Let's build a smarter planet

Within the past decade emergency and disaster risk management has emerged as perhaps the most pressing issue facing governments worldwide. The responsibility for aligning information and processes in order to anticipate, plan for, respond to and recover from emergencies unquestionably falls to the public sector. Meeting that responsibility requires seamless collaboration across jurisdictions, discrete organizations and disparate systems.

South Africa's Gauteng Province is geographically the smallest province in South Africa, but it's also the most populous, encompassing the nation's capital, its largest city and a number of sprawling informal settlements. Its population density, complicated by cultural, political and socio-economic tensions, along with the incessant risk of flooding in some areas of the province make Gauteng the likely epicenter of any man-caused or natural disaster in South Africa.

Yet, until Gauteng's rising risk profile, a national disaster management mandate and the selection of South Africa as host to the 2010 FIFA World Cup combined to drive a change, former chief director of disaster management and fire services, Colin Deiner, describes Gauteng's ability to manage risk and coordinate disaster preparedness and response as rudimentary.

Multiple mandates for change

"We really had no collaborative environment in place had there been a major disaster, and the preparedness levels required for the World Cup just wouldn't have been possible," Deiner says. "Each jurisdiction operated distinctly, with whatever coordination that could be done taking place over telephone lines and email, which, of course, is not very reliable, particularly in a disaster scenario."

South Africa's National Disaster Management Act mandates that every jurisdiction in South Africa formalize disaster response plans and develop a framework for achieving those plans. One key requirement within the framework is the implementation of an information, communications and technology system to provide a common platform for collaboration among emergency management stakeholders at every level of government.

VirtualAgility Provides Gauteng Province with Collaborative Framework for Emergency Planning, Response and Recovery

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VirtualAgility to provide collaborative framework for real-time information sharing and the alignment of provincial and municipal resources.

Gauteng Province, South Africa’s most densely populated province, selected VirtualAgility to provide disaster management decision-makers and responders across multiple governmental entities with one common operating platform from which province-wide disaster planning, response and recovery activities could be coordinated. Utilizing an embedded IBM DB2® database, running on IBM WebSphere® Application Server and leveraging a range of IBM collaboration middleware, the VirtualAgility Operations Center (VOC) transforms real-time data into a predictive tool for emergency management stakeholders charged with anticipating and mitigating risks. VOC also acts as the platform for orchestrating intra-province disaster response activities on an ad hoc basis in the event of a disaster.

Solution Leverages IBM Database and Middleware for Real-Time Information Sharing and Decision-Making

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In the face of this mandate, and with a sense of urgency to institute a province-wide disaster management framework, Deiner and a senior management team selected IBM Advanced Partner, VirtualAgility, and its VirtualAgility Operation Center (VOC) as Gauteng’s platform.

Planning, Response, Recovery

“You need to have a common operating platform to bring people and entities together in an ad hoc manner to respond and recover in the event of major disasters; that’s what we facilitate,” says Stuart Rudolph, President and CEO of VirtualAgility. Just as importantly, Rudolph points out, VOC is a critical preparedness tool. “It’s not just shelf-ware, sitting there waiting for something to happen. It’s a real-time, single-source-of-truth for disaster management planning, and planning can prevent an incident from becoming a disaster.”

Gauteng coordinates disaster management planning, response and recovery through a central emergency operations center linked to operations centers located in provincial cities and districts. The operations center is manned every day, with real time information pertaining to schools, hospitals, power plants, chemical installations - virtually every category of infrastructure and risk area - being mapped within VOC and made accessible to decision-makers for analysis.

This solution is an implementation of the Emergency Response Management project in the IBM Government Industry Framework. The core of VOC is VirtualAgility’s “WorkCenter” product, which utilizes an embedded IBM DB2 database and runs on IBM WebSphere Application Server. IBM WebSphere Portal is utilized within the VOC environment to display user-specific views of the VOC interface and job-specific applications, avoiding screen clutter by delivering only the information.

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Smarter Emergency Management: A Single Source of Truth

**Instrumented**

Emergency management information is analyzed and managed at the granular level and is shared securely within the emergency management infrastructure, providing a “single source of truth”.

**Interconnected**

The system integrates processes, devices and objects to better automate mitigation, preparedness, response and recovery activities among distinct emergency management jurisdictions and agencies.

**Intelligent**

The system intelligently presents a vast mix of structured and unstructured real-time data, enabling decision makers to develop better response plans, understand the consequences of response decisions and identify trends that impact risk levels.
Let’s build a smarter planet

Solution Components

IBM Business Partner Software
- IBM WebSphere Portal
- IBM WebSphere Server
- IBM Tivoli Directory Integrator
- IBM Tivoli Directory Services
- IBM Lotus Sametime®
- IBM Web Conferencing
- IBM DB2

IBM Business Partner Software
- VirtualAgility OPS Center
- VirtualAgility WorkCenter

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Stuart Rudolph,
President and CEO,
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needed by a particular user. IBM Lotus® tools provide internal messaging, presence awareness and web conferencing capabilities.

Controlling information access is IBM Tivoli®, which enables VOC to integrate distinct directories into one common directory, providing a secure single sign-on for users and enhanced search capabilities. “If someone from one municipality wants to find a hazardous materials specialist they can do a keyword search in the VOC search panel and it will explore all directories and provide a list of specialists, their location and contact information.” says Rudolph.

Getting what is needed, where it’s needed, when it’s needed

Deiner says VOC gives Gauteng a newfound ability to identify trends. “Gauteng is able to remain ahead of events,” says Deiner. “We would receive real-time information, like traffic and public safety data, from municipalities, which would then allow us to establish benchmarks, pick up on trends, map emerging risks and draw up context-specific plans.” Those plans reflect the distinct characteristics of the locale being studied; for instance, its size, local geography and any specialized expertise that may need to be called in should a disaster occur.

VOC features a suite of incident command tools and a command structure designed to speed emergency response. The system standardizes everything from incident report forms to asset request forms, replacing paper and faxes with a common user interface for completing reports and the automated distribution of those reports to pre-selected people and entities.

“If an incident commander needs 20 bulldozers he doesn't need to fill out a paper form and send it back to the emergency operations center,” explains VirtualAgility’s Rudolph. “He enters it into the system remotely, and because it’s a web-based system the logistics officer in the center sees the request in real-time, looks in the system for people who have the dozers and delivers them to that location.”

Deiner offers a refugee crisis in a camp near Johannesburg as another case-in-point.

Housing 16,000 men, women and children from several African countries in ad hoc shelters, the camp was fraught with political and religious tensions, leading to 65 deaths over a two week period and increased risk of a mass health crisis. “We needed to move all these people to safe shelter within the next week, so we activated our disaster management teams, developed a budget - what it would cost to feed people, protect them and provide medical assistance - and identified land for the new camp.”

Gauteng used VOC for mapping processes, performing risk assessments of the identified land and for tracking individuals, nationalities, religions, food, injuries, disease - virtually everything pertaining to a mass relocation. Deiner continues, “We had to understand the demographics before we could start designing shelters, developing security and access control plans, along with sanitation and food...”
provisioning. The only way we were able to manage this highly fluid situation is by getting up-to-date information from, and coordinating our efforts through VOC.

“I have managed disaster responses all over the world but this was probably one of the most difficult ones because of the dynamics, so we needed to have very good information all the time and VOC provided that,” says Deiner. “The shelter reports - tracking where each refugee was - needed to be updated twice daily, and that was able to be achieved because we had a common platform in VOC.”

You won’t find VOC being used for incidents like a house fire or a cat stuck in a tree, says VirtualAgility’s Rudolph. “Our focus is on really bad things; a passenger bus with 20 injured up to a global pandemic, disasters that require a common operating picture and large scale response.”

The Inside Story: Getting There

Prior to 2007, Gauteng Province had no formal province-wide disaster/emergency management system in place, but a government mandate, the upcoming FIFA World Cup and the risk potentialities associated with being the most densely populated province in South Africa demanded that one be implemented.

The responsibility to find and implement a system fell primarily to Gauteng’s Colin Deiner. For Deiner, the scale of his province’s emergency and disaster management needs meant the solution selected had to be a mature one; it had to have been proven in actual disaster scenarios. One critical step during the process of evaluating a number of competing solutions was a visit to the United States. “We view the U.S. as a benchmark. A lot of our fire services - especially in province - and a lot of our disaster management protocols are based very closely on U.S. emergency management principles, so we looked at a whole range of scenarios and systems when we were in the U.S.”

Deiner and his group designed the province’s specifications for an emergency management solution largely around what they observed in visits to Washington D.C., New York and Florida. “By gaining a greater understanding of the challenges those areas face and seeing how they’re organized to plan for and respond to those challenges we had a solid basis for putting together our requirements, and when we did we found that they were satisfied by VirtualAgility’s Operations Center.”

For more information

Please contact your IBM sales representative or IBM Business Partner. Or you can visit us at: ibm.com

For more information about IBM SmarterPlanet, visit us at: ibm.com/SmarterPlanet

For more information about ISV resources from IBM PartnerWorld, visit: ibm.com/partnerworld/industry networks

For more information about VirtualAgility, visit: virtualagility.com

For more information about Gauteng Disaster Management Center, visit: www.gauteng.gov.za