First steps to SOA—enabling rapid crisis response and driving business innovation.

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Introduction

Service-oriented architecture (SOA) is one of the most widely discussed technology trends of recent years. Many companies recognize the competitive advantage offered by SOA, but wonder where to begin. In theory, it is easy to see how a service oriented approach can help a company become more agile and efficient by service-enabling its business processes and applications, thereby making them ready for use in new business situations. In practice, it may seem daunting to figure out where to begin, how to leverage existing assets and how to govern a service-oriented architecture on an ongoing basis.

As an early proponent of SOA, IBM has marshaled extensive resources spanning technology and business in support of a comprehensive strategy to make SOA adoption practical and compelling. IBM's product offerings accommodate multiple entry points to SOA, providing an incremental approach to SOA maturity and industry-specific models for getting started. An important element of IBM's strategy has been to build SOA enablement into its most widely used products. For example, products like IBM WebSphere® Portal, IBM WebSphere Process Server, IBM Lotus® Notes® and Lotus Domino® and IBM® Workplace™ Forms™ software are already service enabled and provide a solid starting point for building a robust SOA based on open standards. If you are already using these products, then you have already taken the first step toward SOA.

So, what is the next step and, in particular, how easily can you take it? In brief, the WebSphere and Lotus product sets enable and empower business users and IT to work together to rapidly assemble components and rearrange existing processes into new and innovative ways to work. This white paper shows how this next step can be taken.

The paper is built around the case study of a fictional insurance company responding to a natural disaster. The case study is a composite of multiple real-world deployments and is based on actual experience. It illustrates how a company can effectively leverage an initial, small SOA proof of concept within the company's existing investments in IBM WebSphere Portal, WebSphere Process Server and Lotus products.

The case study presents an example of how the IBM approach addresses both specific industry requirements and cross-industry needs such as collaboration, adaptable user interfaces and business process management. While the case study is focused on the insurance industry, the scenario described has close parallels in many industries including healthcare, utilities and government.

Case description
Background
Innovator Insurance Company (IIC) is a midsize property and casualty insurance company with state-based, localized operations in California, Nevada, Arizona, Texas and Louisiana covering automobile and home lines of business. IIC has undergone tremendous growth, largely through acquisitions, and has made an early investment in WebSphere Portal software as a means to manage this growth. WebSphere Portal software already provides IIC's business users with a single point of access to disparate legacy systems that are a result of its acquisition strategy. WebSphere Portal software integrates people, processes and applications, shielding the business user from technical complexity.

IIC embarked on an SOA proof of concept to create and validate ACORD transformation services and automate claims processing workflows.

IIC's strategic direction includes increasing cooperation with business partners and streamlining its own processes. Recognizing that service oriented methods have gained wide industry acceptance, IIC embarked on a proof of concept to create and validate the following services:

- *Reusable ACORD transformation services. As an insurance industry standard, Association for Cooperative Operations Research and Development (ACORD) forms can be used to exchange information with business partners. IIC implemented reusable services to parse and transform ACORD forms and ACORD XML to the proprietary XML format used by IIC's systems. IIC has deployed these services for integration with its agency management systems (AMS) and tested its compatibility with most of the major industry vendors. Implementation of reusable ACORD transformation services enables IIC to interact efficiently with its partners.*
- *Automated claims processing workflows integrating human tasks. These workflows span IIC's first notice of loss (FNOL), claim allocation and claim setup applications. The ability to monitor the performance of these workflows was implemented with key performance monitoring portlets using the WebSphere Process Server application programming interface (API).*

Business situation — a crisis looms

Due to a storm forecast predicting catastrophic effects on coastal areas of both Texas and Louisiana, IIC activates its claims crisis management group, composed of the vice president of claims, state claims managers and senior IT management. In anticipation of the predicted crisis, IIC wants to proactively address what is expected to be an unprecedented 1,300 percent increase in catastrophe-related claims.

In anticipation of a predicted storm crisis, IIC must address what is expected to be an unprecedented increase in catastrophe-related claims, so the claims crisis management group requests that its claims emergency response team and its IT SWAT team be engaged.

For this purpose, the claims crisis management group requests that its claims emergency response team and its IT SWAT team be engaged.

To maintain its reputation for customer service, IIC develops a plan to shift catastrophe claims overflow to unaffected states and to utilize additional local independent adjusters.

There are four points to IIC's strategy.

Response strategies

Business readiness and responses

IIC's claims crisis management group understands that even though the predicted natural disaster is unprecedented in size and impact, IIC's customers will expect and require the same excellent customer service for which IIC is highly regarded. In fact, due to the direness of the emergency, IIC's customers will expect a heightened response. With this guiding principle in mind, the IIC team focuses on a strategy that takes advantage of the many claims processing centers in California, Nevada and Arizona that are operating at an efficient pace and will not experience abnormal claims activity due to the storm. If these resources can be utilized to handle the catastrophe claims overflow, then IIC will have the best possible chance of maintaining its reputation for customer service. Additionally, IIC wants to utilize many local independent adjusters to help manage the increase in claims volume. The IIC team develops a four-point strategy to respond to the crisis:

- *IIC will leverage its Texas and Louisiana underwriting and billing representatives, who have been cross-trained in claims processing.*
- *IIC personnel will collaborate with qualified independent emergency adjusters and appraisers in the storm-affected areas to expedite the processing of claims.*
- *IIC will route its overflow claims from Texas and Louisiana to its claims centers in California, Arizona and Nevada (which already operate 24x7). This will help IIC maintain its customer service standards for loss reporting, reserve allocation and payment. Based on previous data, customer service most often suffers during the claims setup process.**
- *IIC will develop and execute an IT support plan to support its business through a crisis.*

The IT SWAT team can quickly bring independent adjusters online and reroute overflow claims by leveraging IBM WebSphere Portal software and other Lotus software products that IIC already has in place, without developing any new functionality.

A simple modification to the existing definition of the claims setup process will allow any claim flagged as catastrophe-related to be routed to IIC's California, Arizona and Nevada offices as well as to its Texas or Louisiana offices.

Clearly, the second item in the plan poses difficulties: How can IIC bring independent adjusters online quickly enough to handle the crisis in a way that is consistent with IIC's emergency policies? However, the third item in the plan poses the greatest challenge: How can IIC implement the rerouting of overflow claims to California, Nevada and Arizona quickly and effectively enough to handle the crisis? Moreover, how can IIC enlist the help of its California, Arizona and Nevada offices with minimal disruption to normal claims processing in those states?

IT readiness and response

The claims crisis management group asks IIC's IT SWAT team to devise a solution to support the crisis plan. The IT SWAT team immediately recognizes that it can leverage IBM WebSphere Portal software and other Lotus software products that IIC already has in place.

During an emergency whiteboard session, the claims emergency response team and the IT SWAT team arrive at the consensus that no development of new functionality will be attempted to meet the emergency. Rather, they will take advantage of their IBM Lotus products to assemble, manage and deploy components created in their SOA proof of concept.

One of IIC's business analysts proposes that a simple modification to the existing definition of the claims setup process would allow any claim flagged as catastrophe-related to be routed to IIC's California, Arizona and Nevada offices as well as to Texas or Louisiana offices. This solution leverages IIC's existing automation of the claims setup process, which handles intrastate spikes in claims by distributing them to other less utilized intrastate claims resources.

This would solve the key problem for the crisis plan and put IIC in the best position to maintain its reputation for customer service. There would be little impact on normal California, Arizona and Nevada claims processing, because the overflow tasks would be distributed to a wide pool of employees.

How does the IT SWAT team accomplish these objectives?

Collaboration—respond in a single voice

In a crisis, it is imperative that everyone involved speaks with a single voice; employees and independent contractors need to communicate and collaborate in real time.

In a crisis, it is more imperative than ever that company employees be "on the same page" regarding response procedures. Because independent contractors play a role in IIC's crisis plan, the problem of achieving a single, clear understanding of procedures and keeping everyone updated is compounded. Participants (employees and independent contractors) need to communicate and collaborate in real time.

The IT SWAT team uses IBM Lotus software to provide e-mail notification and content management to publish contingency policies and procedures to all users, and the team uses Lotus Sametime instant messaging and conferencing capabilities for instant, 24x7 communication and collaboration.

The IT SWAT team uses IBM Lotus software to provide e-mail notification and content management to publish contingency policies and procedures to all users. The team also uses IBM Lotus Sametime® instant messaging to provide instantaneous collaboration between field adjusters and the adjusters providing support from California, Arizona and Nevada. Instant messaging is the preferred mode of communication in the crisis, when possible. The immediate availability of 24x7 call center personnel provided by instant messaging increases the field adjusters' productivity. Moreover, Lotus Sametime conferencing enables field adjusters to work with their colleagues in other states as if they were in a virtual office, and share documents and pictures online. Processing time is minimized by effective collaboration that is enhanced with business process management tools to customize notification e-mails.

The best part of the collaboration framework is that all these services are available at the business user's disposal within a single unified portal interface. The single sign-on infrastructure makes it easy to add the independent adjusters' personal digital assistant (PDA) devices to the system with security-rich access to Lotus Sametime, e-mail and directory services.

User interfaces — making IIC easy to do business with
Portal infrastructure
IIC's WebSphere Portal infrastructure delivers both the collaboration services that are vital to the emergency effort and the interfaces to IIC's claims processing system. IIC's claims processing system includes a number of composite applications, such as loss calculators, weekly scorecards, state-specific property value assessment tools and correspondence applications. A key responsibility for the IT SWAT team is to grant the appropriate access to adjusters helping with the crisis. Employee adjusters in California, Nevada and Arizona need access to portlets that are specific to Texas and Louisiana. Independent adjusters need access both to IIC's collaboration services and to specific components of IIC's claims processing system. IBM WebSphere Portal software makes these objectives easy to meet:

- *To grant employee access to Texas and Louisiana portlets, only simple configuration changes are needed.*
- *For independent adjusters, portlets can be assembled into a simplified work area. This work area, as shown in Figure 1 (on page 9), includes collaboration tools like e-mail and instant messaging, as well as selected components of the claims system, such as FNOL ACORD forms, downloadable forms and claims manuals.*

The portlet for independent adjusters includes collaboration tools like e-mail and instant messaging, as well as selected components of the claims system, such as FNOL ACORD forms, downloadable forms and claims manuals.

Figure 1. Snapshot of independent adjuster screen

Workplace Forms software

Two challenges relating to IIC's field adjusters are worth noting. First, adding new independent adjusters to the system is made more difficult by the fact that there is no automated process for registering independent adjusters. Second, due to the crisis conditions, Internet connectivity for field adjusters in affected areas is not always available.

In each state, there is a standard form defined by that state's insurance commission specifically for registering independent adjusters. IIC has never delivered this form electronically. IBM Workplace Forms Designer software provides rapid development tools that a technically oriented business analyst can use to create the form in a matter of hours. This form allows an independent adjuster to fill out and submit the form online. Submitting the form causes the data entered on the form to be posted in XML format to IIC's provisioning systems. Figure 2 shows the easy-to-use interfaces that enable most forms to be designed by simply dragging and dropping fields and object libraries.
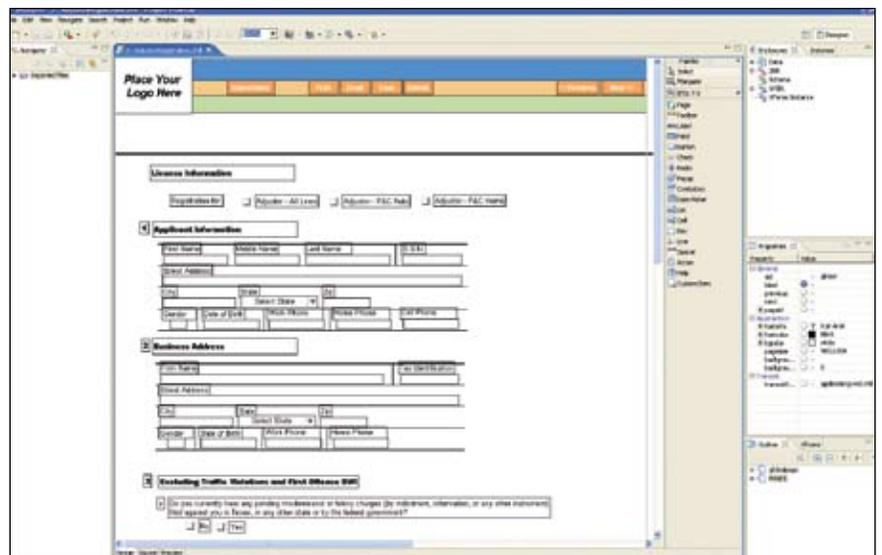
IBM Workplace Forms Designer software provides rapid development tools that can be used to create state-specific forms in a matter of hours.

Figure 2. Workplace Forms Designer software

IBM Workplace Forms Viewer software enables field adjusters to capture claims data and save it offline, which is especially impor-tant when Internet connectivity is not reliable.

The likely loss of Internet connectivity dictates that field adjusters be able to capture claims data and save it offline. This is made possible using lightweight IBM Workplace Forms Viewer software. Internet connectivity is required to download the viewer initially, but once installed, the field adjuster can enter and save claims data offline. Claims data is normally entered into IIC's FNOL system by employees trained on IIC's proprietary form. To facilitate claims entry for independent adjusters, the crisis plan provides that they will fill out an indus-try standard ACORD form, built upon the new, electronically enabled version known as "eForms+." Independent adjusters are quite familiar with ACORD forms, as this is an insurance industry standard. The eForms+ approach provides the ability to submit form data online, and eForms+ can be used either directly through the portal or through Workplace Forms Viewer software.

IIC had created a translator service to take standard eForms+ data and translate it into IIC's proprietary format, to facilitate information exchange with its business part-ners; as it turns out, this service can also be used to engage inde-pendent adjusters in a crisis.

Once Internet connectivity is restored, the adjuster can submit the forms elec-tronically. It was part of IIC's SOA proof of concept to create a translator service to take standard eForms+ data and translate it into IIC's proprietary format. IIC undertook this task for the purpose of facilitating information exchange with its business partners. As it turns out, this service could also be used to rapidly engage independent adjusters in a crisis. Note that eForms+ were developed jointly by IBM and ACORD. Such collaboration with key industry vendors is an example of IBM's strategy for supporting industry-specific standards and services. Like Workplace Forms Viewer software, ACORD eForms+ can be distributed through the portal to achieve maximum productivity.

The integration architecture supporting the use of ACORD eForms+ is not complicated. Let us consider it briefly. This architecture is represented below using the SOA reference architecture in Figure 3.

- *When an ACORD form is submitted, eForms+ XML containing both data and form information in XML format is routed to a servlet.*
- *The servlet routes the eForm+ XML to an ACORD eForm service that extracts the data from the XML and stores it.*
- *ACORD XML is routed to the ACORD XML service to convert to the proprietary XML structure of IIC's legacy systems.*
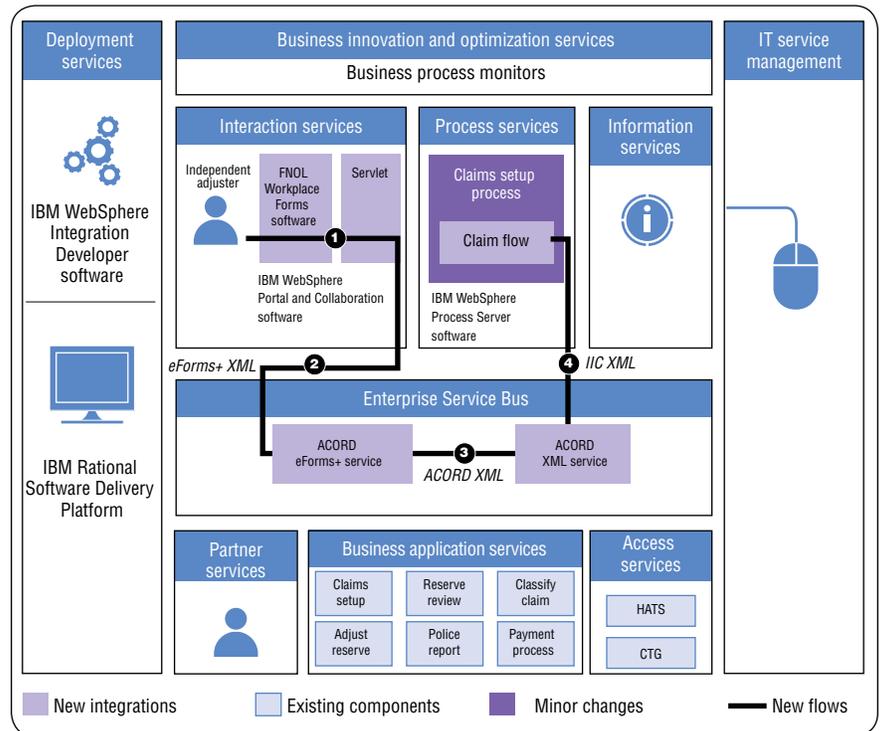- *Proprietary XML data is properly routed to process the claims.*

The integration architecture that supports the use of ACORD eForms+ is represented in Figure 3.

Figure 3. High-level integration architecture

Other Workplace Forms capabilities, such as support of digital signatures and the ability to use the Texcel FormBridge tool to convert an existing paper-based form to an IBM Workplace Forms version, are not required for crisis response.

In states that are not affected by the storm and that are not handling the overflow of catastrophe-related claims, it's business as usual.

A couple of other IBM Workplace Forms capabilities are considered, but the claims emergency response team and the IT SWAT team determine that these features do not apply during the crisis situation. For example:

- *Digital signature is supported by IBM Workplace Forms software and could be used to automate an end-to-end business process. This feature is suggested for adjuster registration, but is postponed due to time constraints. However, IIC's IT will, in the future, initiate a proof of concept to test these capabilities for expense check authorization.*
- *For the adjuster registration process, the Texcel FormBridge tool is proposed to convert the existing paper-based form to an IBM Workplace Forms version. But considering the simplicity of the form, IIC's business analysts prefer to create their own version, using the rapid development facilities provided by Workplace Forms software. In the future, however, for bulk automation of the manual forms, FormBridge will be used.*

Business process management — business as usual in a crisis

In states that are not affected by the storm, the crisis solution cannot interrupt business as usual. The only change to claims processing in these states should be the overflow of catastrophe-related claims from Texas and Louisiana appearing in the California, Nevada and Arizona representatives' task portlets. In this way, IIC can provide a rapid response in storm-affected areas with little or no impact to normal claims processing in these states.

In order to provide a heightened level of service to meet the acute needs of storm-affected customers, IIC decides that the following steps will be taken to modify the existing business process. These steps use IBM WebSphere Integration Developer software to manage critical tasks:

IIC uses IBM WebSphere Integration Developer software to manage critical tasks pertaining to the catastrophe setup claim human task.

- *Add a new catastrophe setup claim human task, modeled on the existing setup claim task.*
- *Perform the following changes to the catastrophe setup claim human task:*
  - *Define the catastrophe setup claim task as transferable. This is needed to enable supervisors and managers to interrupt the usual process to reassign claims to alternate representatives. In the regular process, the claims are assigned using an automated assignment task. Because the claims need to be balanced across branches at other states, while claims representatives also process their regular workload, manager intervention would be helpful.*
  - *Modify the Texas and Louisiana claims assignment rules to include the California, Nevada and Arizona branches.*
  - *Define new sets of rules for escalation, mail notification and work allocation for the newly created human tasks.*

End users can take advantage of additional features, including workflow task and task assignment portlets; the ability to prioritize critical catastrophe-related tasks; and the opportunity to communicate with a supervisor or manager if necessary.

From the end-user perspective, it's business as usual, except for the following additional features:

- *Workflow task and task assignment portlets provide capabilities for reassigning the setup claim human tasks.*
- *Claims representatives are directed to prioritize critical catastrophe-related tasks and will have the opportunity to communicate with a supervisor or manager if they become overloaded.*

The IT emergency response team comprises key members of the IT SWAT team and other IT representatives, as shown in Table 1.

Strategy execution

With the IT response strategy developed, an IT emergency response team is assembled, comprising key members of the IT SWAT team and other IT representatives, as shown in Table 1.

Resource category	Number
Business analysts	3
Integration developers	3
Portal administrator	1
Security administrator	1
Architect	1
QA – functional testers	2
QA – regression testers	2
Configuration administrator	1
Operations	1
QA – performance tester	1

Table 1

On the first day of crisis planning, the IT team must accomplish a number of activities with seamless integration.

The following section presents the execution plan in more detail.

Day one
IT track
The IT emergency response team is located in one place to foster better communication. The architect coordinates the activities of all the team members to ensure seamless integration. These activities include the following:

- *A business analyst creates the IBM Workplace Forms form for the registration of independent adjusters, and an integration developer performs the integration with the provisioning system.*
- *Another business analyst and integration developer are paired to make changes to the Business Process Execution Language (BPEL) definition and to perform unit testing using the WebSphere Integration Developer Universal Test Client. Upon making the changes, the integration developer executes the unit test suites for the existing workflow to make sure that there is no impact on existing functionality.*
- *The third business analyst and integration developer are paired to create the servlet that transfers the ACORD forms from eForms+ to the claims processing system.*
- *The security administrator performs the changes to accommodate the new group of users, "Independent Adjusters."*
- *Portal administrators use WebSphere Portal administration tools to rearrange the portlets and Workplace Forms forms for the independent adjusters, and provide the adjusters access.*
- *The functional quality assurance (QA) testers prepare the test cases to verify the new functionality.*
- *The regression and performance QA testers validate the existing scripts and prepare test data.*
- *The configuration administrator moves the applications to the integration testing and regression testing environments.*

On the second day, IT focuses on the execution of test cases and automated regression scripts; business users perform final acceptance testing and provide the appropriate sign-offs; changes are made to the production environments; and business users document the emergency procedures and publish them, through the portal, to employees and independent adjusters.

IIC has developed the ability to route excess load to alternate state offices; to rapidly deploy and easily manage a temporary workforce on short notice; and to initiate emergency communications and offline procedures in times of crisis.

Business track

- *Claims managers collaborate with state emergency response teams to publish the process for registering emergency independent adjusters with IIC.*

Day two
IT track

- *The focus is on the execution of test cases prepared by the QA teams and execution of the automated regression scripts using IBM Rational® Robot software.*
- *Business users perform the final acceptance testing and provide the appropriate sign-offs.*
- *The changes are made to the production environments per the enterprise production emergency processes.*

Business track

- *Business users document the emergency procedures and publish them, through the portal infrastructure, to employees and independent adjusters.*

Day three
Business track

The resulting implementation is not a temporary fix that must be dismantled at the end of the crisis. Rather, it lays the foundation for IIC to continue to improve its already outstanding customer service and to enhance its reputation for service excellence. IIC has strengthened itself in the midst of catastrophe. In a matter of days, IIC has developed the ability to route excess load to alternate state offices; to rapidly deploy and easily manage a temporary workforce on short notice; and to initiate emergency communications and offline procedures in times of crisis.

This white paper illustrates that the dramatic, business-transforming benefits of SOA can be achieved with relative ease and that a service oriented platform can provide the ability to respond with business agility in an emergency.

Using IBM Lotus and WebSphere tools, the path to SOA can be gradual, incremental and inexpensive.

Conclusion

A crisis, like the one described here, can either ruin an enterprise or reveal its strengths. Fortunately, our hypothetical insurance company, IIC, had implemented tools like WebSphere Portal software that had prepared IIC to be agile and responsive. Before the crisis, IIC had begun to plant the seeds of SOA through a proof of concept, and these capabilities blossomed during the crisis. The transition to a service-oriented architecture need not depend on a crisis and should not be postponed until one occurs! This white paper has illustrated that dramatic, business-transforming benefits of SOA can be achieved with relative ease. IIC already possessed a service oriented platform and the tools needed to respond with business agility in an emergency. Existing IBM customers with investments in WebSphere Portal, WebSphere Process Server and Lotus software products have the means at their disposal to begin their own SOA implementation.

Using IBM Lotus and WebSphere tools, the path to SOA can be gradual, incremental and inexpensive. SOA is both a well-established approach to business agility and a trend for the future that is focused on how best to take advantage of the past. It is a mistake to imagine that SOA implies rebuilding existing assets, processes and procedures from scratch. A number of IBM tools, designed for SOA, are specifically intended to make use of legacy systems in the Internet world. IBM WebSphere Portal software can be leveraged as an ideal platform on which to build a service-oriented architecture, with its use of standards and enhanced integration capabilities with middleware tools and applications. Further, IBM Lotus tools bring key business processes closer to business users and facilitate their ability to take control and innovate. IBM Lotus Workplace Forms software is an ideal data entry point for service-enabled business processes and can be used both online and offline.

IBM is the preeminent provider of SOA-enablement tools and solutions.

IBM is the preeminent provider of SOA-enablement tools and solutions, because IBM has taken a broad approach that encompasses comprehensive software suites, relationships with key industry-specific vendors, in-depth guides to governance, deployment patterns, best practices and more. The expansive sweep of IBM's approach makes it possible to initiate profound business changes starting from the smallest proof of concept.

For more information

To learn more about how IBM can help you with your service-oriented architecture solution, contact your IBM representative or IBM Business Partner, or access the following resources:

There are a number of resources available to you, if you are interested in learning more about service-oriented architecture.

- Opening the door to a service oriented architecture − IBM Workplace, Portal and Collaboration Products for an SOA, *by Dr. Barry Devlin (available at* ftp://ftp.lotus.com/pub/lotusweb/wplc/WPLC_SOA_white_paper.pdf*)*
- **ibm.com**/websphere/portal *(for the IBM WebSphere Portal product page)*
- **ibm.com**/jct03002c/software/integration/wps/index.html *(for the IBM WebSphere Process Server product page)*
- **ibm.com**/software/workplace/forms *(for the IBM Lotus Workplace Forms product page)*
- **ibm.com**/soa *(for information about service-oriented architecture and IBM)*
- **ibm.com**/software/solutions/soa/entrypoints/people.html *(for information about the people entry point to SOA)*

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* Claims setup process is a complex business
process that involves reviewing a claim as it is
taken by the field adjuster. This review ascertains
the facts of the loss by interviewing claimants, the
insured and other carriers. Additionally, the review
identifies all potential claimants and orders an offi-
cial police report if necessary to determine fault.
This is a critical task that needs to be done for the
adjusters to compute the potential loss