

Better service delivery with trusted information
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Information Management software

One-stop citizen-centered business model

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Executive summary

For many years, governments worldwide have delivered service to their citizens through a *programmatic business model*. This model is characterized by numerous policy departments with multiple programs, each with program-specific service delivery channels such as in-person offices, phone centers, the Internet and mail. Yet this model, with its focus on transactions rather than outcomes, has a long-standing reputation for being complex and frustrating for citizens to navigate, and is especially expensive for the organizations themselves.

Fundamentally, the public expects the same level of service from government that they experience in the private sector. According to Canadian research¹, citizens believe that government should understand their needs and circumstances and fundamentally focus on finding ways to help them. Additionally, research shows that there is a strong link between service and the trust and confidence citizens have in government.

Reassessing outdated business models

Therefore, government organizations determined to provide services in alignment with the diverse needs of citizens instead of the established structures and processes of individual programs are taking a fresh new look at their business models. The business model is crucial in determining how to achieve the mission and objectives of an organization. It is equally important in identifying the

expertise and organizational structure of the entity and in establishing priorities. So organizations are investigating whether their business models define the functions, roles, responsibilities, organizational structure, relationships, strategies, and plans of the organization in a way that creates optimal value for citizens and therefore organizational success. These agencies are discovering that the programmatic business model falls far short, because the nature of this type of business model prevents organizations from delivering services directly and specifically focused on the important needs of citizens.

Both citizens and government employees need to be able to count on a program that provides ready access to trusted information so that program initiatives can be met and citizen requests fulfilled. Yet most organizations are drowning in data, reports, spreadsheets, paper-based documents, e-mails and much more. Unfortunately, how this information is stored and managed overwhelmingly limits how it can be retrieved. Historically, government organizations store information in manual or paper-based file systems, lock it up in operational application systems and employee disk drives, and scatter it across multiple repositories. In the absence of a unified, trusted view of citizen, service and provider information, employees continually search for and create redundant information, and multiple views of critical business information emerge, along with inaccuracies and errors. Costs go up and effectiveness goes down, while citizen needs continue to be unmet.

Focusing on citizens, not programs

There is a better way to deliver government service.

By moving beyond the traditional programmatic model and developing a business model based on the real needs of the citizen, governments can greatly improve how they leverage information and significantly enhance the level of service delivered to the public. The *one-stop citizen-centered business model* is based on four foundational concepts that place the citizen at the center of service delivery.

Governments need to focus on the citizen so they can effectively connect citizens to the programs, services and information that citizens need. Organizations must define a way to deliver one-stop government service through an integrated channel strategy that enables comprehensive service to citizens through a single point of contact.

Plus, governments need to leverage their collective potential by identifying new ways to collaborate and partner to bring the best value to citizens.

Once organizations understand the foundational concepts of the one-stop citizen-centered business model, they can proceed in developing a strategy for citizen-centered service delivery. Importantly, government organizations can better serve citizens by discovering new, innovative ways to relate to and transact with the public based on understanding their identities, relationships and behaviors. To meet citizen needs and greatly improve efficiencies, organizations should provide a single, authoritative record of individual citizen data across organizations, programs and applications. Agencies can optimize information by mastering data – including integrating, coordinating, synchronizing and unifying the information – throughout the lifecycle of the data. It is also critical to make information available as a service in an open and easily accessible way through improving process performance across the service delivery network.

Leveraging information as a strategic asset

IBM offers new capabilities that help government organizations maximize the value of information. IBM's integrated software platform delivers a breadth of capabilities including data and content servers, information integration, master data management, and advanced analysis and discovery. But successfully making the transition to citizen-centered service delivery requires more than new technology. It calls for a comprehensive approach that allows the transformation through both short-term tactical changes and longer-term strategic evolution. IBM has extensive experience in helping organizations plan and implement their citizen-centered business models. Through executive education and a wide range of consulting offerings, organizations can gain critical insight into the strategies, technology components and solutions, information governance and roadmaps necessary for citizen-centered service delivery.

Today, governments are redefining how they serve citizens and are transitioning to the one-stop citizen-centered business model. By doing so, citizens will not only have greater outcomes in doing business with government organizations, but can rebuild their trust and confidence in these government agencies and the government on the whole. This paper explores the concept of the one-stop citizen-centered business model, why it is the basis for the service transformation underway in governments across the globe, and information management solution strategies that governments can take to facilitate leadership in this area.

The importance of the business model

Many organizations assume that success is determined primarily by the quality of their products and services, and on the efficiency and effectiveness of their operations. But in today's rapidly changing and complex environment, the business model is becoming equally important in determining how it achieves success². The success of Dell and eBay demonstrates how important the business model is to an organization.

In the private sector, a business model defines how a business creates value for its customers and shareholders. It defines the functions, roles, responsibilities, organizational structure, as well as the strategies and plans of an organization. The best business models demonstrate a precision and focus that can be communicated in a few words. For example:

- *Procter & Gamble Co. is transforming its former in-house research and development process with a new model it calls “**connect and develop**”³ to tap external networks of inventors and scientists for new products that can be developed in-house.*
- *Dell’s “**direct**” model is based on the premise that the most efficient path to the consumer is through a direct relationship, with no intermediaries to add complexity and cost.*
- *eBay has pioneered the **automated online auctioning** business model, linking buyers and sellers together.*
- *Oil companies around the world are applying the **vertical integration** business model by acquiring downstream production facilities and integrating their supply chain.*
- *In printers and razor blades, HP and Gillette use a **value chain** business model where a product is sold at or below cost to make money on the sale of consumables.*

The public sector is no different.

In the public sector, a business model describes how an organization creates value for its customers, the citizens of the country, and fulfils its mandate. The business model defines functions, roles, responsibilities, structure and relationships to other entities and partners. A company's business model, more than other areas of innovation, is associated with sustained improvement in business value, according to the Global CEO Study 2006 from the Institute for Business Value (IBV).

Business model innovation is the new frontier in creating strategic advantage

The traditional programmatic model of government provided service to citizens through numerous departments, each with their own set of programs and service delivery, aligned to their mandates. This has been confusing for people seeking service. They have had to connect with the right department or program before applying for a benefit or accessing a service. Many have experienced the frustration of making multiple calls or inquiries before they get what they need or talk to someone who can help. They have also provided the same information to government over and over again.

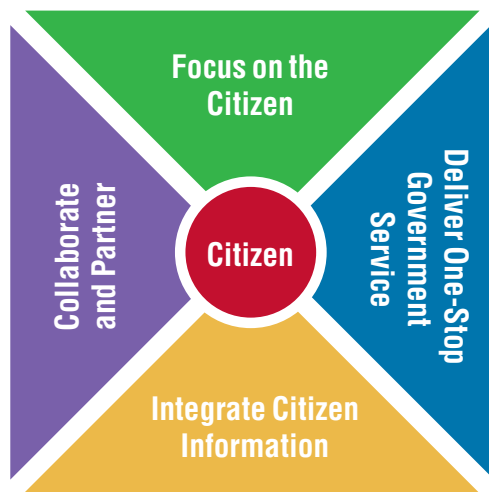
This model doesn't work for citizens anymore. They want connected and high-quality government services. They expect government to stay in step with the service improvements they experience elsewhere⁴. In short, they want service that comes from an organization with a one-stop citizen-centered business model.

In the same way that Dell, HP, eBay and Procter and Gamble use their business models to achieve their strategic goals, governments around the world are using various elements of the one-stop citizen-centered business model to help in achieving their strategic objectives.

Four foundational concepts in the one-stop citizen-centered business model

The one-stop citizen-centered business model focuses on people not programs, and puts the citizen at the center of how government delivers service. It's a new way to deliver government service, replacing the traditional programmatic model.

Four foundational concepts form the basis of the new one-stop citizen-centered business model.



1. Focus on the citizen. A citizen-centered organization connects people to the programs, services and information they need, regardless of who delivers them. But it does more than just point to providers of service; it is focused on understanding citizen needs and then integrating and bundling services and benefits to enable real outcomes.

2. Deliver one-stop government service. One-stop service ensures that government is easy to find, easy to access and easy to deal with. It is about delivering service through an integrated channel strategy, and offering a complete service to citizens at the point of contact in a “one touch and done” approach. This approach also recognizes that service matters to those who deliver it and that these professionals are provided career development and progression opportunities.

3. Integrate citizen information. Instead of asking for the same information every time a person accesses government and processing this information over and over, a citizen-centered organization asks for the information once and remembers it in the future while enhancing privacy protection, accuracy and transparency of citizen information.

4. Collaborate and partner. One of the most important elements of citizen-centered service is the need to bring services together in a way that is easy and integrated. This requires extensive collaboration and partnering with organizations working together to leverage their collective potential to create new value for citizens.

There are examples from around the globe that demonstrate that a citizen-centered business model can achieve improved service, lower costs and better outcomes for citizens. Through these concepts, governments can redefine how they serve citizens, and in so doing, demonstrate how to build and improve trust and confidence in government. This chapter presents these concepts in more detail.

Concept 1 – Focus on the citizen

The new citizen-centered government service organization

Today, citizens often need a significant understanding of government to get the services they need. There are multiple channels owned by multiple programs from different departments, across three levels of government, plus non-government organizations, all of which can be very confusing.

This is the role of the service integrator. In any market with a number of service providers, the integrator model is a proven approach for improving service and simplifying access.

In a citizen-centered model, the role of a service integrator is advanced to a new level – not just connecting citizens to the services they need, but integrating those services over time to minimize overlaps, reduce duplication and fill gaps in service. It means offering bundles of services, designed to meet the complete set of needs, organized for the convenience of the individual and focused on achieving the necessary outcomes.

To deliver citizen-centered service, a service integrator:

- *Focuses on groups of people with a common need*

Citizen-centered service means understanding groups of people and their common needs. By better understanding the needs of client “segments,” government can identify the outcomes that it is trying to achieve and then reorganize services and benefits to achieve those outcomes.

This focus on outcomes helps determine the types of new services and benefits. This in turn shapes the partnerships necessary to expand service capabilities.

Segmenting groups of people to provide service differentiation is not a new idea. The financial services industry constructs different types of accounts to appeal to customers ranging from students to seniors, based on different savings requirements. For government, it means that service should be designed to meet the needs of people and take account of their characteristics and preferences.

- *Builds service offerings to better meet the needs of citizen segments*

This focus on citizens means that they need to be at the center of the design of government services and benefits. This transformation is expressed by “service offerings.”

Service offerings focus on the experience a citizen will receive and the outcome that will be achieved. Service offerings may be delivered individually or they may be “bundled” with other service offerings to make them more relevant to a person’s need.

An example is the integrated service for registering births. Initially in Ontario, when you register, you are automatically able to get your birth certificate and apply for your Social Insurance Number. Here the Social Insurance Number service offering is bundled with provincial and municipal service offerings to create a single integrated offering for parents. This results in a better service experience for the parents, lower costs to administer the registrations, and more accurate information collected and validated at source.

Bundling services at both the simplest and most complex level to eliminate gaps in service and to reduce overlap and duplication between services is a fundamental role of a service integrator.

Examples of Service Integrators



- Offers a wide range of services and benefits from across government departments and governments, based on need

A service integrator connects people to the services and benefits that they need. To achieve this, the integrator needs to know about those services and benefits and to bring them together in such a way that it is easy to organize and deliver them.

Historically, government has achieved this through early use of the Internet and 211- and 311-like services. These allow citizens to find out what is available and where they can go to get service. But the need is more; citizens want to be served when they access government, not just pointed to the right place for service.

A service integrator offers not only the access to services and benefits across government; it fulfills the service as well. Focusing on the citizen means offering a wide range of services and benefits and going beyond the information provision to the actual provision of service itself, across departments and across governments.

- Introduces new services and benefits faster

In the private sector, “time to market” and “first mover advantage” have a major role in determining an organization’s success over competitors and its ability to create value. In government, the same principles apply, but they relate to how fast a government can introduce new services or benefits, to the advantage of citizens.

A government service integrator that offers a wide range of services and benefits will have an increasingly changing “product line.” It will need to introduce new or changed services and benefits faster to meet the changing demands of citizens and governments. Service integrators therefore look for re-usability in functions, processes and technology that allows service offerings to be implemented faster than under the programmatic model.

This results in a more flexible service delivery capability to respond better and faster to government priorities and initiatives.

Connecting people to an expanding list of integrated and bundled services and benefits is a major step toward citizen-centered service. It reduces confusion and complexity and helps improve take-up, and ultimately improves the desired outcomes for citizens. Focus on the citizen is the first foundational concept of the one-stop citizen-centered business model.

Concept 2 – Deliver one-stop government service

Government that is easy to find, easy to access and easy to deal with

Universal best practices for service organizations, both public and private, is to develop “one face to the customer” or client. Why? Clients can go to one place, it’s faster and easier for them to access what they need, it provides choice, they don’t have to provide the same information over and over, and the service organization can provide service at the point of contact.

A one-stop citizen-centered business model eliminates complexity for citizens. It connects people to the services they need, regardless of whether they understand the originating department, level of government or how third parties are involved.

The move to “one-face”, “one-stop” service delivery across business lines is evident in many industries, including the financial services and banking industries and in retail service.

Progress is being made in government as well. Australia’s Centrelink, for example, provides one-stop delivery for human and social services, across jurisdictions and programmatic lines. The Department of Work and Pensions in the UK has transformed its offices and phone services to deliver integrated services, and Canada provides integrated phone services through 1-800-O-Canada and its Internet site servicecanada.gc.ca.

Centrelink is an Australian government statutory agency, responsible to the Minister of Human Services, delivering a range of Commonwealth services to Australians

One-stop government service delivery:

- *Ensures presence and visibility in communities across the country*

Government service must be easy to access and available in the community that it serves. By adopting leading-edge retail practices used by banks and stores, governments can afford to be present in the communities where people need service.

Government can rationalize offices across departments and programs. It can use a range of office sizes to accommodate smaller and more remote communities. Government can also provide access through partnerships and the extensive use of outreach and mobile services, going to citizens rather than expecting them to come to government.

A physical presence strategy enables government organizations to consciously create the type of service experience they want to convey. Innovation in the in-person channel has extended to the physical design of the office space. For example, the use of “zoning” and “walk-thru” concepts have been used successfully in the UK and Australia. Zoning uses design principles to create subtle physical cues that help create the desired service experience.

- *Provides easy access and choice across channels*

Being citizen-centered and delivering one-stop government service mean that service channels need to be easy to access and provide citizen choice.

There are many examples of governments improving accessibility to their services:

- Use of video for remote access in rural US and Sweden
- Use of mobile channels or m-commerce in Singapore, Norway, Finland and the UK
- Accessibility for people with disabilities in Belgium and China
- Promotion of electronic channels in Ireland and Belgium
- Plain English Campaign (UK)

The modern Internet is an essential tool for citizen-centered service. Consumers have developed new behaviours and trust models based on their experience with eBay, Amazon, and iTunes; citizens have come to expect similar experiences with government.

Government Internet sites are destined to become service delivery channels and move to an environment where they can be found, where people are remembered, where experiences are tailored to the preferences of the user and where transactions are completed, not just started.

Korea.net is a dynamic multi-media portal that allows citizens to create a user account. Members have the ability to save contents and can access special services such as newsfeeds, personalized calendar and a diary.

Citizens also continue to seek service over the phone. They have experienced a retail environment where transactions are quick, easy, personalized and are conducted while waiting. In becoming one-stop, government should provide one number for citizens to call, and allow them a clear choice between speaking to an agent or using an interactive voice response service, depending on their personal preferences.

When citizens need to go to an office, it should be easy to find; they should feel welcomed and experience a service that leaves them with a positive impression, while achieving what they came to do. For example, Job Centre Plus in the UK has implemented well-designed and structured layouts optimized to meet the business needs, the comfort and the safety requirements of clients and staff.

One-stop government service means that channels are designed to work together—they are integrated. People are able to call or book appointments in offices, over the phone, or on the Internet. When in an office, citizens are able to access the Internet or phone a specialist with a question. Integrated channel management means that service delivery is designed with a one-stop experience in mind and ensures that citizens have choice and easy access.

- *Professionalizes the role of service delivery*

Service matters to citizens, and its quality is highly dependent on the people who provide it. They need to understand and be inspired by a vision of improving service for citizens.

Today, many government organizations continue to classify and manage the “service” people under administrative or clerical employment categories. This needs to change. Service needs to be viewed as a valued profession. Employees in service need to be supported with career models, possibilities for advancement, and leading-edge training, tools and development. In addition, they need some flexibility to pursue new, creative and improved ideas, and identify new opportunities for service.

Citizen-centered service also requires a commitment on behalf of the organization as an employer, to keep and attract people committed to service excellence. Most service organizations have developed models for recognizing and rewarding service excellence. These programs range from simple “thank you” programs, through “employee of the month” recognition, to sophisticated reward and bonus programs based on customer satisfaction. The spirit and theme is consistent throughout—recognizing and rewarding people who demonstrate that service matters.

- Centrelink publishes a Customer Charter that states the level of service clients can expect. Centrelink also publishes an annual report documenting its performance against its service standards.
- Service Canada has published a Service Charter that documents its commitments to service delivery. Service Canada also publishes a scorecard for service standards in its annual report.

- *Is driven by service standards*

It is also important to invest in creating service standards. Service standards underpin the commitment to service for an organization and communicate to citizens that service matters. Service standards need to set out the level of service and any associated targets and then report on their achievement.

Many service-focused organizations also develop a written and public commitment to service, or a Service Charter, to explain what citizens can expect and their rights if they don’t receive the service they need.

“One-stop” government is the ability to deliver service that is easy to find, accessible and as complete as possible at the point of contact. It is about providing real choice in channels and an integrated service experience. It is also about placing a priority on investing in professionalizing service, recognizing and rewarding service excellence and implementing service standards. This is why “one-stop” government is the second foundational concept of the one-stop citizen-centered business model.

Concept 3—Integrate citizen information

Collect information once, use it again

Today, governments often ask citizens to fill out an application form for every benefit or service they request, even if they have provided the information in the past. This is not just an issue for citizens; businesses provide the same business and payroll information to multiple levels of government and even different departments within government—often information about employees.

Not only does government rarely connect up the same information provided by both parties, it collects it and stores it time and time again. By better integrating this information, the costs of collecting and processing information can be reduced. The integrity of programs can also be improved as the latest, most accurate, information is used.

A one-stop citizen-centered organization:

- *Enhances privacy protection, accuracy and transparency of citizen information*

Governments use information to provide services and benefits to citizens. Maintaining accurate information is an essential requirement for service delivery organizations.

One of the most effective ways of increasing the accuracy of information is to make it transparent to citizens. People are used to this; they already get loyalty program information from airlines and retailers and understand that they need to keep the information current. If it is easy to update, most people will readily advise about changes in their circumstances.

Too often, privacy is used as an excuse for poor service. In fact, under most privacy regimes, privacy can be used as an enabler of service. Government organizations can ask citizens if their information can be reused to provide better service. Their consent can be used to share their information for their convenience, benefit and satisfaction. Practical examples include pre-filling forms, automatically processing claims and derived benefits, and eliminating unnecessary applications.

Ontario, a province in Canada, has a Newborn Registration Service that combines three services into one “integrated” application, saving citizens from having to enter the same information to complete separate application forms.

Citizens want to control the use of their information and once they have given their consent, they expect government to use information again. While they demand that government protect their information, they expect privacy and good service.

This creates a new “contract” between citizens and government. Citizens keep their information up-to-date and government protects privacy and ensures authorized usage of the information.

Privacy protection and transparency of information, combined with citizen-centered service, means that citizens don’t have to repeat their date of birth every time they apply for a service. They only have to change their address once. Should a loved one pass away, they will only have to inform government once, not the multiple times they have to today.

The concept is not new. Most commercial organizations already combine privacy protection and service and most citizens are already experiencing it in their day-to-day experiences with banks, insurance companies and retail organizations.

- *Improves the collection and use of information*

In our experience, government already has most of the information it is asking the citizen to provide on most application forms.

Citizen-centered organizations think about what information is required, what information is already stored, what is trusted and what needs to be validated. Only then do they ask for any remaining information from the citizen.

Belgium is one of the most advanced information environments in the world. The Crossroads Bank manages the information model and network in Belgium. They have been able to eliminate the need to collect information that is already collected – that means over 230 forms and on the ones that are still left (only about 50), there has been a 1/3 reduction in the items required.

Citizen-centered organizations have tools and processes that ensure the information is collected and used again. Information is centered on the citizen, stored from their perspective once and used multiple times rather than stored multiple times and used once.

Re-using information this way is an enabler of good service. It means we can remember when a person last called or visited and what was said or done at that time. It means we can recall personal preferences and characteristics and use these to better serve the citizen – for instance, if a person is visually impaired, Braille formatted letters are automatically provided.

Most government programs around the world rely on a passive model in their use of information – citizens apply for a service and the government approves or denies an application. In a pro-active service model, information can be re-used to identify applicable services and benefits. This re-use of information is particularly relevant in increasing uptake of programs targeted at the most needy in society. It helps citizens access services they are entitled to, but may not know about.

- *Provides service at the point of contact*

From their experience in the private sector, citizens expect to have their purchases processed instantly, completing the service at the point of contact. Citizen-centered government can do the same by moving the business of government to the point of contact with citizens so that they see, feel and experience government working for them.

Gone are the days of “claim and wait” when each new program designed a new application form, sent the form to a processing center and eventually communicated a decision several weeks later. Citizens now expect government to have answers immediately at hand, to process their claim instantly and “connect the dots” on information it has already has.

Through a one-client view, citizens in many countries can access their personalized government accounts to see what information is stored about them and change it. They can also apply for services, benefits and more. If they phone and ask for the status of an application, the call agent will have that information at hand and be able to offer additional services if applicable. When a person goes for an interview in an office, the case worker will have the full file information available.

Amazon.com

- Provides the service at the point of contact
- Pro-active service (reaching out via e-mail)
- Processing assumed to be OK – real convenience through a non-intrusive my account
- Fraud checks done in background – before shipment of the goods from the warehouse (i.e. it is multi-channel)
- But service and convenience are key design decisions

Integrating citizen information is critical for providing citizen-centered service. In the future, citizens will no longer need to apply for many programs and services. Government will have the information required to determine eligibility and permission from citizens to use it pro-actively. Citizens will have more confidence in how the government uses and protects their information, the cost of delivering service will be reduced, and speed of service increased. This is why “integrate citizen information” is the third foundational concept of the one-stop citizen-centered business model.

Concept 4 – Collaborate and partner

Partnership is indispensable for citizen-centered service

A key element of citizen-centered service is the need to bring services together in a way that is easy and integrated. This requires extensive collaboration and partnering, as organizations work together to leverage their collective potential to create value for citizens.

While collaboration is easy in theory, it can be difficult in practice. It requires serious intent and needs to be developed as a discipline. At its foundation is the ability to identify and use the expertise and the capacity that exists within organizations.

Examples are common in the commercial sector. General Motors has a supply chain involving thousands of suppliers who collaborate on new vehicle designs and network to manufacture them. Zara, a fast-growing Spanish retailer, has a networked business model that delivers a rapid response to fashion trends by utilizing a network of small regional producers in Spain to reduce their time to market.

For government, collaboration and partnering:

- *Leverages the collaborative potential across government*

Collaborating across government is based on the shared desire to better serve and improve outcomes for citizens. Sometimes referred to as “joined-up” government, the objective is to bring together and integrate services in a way that makes it easier to access service and reduces the level of complexity for citizens. By leveraging each other’s capabilities, governments are able to improve service while

at the same time lowering costs. This collaborative potential is enormous and where it has been done, significant benefits for citizens and governments have been achieved.

Service Canada, which delivers services on behalf of Canada's federal government, partnered with Service New Brunswick, which delivers services on behalf of the provincial government. Together they deliver a national program to citizens in all Canadian provinces. Service Canada provides licenses for Pleasure Crafts (boats) across its national retail network. The supporting application and database was developed, hosted and supported by Service New Brunswick.

- *Develops partnerships*

Service organizations in government (such as Centrelink in Australia, Service New Brunswick and Service Ontario in Canada, etc.) have invested in external partnerships as strategic levers to enhance their ability to deliver citizen-centered service. Their partnerships enable access to best practices in the private sector and other parts of government and enhance their ability to deliver service. They have partnered with:

- *Non-government organizations that have a deep understanding of citizen needs and how to meet them;*
- *Other service delivery organizations such as banks and insurance companies; and*
- *Research organizations, management consultants, and think tanks on the implementation of global best practices.*

- *Invests in relationship management*

Service organizations need to invest in relationship management as a key tool for securing and enhancing services. By understanding the drivers and motivators of organizations that can collaborate and partner, new opportunities will arise to better serve citizens.

The four foundational concepts in the one-stop citizen-centered business model illustrate the importance of focusing on people rather than programs and emphasize the value of executing an integrated, collaborative service strategy. At the heart of every collaborative effort within the organization and every transaction with citizens is information in the form of data, and the reliability of that data is critical. Citizens and employees alike need access to this trusted information every step of the way when program initiatives are implemented and citizen requests are fulfilled. Therefore, government organizations need the capability to effectively manage, unlock and transform information—through the right people, processes and technology—and make it readily available internally and externally to create public value and effectively meet the needs of citizens.

Trusted Information On Demand

As forward-thinking executives across multiple industries are beginning to realize, many organizations lack the knowledge or capabilities to leverage trusted information as a strategic organizational asset. Additionally, long-standing inefficiencies in how information is managed plague government organizations around the globe. For years, information has been locked up in individual systems, databases and business application systems. Managing information within isolated silos restricts government innovation and increases IT costs. Instead, information must be available as a service when it is needed to core applications and business processes across and beyond the organization. Today, there is a universal shift in the way organizations manage information. Beyond just storing data, agencies should be able to unlock valuable insights that translate into better decision making, better citizen service and outcomes, and optimized business processes.

Transforming core processes can facilitate a free flow of information across your organization. With trusted Information On Demand, employees can recognize and seize opportunities, your partners can align with your goals and citizens can benefit from a customized relationship they value as much as you do. You can optimize processes in real time, delivering actionable insight to every employee for every transaction, maximizing the potential of your information to drive business results.

IBM offers new capabilities that can help you maximize the value of information. IBM’s integrated software platform delivers a breadth of capabilities including data and content servers, information integration, master data management, and advanced multi-cultural name recognition and relationship awareness, analysis and discovery.

By leveraging these capabilities to provide trusted Information On Demand across your organization, you can:

- *Understand and serve citizens better by discovering new, innovative ways to relate to and transact with the public.*
- *Provide a single, authoritative record of individual citizen data across the organization.*
- *Optimize and master your data throughout the lifecycle of the data.*
- *Make information available as a service in an open and easily accessible way, thereby improving process performance through ready access to accurate and relevant information for every person who needs it during each transaction.*

With the right information capabilities, government agencies can transform the four foundational concepts in the one-stop citizen-centered business model into trusted Information On Demand across systems, programs and the entire organization to consistently deliver the best possible service to the public.

One-Stop Business Model	Trusted Information on Demand
<p>Focus on the Citizen— understand citizen needs</p>	<p>Know Your Citizen— understand identities, relationships, multi-cultural names</p>
<p>Deliver One Government— establish an organization that is easy to find, easy to access, easy to deal with</p>	<p>Provide a Single View of Citizen— create an authoritative record across organizations, programs, applications, touch points</p>
<p>Integrate Citizen Information— ask for information once, use many times</p>	<p>Master Your Data— integrate, synchronize, unify information throughout data lifecycle</p>
<p>Collaborate & Partner— create new value for citizens</p>	<p>Optimize Service Delivery Performance— improve process performance across service delivery network</p>

Know your citizen

Social Services and Social Security organizations, regardless of program area, are focused on developing the capabilities that will help them provide the best services to their clients. Organizations want to be able to provide service delivery around a complete, holistic view of the client. They want to improve the availability of programs and services, and they want secure data to help them provide those programs and services.

Social sector organizations have to solve many problems including, for example, those that contribute to improper benefit payments:

- *Verify applicant identity upon intake or registration.*
- *Determine if the applicant is applying for the same benefit in more than one jurisdiction.*
- *Determine if the applicant is applying for multiple benefits across several programs whether in the same jurisdiction or across jurisdictions.*
- *Uncover hidden relationships between the applicants and other benefit recipients that if known would negate or reduce benefits eligibility.*
- *Compare applicant eligibility information across programs and jurisdictions anonymously in order to comply with privacy legislation.*

The desired solution approach should present an active, preventive approach to fraud, abuse and error detection, capable of integration with case management applications so that the right eligibility decisions are made prior to extending benefits. This is in contrast with traditional passive detection methods that look for improper payments after benefits have already been paid.

Worldwide, more than \$4 trillion is expended annually for social services and social security benefits. The majority of benefits go to those deserving and to those who have contributed and are entitled. But not everyone in receipt of benefits presents true information upon application whether due to deception or to error. Not everyone is who he says he is. Not everyone discloses all sources of income, benefits, assets, accommodation or situations where related persons are receiving benefits. When the intent to deceive is successful, or when application errors go undetected, program dollars are paid to the wrong people. This results in fewer benefits for those deserving, and the need for increased program budgets to compensate for improper payments. More effective tools are needed to prevent fraud, abuse and error.

How are problems of identity and eligibility managed today?

Social services and social security organizations are confronted with significant amounts of ambiguous data regarding the identity of their clients, applicants and providers. This ambiguous data may be due to deliberate attempts by clients and/or providers to obtain services and payments or it simply may be unintentional error. The core of these social services systems is the citizen database repository, which contains information such as name,

address, telephone number, social security number, birth date, place of birth, marital status, mother's maiden name and so forth. Identity is further complicated by multiple databases residing in other departments that maintain different versions of the data about a client or provider. Separate databases may exist for specific programs such as pensions, disability, child allowance and employment insurance. These different databases are often not integrated, resulting in siloed, inflexible systems.

Under these arrangements, citizens provide the same information each time they apply for a different benefit. These inflexible systems do not share data between silos, are administratively inefficient and do not have consistent, up-to-date data between silos. For example, when a citizen passes away, regional governments provide death data to the national government to update the identity repository where it is then shared with other benefit programs. Due to stand-alone systems, inadequate data matching routines and privacy legislation, this update is prone to error and is a major cause of data integrity problems.

Social services and social security organizations share little data externally with other agencies, jurisdictions or third parties. For example, national government agencies such as Education Savings Grants, Student Financial Assistance, Student Loans, Housing, Veterans Affairs, and non-government organizations such as Financial Institutions and Credit Reporting agencies, all utilize identity data.

However, the sharing of data with other government and non-government organizations for service delivery integration and to prevent improper payments is minimal. The challenge is that sharing citizen information requires protection of data security and privacy. This is an issue today and will continue to be one in the coming years. In addition, most social sector fraud, abuse and error solutions rely heavily on after-the-fact detection rather than prevention or active detection before benefit payments are made.

Data matching techniques and requirements

Organizations typically employ three types of identity matching:

- *Merge/purge and match/merge. Direct marketing organizations developed these systems to eliminate duplicate citizen records in mailing lists. These systems operate on data in batches; when organizations need a new de-duplicated list, they run the process again from scratch.*
- *“Binary” matching engines. This system tests an identity in one data set for its presence in a second data set. These matching engines are used to compare one identity with another single identity (versus a list of possibilities), with the output often expected to be a confidence value pertaining to the likelihood that the two identity records are the same. These systems help organizations recognize individuals with whom they had previously done business (the recognition becomes apparent during certain transactions, like checking into the hotel) or, alternatively, recognize that the identity under evaluation is known as a subject of interest—that is, on a watch list—thus warranting special handling. This identity matching system can be batch handled or real time, although real time is preferred.*

- *Centralized identity catalogues. These systems collect identity data from disparate and heterogeneous data sources and assemble it into unique identities, while retaining pointers to the original data source and record in order to create an index. Such systems help users locate enterprise content in the same way the library's card catalogue helps people locate books. There are two approaches to record matching: probabilistic and deterministic. The identity matching systems use either probabilistic or deterministic matching algorithms. The probabilistic approach matches records by leveraging statistical properties of the data set while the deterministic approach generates a key (based on a rule) for each record, and matches all records associated with the same key.*

Probabilistic techniques rely on training data sets to compute attribute distribution and frequency. For example, Mark is a common first name but Rody is rare. These statistics are stored and used to determine confidence levels in record matching. As a result, any record containing the name Rody Smith and a residence in Maine may be considered the same person with a high degree of probability, whereas, Mark Smith, which is more common, would not have a high degree of probability. These systems lose accuracy when the underlying data statistics deviate from the original training set. To remedy this situation, such systems must be retrained from time to time and the data reprocessed.

Deterministic techniques rely on pre-coded expert rules to define when records should be matched. One rule might be that if the names are close (Robert versus Rob) and the social security numbers are the same, the system will

consider the records as the same identity. These systems can fail especially when the rules are no longer appropriate for the data collected. Both the probabilistic and the deterministic approaches have pros and cons. According to Gartner analysts, the best data matching software is a hybrid, combining probabilistic and deterministic approaches.

Mixture of vital requirements

Given the analysis of the potential problem scenarios and existing data matching techniques, it is clear that a successful solution requires a mixture of several vital characteristics. Chief among these is a non-obvious relationship awareness capability for resolving ambiguous identities. It has to be built on a model of identities and relationships between identities (such as shared addresses or phone numbers or other attributes) in real time. If a new identity is matched or related to another identity in a manner that warrants human security, the system immediately generates an intelligent alert.

- *Sequence neutrality. It needs to react to new data as that data is loaded. Matches and non-matches must be automatically re-evaluated to see if they are still probable as the new data is loaded. This capability is needed to eliminate the necessity of database reloads.*
- *Relationship aware. Relationship awareness is designed into the identity resolution process so that newly discovered relationships can generate real-time intelligence. Discovered relationships also persist in the database, which is essential to generate alerts beyond one degree of separation.*
- *Perpetual analytics. When the system discovers something of relevance during the identity matching process, it publishes an alert in real time to case management and citizen relationship systems and users before the opportunity to act is lost.*

- *Full attribution. Identity resolution algorithms evaluate incoming records against fully constructed identities, which are made up of the accumulated attributes of all prior records. This technique enables new records to match to known identities completely, rather than relying on binary matching that can only match records in pairs. Full attribution improves accuracy and greatly improves the handling of low-fidelity data that might otherwise have been left as a large collection of unmatched orphan records.*
- *Knowledge-based name evaluations. The system needs detailed name evaluation algorithms for high-accuracy name matching. Ideally, the algorithms would be based on actual names taken from all over the world and developed into statistical models to determine how and how often each name occurs in its variant form. This empirical approach requires that the system determine automatically the culture that the name most likely came from because names vary in predictable ways depending on their origin.*
- *Real time. The system has to handle additions, changes and deletions from real-time operational business systems. Processing times are so fast that matching results and accompanying intelligence (such as persons on a watch list or a missing address on an apartment number based on prior observations) could be returned to the operational systems in sub-seconds.*
- *Complex event processing. The system has to support actions triggered not by a single event, but by a complex composition of events, happening at different times and within different contexts.*

IBM Entity Analytic Solutions (EAS)

All of the above capabilities are provided as a suite of IBM software components – EAS that reduces the ambiguity of provider and/or recipient identities. Citizen identities are disambiguated by examining the anomalies and inconsistencies in the data as well as in the network of both obvious and non-obvious relationships hidden in databases. EAS sifts through entity identification information such as name, address, phone number and so on that resides in separate databases to dynamically correlate identities.

EAS includes the following components and capabilities:

- *Enables organizations to answer the question “Who is who?” and to distinguish whether multiple records are, in fact, records for a single resolved identity.*
- *Builds off resolved identities created by identity resolution. Relationship awareness provides answers to the question “Who knows who?” by seeking out non-obvious relationships between individuals and with organizations.*
- *Provides event- and role-based alerts to organizations when a certain set of predefined activities are taking place and answers the question “Who does what?”*
- *Allows several organizations to share and compare data in order to discover “Who is who and who knows who?” anonymously. IBM Anonymous Resolution converts confidential information into cryptographic form enabling data owners to maintain control of what information is revealed and concealed.*

IBM Global Name Recognition (GNR)

IBM Global Name Recognition provides multi-cultural name recognition software solutions for mission-critical applications. This solution provides comprehensive name matching, analysis and recognition capability across multiple cultures spanning more than 200 countries and 17 different cultural families. The GNR software components can be used independently or integrated to improve the processing of names. The GNR portfolio consists of three software components, including:

- *IBM Global Name Analytics*
- *IBM Global Name Scoring*
- *IBM Global Name Reference Encyclopedia*

Global Name Analytics leverages a unique knowledgebase of linguistic information from more than 20 years of research and analyzes millions of names gathered from across the world. It is designed to help organizations manage multicultural data sets and meet the demands of organizations that rely upon data sets from cultures around the globe. It uniquely manages global identity information by identifying and classifying what cultural background a given name comes from and recognizes whether a name is predominantly male or female. Global Name Analytics enables social services organizations to improve data quality about recipients, providers and contractors. It treats multiple cultures sensitively by accurately parsing and storing citizen names within their automated systems.

Global Name Scoring recognize both “written” hand-keyed and “oral” interpretations of name data by intelligently processing the cultural name variations to reduce multi-cultural name ambiguity and fight fraud. Global Name Scoring increases the accuracy in name searches. It allows organizations to identify identical and fuzzy clear text and phonetic name matches more effectively. Global Name Scoring enables users to search for multi-cultural names in a database and provides the most likely variations more effectively. It overcomes the vagueness and inexactness of transliteration and provides a phonology-oriented search capability that provides ranked search results based on similarity of pronunciation. Global Name Scoring allows you to perform searches, recognizes foreign names and screens potential fraud by performing background checks across multiple geographies and cultures. It also applies language-specific letter-to-sound rules in order to identify potential pronunciations for names.

Global Name Reference Encyclopedia is an interactive encyclopedia that includes culture-specific information about names, usage, meanings and patterns of spelling variations. This encyclopedia leverages a vast store of cultural and linguistic knowledge from your desktop, laptop or handheld by automatically analyzing each name to show cultural or ethnic classification, most prominent spelling variants, gender associations and peripheral elements. It includes information and analyses for names from around the world.

Provide a single view of citizen

Governments recognize the need to put the citizen at the center of their operational business processes and move away from their traditional program, organization-centric approach to achieve a citizen-service differentiation strategy and optimize service delivery. The ability to inject and leverage accurate, complete and up-to-date citizen knowledge and insight into operational transactions at the right time is the basis of an effective citizen-service strategy. Aside from the cultural and business challenges involved in that transformation, organizations have to overcome many technical challenges in order to achieve true citizen centrality.

From a technology perspective, the biggest challenge of implementing citizen-centric operational processes is the fact that citizen information is stored in multiple, siloed line-of-business (LOB) systems. Even within an LOB, there exist several back-office program-focused systems and potentially several front-office, or citizen-facing, solutions, all of which contain citizen information. This results in fragmented citizen information across multiple systems, generating several inconsistent versions of the truth for each citizen.

CRM, customer information files (CIF) and data warehouses

Organizations have attempted to solve their single view of citizen problems by implementing CRM, CIF systems and data warehouses.

CRM systems are designed to manage specific citizen-facing processes (customer service, marketing, and so on); however, CRM solutions are reliant on good customer data in order to be effective. The fundamental problem of CRM solutions is poor customer data. CRM systems are not designed to manage customer data and customer transactions across all systems in the enterprise, and are therefore reliant on receiving data from other systems in the enterprise. Without a single view of the customer to provide to CRM applications, organizations do not realize the promise and value of CRM, which is to truly achieve customer-centric sales and service processes.

Organizations have implemented CIFs or operation data stores (ODSs) to provide better customer data to their CRM systems and other front-office channels. The problem with CIFs is that they do not manage the complete customer relationship. Most CIFs cannot easily accommodate all service lines and channels. They typically do not maintain new customer data such as data on customer relationships, interaction history, privacy preferences, campaigns and events. CIFs and ODSs usually have view-only functionality,

so channels can see customer information but there are no business services to update this information. Although CIFs and ODSs provide a view of customer data, they do not address the fundamental process issue around managing master customer data because they do not provide business services for customer data management.

Customer data integration (CDI) capabilities

To make the transformation to a true citizen-centric model, organizations must consolidate citizen knowledge and insight from back- and front-office silos to an enterprise level. That knowledge should be shared across all systems as a set of citizen-centric business processes and services.

Organizations can become citizen-centric by implementing an enterprise-wide CDI capability. The enterprise citizen hub is the foundation for an operational citizen-centric service and sales strategy. By organizing business processes around citizens, having knowledge and insight of citizens and their service profiles, and by implementing citizen-management business services as part of operational business processes, organizations can transform their processes to be citizen-centric. Citizen-centric operations enable organizations to achieve strategic business objectives including increasing service outcomes, improving efficiency to reduce administrative costs, improving risk management, reducing time and costs, and achieving privacy legislation compliance.

Achieve and maintain a single version of truth across the organization

Leading organizations today are undertaking initiatives to break down information silos and gain control of their most important and commonly shared enterprise information assets, or master data. The category of solutions deployed to achieve and maintain this single version of truth of master data across the enterprise is known as master data management (MDM). MDM solutions are designed to manage master data, which includes information about an organization's customers, products and accounts, throughout operational transactions and maintain a single operational view, which serves as the system of record for this data.

MDM solutions are integrated with existing operational systems through business services (or Web services). This integration enables the applications to benefit from sharing a complete understanding of master data and business processes to improve their effectiveness (for example, by providing better service to high-value customers or bundling products and accounts to deliver more attractive offerings). Because of their high level of integration, MDM solutions are important strategic investments that organizations must evaluate thoroughly in order to receive the highest possible return on investment (ROI). The most common and effective approach to MDM is to implement a neutral, service-oriented master data hub that persists the authoritative customer, product or account record in a database.

In addition to a database or repository and a robust data model spanning multiple types of master data, the most effective master data hubs also deliver key components including:

- *Business Services designed to provide real-time access to master data in context of business processes.*
- *Business Rules which can be configured to enforce policy on the treatment of master data.*
- *Data Quality to maintain the integrity of master data.*
- *Security to regulate user access to master data.*
- *Integration elements for rapid implementation into existing environments and third-party tools.*
- *User Interfaces for maintenance and administration of master data.*

Organizations embarking on the journey of MDM not only evaluate technological elements, but also compare solutions based on the suitability of the product against the following decision-making criteria:

Service oriented architecture (SOA): An MDM solution must contain data and business-level services that are designed for consumption by business applications and integration technologies. Most often, MDM services are invisible to the user and must be able to be customized, extended and consolidated into composite business processes. Organizations can significantly reduce MDM and SOA implementation time as well as increase IT flexibility when implementing MDM with pre-built services.

Neutrality: An MDM solution must be business-process neutral. It is designed to be a common infrastructure component that is accessed by multiple business applications; therefore, it cannot have business processes that are specific to any one application. This is a common reason that organizations do not select MDM solutions offered by application vendors. In reality, those vendors are offering an application database with limited application-programming interfaces (APIs) and business function that is designed from the point of view of a application system user (for example, a call-center representative). The most effective MDM solutions are process neutral and manage business processes that are common to multiple business applications.

Performance and scalability: MDM solutions are placed at the center of organizations' operational transactions and can represent a single point of failure for master data. Obviously, these solutions need to perform well and scale to meet the requirements of large organizations, which often exceed hundreds of thousands of transactions per hour and demand sub-second response times.

Extensibility: MDM solutions must be extensible to allow for customization and extension without changing the core product, because each business environment is unique. This allows organizations to benefit from the MDM solution's ongoing product roadmap, while still being able to configure the product to meet their specific needs. It is important that MDM solutions be able to support extensions

and customizations being built in easy-to-use and widely available tools (for example, standard Java™ development tools). MDM solutions should not have proprietary tooling that is difficult to use and more costly to train resources on or hire consultants for, as this will increase the total cost of ownership (TCO) to the organization.

Flexibility: MDM solutions must be able to incorporate data from other sources and to integrate with those sources for continuous master-data processing. For example, MDM solutions should integrate with data warehouse solutions to “operationalize” rich insight and to provide updates to the data warehouse environment in order to marry the operational and analytical views.

In addition to the points mentioned, there are several functional requirements that represent the best practices for MDM. These requirements can be categorized by foundation MDM and transaction MDM. Foundation MDM provides all of the key components and functionality required in all MDM deployments regardless of scale. Transaction MDM leverages foundation MDM components, but also delivers additional functionality required primarily in large-scale fully transactional environments.

IBM InfoSphere Master Data Management Server

InfoSphere™ MDM Server is a highly flexible product, capable of being implemented in either a foundation deployment or as a fully functional transaction hub, dependent on organizational requirements. InfoSphere MDM Server Foundation provides government organizations with the core elements required for a complete MDM solution. InfoSphere MDM Server Foundation includes a robust data model, data and application coarse and fine-grained configurable services, as well as data quality, integration, user interface and platform components. In addition to the foundation components, InfoSphere MDM Server Transaction hub includes the requirements for a deeper and more intelligent MDM solution. The transaction hub includes business-level services, event management and a business rules engine, as well as enhanced integration and integrity capabilities. Both deployments are designed to support operational functionality for three primary entities, or domains: Citizen/Party, Account/Case, and Service.

MDM Server is the industry-leading transaction hub CDI solution. It has proven implementation with the largest organizations in multiple industries. MDM Server maintains the single version of the citizen truth, and provides that knowledge to all channels and systems in real time. MDM Server injects marketing insight and citizen knowledge into the operational processes of the organizations, enabling improvements to service processes based on complete citizen knowledge. It supports multiple styles of CDI including reference data citizen hub and transaction hubs. For more detail on CDI styles, please see section entitled Master Your Data.

Foundation MDM

Knowledge (MDM Repository and Services): A primary requirement is for the foundation MDM solution to persist master data to maintain the authoritative data record for a particular data domain, such as citizen, service or account, as well as for related objects (location, demographics) and relationships (citizen to a service to an account/case to a location). Also required are data and application services and logic that can update and access master data held within the database. It also contains logic for composite business services that represent business processes (for example, adding a citizen).

User Interfaces (UIs): Foundation MDM functionality must be available to deliver trusted information to user interfaces. An MDM solution need not provide complete user interfaces as UI needs can be unique from user to user. However, functionality for the support of all UIs should be available through exposed and configurable data and business services.

Data Quality Control: The foundation MDM data quality component is a set of business rules and internal services that are accessed by other services. Data quality control services are the guardians of the single version of the citizen truth and include matching, data-stewardship and data-validation services.

Integration: Integration provides interfaces and integration points that are packaged within the core application. Data and business services within the Knowledge component must contain integration hooks to allow organizations to plug in custom logic, applications, or both, within the context of an MDM transaction. In addition, published interfaces for functions and common components allow organizations to plug other vendor tools into published interfaces. This includes:

- **Business process management and enterprise application integration tools.** *BPM and EAI tools are designed to integrate applications and to manage long-running business processes. No one system manages the master citizen record. In this environment the process fails because it cannot obtain data on identifying citizens, their existing relationships and profile data. When organizations attempt to inject citizen-centricity into their processes using BPM and EAI tools, they quickly uncover the need for a citizen master data management solution. Central concepts in the business process must be managed by separate application infrastructure components – commonly called data hubs.*
- **Data integration and enterprise information integration tools.** *These tools facilitate database-to-database-level integration between applications, specifically for batch-file processing. ETL tools are commonly used to extract data from other applications that contain citizen data, transform the data into a specified format and deliver a load file (batch file) to the CDI hub for processing. ETL tools are fundamental to the data integration*

infrastructure that supports CDI hubs. CDI hubs are complementary to enterprise information integration (EII) tools, as well. EII is used to manage federated queries (inquiry services) across multiple data stores. EII tools can be used to extend the core services of the CDI hub to retrieve data from other “systems of record” for related data (for example, to return up-to-date account information from an account system as part of a party profile inquiry).

Transaction MDM

Business Level Services: Transaction MDM requires intelligent and complex business-level services, which can serve to fully meet high-value business process requests. Business-level services must have configurable business logic or rules which dictate actions to the MDM transaction solution.

Security and Visibility: Transaction- and attribute-level security, as well as the control of user access to critical master data, is a component of transaction MDM. Security and visibility includes data entitlements for users and user groups, as well as rules of visibility to filter the information that is available for consumption.

Events: The ability to configure and process events is a component of transaction MDM. An event management element allows organizations to set either user-defined or time-based events based on requirements and business rules.

Data Optimization: Additional data quality components are required in transaction MDM, to provide organizations with the ability to optimize information within the hub. This component can send information out in batch processes for additional cleansing and standardization or to prevent data corruption.

Adaptive: Transaction MDM requires components which are specifically designed to support multiple types of users, user groups, and lines of business (LOBs). Adaptive transaction MDM maintains the single version of truth for master data entities and provides the capability to respond to diverse information and process requests across the enterprise.

Master your data

The challenges of master data management

Companies and organizations across many industries face business challenges that affect their master data – the high-value, business-critical information about citizens, providers, services and accounts – and the ability of IT to deliver on the requirements of a dynamic organization. This critical business information is replicated and fragmented across organizational units, geographic branches and applications. The reality is that different types of data remain essentially “locked up” in various silos across the organization. Organizations now recognize that these symptoms indicate a lack of effective and complete management of master data. Since organizations began shifting from a mainframe-based architecture to a more flexible distributed architecture, IT departments have attempted to gain control over this master data using a variety of methods. But few have demonstrated true success due to their reliance on existing, but repurposed, systems and applications.

Traditional approaches to master data management

The enterprise application: Traditional approaches to master data include the use of existing enterprise applications, data warehouses and even middleware. Some organizations approach the master data issue by leveraging dominant and seemingly domain-centric applications, such as a customer relationship management (CRM) application for the customer/citizen domain or an enterprise resource planning (ERP) application for the product domain. However, CRM and ERP, among other enterprise applications, have been designed and implemented to automate specific business processes such as customer on-boarding, procure-to-pay and order-to-cash – not to manage data across these processes. The result is that a specific data domain, such as customer or product, may actually reside within multiple processes, and therefore multiple applications.

In this scenario using application masters, it is difficult to determine which iteration of customer, product or account – if any – is complete and correct. Additional complexity occurs as organizations attempt to maintain the correct copy of the data, and identify and understand all of the systems that can update a particular domain, those that consume portions of the updates, and the frequency rate at which this consumption occurs. It quickly becomes apparent to organizations that have undergone such a project that the process-automating application cannot also manage data across the enterprise.

The data warehouse: Alternately, some enterprise initiatives have attempted to repurpose new or existing data warehouses to serve as a master data repository. As data warehouses aggregate enterprise information, the warehouse is often viewed as a starting point for companies attempting to master their data. However, data warehouses have inherent design characteristics to optimize reporting and analysis, and to drive sophisticated insight to the business. This design, while effective for its primary use, cannot scale well within an operational environment – even in the case of dynamic warehousing – when measured against the needs of most businesses today. Based on its fundamental design, the data warehouse also lacks data management capabilities. Essential functionality such as operational business services, collaborative workflows and real-time analytics that are critical to success in these types of master data implementations require large amounts of custom coding. Similarly, data management capabilities – data changes that trigger events and intelligent understanding of unique views required by consuming systems – are also absent from a data warehouse.

Integration middleware: EII or EAI technologies used to federate and synchronize systems and data have also been presented as substitutes for data management products. Although these solutions can tie together disparate pieces of architecture either at the data tier (EII) or at the application tier (EAI), they do not provide either a physical or virtual repository to manage these key data elements. And much like warehouses, they lack data functionality. The management of data processes poses yet another challenge.

Choosing to build functionality within this middleware technology can affect performance in its core competency: the integration of applications and data. Without a true master data solution to complement it, the implementation of EII and EAI technology can actually add to the architectural complexity of the business and perpetuate master data problems with point-to-point integration. In most cases, these methods fail because they are designed to treat data symptoms, such as fragmented data or systems that are out of sync, and not the root cause of the master data problem. That root cause is that data is tightly coupled to applications and business processes and this data is not being managed by a single, independent resource that can capture the complete and current enterprise understanding of the domain (citizen, service, account/case or provider).

While EII and EAI technologies specialize in specific functions such as data federation, data quality or aggregate analytics, they do not manage the essential data processes or data changes that can initiate other processes such as quality and data stewardship. Attempting to manage these data processes virtually can mean that an essential fact – like the correct address of a citizen – must be determined on every transaction; for example, determining whether address 1 from system A or address 2 from system B is correct. It is also necessary to persist this information because the data is created and changed over time – this timeframe is known as the information lifecycle – to capture net new data like privacy preferences and to deliver this information in context to all of the relevant consumers, typically on demand via business services.

The problem with traditional approaches

The following example illustrates the problem. A citizen contact occurs in the call center. This action initiates an address change to a citizen record. The address change is immediately reflected in the CRM application, but the billing system is not updated. The citizen's bill for that month is sent to the wrong address and the analytics are skewed because the data warehouse did not receive the required change. The ERP system, on the other hand, has a third address, confusing data stewards and forcing another citizen contact to try to correct the error. The result is a poor citizen-service experience for the citizen. No single application has the ability to manage the “golden copy” of this citizen information to ensure all systems receive the necessary changes, as well as triggering duplicate suspect processing (matching the citizen with an already existing address), event handling (such as alerting a data steward to the problem) and analyzing whether a service offer should be made due to the change.

While existing systems are automating their associated business processes, this dynamic data is actually driving process changes of its own. Integration technology or a data warehouse in combination with extensive customization may provide the ability to link some of these applications and data elements. But does this integration occur frequently enough to avoid discrepancies across the enterprise? What if the address change was originally made to the billing system when the customer received the last invoice statement? Will this information be overwritten by the dated CRM address? What happens with the addition of another channel such as a self-service Web application that also has an address update capability?

The evolution of MDM solutions

In general, MDM solutions should offer the following:

- *Consolidate data locked within the native systems and applications*
- *Manage common data and common data processes independently with functionality for use in business processes*
- *Trigger business processes that originate from data change*
- *Provide a single understanding of the domain – citizen, service, account/case, location – for the organization*

MDM products, however, address these four requirements very differently. Some products decouple data linked to source systems so they can dynamically create a virtual view of the domain, while others include the additional ability to physically store master data and persist and propagate this information. Some products are not designed for a specific usage style, while others provide a single usage of this master data. Even more mature products provide all of the usage types required in today's complex business – collaborative, operational and analytical – as out-of-the-box functionality.

The lifecycle of master data affects data management

Three styles – collaborative, operational and analytical – describe how applications use master information.

These styles reflect the data lifecycle in which data is created, managed and accessed across the organization.

Master data may be created through many scenarios, and the style associated with these creation scenarios is collaborative. The collaborative usage style is the dominant style in product information management (PIM). In this example, a service is a product. For example, an organization wants to manage its business process that relates to the introduction of a new service. It establishes how services are defined and synchronized across the organization, and the management of the resulting data is called *collaborative MDM*.

Another scenario involves transactional business processes within applications that need access to master data via an SOA approach. This type of access to master data provides a view of any entity within a data domain. This operational usage style is dominant in transactional CDI hubs. For example, a front-end citizen touch point or application may need access to a single view of a citizen during an intake/case opening process. Management of master data within this process is *operational MDM*.

The final style enables advanced analytics to be performed on master data and provides a staging area for use in business intelligence with data warehouses. It can cross multiple domains and provide unique and valuable insight into master information. These advanced streaming analytics function in the analytical style. This usage style, called *analytical MDM*, is prominently used for complex analytics on master data domains, such as providing analytical applications with more current and accurate data.

Finally, MDM products vary in their domain coverage, ranging from specializing in a single domain such as citizen or service to spanning multiple and integrated domains. Those that span multiple domains help to harness not only the value of the *domain*, but also the value *between* domains, also known as relationships. Relationships may include citizens to their locations, to their accounts/cases or to services they have received. This combination of multiple domains, multiple usage styles and the full set of capabilities between creating a virtual view and performance in a transactional environment is known as *multiform MDM*.

IBM Multiform Master Data Management

IBM Multiform Master Data Management manages master data domains – citizens, accounts/cases, services and products – that have significant impact on the most important business processes and realize the promise of SOA. IBM is the only vendor that delivers an integrated MDM product with significant out-of-the-box functionality for each MDM usage style – collaborative, operational and analytical – across multiple data domains, thereby managing the complete data lifecycle. This multiform approach enables an organization to centralize its most critical information to a single trusted source and provide configurable functionality across multiple usage types and data domains, which can be altered to unique business requirements. Multiform MDM delivers capabilities such as identifying key citizen segments and provider relationships, introducing new services more quickly and managing fraud risk more effectively.

The value of IBM Multiform MDM can be recognized in a range of projects, from short-term fixes for a narrow set of problems such as capturing citizen privacy preferences to long-term enterprise-wide initiatives like delivering agility to the business by shifting to SOA.

IBM is committed to providing flexibility to its customers; therefore, IBM Multiform MDM is designed to scale from tactical requirements to full-blown strategic solutions with enhanced value through the understanding of domain relationships. Customer-related examples of tactical requirements to strategic initiatives that realize the value of Multiform MDM include: Identifying the most important citizens in need. The tactical requirement is to meet short deadlines and deliver quick ROI. IBM Multiform MDM (citizen domain/operational usage) is deployed in a single LOB to consolidate citizen across multiple CRM and service applications. It also provides an operational view through the use of business services to the citizen-facing channels of the business. While the tactical problem may be solved with a number of MDM solutions across the MDM maturity model, relatively immature solutions create future risk by inhibiting an organization's ability to add a second domain (account/case) and to integrate new applications to the MDM product. However, using Multiform MDM protects the organization from a strategic standpoint over time, as business requirements expand to provide services to citizens based on cases across multiple programs and organizations. The IBM Multiform MDM operational/citizen component is integrated with the IBM Multiform MDM operational/account/case component, spanning multiple programs and organizations and allowing the organization to provide differentiated service to its citizens and partnering with service delivery partners.

Introducing new services to market more efficiently. Organizations need to streamline the new service introduction process – the tactical requirement. Using IBM Multiform MDM (service/collaborative), organizations can create a single repository for services across programs, quickly leverage configured existing workflows, and create and augment service data spanning the process. This process helps shorten the new service introduction process from weeks to days. Again in this scenario, the organization may choose an immature MDM product to create this efficiency, but create risk in the ability to add a second domain (provider) and another usage style (operational) needed for both the service and provider domains. Strategically, the organization can integrate the IBM Multiform MDM service/collaborative component with a provider/operational component to update transactional systems via business services with services and products available from specific providers, reducing service gaps and product outages and providing real-time provider alternatives. Organizations moving from tactical to strategic deployments of MDM – Phase 1 to Phase 2 and beyond – can face potential risks, or chasms, if existing functionality and domain focus is not available. Caused by heavy customization, high development costs and product scalability limitations, chasms can prevent initiatives from reaching their true value of leveraging MDM usage styles and combining interrelated domains. IBM Multiform MDM provides this value from both usage and domain perspectives to help ensure organizations can map their MDM capabilities to their ever-changing business needs.

Information sharing and privacy

Keeping citizen trust. What can government executives do to protect privacy? The privacy discussion is driven by an environment of increased information sharing across traditional agency and governmental boundaries and the ease with which information can be collected, compiled, manipulated, used and transmitted. Rapidly evolving technologies have and will only continue to facilitate this, while the legal framework for privacy, as well as the generally accepted business practices to guard against privacy compromises, have failed to keep pace.

What is privacy and what is not?

Privacy refers to the decisions that are made about when and how government should collect, store, use, disseminate and dispose of citizens' personal information and how policies based upon those decisions should be implemented. For example, when should it be acceptable for an agency to collect a citizen's social insurance number? Can that agency then share that citizen's name and social insurance number with other governmental organizations? Or even share it with third parties, such as providers? These questions involve citizen privacy with respect to personal information and create the need for governments to address how citizens' personal information is handled in a holistic fashion.

Security is a related concept. It is how information is protected – the measures that an organization takes, including virus protection, firewalls, roles-based access to sensitive information, and intrusion detection systems, to ensure that personal information is not accessed or used in a manner that is contrary to its privacy policies.

Although privacy and security are separate concepts, the relationship between the two is best expressed by the statement that “one cannot have privacy without security.” The privacy policy dictates how a government will collect and use citizens’ personal information. The security policy dictates how a state will protect that information from misuse by those internally as well as externally⁵.

IBM InfoSphere Master Data Management Server

InfoSphere MDM Server maintains privacy information for a party. The data model manages both default and citizen-stated privacy preferences. Relationships can be established between default privacy preferences to denote which default preferences take precedence over other preferences.

The party’s specific preferences are also stored and override the default preference if they are present. Privacy preferences contain actions (for example, “do not call,” “do not share data”). Privacy preferences can be related to other objects – such as locations (addresses and contact methods), contracts and parties. Citizen service or contact preferences are also maintained within the same subject area.

InfoSphere MDM Server manages alerts and notes for other objects, such as parties, contracts and addresses. Notes can be used to store important information on specific entities and to make this information available to all channels across the organization.

IBM Anonymous Resolution

Governments are often confronted with the problem of accurately identifying citizens in a world of legacy systems and dirty data. Effective entity resolution will help improve the quality of service, reduce duplicative cases and services and other unneeded services, and substantially reduce fraud and other unauthorized payments. Going beyond traditional entity resolution, IBM Anonymous Resolution is a revolutionary technology that uses encryption and enables the transfer of citizen records or other data: (1) across a boundary, such as between two providers; (2) without the transfer of the name or other personally identifiable information of the individual; and (3) in a mathematical form that permits records of the same individual to be linked together. The importance of anonymous resolution has already been accepted for national security applications.

Anonymous Resolution can help solve key problems in social services and social security environments, in the United States and globally. For example:

- *As electronic records and case information are shared at the regional and national level, Anonymous Resolution is perfectly suited for linking citizen records held at multiple locations such as a master patient index (MPI).*
- *Anonymous Resolution has numerous advantages for payers in the shift to case management. It would improve the quality of service, allowing sharing between government agencies, providers and others who are part of the service value chain. It would be especially effective for improving the integrity of processes and deterring, detecting, and proving fraud and other unjustified payments.*

- *Program and program integrity functions would benefit from anonymous resolution. It would allow analysts to identify records held across organizational boundaries, without identification but with the ability to accurately associate and count the records despite the disparate information silos.*

Optimize service delivery performance

Integrating information across the service delivery network

The 2006 IBM CEO survey found that organizations that were highly effective at integrating information were five times more likely to drive value creation compared to those that were less effective at it. Most governments already own the information they need, but they are unable to access critical information when and where they need it and are unable to put it to valuable use. In fact, the IBM CEO survey found that more than 60 percent of CEOs believe that their organizations need to do a better job leveraging information. The problem is that this information is usually spread across many heterogeneous systems and is not understandable as a complete whole. As organizations move to embrace an SOA, this problem becomes magnified. Although promising as a new method for building applications, Gartner believes that SOA will fail if long-standing data quality, data redundancy and semantic inconsistency issues are not addressed. Additionally, businesses commonly cannot trust the information they do have available because of issues related to timeliness, quality or completeness.

At the same time, organizations that wait for their application vendors to solve these problems for them are losing their opportunity to differentiate. According to the 2006 IBM CEO survey, 87 percent of CEOs believe a fundamental change is required within the next two years to drive innovation – but the application vendors simply do not move that fast. Organizations that wait for their application vendors to act put themselves on an equal playing field with their competitors – all companies get improvements at the same time. To differentiate, and to truly innovate, organizations must do a better job of leveraging their information outside the scope of their existing applications.

What is driving this change?

Several business drivers are increasing the importance of information availability:

- *The ability to know your citizens*
- *Single, right view of citizen (SVC) and single version of the truth*
- *The creation of accurate and informative data warehouses and operational data stores*
- *Regulatory compliance (risk and compliance efforts)*
- *Real-time view of cases, services, payments and other key performance indicators*

These drivers increase the focus on accurate, timely information as political and LOB executives face increasing public pressure to use public funds effectively and wisely. The costs to maintain duplicate or obsolete systems increase while control of information becomes almost impossible with redundant and disparate applications. To supply the right information to the right people in the context they are seeking, companies need to enable their information infrastructure to be more agile and responsive to the various demands of the social services and social security organizations.

What is needed to effect this change?

To fully realize the benefits of addressing these critical business initiatives, organizations need an enterprise information architecture with the breadth and flexibility to enable access to trusted information wherever, whenever and however it is needed. The delivered information must not only be accessible, authoritative, consistent and timely, but it also must be in context to help managers and case workers gain insight and make better business decisions. To deliver information you can trust across a full range of business requirements, a comprehensive information integration solution must provide six fundamental capabilities:

1. Connect to relevant business applications, data and content, and recognize and respond to data changes in those sources – whether structured or unstructured, mainframe or distributed, internal or external
2. Discover, model and govern information structure and content to completely understand data before it is integrated and proliferated throughout the organization
3. Standardize, merge and correct information to provide authoritative, consistent and complete views of business information and its relationships across the extended enterprise
4. Effectively and efficiently collect, combine and restructure high volumes of data for new uses
5. Synchronize, virtualize and move information for in-line delivery
6. Flexibly publish and manage reusable information services in an SOA

IBM Information Server

IBM Information Server is a revolutionary new software platform that helps organizations derive more value from the complex, heterogeneous information spread across their systems. It enables organizations to integrate disparate data and deliver trusted information wherever and whenever needed, in line and in context, to specific people, applications and processes. IBM Information Server helps business and IT personnel to collaborate to understand the meaning, structure and content of any type of information across any sources. It provides breakthrough productivity and performance for cleansing, transforming and moving this information consistently and securely throughout the enterprise so it can be accessed and used in new ways to drive innovation, increase operational efficiency and help lower risk.

IBM Information Server achieves new levels of information integration speed and flexibility by providing:

- *A comprehensive, unified foundation for enterprise information architectures, scalable to any volume and processing requirement.*
- *Auditable data quality as a foundation for trusted information across the enterprise.*
- *Metadata-driven integration, providing breakthrough productivity and flexibility for integrating and enriching information.*
- *Consistent, reusable information services – along with application services and process services, essential for enterprises.*

- *Accelerated time to value with proven, industry-aligned solutions and expertise.*
- *Broadest and deepest connectivity to information across diverse sources: structured, unstructured, mainframe and applications.*

Improving outcomes and performance

Government organizations face increasing scrutiny from legislators and the public; they are compelled to do more with less funding, offer proven program value and be accountable. In light of current policy and political priorities, a bi-partisan group of government executives, public management scholars, and business leaders – under the aegis of the Kennedy School of Government at Harvard University – met recently to discuss the importance of performance management. They concluded that “performance management is essential for government agencies seeking to improve outcomes and rebuild confidence in government.”

Performance management consists of a series of integrated steps where an organization defines key priorities, measures progress towards these goals, and analyzes and communicates results to stakeholders such as legislators and oversight bodies. By linking strategy with execution in this way, they can more effectively monitor and improve performance. Yet “few government leaders understand clearly enough, and early enough, the leveraging power of performance management.” Moreover, measuring and managing

performance – metrics, plans and budgets, and detailed actual results – has been a challenge because disparate tools, paper-based processes and legacy IT systems provide limited visibility into operations and activities.

Current realities have increased the requirement for timely and effective management oversight. Government organizations need to see the big picture – the relationships, connections and direction – as well as the details to make informed decisions and improve outcomes. This is the promise of government performance management.

IBM Cognos performance management, scorecarding, reporting and analysis

Why performance management?

Effective decision making is key to creating an accountable, cost-effective and productive organization that delivers on today’s government performance requirements. With government performance management software, you gain access to the reliable, timely information that drives better decisions. While you may have any number of decisions to make, they depend on answers to these fundamental, interrelated questions:

- ***How are we doing?*** – *A gauge of the most critical indicators for your organization.*
- ***Why?*** – *The ability to dig deeper into current issues, successes or problems in order to understand what led to the results.*

- ***What should we be doing?***— *The facility to set plans, allocate resources, monitor them and adapt. Cognos, an IBM company, provides an integrated, best-practices platform for government performance management. It integrates and leverages your critical data, and delivers the scorecarding, reporting and analysis, and planning tools you need to manage and optimize performance. With integrated plans, business intelligence and performance metrics, you can dramatically improve your understanding of the business, and improve your ability to make timely, informed decisions.*
- *Monitor and make quantified decisions about what to cut and where to continue funding.*
- *Capture, measure and track long-term program outcomes.*
- *Identify issues and justify changes in budgets, headcount and other areas.*
- *Measure and track the costs and benefits associated with particular programs or legislation.*

Scorecarding

Scorecarding, with IBM Cognos 8 Business Intelligence, communicates strategy and objectives through a metrics-based method of management. It answers “How are we doing?” by providing people with the information they need to take ownership of their performance – visibility into strategy, understanding the part they play in making the strategy succeed and the metrics to measure their success. Scorecarding also allows stakeholders and the public to be educated on what your organization has been chartered to do and stay informed of activities.

By enabling the strategic alignment of program objectives against performance metrics, you can answer at any time the central questions: Are we on track? Are we making progress on the things that must be done? Use IBM Cognos scorecarding to:

- *Engage the entire organization – agency staff as well as contractors and suppliers – with real-time feedback on progress toward goals.*
- *Track dollars spent to ensure projects or programs are performing as expected.*

Reporting and analysis

Public sector organizations amass large amounts of data that reside in many systems – ERP, CRM, HR, data warehouse – often across multiple sites and locations. Consolidating this information is a huge challenge. It is especially difficult given that there can be as many tools used to analyze and report on the data, creating further islands of information. IBM Cognos 8 BI reporting and analysis consolidates and leverages your critical data and turns it into consistent, meaningful information relevant to your organization’s mission. You can spot broader trends and drill down to discover underlying causes and issues.

The Web-based reporting and analysis environment means people access consistent information delivered in the right way – across all departments, roles and locations. With standardized BI reporting and analysis, you can accurately assess the “Why” behind performance. This provides the necessary context against which decisions can be made.

IBM Cognos BI in conjunction with IBM Information Server and IBM InfoSphere MDM Server provides a unique and more powerful combination to deliver a comprehensive performance management solution.

Different implementation styles

The MDM market has quickly and successfully moved from a data-centric approach to a function-centric approach.

The need for a single solution to manage master data has not only emerged but has matured into a de facto solution option for mid-sized and large organizations across almost all industries. Along with categories of solution offerings available and designed principally around the concept of a central repository to store and manage master data, varied architectural approaches or styles have also emerged.

This provides organizations greater options as to how to build these repositories and how to best manage master data in their organization.

MDM architectural styles

One of the earliest definitions of these MDM styles was developed by the Gartner Group. It defined these styles for CDI solutions initially and then expanded their definitions to be applied to MDM solutions. The four styles include:

The consolidation style: The consolidation style of MDM architecture has a physically instantiated, “golden record” single view of master data stored in the central hub.

This usually supports reporting; however, it can also be used for reference operationally. If used for reporting, it may be referred to as a downstream “system of reference” for reporting needs¹.

The registry style: The registry style of MDM architecture is a relatively lightweight approach. It consists mainly of metadata with small amounts of master data, such as a global identifier. It is a relatively noninvasive approach to creating an accurate, consistent and up-to-date single view of master data. It is typically faster and easier to implement than the other three styles, which involve greater central storage and maintenance of physical data – with an accompanying need for greater governance – when deployed in the enterprise. However, it does not fix data-quality problems in the source systems and depends on their availability at runtime.

The coexistence style: The coexistence style of MDM architecture involves master data that is authored and stored in numerous locations, but includes a physically instantiated golden record in the central location and harmonized master data across the application portfolio. The golden record is constructed in the same manner as the consolidation style, and, in the operational world, consolidation-style MDM systems often evolve into the coexistence style. However, the key difference is the concept of a central MDM system publishing selected master data out to the subscribing spoke systems¹.

The transaction style: The transaction-style MDM system hosts a central, physically instantiated, single version of the truth for master data. Upstream, transactional applications can read and write master data to the new MDM system, and, potentially, all spoke systems subscribe to updates published from the central system in a form of harmonization. This style often evolves from the consolidation and coexistence styles. In a similar way, it physically instantiates

a golden record single view of master data in the central database; however, the key difference is that the master data is authored in the center.

The architectural styles have common aspects:

- *All have a requirement to create/define a central store or database for the master data*
- *All have requirements for the solution to have a data quality foundation*
- *All have requirements to act as the master source of data despite how many multiple sources of data are being accessed*

Style myths debunked: Multi-style, multi-phase is today's reality

It is imperative to clear up some misconceptions in the market about these varied styles and how they can and cannot be deployed in any given organization.

One such misconception is that a solution offering addresses only one architectural style. The reality is that some solutions have the breadth of capability to offer functionality that spans multiple styles. For example, some solutions address both registry and transactional styles or consolidation and harmonization styles. There are solutions that can address up to all four.

A second misconception is that organizations have to adhere to one approach for the lifespan of the project. The more common trend is that a company will see a few of these different MDM styles used during various parts of an implementation. Often the use of more than one style can

take place to serve as an intermediate phase before being developing into a full transactional hub. In some cases two or more styles may be the permanent vision for the company. It all depends on what the organization is trying to achieve out of their current and future systems and how these map to their long-term business plans.

This second misconception continues to exist in the marketplace because there are solution providers that are more suited to one style. Organizations begin with such vendors to get quick and easy initial build-outs of their MDM projects but often cannot continue within the same style (and with the existing vendor) as the project expands. Second projects that focus on building the transactional hub generally follow and what emerges are silos of master data – precisely what the solution was initially meant to avoid.

Interestingly, the styles, no matter which a company begins with, very often represent one project phase of a multi-phased approach. Few of the implementations today will start or end with just one style. There are some common trends of how companies typically implement MDM. Projects often culminate from the need to solve an initial data problem that impacts one or several critical business processes – creating and storing net new data; reorganizing the data to be viewed and reported on more effectively; and creating more effective data stewardship functions on consolidated data for existing channels, like sales and marketing, to consume.

For example, an organization may find that their CIFs can no longer house or support pieces of the company's data that are required for critical business processing. These may be net new pieces of data, such as a privacy preference or datum whose attributes have to be redefined to accommodate new information, such as additional locations for a customer. These are new data entities that require storage and management and often there is no such system to allow for that.

Often companies need to amalgamate separate businesses or organizations creating new requirements for views of data and data reporting. Such was the case for most organizations that needed to adhere to many new regulatory policies and procedures introduced over the last two decades which called on them to report on data from across the entire company. In some cases organizations want consolidated views from across LOBs for cross- and up-sell opportunities.

Demutualization was the springboard for an MDM project by one major U.S. insurance company. That company aimed to create a single transactional view across six LOBs, with a goal of storing 100 million customer records by 2010. Their approach was to begin with a transactional hub and gradually bring in one LOB followed by another, beginning with their individual lines of business.

Whatever the initial springboard for an MDM project may be, companies will opt for either a purchased or custom-built solution to address the immediate data requirement that meets the short-term requirement. Generally, they will consider a phased approach and build onto the solution over time to meet a bigger business need in the future. The rarer cases are those in which organizations having a complete enterprise vision for how their organizations will harness the benefits of an MDM solution, and while they have plans and blueprints, they too execute projects with a phased approach. There are companies who have very successfully deployed on this model, although it is one that needs to have a very sound execution model and executive-level buy-in from day one.

Styles can and do work together

Interestingly, the need to have two, and possibly more, styles working together in an environment is also a reality for many organizations. If architected correctly, an organization should be able to use a single instance of an MDM solution to provision multiple styles simultaneously to support various business requirements. SOA and the notion of reusability of MDM services can help an organization achieve this. If data is provisioned through "callable business services," an MDM system will allow you to call upon a "get a customer profile" service, for example. In a transaction-style architecture, the current data record would be delivered to the requesting system. In a registry-style architecture, a reference link would be provided, and in a co-existence-style architecture, a batch record would be called. In any case, what is retrieved – whether it is the real-time data, batch or an index to the data – is generated by one MDM system.

Two MDM styles worked in parallel in the case of another large U.S.-based insurer. Their MDM project was initially launched as a registry style to house new customer data attribute-privacy preferences – which were not maintained in any existing systems and were required for meeting regulatory compliance. When the second phase of their project introduced the transactional style, providing full, real-time operational MDM capabilities to their LOBs, they opted to maintain the registry-style functionality for this piece of enterprise-level data. Of course, they were able to do so using the same MDM deployment by simply calling on different services to return the data to the LOBs or the cross-reference links to the enterprise.

Organizations benefit most when they can leverage a single instance of an MDM application for multiple styles, and ideally all styles. This approach offers the most return on long-term investment because the organization is able to benefit from calling on “reusable MDM services,” which allows them to use the same service interfaces but only requires them to change the configuration options within the solution to allow them to “get more” and “add more” data as they move into different styles. The critical aspect for organizations is that the integration point remains the same via the services, which is the area where IT organizations can typically invest a lot of time and resources.

It is critical for companies to make solution decisions with the understanding that a technology can meet capabilities for more than one approach and still provide a flexible, scalable solution for project scope expansion in the future. Companies should not leave themselves at a disadvantage by

limiting themselves to one style in the short term only to have to rebuild or re-architect the solution down the road to meet needs that may become more transactional in nature.

With IBM’s InfoSphere MDM Server, organizations can adopt a multi-style approach to master data management.

How can IBM help you?

Implementing one-stop citizen-centered services

The four foundational concepts presented in this paper have yet to be attained by most government organizations. One-stop citizen-centered government requires strong leadership and will, innovation, new governance and accountability modes, and new skills and expertise to implement.

It also requires functions, roles and responsibilities that are managed horizontally across programs, and no longer aligned with individual programs and departments.

Attention needs to be focused on developing service strategies that meet the needs of client segments, and building the service offerings and supporting partnerships that deliver on these strategies. Managing channels that deliver multiple programs and service offerings and offer cross-channel integration is another evolving and important function.

Monitoring and reporting on service delivery performance and providing feedback to policy and programs are also required in the new model.

In line with new functions, the structure of government organizations also changes with citizen-centered services. The model of the past, where every new program and every department built and maintained separate programs with their own service delivery channels, is ineffective and costly to maintain.

Citizen-centered service creates two distinct but interdependent kinds of government organizations – service organizations and policy organizations. Service organizations will organize around client segments and integrated one-stop service channels. Policy organizations will focus on policy and on how to develop and implement the programs necessary to achieve the desired outcomes of the government.

The one-stop citizen-centered business model for government is evolving with four foundational concepts – focus on the citizen, deliver one-stop government service, integrate citizen information, and collaborate and partner. It will take time to implement – but it will result in improved service, lower costs and better outcomes for citizens and government.

Identify and prioritize initiatives

Successfully addressing the challenges facing social sector organizations requires more than new technology; it requires a comprehensive approach, based on a clear understanding of the issues, a deep understanding of the business, advanced technology thinking and talented professionals who are passionate about what they do. As one of the largest providers of solutions for the social sector worldwide, IBM is able to bring together this powerful combination.

IBM has extensive experience in helping organizations with their citizen-centered transformation. To help your organization understand how to use the one-stop citizen-centered business model, we offer a one-day executive workshop, a week-long executive education program and a range of consulting offerings.

Information agenda

In order to provide the citizen-centered services, an information agenda needs to be put in place. The information agenda describes key considerations and best practices in creating and implementing an information agenda, and sets forth how IBM can help you to deliver trusted information organization-wide.

The information agenda is the comprehensive, government-wide plan a CIO – working with LOB colleagues – creates and implements to achieve both short-term tactical and longer-term strategic changes. The goal is to transform the organization and unlock the business value of information across data and content silos. The information agenda enables organizations to deliver trusted information to optimize organization and service performance.

Strategy

Creating a vision to guide decisions and help the organization determine how to best support business goals.

Information infrastructure

Identifying the technology components and capabilities to establish a common information framework.

Information governance

Implementing cross-LOB policies and practices for managing, using, improving and protecting information.

Roadmap

Establishing a plan for executing discrete projects to realize short- and long-term ROI.

At IBM, we stand ready to help you at every step of the way. Our global teams of skilled solution specialists and consultants bring deep industry insight, proven methods and techniques, and a unique vision for the future to help you take your next step.

For more information

http://www-306.ibm.com/software/data/?pgel=ibmhzn&cm_re=masthead_-_products_-_sw-infomgmt



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¹ Erin Research Inc. for the Institute for Citizen-Centered Service and the Institute of Public Administration of Canada, *Citizens First 3*; Phase 5 Consulting Group Inc. for the Institute for Citizen-Centered Service and the Institute of Public Administration of Canada, *Citizens First 4*

² Expanding the Innovation Horizon Global CEO Study 2006

³ *Business Week*, April 2006

⁴ Erin Research Inc. for the Institute for Citizen-Centered Service and the Institute of Public Administration of Canada, *Citizens First 3*; Phase 5 Consulting Group Inc. for the Institute for Citizen-Centered Service and the Institute of Public Administration of Canada, *Citizens First 4*

⁵ Keeping Citizen Trust, Research Brief, National Association of State Chief Information Officers (NASCIO), 2006, www.nascio.org

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