

Modernizing the Global Visa Environment

An Operating Model for the 21st Century

White Paper

CSC



CSC
North American
Public Sector

ABSTRACT: Global visa agencies face a challenge of facilitating international travel without compromising security. Traditional operational models – using embassies and consulates as customer service centers that collect paper-based benefit applications – cannot sustain current demand. Nations that do not adapt will find themselves losing travel market share.

To get to the point of digital benefit application submission and adjudication requires commercial partners who can provide brick and mortar customer services to non-citizens. This means moving beyond current best practices of selecting commercial providers to supply benefit information and facilitate paper applications, to allowing those providers to co-locate such services for multiple governments and agencies. Most importantly, it means recognizing that the process of identifying benefit applicants – collecting biometrics, scanning documents, registering biographics – needs to shift from being enterprise-centric (and repeated by each agency) to being consumer-centric. Just as commercially operated application centers can without conflict, support the needs of multiple benefit-issuing agencies and governments, so too can a commercial identity service consolidate the process of identification for many enterprises. By moving to an Identity as a Service model, agencies can simultaneously accelerate digitizing their benefit processes, cut costs, facilitate travel, increase security and focus on core diplomatic functions.

Keywords: Global Visa Environment, Visa Reform, Border Reform, Immigration Reform, Secure Digital Identity, Digital Accountability.

Traditional visa, border, and immigration benefit application operating models are stifling facilitation, security, and resilience.

Twenty-first century operations must leverage commercial partners and the consumerized technologies of cyberspace to reform the system. Commercial partners can provide critical customer service functions and identification-related services, while creating economies of scale for both.

As a result, trusted digital identities -- managed and controlled by individual consumers -- will drive a complete digitization of visa, border, and immigration benefit operations. Benefit adjudicating agencies can leverage advanced analytics to perform instant eligibility, risk, and threat assessments, accelerating the processing of low-risk applications and paying closer attention to higher risk requests... long before the applicant appears at a physical port of entry.

And applicants -- equipped with trusted digital identities -- will be able to apply for benefits from any nation, from the comfort of their home or office, without having to undergo separate and repetitive biometrics collection and identity assurance processes.

In May, 2011, the BBC [reported](#) that the UK is “losing the competition” for tourists and tourism revenue, citing as a primary cause rigorous identification and visa processes that require individuals to travel long distances in some cases to make benefit applications in person, including the need to enroll biometric information via electronic fingerprint scanners. While the Home Office points to a visa application approval rate of 97% as a sign of success, critics say this metric does not take into account individuals who do not complete – or do not even bother to start – an application.

The problem faced by the UK echoes the US experience, where a post-9/11 security-oriented visa process has driven not just the requirement to collect biometrics, but also a need to appear personally for interviews at US consulates and embassies. Indeed, as a number of nations plan their own trajectory towards making biometrics part of every benefit application, each faces similar unintended consequences: potential visitors –

tourists, academic bright lights, talented engineers, doctors, researchers, and business people — travel, study, contribute, or innovate elsewhere, where the process is less cumbersome.

The realities of the twenty-first century security paradigm demand a continuous focus and orchestration of intelligence and law enforcement to frustrate and prevent the movement of both ideologically and financially oriented criminals, and to render them unable to commit acts of terrorism or other crimes. Hence, the US and its security partners continue to struggle with the question of how to make it more difficult for terrorists and criminals to hide in plain sight as they secure travel permissions, while continuing to facilitate – indeed, compete for – tourism, business travel, and intellectual exchange.

Despite intense and costly effort, traditional visa, border, and immigration operations models struggle to meet their objectives of ensuring both security and facilitation. They need reformation.

CORE SERVICES VS GENERIC SERVICES

While “core” embassy and consular functions are indeed complex and highly particular to national interests, the basic functions of providing visa, border, and immigration information, identifying applicants, and facilitating benefit applications are highly generic.

A combination of historical precedent and technological limitations has caused these generic services to be replicated by almost every government on the planet, each of which also inflate their embassy, consulate, and adjudication operating costs.

It has created a highly inconvenient and expensive process for individuals who cannot travel under visa waiver privileges.

And it makes achieving security and facilitation objectives difficult.

Since no one is winning under this concept of operations, it's time to change.

A HARD LOOK AT OPERATIONS MODELS

Budget cuts are forcing a hard look at traditional embassy and consulate-based operations models (See Sidebar I). For most of the 20th century, it seemed reasonable to manage visa application processes in what were otherwise primarily diplomatic facilities. In the early 1980s, growing travel volumes started to overwhelm the adjudication process. The solution, in 1986, came in the form of the US Visa Waiver Program and its international counterparts, which aimed to simplify and facilitate short term travel for business or pleasure. The primary objective was to focus visa adjudicators on higher risk nations that received elevated visa refusal rates. The focus of questioning in such nations, at that time, centered around whether visa applicants had enough motive to return home, or whether they intended to permanently immigrate to the U.S.

Then came 9/11, and official recognition of a new national security paradigm that included a concerted effort to push the border off-shore, into already overburdened diplomatic posts. New rules and processes were added, including mandates to collect biometrics from and interview almost every foreign visitor to the United States. In recent years, US diplomatic facilities have also become home to

enforcement staff who run the Visa Security Program.

Embassies are now again overwhelmed with activities that have little to do with diplomacy and trade promotion. The traditional operating model may have been viable prior to the explosion of consumer travel, and prior to globalization; but it's not working very well today. Budget cuts may be the catalyst that propels our thinking about how to solve these global visa, border, and immigration challenges in ways that meet twenty-first century needs.

THE BEGINNING OF REFORMATION

Some governments are responding to such pressures by shifting the bulk of their operations to focus on visa adjudication rather than administrative preparation. To fill the customer service gap, they partner with commercial service providers who establish (or already have) the physical, electronic, and call-center infrastructure required to provide visa information, collect biometrics, and perform a completeness check on paper-based visa applications and supporting documents before sending them on for adjudication.

Others are looking further ahead. They acknowledge the anachronism of dealing with paper in a digital age, and are making progress in

SIDEBAR I: DIPLOMACY OR CUSTOMER SERVICE?

As agencies navigate a new fiscal environment, it's worth asking a simple question: Why do governments continue to provide a wide range of customer services to foreign nationals through facilities originally intended for diplomacy?

Embassies and consulates were originally designed for diplomacy – to promote a nation's interests outside its own boundaries – and for providing limited services to their own citizens. Evolving circumstances drove function creep, such as the allocation of physical space to border and immigration operations, and the initiation of customer service functions for non-citizens. While the high operational costs associated with this model could be accounted away, physical constraints could not. Facilities started bursting at the seams. Security chiefs objected to the risks associated with public waiting rooms, driving further security costs. Queues formed outside, simultaneously aggravating security concerns and sending a bad brand message about customer service. In some cases, these external queues became disorderly public safety concerns. It's a model that doesn't scale.

And today's governments must think about customer service and brand experiences just as business does. Globalism is here to stay. Nations must compete, not just for access to the world's best and brightest, but also for tourism dollars. Although dampened by terrorism and global economic challenges, 2010 saw a record 935 million international tourist passenger movements. The WTO sees that number rising to 1.6 billion by 2020. Something has to change.

Given physical and budgetary constraints, and a mission that increasingly blends diplomacy with trade and tourism advocacy, governments need to reconsider their operational model. The starting point is for governments to focus their activities on those tasks that must be performed by officials, and find new and innovative ways to handle those that don't. In other words, focusing on core diplomatic and bilateral relations, trade links, and network building, and providing a limited set of services to one's own nationals under particular circumstances. That means outsourcing customer service to commercial partners, getting away from handling paper, and maximizing the use of IT to deliver rapid adjudication decisions.

WHAT CAN BE DONE TODAY?

Agencies interested in optimizing budgets while maintaining security and improving facilitation should look to commercial partners to perform aspects of the benefit process that are not inherently related to making grant or denial decisions.

Commercial partners can provide the following front-end services:

- *information about requirements and processes*
- *assistance in the completion of applications*
- *collection of biometrics and scanning physical documents like Passports and other credentials or evidence*
- *collection of payment, and scanning paper applications for digital transmission to case management systems*
- *application kiosks and web applications that generate fully electronic applications*
- *data entry services*

transforming their benefit operations into an electronic model that allows for automated or automation-assisted eligibility, risk, and threat processing. By automating routine and non-risky applications, scarce human resources can be more intelligently used to assess higher-risk travelers.

Some governments question the value of interviewing in all or most cases, based on informal reviews of whether an interview actually makes a significant difference in deciding whether to grant or deny a benefit (See Sidebar 2). As a result, such agencies are placing more reliance on electronic visa processes, and limiting the number of interviews they perform to the cases that warrant them.

Some governments have also experimented with regionalization, by removing visa adjudicators from many diplomatic posts and instead bringing them together in fewer specialized regional visa centers. Others have taken the next logical step, to repatriate adjudicators to much less expensive adjudication centers in the home country, so making huge efficiency savings, while relying on technology and a thinner overseas network, supported by commercial partners, to maintain local knowledge and customer contact.

These are the first steps towards reforming how governments handle non-citizen services.

SIDEBAR 2: THE INTERVIEW: FROM LINE-UPS TO VIDEO CONFERENCES

While there will always be a clear sub-set of circumstances in which an interview is required to finalize an adjudication, current mandates from some nations to interview every visa applicant are counterproductive in the sense that they do not allow for an intelligent allocation of scarce resources, based on risk or complexity criteria. In fact, the overwhelming burden of “all or nothing” interview philosophies takes us right back to 1986 and the drivers of the Visa Waiver Program. It also brings to mind the now infamous Visa Express program, which a number of the 9/11 hijackers exploited. Visa Express was introduced by the Department of State in Riyadh in June 2001 to eliminate the need for personal appearances because the embassy was dealing with up to 800 applicants a day.

Personal appearances and interviews provide an opportunity to clear up issues and concerns that cannot be resolved simply by reading narrative submissions. Experienced adjudicators, like seasoned law enforcement officials, build over time a finely tuned sense of whether an interviewee is telling the truth, or being intentionally evasive. They can also factor cultural issues into their evaluation. There is no doubt that interview skills and cultural knowledge are a valuable tool in an adjudicator’s toolkit.

But a useful interview can take time. This is a problem when faced with the need to manage many interviews, while still maintaining productivity in adjudicating visas. It’s logical that if the workload rises, constraints (budget, physical space) in the number of adjudicators will tend to drive a requirement to shorten interviews... indeed, perhaps in many cases to make them ineffective and perfunctory, to “tick the box.” And that causes thoughtful people to ask the question: *Why are we doing this at all?*

A better question is: *How can we take a more effective and productive approach to the issue of personal appearances and face-to-face interviews?* Whether to interview an applicant should not be driven by a visa class. It should be driven by a risk assessment. Today, we can leverage modern technology -- rules-based risk assessment engines -- to select interview candidates based on the specific characteristics of their application. Could we deploy consumerized video conferencing technology to conduct those interviews? Video conferencing will render an adjudicator’s geographic location irrelevant. Adjudicators would not have to be housed in expensive diplomatic facilities. Attending interviews would be much more convenient for applicants as well, who would no longer have to travel -- often hundreds of miles -- for these encounters. And the full interview could become part of the digital record.

The unresolved issue is: How do the participants in a video conference authenticate their identities? The answer lies in commercial trusted identity services, (Discussed later in this paper: See “A Key Obstacle and Its Solution”) which will provide the individual with a reliable means of authenticating their identity in digital transactions.

SIDEBAR 3: THE FUTURE OF VIDEO?

Video may offer interview advantages that go beyond convenience and cost reduction. Combined with [video image analysis](#), an emerging science or practice of facial expression analysis could in the future offer adjudicators another tool to assess whether benefit applicants answer questions truthfully. [See this [short interview](#) of Dr. Paul Ekman on micro-expressions, and this [summary of a study](#) of the universality of expressions].

WHAT CAN WE DO TOMORROW?

Many of today's commercial visa application service centers are operated strictly on behalf of specific agencies, and tend to focus only on visa benefits.

But the generic nature of visa application centers creates an opportunity for significant economies of scale, where agencies can agree to co-location, allowing new entrants to the market to pay only the marginal costs of joining the existing network of commercially-run centers. Further economies are available if agencies were to add other benefit types -- like membership in trusted traveler programs -- to the set of products offered.

In this way, a single Visa Application Center could provide the platform for servicing any kind of visa, border, or immigration benefit application process.

It would also create a tremendously customer-centric brand message to offer successful visa applicants the immediate opportunity to participate in trusted traveler programs. Indeed, membership in trusted traveler programs could become the 21st century's equivalent of visa waiver privileges.

THE PRINCIPLES OF REFORMATION

Within these first steps, we can begin to infer several important characteristics and trends of the coming reformation of global visa, border, and immigration services.

1. **Use of Commercial Services:** Like businesses, government agencies need to specialize to maintain their vitality in the new environment. To focus on their core missions of facilitating travel to advance economic and commercial interests, and intensely screen applicants to mitigate national security, law enforcement, and illegal migration risks, it makes sense to separate purely administrative activities from the actions required to adjudicate eligibility, risk, and threat. An initial expression of this principle is to partner with commercial organizations to address key aspects of getting a visa application to the adjudication-ready stage, including collection of biometrics.

2. **Reducing and Eliminating Paper:** Perhaps blindingly obvious, one of the clear benefits of accelerating a move to completely digitize benefit applications is to allow IT -- business process orchestration and rules engines -- to drive intelligent case management that can automate many eligibility and threat (watch-list) checks. Another important advantage of making the information digital from the outset is that the larger body of data collected -- from applications, to entry-exit records, to compliance investigations -- forms the foundation on which agencies can perform automated, analytic-driven risk assessments.

3. **Automating Risk Assessments:** Given that the vast majority of applicants for visa, border, and immigration benefits are true about their intentions and eligible for the benefit, it makes sense to prioritize interview and secondary inspection efforts and resources. If applications themselves can be better constructed to collect eligibility and risk indicators, then the incredible leverage of modern computing power and analytics can be turned loose on selecting applications that contain indicators of higher risk. Some of these applications can then be turned down without subjecting either the applicant or the agency to the inconvenience or expense of conducting an interview. Others will be sufficiently inconclusive and will warrant the second look afforded by a face-to-face conversation.

THE DESIRED END STATE

The end result of visa, border, and immigration reformation will be to simultaneously enhance facilitation and the overall customer brand experience, improve security and integrity, remove the burden of customer service operations on diplomatic facilities, and deliver dramatic efficiency savings.

21st Century Digital Borders: Put simply, the future of visa, border, and immigration application and adjudication is in cyberspace. Individuals in any part of the world should be able to apply for these benefits in the same way that they book airline travel and accommodations. Booking an airline seat doesn't require separate interactions with the reservations system, the baggage handlers, the catering contractor, etc. So too, the process of engaging with a government to obtain the benefits associated with entering and exiting a nation must become a seamless experience, regardless of the number of agencies that work behind the scenes to deliver the outcome.

Speed: Benefits should be processed very rapidly, using automation to present decision-ready applications to adjudicators. In principle, any kind of benefit associated with entering or exiting a country could be made adjudicable within a week of application. Simple benefits, like Electronic Travel Authorizations (essentially, an e-visa for Visa Waiver nationals), should be turned around in minutes.

Automation: While some applications -- for example, the non-visa that is the Electronic Travel Authority -- have such simple basic requirements that their adjudication can be completely automated, others embed sufficient subtlety that binary logic alone cannot handle them. Render unto the machine what the machine can do. And focus adjudicators on exercising judgement.

Interviews: Circumstances that warrant face-to-face interviews should be handled by video (See Sidebar 3), leveraging adjudicators -- perhaps sometimes more than one -- who have precisely the right skill and experience to handle that particular situation, and not being constrained (as they are now) to whatever consular officer happens to be assigned to an embassy or Service Center. In fact, face-to-face interviews would rarely need to be hosted at an embassy facility. Instead, conducted over the internet with video apps, interviews could be recorded, and form part of the individual's personal record of interaction with the enterprise.

THE NEAR FUTURE: IDENTITY SERVICES ENABLE DIGITAL BORDERS

Privacy-Centric Identity Services: a logical extension of the concept of having commercial services provide non-adjudicative services associated with visa, border, and immigration benefit applications.

Consumers need a service tailored to facilitating secure digital identity, and the sharing of verified personal data.

*Commercially provided Identity Services will allow individuals to perform the rituals of proving who they are **once**, provide them with multi-factor (biometric and one-time password) authentication solutions (think smart phone with an app) to enable robust and reliable digital identity claims **anywhere**, and enable individuals to share the results of the verification process, and the data verified **many times** with any enterprise.*

Visa, border, and immigration benefit issuing agencies could be the first to facilitate such a solution by agreeing to accept commercially brokered identity claims. In so doing, they would eliminate the need to require physical presence for each application that depends on biometrics, or the repeated submission of identity documents. Combined with multi-factor authentication services, privacy-centric identity services would eliminate the remaining obstacles to digital borders.

Resilience: In this future state, border and immigration integrity would not simply rely on physical lines in the sand, or “boots on the ground,” because the overall system would be designed for resilience. We should expect individuals to circumvent off-shore screening mechanisms. Some will get past port of entry inspectors. Others who begin with legitimate intentions will seek to overstay their benefit permission, or otherwise violate its terms. But if the driving force behind these illegitimate activities is to take up residence without permission, internal mechanisms -- like digital employment eligibility and legal presence checks for key rights, benefits, or entitlements reserved for legal residents -- would quickly take the value out of illegal presence.

IDENTIFICATION AND IDENTITY: THE OBSTACLE, AND ITS SOLUTION

The primary obstacle to this digital visa, border, and immigration environment is the issue of identification. The core of this issue is maximizing the probability that the individual is who he says he is, locking that identity claim with biometrics, and then subsequently being able to reliably authenticate that individual, whether in a physical or digital encounter.

Proving Who They Are: A significant part of the current benefit application process centers on collecting and evaluating evidence of identity. The characteristics of this activity include assembling biographic identity data, collecting various biometrics, and reviewing identity documents. At its core, this is a highly generic business process, relevant to any government and commercial benefit/privilege/entitlement assessment. Before anyone can determine whether an individual is eligible for a benefit, presents a risk to the integrity of the program, or is on a watch-list... *we need to know who they are.*

Repetitive and Inconvenient: Today, this process repeats itself every time someone applies for a benefit. Even countries that collect biometrics during a particular benefit process, and associate the application with the unique identity, are bound by traditional practices to repeat these cumbersome, inconvenient, and expensive identification rituals.

Commercial Global Identity Services: If the generic processes of managing applications for visa, border, and immigration products are amenable to handling by commercial services, then

this even more generic identification activity is also amenable to commercial service support.

Commercially operated Identity Services can deliver identification economy and convenience, security, and privacy. The solution would allow individuals to prove who they are *one time* to a service that can:

- (i) Evaluate the evidence (including physical examination of credentials by qualified examiners) and then act as a broker for certified identifying information;
- (ii) Perform a biometric uniqueness check; and,
- (iii) Provide the individual with portable strong, personalized multi-factor authentication solution (think smart phone and app with biometrics) to prove their connection to that data and the due diligence performed on it in a way that can be used within the classical username and password infrastructure operated by benefit providers.

Convenience, Security, Efficiency and Privacy: In this way, individuals would no longer have to repeatedly pay for and incur the inconvenience of proving who they are to each benefit provider. The solution would deliver an ability to recover privacy (regain control and secure personal information) by providing access to a personal service that catalogs and manages the sharing of personal information. Such a solution will simplify how an individual shares digital information with enterprises, and allow them to share previously certified data. Finally, a personalized multi-factor authentication device, such as a smartphone, will enable reliable identification during video interviews, and simplify the process of giving the individual access to view transaction histories, and update or provide further information.

Digital Accountability: Such a solution would function and provide accountability across the spectrum of stakeholders in the border and immigration domain, including individuals:

- applying for and exercising benefits;
- representing applicants (e.g., immigration consultants, travel agents);
- supporting applicant qualifications (e.g., certifications, degrees);
- confirming applicant purpose (e.g., university enrollment, employment);
- attesting to the applicant's condition (e.g., medical checks); and,
- managing and adjudicating border and immigration applications and transactions.

BENEFITS OF THE FUTURE STATE

The primary benefits of a reformed global visa, border, and immigration environment include:

- *elimination of the need to provide customer service to non-citizens at diplomatic facilities*
- *repatriation of benefit adjudicators to less expensive, home country locations*
- *strengthened risk assessment*
- *better, faster, and less expensive adjudication processing*
- *biometrics-backed, multi-factor confidence in physical and virtual identity claims*
- *border and immigration policy resilience*

A Global Identity Ecosystem: Responding to a wide array of privacy and cybersecurity concerns, the US National Strategy for Trusted Identities in Cyberspace calls for the emergence of an “identity ecosystem,” which it anticipates should be a largely private sector, commercial effort. The concept suggests a market of identity services, with individuals able to choose identity brokers.

Separating the management of identification (and delegating it to such a specialty business service) from the processes of adjudicating visa and immigration benefits gives agencies responsible for the latter an opportunity to focus on core mission concerns, dramatically reduce per-benefit expenses, and achieve greater throughput, responsiveness, and effectiveness.

GETTING FROM HERE TO THERE

Figure 1, below, sketches an incremental approach to relieving governments -- diplomatic operations, and their back-office support mechanisms -- of many of the generic burdens associated with issuing and managing non-citizen benefits. At the same time, these shifts will make the process more convenient and user-friendly for applicants, and enable better overall security and resilience for governments.

The first step -- which a number of governments have already taken -- is to reduce pressure on diplomatic facilities by outsourcing the customer service elements of facilitating visa applications. The logical next steps involve becoming comfortable with co-location, so that

single Visa Application Centers can achieve economies of scale by servicing multiple Governments with the same infrastructure.

Once governments see the benefits of this approach, it will become easier to take the next logical step of recognizing the generic nature of identification processes, and the cost and efficiency savings inherent in acquiring them as a service. Just as it makes sense for multiple visa products to share shelf space in a physical visa application center, so too does it make sense for a single identification process -- conducted on behalf of the individual, for the individual's convenience, and under the individual's control -- to produce a robust digital identity claim that can be used in multiple benefit or entitlement contexts. In this way, individuals can submit already certified personally identifying information within a benefit application, receive digital credentials, and prove their association with those credentials through personal authentication capabilities.

Reform's Outcomes: Lower Costs, Higher Efficiency, Stronger Security, Greater Convenience, Better Facilitation: These reforms increase both security and travel facilitation while decreasing costs for governments and applicants. With trusted identities, the visa, border, or immigration agency has greater confidence that the applicant is who he claims to be. Just as outsourcing administrative portions of the visa process has fostered travel facilitation by freeing up consular officers' time, so too would outsourcing the identification part of the process. Indeed, with

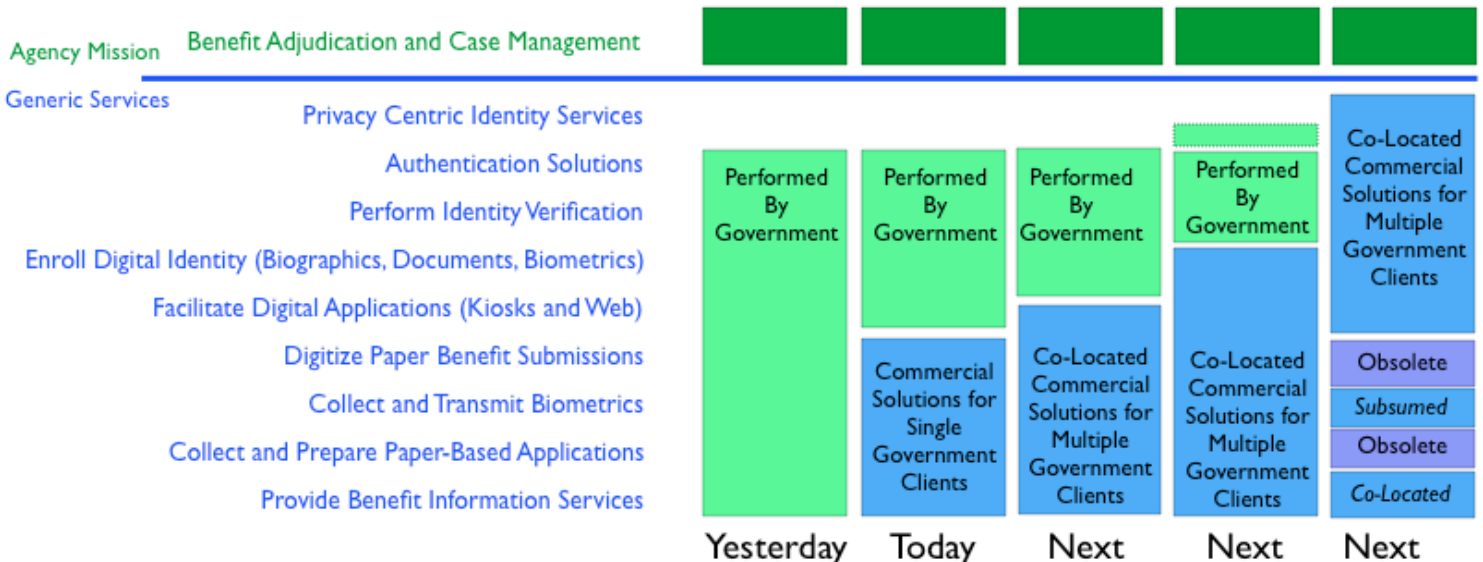


Figure 1: The gradual commercialization of generic application processes will enable a return to mission focus for benefit issuing enterprises.

greater digital trust based on robust, trusted identities, governments could further reduce their costs by maximizing digital engagement, automating adjudication processes, and enabling remote video interviews that reduce embassy or consulate staffing requirements. Moreover, governments could drive further cost and efficiency savings by driving economies of scale through accepting the co-location of commercial services, including the process of identifying applicants.

Embassies and consulates can return to being places of diplomacy, while visa, border, and immigration processes are rapidly and efficiently mediated in cyberspace.

Taken together, these factors cannot but help improve a Government's message to the rest of the world: Welcome.

SIDEBAR 4: WHAT ABOUT CITIZENS?

This paper proposes a roadmap to improve the way governments provide business and tourism services to non-citizens. The same arguments apply to citizen services and to programs responsible for issuing passports. A passport, after all, is simply another credential. As a "product," it differs from a visa only insofar as the specifics of the eligibility and watch-list checks.

Our historical problem with passports has been the inability to securely associate them with the physical person and a true, legal identity that publicly belongs to that person. So imagine a scenario where a consumer- and privacy-oriented Identity Service supports both citizen entitlements like passports, and enables those citizens to engage foreign governments with highly trusted, verified, digital identifying data and citizenship claims.

CONTACTS

Chris Wiesinger, Principal Business Architect, CSC
North American Public Sector
Border & Immigration Center of Excellence
Lora Ries, Director, Immigration Reform Strategy
CSC North American Public Sector
Border & Immigration Center of Excellence

BUSINESS CONTACTS

Ryan Kociolek, Director of Business Development
CSC North American Public Sector

ABOUT CSC

The mission of CSC is to be a global leader in providing technology-enabled business solutions and services.

With the broadest range of capabilities, CSC offers clients the solutions they need to manage complexity, focus on core businesses, collaborate with partners and clients, and improve operations.

CSC makes a special point of understanding its clients and provides experts with real-world experience to work with them.

CSC is vendor independent, delivering solutions that best meet each client's unique requirements.

For 50 years, clients in industries and governments worldwide have trusted CSC with their business process and information systems outsourcing, systems integration and consulting needs.

DISCLAIMER

The information, views and opinions expressed in this paper constitute solely the authors' views and opinions and do not represent in any way CSC's official corporate views and opinions. The authors have made every attempt to ensure that the information contained in this paper has been obtained from reliable sources. CSC is not responsible for any errors or omissions or for the results obtained from the use of this information. All information in this paper is provided "as is," with no guarantee by CSC of completeness, accuracy, timeliness or the results obtained from the use of this information, and without warranty of any kind, express or implied, including but not limited to warranties of performance, merchantability and fitness for a particular purpose. In no event will CSC, its related partnerships or corporations, or the partners, agents or employees thereof be liable to you