Intelligent City
(Digital Strategy / Smart City)

By: Frank Di Palma, Chief Information Officer, City of Vaughan, Ontario
       Robert Lane, CABA Intelligent Building Council

On a regular basis municipalities around the globe suddenly announces that they are now a "Smart City". The challenge is that most cannot adequately describe what makes a city a "smart city". Usually in their description it involves ubiquitous high-speed internet access and a host of smartphone applications.

And by using the "smart city" label it is the hope of the municipality that it will drive economic activity and livability -- drawing people to their city like a magnet and lifting spirits of their citizenry to increase productivity. But it's more than that.

Smart cities have become more and more critical in today's society as the world's population grows and becomes more urbanized. Increased urbanization means a greater number of buildings and key urban systems. The words we often hear are digital transformation, Internet of Things (IOT), adaptive sensors, algorithms, autonomous vehicles, drone delivery, unified communications, augmented reality, Big Data, 3-D printing and so on. All of these are elements of what makes a city "smart". The key to enabling these aspects of a smart city is the presence of a digital strategy. This strategy brings all the pieces together and brings perspective to the table helping smart cities make informed decisions.

It's important to note that technology is just an enabler – it facilitates and catalyzes process change, but is secondary to the change itself. Cities thinking about becoming "smart" should not start their plans with a focus on technology or instantly partner with technology providers. Procuring technology and automation should be one of the last steps in a digital strategy. You really should not be purchasing technology without thinking about the people and process changes that may be required?

Digital transformation is as much about people and process as it is about technology. A city is like a business – its role is to serve the customers who pay all of the expenses associated with an ability to live, earn, play and learn in an urban setting.

What have successful leaders of companies that made the transformation to digital learned?
As we have experienced in all aspects of business, disruptive technology and the accelerating pace of change are undermining legacy activities. It is no different for cities. Consumers empower a city's administration to provide services directly or privately that are often governed by rules and guidelines enacted through by-laws. As we experience in the business world, often many of these are not conducive to digital transformation.

Digital Strategy

Social Media — COMMUNITY

Access to Data + Content — TRANSPARENCY

Public Access — BARRIER-FREE

eServices + Mobile Apps — 24/7

Internal Digital Transformation — CITIZEN-FOCUSED

Municipal Transformation — NEXT?

Intelligent City
(Digital Strategy / Smart City)

Cities that seek to be smart need to start by developing a digital strategy that positions technology as a differentiator. Such a process is underway for the City of Vaughan as identified in six elements and themes illustrated in Figure 1. Vaughan has created a digital strategy that is inclusive, progressive, innovative and charts its journey to becoming a world-class digital city. The remainder of this article will take a deeper dive into each element:

• Social media - Community

• Access to data and content - Transparency

• Public access - Barrier-free

• eServices and Mobile Apps – 24/7

• Internal digital transformation – Citizen-focused

• Municipal transformation – Be ready for what's next

Social media - Community
Vision Social media can be used to foster a vibrant community that promotes diversity and inclusivity. We believe that citizens should be heard and a City should provide timely responses with appropriate actions and/or communication of the right information when it is relevant.

Joining the conversation
Social media brings together likeminded individuals in a virtual environment with very little constraints. What makes social media unique is the constant contact. There are no leaders -- every member has a voice to which any other member can respond. Trending is a term in social media indicating that a topic of conversation is getting a significant amount of traffic – sometimes a trending topic can cross into other social media platforms. A city should actively create profiles on the most popular social media sites and have processes in place to join relevant new trending sites in their early stages. Active participation on these sites will ensure that the city is informed and can respond to real-time issues. This will engage citizens in meaningful dialogue. For this to be possible, a city will need to ensure that concerns are attended to by appropriate actions and the proper support tools, staffing and competencies are in place.

Answering questions
Blogs are discussion forums which engage and inform their readers. The City of Vaughan has a blog that allows citizens to learn about City services, ask questions, get involved, or sign up for events. Any effort invested in creating blogs will forge a common understanding of relevant issues. It will also make it easier to navigate a city's services, receive valuable input from residents and businesses, provide specific answers to unique questions, and promote community values.

Facilitate community good
A City should look at ways to use social media to connect citizens in need with members in the community that can provide that support. Citizens that want to contribute to the advancement of their communities should have a platform to connect with volunteers. Citizen engagement through surveys can provide beneficial feedback for dealing with community issues and city-building.

"Social media is the ultimate equalizer. It gives a voice and a platform to anyone willing to engage." - Amy Jo Martin

Access to data and content – Transparency
Vision Access to data is about making city data publicly available, accessible and easily interpreted – it is an important driver of open, transparent and accountable government. This allows for an easier flow of information, learning, improving services, becoming more efficient, adding value and creating new opportunities for the organization and residents.

Making data available (Open Data)
Vaughan has a variety of data that would be interesting to the community: permits, development data, plans, information linked to maps of properties and assets, City spending, and data related to City services like complaint management. When communities begin to access and use open data, they invariably add value by creating applications and combining different datasets in a way that collaboratively address community concerns and interests. Other governments, in Canada and across the world, have repeatedly reported benefits that include: increased quality of life, more efficient city services, better decision making and creation of new data-driven businesses.

Having a single version of the truth
Corporate data access, usability and the ability to integrate data from different sources to eliminate data silos are dependent on creating a single version of the truth – managing master data as a single consistent entity across a city. For example, property locations are identified by street address in a variety of databases and solutions throughout the City of Vaughan; if we implement a consistent, managed address standard across the City, we would be able to integrate all address-based information geospatially. This would help generate strategic and operational insights that would result in the delivery of better services.

Intelligent City
(Digital Strategy / Smart City)

Creating dashboards

By building dashboards supported by integrated data and a single version of the truth, an organization would be in a better position to make faster, more evidence-based decisions in support of the services delivered. The technology involved in sorting, filtering and aggregating the information that is contained in a dashboard would eliminate significant processes where the business physically manages and interprets the data in the absence of supporting technology. This would liberate resources to focus on the delivery of services above the management of data and would promote continuous improvement gained through insights in the dashboards.

"New possibilities for a more active democracy are beginning to emerge in the information age. Effective citizen action is possible if citizens develop the abilities to gain access to information of all kinds and the skills to put such information to effective use." - Harry Boyte

Public access - Barrier-free

Vision Public access to high-speed internet today is critical for the well-being of the community. It enables citizens and businesses to access new opportunities. There is a direct link between economic growth and digital literacy. Vaughan is committed to ensuring that the entire community has the ability to benefit and compete in this information age.

Broadband for everyone

Broadband internet is quickly being considered a necessary infrastructure in city-building. Just as it is difficult to measure the benefits of providing power, clean water and waste removal, it is difficult to determine the detriment to social and economic well-being of not providing broadband to everyone.

Access to public studios and labs

Multimedia, software development, and 3-D printing are staples for creativity, research and development, and business development. A city should provide the tools and space necessary for citizens and businesses to use the latest technology to communicate, collaborate and enter new markets.

Improve digital literacy

Digital literacy is the ability to use technology for finding information, getting services, expressing ideas, forming and joining communities, and performing business transactions. Anyone unable to use technology will find it increasingly difficult to thrive in today's information age. A city should ensure the inclusion of citizens in today's digital world by providing opportunities to learn how to use foundational tools and technologies.

" The Internet is becoming the town square for the global village of tomorrow." - Bill Gates

eServices and mobile apps – 24/7

Vision A City of choice uses the internet to look for ways to serve its constituents in a timely, informative way that provides outcomes and value for money. This service should be available when, where and how they want it.

Ensuring web presence is responsive

Websites and solutions are responsive when they provide citizens with consistent experiences using any device (PC, tablet or smartphone). Consistency includes performance, ease of use and outcomes. Sites should be intuitive to locating services, information should be easily accessible and transactions should be friendly, efficient, and complete.

Virtual counter service

All services that can be migrated to the web, should be. Vaughan City Hall has many counters to assist residents, developers and local businesses. The same care in developing forms and service packages should be made available on the web. This will allow service requests and transactions to occur during all hours. Increasing self-service will reduce overall service costs as well while delivering information directly to the consumer in the comfort of their home or business.

Leverage Cloud computing

Cloud computing is making it easier for governments to focus on constituent needs and less on the infrastructure requirements to satisfy that need. Solution development is getting quicker and easier. Although time to develop and deploy solutions is faster, consideration needs to be given to costs associated with hosting services, data management and integration skills.

"There was a time when people felt the Internet was another world, but now people realize it's a tool that we use in this world." – Tim Berners-Lee

Intelligent City
(Digital Strategy / Smart City)

Internal digital transformation – Citizen-focused

Vision Internal digital transformation is key to ensuring citizen-focused services are continuously reviewed for efficiency, effectiveness and sustainability.

Improving staff digital literacy
City employees should think "digital-first". Each process that collects data in electronic form lends itself to better analysis, reporting and decision-making. Employees can improve their digital literacy by optimizing their use of existing systems by considering data and system integration. This will allow people to leverage technology in innovative ways with every new business problem, initiative or project.

Making the Workforce mobile
Empowering the travelling worker with mobile solutions will allow them to plan their day more effectively, to capture electronic data in the field quickly, and to communicate with constituents by providing information that is timely, accurate and relevant.

Continuous innovation
Technology is changing at an exponential rate. A city should have processes in place to review and evaluate relevant emerging technologies. Those that are disrupting industries should be of special interest because they are creative in nature, can reveal opportunities and can change mindsets by altering citizen expectations.

" It's not about grand innovation. It's about a lot of little innovations: every day, every week, every month, making something a little bit better." – Jason Calacanis

Municipal transformation – Be ready for what's next

A city's digital maturity is dependent on allocated resources and its ability to engage, participate and learn from others. Technology is changing so rapidly that Smart Cities need to be open to embracing what's next. A city needs to explore and understand emerging concepts, models and technologies such as Smart Cities, Internet of Things (IOT), Digital Economies, and eGovernment. It should look to industry leaders for trends, interpretations and partnering opportunities.

" We are all now connected by the Internet, like neurons in a giant brain." – Stephen Hawking

It is only once a city has developed a vision for what it really wants to be in the future that the work to develop a plan, establish governance and commit resources can begin..

About Vaughan
The City of Vaughan is one of Canada's fastest growing cities with a population of more than 325,000. Incorporated in 1991, Vaughan is marking its 25th anniversary as a city this year. Vaughan includes the communities of Concord, Kleinburg, Maple, Thornhill and Woodbridge. This culturally diverse municipality is located in the heart of York Region and the Greater Toronto Area.

About the Authors
Frank Di Palma is the Chief Information Officer for the City of Vaughan. He is a graduate of York University with more than 20 years of experience in IT operations and services

Robert Lane is Vice-Chair of the CABA Intelligent & Integrated Buildings Council
CEO - Robert H. Lane & Associates Inc.