

*Point of View*

# Six Technologies That Are Changing Social Services and Social Security Worldwide

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Global Social  
Segment



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In 1935, IBM was asked to assist the U.S. Federal Government with the implementation of the management and accounting system for the U.S. Social Security Act of 1935. It may not have been the first instance of technology being used to facilitate the implementation and delivery of a social benefits program but, described in news accounts at the time as “the largest bookkeeping operation in the history of the world,” it was almost certainly the largest. IBM provided the new organization with the tools needed to keep track of 26 million American workers, assign 3.5 million Employer Identification Numbers, and develop a centralized system of record keeping that took up 24,000 square feet of floor space.

Since that time, technology has become an integral part of social services and social security programs worldwide. Today, IT tools are used for tracking clients, managing grants, paying benefits, establishing eligibility, accessing information, following trends, and archiving files to name just a few of the business needs fulfilled by technology. But what are the technology trends of tomorrow, next year, or ten years from now? How will technology change the way that social organizations do business in the future? This paper will examine six technology trends:

- Decision Support Systems
- Assistive Technology
- Sensors and Home Health Monitoring
- Collaboration Tools
- Intelligent Processing
- Intelligent Identity

that will change the way in which human services organizations interact with each other, their business partners, and their clients.

### **Decision Support Systems**

When we try to make decisions about complex issues and relationships, involving many sources of relevant data and information, we can quickly move beyond our cognitive capacity. Whether it's the manager of a string of supermarkets trying to understand consumer purchasing patterns, a financial analyst attempting to understand economic data in order to advise clients on their stock portfolios, a social security administrator trying to comprehend benefit utilization trends, a caseworker who needs to decide if a juvenile delinquent will exhibit future violent behavior, or a pediatrician diagnosing congenital heart disease; making the correct decision in business is often based on the quality of your data and your ability to utilize that data. Decision Support Systems provide a way to model and understand complex data and make quality decisions based upon that data.

As is true of other types of business intelligence tools, Decision Support Systems are intended to put the right information in the right hands at the right time. They are interactive, computer-based systems that help users with judgments and choices. They go beyond simple data storage and retrieval by delivering real-time, comprehensive, actionable information directly to the user's desktop. In their simplest form, Decision Support Systems are rather uncomplicated...ask a question and get an answer. Naturally, things are not really quite so simple.

***Decision Support Then and Now:*** Decision Support Systems emerged from a data processing standard of the 1970s characterized by routine, static reports that were difficult and time consuming to change or customize. If an administrator or manager needed data that was not routinely reported, they could wait days or weeks for the information they needed. Technology advances of the 1960s like the IBM 360 and other mainframes provided the engine for Decision Support Systems. But the advent of query systems, rules-based software and packaged algorithms in the 1970s provided the fuel for Decision Support Systems to take off.

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### Highlights

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***Today, Decision Support Systems are fully integrated into the everyday workflows of business. They are used for everything from tracking cornflakes in supermarkets to helping doctors diagnose and treat disease.***

Initially, Decision Support Systems were a rather specialized part of a business's operations relegated to the back office. System users would have to actively seek out the tool and either enter data themselves, or request an analysis. While early systems were an improvement over static aggregated statistical reports, the process was time-consuming and inefficient whether users requested an analysis or queried the system themselves. Today, Decision Support Systems are fully integrated into the everyday workflows of business. They are used for everything from tracking cornflakes in supermarkets to helping doctors diagnose and treat disease.

But even though Decision Support Systems are integrated into the business routine, they are largely siloed within business units. This is particularly true of social services and social security organizations where data is not regularly shared across departmental units or programs within an organization, and even less frequently shared between organizations.

***The Future of Decision Support Systems:*** What does this mean for Decision Support Systems and the way they are used? It means that the future of Decision Support Systems lies in a tight integration with virtually every aspect of the social services enterprise. Decision Support Systems can help improve decision making by delivering comprehensive, actionable information directly to staff desktops. Just a few examples of how Decision Support Systems can assist workers include:

- Reduce fraud and abuse by actively highlighting abnormal claims
- Minimize audit risk by identifying clients who are not compliant with service rules
- Improve the use of outcome measurements that enable the elimination of ineffective programs
- Allocate financial resources effectively based on accurate, timely, and easily accessible information

- Hold managers and staff accountable for operating goals by tracking key performance indicators and making that information available in real time
- Provide stakeholders with relevant data on program effectiveness, customer satisfaction and financial measures with balanced scorecard reports

Decision Support Systems are, of course, already being used for each of the purposes above; as well as many others. But where today's Decision Support Systems are being used predominately for program-specific purposes, typically utilizing program-specific data sources, tomorrow's Decision Support Systems will take a more holistic approach. Data will be drawn across programs, departments, organizations, and levels of government. Clients will be viewed holistically across all of the benefits and services they are receiving and decisions will be made by caseworkers based on that view. And all of this will work seamlessly with integrated case management systems.

When integrated with a comprehensive case management system that draws on data from many sources, decision support can be tailored much more closely to individual needs, implementation of decisions can occur more quickly, and duplicate data entry can be minimized or eliminated. In many ways, the concept of Decision Support as a stand-alone system will cease to exist because the technology will become a pervasive and seamless component of the organizational workflow that supports decisions made by workers.

What does this mean for the end user, the organization and the client?

- Faster access to actionable information that can support critical decisions about clients
- Improved quality of decision making. More correct decisions and fewer errors
- Preservation of organizational expertise by capturing the knowledge of professional "experts" and individuals who are retiring; and distribution of that expertise enterprise-wide
- Better use of scarce resources. Workers spend their time on mission critical activities rather than chasing down data. The correct decision is made the first time

Public demand for government accountability has created the need for improved outcome measurement in social services and social security programs. In the end, technology can only support humans in understanding data, developing usable hypotheses, and executing strategies. IBM's view is that Decision Support Systems will play a bigger role in collecting the needed data, analyzing and shaping that data, and supporting the decisions that ultimately lead to improved outcomes for clients.

### **Assistive Technology**

Take a look at world population trends and projections and you can't help but notice what appears to be a contradiction. For the past few decades, there has been a steep decline in fertility in most developing countries and low fertility rates in most developed nations. At the same time, population estimates project large increases in the world's population during the coming decades. An increase of approximately 2.35 billion people can be expected worldwide between 1995 and 2025; with an additional 1.3 billion increase between 2025 and 2050.<sup>1</sup>

People are living longer. And as the world's population is increasing, it is also rapidly growing older. Today, the estimated 371 million elderly people in the world constitute about 5% of the world's population. It is projected that, by 2050, the world's population will grow to about 9.37 billion. The elderly will make up about 15% of that number – 1.4 billion people.

Population trends for people with disabilities are more difficult to come by, in part, because countries define disability differently. But according to the United Nations Convention on Rights of Persons with Disabilities (2007), disabilities impact about 15% - 20% of every country's population. There are about 650 million people with disabilities worldwide. And since disabilities are closely associated with age, not to mention continuing advances in health and medicine, it is likely that this population will increase significantly in the coming decades.

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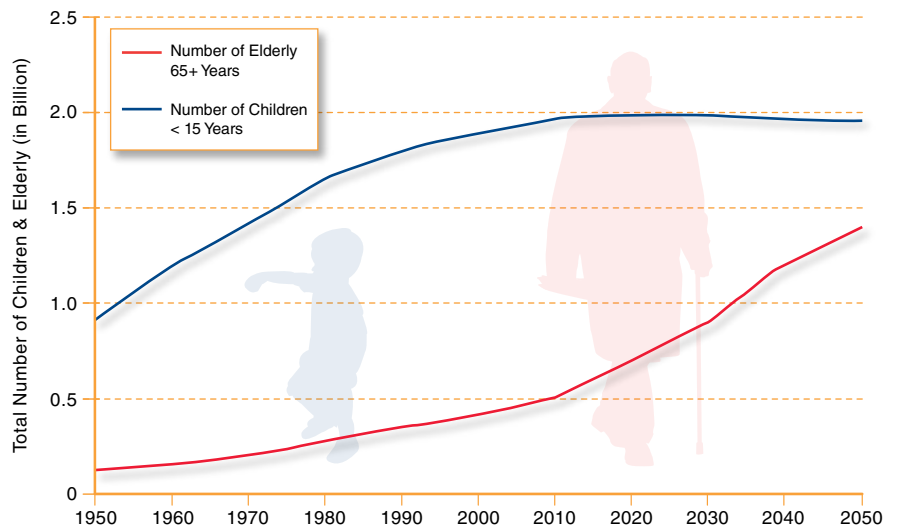
<sup>1</sup> International Institute of Applied Systems Analysis. World Population: Major Trends. <http://www.iiasa.ac.at/Research/LUC/Papers/gkh1/chap1.htm>

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**Highlights**

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**Total Number of Children and Elderly Worldwide**



Source: UN population Division (1997) World Population Prospects, 1950 – 2050. The 1996 Edition (Annexes I and II)

***As world demographics change, governments are evolving traditional service delivery access policies in order to meet the changing needs of clients.***

As world demographics change, governments are evolving traditional service delivery access policies in order to meet the changing needs of clients. Accessibility to electronic channels has become a particular priority around the world. Governments continue to bring services online, and policies and legislation are being established to ensure that the Web channel can be accessed by all. The international Web Content Accessibility Guidelines (WCAG), which promotes a high degree of usability for people with disabilities, is increasingly being adopted worldwide. In Europe for example, the European Commission's *i2010: A European Information Society for Growth and Employment* contains strategies to ensure that all citizens benefit from the information society. In Canada, the province of Ontario has enacted specific accessibility legislation that provides for the development of standards for accessibility in both the public and private sectors. When citizens can easily access the information and assistance they need, they become more independent and less reliant on government.

But this challenge is not limited to citizen accessibility. The workforce is changing as well as older workers put off retirement and businesses embrace the benefits of employing people with disabilities. And, like every other industry, human services organizations must adapt to changing worker needs. With the recent economic downturn, the workforce will continue to age as workers try to recoup lost pension assets – global pension assets declined \$5 (19%) trillion in 2008.<sup>2</sup>

**Technology and Accessibility:** When it comes to technology and accessibility, the trend has been toward aids that are added to computers by the people who use them in order to make the computers more accessible. These aids have included things like:

- Keyboard enhancement utilities for people who have trouble typing and controlling a mouse
- On-screen keyboards for people who are unable to use a standard keyboard
- Screen magnifiers that, like a magnifying glass, help people enlarge items on the screen
- Screen readers that synthesize speech or convert text to Braille in order to make on-screen information available to people who are blind
- Speech recognition software that allows the user to control the computer with their voice
- Alternative input devices that allow a person to control their computer with tools like eye-gaze pointing devices, keyboards that are larger or smaller than typical keyboards, and sip and puff input mechanisms

But assistive technologies aren't really enough. They are not making computers and on line information fully accessible to everyone.

**Universal Design:** Designers typically focus on the characteristics of the average user. But by designing for the average user, we sometimes create unintentional barriers to full accessibility that even assistive technologies can't always overcome. Universal design is all about designing products that are usable

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<sup>2</sup> Reuters. Global pensions lose \$5 trillion in 2008: study. January 26, 2009.



by the broadest possible group of users without the need for adaptation or specialization. It takes into account differences in sight, hearing, mobility, speech and cognition, and can benefit everyone; not just people with disabilities.

A cutout in a sidewalk curb not only helps a person in a wheelchair, it helps a person using a walker or a cane, a mother pushing a baby carriage, bike riders and skateboarders. Automatic doors assist people with physical challenges, but can also be a help to people who have their arms full.

If social programs are to succeed at making information easily accessible to their clients and their staff, they will need to go beyond special technologies that facilitate accessibility and look to technologies that are easy to use...for everyone.

For example, GUIs (Graphical User Interfaces) allow overlapping graphical windows, clickable icons, functions that can be dragged, and controls that are reliant on the use of a mouse. Screens with these characteristics are difficult for users who are blind or with low vision. Screen readers can't easily decipher what is on the screen and represent it to a user. Similarly, important information that is presented graphically is inaccessible to screen readers and, as a result, to visually impaired users. But screens that are designed to be used by the broadest array of people are accessible by people with disabilities, but also people with low bandwidth connections.

Video that is not captioned is inaccessible to people who are deaf or hard of hearing. Captioned video not only helps people with hearing disabilities, it can benefit people who are not fluent in the language.

Systems that require fast responses, fine motor control or present information in rapidly changing form can be difficult to use for many. Intelligently designed systems benefit everyone.

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**Highlights**

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***The challenge for government is not simply to help citizens access the Internet. The real challenge is to make it worthwhile for all citizens to utilize the Internet as a tool for getting the benefits, services and information they need.***

Technology has been, and can continue to be, a “game changer” for the way that social services and social security organizations provide benefits and services. The challenge for government is not simply to help citizens access the Internet. The real challenge is to make it worthwhile for all citizens to utilize the Internet as a tool for getting the benefits, services and information they need. Digital technology can surely help extend quality health care, education, and social services to the poor; but not if citizens won’t or can’t use the technology because it is viewed as slow, cumbersome, or of little value. Older workers can continue to bring value to the workplace; but not if they don’t have the tools they need to help them succeed. Accessibility will continue to grow as a significant issue for social services and social security organizations as they try to accommodate the changing needs of their clients and their workforce. But IBM believes that, in order to make benefits, services and information truly accessible, a new approach to accessibility is required. Universal design will become more important than ever in helping make accessibility to technology achievable.

**Sensors and Home Health Monitoring**

On October 16, 2007 Kathleen Casey-Kirschiling became the first US baby boomer to sign up to receive Social Security. Ms Casey-Kirschiling and her fellow boomers – born between 1946 and 1966 – have influenced virtually every aspect of how we live today. They are now changing the way we look at retirement and old age. And as they do so, they will be putting new, and sometimes unanticipated, pressures on social systems that may not be equipped to handle them.

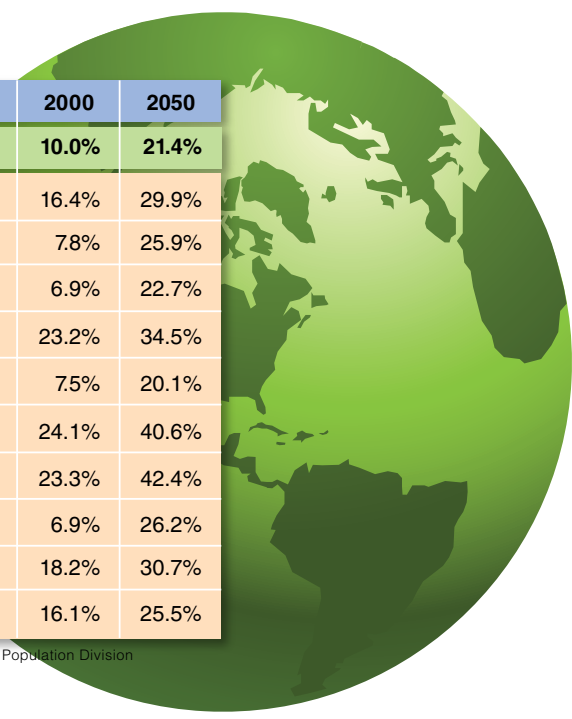
The baby boom generation is the first that can rightfully claim that they have spent all of their working lives paying in to the various social benefits systems. As a result, they can fairly expect high quality services. So while the relative good health of the boomers may keep the overall numbers low, those boomers who do require specialized medical care, geriatric services, and rehabilitative services will expect high quality programs that are easily accessible and designed to meet their specific needs. They are also likely to demand home

care and community based services that allow them to stay in their homes whenever possible. But before they begin receiving these benefits and services themselves, many of them will struggle to provide support and care for their elderly parents and other relatives.

The trend toward in-home care is, in fact, already occurring. It is already putting a great deal of pressure on people and, with the world's elderly population increasing, this pressure will increase exponentially.

One out of four U.S. workers is currently caring for a parent or other relative. Over 5 million Canadians are doing the same. It has been estimated that, within 30 years, nine million workers in the UK will be caring for an elderly relative. According to the National Alliance for Caregiving and MetLife, U.S. companies lose \$11 billion a year due to absenteeism, turnover and lost productivity among employees who are caring for elderly people. The trends are similar world wide.

**Over 60 Population in Selected Countries:  
2000 and 2050**



	2000	2050
<b>World</b>	<b>10.0%</b>	<b>21.4%</b>
Australia	16.4%	29.9%
Brazil	7.8%	25.9%
China	6.9%	22.7%
Germany	23.2%	34.5%
India	7.5%	20.1%
Italy	24.1%	40.6%
Japan	23.3%	42.4%
Mexico	6.9%	26.2%
Netherlands	18.2%	30.7%
United States	16.1%	25.5%

Source: United Nations Population Division

Health care and social services have to move into the home in order to enable elders to “age in place” and remain in their homes for longer periods while allowing caregivers to succeed at work. The idea is to ensure the safety and well-being of the elder while at the same time reducing the burden placed on the caregiver.

**Assurance systems** are designed to track the elder’s behavior and provide up-to-date information to the caregiver. Caregivers can receive regular status reports and can be alerted to potential problems or emergencies by phone or e-mail. Assurance systems can be rather simple. For example, a sensor network may consist of contact switches on doorways to signal when a cognitively impaired individual leaves the home. If a switched door is opened, an alarm sounds.

A more comprehensive network might include a broad array of sensors that are continuously monitored to detect changes to typical trends. The absence of movement near a kitchen or medicine cabinet may indicate a failure to take medication. The absence of motion above a certain height may be a sign that someone has fallen. In addition to sensors, business intelligence tools may be used to detect patterns which deviate from the norm and result in a warning. If, for example, a pattern has been established that an individual is usually active in the kitchen at noon, and no activity has been detected, an alert may be sent to the caregiver.

**Compensation systems**, in contrast to assurance systems, can intervene to assist an individual trying to complete an activity. They can compensate for impairment and help with navigation issues, scheduling, locating objects, and facial recognition. A schedule management system, for example, can remind people to take medication, to eat, when to check in with a caregiver,

or when to take care of personal hygiene. Activity guidance systems go a step beyond simple reminders by providing reminders about consecutive steps in a particular activity. For a person that needs to take medication on a full stomach, the system can track that some medications need to be taken after eating and remind the individual to eat at a specific time. After eating, the person is then reminded to actually take their medication.

Researchers are also looking at the use of **Assessment Systems** that can provide recurrent, naturalistic assessment of an individual's cognitive status. Today, cognitive assessments are done infrequently in clinical settings when a person visits the doctor. The assessment may not be terribly helpful if the person is having an unusually good or bad day. Sensor-based monitoring in combination with analysis algorithms that can assess thousands of data points related to the person's behaviors and activities can evaluate the individual's level of functioning as they go about their normal routine.

IBM believes that the real breakthrough – which may be 20 years or longer away – will come when all of these systems and networks are melded together to create a single system. By linking artificial intelligence software, GPS technology, sensor networks and infrared ID badges, personal digital assistants and “smart homes” can help an elderly person attend to personal hygiene, cook for themselves, catch a bus, take their medication and ultimately stay independent and in their homes longer. A child or other caregiver will be able to monitor the elderly person and provide assistance when needed. The caregiver will be able to attend to work without worrying about mom or dad, and the senior citizen will maintain their independence for more years than may be possible today.

**Collaboration Tools**

You've probably heard the term "Web 2.0." Maybe you've read about "Second Life." It's possible that you've seen or heard stories in the media about something called "Jams." You may even understand what these things are. But do they have a place in social services and social security? You may be surprised to learn that they do.

**Full Participant vs. Passive Recipient:** More than ever before, consumers of social benefits and programs want to be active participants rather than passive recipients of services and benefits. They want to have input into which benefits and services they receive, they want to participate in the selection of service providers, and they want a choice in where and when they will receive those services. Citizens also want to be able to voice their opinion about the quality of social programs and benefits. Some governments have recognized the inherent value of such a partnership and are putting the necessary mechanisms in place to make it a reality. In the coming years, stakeholder collaboration – all stakeholders – will become a more common feature of social services and social security programs. Stakeholders will collaborate on policy, service delivery, training, and the general sharing of ideas. But in order to make this happen, tools will need to be put in place to allow active collaboration.



Clients today use multiple devices, channels, and social computing technologies.

Web 2.0, Second Life, and Jams are just a few of the collaboration tools that have been developed over the last few years. But while they are fairly new, they are increasingly being utilized in many different and novel ways by educators, community leaders, businesses, the arts, and government. They are even being used by some social services and social security organizations. During the next decade, as people become more familiar with and attuned to the benefits of these tools, we are likely to see them become more pervasive across the public and private sectors.

***What is Web 2.0?*** If you go looking for a definition of Web 2.0 that is simple, clear and widely accepted you will, in all likelihood, fail. Nobody seems to be able to agree on a formal definition. It's been defined as a concept, a phenomenon, a platform, a label, a philosophy, and an attitude. To paraphrase United States Supreme Court Justice Potter Stewart, people may not be able to define Web 2.0, but they know it when they see it. Web 2.0 is about using the Web collaboratively. It's about sharing and mixing information and resource, new interfaces, and new ways of searching for and accessing Web content. It's Facebook, Flickr, wikis, podcasts, and blogs. Perhaps most importantly, it's about inclusion. Its aim is to enhance creativity, communications, secure information sharing, collaboration and the functionality of the Web.

Early on, the Internet was about publishing information. Today it is about collaboration. And Web 2.0 is all about collaboration. It is a rich social networking environment that provides secure and integrated collaboration tools which allow people to harness the total knowledge of the extended enterprise.

We see collaboration tools benefiting social services organizations in the following ways:

- Creation of community value by tapping the collective knowledge of people and allowing it to be applied to the creation of policy. Sites like [regulations.gov](#) have had an early start in this area.
- Efficiently and effectively targeting large and small client segments that have specific interests or requirements and allowing a deeper understanding of their wants and needs. [Petitions.number10.gov.uk](#) has excelled in allowing large and small groups to have a direct say in government. They have an impressive track record of gaining large responses on “small” issues.
- Fostering innovation, flexibility, speed, efficiency and improvement initiatives by getting direct and speedy feedback from users of government services. Sites such as [kafka.be](#) have excelled at getting direct input from citizens on how to improve services.
- Connecting people to one another to facilitate innovation. One of the best examples of this type of collaboration tools is Jams which are highlighted below.
- Potentially bringing completely new channels to social services organizations through media like Second Life and others still to be discovered.

**Jams:** According to the 2008 IBM Global CEO Study, innovation is a crucial component of today’s adaptable enterprise. The question is, how do you ensure that innovation takes place? In the not-too-distant past, an organization might have relied on a suggestion box. Even in today’s “virtual world,” many make use of a virtual suggestion box where the user can submit their ideas and suggestions which are then collected and read; and possibly responded to. But virtual suggestion boxes don’t allow true collaboration. And they don’t easily foster innovation. Jams do.



Jams provide an Internet-based platform for innovation through enterprise-wide brainstorming. They connect tens of thousands of users across internal and external organizational boundaries and jobs to develop actionable ideas around business-critical or urgent societal issues.

In 2005, over three days, the Government of Canada, UN-HABITAT and IBM hosted Habitat Jam. Tens of thousands of participants - from urban specialists, to government leaders, to residents from cities around the world - discussed issues of urban sustainability. Their ideas shaped the agenda for the UN World Urban Forum, held in June 2006.

What was unique about Habitat Jam is that it reached out to some of the most disadvantaged and impoverished people in society and brought them together over the internet. Before Habitat Jam, most people, experts included, would never have thought that “illiterate slum dwellers” and rural farming communities could be brought together via the internet. Through an incredible collaboration of not-for-profits, governments and the United Nations this happened. You can watch more about this incredible experience at:

<http://www.globaldialoguecenter.com/exhibits/backbone/index.shtml#video>



**Virtual Worlds:** Five years ago we made a prediction that mobile devices would be prevalent in social services. Since then, devices like Blackberry's have become commonplace. Social networking sites like Facebook have exploded worldwide. In the not-to-distant future, virtual worlds like Second Life may become the accepted collaboration norm. Second Life is a virtual world accessible via the internet. But to think of Second Life as merely as a video game would selling it short. To many of its users, it is a lot more than that. Second Life allows its users to interact with each other in much the same way you would interact in real life. For example, you can meet and interact with new people, trade goods and services in return for Linden Dollar—the currency used in Second Life's virtual world—or travel.

It's not clear how many people regularly use Second Life, but it has almost two million registered users. Many companies and organizations have started to advertise through second life, or have a presence within the virtual world, which helps them interact with other users. It's even being used to support social services programs. One example is Virtual Ability Island ([slurl.com/secondlife/Virtual](http://slurl.com/secondlife/Virtual)) which was created to support people with disabilities and chronic illnesses. IBM has extensive research underway looking at how people with visual disabilities can interact in a virtual world that relies predominately on sight and where traditional accessibility tools no longer work. There is also research underway to allow people with hearing challenges to take part in web-based voice collaboration. And over the next few years, more uses and opportunities for innovation will no doubt be found for this technology.

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### Highlights

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*The question isn't whether collaboration tools have a place within social services and social security, but how they can best be utilized.*

***Social Services, Social Security and collaboration tools:*** The question isn't whether collaboration tools have a place within social services and social security, but how they can best be utilized. As pointed out in the IBM white paper: *What's next? Becoming a more effective, efficient, and responsive social services and social security organization*, organizations providing social security, social services and workforce services worldwide are striving to become more effective, efficient and responsive to the clients they serve and the taxpayers who fund them. In some ways, the advances seen in Internet technology are driving these changes because citizens and professional staff have come to expect them. If you have any doubts, check out the National Association of Social Workers (NASW) on Twitter and Facebook. Spend some time with the ***Social Work Podcast*** (<http://socialworkpodcast.com/>). Or learn about Social Work 2.0 on The New Social Worker blog (<http://blog.socialworker.com/2009/03/social-work-20.html>). Web 2.0 is already changing the face of social services and social security and will continue to do so in the coming years. Collaboration tools like Web 2.0 and Jams and Second Life are already becoming a staple of social services and social security collaboration methods. IBM believes that, in the future, these and similar collaboration tools will be as commonplace as PCs, laptops, cell phones, and Blackberrys. All things that some people thought would never take off.

#### **Intelligent Processing**

Social Security systems have developed over many years with a strong transactional focus. People make a claim for benefits, that claim is checked for accuracy, assessments are made, evidence is collected, benefit rules are applied to make eligibility and entitlement decisions and if acceptable, a payment is made. At some regular interval, the ongoing eligibility is tested to ensure that the claimant is still eligible.

**Program Eligibility:** This basic process is applied across all type of benefits; unemployment insurance, welfare, disability pensions – in fact anything involving money or the payment of moneys to a third party, such as an elderly person’s housing allowance or a grant to a remedial education program. It is tried and tested and used in just about every social system today.



Benjamin Franklin once said: “There is no kind of dishonesty into which otherwise good people more easily and frequently fall than that of defrauding the government.” So it shouldn’t be too surprising that, over time, various checks and balances have been put in place at each stage of the eligibility process in an attempt to prevent attempts to defraud the system. And with time, the sophistication of the fraud attempts and the comprehensiveness of those checks and balances have increased. In fact, they have increased to the point where, in most systems, every person who is applying for a benefit is assumed to be doing so with a criminal intent. Information is collected multiple times, checked time and time again and then checked again. There are few systems today that do not use a variant of the “two person rule”<sup>3</sup>, which further compounds the complexity.

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<sup>3</sup> This is the separation of duties so the person who collects the information and prepares a case is different from the person deciding eligibility to attempt to eliminate employee/claimant collusion.

What was once a simple process has in most countries now become complex, burdensome, and highly costly. In some cases, the complexity of the controls is actually creating a disincentive for needy people to apply for the benefits they are actually eligible for. The problem is that every person is treated the same and all are assumed to be trying to game the system. The low risk people are treated as high risk people so that the high risk people can be deterred or found out.

**A different way of doing business:** There are a few countries that have understood that designing the program system so that all people are treated as potential criminals is not the best approach. They are applying intelligence to their processing.

In this situation, the person's circumstances are taken into account when the processing is undertaken. Each claim is analyzed against the existing data, using external input where appropriate and allowed. By looking at the person and realizing that an extensive history already exists, pre-existing information may be used, a lower threshold of evidence may be collected, or they may be allowed to use lower costs channels to undertake the claim.



“In practical terms, this means that this year 100,000 to 125,000 disabled Americans — those with the most severe disabilities — will be approved for benefits in about 10 days instead of waiting the three to four months it typically takes for an initial decision.”

— Michael Astrue,  
SSA Commissioner

At the US Social Security Administration, Intelligent Processing is already being used to screen Disability claims. By looking at the initial claim an assessment of the likelihood of success is made and if the claim looks likely to be successful, it is fast-tracked. According to SSA Commissioner Astrue: “In practical terms, this means that this year 100,000 to 125,000 disabled Americans — those with the most severe disabilities — will be approved for benefits in about 10 days instead of waiting the three to four months it typically takes for an initial decision.”

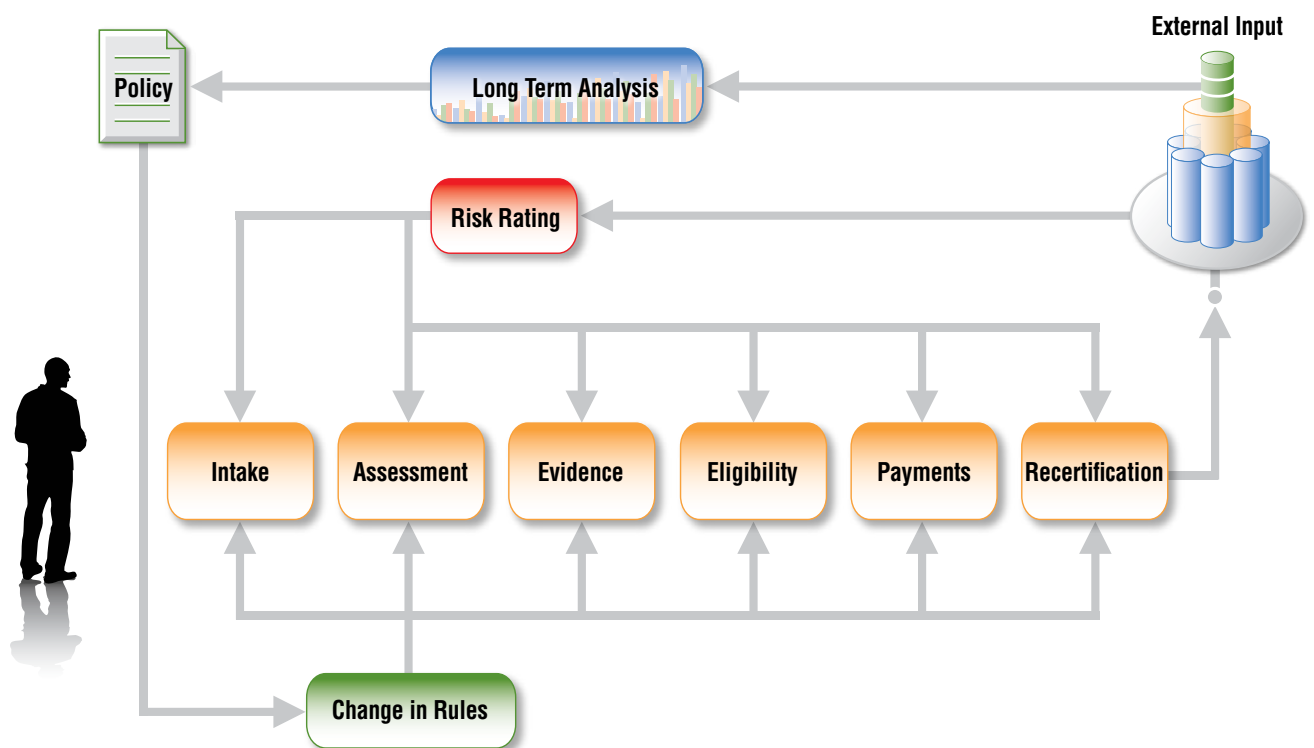
At the other end of the process, SSA’s Disability recertification, called Continuing Disability Reviews (CDR’s), also have intelligence applied to them. Instead of insisting that all claimants undertake a Full Medical Review (FMR), those that are unlikely to have regained mobility are sent a mailer for a lower level assessment. By focusing the FMR on those that might actually no longer be eligible, SSA was able to save over \$1 billion dollars between 2001 and 2006 and has continued to accrue savings since.

Intelligent Processing can be applied at all levels of the claim process. Unlike fraud prevention measures which look to focus resources on likely criminal activity, Intelligent Processing initially looks at those people who are low risk and looks to relax the controls and save the costly processing overhead associated with them. What we have also learned is that over the long term, the concept can be applied to the policy itself.

***A different way of developing policy:*** By taking a long term analysis of claim data, it should be possible to start building more sophisticated rule sets that start to differentiate lower and higher risk. While still keeping the important policy principles of fairness and equitability, different service delivery approaches can be built into the system.

An example at SSA, and implemented in several other organizations, relates to people who are claiming benefits but are suffering from a terminal illness. In these examples, different rules have been built to both fast track the claim so that claims are approved before the claimant dies, and to get benefits to the claimant when they are most in need. In such cases the risk of making a wrong decision is usually low as a wrong coverage decision is normally limited by the death of the claimant and a wrong medical decision is limited by the continued life of the claimant. For the small number of potentially risky decisions, a large number of people in need and their families are helped at a difficult time.

The concept of Intelligent Processing may be new to Social Services and Social Security, but it is not new to most of the people who are claiming benefits. Today, when we book airline tickets, we don't expect to wait to get our tickets while security checks are undertaken – we get our tickets straight away. Meanwhile, the authorities are checking behind the scenes and before we get to the airport we will have been screened in some way. For the vast majority of us, the low risk people, we see an easy-to-use system.



IBM believes that the static Social Services and Social Security systems of today need to become more dynamic by adopting the concepts of Intelligent Processing. Particularly when confronted with challenging economic times, focusing resources on the most risky parts of the eligibility process and intelligently using information and risk models to relax the controls on the majority of people can result in faster and more efficient decisions that benefit both the organization and the client.

### **Intelligent Identity**

Using only a name and a national insurance, social security, or other identification number, an identity thief can borrow money, obtain credit, get a job, or even apply for and receive social benefits. More often than not, the victims are unaware of their victimization. It may take weeks or months before a victim realizes that their identity has been stolen.

As more and more information is shared on-line and identity theft becomes more of an issue, identity management has become more important to all social services and social security systems. It starts with making sure that contributions are made and credited to the correct account. It also covers making sure that the person making a claim is entitled to do so and is the same person that made the contributions. Finally, it is making sure that the person receiving the benefit is the person who made the claim.

In the past, when service was delivered through local offices, checking the identity of a claimant was as simple, in theory, as asking for appropriate documents and then checking that they matched expectations. As the move to the Internet and phone services has increased, the opportunity for identity fraud has stopped or held back many of the opportunities for increased efficiency that these same channels offer.



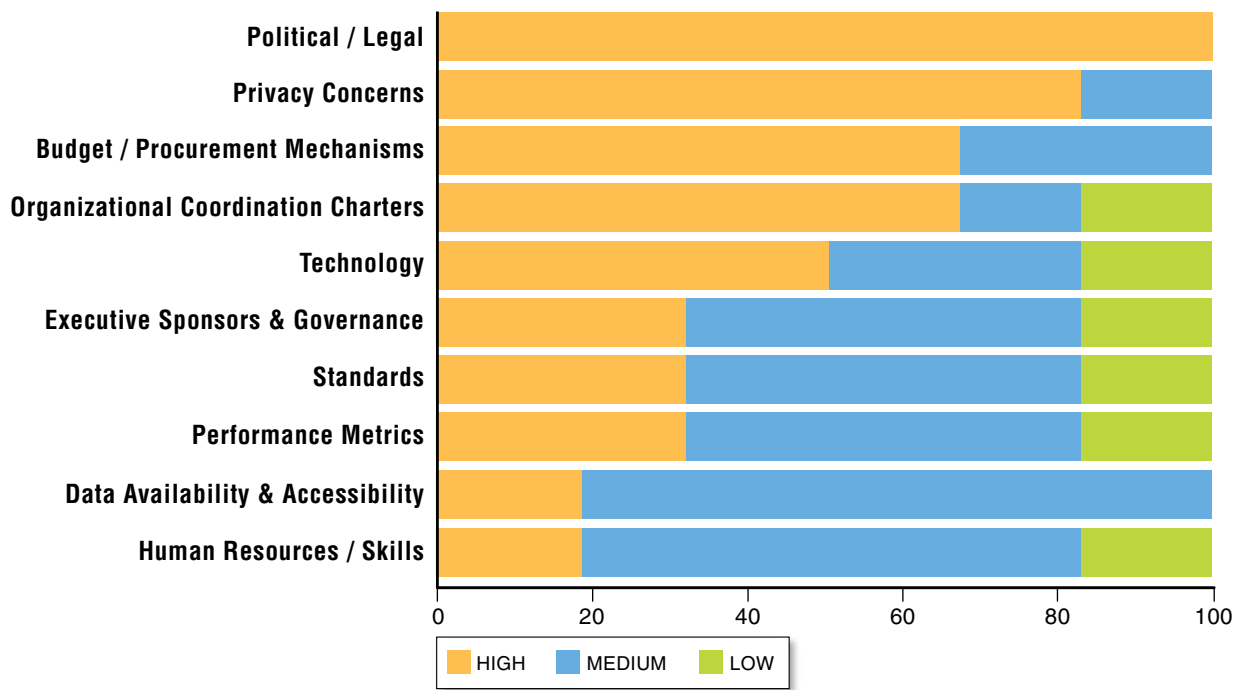
Even as banks and insurance companies have moved to on-line services, human services organizations have rarely put much of their services truly on-line. Banks can take risk and absorb some element of fraud, but they also have a built in alarm service, the account holder, to raise the alarm when identity fraud occurs. Social services and social security identity fraud does not typically have such a built in warning system. It relies on the social system itself to identify the activity, not the account holder.

***Impediments to addressing identity fraud:*** In order to combat identity fraud, but also to facilitate access to services for eligible citizens, there has been a trend towards biometric identity management systems in recent years. Starting in the 90's, with implementations in South Africa, and South America, through the late 90's with the UK Benefit Card, some US Food Stamps programs in the early 00's, and more recent initiatives such as the Australian ACCESS Card, there have been attempts to harden the identity management of benefit claimants.

However these initial attempts had several shortcomings in common:

- They require popular support from the electorate and a political will to address the perceived civil liberty issues. In fact, in a survey of government identity management administrators, IBM found that political and legal issues were the major roadblock to identity management programs;
- They require significant investment – often into the billions of dollars – in point of service technology for field office operations and the integration to legacy systems;
- They have not been able to support effective operations on the phone or over the Internet, due to the requirement for biometric devices;
- The technology continues to advance at a rapid rate, risking built in obsolescence of individual projects before they are rolled out; and
- There is always the fear that some-one will crack the technology, leaving the system open for abuse.

Roadblocks to identity management programs — Respondents rate the severity of various barriers to improve identity management strategy



Source: IBM Institute for Business Value Identity Management Survey

**A new way to manage identity:** The future lies in a new way of undertaking identity management: Intelligent Identity. Instead of relying on a single line defense, this model works on a dynamic mixture of different types of identity, used in real time, and in a context of use. The easiest way to think about this is to open your wallet. In it you will likely find a range of different pieces of identity:

- Your driving license;
- Several credit cards from different banks
- An ATM card, possibly from another bank
- A health insurance card, detailing your coverage and,
- In some countries, a formal identity card.

Each of these identity “tokens” would have been secured from a separate organization with a unique application process, and gained at different times. Many of them would have had a history of safe and secure usage and some of them would have built in, incentive based, alarms in the event they were stolen (particularly the bank cards).

Counterfeiting any one of these tokens might be possible. Duplicating them all would be an arduous endeavor. Intelligent Identity works on premise of the well-know phrase: The whole is greater than the sum of the parts. In the case of intelligent identity, duplicating the complete identity is significantly more complex than the summation of the difficulties of each individual identity. It would take time. History would need to be created. And the virtual tokens such as credit reports and loan histories would have to be matched to the physical tokens – the actual identity cards. And of course, if all of these were created at the same time, that in itself would be problematic.

By linking together the different forms of identity, which are associated with the individual, Intelligent Identity effectively creates an amalgamated mesh of information – from the physical to the virtual – so that when an identity is used, it can be linked to a risk factor and the risk factor can be used in the processing of the claim or the benefit.

This risk factor can be created in real time – using modifiable algorithms – so the line of defense is not static, but completely dynamic. It may even change depending on how many times an individual attempts to apply, or how many different attempts are made from the same web address, or telephone number.

Intelligent Identity requires government to join up the information it already has and use it to protect the rights of the individual who provided that information. It offers a huge opportunity for citizens to take advantage of increased service opportunities on the web and phone, without having to implement expensive physical biometric based hardware.

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**Highlights**

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Intelligent Identity is programmable, so as criminals start to learn the principles, they can be changed; in real time.

By being programmable, the physical infrastructure required is limited thus reducing costs; but also enabling direct service on the web and on the phone. People are already used to being asked to validate information on the phone and Intelligent Identity plays to this familiarity, but with more intelligence and information behind it.

Limited forms of this approach are already used by banks and insurance companies. In the ideal world, central governments might look at national programs that would serve the government need, but also link into the banking systems as well. This offers the opportunity to not only provide a banking system more resistance to identity theft, but also widens the information base for government systems.

This softer Identity Management approach, versus “hard” biometrics, is ideally suited to social services and social security organizations, particularly in countries where the identity cards are not pervasively used in the social system. It also allows integration into the on-line and phone worlds as the physical token is not essential to the principles of Intelligent Identity.

***Combining the concepts of Intelligent Identity and Intelligent Processing opens a huge opportunity for social security organizations. It allows risk to be based on a channel independent identity management system.***

Combining the concepts of Intelligent Identity and Intelligent Processing opens a huge opportunity for social security organizations. It allows risk to be based on a channel independent identity management system. As described in the Intelligent Processing section, the processing rules can vary depending on the circumstances of the claimant and the known facts. Identity can, and should, be part of that equation.

If a person provides limited identity information, they may be able to go so far on-line. They might be able to make a clean claim. If they provide more identity validation, they may be able to see existing information and validate it is correct, and therefore not have to type it in. In the extreme case, the level of identity integration may be so strong that the claim initiation requires no additional information as the network is able to go out and find the address, the employment information etc. and automatically initiate the claim process.

Over the next few years, both biometric and Intelligent Identity systems will evolve, with the pressure for more on-line services moving more intelligence into both the identity itself and into the processing behind it.

### **Innovation in a tough economy**

In an economic downturn like the one the world has been experiencing since the late summer of 2008, social services and social security organizations find themselves in a unique bind. At a time when government budgets are being severely cut and staff are being laid off, many organizations find that they are providing services to more people than ever before. One response to the new economic reality is to continue doing everything as before. Such an approach, however, is almost certain to fail. An organization may be able to slide by for a short period with increased caseloads combined with fewer staff and smaller budgets; but in a protracted economic decline this approach just won't scale.

In an atmosphere where many organizations are looking to simply carry on; forward looking administrators are looking to flourish. Technology is not a cure-all for today's harsh economic realities. But technology is already helping forward thinking administrators find new ways to get optimal value from existing programs and services, as well as new ways to address the needs of staff and the demands of clients.



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