to be on that scale of possibilities, and identify the gaps that need to be closed in order to reach the target state.

Conclusions & recommendations

Assuming that self-service is indeed the future of service delivery, what does that mean for organizations in Canada, and specifically for the public sector? One implication is that while there will be a need for greater investment in self-service channels, the more traditional ones will not entirely go away. Thus, there will be a continuing need to allocate limited resources in as efficient a manner as possible. That may also mean having the appropriate capabilities to develop and apply portfolio management principles and approaches—in order to determine which initiatives should be funded and implemented and which ones should be deferred or dropped.

It goes without saying that investments will be necessary and that business cases may not always be clear, and while it is advisable and often necessary to make the case as robust as possible, there is also something to be said for accepting the available evidence and simply trying to do things in a new way. In fact, innovation would not be possible if everyone waited for incontrovertible proof before pursuing an idea. Innovation is not foreign to government, which after all was responsible for creating self-service infrastructure such as the Internet, and which, in its myriad manifestations around the world continues to innovate, as in Denmark, Estonia and the UK.

With that in mind, there are a number of insights that can be drawn from this study to inform Canada's own self-service strategy. Specifically, it is evident that self-service is a viable option and one that is being readily accepted by both citizens and businesses globally. However, in order to ensure and encourage adoption it is necessary to take some potentially controversial and bold steps—to improve inter-jurisdictional collaboration, to incent clients to use self-service channels and to create the people, process and technology platform for change. The following are some recommendations for getting from here to there:

1. **Adopt a coordinated and collaborative approach within and across jurisdictions by establishing a pan-Canadian task force to focus specifically on self-service.** The existing Public Sector Service Delivery Council (PSSDC) and Public Sector Chief Information Officer Council (PSCIOC) provide a framework and starting point and have had notable success on issues such as the single business number. However, what's needed is a more tactical approach and an operating body with a mandate to define, implement and govern specific joint initiatives such as identity management. The Digital Taskforce in Denmark is a good example to consider. It has established a governance structure and negotiation framework for making investments and harvesting benefits from self-service programs.
2. **Through the new task force and individually, jurisdictions should create and deliver a campaign and engagement plan to promote self-service.** It is important to have a frank discussion with politicians, constituents and public servants about the costs and benefits of self-service. Such a conversation needs to address issues such as closure of in-person offices, staff reductions and accommodations/alternatives for specific populations and services. As well, the benefits need to be clearly communicated, including ones such as new career opportunities for staff, along with better, faster service and higher citizen/business satisfaction levels. There also needs to be acknowledgement and acceptance that not all benefits will be realized in the short-term and that appropriate resources will have to be allocated to help realize any benefits—including support for marketing, outreach, and incentives, etc. It is time to consider bold action to accelerate self-service adoption, through a combination of measures such as policy changes, marketing, and incentives/disincentives, etc. which have been successful elsewhere, including in Denmark, Ireland and even select Canadian jurisdictions. Those who have taken such steps have discovered that the public reaction is not as negative as may have been anticipated and the benefits generally outweigh the costs, as long as there are appropriate safeguards and mitigation of risks

3. **Establish and publish a transaction cost methodology in order for individual jurisdictions to calculate and report transaction costs**, by channel and type of service, in a consistent and comparable manner. Also consider compiling and publishing a “benchmark” survey of transaction costs for use by both Canadian and global jurisdictions. Not only will this allow for more apples-to-apples comparisons and facilitate identification of opportunities to improve costs and efficiencies, but by publicly releasing such a framework, Canada can take the lead in addressing an issue that both other governments and the private sector are struggling with. Stronger businesses cases could also be built based on more accurate cost modeling and benchmarking against both peers and private sector services. If implemented, this could be a very powerful platform for continual improvement and for driving change.
4. **Create and adopt a strategy and plan for implementing service bundles.** These bundles should be built around a common life and business event framework and incorporate services from all levels of government, including municipalities and potentially non-governmental organizations. Bundles help to achieve end-to-end service integration and may also be useful in reducing cost-to-serve and promote migration to self-service channels, based on greater convenience and improved client experience.

Additionally, at an individual level, jurisdictions should:

1. **Develop and publish a multichannel service delivery strategy, with a focus on self-service and channel migration** in order to begin articulating a business case for making the necessary investments. These individual strategies will also be a starting point for stakeholder engagement and can be used to communicate the ultimate vision and benefits of a transformed service delivery model.
2. **Assess the potential for using alternative financing and delivery models to develop and operate self-service channels**, similar to what has been done in more than 20 U.S. states. While there is some justified skepticism about the benefits of partnering with the private sector, appropriately structured deals, which include obligations for governments as well as their partners, have been shown to work, including in U.S. states like Texas. The key will be to identify and transfer risks appropriately, as well as incorporating appropriate contract mechanisms to manage performance and costs.
3. **Segment both their clients and services in order to understand and address barriers to self-service adoption**, especially among vulnerable populations. Develop risk mitigation plans to address both these and other, more traditional, risks such as those related to technology implementation and channel adoption. While we tend to focus more on the benefits, it is important to acknowledge that there are risks and unanticipated or unintended consequences—including increased costs, decreased client satisfaction and more inconvenience. However, many of these risks can usually be addressed through careful planning and performance management. Additionally, understand and address public perceptions of privacy risks associated with integrated service delivery, drawing on experiences such as the BC Services Card and the UK National ID program, as well as through direct engagement of citizens and business via surveys, focus groups, etc..
4. **Commit to support and adopt national standards developed by a central task force**, including potential standards for service categories/tiers, service bundles, performance metrics and cost measurement, among others. This could also include a commitment to completing and sharing the results of their respective self-service maturity assessments. Such a commitment would not only help to streamline end-to-end service integration across levels of government but potentially also help to reduce service delivery costs by building best practices into those standards.

Ultimately, the move to self-service is also a paradigm shift and requires organizations to work and do things differently than they have in the past. Often, it means new structures that can pull together disparate channels to support consistent standards and end-to-end integration. Initially, such change requires political will, both from politicians and from the bureaucrats. Once new organizations are in place they require a new culture to sustain them. This culture is one based on client—rather than program—centricity and a commitment to service levels, cost containment and constituent engagement; as well as a relationship—rather than a transaction—mindset, when it comes to delivering services.

Appendix A

Self-service channel trends

Web channel

Canadian access to and use of the internet has rapidly risen in recent years. In 2012, 27.4 million Canadians had access to the internet, or 80% of the population.⁴¹ As web-based service and information delivery has become a standard for public and private sector organizations around the world, governments and companies have increasingly mature information content delivery via the web.

Internet-based service strategies are often delivered in combination with access to other channels, such as email, telephone (click to call), and mobile (mobile app downloads and mobile device-based internet browsing) as well as the use of assisted support tools, such as live chat, click-to-chat, and assisted browsing. This multichannel approach to web-based service delivery is designed to allow for client channel choice while also supporting client interactions and transactions in the lowest cost to serve environment: the internet.

Web-enabled e-services are highly relevant to Canadian governments, as exhibited by an increasing push to develop online services and use of these services by citizens. ServiceOntario, Service BC, Services Quebec, Service Ottawa, Service Canada, and many other Canadian public sector integrated service delivery agencies illustrate this trend. However, organizations and governments often experience challenges in the organization, design, and delivery of web-based content and services, including service integration, design and navigation, search-ability, ease of use, understanding what clients are seeking, providing clear and readable content, sharing data, respecting citizen privacy, and accessibility. Key elements of web-based delivery of services that must be optimized by organizations across the public and private sectors include the presentation of multi-channel access points and choice, ongoing performance measurement of websites, and website and client-based data analytics.⁴²

Impact of e-Services on other channels

Canadians demonstrate not only increasing access to the internet but also increased receptivity to performing tasks and accessing services online. For example, within the Canadian banking industry, online banking is the most frequently used channel for service delivery. The rise in the use of this channel in Canada has decreased the number of transactions in other channels, such as telephone and automated banking machines (ABMs), as illustrated below. Of note, 68% of the Canadian population uses two or more channels to access their banking services on a monthly basis (compared to 20% in the U.S. and 16% in Europe), thereby demonstrating the importance of integrating this primary access channel with other service delivery channels.

⁴¹ 6S Marketing, *The State of Canadian Connectedness: Internet Usage, Mobile, Search, and Social Media* (2012).

⁴² RightNow, *User Experience Best Practices for Web Self-Service* (2009).

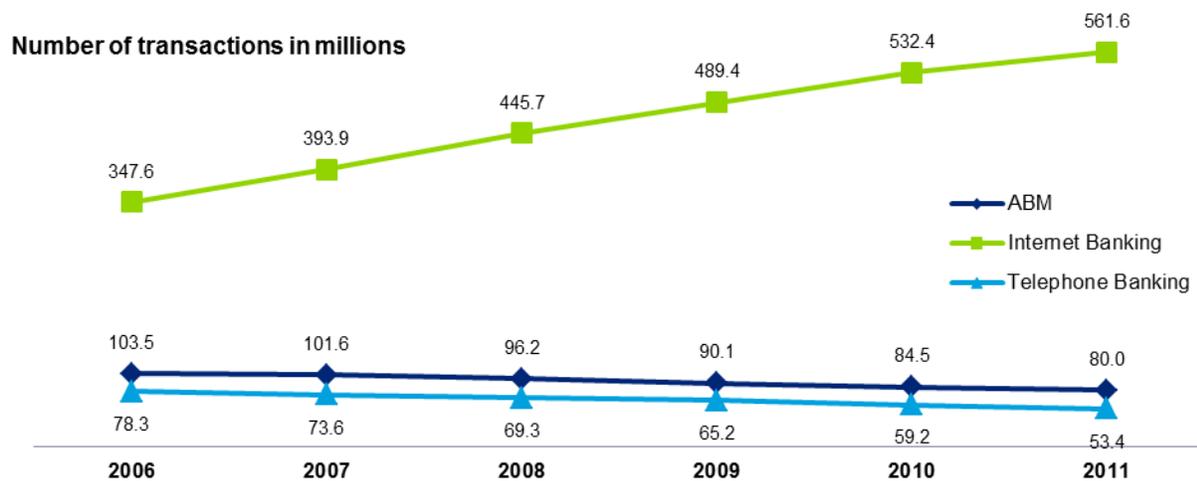


Figure: Channel-based transaction volumes for transfers and bill payments from the six largest Canadian banks (2006-2011)⁴³

In an interview with a major Canadian bank, the Director of Multi-Channel Strategy explained that the historic roots of the bank’s service delivery model were the in-person retail banking environment and experience. Over time, this service delivery strategy expanded to include automated banking machines (ABMs), contact centre services, and, lastly, online and mobile banking services and applications. As is seen across a variety of public and private sector industries, online and mobile services have rapidly eclipsed other service environments, and have increasingly facilitated self-service transactions by clients. When comparing the cost to serve within the internet channel, the bank’s cost to serve a client online is over one hundred times (100x) less than it is to serve the same client in the in-person retail environment.

The share of the bank’s overall transactions in the online service channel has risen dramatically, from 33% to 44% of all transactions from 2008 to 2011. This rise has occurred while all other channel transaction volumes have fallen from 2008 to 2011 (ABM: 23% to 16%; contact centre: 8% to 6%; and in-person branch offices: 36% to 29%). What is most notable about these figures, however, is that the overall volumes of transactions during this same period have increased by 25%, while the client base only increased by 8%. According to the bank, this rise in overall volume of transactions has been highly correlated with the increase in online information, product comparison, and self-service transaction options.⁴⁴ Additional factors influencing this shift may include the growth in online payments and funds transfers—including to individuals—which has eliminated a major reason for many customers to visit a branch.

e-Service transaction types

Most public and private sector organizations have fairly mature information content delivery through the internet and remaining issues relate to improving design and navigation (e.g., reducing number of deprecated links on websites) and increasing the number of end-to-end e-service applications that are available to the public.

In recent years, a variety of government online end-to-end services have been enabled: processing online transactions for income taxes dominate, followed by transactions for utilities, registrations, certificates, fines, and licenses as they offer quick benefits of better revenue capture and streamlined service delivery. More evolved digital government initiatives have focused on the digital provision of social benefits, tax

⁴³ Canadian Bankers Association, Select Delivery Channel Statistics – Transaction Volumes (2012). Accessed at: http://www.cba.ca/contents/files/statistics/stat_channels_en.pdf

⁴⁴ Deloitte Interview, Major Canadian Bank (RBC) (2013).

compliance activity, and citizen account management as these seem to be the areas that attract the largest (and most costly) levels of client interaction.⁴⁵

Core public sector e-service offerings around the globe tend to include, but not be limited to, the following services:

- General information/FAQs
- Parks and recreation program registration
- Parking fees and penalty payments
- DMV and driver services such as driver licensing, vehicle permits and registration, driver histories, ticketing, and accident reports
- Outdoor licensing services, such as outdoor vehicle and board permitting and hunting and fishing licensing
- Business licensing, registration and search services, including certificates, agent designations, annual report filings, trademarks, document retrievals, disclosure and compliance filings
- Specialized ID card or health card issuance services
- Land registration and document request services
- Transportation and trucking services
- Professional licensing services
- Passport applications and renewals
- Voter registrations and ballots
- Tax filing services
- Payment services, financial transactions, and fund transfers
- Account, usage, and balance checking

While this list is by no means exhaustive, these services tend to be web-enabled across a wide range of jurisdictions around the globe.

Mobile channel

Delivering services through mobile devices and applications is a powerful way to reach citizens. The number of mobile-connected devices is expected to exceed the world's population in 2012. To put the extent of the mobile accessibility in perspective, 4.8 billion people worldwide own mobile phones and 4.2 billion people worldwide own toothbrushes. Mobile internet use is expected to surpass desktop internet use by 2014.⁴⁶ In Canada, we are on track to achieving a wireless penetration rate that exceeds 100 per cent in about three years.⁴⁷

In 2012, up to 70% of Canadians own and use mobile devices.⁴⁸ Three-in-ten online Canadians (31%) own a smartphone in Canada, an increase of over 50% since previously measured in the spring of 2010. The average Canadian has 25 apps installed on their phone (6 of those are paid apps) and has used 9 apps in the last 30 days.⁴⁹ According to Ipsos Reid, in the six month period between August 2011 and January 2012, 'Smartphone ownership grew by 13%, Tablets by 66%, and eReaders by 43%. In absolute terms, market penetration of Smartphones grew from 24% of Canadians stating they owned one in August 2011 to 34% in January 2012. For Tablets, 3% of Canadians said they owned such a device in August 2011 and 10% said they owned one in January 2012.'⁵⁰

Given its rapidly accelerating use, the mobile channel will necessarily be a channel of importance to Canadian governments in coming years. However, it is worth noting that, for now, governments tend to lag behind the private sector in the capability to deliver effective e-services through the internet. This is partly because of the availability of funding but also because not all government services are suitable to be delivered over a mobile channel, including those that require delivery of counseling, a physical

⁴⁵ E-Government for the People, United Nations E-Government Survey 2012 (2012).

⁴⁶ Deloitte Digital, Digital Disruption Infographic (2012).

⁴⁷ The Globe and Mail, Canada on Track to Surpass 100 Per-cent Wireless Penetration Rate (2012).

⁴⁸ 6S Marketing, The State of Canadian Connectedness: Internet Usage, Mobile, Search, and Social Media (2012).

⁴⁹ Canadian Mobile Consumer Behavior and Smartphone Usage Stats from Google (2012).

⁵⁰ Ipsos Reid, Latest Wave of Ipsos Study Reveals Mobile Device Brands Canadian Consumers are Considering in 2012 (2012).

product, or other service where an in-person interaction is either beneficial or required. Given mobile's relatively new rise in transaction volumes and challenges in designing a user friendly, easy to navigate screen on small-scale devices, Canadian governments are likely best served by focusing on enabling foundational web-based services. In designing these services, translation to and access by mobile devices should be considered. Many of the basic undertakings that support e-services will also enable mobile services, including improvement of data warehousing and access, investment in customer relationship and enterprise content management systems, and technology interoperability. If Canadian governments focus on enabling these fundamental capabilities, they will be better equipped to create and use mobile-based services and technologies the future.

Other governments, such as Singapore, have taken a broader and more integrated approach to m-government. With over 100% mobile penetration rate in Singapore, citizens today are able to access a wide variety of government information and services conveniently through mobile devices. The Singapore Mobile Government programme (mgov) has the primary objective of making government e-services more accessible to a wider customer base, and more convenient for those who need to transact on the move. The programme goals are twofold: to drive the implementation of m-services and the deployment of central infrastructure for m-services. Singapore offers a range of payment and account management mobile services that are not web-enabled. As of June 2011, there were 300 mobile government services and 20 government mobile apps. In addition, navigation of the government's mobile suite of products is supported through mGov@SG, a one-stop mobile site that allows individuals and businesses to easily search for, identify, and access m-services provided by the Singapore government.

In addition, Singapore is developing centralized strategies regarding delivery of its m-information. For example, there is a single SMS number for all new m-services, and a standardized, simple and easy to use format to access SMS based m-services. There is an m-Service Directory to aggregate all government m-services so that customers can find government m-services easily as well as a shared central repository of mobile numbers to facilitate agencies' deployment and personalization of m-services. The government has created a central information technology support structure to enhance its m-capabilities, including shared m-payment services, m-authentication services, and m-publishing services.⁵¹

Impact of mobile services on other channels

According to technology, media and telecommunications experts, the emergence of better mobile broadband around the world and the continuing proliferation of Wi-Fi hotspots will likely accelerate the use of high end mobile devices as a preferred means of accessing digital networks in the coming years.⁵²

Mobile technologies and access by citizens are rapidly changing. Increasingly mobile devices and plans have access to unlimited or larger stores of data, browsing, an expanding library of mobile applications, rapidly downloaded content, web video recording capabilities, highly responsive touch screens, and increased network quality.⁵³ People are also doing more over mobile: social networking among U.S. subscribers reached 57.9 million mobile users in December 2010, up 56% versus 2009. The classifieds/marketing category was the second strongest growth sector, reaching almost 17 million mobile subscribers (up by 55%), followed by online retail sites with a 53% increase in visitors.⁵⁴ Citizens are also increasingly using mobile devices to interact with the government, where opportunities to transact "on the go" are provided.

Before exploring trends for the mobile channel, it is useful to understand the wide array of means through which clients may use mobile devices in the future, each of which may replace or be added to the "traditional" interactions in other client service channels. The graphic below depicts an illustrative scenario of how the mobile device and service suite may become an increasingly integral part of client service interactions:

⁵¹ Singapore egov programs website (2012). Accessed at: <http://www.egov.gov.sg/egov-programmes/programmes-by-citizens/mgov-sg> and <http://www.egov.gov.sg/egov-programmes/programmes-by-citizens/mobile-government>.

⁵² Deloitte, Improving Access to Digital Government Services through Kiosks (2012).

⁵³ Deloitte, The State of the Global Mobile Consumer: Connectivity is Core (2012).

⁵⁴ comScore, The 2010 Mobile Year in Review (2011).

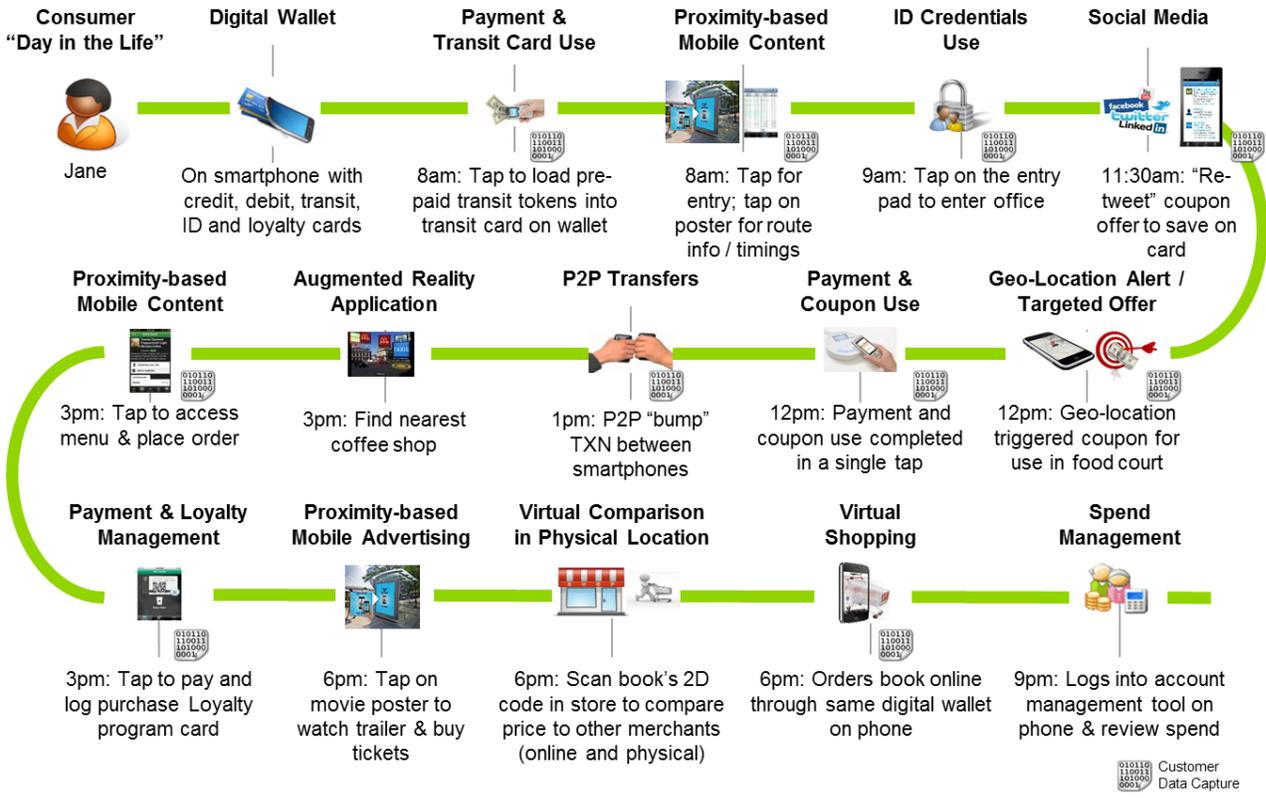


Figure: Examples of emerging usage of mobile services & mobile interaction types

Both the private and public sector have been rapidly advancing the use of mobile solutions to meet the need of their clients. These mobile solutions meet needs across a variety of industries, sectors, demographics, and devices. Key, high volume mobile behaviours of mobile device owners aged 13 and above in Canada are profiled below:

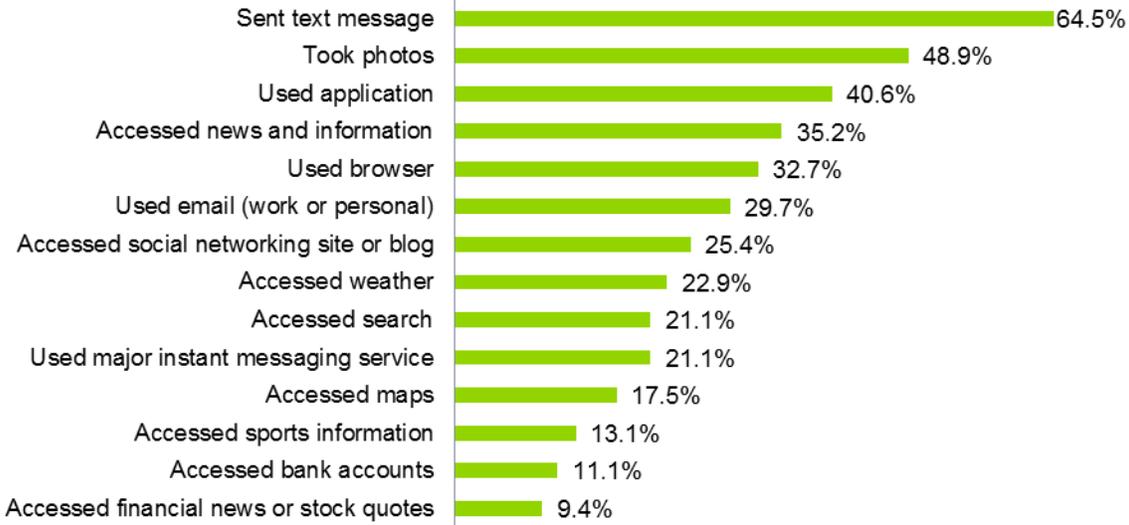


Figure: Select mobile behaviors in Canada – Total Canada mobile audience ages 13+ (March 2011)⁵⁵

⁵⁵ comScore MobiLens, Mobile Measurement in Canada (2011). Accessed at: http://www.comscore.com/Insights/Press_Releases/2011/6/comScore_Launches_Mobile_Measurement_in_Canada

Mobile transaction types

Public and private organizations around the world have been introducing innovative new mobile applications to meet citizen and internal organizational needs. For government agencies, mobile technologies can:

- Provide health and human services case workers remote access to case management information
- Allow emergency responders to receive real-time information in the field
- Enable police officers to look up licenses on the spot and finish reporting without having to travel back to the office, and
- Support telework initiatives that can reduce costs for travel and real estate.

According to Forrester, 60% of firms in North America and Europe provide some support for personally owned smartphones such as Android, Apple, and BlackBerry devices.⁵⁶ However, employee-owned devices can pose significant challenges for corporate IT and help desk personnel: the organization must determine how to seamlessly control mobile applications for employees, clients, partners, and suppliers in an increasingly heterogeneous mobile device environment.

For citizens and businesses, mobile technologies can:

- Allow them to report potholes, street light outages, and graffiti to a 311 service
- Find government offices and facilities near their location with GPS technology
- Enable them to renew driver's licenses, obtain a hunting or fishing license, and pay taxes all online, and
- Provide a means to communicate and interact with government at their own convenience.⁵⁷

For example, the government of South Australia introduced the web-based and mobile EzyReg application allows users to check the registration status of any South Australian vehicle just by providing a plate type and number. EzyReg allows users to renew their registration, check their payment history through the application and locate customer service centres. To renew their registration, users can scan a bar code on their bill using their smartphone, or they can manually provide information such as the payment number on the bill, or their client and plate number.

Since its launch in June 2011, EzyReg online (web and mobile application) "license renewals are comfortably over the 50% mark, which is quite an achievement, since it exceeds that of Internet banking. This translates to real business gains, because the online transaction cost is one-tenth that of traditional channels."⁵⁸ Notably, 48,350 license renewals occurred via the application from the launch (June 2011) and May 31, 2012. This represents approximately 3% of the volume of weekly renewals⁵⁹ – a modest volume figure which illustrates that government payments via the mobile channel are still in their early stages, and that m-government applications at this stage have been primarily focused on increasing citizen satisfaction and testing the market than about return on investment.⁶⁰ The South Australia government did not invest highly in marketing the new service, but rather limited marketing activities to how-to-pay information on mailed notices and a campaign tile on the government website.



⁵⁶ Forrester, Build A Corporate App Store Into Your Corporate Mobility Strategy (2013).

⁵⁷ Deloitte Digital, Government Meets its Mobile Future (2012).

⁵⁸ Gartner, Mobile Government Best Practices, and South Australia's EzyReg Vehicle Registration Smartphone App (2012).

⁵⁹ Compared with other channels: over 45% of renewals are performed online, over 21% are performed at a customer service centre, 20% via Australia Post and just under 9% via interactive voice response (IVR).

⁶⁰ Ibid.

In Australia, federal, state, and local governments offer a wide array of mobile apps, including the following (note: the list below represents only a subset of their total mobile app offerings):

App name & agency	App description
Better Health Channel	Conveniently locate health services wherever you are in Victoria, learn more about medical conditions and treatments on the go, and get first aid essentials and important health advice anywhere, anytime – all from the most trusted brand in health information.
FireReady (Country Fire Authority)	The CFA FireReady smartphone application provides access to timely and accurate incident and fire safety information on your smartphone or compatible tablet device.
The Daily List (Courts of Victoria)	The Daily List iPhone app is the official Victorian Law Courts application for publishing daily case listing information to your iPhone.
PlanningVIC: Planning Property Report (Department of Planning & Community Development)	The app accesses the Victorian Government's Planning Property Report service which provides free reports to planning information for any property in Victoria, Australia. The app uses your current location (when in Victoria), or allows entry of any other address in Victoria, to gain access to the report for that property.
DPI Crop Disease (Department of Primary Industries)	The DPI Crop Disease application provides quick access to current crop disease resistance ratings, in the paddock.
Report Litter (EPA Victoria)	EPA Victoria's public litter reporting system is unique to Australia and allows members of the public to report those who they see littering from or near motor vehicles. You can submit a litter report whilst you are on the go by using the Report Litter free iPhone app.
Public Transport Victoria	The free Metlink app gives you public transport information at your fingertips.
SRO Mobile (State Revenue Office Victoria)	Find out if you are eligible for Victorian Government first homebuyer grants and bonuses. Easily calculate how much you may be eligible for through the First Home Owner Grant, First Home Bonus and Regional Bonus.
SmartPark (VicRoads)	SmartPark can help you when parking in Melbourne clearway zones and timed parking spots by reminding you to get back to your car before the time expires. SmartPark can also give you directions back to your car.
Vote Victoria (Victorian Electoral Commission)	Vote Victoria is an application to help voters find where to vote and to keep an eye on election results during the 2010 Victorian State Election.
Casey-Cardinia Library Corporation	BookMyneYou can now access the library catalogue and your library card from your iPhone with this great app called BookMyne.
Maribyrnong City Services	Are you fed up of seeing graffiti on the walls, or driving over potholes? Then report it to your council using 'Maribyrnong' App.
Express Plus Families (Centrelink)	Do your Centrelink business with Express Plus Families – simple, fast, mobile. The Australian Government's Express Plus Families app helps you update your family income estimate, view your child care details and report changes in your circumstances to Centrelink. No need to visit an office or wait on the phone. You can also view your family assistance payments and view letters.
Express Plus Job Seekers (Centrelink)	Do your Centrelink business with Express Plus Job Seekers – simple, fast, mobile. The Australian Government's Express Plus Job Seekers app helps job seekers report their income and changes in circumstances to Centrelink. No need to visit an office or wait on the phone!
Express Plus Students (Centrelink)	Do your Centrelink business with Express Plus Students – simple, fast, mobile. The Australian Government's Express Plus Students app helps students report their income and changes in circumstances to Centrelink. No need to visit an office or wait on the phone!
National Public Toilet Map	The National Public Toilet Map shows the location of more than 14,000 public and private public toilet facilities across Australia. Useful information is provided about each toilet, such as location, opening hours, availability of baby change rooms, accessibility for people with disabilities and the details of other nearby toilets.
National Health Services Directory	The National Health Services Directory (NHSD) App is a new national health information resource supported by all Australian governments. It provides information such as location and opening hours for GPs, Pharmacies, Emergency Departments and Hospitals straight to your mobile, whenever and wherever you might need it across Australia.

In Estonia, the government has been pushing for online – and now mobile – voting for the past decade. In 2007, for the first time in the world, it was possible in Estonia to vote online for parliamentary elections. Citizens are required to insert their nationally-mandated ID cards into readers attached to their computers so that their identities can be verified. The new record for e-votes was set during the parliamentary

elections in March 2011, when 140,846 people cast their votes electronically, which represented 24.3% of the total population who voted. In 2011, the Estonian Parliament voted in favor of a measure that would allow citizens to vote via mobile phone in the next Parliamentary election. In order to vote by phone, Estonians receive a special chip for their handsets from the SK Certification Centre, which issues ID certificates and provides the mobile payment and ticketing system used on public transportation. The chip verifies the voter's identity and authorizes them to vote. Estonia's voting system allows for multiple votes: an e-voter can cast his/her vote again electronically and the previous vote will be deleted.⁶¹

While comprehensive coverage of the wide range of mobile applications that have been developed by governments around the globe is not feasible within this report, the mobile apps listed above clearly highlight the wide range of mobile information and service opportunities that have been identified by government agencies around the world. The most innovative mobile applications, however, have primarily been advanced in the private sector to date, and enable clients to log in and interact with their account and service histories. Mobile banking apps are an example of sophisticated mobile account-based applications which have had increasingly high adoption and usage rates, and are profiled within the leading self-service practices within this report.

Kiosk channel

Kiosks and self-service technologies have increasingly become a part of citizens' everyday lives in recent years; from automatic banking machines (ABMs) to kiosk-based self-check in at airports and supermarket checkouts. In a study done by Forrester, 64% of U.S. online adults expressed interest in in-store scanners that can scan purchases, give discounts, and allow automatic checkout without waiting in line and 61% are interested in scanning and paying for purchases in a self-service aisle.⁶²

The following figure highlights the use of kiosks as a public sector channel for service delivery in key regions around the world today:

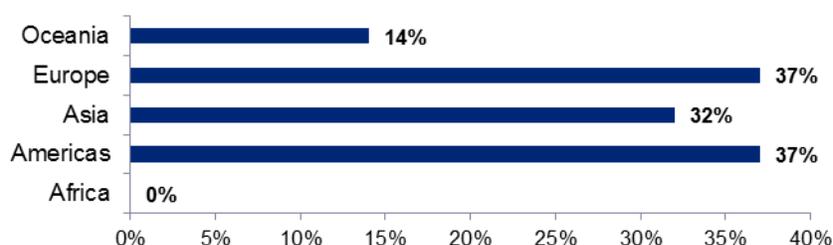


Figure: Countries using kiosks as a channel for delivering public services
Number of countries in each region (as % of Total)⁶³

Whether assisted or simply self-serve, service kiosks and computer terminals are generally used as an access point for online services. For this reason, many of the leading self-service practices that are relevant for e-services also apply to the kiosk channel.

Impact of kiosks on other channels

Government agencies around the world have indicated that kiosks have been advantageous in reducing inquiries through the in-person retail channel and encouraging and supporting citizens to access online services.⁶⁴ In 2010, the number of bank-owned automatic banking machines (ABMs) in Canada was approximately 17,200. However, banks increasingly find that ABM usage is declining due to the rapid uptake of online banking services and the increasing shift away from a cash-based economy.⁶⁵ Kiosks are

⁶¹ Estonian Government Website, Estonian e-voting system (2012). Accessed at: <http://estonia.eu/about-estonia/economy-a-it/e-voting.html>

⁶² Forrester, Consumer Usage Of Kiosks And Self-Service Checkout Tools (2009).

⁶³ Ibid.

⁶⁴ Deloitte, Improving Access to Digital Government Services through Kiosks (2012).

⁶⁵ Deloitte Final Report and Forrester (2010).

now seen as rapidly being replaced by mobile self-service applications and well-executed online e-services which can be easily accessed from the home. While kiosks can be very valuable within specific high volume, low complexity scenarios (e.g., flight ticketing, parking ticket payments, etc.), they are less valuable when they are underutilized or developed only for a specific purpose. Historically, kiosks have been relatively expensive to develop, inflexible, and can rapidly become antiquated.

Many governments have seen the investment in kiosks as a “transitional” investment that has helped populations begin to change the way that they view accessing government services. As public service kiosks have often been supported by onsite staff, they have provided a bridge in the rapidly changing digital environment for less technologically savvy citizens to begin to self-serve online. We believe that Canadian governments should focus primarily on the creation of in-person computer centres that can educate citizens on self-service access and be used to divert in-person transactions during busy hours.

It is worth noting that kiosks must be designed to be secure in order to be trusted and used by citizens. The importance of such assurances is emphasized by occurrences such as ServiceOntario’s recent termination of its kiosk strategy based on security violations at several kiosks.⁶⁶

Kiosk transactions types

Public and private primarily use kiosks to enable self-service and divert from counters within in-person service environments. In addition, specialized kiosks may be developed to serve a specific high volume, low complexity function, such as bank fund withdrawal and transfers, airline check-in, parking ticket pre-payment, or supermarket checkout.

In-person centres which feature computer terminals (PC kiosks) allow citizens without home-based access to the internet to access online government services in an assisted-service environment. For example, the Ministry of Social Development in New Zealand has invested in creating access points to online government services through the rollout of “PC kiosks” in selected branch locations.⁶⁷ Similarly, CitizenConnect is an initiative in Singapore that aims to increase the reach of government electronic services to Singapore residents, especially for those with difficulties transacting online. CitizenConnect centres were set up at accessible locations where residents live or work, and are equipped with two personal computers with internet access and online payment peripherals such as cashcard readers. CitizenConnect officers are available to offer help and guidance so that the client will be better equipped for future self-service transactions.⁶⁸

Kiosks are also being used by governments to speed throughput across a diversity of transactional environments. For example in Bermuda, a customer kiosk solution was created that allows returning travelers to bypass the lines at the Customs Desk and declare and pay duty taxes at self-service kiosks. The Duty Payment Kiosks lead travelers through a process of declaring items purchased abroad by entering quantities and amounts as defined by the paper Declaration Form. A rules-based engine then converts the entered currencies into Bermuda dollars and calculates any duty taxes required of the purchases. The traveler can then insert a debit/credit card and authorize the payment by signing the signature capture device. A payment receipt is then printed, which the traveler submits to a Customs Officer when leaving the Arrivals Hall.⁶⁹

In Portugal, the Postal Services of Portugal (CTT Correios de Portugal) set out to develop a 24-hour postal office that could perform all the services that customers traditionally could only get at the counter. Using Escher’s RiposteKiosk software, CTT Correios was able to create one kiosk that could provide all the services it needed to maintain, including mail services, pricing, label printing, bill payment and financial services. The self-service office is adjacent to CTT Correios’ headquarters in Parque das

⁶⁶ ServiceOntario website, “ServiceOntario Kiosks Temporarily Shut Down “ (2012). Accessed at: <http://news.ontario.ca/mgs/en/2012/06/serviceontario-kiosks-temporarily-shut-down.html>

⁶⁷ Deloitte, Improving Access to Digital Government Services through Kiosks (2012).

⁶⁸ Singapore egov, 3 Singapore Initiatives Among World’s Top 20 Innovations (2007). Accessed at: <http://www.egov.gov.sg/media-room/media-releases/2007/3-singapore-initiatives-among-world-s-top-20-innovations>.

⁶⁹ Livewire, Bank of Bermuda, Case Study: Custom Design (no date).

Nações, Lisbon, and also doubles as a retail location, where it sells items through a vending kiosk or a standard retail self-checkout.⁷⁰

Telephone (IVR) channel

Interactive voice response (IVR) is a computer-based system which allows callers to use their telephone keypad or voice commands to retrieve and/or provide information without assistance. Public and private sector organizations use IVR for a variety of self-service purposes, from call routing which directs calls to the appropriate resource through responsive telephone directories to proactive auto-reminders via telephone for service updates (e.g., renewals) and payments. IVR interfaces present callers with a list of options and questions about the nature of their call; provide answers to frequently asked questions; and direct calls for further assistance to specific interactive call flows and/or trained specialists. Menu options can be made available for specific times of the day, days of the week, holidays, special events or multiple languages.

Global demand for a foundational IVR solution (Automatic Speech Recognition) is expected to increase at a robust double-digit growth rate during the 2007 through 2015 period and the global speech technology market is expected to reach US\$20.9 billion by 2015.⁷¹ IVR technologies are foundational in multi-channel self-service strategies, but often are correlated with lower customer satisfaction due to poor call flow, slower service times, and a less personal feel.

An IVR system call flow identifies all the resources available to callers, such as recorded announcements, access to self-service transactions, or live support. The call flow is, in essence, a road map to how callers will be served from beginning to end. A good call flow design provides optimum service and the best customer experience. It is a prerequisite for planning and implementing an IVR service for a contact center. In a usability test for a telecom company's IVR, Human Factors International (HFI) found that 40% of user failures occurred at the first menu level. Failures were attributed to unclear menu descriptions and memory overload.⁷² A poorly designed user interface convinces callers that the IVR is unable to provide them with the relevant information and results in high opt-out rates to a live agent. Therefore IVR systems should be designed to get users to their goals as fast as possible. For example, American Airlines' Remember Me flight information IVR application identifies the caller based on his or her telephone number. If the caller has an upcoming trip, the system offers the user the option for the status of her upcoming flight before the standard IVR menu. As a result of this simple change, American Airlines found that the call abandonment rate went down 25%.⁷³

Usability tests conducted during the redesign of Bell Canada's phone self-service system revealed that customers would give up after three failed attempts at a task. Managers turned this finding into a guideline requiring customers to be transferred to a rep after two failed attempts that contributed to a 79% decline in customer complaints to executives.⁷⁴

In 2011, Gartner found that most companies weren't planning to invest in their IVR systems, and only one-fifth of the customer experience professionals surveyed had plans to invest in the phone self-service experience in 2011.⁷⁵ However, it has been found with frequency that consumers use automated phone systems regularly and are deeply dissatisfied with what they experience. Governments should continue to explore opportunities to improve their IVR service and call flows. For example, four techniques that can improve both performance and satisfaction of their interactive voice response (IVR) systems: identifying callers and using information to predict their requests; working closely with call centre employees to identify IVR improvements and smooth transitions; creating actionable outbound calling; and using

⁷⁰ KioskMarketplace, Portugal opens 'never-closing post office' (2012). Accessed at: <http://www.kioskmarketplace.com/article/194541/Portugal-opens-never-closing-post-office>

⁷¹ PRWeb, Global Speech Technology Market to Reach US\$20.9 Billion by 2015 (2011).

⁷² E. Schaffer, and J. Sorflaten, "Interactive Voice Response (IVR) Case Study: Testing Your Telephone-Based e-Commerce Support," *Journal of Electronic Commerce*, vol. 12, no. 2.

⁷³ Forrester, *Reviewer's Guide: IVR User Experience Review 8.0 (2010) and Top Customer Experience Takeaways From SpeechTEK (2009)*.

⁷⁴ Forrester, *Reviewer's Guide: IVR User Experience Review 8.0 (2010)*.

⁷⁵ Gartner, *The State Of Customer Experience (2011)*.

speech analytics, call listening, usability testing, and expert reviews to continuously improve an organization's IVR system.⁷⁶

In recent years, Voice XML-based IVR has expanded at a rapid pace. VoiceXML is a web-based markup language for representing human-computer dialogs and integrates improvements in speech recognition and text-to-speech synthesis. In addition, more Interactive Voice and Video Response (IVVR) solutions are expected as 3G and 4G mobile technologies become more widespread, and as clients are more easily able to place video calls while on the go.⁷⁷

The use of IVR will continue to be highly applicable to Canadian governments, and should be integrated into contact centre operations. Ideally, IVR call flows and systems are supported by a well-developed knowledgebase which is flexible and can be deployed across a variety of client service channels (e.g., internet, mobile, and IVR). With a high level of integration, the same knowledgebase can be used to dynamically generate FAQs and responses online, answer questions through IVR via speech recognition and processing, and serve as a knowledge tool for contact centre agents who are fielding live questions from callers.

In addition, IVR cloud-computing based services will continue to drive down cost and increase the speed of deployment of IVR systems for all organizations. Canadian governments should evaluate their current IVR systems as well as undertake cost/benefit analyses based on outsourcing of their IVR solutions and/or using cloud-based solutions. Governments should also be sure that business and data analytics are integrated into IVR systems in order to inform outcomes and return on investment (ROI) analyses.

Impact of IVR on other channels

While less innovative than other self-service technologies may appear today, the use of IVR systems results in proven increases in operation efficiencies and customer experience, if information is made more easily and quickly available than in other service channels. For routine questions and account checks, IVR decreases overall cost to service clients by provide automated responses and access to key information, 24/7. If designed appropriately, the use of IVR will quickly decrease the number of higher cost in-person call centre contacts for frequently asked questions (FAQs).

Of note, the rise of mobile phones has increased the use of traditional IVR systems, even as smartphones and electronic tablets have created additional avenues of providing customer support. The ability to access information over the phone remains one of the most convenient ways of doing so for the majority of service clients.⁷⁸

IVR transaction types

Public and private sector organizations use IVR for a variety of self-service purposes, from call routing/auto attendants who help to direct calls to the appropriate resource through responsive telephone directories to proactive auto-reminders via telephone for license, tax, and ticket updates and payments. In emergencies, governments can use emergency notification IVR services to alert the public about disasters or events as well as relay any information on evacuation measures. Leading public and private organizations use IVR systems for information verification or client case status checking and automated updates. For example, Ontario's Ministry of Health and Long-Term Care has an IVR-driven automated telecommunications system designed to allow providers to confirm the validity of a health number/version code using a touch-tone telephone.

IVR-type systems can also be used to support proactive outbound notifications that are tied to actionable items. For example, a healthcare provider uses outbound calls to inform patients to take their medication and asks them to confirm that they did. If they don't respond, the provider will follow up with a call from a

⁷⁶ Gartner, Top Ways to Improve Phone Self-Service Experiences (2011).

⁷⁷ Forrester, Reviewer's Guide: IVR User Experience Review 8.0 (2010).

⁷⁸ Forrester, Top Customer Experience Takeaways From SpeechTEK (2009).

live person. Forrester Research provides the following suggestions regarding proactive IVR-based self-service opportunities:⁷⁹

Opportunity	Description	Example
Notify that something is due	If the company knows a user has a time-specific upcoming (or past-due) event, the system can proactively offer a path to complete that goal as the first option.	When a client calls her pharmacy, the system alerts her that she has a prescription that's due for renewal and offers her the option to renew it right then.
Continue a process	When the company knows a user has started a process, whether in the same channel or in a different channel, the system can proactively offer the status of that process in the beginning of the call.	When a user who has ordered a product on a retail site calls in, the system acknowledges that he has an open order and provides the status of the order proactively, letting him know when to expect the package in the mail.
Acknowledge frequent tasks	If the system detects that the same caller has called multiple times for the same repeatable activity or has asked for a specific type of response in the past, the system could then offer that option as the default.	Each time a customer calls an airline before a flight, she requests a text message with her flight information. The next time she calls before a flight, the system proactively offers to send her a text message with the information.
Cross-sell or upsell	Based on knowing who the user is and what he's trying to do, the system gives a cross-sell or upsell that offer that is relevant to that user.	At the end of making a funds transfer at his bank, a customer gets and offer for a related product.

Key self-service transaction characteristics

Self-service transactions and interactions are increasingly available to citizens and businesses in both the public and private sectors. In general, services chosen for self-service delivery are of high value to clients, high volume, relatively standardized, and low to medium complexity. General information and FAQs are ideally provided to the public through self-service access points (e.g., online, mobile, or IVR) rather than via expensive in-person retail channels. Wherever possible, new services should also be “designed for digital”. It is easier and less risky to build a service from scratch for use in digital self-service channels than it is to transition an existing service into electronic channels.

Deloitte has found that it is essential to tackle channel shift towards citizen self-service on a transaction-by-transaction basis, rather than a service-by-service basis. Within a broad service there are likely to be some processes with transactions that are well suited to digitization, and others that are not. The types of transactions that are suitable for shifting to digital channels and self-service models have readily identifiable characteristics, which are aligned to a strong business case for digitization as well as a clear benefits realization strategy. For example, if an organization has a high volume of intake for applications which require a manual adjudication or review of evidence, then the intake process may be digitally enabled through an e-fillable form and the scanning and upload of evidence while the adjudication process remains manual.

Below are the six key features which are often used to evaluate which services should be presented within digital self-service channels for service delivery.⁸⁰ These service characteristics must be considered when evaluating services – or aspects of the business processes aligned with services – for digital enablement.

Characteristic	Description
Volume	<ul style="list-style-type: none"> Given the high fixed costs of creating self-service channels, greater volume will give them greater economic viability.
Standardization of process	<ul style="list-style-type: none"> Self-service is less viable if service delivery needs to respond to unpredictable demands.
Real-time need for information	<ul style="list-style-type: none"> The greater the need for real-time information, the better aligned a service will be to self-service delivery. The digital capabilities associated with self-service are generally faster than manual business processes.

⁷⁹ Forrester, Top Ways To Improve Phone Self-Service Experiences (2010).

⁸⁰ Deloitte UK, Choosing Fewer Channels: Public service channel options in an age of austerity (2011).

Characteristic	Description
Complexity of information	<ul style="list-style-type: none"> Personal contact is generally more appropriate when dealing with more complex information.
Need for the “human touch”	<ul style="list-style-type: none"> Services requiring sensitivity or human judgment are more appropriately delivered in person.
Propensity of client to self-serve	<ul style="list-style-type: none"> Clients have different capabilities and access to self-service channels. Their propensity to self-serve often correlates to distinct demographics such as age or class.

Multichannel strategies

Multichannel strategies, which span individual channel strategies, typically include the following:

- **Analysis of customers:** analysis of customers includes an analysis of current and desired future state customer segments, service needs, satisfaction levels, and channel usage/preferences.
- **Analysis of services:** analysis of services to understand which services (and/or functions) should be presented within each channel. This analysis will include developing an understanding of the key features of services, such as variability and complexity, which will influence service interactions.
- **Analysis and design of channels:** analysis of channels includes an analysis of current and desired future state services and effective alignment to channels as well as a comprehensive understanding of the key functions within each channel, alignment of customer segments to channel (i.e., “right-channeling”), channel usage trends, and channel economics. Design channels to meet identified channel and customer needs, factoring in targeted cost reduction, improved customer experience, and improved access.
- **Development of performance measures and analytics:** develop capabilities to measure key information and perform analytics on data collected from within and across service channels. This includes identifying the measures/metrics will allow for performance management and monitoring as well as business intelligence. Incentives should be incorporated as a key element of performance measures and service delivery outcomes to promote multichannel success.
- **Build key organizational capabilities:** in order to sustain an effective multichannel strategy, organizations must have strong project management; channel-based strategic planning; service delivery capabilities, including information technology solutions; organizational coordination across channels; financial management; marketing and communications; change management; and training. Data should enable a “single view of the customer” and measurements should enable tracking of channel accounting and outcomes – database maintenance and integration is foundational to success. Organizational charts may need to be reorganized to force traditionally siloed managers and channels to coordinate and integrate.

Appendix B

Leading practice case studies

Federated Identities

Capability	Integrated Authentication & Identity Management
Leading practice	Federated Identities
Description & case example	<p>Federated identity solutions enable “identity statelessness,” which Forrester research defines as follows: “networked services achieving access control and personalization goals by consuming just-in-time identity data and services from authoritative sources living in other organizational domains, at the moment users and applications approach, removing the need for long-term identity data replication.” There is broad consensus across public and private sector organizations that the starting point for digital transformation is a federated digital identity that can be used across sectors and organizations.</p> <p>In 2012, Service Canada began using the SecureKey Concierge (SKC) identity broker service. This allows Canadians to access services using their online banking credentials and represents the first federated identity implementation in Canada targeted at citizens. It takes the user approximately five minutes to complete the SecureKey initiation. After being enrolled, the link between the bank credential and the service is maintained, which speeds verification in future interactions.</p> <p>The Danish Government allows citizens to access all government self-service options through a federated identity management solution – NemID and NemLog-in – which is shared across the banking sector and all three levels of government (municipalities, regions and the State).</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div data-bbox="495 1102 808 1276" style="text-align: center;">  </div> <div data-bbox="987 1102 1312 1276" style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div data-bbox="459 1293 846 1320" style="text-align: center;"> <p>Figure: SecureKey Concierge Website</p> </div> <div data-bbox="943 1293 1357 1346" style="text-align: center;"> <p>Figure: Danish Agency for Digitisation & NemID Logos</p> </div> </div>
Considerations	<ul style="list-style-type: none"> • Digital identity management will be highly relevant to Canadian governments as they move forward with increasing digital transformation efforts • Federated identity management must be accomplished in a manner that upholds Canadian values, including the protection of privacy and security • Major private sector organizations share an interest in identifying a universal solution for federated identity management; in interviews with major Canadian banks they highlighted their interest in working together to find a shareable solution • Digital identity, when realized, can accomplish identification without the need for paper documents or in-person visits
Sources	<ul style="list-style-type: none"> • Treasury Board of Canada Secretariat, Federating Identity Management in the Government of Canada: A Backgrounder (2013). • Code Technology, Service Canada and SecureKey Concierge (2012). • Forrester, The "Venn" Of Federated Identity (2011). • Forrester, Identity and Access Management Predictions: 2011 And Beyond (2011). • UK Government Gateway Website (2013). • Danish Agency for Digitisation, Digital Signature Website (2013).

Multi-Factor ID Data Verification

Capability	Integrated Authentication & Identity Management
Leading practice	Multi-Factor ID Data Verification
Description & case example	<p>Identity verification can be established by using multiple trusted government identity databases to confirm information supplied by clients during service interactions. In these instances, data is not held by the organization, but rather data interfaces are used to “bounce” information against other systems for comparison. Such tools can set flags based on information discrepancies and create “confidence levels” regarding a user’s identity assurance. The required confidence levels can then be used to align with specific service offerings: for example, registering a gun would require a very high level of confidence whereas paying a parking ticket would require a very low level of confidence.</p> <p>Australia’s greenid identity verification tool uses five data points from across five government databases to confirm identity and establish identity verification confidence levels. greenid offers solutions to plug into existing online application forms, a complete end-to-end standalone application product, and also a comprehensive administration console that can be used to verify customers in person, over the phone or by receiving ID documents in the mail.</p> <p>greenid business processes support manual verification of identities which cannot be automatically confirmed. The Australia Post is a greenid partner which can be used to provide onsite identity verification.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div data-bbox="451 779 846 968" style="text-align: center;">  <p>greenid.TM</p> <p>Fast, accurate online identity verification to get your customers on their way</p> <p>Done online in an average of 3 minutes</p> </div> <div data-bbox="967 726 1305 989" style="text-align: center;">  <p>On-line verification → Database → Self → Signpost</p> <ul style="list-style-type: none"> <li style="width: 30%;">1. Electoral roll <li style="width: 30%;">2. White Paper* <li style="width: 30%;">3. Transaction history <li style="width: 30%;">4. International <li style="width: 30%;">5. Match lists <li style="width: 30%;">6. Non-individuals <li style="width: 30%;">7. Algorithms <li style="width: 30%;">8. Passport <li style="width: 30%;">9. VEVG <li style="width: 30%;">10. Medicare <li style="width: 30%;">11. Drivers license <li style="width: 30%;">12. Australia Post <li style="width: 30%;">13. Branch <li style="width: 30%;">14. Certified copies </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> Figure: greenid Website Introduction Figure: greenid Verification Process Visual </div>
Considerations	<ul style="list-style-type: none"> Standardized identity verification tools can enable sharing of solutions across an array of public and private organizations Data sharing agreements between government agencies (i.e., the owners of the data) and solution providers must be established in advance of widespread use of such solutions Privacy and data sharing legislature may need to be changed in advance of allowing data to be used as a confirmation source for a third party or cross-governmental identity verification service As data storage does not occur within the service, a high level of privacy is maintained
Sources	<ul style="list-style-type: none"> greenid Website (2013). Deloitte Global Data Management Interview (2012). Global Data Company Website, greenid (2013).

Biometrics – Iris Scanning

Capability	Integrated Authentication & Identity Management
Leading practice	Iris Scanning
Description & case example	<p>An iris scan is a biometric authentication technique that uses the unique patterns on a person's iris to identify them. Because of the complex structure of the capillaries that supply the iris with blood, each person's iris is unique. Due to its unique and unchanging nature, the iris appears to be the most precise and reliable biometric. Iris scanning is so accurate that its error rate is estimated to be only one in a million.</p> <p>Australia's ANZ Bank undertook research which demonstrated that 67% of Australians would be comfortable using a machine that scans your eye to verify identification in place of a pin and 79% would be comfortable using fingerprint technology in place of a pin. Middle eastern banks, including Jordan Commercial Bank and Cairo Amman Bank, have integrated the iris scanning systems into their ATMs.</p> <p>Schiphol Airport in the Netherlands allows travelers to enter the country without showing a passport if they participate in its Privium iris recognition program. When travelers enroll in the program, their eyes are scanned to produce binary iris codes that are stored on a Privium card. At the border crossing, the details on the card are matched to a scan taken of the cardholder's eye to allow the person passage. 90% of Privium members say that they experience greater comfort at Amsterdam Airport Schiphol.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="448 800 857 1026"> </div> <div data-bbox="971 800 1330 1031"> </div> </div> <p style="text-align: center;"> Figure: Jordan Commercial Bank Website & Iris Scanning ATM Technology Figure: Schiphol Airport Iris Scans Overview </p>
Considerations	<ul style="list-style-type: none"> Recently, academics have found a way to recreate iris images that match digital iris codes that are stored in databases and used by iris-recognition systems to identify people – this could be a cause for future security concerns Outcomes can be variable – in the UK, two iris recognition gates were terminated amid criticism that the £4.9 million scheme has failed to cut delays Iris scanning technologies are still relatively expensive, although cost to implement the solution in ATMs is falling rapidly Appropriate uses for the iris scanning solution must be identified and balanced against cost to execute
Sources	<ul style="list-style-type: none"> Newspoll, Survey of 1211 Australians aged 18 and over across all states and territories (2012). Jordan Commercial Bank Press Release, Jordan Commercial Bank To apply Iris Recognition System (2011). Wired.com, Reverse-Engineered Irises Look So Real, They Fool Eye-Scanners (2012). Telegraph Media Group, Iris recognition gates scrapped at two airports (2012). Schiphol Amsterdam International Airport Website, Iris scans at Amsterdam Airport Schiphol (2013).

Biometrics – Palm/Finger Vein Readers

Capability	Integrated Authentication & Identity Management
Leading practice	Palm/Finger Vein Readers
Description & case example	<p>In vein reading, a user's unique, biometric vein pattern image is captured by radiating her or her hand with near-infrared rays for authentication. The reflection method illuminates the finger or palm using an infrared ray and captures the light given off by the region after diffusion through the tissue. This vein pattern is then verified against a preregistered pattern to authenticate the individual.</p> <p>One of the main benefits of vein readers is that, unlike fingerprints which change during childhood, the palm and finger vein pattern is constant throughout a person's life. Scanners operate on near-infrared light to read the vein pattern, which lies underneath the epidermis and so can't be distorted by damage to the skin, age or the wearing of gloves.</p> <p>In Japan, the Bank of Tokyo-Mitsubishi has adopted the palm system for use in its ATMs, while Japan Post, Mizuho Bank and Sumitomo Mitsui Banking Corp. have announced their adoption of a biometrics system that reads the pattern of veins in the index finger to identify customers. Japan's major banks have been using palm and finger vein recognition at cash points, rather than PINs, and have confirmed extraordinarily high standards of accuracy, with false rejection rates of 0.01% and false acceptance rates of less than 0.00008%.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div data-bbox="431 825 873 978" style="text-align: center;">  <p>Figure: Bank of Tokyo-Mitsubishi Website</p> </div> <div data-bbox="1019 774 1279 1024" style="text-align: center;">  <p>Figure: Palm Vein Reader</p> </div> </div>
Considerations	<ul style="list-style-type: none"> • Vein readers benefit from being non-contact – a particular advantage in environments such as health care, where hygiene may be an issue • Cost of these systems is still relatively high – as with all biometric solutions, appropriate uses for the technologies must be identified and balanced against cost to execute • Accuracy rates are incredibly high, which can offset citizen concerns about privacy/security
Sources	<ul style="list-style-type: none"> • SourceSecurity.com, Biometrics – a view of the future (2013). • BiometricNewsportal.com, Palm vein biometric systems (2013).

Biometrics – Voiceprint Recognition

Capability	Integrated Authentication & Identity Management
Leading practice	Voiceprint Recognition
Description & case example	<p>Voiceprint recognition uses a microphone to gather a unique constellation of a user's vocal features (e.g., inflection, pitch, dialect) in order to recognize the speaker. This authentication method provides a biometric second factor on top of any other verification factors being used by an organization (e.g., passwords, certificates, etc.) as it reflects a unique aspect of the user (i.e., voice). Voiceprint is useful in IVR/telephone and computer-based scenarios, especially self-serve transactions (e.g., account access or updates, password reset, service transactions, etc.).</p> <p>Financial institutions have identified voice biometrics as one of the best means to secure its client accounts and financial information. The National Australia Bank (NAB) has focused its biometrics attention on voice recognition instead of fingerprinting for customer identification, because it's much more secure and reliable. NAB clients can opt to use their voice as an identifier in lieu of a PIN. Today, there are around 140,000 customers using voice recognition for phone banking. The bank is in the process of rolling out a new, easier speech recognition solution, which is predicted to save customers 15 million minutes per year, collectively. Australia's largest telecom, Telstra, and its ANZ Bank are also using voice recognition solutions.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div data-bbox="440 768 865 999" style="text-align: center;">  <p>Figure: nab Website</p> </div> <div data-bbox="1036 768 1266 999" style="text-align: center;">  <p>Figure: Voiceprint Recognition Icon</p> </div> </div>
Considerations	<ul style="list-style-type: none"> • Financial services companies and retailers, for example, are reporting a rise in call center fraud, thereby signaling the importance of this issue to Canadian governments • Voice recognition requires a certain level of effort at the outset – organizations to register their clients voice patterns and correlate them to personal data for incorporation into a database • Voice recognition is high quality – voice has around 120 security points, compared to fingerprints, which only have about 40 security points • Implementation of voice recognition can require a moderate investment in technology solutions as well as the information storage capabilities
Sources	<ul style="list-style-type: none"> • Forrester, TechRadar™ For Security Pros: Strong Authentication (Q1 2012). • BiometricUpdate.com, Voice Verification (2013). • Aite Group, Knowledge-Based Authentication: Use and Trajectory in E-Commerce, Healthcare, and Financial Services (2012). • ZDNet, NAB touts voice as superior biometrics over fingerprints (2012). • Technology Spectator, NAB speaks loud and clear on voice biometrics (2012).

Role-based access

Capability	Integrated Authentication & Identity Management
Leading practice	Role-based Access
Description & case example	<p>One of the most challenging problems in managing large networks is the complexity of security administration. Information security requires an infrastructure that ensures people are who they say they are and provides users their appropriate level of access in order to conduct their assigned duties efficiently. Role-based access control has become one of the predominant models for advanced access control because it reduces cost and increases privacy and security for end users.</p> <p>Role-based access is the principle of controlling access to information/data entirely through “roles” created in IT systems that align to job functions (e.g., data entry clerk), assigning permissions to those roles, and then assigning those roles to employees or the organizations in which they work. Organizations must balance the benefits and costs of granting internal and external users IT permissions to arrive at the desired access control policy. They also must protect their IT resources from breaches of security, both accidental and intentional. In a survey, 54% of organizations were found to use enterprise roles via an identity management solution that manages permissions for users across multiple applications and systems. In 2009, it was estimated that RBAC saved U.S. organizations \$1.8 billion from more efficient access control policy maintenance.</p> <p>Launched in 2001, Estonia’s X-Road middle-tier data exchange service layer for government agencies allows for interconnectivity through role-based access to all trusted public and private databases. The X-Road was developed to make queries to the different databases, but has now evolved into a tool which can also write to multiple databases, transmit large data sets and perform searches across several databases. In 2011, the X-Road provided access to 67 different databases and 687 online services. The X-Road enables secure access to public services on the internet with a digital signature for e-elections, e-schools, e-government, e-police, e-health and the e-tax office. Currently there are more than 600+ organizations, public registers and databases connected to the X-Road, including private sector banking partners.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div data-bbox="451 993 841 1178">  </div> <div data-bbox="948 1031 1325 1142">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div data-bbox="521 1192 773 1220" style="text-align: center;">Figure: Estonian X-Road</div> <div data-bbox="943 1192 1333 1245" style="text-align: center;">Figure: Estonian Information System's Authority Logo</div> </div>
Considerations	<ul style="list-style-type: none"> • RBAC enables greater shared responsibility and more effective and efficient permissions management for IT and business operations • It can be a challenge to get roles right, and developed at the right level of complexity, within organizations and across service delivery partners • For many organizations, especially medium and large ones, maintaining an access control policy requires a substantial dedication of resources because of the large number of users, objects, and systems • In many jurisdictions, information privacy and internal-controls regulations have been enacted that specify access control policy characteristics with which systems must comply • The principal source of economic benefit is often from more efficient access control policy maintenance and certification
Sources	<ul style="list-style-type: none"> • National Institute of Standards and Technology (NIST), Role Based Access Control (RBAC) and Role Based Security (2012). • RTI International, Economic Analysis of Role-Based Access Control (2010). • E-Estonia Website, X-Road (2013). • Design Wales, Case Studies in Design Policy & Programmes (2011).

Multi-channel Management

Capability	Multichannel Management
Leading practice	Multichannel Strategies & Solutions
Description & case example	<p>Online Account: The online BC Hydro “MyHydro” allows for account management, view bills and consumption, account updates, DSM reward status, and notifications – a multi-account view is enabled for businesses, with role-based information access. Real-time alerts are provided to customers (e.g., price/rate tier, usage, outages). One primary email inbox streamlines communication with customers.</p> <p>IVR System: BC Hydro’s current IVR systems are simple and focus primarily on providing information to customers (e.g., up-to-date outage information), rather enabling account access for updates or transactions. There is a 35% containment rate within the IVR self-serve (i.e., calls are not transferred to live agent, but rather contained within the IVR system).</p> <p>Mobile Services: Today, a mobile-enabled website provides up-to-date information on outages and expected resolution timelines. There are no mobile-enabled transaction services today; this is a key consideration for BC Hydro’s future multichannel service strategy.</p> <p>To note, BC Hydro does not support in-person services, or self-service kiosks, although payments can still be dropped off by customers in a few offices. BC Hydro stopped providing in-person services in 1998 – negative public feedback rapidly subsided after a few months.</p> <p>Channel Strategic Plans & Initiatives:</p> <ul style="list-style-type: none"> • BC Hydro plans to move 40% of call centre volumes to the web – migration target is based on high customer adoption of online interactions and paperless accounts • Average 5 year pay-back period for channel-based business case ROI calculations • Increased investment in marketing and outreach for digital services • Increased tracking of channel data and use of client analytics • Live call centre service agents promote self-service offerings to customers when they call in – pilot campaigns have achieved uptake near 20% • Marketing initiatives drive customer behaviour – the last direct mail campaign for digital services drove a 4% increase in paperless billing • Customer segmentation analytics and strategies are increasingly being used – eleven “composite personas” represent a hybrid of customer and digital personas
Considerations	<ul style="list-style-type: none"> • BC Hydro’s Customer Service Team partners with the Technology Team for business case development, including initiatives to increase digital services and self-serve options – development of business cases for digital initiatives is crucial to success • The company is increasingly using data analytics to support its channel decision making
Sources	<ul style="list-style-type: none"> • Deloitte Interview, BC Hydro (2013). • BC Hydro Website (2013). Accessed at: http://www.bchydro.com/index.html

Multichannel Strategy

Capability	Multichannel Management												
Leading practice	Multichannel Strategies												
Description & case example	<p>The Australia Government's Access and Distribution Strategy describes the whole of government service delivery vision and provides the conceptual and practical tools to enable integrated multichannel service delivery.</p> <p>A supporting multichannel resource accompanied the strategy: <i>Managing Multiple Channels</i>, a guide for the strategic assessment and development of service delivery channels. This guide highlighted the key elements of a channel strategy, which can enable agencies to manage service delivery to customers through the most appropriate channel – channel strategies have two key foci:</p> <ul style="list-style-type: none"> • Information and experience consistency – although customers may want to continue to use a variety of channels, they expect consistency in their experiences when interacting with government, no matter which channel they use. • Cross channel insight – customers expect each channel to be attuned to recent interactions and transactions that were initiated through alternate channels. <p>The phases and associated elements below are the foundation of the Australian Government's multichannel strategy guide:</p> <table border="1" data-bbox="431 785 1367 1371"> <thead> <tr> <th>Phase</th> <th>Purpose</th> </tr> </thead> <tbody> <tr> <td>One: Situation Analysis</td> <td> <ul style="list-style-type: none"> • To understand and process information an agency currently possesses regarding services, channels and customers. • <i>Consider:</i> services, channels, customers, customer segments, channel usage, and channel economics. </td> </tr> <tr> <td>Two: Channel Design</td> <td> <ul style="list-style-type: none"> • To align channels with customer needs, service characteristics and agency priorities. • <i>Consider:</i> customer needs and service characteristics. </td> </tr> <tr> <td>Three: Measurement Design</td> <td> <ul style="list-style-type: none"> • To determine the measures of success. • <i>Consider:</i> key metrics, targets, and customer satisfaction. </td> </tr> <tr> <td>Four: Implementation</td> <td> <ul style="list-style-type: none"> • To develop a plan for implementation of a channel strategy. • <i>Consider:</i> project management, operational capabilities, financial management, communications, change management, and training. </td> </tr> <tr> <td>Five: Refinement</td> <td> <ul style="list-style-type: none"> • To evaluate and refine the channel strategy. • <i>Consider:</i> continuous improvement, future usage patterns, and public messaging. </td> </tr> </tbody> </table> <p>Figure: Australia Government's Channel Strategy: Overview of Phases</p> <p>In addition, the Australian Government's <i>Service Delivery Capability Model</i> is a guide for mapping an agency's capability to deliver multi-agency, multi-channel and citizen-centric services. The capabilities explored within this model include: people; business practices; facilities and equipment; information and communication technologies; knowledge; and accountability and governance. These capabilities are foundational to delivering an effective and efficient multichannel experience to clients.</p>	Phase	Purpose	One: Situation Analysis	<ul style="list-style-type: none"> • To understand and process information an agency currently possesses regarding services, channels and customers. • <i>Consider:</i> services, channels, customers, customer segments, channel usage, and channel economics. 	Two: Channel Design	<ul style="list-style-type: none"> • To align channels with customer needs, service characteristics and agency priorities. • <i>Consider:</i> customer needs and service characteristics. 	Three: Measurement Design	<ul style="list-style-type: none"> • To determine the measures of success. • <i>Consider:</i> key metrics, targets, and customer satisfaction. 	Four: Implementation	<ul style="list-style-type: none"> • To develop a plan for implementation of a channel strategy. • <i>Consider:</i> project management, operational capabilities, financial management, communications, change management, and training. 	Five: Refinement	<ul style="list-style-type: none"> • To evaluate and refine the channel strategy. • <i>Consider:</i> continuous improvement, future usage patterns, and public messaging.
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Five: Refinement	<ul style="list-style-type: none"> • To evaluate and refine the channel strategy. • <i>Consider:</i> continuous improvement, future usage patterns, and public messaging. 												
Considerations	<ul style="list-style-type: none"> • Government can learn from the experiences of the Australian government and can leverage these tools as they consider and develop their own multichannel strategies and service delivery capabilities. • Channel strategies need to be developed in the context of local government policies (e.g., privacy regulations), cultures, technology constraints, and key stakeholder working environments. 												
Sources	<ul style="list-style-type: none"> • Australian Government, Delivering Australian Government Services: Access and Distribution Strategy (2006). • Australian Government, Delivering Australian Government Services: Managing Multiple Channels (2006). • Australian Government, Delivering Australian Government Services: Service Delivery Capability Model (2006). 												

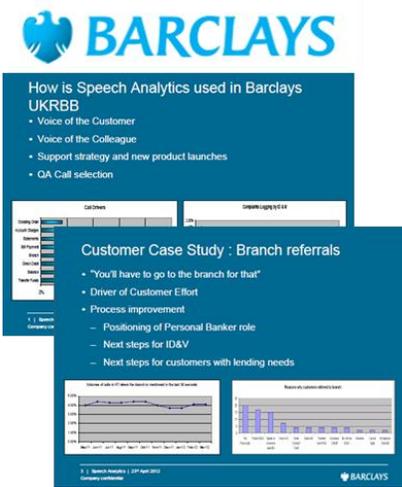
Channel Markers

Capability	Seamless Multichannel Management
Leading practice	Channel Markers
Description & case example	<p>Clients may interact with organizations through an array of channels, including the web, mobile devices, kiosks, or over the phone – even during one service interaction. 68% of the Canadian population uses two or more channels to access their banking services on a monthly basis (compared to 20% in the U.S. and 16% in Europe).</p> <p>Clients may have different experiences from channel to channel or agent to agent. In order to understand what is influencing client interactions, organizations must be able to track client interaction movement across channels and relate these interactions to one another in order to interpret the big picture effectively.</p> <p>Tracking client interactions across channels requires sequencing the interactions and using a unique identifier, or marker, that is tied to the interaction as it moves across channels. As a result of understanding cross-channel migrations, organizations will better understand where to prioritize service and user experience redesign in order to streamline delivery and keep clients interacting in the lowest cost to service channels.</p> <p>A major Canadian bank is currently investing in the technologies capabilities that will allow for marking and tracking of client interactions across all service channels.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="428 737 846 1016"> </div> <div data-bbox="927 747 1365 1016"> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div data-bbox="436 1037 867 1062"> Figure: Cross-channel Interaction Graphic </div> <div data-bbox="932 1037 1365 1087"> Figure: Charting Client Interactions Across Channels – Illustrative </div> </div>
Considerations	<ul style="list-style-type: none"> • In order to understand how their clients are moving across channels due to service challenges or constraints, Canadian governments must be able to track interactions as they move from one channel to the next • While the private sector is currently leading the desire to obtain this information due to cross-sell and up-sell opportunities, the public sector can also learn from information analytics that result from understanding cross-channel interaction patterns • Increasingly, data and information analytics tools and capabilities can be sources from third party vendors – but the information must be tracked in order to be analyzed downstream and used to create evidence-based channel strategies and initiatives
Sources	<ul style="list-style-type: none"> • Deloitte Interview with a Major Canadian Bank (2013). • Google Analytics, Multi-Channel Funnels (2012). • VizionInteractive.com, Using Google Analytics Multi-Channel Attribution Tracking (2012) • Webtrends.com, Multi-Channel Measurement (2013). • IBM, IBM Digital Analytics Multichannel (2012).

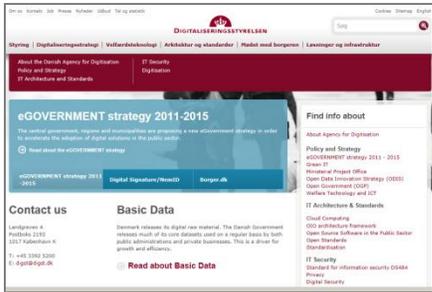
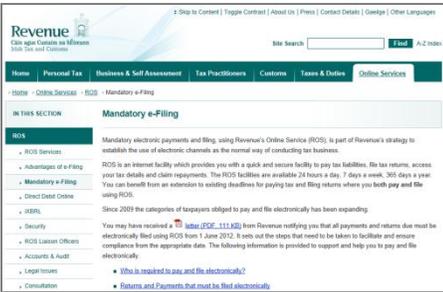
Social Media Data Mining

Capability	Seamless Multichannel Management
Leading practice	Social Media Data Mining
Description & case example	<p>In 2012, approximately 64% of Canadians were found to have a social networking profile. Social media data mining uses profile data to personalize recommendations or content. Examples of social media innovations, marketing and outreach are widely varied.</p> <p>Social media encompasses a broad set of technologies, channels, and platforms, including: blogs, social networks (Facebook, Twitter, etc.), wikis, video, podcasting, discussion forums, photo sharing, gamification and popular challenges and competitions. Increasingly, organizations are leveraging these platforms and connected communities to mine social media data to predict client trends, preferences, or upcoming service needs.</p> <p>Canadian auto classifieds Autotrader created the autolyzer Facebook app, which uses data from users' Facebook profiles (including recent photographs, social activities, comments, and interests) to generate three vehicles available for sale which suit their lifestyle and personality. The app is designed to help people navigate through hundreds of thousands of vehicles to find the "right one," connecting with Autotrader's claim to have "The Most Cars in One Place". The aim of the app is to drive more business through the Autotrader website by making recommendations based on Facebook profiles.</p> <div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: center;">Figure: The autoLyzer Facebook App Figure: AutoLyzer Options Presentation</p>
Considerations	<ul style="list-style-type: none"> • Many Canadian politicians have a social media presence, and government agencies increasingly have Twitter and/or Facebook accounts • As governments continue to embrace social media, the need for social media policies is increasingly apparent. Policies need to communicate expectations regarding how social media channels can be used by both agencies and employees • Social media concerns may include security/privacy, employee access, acceptable use, account management, content, legal issues, and employee/citizen conduct • Governments may need to obtain consent from citizens before they can access their social media information and data
Sources	<ul style="list-style-type: none"> • Blogcampaigning.com, What kind of car should you buy? (2012). • The Globe & Mail, What car are you? Find out with this Facebook App (2012). • University at Albany, Center for Technology in Government, Exploring Value in Social Media (2013). • 6S Marketing, The State of Canadian Connectedness: Internet Usage, Mobile, Search, and Social Media (2012).

Speech analytics

Capability	Seamless Multichannel Management
Leading practice	Speech Analytics
Description & case example	<p>Speech analytics helps identify the reasons why clients call an organization and what causes client dissatisfaction. Examples of speech analytics include the following:</p> <ul style="list-style-type: none"> • Real-time speech analytics: analyzes spoken interactions in real-time as they occur. It enables real-time agent guidance for next-best-action, as well as alerts for call intervention. • Phonetic indexing: breaks down speech into phonemes, the smallest units of language, and creates an indexed voice database. It can analyze 100% of call recordings to understand why customers are calling and enables free text search for specific words or phrases. • Speech-to-text transcription: transcription of calls from spoken to written words is a foundation of speech analytics. It enables text and data mining models to uncover root causes and hidden insights in frequently mentioned topics. • Emotion detection: analyzes the voice of the speaker and identifies emotion. • Talk-over analysis: identifies portions of calls in which the customer and agent are talking simultaneously – a common indicator of dissatisfaction. In addition, talk-over analysis identifies periods of silence during calls that may be related to agent knowledge gaps. <p>UK's Barclays Bank has used speech analytics to improve its call centre operations.</p> 
Considerations	<ul style="list-style-type: none"> • The use of speech analytics will benefit Canadian governments not only in their IVR self-service offerings, but also in their call centre and multichannel management strategies • Through greater insights into the challenges faced by clients, service delivery channels and solutions can be better aligned to citizen and business needs • As a result of speech analytics, additional call centre management capabilities may need to be developed, such as teams devoted to client issues, process issues, and quality assurance and risk monitoring • If IVR solutions are speech recognition enabled then speech analytics can be applied
Sources	<ul style="list-style-type: none"> • NICE Website, Innovative Speech Technologies to Unveil Hidden Insights (2013). • Gartner, Invest in Analytics for the Customer Service Agent Work Cycle (2012). • Gartner, Hype Cycle for Contact Center Infrastructure (2012). • Forrester, Real-Time Analytics For Contact Centers (2010). • Barclays, Speech Analytics: UK Retail and Business Banking (2012).

Mandatory digital services

Capability	Channel Migration & Adoption
Leading practice	Mandatory Digital Services
Description & case example	<p>Mandatory e-filings are one mechanism through which governments can legislate required self-service in order to speed uptake.</p> <p>Mandatory electronic payments and filing, using Revenue's Online Service (ROS), is part of Ireland Revenue's strategy to establish the use of electronic channels as the normal way of conducting tax business. The legislation for mandatory e-filing was launched in 2009.</p> <p>ROS is an internet facility which provides Ireland's citizens and businesses with a quick and secure facility to pay tax liabilities, file tax returns, access tax details and claim repayments. The ROS facilities are available 24 hours a day, 7 days a week, 365 days a year. Revenue has used a phased approach to mandatory e-filing by businesses, based on business characteristics (e.g., size) – since 2009 the categories of taxpayers obliged to pay and file electronically has been expanding.</p> <p>The Danish Digital Taskforce has mandated a wide array of citizen and business e-service filings and interactions, including business invoicing, citizen bank accounts for government e-payments, business and citizen participation in the one digital inbox/mailbox initiative and more.</p> <p>In 2012, the Canada Revenue Agency (CRA) introduced a mandatory e-file requirement in the 2012 federal budget legislation (Bill C-38), which will be effective for 2012 income returns filed after December 31, 2012. The proposal will impact tax preparers engaged to prepare more than 10 income tax returns annually. The penalty for non-compliance is \$25 for each individual return and \$100 for each corporate return that is not e-filed.</p> <div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: center;"> Figure: Government of Denmark e-Government Strategy Website Figure: Ireland Revenue Website – Mandatory e-Filing Instructions </p>
Considerations	<ul style="list-style-type: none"> • Mandatory e-filing is applicable to Canadian governments as CRA is already pushing to legislate mandatory tax filings • In addition, the USA has been investigating the use of mandatory e-filing for certain immigration statuses, based upon newly created online capabilities • As not all citizens will have access to computer terminals, the public sector must make public kiosks available to support mandated online services • In addition, appropriate marketing, communication, consultations, and provision of training and supports may be required to reach digitally challenged populations
Sources	<ul style="list-style-type: none"> • Ireland Office of the Revenue Commissioners Website, Mandatory e-filing (2013). • Chartered Accountants of Canada, Ready or not – Mandatory e-filing required after 2012 (2012). • Government of Denmark, eGOVERNMENT strategy 2011-2015 (2011). • Deloitte Interview, Ireland Revenue (2013). • Deloitte Interview, Danish Digital Taskforce (2013).

Price discrimination

Capability	Channel Migration & Adoption
Leading practice	Price Discrimination
Description & case example	<p>Public and private organizations are increasingly using innovative incentives and penalties to encourage adoption of self-service technologies and channels. Incentives may take the form of better service levels for self-service options as well as lower prices for service in lower cost to serve channels.</p> <p>Fees: Singapore has implemented higher fees for higher cost to serve channels. The Land Transport Authority's Easi ERP m-service charges a S\$4 fee if a motorist pays via the mobile channel for the outstanding cash card violation. However, the customer would have to pay S\$10 if the transaction was done via the counter or S\$8 via the internet.</p> <p>Access: As in-person discussions with customers only accounted for 2.5% of all business in 2011 for the Canada Revenue Agency (CRA), the CRA made the decision to discontinue their in-person payment and inquiry counter services.</p> <p>Guarantees: The Standard Chartered Bank in Brunei has an eight (8) minute standard of service at all retail in-person branches or will donate BND\$1 to charity. They also guarantee to take no longer than 10 minutes to open a bank account. If they do, the company will credit BND\$10 into the client's account.</p>  <p style="text-align: center;">Figure: Standard Chartered Bank (Brunei) Service Guarantees Website</p>
Considerations	<ul style="list-style-type: none"> • While incentives/penalties are often easier to employ in the private sector, these are meaningful tools to help to implement Canadian government self-service strategies • ServiceOntario recently began offering service guarantees complete with a service refund if service levels/cycle time are not met • Canadian government will need to consult extensively with stakeholders in order to understand the impacts of closing service access points and/or changing service fees • In some cases, fee structures associated with services may be legislated, requiring a review of the policies as well as changes to legislation to increase flexibility
Sources	<ul style="list-style-type: none"> • Singapore eGov iGov2010 > Mobile Government Website (2012). • Cape Breton Post, "Revenue Canada no longer offering in-person payment and counter service" (2012). • Canada Citizenship and Immigration Website, Visas & Immigration (2012). • ServiceOntario, Personalized licence plate service guarantee (2012). • Standard Chartered Bank, Brunei Website, 8 Minutes Service Pledge & 10 Minutes Service Guarantee (2013).

Competitions & challenges

Capability	Channel Migration & Adoption
Leading practice	Competitions & Challenges
Description & case example	<p>Public sector organizations should consider the use of competitions and challenges to source public innovations and digital service technologies, especially given that relatively small investments are often required to yield cost saving ideas and new technological solutions.</p> <p>In Singapore, The Enterprise Challenge (TEC) is an initiative that provides funding for testing innovative ideas that have the potential to improve the delivery of public services. The program also assists individuals with innovative ideas in identifying and providing suitable test-beds within the public service. Since its inception in March 2000, TEC has received some 1,400 proposals from public sector officers and from the private sector. These projects cover a broad range of public service areas, including education, healthcare, environment, community, safety and security.</p> <p>Out of the proposals received by TEC, 85 projects have seen some \$32 million invested into them to bring the project to trials. The returns on this investment were manifold, with some estimated \$170 million in cost savings achieved.</p> <p>The TEC initiatives has evolved over time and the Singapore government now holds an array of competitions and open public tenders for vendor proposals and ideas, including:</p> <ul style="list-style-type: none"> • i-Singapore@Work Call-for-Collaboration • Next Phase of Wireless@SG Call-for-Collaboration • Software-as-a-Service (SaaS) Solutions Call-for-Collaboration • Harnessing Data for Value Creation Call-for-Collaboration • Mobile Positioning & Analytics Services (MPAS) • Telehealth Call-for-Collaboration To Develop New Models of Distance Care for the Elderly • Home-based work and smart work centre, and • Green Data Centre Innovation Challenge Call-for-Collaboration. <p>These public tenders offer vendors the ability to present proposals for services, which are then evaluated by the government through an investment and public value/outcomes lens.</p> 
Considerations	<ul style="list-style-type: none"> • Competitions require effective communications and outreach to make vendors and applicants aware of the offering • Governments must effectively communicate the kinds of insights and technologies that they are seeking and, where possible, make data available to inform development of solutions • Some management of contests and competitions is required for execution; funding/investment is required based on contest/competition structure • Relatively low investment by government for what are often significant returns in value and innovation
Sources	<ul style="list-style-type: none"> • Singapore eGov Website, The Enterprise Challenge (2006). • Infocomm Development Authority (IDA) Website, Collaboration and Initiatives (2013).

Intake Wizards & Smartforms

Capability	Robust Business Architecture
Leading practice	Intake Wizards & Smartforms
Description & case example	<p>“Intake wizards” are dynamic, interactive interfaces which lead applications page by page through forms, prompting and guiding users along the way. SmartForms are interactive electronic PDF forms which allow agencies to collect data digitally, and directly import this data into back-end systems. SmartForms can also be dynamic: as users enter information they are presented with sections relevant to their circumstances.</p> <p>Online service intake and application offerings reduce paper applications, postage fees, and substantial manual data entry and processing for organizations. Increasingly, smartforms and intake “wizards” are being designed by organizations in order to increase, speed, and streamline online filings while reducing government data entry burdens. Dynamic online tax “wizards” have been an area of particular success for governments and 3rd providers (e.g., TurboTax).</p> <p>The Australian Government developed a SmartForms Solution, which is an advanced forms capability that provides agencies with the ability to create, publish and maintain their online forms and transactions. A cost/benefit assessment of smartforms projects which made the development assessment process for local businesses easier by placing information and application materials online was undertaken. The analysis found that for every \$1.00 in cost the initiatives delivered around \$10.50 in benefits.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="435 823 873 1066"> </div> <div data-bbox="954 823 1344 1066"> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div data-bbox="493 1083 813 1108"> <p>Figure: TurboTax Intake Wizard</p> </div> <div data-bbox="932 1083 1370 1129"> <p>Figure: Australian Government Smartforms Website</p> </div> </div>
Considerations	<ul style="list-style-type: none"> • The development of smartforms and intake wizards is highly relevant to Canadian governments. Dynamically designed intake wizards help coach clients regarding eligibility during the intake process • Smartforms reduce the total application cycle time, decrease manual data entry for governments, and increase accuracy in data recorded – in particular, there is an opportunity to extend these kinds of functionalities within social services and other harder to service application sectors • Citizens and businesses will experience greater satisfaction with services as a result of personalized recommendations and easier, faster service
Sources	<ul style="list-style-type: none"> • Australian Government SmartForms Home Website (2012). • SmartForms Developer Centre, SmartForms Case Studies: EasyBiz Project (2007). • SGS Economics & Planning, Regulation Reduction Incentive Fund Final Report: Cost/benefit analysis and calculation of savings (2007). • TurboTax Website (2013).

Mobile Payments & Wallets

Capability	Robust Business Architecture
Leading practice	Mobile Payments & Wallets
Description & case example	<p>Mobile banking spans an increasingly innovative and wide array of products, services, and tools, including mobile applications, mobile wallets, smartphone payments, contactless mobile payments, prepaid cards, and more. Mobile banking technologies, applications, and solutions allow citizens to conduct financial transactions while “on the go”. By 2015, mobile banking usage is expected to outpace the online channel for routine transactions.</p> <p>Australia’s ANZ Bank FastPay will be Australia’s first mobile banking app that allows small businesses to more effectively manage their cash flow by securely processing same day settlement of credit and debit card payments using an iPhone or iPad. ANZ goMoney™ allows you to make secure payments to anyone with just their mobile phone number. ANZ also confirmed that it will launch a trial of ANZ mobile wallet, which is a contactless mobile phone payments system using near field communications (NFC) technology.</p> <p>In the UK, Barclays Bank has launched PingIt, which is an easy way to transfer money from person-to-person using only a mobile number. All that is required is: a sort code and account number, verification via PINsentry or a Barclay’s cash machine, and a smartphone with internet access. Bank of America has launched a Mobile Pay on Demand application which enables vendors to accept major credit card payments through their iPhone or Android handsets.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="483 825 824 1115"> </div> <div data-bbox="935 825 1367 1115"> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div data-bbox="451 1129 857 1163"> <p>Figure: ANZ Bank Mobile Payments App</p> </div> <div data-bbox="992 1129 1308 1163"> <p>Figure: Mobile Payment Screen</p> </div> </div>
Considerations	<ul style="list-style-type: none"> • The increasing usage of digital payments by citizens is a trend which Canadian governments will need to be increasingly responsive to • Governments around the globe are developing and deploying mobile payment options for their services • Despite mobile banking’s growing popularity, security issues remain a concern – in a recent ING Direct survey of 700 smartphone users, two-thirds said that security was their biggest concern about mobile banking • Ensuring that mobile banking platforms are secure is a foundational requirement for adoption and use
Sources	<ul style="list-style-type: none"> • BiometricUpdate.com, ANZ to examine use of biometrics for everyday banking (2012). • InfoWars.com, Survey Finds Large Number of Australians Welcome Cashless Society, Retinal Scans for Banking (2012). • ANZ Media Release, No cash, no worries your fingerprint will do, new survey reveals (2012).

Facebook Banking

Capability	Robust Business Architecture
Leading practice	Facebook Banking
Description & case example	<p>Facebook banking is the process of using Facebook as a platform through which to conduct financial transactions, monitor accounts, and more. Facebook banking applications are still relatively limited, but increasingly banks are investing this social media network as an access point for transactions, including person to person payments.</p> <p>Turkey's Deniz Bank introduced the “globally first ever” banking platform on Facebook –Facebook banking. The Facebook banking service offers users online banking functionality, including monitoring of accounts, access to credit card statements, a total view of cash flows and payments, ability to send money to other individual at any point in time, applications for loans and credit cards, an integrated financial and Facebook calendar, and the ability to invite friends to participate in the platform.</p> <p>Functionalities which will be enabled in the future include card and bill payments, gamification, access to mutual funds and FX transactions, mobile wallet top-ups, and social network-based product access (e.g., differential pricing for loans based on the ability to bring friends into the network).</p> <div data-bbox="722 730 1079 1123" data-label="Image"> </div> <p style="text-align: center;">Figure: Deniz Bank Facebook Banking Frontpage</p>
Considerations	<ul style="list-style-type: none"> • Facebook banking is not highly relevant to Canadian governments as it is a leading edge solution which still has limited adoption across the banking sector • However, it illustrates the integration of citizen's social media networks and their professional/service transactions, and how these areas will continue to blur as technologies become more integrated in the future
Sources	<ul style="list-style-type: none"> • DenizBank Press Release, The First Facebook Bank Branch of the World from DenizBank! (2012).

One Stop Shop Web Portals

Capability	Client-focused Service Integration & Bundling
Leading practice	One Stop Shop Web Portals
Description & case example	<p>Easy, streamlined access to government services is a critical driver of citizen satisfaction and channel efficiency. Increasingly, services are not only being migrated online, but are also being integrated into “one stop shop” service delivery environments.</p> <p>The one stop shop service environment enables citizens and clients to have a single access point to information and service transactions. As such, one stop shop service environments seek to unify presentation of services across multiple levels of governments, diverse agencies, and/or internal departments.</p> <p>The U.K.’s GOV.UK website, which replaces the previously existing Directgov and BusinessLink portals and will serve as a single website domain for the majority of the U.K. government. Originally, GOV.UK was born out of a website consolidation project which sought to rationalize up to 75% of existing UK government information sites and cut the cost of remaining sites by up to 50%. GOV.UK is predicted to cost U.K. taxpayers up to £70M less per year than the services that the website is designed to replace.</p> <p>In 2012, the U.K. chose to host GOV.UK through the G-Cloud as part of a £600,000 infrastructure-as-a-service deal to increase flexibility and access.</p>  <p>Figure: GOV.UK Webportal</p>
Considerations	<ul style="list-style-type: none"> • Within the public sector, constructing such one stop shop service portals can feature the challenge of unifying service offerings from across an array of government bodies • This objective is relevant to Canadian governments as well, who increasingly seek to integrate their service offerings • ServiceOntario is a Canadian example of an integrated, cross-ministerial web portal and service delivery strategy within Ontario today • However, government policies, privacy concerns, and legislation often accompany these public sector dividing lines and can create challenges to integration of service offerings and information presentation
Sources	<ul style="list-style-type: none"> • U.K. Cabinet Office, Launch of GOV.UK a key milestone in making public service delivery Digital by Default (2012). • ITNews, “United Kingdom to pull GOV.UK out of beta” (2012). • PricewaterhouseCoopers, Transforming the citizen experience: One Stop Shop for public services (2012). • University of Utah Case Study, Smarter eGovernment: The Economics of Online Services in Utah (2012).

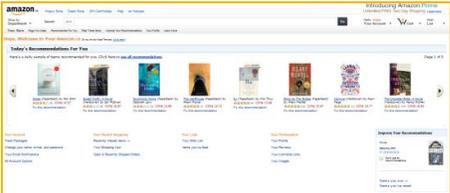
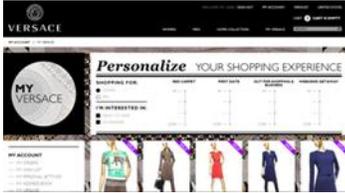
Rapid, Dynamic Search

Capability	Enhanced User Experience
Leading practice	Rapid, Dynamic Search
Description & case example	<p>Search engine optimization is the practice of improving aspects of a website so that commercial search engines (e.g., Google) can find and display appropriate webpages in the results when they're highly relevant to a user's query. In 2012, 4.8 billion Canadian Google searches were performed each month.</p> <p>The key aspects of search optimization that need to be considered include: understanding how commercial search engines work; website and information architecture; building quality website content; and search analytics. Increasingly, gateways to websites are featuring search as the primary visual aspect of the webpage.</p> <p>Utah.gov's front-end web portal is strongly search-oriented. The state identified that search was by far the most utilized feature by its website visitors, used more than two times as often as anything else, based on four years of online analytics.</p> <p>The search function, which was developed in collaboration with major search engine companies, displays results dynamically while typing. Overall, there are approximately 1,500 online services from federal, local and state governments which are searchable and accessible from the Utah.gov portal.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="430 779 875 974">  </div> <div data-bbox="976 779 1321 974">  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div data-bbox="483 989 824 1016">Figure: Utah.gov Search Gateway</div> <div data-bbox="951 989 1349 1016">Figure: ServiceOntario Search Gateway</div> </div>
Considerations	<ul style="list-style-type: none"> • The practice of using search optimization is highly relevant to Canadian government bodies across all levels of government – search is already being used by diverse government ministries and agencies across Canada to improve citizen access • The importance of search across government websites is illustrated by the U.S. GSA's Search.U.S.A.gov, a government-wide internet search capability that is offered free to federal, state, local, tribal, and territorial websites through the USA.Gov Search Services Affiliates Program • As a leading Canadian example, ServiceOntario website now prominently features search upon its gateway webpage
Sources	<ul style="list-style-type: none"> • Google Presentation, Google Engage Conference in Vancouver, BC (2012). • HowTo.gov, Search Engine Optimization (2012). • Center for Information Technology Services and Solutions Website, USA.gov Search Services (2013). • Government Technology, Utah.gov Puts Search Front and Center (2011). • Government Technology, "The Economics of E-Government Services Are Far From Simple" (2011).

Speech Recognition

Capability	Enhanced User Experience
Leading practice	Speech Recognition
Description & case example	<p>Natural language user interfaces (LUI) are a type of computer to human interface where a natural language search uses speech recognition to perform a look-up. Using this type of search you can ask the database a question that describes the information you are looking for. The database then uses a programmed logic to determine the keywords in the sentence by their position in the sentence.</p> <p>Such systems effectively use client spoken words to find information; verify account access; seek answers to routine questions; and route calls/service interactions to appropriate agents.</p> <p>Apple's Siri is a personal assistant application for the operating system iOS and is available as an iPhone app. The application uses natural language processing to answer questions and make recommendations. Siri adapts to a user's preferences over time and personalizes results. Siri works with a range of built-in apps. It is "smart" enough to know which apps to use to provide clients with answers.</p> <p>As these technologies are still in the development/refinement stage, organizations that have chosen to use them in innovative ways are considered "early adopters".</p> <div data-bbox="727 762 1068 1144" style="text-align: center;"> </div> <p style="text-align: center;">Figure: Apple's Siri Webpage</p>
Considerations	<ul style="list-style-type: none"> • Simple natural language interfaces/speech recognition are often used in IVR applications and, as such, can be very useful tools for Canadian governments • Dynamic, advanced voice recognition systems are likely less relevant to Canadian governments today as they are dependent upon exceptional user interface design due to high levels of input ambiguity in spoken language – however, select global governments (e.g., Poland) are using LUI in interactive, speech-enabled virtual clerks • Within Canada's multilingual government environment, such voice recognition tools may encounter resistance from certain populations if they are not effectively developed for interactions in French and English (and accompanying accents)
Sources	<ul style="list-style-type: none"> • Wikipedia Website, Natural Language User Interface (2012). • UX Magazine, Process Makes Perfect: Speech Recognition User Interface Design (2013). • Apple's iOS Siri Website (2013). • ChatBots.org Website, Wirtualny Urzednik (2012).

Personalized Web Portals & User Content

Capability	Enhanced User Experience
Leading practice	Personalized Web Portals & User Content
Description & case example	<p>Web portal personalization technology enables the dynamic insertion, customization or recommendation of web portal content that is relevant to the client, based on the client's implicit preferences and explicitly communicated information. Personalization can be reflected by:</p> <ol style="list-style-type: none"> 1. Customization (e.g., insertion of a name or pre-existing data into an image) 2. Crowd personalization (e.g., using the crowd to power suggestions – “related items”) 3. Segmented personalization (e.g., making recommendations based on a similar group of people who share similar interests – “people like you also bought”), and 4. One to one personalization (algorithms based on multiple data points/preferences). <p>Amazon's recommendation engine proactively pushes personalized product suggestions to each client based on client search, virtual shopping carts, and historical buying behaviours. Versace's new online My Versace Account and “mood mixer” allows users to set personal online clothing and shopping preferences. In 2012, American Apparel set a new monthly record for online sales, besting 2011 sales by 59% after it began operating integrated e-commerce sites for different client segments and geographic regions which present customers with personalized content and customized search options.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="428 823 878 1016">  </div> <div data-bbox="976 823 1321 1016">  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div data-bbox="418 1033 886 1058">Figure: Amazon's Website Recommendations</div> <div data-bbox="976 1033 1321 1058">Figure: My Versace Account Portal</div> </div>
Considerations	<ul style="list-style-type: none"> • Personalization examples are more widespread in the private sector, but are relevant to the public sector as well • Utah.gov's website uses technology to identify a user's location and present community-specific information such as public meetings, jobs, and government office locations • Content personalization can result in higher client satisfaction with web-based services based on easier, faster, and more relevant results and services • When using personalized content, Canadian governments may want to ask for client permission to use their data dynamically
Sources	<ul style="list-style-type: none"> • Retail Info Systems News, American Apparel Online Personalization Boosts E-Commerce Sales 59% (2013). • eGovernment Resource Centre, Utah.gov Unveils Major Redesign (2011). • CNN Money, Amazon's recommendation secret (2012). • LuxuryDaily, Versace drives U.S. ecommerce via content, personalization (2012).

Automated Notifications

Capability	Enhanced User Experience												
Leading practice	Automated Notifications												
Description & case example	<p>Content and system response personalization can also be used to drive automated notifications. For example, emails, IVR-based automated calls, social media “tweets”/posts, and SMS (text) messages can be used to send updates and notifications to clients based on changes to a client accounts, cases, preferences, “life event” (e.g., marriage or birth), individual characteristics (e.g., age) or other triggers.</p> <p>In the USA, CVS Pharmacy provides client with an automated text alert when prescriptions are due for renewal. If a client calls into the pharmacy, the system will remind her of her upcoming prescription and offer her the option to renew it immediately.</p> <p>Automated notification examples and opportunities are highlighted below:</p> <table border="1"> <thead> <tr> <th>Opportunity</th> <th>Description</th> <th>Example</th> </tr> </thead> <tbody> <tr> <td>Notify that something is due</td> <td>If an organization knows a user has a time-specific upcoming event, the system can proactively offer a path to complete that goal as the first option.</td> <td>When a client calls her pharmacy, the system alerts her that she has a prescription that’s due for renewal and offers her the option to renew it right then.</td> </tr> <tr> <td>Continue a process</td> <td>When an organization knows a user has started a process, whether in the same channel or in a different channel, the system can proactively offer the status of that process at the beginning of the interaction.</td> <td>When a user who has ordered a product on a retail site calls in, the system acknowledges that he has an open order and provides the status of the order proactively, letting him know when to expect the package.</td> </tr> <tr> <td>Acknowledge frequent tasks</td> <td>If the system detects that the same caller has called multiple times for the same repeatable activity or has asked for a specific type of response in the past, the system could then offer that option as the default.</td> <td>Each time a customer calls an airline before a flight, she requests a text message with her flight information. The next time she calls before a flight, the system proactively offers to send her a text message with the information.</td> </tr> </tbody> </table>	Opportunity	Description	Example	Notify that something is due	If an organization knows a user has a time-specific upcoming event, the system can proactively offer a path to complete that goal as the first option.	When a client calls her pharmacy, the system alerts her that she has a prescription that’s due for renewal and offers her the option to renew it right then.	Continue a process	When an organization knows a user has started a process, whether in the same channel or in a different channel, the system can proactively offer the status of that process at the beginning of the interaction.	When a user who has ordered a product on a retail site calls in, the system acknowledges that he has an open order and provides the status of the order proactively, letting him know when to expect the package.	Acknowledge frequent tasks	If the system detects that the same caller has called multiple times for the same repeatable activity or has asked for a specific type of response in the past, the system could then offer that option as the default.	Each time a customer calls an airline before a flight, she requests a text message with her flight information. The next time she calls before a flight, the system proactively offers to send her a text message with the information.
Opportunity	Description	Example											
Notify that something is due	If an organization knows a user has a time-specific upcoming event, the system can proactively offer a path to complete that goal as the first option.	When a client calls her pharmacy, the system alerts her that she has a prescription that’s due for renewal and offers her the option to renew it right then.											
Continue a process	When an organization knows a user has started a process, whether in the same channel or in a different channel, the system can proactively offer the status of that process at the beginning of the interaction.	When a user who has ordered a product on a retail site calls in, the system acknowledges that he has an open order and provides the status of the order proactively, letting him know when to expect the package.											
Acknowledge frequent tasks	If the system detects that the same caller has called multiple times for the same repeatable activity or has asked for a specific type of response in the past, the system could then offer that option as the default.	Each time a customer calls an airline before a flight, she requests a text message with her flight information. The next time she calls before a flight, the system proactively offers to send her a text message with the information.											
Considerations	<ul style="list-style-type: none"> Automated notifications are relevant to Canadian governments as they can create increase feelings of positive engagement with government, decrease client contacts based on proactively “pushing” information, and increase service effectiveness based proactive communication of upcoming client service needs In situations where clients have accounts and/or case applications which are processing, automated notifications can be used based on account or case settings, personalized notification desires, or changes to account or case information Enablement of automated emails, texts, or IVR phone calls can have a profound effect on call centre volumes when clients contact frequently to be provided with updates 												
Sources	<ul style="list-style-type: none"> Forrester, Top Ways To Improve Phone Self-Service Experiences (2010). Cisco, Pharmacy Interactive Voice Response Script Example (no date). 												

Crowdsupport Public Forums

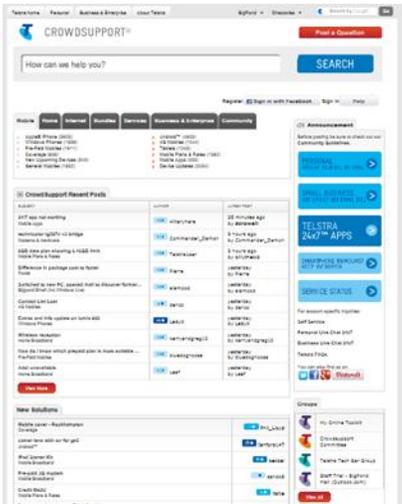
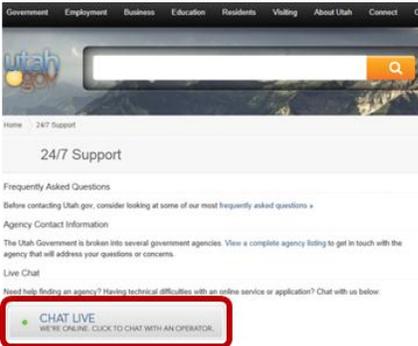
Capability	Assisted Self-Service
Leading practice	Crowdsupport Public Forums
Description & case example	<p>Organizations are increasingly using public forums and “crowdsupport” websites in order to leverage user information and willingness to support other service clients to better serve and meet information demands.</p> <p>Public forums can be used to divert client contacts from other higher cost to serve channels, such as contact centres, by providing them with a robust tool and platform through which to find information and help one another. By using public forums, service clients can communicate with one another as well as the organization regarding needs, trends, support, and solutions.</p> <p>In 2011, Australia’s leading telecom, Telstra, launched a new customer support forum – dubbed “Crowdsupport” – which is designed to help Telstra customers assist other customers and foster a community around their services. Forum users can give “kudos” to messages that are useful, message Telstra staff and other users interacting on the site, comment on issues impacting the company and discuss ideas that Telstra should implement. The launch of the site builds on the company’s success using social media (Twitter) to assist clients.</p> 
Considerations	<ul style="list-style-type: none"> Public forums can be powerful tools for Canadian governments to obtain feedback and input from citizens, especially in relation to services, websites, and information. Public forums are most effective when they are designed to support services and exchange information in a structured manner about a particular series of topics. Moderation of forums can increase the quality of content, but may require an additional investment of time. Concerns related to public forums are similar to those related to social media channels, and include security/privacy, employee access, acceptable use, account management, content, legal issues, and employee/citizen conduct.
Sources	<ul style="list-style-type: none"> iTechReport.com.au, Telstra turns to crowd-sourced support, launches CrowdSupport (2011). United Arab Emirates Websites, Welcome to the Emirates eGovernment Discussion Forum (2013). AMEInfo.com, Noor Islamic Bank invites the world to shape the future of banking (2012).

Figure: Telstra Crowdsupport Portal

Virtual Agents

Capability	Assisted Self-Service
Leading practice	Virtual Agents
Description & case example	<p>Organizations increasingly deploy dynamic knowledgebases, systems for managing knowledge in organizations. These systems can be used to enable web-based FAQ bases, self-service IVR fact bases, and virtual agents to provide support to clients through a dynamic, logic-driven information environment.</p> <p>Virtual agents can be built to be relatively static (e.g., typed questions yield responses) or dynamic (e.g., avatars respond to spoken questions through spoken recommendations and coaching). Virtual agents have been successful because they can answer common questions such as how to log into an account, how to retrieve a forgotten password, where to check an account balance, and how to open a new account.</p> <p>Aetna's virtual agent, "Ann" was launched in 2010. Five months after the launch, the number of calls to Aetna's customer service technical help desk had decreased by 29%. Ann is integrated into Aetna's backend systems to provide personalized answers on many topics, including the status of insurance claims. In addition, Aetna's Healthwise Knowledgebase is a dynamic, online decision-support tool that helps members research treatment options and make informed decisions by providing access to clinical information on a wide variety of health topics, medical tests/procedures, and medications.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div data-bbox="446 842 857 1079" style="text-align: center;">  <p>Ask Ann Virtual Assistant</p> </div> <div data-bbox="1003 800 1295 1121" style="border: 1px solid black; padding: 5px;"> <p>Aetna Customer Link Information that matters - to you and your employees</p> <p>Search Quarter 2011</p> <p>An online decision support tool with a personal touch, accessible 24/7: Healthwise® Knowledgebase</p> <p>In this era of health care consumerism, Healthwise is helping its members become more engaged as health care decision makers through access to a wealth of online facts and information. The community provide value to our members through technology and innovation.</p> <p>Healthwise Knowledgebase is yet another valuable resource that Aetna offers. This easy-to-use, online decision support tool helps our members research treatment options and make informed health care decisions by providing access to clinical information on a wide variety of health topics, medical tests and procedures, and medications.</p> <p>An online encyclopedia and more The Knowledgebase contains clinical information presented in member-friendly text on approximately:</p> <ul style="list-style-type: none"> • 8,000 health topics • 400 medical tests and procedures • 500 support groups • 1,000 medications <p>More than just an online encyclopedia, the tool takes a personal approach by responding on topics with additional questions for members to consider, such as:</p> <ul style="list-style-type: none"> • Medical Tests - "What to Think About," "Why It is Done," "How it Feels" • Medications - "How it Works," "Why to Use It," "How Well it Works" <p>It also includes more than 1,000 illustrations to help members better understand their health conditions, treatment options, surgical procedures and more. Prior-friendly formatting allows members to print and share information with their doctor to ensure better partners in managing their medical care.</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div data-bbox="446 1136 857 1163">Figure: Aetna's Ann – Virtual Agent Icon</div> <div data-bbox="963 1136 1338 1163">Figure: Aetna's Healthwise Overview</div> </div>
Considerations	<ul style="list-style-type: none"> • The most common objective for employing knowledgebase systems is deflecting high-volume, low-value interactions away from live agents – some financial services clients have shown up to 30% call deflection rates based on surveys within their virtual agent • Within Canadian governments, the use of dynamic knowledgebases and virtual agents has been relatively limited to date, however they can be a powerful tool if effectively armed with the right information • Governments should begin by developing a dynamic knowledgebase that can support a question search function, with relevant responses on high volume topics – such knowledgebases should be deployed across client and agent facing channels
Sources	<ul style="list-style-type: none"> • Creative Virtual, The Impact of Intelligent Virtual Agents on Financial Services (2011). • Forrester, Five Essential eBusiness Criteria For A Successful Virtual Agent Vendor Selection (2011). • Hewlett Packard, Leveraging intelligent, interactive virtual agents to drive quality and savings in customer service (2011). • IntelliWISE Case Study, How to improve Customer Experience and self-service at the leading Utility provider (2012). • ChatBots.org Website, Wirtualny Urzednik (2012).

Live Chat/Click to Call

Capability	Assisted Self-Service
Leading practice	Live Chat/Click to Call
Description & case example	<p>Web-based live chat and click-to-call are real-time communications devices that can be used to link online customers to contact center staff while they are transacting online. Clients who are accessing services online can use the live chat or click-to-call functions to ask questions of an agent while still completing their transactions via the web.</p> <p>Live chat allows the user to “chat” via desktop with a live agent through instant messaging. Contact centre staff can be trained to manage both telephone chats and more than one live chats concurrently. Similar to live chat, click-to-call is a form of internet-based communication in which a person clicks an object (e.g., button, image or text) to request an immediate connection with another person in real-time either by phone call, Voice-over-Internet-Protocol (VoIP), or text.</p> <p>Gartner found that the introduction of a chat channel reduced telephony volume by 12% and that phone service is typically four times the cost of web chat. In 2009, the Virginia Department of Taxation reduced web-related calls from citizens by 70% as a result of launching an online chat device with an instant messenger function. Live chat on the United Kingdom’s HSBC Business Banking website has adopted a proactive stance. If the client pauses on a particular webpage for some time, the bank will automatically pop up an invitation to discuss the content further with a Business Account Advisor via an online live chat tool. Utah.gov offers live chat support 24/7.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div data-bbox="444 821 862 1167" style="border: 1px solid black; padding: 5px;">  </div> <div data-bbox="1003 852 1318 1108" style="border: 1px solid black; padding: 5px;">  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div data-bbox="480 1184 824 1209" style="text-align: center;"> <p>Figure: Utah.gov Live Chat Button</p> </div> <div data-bbox="948 1184 1354 1209" style="text-align: center;"> <p>Figure: Sample Click to Call Screen Icon</p> </div> </div>
Considerations	<ul style="list-style-type: none"> • Live chat is used in the public sector and many U.S. state websites, such as Utah.gov, support clients through live chat tools • From a technology standpoint, live chat is generally very low cost to deploy as it is often a cloud-based service with a high degree of scalability • Agents can achieve higher utilization if they are cross-trained for live chat • By offering live chat and click-to-call supports, Canadian governments will allow their clients to communicate their needs in real time while online – this may reduce the likelihood that they will switch to a higher cost to serve channel • Implementing click-to-call often requires less investment than click-to-chat
Sources	<ul style="list-style-type: none"> • RightNow Guide: Best Practices for Chat Deployments (2010). • Government Technology, Web Chat Helps Virginia Reduce Phone Calls About Tax Questions (2010). • Deloitte Banking Best Practices Case Studies (2012).

Video Tellers

Capability	Assisted Self-Service
Leading practice	Video Tellers
Description & case example	<p>The use of video-enabled kiosks/tellers and video conferencing for personalized, high-touch service are on the rise. The costs associated with serving customers in the traditional banking branches rose as clients have increasingly adopted self-service channels and branch traffic fell. Video-enabled services can give clients the personal service they need while keeping them in lower cost to serve channels.</p> <p>New Zealand's ASB Bank developed a video conferencing service that enables clients to talk to specialist staff from their PC. A study conducted by Telstra found that 57% of Australians are interested in video banking services. Users can make video-call appointments in advance by phone, email, or in-branch and then connect to a banking specialist at the appointment time through an email link that immediately starts the session. The service also offers secure sharing of documents meaning banking arrangements can be confirmed without needing to visit an in-person branch. A pilot is now in place while a mobile option is expected to arrive in 2013.</p> <p>Australia's ANZ Bank further announced a series of new technology initiatives, including the rollout of videoconferencing equipment at 43 regional and remote branches, plus 800 "next-generation" ATMs equipped with video screens for agent interactions. Videoconferencing in branches gives clients in remote and regional Australia greater access to specialist advice.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div data-bbox="527 821 792 1213" style="text-align: center;">  <p>ASB Creating Futures</p> </div> <div data-bbox="938 867 1362 1171" style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div data-bbox="440 1230 865 1255" style="text-align: center;">Figure: ASB Interactive iPad Video Tellers</div> <div data-bbox="1024 1230 1276 1255" style="text-align: center;">Figure: ATM Video Teller</div> </div>
Considerations	<ul style="list-style-type: none"> • Video-enabled support kiosks are one way to help engage with clients in rural areas while not incurring high in-person service costs • Agent utilization can be made higher if services are delivered remotely and according to workforce and demand management • While video-enabled kiosks are a form of assisted service, they can keep clients transacting in lower cost to serve channels or be used to assist/train clients to complete online self-service transactions in the future • Changes in workforce management, training, and investments in PC terminals are all factors to be considered in rolling out a Canadian government video-support model
Sources	<ul style="list-style-type: none"> • BiometricUpdate.com, ANZ to examine use of biometrics for everyday banking (2012). • VisibleBanking.com, ASB Bank and Telstra: "Banking Customers Want Video Conferencing" (2012) • ASB Bank Press Release, ASB connects customers face-to-face with banking specialists via new video service (2012). • FinancialBrand.com, iPhone, iPad Video Banking Could Spell The End For Branches (2012).

Appendix C

Costs and benefits – examples

Jurisdiction	Description	Investment
United Kingdom (UK) Government Digital Services ⁸¹	According to the U.K. government, taxpayers are currently spending an estimated £4 billion each year on engaging in non-digital transactions (e.g., telephone or post).	Total investments are unknown.
United Kingdom (UK) Government Tell Us Once Initiative ⁸²	Tell Us Once (TUU) is a major government programme being led by the Department for Work and Pensions (DWP) on behalf of the Government as a whole, to transform the way in which people tell central and local government about changes to their circumstances. Tell Us Once lets citizens report a death to most of the government organisations that they need to tell in one go – users can access it online, over the phone or face-to-face.	Total investments are unknown.
Australian Government Tell Us Once Initiative ⁸³	Building upon the success in the U.K., Tell Us Once is an initiative by the Australian government that will allow citizens to: <ul style="list-style-type: none"> • Communicate updated details to multiple agencies simultaneously • Pre-fill forms using information previously submitted to a government agency • View all their communications with government in one place. 	The government will provide \$2.3 million in 2011 – 2012 to investigate and test some preliminary developments to improve people's ease of use and access to government services under a Tell Us Once initiative.

⁸¹ UK Cabinet Office, Government publishes costs of transactional services for the first time (2013); PricewaterhouseCoopers, Champion for Digital Inclusion: The Economic Case for Digital Inclusion (2009).

⁸² kable: government computing, The benefits of Tell Us Once (2011); GOV.UK Website, Tell Us Once (2013); HM Government, Tell Us Once Presentation (2012); Improvement & Development Agency, Tell Us Once Case Study (2009).

⁸³ Australian Government, Department of Broadband, Communications and the Digital Economy.

Jurisdiction	Description	Investment
Australia Smartforms Solution ⁸⁴	<p>In Australia, the government developed a SmartForms Solution, which is an advanced online forms and services capability that provides government agencies with the ability to create, publish and maintain their online forms and transactions.</p> <p>SmartForms are interactive, dynamic electronic PDF forms used to replace or compliment non-interactive documents which allow agencies to collect data digitally, and import this data into back-end for business processing. SmartForms are designed to be dynamic: as individuals enter information they are presented with sections relevant to their circumstances.</p>	<p>A SmartForms project, which included \$6.2 million in funding secured from the Regulation Reduction Incentive Fund (RRIF), was undertaken by the EasyBiz Project Consortium (30 Victorian Local Councils) and the Municipal Association of Victoria in 2007.</p> <p>The project included the development of a set of permit, licence and registration application forms which: used a single form template for each across 30 councils; enabled customization of forms, as required; enabled the user to deliver the application form, any supporting documents and make any necessary payments online; enabled all relevant data (form data, supporting documents and payment) to be sent directly to council's back-end systems ready for processing; and enabled the user to choose to print the form and deliver the form with any supporting documentation and payment to council either by fax, post or over the counter.</p>
Australian National Office for the Information Economy (NOIE) e-Government	<p>In Australia, the National Office for the Information Economy surveyed 38 e-government projects in 2003.</p>	<p>NOIE (2003) found that 24 projects claimed cost reductions (or increased revenues).</p> <p>For an estimated investment of \$108 million, these 24 projects were expected to achieve cost reductions of \$100 million.</p> <p>This represents a benefit/cost ratio of 92.6% (the estimate omits user benefits).</p>
Texas.gov P3 e-Government ⁸⁵	<p>Texas.gov is the official e-government web site for the State of Texas. As the primary resource for Texas web-based public services, Texas.gov provides eligible customers with the expertise to automate routine tasks into interactive applications for citizens and businesses. Texas.gov hosts over 1,000 online services for more than 100 publicly-funded government agencies.</p> <p>Texas.gov is operated as a self-funded, public-private partnership (P3). The Texas Department of Information Resources (DIR) provides contract management, strategic and operational oversight, enterprise-level coordination, and advocacy. The private partner, NIC Inc., provides all other aspects of program management.</p>	<p>In 2009, the DIR selected NIC Inc. to manage Texas.gov, the state's Internet portal, under a new seven-year contract beginning July 31, 2009. Under the new contract, NIC will maintain current services and leverage what has been termed the 'next generation' of Web 2.0 design and tools on the site, including streaming videos, podcasts, blogs and improved navigation and search features."</p> <p>Under the new contract, the State of Texas will pay \$570,000 in 2010 to NIC Inc. through a blanket order for subscription fees.</p>
Montana.gov P3 e-Government ⁸⁶	<p>NIC Inc.'s partnership with Montana has also demonstrated savings. The state began to build its e-Government plan in 1999; however taxpayer funds were not available to fund the initiative.</p> <p>As more than 80% of the state's population lives at least 100 miles from the capitol, the state recognized its strong need for digital online services. Montana worked with NIC Inc. to develop its e-government service suite through a self-funded model.</p>	<p>NIC Inc. is an advocate for the self-funded model and is willing to invest upfront – often in the millions of dollars – in development of IT systems and key e-government capabilities on behalf of its partners.</p> <p>In a self-funded e-Government environment, the private sector partner (i.e., NIC Inc.) covers the costs to build, maintain, enhance, and market digital online services on behalf of state governments. This initial investment is recouped by the company over the life of the contract through a shared fee model for select online service transactions.</p>

⁸⁴ Australian Government SmartForms Home Website (2012); SmartForms Developer Centre, SmartForms Case Studies: EasyBiz Project (2007); SGS Economics & Planning, Regulation Reduction Incentive Fund Final Report: Cost benefit analysis and calculation of savings (2007).

⁸⁵ Texas Department of Licensing and Regulation, NIC Inc. Texas.gov Purchase Order (2010); Deloitte Interview, NIC Inc. (2012).

⁸⁶ NIC Inc., A Report to the National Association of State Budget Officers: Delivering Savings and Efficiencies Through Self-Funded e-Government (2010).

Jurisdiction	Description	Investment
Colorado Department of Revenue Knowledge Base System ⁸⁷	<p>The Colorado Department of Revenue (DOR) used a dynamic knowledgebase to provide self-service research to taxpayers, reduce call center and email volumes, and improve the accuracy and consistency of information provided to the public.</p> <p>During the income tax filing season, and for several months following, many citizens would reach out to the department with questions regarding the proper application of tax rules, the obtaining of forms, and the status of returns.</p>	<p>A knowledgebase was designed to present answers to these kinds of questions through intuitive question flows based on common inquiry patterns.</p> <p>Key cost areas for the deployment were software, and personnel. One employee of the Colorado DOR spent two days building the knowledge base and creating the Web pages for access by the public. Another employee spends 40% of her time researching new content for the knowledge base, publishing content, and maintaining the system. The average yearly cost of ownership is \$39,613.</p>
Utah.gov Working 4 Utah Initiative ⁸⁸	<p>Cost savings associated with self-service were uniquely expressed in Utah, which also outsources its Utah.gov portal to NIC Inc. In 2008, Utah launched the “Working 4 Utah” initiative, which called for closing most of the state’s administrative offices on Fridays. Utah’s Governor cited the state’s national leadership position in technology services and the ability of the state’s award-winning Web site, Utah.gov, to provide ongoing access to government services as key factors in Utah’s move to a four-day work week.</p> <p>In addition, a study by the University of Utah on the economic cost savings attributed to Utah’s e-government service strategies was undertaken by the University of Utah.</p>	Total investments are unknown.
National Health Services (NHS) Direct Health & Symptom Tracker ⁸⁹	<p>National Health Services (NHS) Direct launched its online and mobile application, the Health & Symptoms Checker, which helps clients to understand and interpret their medical symptoms without the assistance of a nurse or live agent. Today, the 40 online and mobile NHS Direct Health & Symptoms Checkers have demonstrated thousands of percentage points of financial return on the digital service investment.</p>	<p>Annual costs for the online and mobile applications are approximately £2.5 – 3.5M annually.</p> <p>The annual cost for the online and mobile health and symptom check applications is relatively low because the service availability is so high. For example, during the swine flu epidemic online demand for the service spiked heavily (6 times the average) and the system was able to manage approximately 45,000 concurrent users per hour. (This volume of transactions quickly would have overwhelmed the NHS Direct call centre staff.)</p>
Government of Alberta Shared Services ⁹⁰	<p>The Canadian provincial Government of Alberta spends around \$96 million on information communications technology (ICT) each year. A recent review found wide divergence in the costs of common high volume services across the government.</p> <p>To reduce function and service duplication and increase economies of scale, the Service Coordination Initiative, an innovative ICT Shared Services project, was developed to design and advise on effective organization and structural procurement.</p>	<p>The project made key changes to the delivery of ICT services through an enterprise model of service delivery. These changes included introducing a reformed governing body with clear standards, common tools and processes across ministries, service level management, and increased competition of service providers by pooling corporate core funding for ICT infrastructure.</p>

⁸⁷ RightNow Technologies, ROI Case Study: Colorado Department of Revenue (2008).

⁸⁸ Utah Government, Initiative Performance Report: Final (2009); University of Utah Case Study, Smarter eGovernment: The Economics of Online Services in Utah (2012); Deloitte Interview, NIC Inc. (2012).

⁸⁹ Deloitte Interview, NHS Direct (2013).

⁹⁰ Deloitte GoA ICT SCI Business Case and Government of Alberta: Business Case: ICT Service Coordination Initiative (2007); Dalibor Petrovic, Deloitte. Shared IT Services for Governments: Governance, collaboration and the “me” factor (2008).

Jurisdiction	Description	Investment
City of Calgary's Online Tax Installment Payment Plan (TIPP) Service ⁹¹	The City of Calgary developed the online Tax Installment Payment Plan (TIPP) service in 2006.	Total investments are unknown.
Australian Bureau of Statistics (ABS) Online Publications ⁹²	Public Sector Information (PSI) policies seek to optimise innovation by making data available for use and re-use with minimal barriers in the form of cost or inconvenience. The report for the Australian Bureau of Statistics presents case studies exploring the costs and benefits that PSI producing agencies and their users experience in making information freely available and preliminary estimates of the wider economic impacts of open access to PSI.	The net cost to the Australian Bureau of Statistics (ABS) of making publications and statistics freely available online and adopting Creative Commons licensing was likely to have been around \$3.5 million per annum at 2005-06 prices and levels of activity. The wider impacts in terms of additional use and uses bring substantial additional returns, with our estimates suggesting overall costs associated with free online access to ABS publications and data online and unrestricted standard licensing of around \$4.6 million per annum.
Force.com Cloud Platform ⁹³	Cloud computing provides numerous strategic and tactical benefits, including IT de-capitalization, accessibility, business agility, scalability, and cost-effectiveness. With Cloud computing platforms, the computer resources, storage resources, application logic, and development and deployment environments can now reside on the Web and be accessed 24x7 without having to rely on local replicas or resources other than a browser. To understand the business value of Cloud-based platform as a service (PaaS), IDC interviewed ten companies that used Force.com to develop custom applications, and have been running the applications for at least 12 months. These ranged from large to small enterprises located in the U.S., Europe and Asia Pacific regions.	On average these companies were able to recognize benefit of \$8.21 per every \$1 invested in Force.com.
USA Cloud Computing Environment ⁹⁴	During 2009, OCS migrated USA.gov to a new "Cloud Computing Environment," acquired a new content management system currently undergoing implementation, and intensified security programs that met all FISMA requirements. The move to the "cloud" was completed with a Certification and Accreditation for the new environment, which added flexibility, standardization, additional COOP strengths.	Total investments are unknown.
USA Internal Revenue Service (IRS) Free File initiative ⁹⁵	IRS's mission is to provide America's taxpayers top quality service by helping them to understand and meet their tax responsibilities. The Free File initiative helps IRS meet this mission by creating a single point of access to free on-line preparation and electronic tax filing services, which reduces burden and costs to taxpayers.	Annual agency contributions, including in-kind contributions, in FY2010 to the Free File initiative were \$1.745 million. Contributions in 2009 were \$1.8 million. Contributions in 2008 were only \$70,000.

⁹¹ Deloitte Interview, City of Calgary (2013).

⁹² Centre for Strategic Economic Studies, Victoria University, Costs and Benefits of Data Provision (2011).

⁹³ IDC, Force.com Cloud Platform Drives Huge Time to Market and Cost Savings(2009).

⁹⁴ Report to Congress on the Benefits of the e-Government Initiatives (2010).

⁹⁵ Report to Congress on the Benefits of the e-Government Initiatives (2010).

Jurisdiction	Description	Investment																														
E-Rulemaking – Managing Partner Environmental Protection Agency (EPA) ⁹⁶	<p>E-Rulemaking provides citizens one access point to view and comment on rules and notices. This Program and its supporting application allows agencies to fulfill the E-Gov Act of 2002 requirement to ensure a publicly accessible website contain electronic dockets for rule-makings. The E-Rulemaking program includes two important components:</p> <p>The E-Rulemaking program provides substantial benefits as an electronic docket solution for agencies to manage their regulatory information (FDMS.gov) and to provide the documents to the public for comments and other submissions (Regulations.gov). The Program is helping to manage and disseminate Federal regulatory information far beyond traditional paper publications and paper-based docket processes.</p>	Cross-agency funding for E-Rulemaking in 2008 (across 22 agencies) was approximately \$8.5 million.																														
Australia Centrelink Family Income Estimates Update Service ⁹⁷	<p>Centrelink delivers services to 6.3 million customers on behalf of 20 client agencies through an extensive service delivery network. Centrelink is committed to offering customers a wider range of options for accessing services, with extended contact hours and help to access the options most appropriate to their needs.</p> <p>The Family Income Estimates Update Service was implemented on 17 July 2001 and allows customers to prepare revised family income estimate online through either the Centrelink or Family Assistance Office web sites and submit the new estimate through Centrelink's Secure Internet Messaging Service. Previously customers could only provide revised estimates over the phone to the call centre, via an office, or by posting a written form.</p>	<p>The cumulative total program cost of AUD \$600,000 by 2005 included a number of associated technical services that were built and implemented in March 2003, and annual maintenance costs up to and including 2005. The table below highlights the return on investment analysis, including costs and benefits.</p> <table border="1"> <thead> <tr> <th colspan="6">Return on investment analysis</th> </tr> <tr> <th>Year</th> <th>2001</th> <th>2002</th> <th>2003</th> <th>2004</th> <th>2005</th> </tr> </thead> <tbody> <tr> <td>Costs (\$m)</td> <td>0.32</td> <td>0.43</td> <td>0.49</td> <td>0.55</td> <td>0.60</td> </tr> <tr> <td>Benefits (\$m)</td> <td>0</td> <td>0</td> <td>1.1</td> <td>2.7</td> <td>5.1</td> </tr> <tr> <td>Benefit/cost ratio (%)</td> <td>0</td> <td>0</td> <td>223</td> <td>494</td> <td>850</td> </tr> </tbody> </table>	Return on investment analysis						Year	2001	2002	2003	2004	2005	Costs (\$m)	0.32	0.43	0.49	0.55	0.60	Benefits (\$m)	0	0	1.1	2.7	5.1	Benefit/cost ratio (%)	0	0	223	494	850
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Benefit/cost ratio (%)	0	0	223	494	850																											
Spain Paperless Administration ⁹⁸	<p>By 2015, Spain intends to implement a paperless administration through the digitization of procedures, the incorporation of electronic signatures (electronic ID) and the establishment of electronic records.</p> <p>The focus is on getting all ministries and government bodies to realise the value of e-government in furtherance of paperless administration.</p> <p>Spain's online service provision today is of very high standard. Approximately 90% of procedures (end-user services) and 99% of all (internal) administrative processes at national level are available in digital form.</p>	The investment into "paperless administration" in 2010 is EUR €536,525,000 and €74,483,000 in 2011.																														

⁹⁶ Report to Congress on the Benefits of the e-Government Initiatives (2010).

⁹⁷ E-government Benefits Study – Agency Case Studies (Centrelink) (2003).

⁹⁸ OECD, E-Government: Reforming Through Information and Communication Technologies – Reaping the Benefits of ICT Technologies in Spain (2012) and Spanish Ministry of Industry, Tourism and Trade, Estrategia 2011-2015, Plan Avanza 2: Anexos ((2010).

Jurisdiction	Description	Investment
Danish Digital Service ⁹⁹	<p>The fund for assistive technology, the PWT Foundation, provides co-financing investments in projects that seek to employ new technology and contains DKK 3 billion for the period of 2009 – 2015.</p> <p>Public institutions can, alone or in partnership with private firms, seek co-financing for projects that support more efficient, less labour intensive working practices within the public sector.</p> <p>The aim of the fund is to be able to realize a profit bigger than the initial investment of approximately EUR €400 by 2018 in labour saving solutions.</p>	<p>Select examples of investments include:</p> <ul style="list-style-type: none"> • AmbuFlex: demand-driven patient treatment with web-based clinical self-monitoring (DKK 0.64 million) • Automated case handling (DKK 37.4 million) • Digital reservations for child care (DKK 2.1 million) • Digital reservations for general practitioner consultations and access to case files (DKK 0.9 million) • Donor self-booking and the digitization of donor registration and blood donations (DKK 9 million) • Common medicine card (DKK budget reservation of 119.6 million in 2010) • Quick access to single sign-on for mobile doctors and nurses (DKK 6.0 million) • Video-based citizens services (DKK 1.5 million)

⁹⁹ OECD e-Government Studies, Denmark: Efficient e-Government for Smarter Service Delivery (2010).

Appendix D

Self-service maturity framework definitions

A. Channels

Component	Description
Fixed Computer/Laptop	<ul style="list-style-type: none">• This channel reflects the traditional notion of access to “online” services.• Clients access information/services via the internet using a fixed computer – either a desktop computer or a laptop.• These computers are not considered mobile devices as they are not designed for “on the go” interactions in the same way as a smartphone or tablet.
Mobile Device/Smartphone/Tablet	<ul style="list-style-type: none">• The channel reflects the increasing trend of accessing web-based information/services and specially developed applications via mobile devices.• The primary mobile devices being used today to access mobile information/services are smartphones and tablets.• Many mobile service offerings are also “online” services as they have been enabled through websites configured for mobile devices or downloadable mobile service applications (apps).
Kiosk	<ul style="list-style-type: none">• This channel reflects access to information/services via public computer terminals or kiosks.• Kiosks may be specialized machines designed to perform a specific service or they may simply be an internet access point for client service interactions which are web-enabled (e.g., computer centres).
Telephone/IVR	<ul style="list-style-type: none">• This channel reflects access to information/services via the telephone, whether fixed or mobile.• This channel is considered self-service when interactive voice response (IVR) systems are engaged, thereby bypassing the need for a client service agent or live service interactions.

B. Client Functions

Component	Description
Get information/FAQ	<ul style="list-style-type: none"> • This is the act of a client seeking information/FAQs through a self-service channel. • This interaction may be supported by a dynamic knowledgebase or virtual agent. • This interaction may involve accessing a client account for service information or transactional history.
Manage identity	<ul style="list-style-type: none"> • This is the act of a client providing information regarding his or her identity, the system accepting and storing this information (including any documentation for verification), and the system using the information (and possibly external databases) to confirm identity.
Determine eligibility	<ul style="list-style-type: none"> • This is the act of the client supplying benefit information, which will be aligned with benefit eligibility. • In self-service scenarios, the system may support eligibility rules engines which dynamically use information to determine eligibility, advise the client on eligibility, or both. • Eligibility adjudication may also be a manual step in high complexity cases which have been provided through a self-service intake mechanism (e.g., online e-fillable forms).
Apply & pay for services	<ul style="list-style-type: none"> • This is the act of the client applying for a service (e.g., application or renewal) and paying for services based on calculated fees.
Manage cases & adjudicate	<ul style="list-style-type: none"> • This is the act of the client providing information for cases as well as the system managing case and account information over time. • If account-based services are present, clients may access and updated case and account information on an as-needed basis.
Service fulfillment & problem resolution	<ul style="list-style-type: none"> • This is the act of fulfilling the service request for the client. Fulfillment may include digitally dispensing of service documentation and verification. • In addition, this is the process of providing problem resolution to clients who are engaging in self-service interactions but require assistance. Assistance may be provided via assisted browsing, virtual agents, dynamic knowledgebases, live chat, or click to call.

C. Management functions

Component	Description
Multichannel service strategy & policy	<ul style="list-style-type: none"> • These functions include the development of multichannel service strategies and policies in support of self-service execution. • Strategies for multichannel self-service delivery and channel migrations would include but not be limited to: Marketing & Communications; Incentives & Penalties; Service Selection & Design; User Interface Design; Channel Vision & Objectives; Channel Strategic Plans; Channel-based Business Cases; Service Bundles; Client Segments; Open Data & Competitions; and Data Analytics. • Policies which have high impact on self-service options would include but not be limited to the following: Information Privacy; e-Signatures; Data Sharing MOUs; funding allocation for shared resources (e.g., centralized web portals); Data/Information Storage & Retention; Use of Client in Service Contexts; Services by Channel Access Regulations; Fee Structures; and more.
Business & service processes	<ul style="list-style-type: none"> • These functions include the development and definition of service-based business processes that support self-service client interactions. • Processes may include business process reengineering for digital design, transitions from digital to manual processes based on exception flows (e.g., manual identity verification required), and system requirements development and documentation.
Performance, risk, & financial management	<ul style="list-style-type: none"> • These functions are responsible for overseeing and managing channel performance, security/risks, and financial outcomes. Data and information collection, tracking, monitoring, and analytics are key components of the management process, including speech analytics, channel analytics, etc.
People & culture	<ul style="list-style-type: none"> • These functions include managing the people associated with service delivery, including self-service assisted supports, workforce management, and performance management. • In addition, leadership buy-in and support for self-service, change management, and an organizational culture which is dedicated to service excellence will all contribute to self-service success.

D. Technology & infrastructure

In order to further illustrate the technology & infrastructure component, we have developed the technology and infrastructure support model below, which depicts the foundational services to enable the four other elements of the self-service maturity framework. This technology and infrastructure model can be understood as a Service Oriented Architecture (SOA), in which business functions are exposed as common service components allowing a variety of government agencies/jurisdictions to leverage legacy systems, thereby reducing the overall development costs for self-service enablement. These foundational capabilities can be architected to support multichannel deployment of self-service options as well as agency-facing solutions and supports for assisted self-service. Further descriptions about the components of these services can be found in the appendices of this report.

Channels & channel support services			
Web	Mobile	Telephone (IVR)	Kiosk
Client Services	Client Services	Client Services	IVR Services
Channel Integration Management			
Client Care Management (CRM/"My Account")			
Personalization & delivery service components			
Personalization		Localization	
Client-Facing Services			
Primary Services			
Supporting Services			
Business Service Components			
Messaging, adapter, and legacy systems			
Messaging (CMS)			
Adapter Systems			
Dept. 1 Adaptor	Dept. 2 Adaptor	Dept. 3 Adaptor...	
Legacy Systems			
Dept. 1 System	Dept. 2 System	Dept. 3 System...	

Technology service components	Business Intelligence	Performance Management	Data warehousing & external data integration	Others
	Security/Privacy	Logging/Auditing		CRA
	Communication	System Management		Companies
				Banks
				Gov. Agencies

Descriptions of the key areas illustrated above are included below:

Component	Description
Channels & channel support services	<ul style="list-style-type: none"> • These services enable and support client interactions via the primary self-service channels: web, mobile, telephone (IVR) and kiosks. • As mobile and web services are both fundamentally web enabled, these services are applications/solutions which deliver digital clients services to citizens and businesses • Channel services also include interactive voice response (IVR) services, which may rely upon a digital knowledgebase. • A client care service (e.g., customer relationship management (CRM) solution and/or "My Account" service) enables universal access to client data and information across channels • Finally, channel integration management enables access to services universally from across the different channels offered to clients.

Component	Description
Presentation & delivery services	<ul style="list-style-type: none"> • <i>Personalization and localization services</i> create a positive user experience and allow services to be customized by and for clients, including based on region/geospatial information and language preferences. • <i>Client-facing services</i> enable client self-service interactions across a variety of service channels; basic client-facing services include but are not limited to: Address Change; Service Request; FAQ Check; and more. • <i>Primary services</i> support client-facing services, and include but are not limited to: Information/Knowledgebase; Search Optimization; Registration; Service Order; Reporting; Referral; Subscription; Service Applications (e.g., Licensing/Permitting); and Bill Payment • <i>Support services</i> include but are not limited to the following capabilities: Identity Authentication; E-fillable Forms; Case/Task Routing; e-Service Applications; Mobile Services Application; Eligibility Rules Engines; Risk & Fraud Rules Engines; Application Programming Interfaces (APIs); Security; Service Fulfillment; Payment; Marketing & Campaign Management; Scheduling/Booking; Content Publishing; Notification; Audit, Financial Management; Financial Reconciliation; Inventory Management; Transaction Reconciliation; Personalization; Digital Content Management; and more. • <i>Business service components</i> include capabilities such as: Content Management, Payments, Service/Product Ordering; Registration; and Workflows • The complexity of a system and self-service option will likely depending on how many of these capabilities have been enabled within the self-service environment.
Messaging & adaptor services	<ul style="list-style-type: none"> • A universal messaging service will provide messaging from across legacy systems that are being integrated into the common service platform • As is commonly the case, if service agency legacy systems will not be re-architected then adapters will need to be built for each of the respective agency systems and solutions • Over time, legacy systems will ideally be re-engineered utilizing enterprise architecture components.
Technology service components	<ul style="list-style-type: none"> • <i>Logging</i> provides a consolidated interface for all logging events in the target architecture, as well as access to the log information through a structured service. • <i>Business intelligence</i> tools use system performance analytics, channel analytics, speech analytics, web content analytics and data analytics to understand business outcomes and inform strategic planning. • <i>System management</i> acts as the interface to the production management tools in order to report status, as well as to make use of system health information to automatically take action (restart components etc.) • <i>Performance management</i> includes IT Service Management (ITSM) technical performance service level agreements plus business measures of organizational programs. Used to evaluate the efficacy of service and channel delivery. • <i>Privacy and security</i> solutions are applied across channels and services to protect client information and ensure security of data as well as appropriate access requirements. These are the rules and capabilities that protect client privacy and security, such as role-based information access rules, firewalls, multifactor verification, and data/information encryption. • <i>Communications</i>: these technologies/telephony infrastructure support a unified communication system across channels, including but are not limited to: Automatic Call Distributor Systems; Email Response Management Systems; Intelligent Call Routing; Interactive Voice Response Systems; Trunk Circuit Networks; Web Chat & Click to Call; and Unified Agent Desktops
Data warehousing & external data integration	<ul style="list-style-type: none"> • These infrastructure solutions and platforms allow for the storage/access of data. • Data management supports the physical mechanisms used to persist data, such as a RDBMS (Relational Database Management System), and encompasses features such as backup, recovery, import, export, tuning, archiving, purging, logging, tracing, and the like. • Data support technologies include but are not limited to the following capabilities: Data Architecture; Data Warehousing; Data Repositories; Role-based Data Access Sharing Rules Engines; and more. Integration with external data sources may include Canada Revenue Agency (CRA), private data sources (e.g., LexusNexus), private companies (e.g., private bank identity information); other government agencies, or other partner sources.

Appendix E

Self-service objectives

In setting out the definition of aspirational self-service, we must also create a clear set of self-service objectives that frame the outcomes being sought through service integration and increasing self-service options. The following fifteen objectives are designed to guide the development and execution of self-service goals and capabilities in the long term:

1. Self-service is the preferred method of service for clients and adoption of low-cost channels continually increases.
2. Every service that can be delivered electronically is delivered electronically.
3. Self-service channels are easier to access, have higher service standards, and are lower in cost for clients.
4. Web-based self-service channels consolidate all available services in an integrated service environment for an easy “one stop shop” self-service experience.
5. Clients only need to provide their information once (single sign-on) and have access to case and service transaction history.
6. Client data and information is private and secure.
7. Clients have access to the same information and services regardless of the channel of choice for a “no wrong door” self-service experience.
8. Service delivery processes are standardized, automated (paperless), and consolidated wherever practical.
9. Most service needs are resolved on first contact.
10. Clients are incented to serve themselves through self-serve channels.
11. Service efficiency is proactively measured based on metrics such as cycle time for service delivery, volume and cost per transaction (per channel), and utilization.
12. A common set of service policies, standards, and processes reflects the needs and desires of clients.
13. Services are bundled based on client segments, service sectors, and “life events” resulting in improved satisfaction and efficiency.
14. Self-service is understood, operated, monitored, and managed in the context of a multichannel, enterprise service delivery strategy.
15. The ability to self-serve is not constrained by access to technologies – public self-service delivery networks are available to meet client needs and are easy to access.

Appendix F

Service tiers & transaction types

In the future, as Canadian public service organizations design their self-service and multichannel strategies for digital service delivery, they should consider the alignment between the type of service, the service tier, the transaction type, and the ideal channel of delivery:

Tier 1 – Basic Information & Routine Transactions

Basic information provided on a range of topics and areas of interest as well as routine government transactions can be secure or non-secure interactions. **Ideally all are delivered as a self-service.**

Low Complexity

- High volume
- Low value
- Repeatable
- Single-source answer

Service Examples

Proactive Outbound Service

- Proactive service tips and communication (e.g., renewals)
- Customized outreach based on service needs
- Outbound transactions

Basic Information

- One common front end website and branding with simple links to all services/programs
- Provision of general information for citizens/business; self-service answers to basic inquiries
- Program/service/benefit eligibility requirements
- Contact information and program/service logistics (e.g., locations, hours, etc.)
- Public data and reporting, including sector-specific and program-related research publications
- Regulatory and compliance information for businesses

Interactions and High Volume, Routine Transactions

- Common intelligent IVR system (voice recognition)
- Common “My Account” to interact with the whole enterprise (secure as needed)
- Initial identity authentication
- Change of address
- Apply for any service/program across channels and conduct end-to-end transactions
- Confirm eligibility in a simple and automatic manner
- Check status of requests and applications
- Request basic assistance to complete transactions
- Provide point in time (e.g., weekly) reporting or submission of records
- Payment collection or issuance
- Automated production (e-Forms)

Channel Features

- Self-service transactions
- FAQs
- Website search
- Virtual agent
- “My account” access

Tier 2 – Processing

Processing services that may require human intervention, but may be initiated online and/or partially self-serviced. **Ideally delivered via partial self-service delivery model.**

Medium Complexity

- Medium value
- Circumstance-related
- Multiple sources required to answer

Service Examples

- In-depth information enquiries and fact finding
- Residual transactions and processing when “automated system” is unable to complete transaction
- More in-depth determination of eligibility
- Adjudication
- Manual production, as required

Channel Features

- Click-to-call
 - Live chat
 - Co-browse
 - Community forums
 - Email
 - Virtual agent
 - Assisted kiosk
-

Tier 3 – Case Management

Complex services are those that require consultation with a program specialist. **Ideally delivered via non self-service channels with higher levels of support.**

High Complexity

- High value
- Complex issues
- Multiple sources required to answer
- Significant customer information required
- High-value customer segment
- High technical complexity

Service Examples

- Complex enquiries
- Policy interpretation
- Case management
- Decisions and rulings on complex cases
- Major investigations
- Appeals/disputes/adjudication
- Enforcement

Channel Features

- Click-to-call
 - Live chat
 - Co-browse
 - Telephone transactions
 - In-person transactions
-

Examples from the United Kingdom (UK) also highlight the kinds of public services which can be considered “contenders” for digitization (i.e., digitization will create value) and “exceptions” (i.e., the value will be harder to extract):¹⁰⁰

Contenders	Exceptions
<p>Managing personalized social care packages</p> <p>Local authorities spend about £16.1 billion on social care but about £1.9 billion of this is spent not on care services but on assessments, administration, and management.</p> <p>Managing a customer’s social care package involves a number of transactions that are well suited to digital service channels, such as:</p> <ul style="list-style-type: none"> • Reviewing the data of the package • Changing levels of service • Adding/removing components 	<p>Delivery of frontline professional service</p> <p>Many public services require face-to-face contact because the purpose of the contact is for a skilled professional to undertake a complex activity. These include:</p> <ul style="list-style-type: none"> • Social worker contact with adults and children • Medical appointments • Parole and offender rehabilitation services • Delivery of education by teachers <p>There are some opportunities for complex, assisted service to be delivered through electronic channels, for example: video conference delivery of educational seminars, and online medical appointments. In these cases, the channel becomes electronic, but the transaction remains assisted rather than self-service.</p>
<p>Managing benefit entitlement details</p> <p>There are many transactions for customers who are in receipt of one or more benefits, which are well suited to self-service, including:</p> <ul style="list-style-type: none"> • Notifying of changes in circumstance • Reviewing entitlement details, payment dates, and accounts <p>We note that the Government’s plans for Universal Credit assume that most transactions will be self-service.</p> <p>Making and changing appointments</p> <p>Numerous parts of the public sector use appointments to schedule customer contact that must be face-to-face, these include: NHS medical appointments, immigration/asylum appointments, and benefit claimant interviews. Whilst the primary contact cannot shift channels, the transactions for booking and rescheduling appointment details are strong contenders for self-service channels.</p> <p>Student management</p> <p>Schools, colleges, and universities all support numerous transactions that are essentially about data and information transfer, such as:</p> <ul style="list-style-type: none"> • Reporting results to students and/or parents • Recording participation and attendance • Applications • Learning management and history 	<p>Emergency services</p> <p>The time-criticality of emergency service response to contacts makes it unlikely that digital service channels are feasible for transactions such as reporting emergency incidents. Customers would not trust that contact has been made without human contact, so channel shift is not achievable.</p>

¹⁰⁰ Deloitte UK, Choosing Fewer Channels: Public service channel options in an age of austerity (2011).

Appendix G

Performance management

As Dave Fletcher, CIO of Utah.gov states, “If you wish to be successful with your digital government initiatives, you must measure.”¹⁰¹ Public and private sector organizations must learn to effectively identify the metrics that will measure success within self-service channels, which includes moving beyond static data such as number of downloads or transaction volumes to tracking user retention and cross-channel access patterns.

It is critical to incorporate the functionality for performance measurement and reporting into digital service applications and web-based solutions design. As digital solutions can increasingly be purchased as Commercial Off-The-Shelf (COTS) solutions, which may subsequently be customized, public and private sector organizations should insist that performance management and reporting capabilities be embedded in any solution or service that they procure.

In addition, when developing new multichannel and self-service strategies, organizations should set clear goals for digital enablement projects and know what the targeted objectives and return on investment (ROI) are at the outset. Having an initial definition of the goals for digital projects will help to inform the performance and outcome information that needs to be collected, monitored, managed and reported. The performance measurement framework below explores five key dimensions of multichannel management. While the performance measurement examples highlighted below are by no means exhaustive, they reflect select data points or key considerations which emerged during our interviews as well as our secondary research:

Multichannel strategies	Client strategies	Processes & operations	People, culture, & organization	Technology & infrastructure
The extent to which channel strategies are aligned with the broader business vision and strategies, and contribute to goals to increase digital/self-serve interactions and transactions.	The extent to which the client experience vision and client segment/profile strategies, including client analytics, support the channel and digital service strategies.	The extent to which channel service processes and operations effectively deliver client interactions, manage performance, and improve efficiency.	The effective management and organization of people to foster a culture conducive to achieving objectives for client interactions.	The extent to which the technical environment supports client channel and service interaction processes, operations management, and enables channels and support agents to meet their strategic objectives.
Performance measurement – component examples				
<ul style="list-style-type: none"> • Channel Analytics • Web Analytics • Multichannel Management • Marketing & Outreach • Social Media & Public Forums 	<ul style="list-style-type: none"> • User Experience • Client Profiles 	<ul style="list-style-type: none"> • Content Management • Service Performance & Fulfillment • Financial Management • Risk Management 	<ul style="list-style-type: none"> • Employee Management 	<ul style="list-style-type: none"> • Data Integration/Quality & Master Data • Privacy & Security

¹⁰¹ Fletcher, Dave, GovLoop, Overview of Metrics I Use with Utah.gov (2010).

The following areas can be considered within a broad performance management framework for increasing digital services and achieving a high-quality multichannel service delivery strategy:

Component	Sample measurements & key evaluations
Channel-based Analytics	<ul style="list-style-type: none"> • Unique visitors to a channel • Time spent by users in a channel-based interaction • First contact resolution rates by channel, e.g., IVR containment rate/call completion rate (%) • Volume of interactions/transactions by channel • % of total interactions/transactions by channel • Channel promotion, e.g., % of all referrals (or visitors) • Channel client behaviour, e.g., stickiness • Channel outcomes, e.g., conversion rate/attrition rate • Channel profitability (note: overlaps with financial management) • Channel contact content analytics, e.g., speech/call centre conversation analytics, web site hits/click-through analytics, etc.
Web Analytics	<ul style="list-style-type: none"> • Average bandwidth of users' connections and percent that have broadband connections • Browser type, i.e., what browser is the basis of a user's connection to a website, screen resolution, operating system, etc. • Search engine optimization (SEO), e.g., referrer efficiency, cost of acquisition and reach; search engine visibility, link building • Web rates: hits, page views/average page views, unique visitors, visitors, visit duration, impressions, bounce rate, new visits, etc. • Click-through rate and clickstream analysis
Multichannel Management	<ul style="list-style-type: none"> • Reasons for channel contact by channel, e.g., contact centre call "categories"/reasons, webpage hits by content index, etc. • Cross channel conversion rates • Total number of hybrid customers • Rate of channel abandonment, and rate of attempted resolution in another channel • Rates of assisted support, e.g., number of web visits that connect to live chat/click to call, number of clients assisted in supported in-person service environments, etc. • Predictive modeling of costs/savings based on channel migrations • Evaluation of the use of incentives and penalties to encourage channel migrations, e.g., if there is a "promotion" or a price/service standard change, what volume changes result • Quality of interactive client data view for users and agents
User Experience	<ul style="list-style-type: none"> • Client satisfaction rates by channel, e.g., surveys • Reasons for abandonment of channel, e.g., surveys, inquiries, page navigation issues, etc. • Channel-enabling IT system failure rates, e.g., server down % of time • Client opinions and feedback
Client Profiles	<ul style="list-style-type: none"> • Client characteristics, e.g., demographics (languages, age, network location, education, etc.) • Client channel preferences, e.g., based on segments, transaction rates by service types, etc. • Client channel behaviours, e.g., based on segments, usability, and clickstreams and site actions
Content Management	<ul style="list-style-type: none"> • Number of updates/improvements made to content • Knowledgebase topics/algorithms • Client and agent feedback on content/knowledgebase • Website franchise/theme management, e.g., amount of pages/services per franchise/theme
Service Performance & Fulfillment	<ul style="list-style-type: none"> • Total cycle time for an interaction/transaction in each channel • Service standards for execution of a service interaction/transaction within a channel, including measurements against standard, e.g., rate of "on time" fulfillment, contact within standard timeframe, etc.
Marketing & Outreach	<ul style="list-style-type: none"> • Cost of marketing initiatives • ROI of marketing initiatives, where value can be calculated
Social Media & Public Forums	<ul style="list-style-type: none"> • Public forum use rate, e.g., number of community members, number of posts, ratings of posts by other community members, satisfaction levels, etc.

Component	Sample measurements & key evaluations
Financial Management	<ul style="list-style-type: none"> • Cost to serve, i.e., measures the average cost by transaction in each channel • Total revenue/income by channel • Financial contribution by channel, i.e., total revenues minus total costs • Cost per unique initiative, e.g., creation of a public forum and ongoing management, marketing initiative, launch of live chat support function, etc. • Quarterly/annual costs associated with implementation of initiatives and/or services associated with a particular channel • Quarterly/annual costs associated with integration of the channel with other channels already in operation • Quarterly/annual costs associated with ongoing maintenance of the channel and its service offerings • Quarterly/annual costs associated with multichannel infrastructure and individual technology components
Risk Management	<ul style="list-style-type: none"> • Risk logs by channel/digital initiative
Employee Management	<ul style="list-style-type: none"> • Employee turnover/retention rates • Employee satisfaction/engagement levels • Employee utilization rates • Performance review outcomes, including number and amount of performance bonuses distributed • Degree/extent of training, including cross-training (across service channels)
Data Integration/Quality & Master Data	<ul style="list-style-type: none"> • Data quality measurements, e.g., consistency of client data across channels and data sources; levels of standardization of data • Ability to access and integrate structured and unstructured data from various sources • Level of reusability of business logic and data services rules • Automated data auditing and reporting features, e.g., audit of changes to data
Privacy & Security	<ul style="list-style-type: none"> • Number of data/system breaches, including by channel, service, and system • Number of reports of identity hacking/stolen identity numbers/documents

Appendix H

Interviews

Given that the project was 12 weeks in length, we were only able to interview the leading jurisdictions and organizations included within the table below. There is undoubtedly a much wider array of national and global organizations and governments that could be considered for additional research on leading self-service practices.

Through our conversations, we were able to build upon ICCS knowledge and public service networks within Canada to include governments with leading digital service capabilities and private companies across the banking, brand management, utilities, and telecommunications sectors. We selected these private sectors based on their similarity to and overlap with services present within the public service (e.g., payments, account-based services, transactional services, etc.).

Organization	Country/Jurisdiction	Sector
1. People's Trust Company	Canada	Private – bank
2. NIC Inc.	USA	Private – e-service provider
3. Global Data Company	Canada	Private – identity verification provider
4. Royal Bank of Canada	Canada	Private – bank
5. TD Bank	Canada	Private – bank
6. City of Calgary	Canada – City of Calgary	Public – municipal
7. ServiceOntario	Canada – Ontario	Public – provincial/regional
8. Revenue	Ireland	Public – federal/central
9. Government of South Australia	Australia	Public – provincial/regional
10. Danish Digital Task Force	Denmark	Public – federal/central
11. National Health Services Direct	United Kingdom	Public – federal/central
12. Service BC	Canada – British Columbia	Public – provincial/regional
13. BC Hydro	Canada	Public – government utility
14. City of Copenhagen	Denmark – City of Copenhagen	Public – municipal
15. Access Florida	USA State	Public – state/regional
16. Service Ottawa	Canada – City of Ottawa	Public – municipal
17. National Electoral Committee	Estonia	Public – federal/central
18. Inland Revenue Authority	Singapore	Public – federal/central
19. LoyaltyOne	Canada	Private – loyalty/branding
20. Services Quebec	Canada – Quebec	Public – provincial/regional