Business white paper

Empowering "Smart Cities"

Increase the effectiveness of the flow of information in municipal business processes

"Urbanization is expected to continue rising in both the more developed and the less developed regions so that, by 2050, urban dwellers will likely account for 86 percent of the population in the more developed regions and for 64 percent of that in the less developed regions."

— United Nations World Urbanization Prospects report

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Executive summary

Around the world, populations in major metropolitan areas are rising sharply. The world has entered the age of megacities, with many metropolitan populations swelling beyond the 10 million mark. Looking ahead, the future holds more of the same. Urbanization is expected to continue rising in both the more developed and the less developed regions so that, by 2050, urban dwellers will likely account for 86 percent of the population in the more developed regions and for 64 percent of that in the less developed regions.[1]

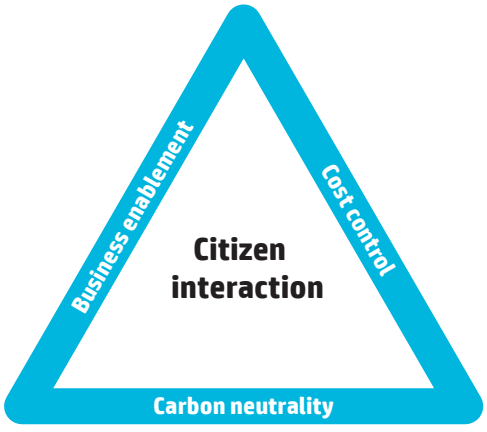
In cities of all sizes, increasing urbanization and ongoing population growth are pushing the limits of natural resources, critical public infrastructure, and municipal budgets. "Many cities are stretched beyond the capacity of their existing infrastructure and resources," notes a study from Forrester Research. "The growing influx of migrants into cities requires new thinking about how to meet the demand for public services."[2]

To overcome these challenges, cities have to get smarter. One way to do that is to use information workflow technology to improve operational efficiency, streamline constituent communications, make government interactions easier, and reduce the carbon footprint of growing metropolitan areas. These are all characteristics of smart cities.

The smart city leverages diverse information and communication technologies to enable better business processes, help control costs, drive toward carbon neutrality, and encourage citizen interaction. This forward-looking city works to promote a healthy economy, attract people and businesses, help reduce environmental impacts, and make it easy for citizens to participate in political, economical, cultural, and social activities.

These are goals that every city should focus upon. So let's look at how an organization can capitalize on intelligent information workflow technology to reach these goals—and become a city of the future.

Figure 1. The keys to a smart city
The smart city focuses on business enablement, cost control, carbon neutrality, and citizen interaction.



The Forrester view

Many cities are stretched beyond the capacity of their existing infrastructure and resources. The growing influx of migrants into cities requires new thinking about how to meet the demand for public services. Even where overall population growth is smaller or even negative, urbanization is increasing. Population growth in developed countries will only be 3 percent between 2010 and 2050, but the size of the urban population will increase by 18 percent.[2] In both developed and developing countries, policymakers must address the need to provide more services to more people. And in developed countries where overall populations are not growing as quickly, cities often face a limited and shrinking tax base, meaning that many face the age-old challenge of having to do more with less. Innovative governments and public organizations undertake "smart city" initiatives to bring information and communications technology (ICT) to bear in response to the demands of an increasingly urban population. Forrester defines the smart city as: A "city" that uses information and communications technologies to make the critical infrastructure components and services of a city—administration, education, healthcare, public safety, real estate, transportation, and utilities—more aware, interactive, and efficient.[2]

Capitalizing on intelligent information workflow technology

A smart city begins with the right technology.
Essential to the operation of any city is the flow of information to, from, by, through, and between the people and machines that make the city run. Intelligent information workflow technology can increase the effectiveness of the flow of information in municipal business processes. It helps define a smart city.

Information workflow technology can include:

- Distributed workflow solutions, which are a combination of imaging and printing hardware and software components that enable capturing data and routing it to the right person for processing
- Other solutions that better enable better business processes, such as those for digitization of paper-based processing, mobile printing, information access, enhanced security, and enterprise software applications
- Managed print services (MPS), which is a comprehensive suite of services designed to optimize imaging and printing assets, management, and supplies, and thereby free up the personnel resources who drive information workflow.

All of these technologies support the goals of a smart city.

The keys to a smart city

There are four essential keys to a smart city: business enablement, cost control, carbon neutrality, and citizen interaction. Information workflow technology contributes to each of these areas of focus.

Business enablement
Information workflow solutions enable the highly efficient business processes that empower the smart city. These solutions help the smart city deliver online services; improve staff training and retention; capture, manage, and preserve information assets; and collaborate more effectively with other government entities and constituents, including area businesses. While enabling better processes, business-enablement solutions can also help city personnel make better decisions in less time, reduce fraud and abuse, and increase efficiency to protect budgets.

The HP Constituent Communications Solution, based on HP Exstream, is an example of a solution that's effective in this area: It enables the delivery of government information how, when, and where a collaborative partner needs it, whether that's an individual citizen or a functional group within a corporation.

Business enablement can also take the form of ePrint solutions that enable print capability in public buildings, such as post offices, railway stations, and bus shelters. These cloud-based solutions allow users to output digital documents, government forms, presentations, photos, and more from mobile devices to registered printers in various locations.

Distributed workflow solutions, or end-to-end enterprise content software solutions, streamline and automate paper-based document management processes. They automate and optimize the flow of documents between the city and its citizen, as well as the city's software applications and devices. These solutions can connect multifunctional printers to secure document management and workflow processes. When integrated into devices that capture documents at the point of entry, digital workflow solutions can significantly reduce operating costs and save staff time by creating role-based workflows.

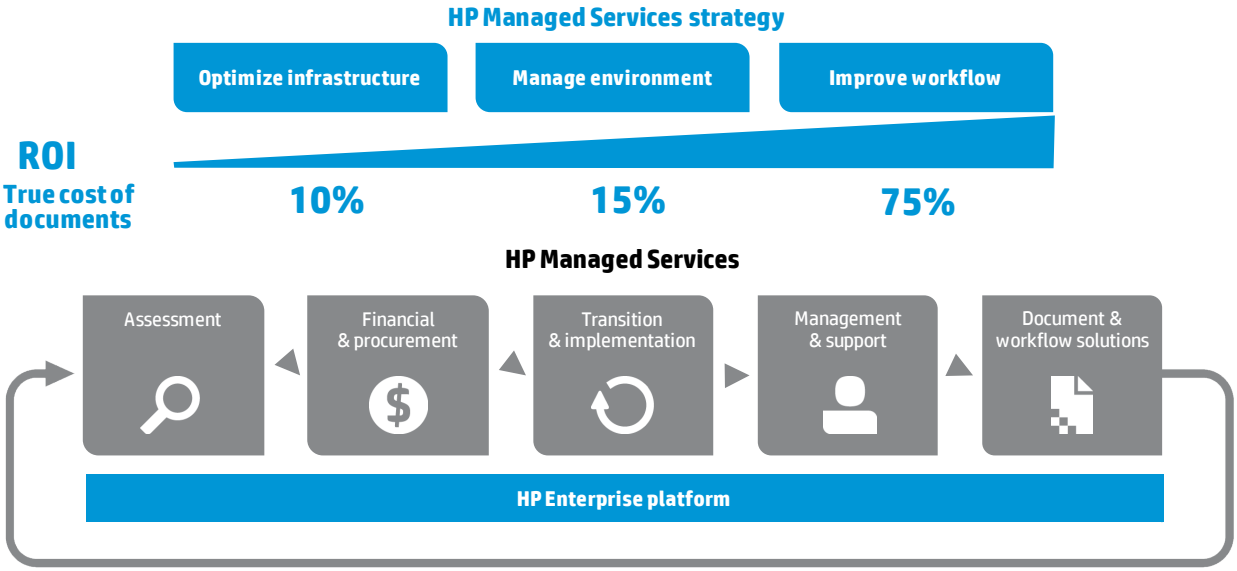
Case study: City of Langford

In British Columbia, Canada, the IT team at the City of Langford wanted to reduce power, cooling, and telecom expenses and digitize thousands of paper documents that were difficult to store and search. The upgraded IT infrastructure it developed is already supporting new services.

Saving time, space, energy, and cash flow, Langford's technologically supported success comes from the combination of a number of different innovations. One of the first projects was to digitize and index more than 600,000 paper documents using HP multifunction printers. This move alone freed up about 1,250 square feet of floor space, preventing the need for office expansion as the staff grew and generating $312,500 [CAD] in space savings over an eight-year period.

Figure 2. HP Managed Print Services

Managed Print Services span infrastructure, management, and workflow needs.



Cost control

Cities are under constant pressure to watch expenses and keep taxes low. Intelligent information workflow technology is one of the keys to containing the costs of city government operations and services in the face of increasing growth and urbanization. The smart city uses intelligent information workflow technology to cut costs by streamlining document handling processes, automating workflows, and transforming paper documents into electronic forms.

Document capture solutions, for example, increase the efficiency and security of document workflows and help reduce the time, cost, and hassle of capturing, managing, and securing documents. Workflow automation solutions speed paperwork processing, limit lost or misplaced documents, and make digital documents readily accessible to authorized users across city departments. Forms and document automation solutions reduce printing costs for pre-printed forms and optimize existing applications by transforming paper documents into intelligent, electronic forms.

Another one of the keys here is managed print solutions. They help cities simplify print management, streamline recycling and disposal, reduce the use of energy and supplies (including ink, toner, and paper), and pay for printing on a usage basis. All of these steps can help cut the costs of operating a print environment that spans a large organization.

As Gartner says, "Office printing remains an underexploited savings opportunity, and actively managing it will reduce your spending by 10% to 30%. Today's cost-consciousness, as well as advances in the tools and services for managing printing, makes now a better time than ever to take on this initiative."[3]

> "The world's cities are responsible for up to 70% of harmful greenhouse gases while occupying just 2 per cent of its land. They have become the real battleground in the fight against climate change. What goes on in cities, and how they manage their impact on the environment, lies at the core of the problem."
>
> – "Hot Cities: Battle Ground for Climate Change," UN-HABITAT 2011 Global Report

Carbon neutrality

With their growing populations, cities generate some of the highest carbon emissions on the planet. The UN-HABITAT 2011 Global Report notes: "The world's cities are responsible for up to 70% of harmful greenhouse gases while occupying just 2 per cent of its land. They have become the real battleground in the fight against climate change. What goes on in cities, and how they manage their impact on the environment, lies at the core of the problem."[4]

To control rising carbon emissions, along with pollution and rising energy costs, many cities are taking the lead in becoming greener, smarter, and more energy efficient. One step in this direction is to digitize document capture and handling. While enabling more efficient operations, the use of electronic documents takes a lot of paper and ink out of municipal processes. Other steps in this direction include the use of recyclable media and ink technology for printed content.

Calculating carbon footprints

The HP Carbon Footprint Calculator for printing estimates a printer's energy consumption during operation, the CO_2 produced by the generation

of that electricity, and the CO_2 produced by the manufacture of the paper consumed during printing. It also calculates the costs of the power and paper the printer consumes based on electric rates and generation facilities in more than 146 countries. To try out the calculator, visit **hp.com/go/carbonfootprint**.

Case study: Colorado State University (CSU)
Colorado State University (CSU) calls itself "The Green University." Based in Fort Collins, Colorado, USA, CSU is internationally known for alternative energy and biofuels research—and for transforming this research into real-world applications. In its own operations, CSU strives to minimize its carbon footprint through energy conservation and recycling. That's why it chose HP as its print solutions partner.

HP provides CSU with the latest ENERGY STAR®-qualified printers and multifunction devices. What's more, through HP Planet Partners, CSU ensures that the HP print cartridges it uses every fiscal year will be properly recycled. The program also pays off financially. CSU has acquired thousands of dollars' worth of HP products through the HP PurchasEdge program by purchasing and recycling Original HP supplies. The HP solution enabled the university to deliver on its objectives of reducing its carbon footprint while reducing cost: CSU reduces paper and energy waste, saves 30 percent to 40 percent in energy usage over its previous printer models, recycles approximately 6,000 HP print cartridges every fiscal year, and gains thousands of dollars in free products with HP PurchasEdge points.

Citizen interaction
One of the ways city government is measured is by how clearly and effectively it communicates with the public and how it encourages citizen participation in civic activities and governmental initiatives. Intelligent information workflow technology helps open the lines of communication between municipal governments and their constituents.

Vehicles for more effective citizen communication include everything from online portals to utility billing notices to public meeting agendas. This range of options used in the smart city allows constituents help and businesses to choose how they prefer to receive information.

To enable better information workflows, the smart city integrates enterprise software with legacy systems to deliver content how, when, and where constituents and businesses need it. This flexibility can substantially improve satisfaction in dealing with the municipal government.

An example of this technology is the HP Constituent Communications solution based on HP Exstream software. This solution helps public organizations communicate more effectively while helping to reduce the costs associated with the design, production, and management of diverse documents.

Case study: Denver Water
To increase its contact with customers, and keep the public well informed on water usage, Denver Water decided to move from bi-monthly to monthly billing. Additionally, it wanted to standardize on an enterprise-wide document generation system to address all customer correspondence, including letters, invoices, and checks.

The water utility invested in a new customer information system (CIS), but when it became clear that contemporary CIS products were not very strong in the area of bill formatting and other output generation, it researched the market to find a more powerful, enterprise document generation system. The solution was HP Exstream, which integrates smoothly with both financial and customer information systems to support targeted messaging.

Today, monthly billing has significantly increased Denver Water's levels of customer service. Customer satisfaction has increased with more intuitive bills, while targeted messaging educates users and helps with water conservation.

Streamlining constituent communications

Intelligent information workflow technology streamlines processes and simplifies communication between cities and their constituents, as shown in this before-and-after example.

Figure 3. Before intelligent information workflow technology

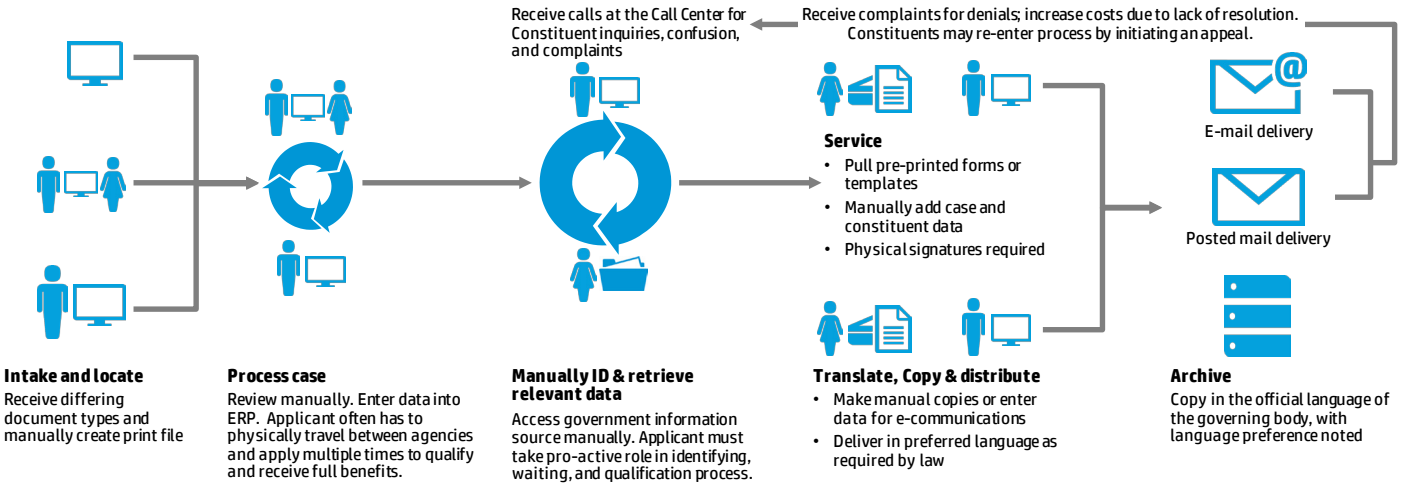
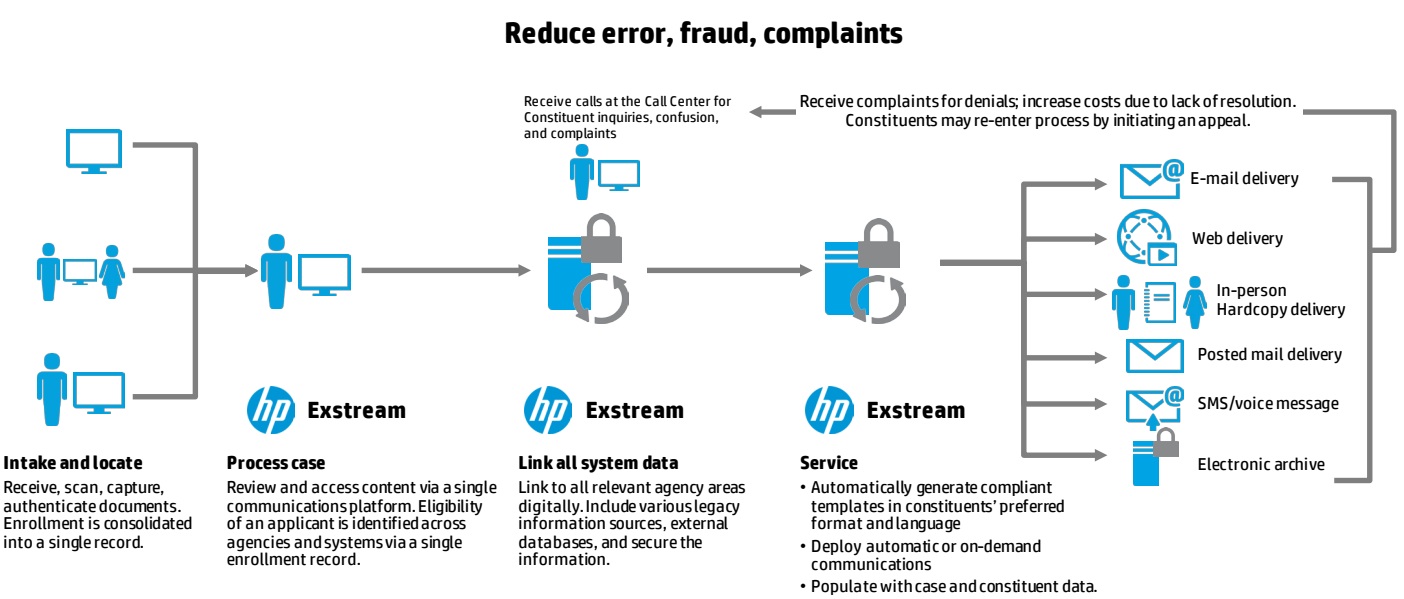


Figure 4. After intelligent information workflow technology



HP can help you create a smart city—today.

Cities around the world, as well as other governmental organizations, turn to HP for the mission-focused experience and expertise to help reduce costs, streamline processes, and operate more efficiently. HP information workflow solutions help cities reduce the time, cost, and effort required to capture, manage, distribute, and secure documents while improving collaborative communications.

These solutions help cities become more efficient; enhance communication with citizens, businesses, and other government entities; achieve paperless and compliance goals; reduce costs; and reduce carbon footprints.

That's the case with the HP Distributed Workflow Solution, an end-to-end enterprise content management (ECM) software solution that streamlines and automates paper-based document management processes. HP multifunction printers (MFPs) capture and transform paper documents into digital images that are routed to a secure and centrally managed repository. The solution then intelligently automates and optimizes the flow of the documents between people, clinical and business applications, and devices anywhere in the world. Capabilities like these hold the keys to the smart city.

If you're on the path to creating a smart city, HP is an ideal partner for your information workflow technology needs. Along with expert services, HP offers a growing portfolio of certified products and solutions used by governments around the world. This gives you ready access to field-proven technologies for building a smart city—today.

Learn more at
hp.com/go/govworkflow

[1] "World Urbanization Prospects, The 2011 Revision, United Nations Department of Economic and Social Affairs Population Division," – ESA/P/WP/224, March 2012.

[2] "Getting Clever About Smart Cities: New Opportunities Require New Business Models," – Forrester Research, Inc., November 2, 2010

[3] "Cost-Cutting Initiatives for Office Printing," – Gartner Research, #2537615, July 2013

[4] "Hot Cities: Battle Ground for Climate Change" – UN-HABITAT 2011 Global Report

HP three-part approach

HP works with you to assess, deploy and manage an imaging and printing environment tailored to meet your business needs, while helping you reduce costs, conserve resources and simplify document-intensive processes.

Optimize infrastructure

HP can help you achieve a balance between your total cost of printing and your needs for user convenience and productivity.

Manage environment

Working together, HP can help you maintain your optimized infrastructure while improving business efficiency and tightening security.

Improve workflow

By streamlining your document-intensive processes, HP can help you deliver a more efficient environment for capturing, managing, and sharing information.

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