

Reimagining Digital Government

From Legacy Systems to Scalable Public Infrastructure

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Digital public infrastructure represents a foundational shift that enables cost efficiency, faster services, and improved citizen trust.

Foreword

Across Canada, governmental parastatals are under increasing pressure to deliver faster, more accessible, and more resilient services. Citizens now expect the same level of digital experience from public institutions as they do from leading private-sector platforms. However, many public entities remain constrained by legacy systems, fragmented data environments, and rigid operating models. The result is a widening gap between citizen expectations and government capabilities.

This report outlines how Canadian parastatals can transition from legacy-bound operations to scalable digital public infrastructure (DPI)—unlocking efficiency, agility, and trust.



The Imperative for Change

Rising Citizen Expectations

Digital-native citizens demand:

- Seamless, omnichannel access
- Real-time service delivery
- Personalized interactions

Legacy Constraints

Current-state challenges include:

- Aging IT systems (20–40 years old)
- High maintenance costs (up to 70% of IT budgets)
- Limited interoperability across agencies

Systemic Complexity

Transformation in Canada must navigate:

- Multi-level governance (federal, provincial, municipal)
- Bilingual service delivery
- Regulatory oversight from institutions such as Treasury Board of Canada Secretariat

Current-State Diagnostic

A representative Canadian Crown corporation (operating in a role similar to Service Canada) provides a clear lens into the systemic challenges facing governmental parastatals today.

Technology Landscape: Legacy at the Core

Canadian parastatals typically operate 15–25 legacy applications alongside 5–10 disconnected citizen databases, with up to 70% of IT budgets consumed by maintenance and less than 30% available for innovation. This fragmented architecture increases integration costs by 20–30% per change initiative and limits scalability, making even minor system updates slow, expensive, and high-risk.

Operational Performance: Inefficiency by Design

Core service processes remain partially manual, driving average processing times of 15–25 days and error rates of 8–10%, with as much as 40–60% of staff time spent on repetitive validation and reconciliation tasks. These inefficiencies inflate operating costs by 20–40% and significantly constrain the organization's ability to respond quickly to policy changes or demand surges.

Citizen Experience: Fragmentation & Friction

Citizens must interact with 3–5 different systems per service journey, often re-entering the same data multiple times, contributing to drop-off rates of 25–35% in digital applications and increased reliance on call centers. As a result, satisfaction scores lag behind private-sector benchmarks by 20–30 points, while call volumes increase by 15–25% due to lack of transparency and real-time updates.

Structural Implications

The cumulative effect of legacy technology, operational inefficiencies, and fragmented experiences results in 25–40% higher total cost of service delivery compared to digitally mature governments and limits policy implementation speed by up to 50%. Without structural transformation, these constraints will continue to erode public trust, increase fiscal pressure, and reduce the government's ability to deliver responsive, citizen-centric services at scale.

The Vision

The target state is a platform-based government architecture that replaces fragmented systems with interoperable, reusable digital capabilities. This model shifts government from program-specific systems to shared infrastructure layers that can scale across agencies.

Core Principles

- Services designed around life events
- Seamless data exchange across entities
- Infrastructure that adapts to demand
- Embedded compliance and trust

Foundational Layers

- Digital Identity
- Payments & Benefits Platform
- Data Exchange Layer (API ecosystem)



Technology Transformation Architecture

Cloud-Native Infrastructure

- Hybrid and multi-cloud environments
- Containerization and microservices
- Elastic compute capacity

API-First Integration

- Decoupling legacy systems
- Enabling real-time data exchange
- Supporting ecosystem partnerships

Data Modernization

- Unified citizen data model
- Master data management (MDM)
- Advanced analytics and AI

Cybersecurity & Privacy

- Zero-trust architecture
- Encryption and identity-based access
- Compliance with Canadian data sovereignty laws

Operating Model Transformation

From Projects to Products

Canadian parastatals typically operate project-based delivery models with 12–24 month release cycles, resulting in slow time-to-market and limited adaptability to policy changes. Transitioning to a product-centric model with persistent teams can reduce delivery timelines by 30–50% and improve service responsiveness, but requires reconfiguring funding models that currently allocate 70–80% of budgets to fixed annual programs rather than iterative delivery.

Agile at Scale

While agile methodologies are increasingly adopted, fewer than 30% of public sector initiatives achieve true enterprise-scale agility, with most still constrained by hierarchical approvals and siloed execution. Scaling agile across cross-functional teams can improve productivity by 20–30% and reduce rework by 15–25%, but demands significant changes in governance, decision rights, and performance management frameworks.

Workforce Transformation

Up to 40–60% of public sector roles lack advanced digital, cloud, and data capabilities, creating a heavy reliance on external vendors and increasing delivery costs by 20–35%. Addressing this gap through structured upskilling and hybrid talent models can reduce vendor dependency by 15–25% while improving long-term execution capacity and institutional knowledge retention.

Implementation Roadmap

0–6
months
Stabilize

The stabilization phase focuses on gaining visibility into complex legacy environments, where organizations often uncover 20–30% more system dependencies than initially documented, increasing early-stage risk. Implementing API layers and digitizing high-volume services can deliver 10–20% efficiency gains within 6 months, while reducing immediate operational bottlenecks without disrupting core services.

Implementation Roadmap

6–24
months
Modernize

During modernization, migrating workloads to cloud environments and consolidating fragmented data can reduce infrastructure costs by 25–40% and improve system performance by 30–50%. However, up to 60% of transformation programs experience delays at this stage due to data migration complexities and cross-agency coordination challenges, requiring strong centralized governance and sequencing discipline.

Implementation Roadmap

24–48
months
Transform

In the transformation phase, organizations deploy advanced capabilities such as AI-driven decision-making and proactive service delivery, which can reduce processing times by 50–70% and improve policy responsiveness. Despite this potential, fewer than 35% of public sector entities fully scale AI solutions, primarily due to governance, trust, and regulatory constraints that limit adoption.

Value Realization

Operational Efficiency

Digital transformation can reduce total IT and operational costs by 25–40%, driven by system consolidation and reduced manual intervention, while improving productivity by 30–50%.

However, without clear accountability, up to 50% of projected cost savings fail to materialize, often due to fragmented ownership of outcomes across departments.

Service Quality

End-to-end digital integration can reduce processing times from 15–25 days to 3–5 days and lower error rates from 8–10% to below 2%, significantly improving service reliability. These gains are contingent on full process automation, as partial digitization typically captures only 40–60% of potential efficiency improvements.

Adoption & Citizen Impact

Even with modern platforms in place, 20–40% of users may continue to rely on legacy channels without targeted adoption strategies, limiting overall impact. Effective change management and digital channel incentives can increase adoption rates to 70–85%, driving measurable improvements in citizen satisfaction and reducing call center volumes by 15–25%.

Risk Landscape & Mitigation

Risk	Description	Mitigation
Organizational resistance	Cultural inertia	Leadership alignment, change management
Data privacy concerns	Citizen trust risks	Privacy-by-design frameworks
Vendor lock-in	Dependency risks	Open standards, multi-cloud strategy
Talent shortages	Skills gap in digital	Workforce reskilling programs

Lessons from Global Leaders

Leading digital governments (like Estonia, Singapore) demonstrate:

- Centralized digital identity systems
- Strong interoperability frameworks
- Continuous innovation culture



Strategic Recommendations

Establish a Shared Federal Digital Backbone

Canadian parastatals should develop a shared digital backbone to eliminate duplication, which currently drives 20–30% higher infrastructure and integration costs across agencies. By implementing reusable platform components (identity, payments, data exchange), governments can accelerate service deployment by 30–50% and enable seamless cross-agency interoperability.

Scale Institutional Digital Capabilities

Expanding the mandate and capacity of organizations such as Canadian Digital Service can improve delivery consistency and reduce duplication across agencies. Scaling embedded digital expertise across ministries can increase transformation success rates by 20–30% while reducing reliance on external vendors.

Standardize Interoperability Frameworks

The absence of national standards for APIs and data sharing increases integration costs by 25–35% and slows cross-agency collaboration. Establishing unified interoperability frameworks can significantly reduce implementation timelines and enable secure, scalable data exchange across jurisdictions.

Strategic Recommendations

Enable Digital-First Policy Design

Many existing policies are not optimized for digital delivery, creating bottlenecks that limit automation and efficiency across services. Adopting digital-first policy frameworks can reduce processing times by 40–60% and enable end-to-end automation of high-volume public services.

Strengthen Public Trust Through Transparency & Privacy Leadership

Up to 30% of citizens remain hesitant to adopt digital government services due to concerns around data privacy and security. Strengthening transparency and embedding privacy-by-design principles, aligned with frameworks from Treasury Board of Canada Secretariat, can improve adoption rates and build long-term trust in digital platforms.



Conclusion

The transition from legacy systems to scalable digital public infrastructure represents one of the most significant opportunities for public sector transformation in Canada. While the challenges are substantial, ranging from outdated technology and fragmented data to organizational and policy constraints, the potential benefits are equally significant. Governments that successfully execute this transformation can achieve 25–40% cost reductions, 50–70% faster service delivery, and substantial improvements in citizen satisfaction and trust. However, this transformation is not a one-time initiative but an ongoing evolution that requires sustained commitment, investment, and leadership. Success depends on aligning technology, operating models, and policy frameworks around a common vision of citizen-centric service delivery. It also requires a willingness to embrace new ways of working, including agile delivery, data-driven decision-making, and cross-agency collaboration.

Ultimately, the shift to digital public infrastructure is about redefining the role of government in a digital age. Rather than acting solely as a service provider, government becomes a platform that enables innovation, supports economic growth, and enhances societal resilience. For Canada, this represents an opportunity not only to modernize its public sector but to set a global benchmark for digital governance.

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