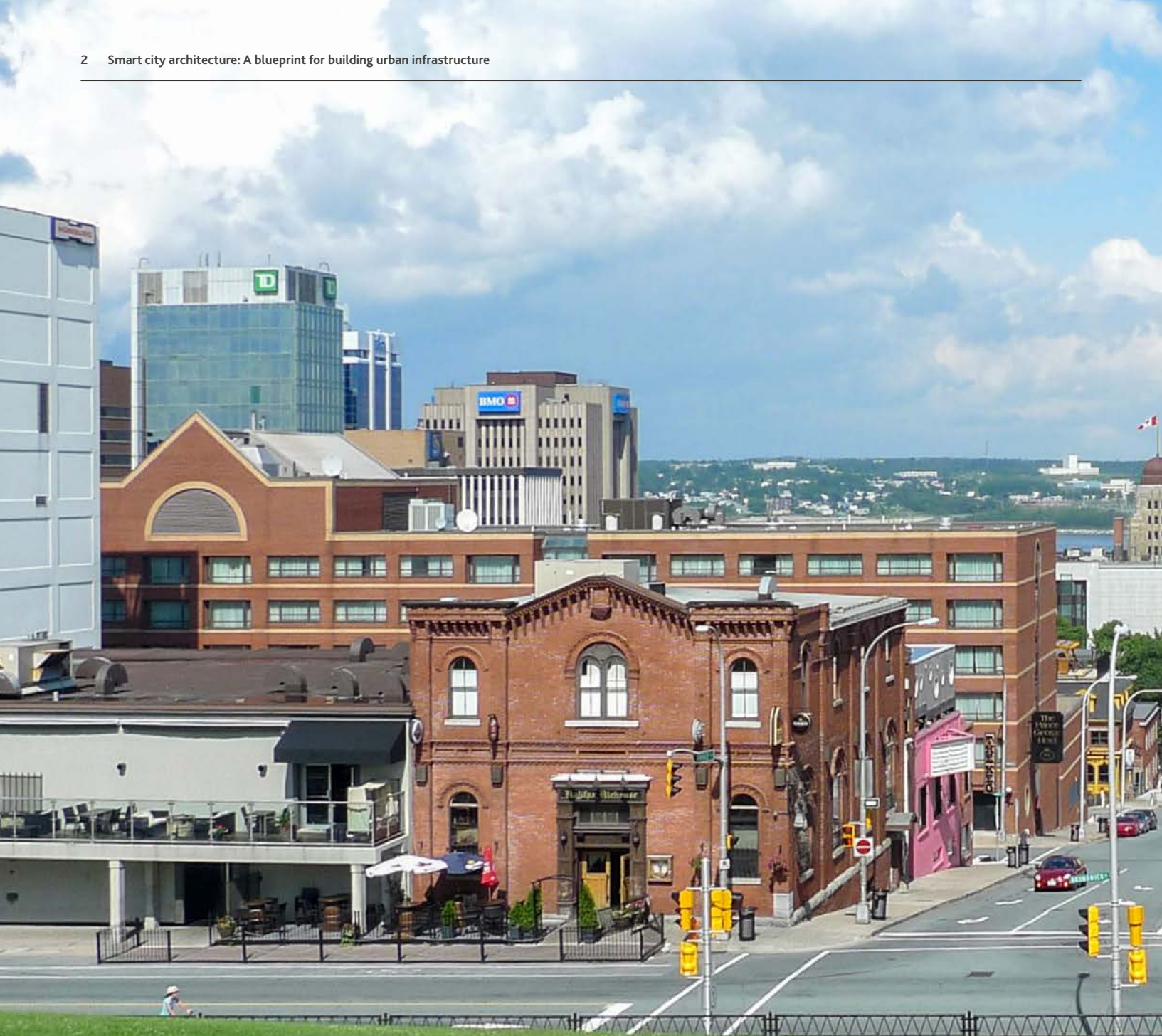




SMART CITY ARCHITECTURE

A blueprint for building
urban infrastructure



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Using technology to make daily life more seamless and intelligent is at the core of why smart city development is essential to long-term opportunities for sustainability and innovation for both citizens and corporations. Integrating new technologies with best-practice business processes and the well-established infrastructure in Canadian cities can bring a multitude of issues, however. Without a blueprint and the collaboration of all stakeholders in the successful implementation of a smart city strategy, realizing any benefits can come to a grinding halt.

As a leading provider of advisory services for Canadian municipalities interested in smart city applications, BDO Consulting has prepared 'Smart city Architecture: a blueprint for building urban infrastructure' to help determine and define the necessary steps to turn an urban vision into the infrastructure of the future. Recognizing that every municipality is unique in its composition, inherent assets, and desired aspirations, our guide uses practical experience, best practices, and academic review to take you through the five steps to implementing smart city initiatives.

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BUILD

STEP 1: BUILD COMMUNITY ENGAGEMENT AND ESTABLISH GOVERNANCE

A successful smart city builds a solid foundation by ensuring that all perspectives are considered in planning, development, and implementation. Key constituencies offer unique perspectives and potential benefits:

- ▶ Municipal governments can provide strong and sustained political leadership—from the city mayor to the municipal council—and help to facilitate collaboration between all municipal departments.
- ▶ Provincial and federal governments can allow access to government-support programs, awareness of legislation and compliance requirements early in the planning cycle, and guidance on existing best practices.
- ▶ Local utilities can enable and deliver potential smart city amenities and are often able to work with the private sector in P3 (public-private partnerships) initiatives that expedite the development of first-to-market smart city solutions.
- ▶ Broadband service providers can provide the essential connections between Internet of Things (IoT) enabled devices and networks, and distribution models including municipal-owned infrastructure, P3-distribution organizations, and traditional telecommunications companies.
- ▶ Universities and colleges can support the research, development, and beta testing required to bring new smart city applications to market.

- ▶ Corporate leaders can share valuable expertise that helps establish a smart city in a cost-effective and timely manner, including entrepreneurial vision, technical acumen, project management, and savvy about funding options.
- ▶ Best-practice partners can impart 'been there, done that' experience that helps refine the blueprint—lessons learned can offer practical solutions.
- ▶ Professional-service providers can advise on pivotal considerations, and include urban planners, engineers, management consultants, financing intermediaries, technology-solution providers, lawyers, accountants, and architects.

Establishing a smart city advisory board peopled by key community constituents is an important part of the process—a formal governance structure best channels the expertise from each group. The most effective advisory boards have a multidisciplinary membership representing a cross section of stakeholders. Special-interest committees, with membership from citizen groups and local associations, report into the board.

Successful smart city implementations often complement the advisory board with a designated department, the Project Management Office (PMO), to coordinate and manage the multiple work streams, interdependencies, and critical decision-making necessary to build a smart city.

Historically, leadership of the advisory board and PMO have come from within local government. Recently, there have been several very successful implementations guided by industry leaders with the required vision and passion for smart cities.

DEFINE

STEP 2: DEFINE THE REQUIRED INFRASTRUCTURE AND NECESSARY CORE COMPETENCIES

The two cornerstones of any smart city are high-speed broadband connectivity and digital intelligence.

As a smart city initiative requires many new forms of infrastructure and skill sets, it is important to assess the current state of the municipality against minimum criteria.

Accessing the IoT-enabled services essential to smart city initiatives, high-speed broadband connectivity should at a minimum encompass:

- ▶ adoption levels at or in excess of 90% of the community
- ▶ speeds of 50/10 (download/upload)
- ▶ ping latency (intermittent delays) of less than 60 milliseconds
- ▶ cost-to-serve is at, or below, industry benchmarks

Since effectively directing the power of IoT-enabled technology depends on understanding and keeping pace with its ever-evolving capabilities, the digital intelligence of a smart city initiative should encompass:

- ▶ an integrated digital-transformation strategy, which includes a privacy strategy for the open-data environment;
- ▶ a complementary HR strategy, which supports targeted recruitment—notably of a senior digital executive—to elevate the overall digital maturity of the municipal government, as well as relevant training;
- ▶ a well-established process hierarchy for digital-transformation projects, starting with core legacy processes and building toward new smart city program requirements;
- ▶ a primary open-data digital platform, the foundation on which smart city programs will access and distribute open-data;
- ▶ a change-management plan to transform the organizational culture at city hall from a silo-based bureaucratic framework to a collaborative agile model.



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POSITION

STEP 3: POSITION THE SMART CITY STRATEGICALLY THROUGH DESTINATION BRANDING

Once a smart city has established a governance structure, a community-engagement plan, the required infrastructure, and digital intelligence, the next step is to determine how it will attract and retain tax-paying residents and businesses, as well as visitors. Determining how to position a municipality uniquely, known as destination branding, is arguably one of the most important steps in implementing a smart city initiative.

A city's brand is strong when people can clearly differentiate the city through specific words and connotations. Think about Paris, or the 'city of love and culture'—the French capital is probably one of the world's best examples of destination branding, both in design and in execution.

In order to promote the area as a place to live and invest, it is important to match its current strengths to the desired destination brand. This should be done at the same time as the infrastructure and municipal programming of the smart city is being built. Start by defining the current position of the municipality, the 'as is' state, specifically as it relates to programming in a number of areas, including economic development, equality, safety and security, environment and sustainability, healthy living, and mobility. The smart city advisory board should review civic programming to determine the combination of services that align with the unique destination brand of the municipality. The municipality can then define, build, and communicate desired outcomes, based on the agreed-upon brand.





DEVELOP

STEP 4: DEVELOP AN INTEGRATED SET OF MUNICIPAL PROGRAMS TO DELIVER THE BRAND

Balanced and integrated programs across all services are essential to support the desired destination brand. It is important to note that the goal is not to go right from conceptualizing a smart city to delivering on destination-brand expression in a single step. The development is a series of generations of brand expressions, usually dependent on the level of broadband connectivity and digital maturity.

While each municipality will have an individual starting point, the key to gaining traction toward achieving smart city goals is recognizing successes along the way and actively communicating each step forward to all interested stakeholders. With this principle in mind, a city should approach their first-generation smart city milestone by addressing four essential steps:

1. Develop a fully transparent governance structure for policies, procedures, and programming, and for the use of open data and privacy concerns.
2. Develop high-speed broadband connectivity as aggressively as possible.
3. Develop the digital maturity of the city with regard to strategy, systems, and human resources within the government, and between the municipality and its citizens.
4. Develop practical expansions, or modifications, to existing programs and service areas aligned with the smart city future state.

It is the fourth step that can be a stumbling point—leaders and collaborators often feel they 'don't know what they don't know' and are reluctant to take the first major step forward.

This set of first generation smart city program pillars must support the brand expression of the municipality. The pillars should be based on a deep understanding of two foundational criteria:

1. Broadband and digital-intelligence capabilities, or limitations, of the city.
2. Global best practices for smart city applications (determined through exhaustive review).

The program pillars should consider the need to demonstrate success in the form of highly visible desired outcomes in the near term, or 'quick wins,' and sequentially developing the infrastructure required to continually advance the smart city vision through to the 'second generation' milestone.



STEP 5: DOCUMENT THE ACTION PLAN— DRAFT THE BLUEPRINT

With the foundation of a smart city implementation in place—from community buy-in to brand expression to infrastructure and digital-intelligence assessments—the initiative now requires an action plan. The smart city advisory board is the custodian of the action plan, or blueprint, a high-level document that includes:

- ▶ a strategy that clearly articulates a vision of tomorrow;
- ▶ a list of desired programs and outcomes for first-generation expression;
- ▶ an organizational structure, with assigned duties—who will do what to achieve identified outcomes;
- ▶ a work-back schedule that determines implementation time lines and sequential dependencies;
- ▶ an operating and capital budgets for implementation initiatives;
- ▶ funding sources—public, private, and P3 opportunities.

It is also important to establish a highly transparent performance dashboard accessible by all stakeholders. If managed properly, the performance dashboard can be the most significant selling mechanism, second only to citizen word-of-mouth, in inspiring the realization the future smart city.

The performance dashboard should be complemented by a well-managed communications function that addresses short-, medium-, and long-term requirements to build the destination brand for the future smart city.

ARE YOU READY FOR THE NEXT STEP?

Building an efficient and purposeful smart city requires many things; foundational governance, core infrastructure competencies, brand positioning, and meticulous project management. The blueprint towards success is not a sprint but a journey that enables growth, celebrates achievement, and engages the community along the way.

BDO recognizes that building a smart city is tall order, and we want to be a part of your municipality's journey towards that sustainable future. By combining industry expertise with operational excellence, BDO Consulting can help you address the business challenges associated with building a smart city by integrating four complementary areas of focus: strategy and operations; technology; risk-advisory services; and human resources. We integrate these area into a single, comprehensive portfolio of exceptional services tailored to your unique needs.

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