

**Collaboration to Counter
Improvised Explosive Devices (IEDs)**
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The Problem

The obvious problem is to detect and defeat IEDs before they do harm. While detection as they are deployed is critical, it is equally critical to identify the source of the manufacture, command, and control of IEDs. If the insurgent leadership and engineers can be identified, then the IED can be defeated at its source.

Intelligence Collection

Traditional intelligence collection methods are directed against the IED problem. All-source intelligence analysis contributes to identification of locations and individuals who control and contribute to the IED production and deployment. Additionally, intelligence is derived from detonated and intercepted devices. Laboratory analysis, including forensic analysis of chemicals, electronics, engineering, as well as, latent fingerprint identification contribute to the intelligence cycle.

The collection, analysis, and dissemination of strategic and tactical intelligence involves many organizations. For instance:

US, Iraqi, and/or coalition forces may detect an IED on the ground. The device is secured and delivered to a DoD laboratory for forensic analysis. If latent fingerprints are recovered from the device, they are submitted to the FBI laboratory for analysis.

While the forensic analysis is being conducted troops and agents collect intelligence from video surveillance, interview of witnesses, etc. This collected information is processed and analyzed by military, CIA, and FBI analysts for production of intelligence products. A challenge is presented by disparate databases, geographically dispersed personnel, and a difficulty in discovering subject matter experts who can add value to the analysis.

Having timely access to information, as well as, people who can provide context to the collected information, is critical to completing the intelligence picture, providing situational awareness, and getting the most comprehensive information to decision makers when difficult decisions have to be made.

Meeting the Challenge with Collaboration Technologies

Since the collectors of intelligence and analysts are geographically and/or functionally dispersed, it is critical that they have timely access to relevant information and subject matter experts. Many analysts have access to perform direct or federated queries of government, public, and private data. However, few have the capability to engage in real-time collaboration with colleagues and subject matter experts unless they are collocated. Implementing a Service Oriented Architecture (SOA) with real-time collaboration as a service can satisfy this requirement.

SOA market leaders are currently focused on development of document-focused data services, enterprise service bus (ESB) suites, and enterprise security services. Collaboration services in most SOA environments are less well-defined, and are concentrated at the user interface level. Most available SOA suites do not look at collaboration as a real-time service, yet collaboration may be the key to the acceptance of SOA and delivery of its promised efficiencies and business value.

Benefits of Collaboration Within SOA

Messaging tools such as email and instant messaging (IM) may encourage collaboration, but they do not constitute collaboration. Other collaboration tools, such as white boards, text chat, and virtual workspaces, improve workflow and communication but do not provide a consistent base for true collaboration. Many organizations have discovered that attempting to force collaboration by 'synthesizing' these tools into a collaboration environment, fails. What is needed is a secure, comprehensive, reliable collaboration platform that supports real-time interaction, presented as SOA services, which can be integrated into existing systems, applications and software.

CollabraSpace and SOA

CollabraSuite, the off-the-shelf collaboration product of CollabraSpace, can reside as a service within the SOA. Although many SOA vendors are focused on BPM and security, few address the delivery of real-time collaboration services in a SOA infrastructure. One developer of SOA-ready collaboration services is CollabraSpace, the leading authority on web-based collaboration solutions. CollabraSpace develops and provides secure web-based collaboration software (CollabraSuite) and platforms that include audio/video conferencing, document sharing and storage, whiteboarding and instant messaging, as well as a J2EE application development platform (CollabraSuite SDK).

CollabraSpace products feature a rich component set of collaborative SOA-ready processes and tools that bring geographically-dispersed people, processes and data together in real-time to increase productivity and improve workflows. CollabraSuite and CollabraSuite SDK include a graphical user interface tuned for collaboration; the ability to monitor collective activity; the ability to create and inject content into the collaborative environment, and integration with a SOA-based dashboard application.

CollabraSuite supports both GUI and infrastructure approaches to delivering collaborative services in SOA via:

- User Interfaces that are included in web applications, such as portals (implemented via WSRP). CollabraSuite's component-based suite of real-time collaboration services enables SOA designers and developers to select services to provide to end users (e.g. chat, whiteboard, etc).
- Collaboration capabilities presented as a service where applications and frameworks, e.g. ESBs and BPM applications, can both retrieve information from the collaboration services and create events within the collaboration

service. CollabraSuite provides an API to support the retrieval of information from, or sending events to, the collaboration service.

CollabraSuite's open, standards-based application architecture speeds the development of scalable, web-based enterprise collaboration services. Built on the J2EE platform, CollabraSuite components align with SOA services, enabling the creation of context-sensitive work environments that are integrated at every level with legacy systems and applications. Scalable, secure, and administered through a client portal or application server, CollabraSpace offers an SOA-integrated collaboration development environment that supports:

- Drag and drop collaboration services that integrate into SOA business processes –whiteboards, chat, etc.
- Collaboration services available within an SOA IDE, such as BEA's WebLogic Composer
- J2EE-based authentication and authorization
- Ability to parse messages from ESBs and perform business processes. BPM applications provide evaluation or introspection of messages, and deliver the capability to define actions that should occur based on information within the messages.

In addition, CollabraSuite provides services that enable BPMs to:

- Dynamically create virtual workspaces/rooms where collaboration can occur
- Assign roles and permissions in the rooms, based on real-time analysis of the relevant capabilities and expertise of on-line participants.
- Copy documents/folders to room file cabinets or user briefcases, providing the necessary artifacts to enable real-time interaction
- Locate users currently on line with a particular skill set, for example locate an individual with air traffic expertise to respond to an air control incident.
- Place images on a whiteboard for real-time interaction and interchange.

CollabraSuite's rich component set includes:

- Presence awareness
- Document storage and retrieval
- Instant messaging/paging
- Audio/video & web-conferencing
- Navigation
- Shared whiteboard
- Associates list
- Desktop sharing
- Access controls
- Auditing and metrics
- Support for lightweight handheld devices.

CollabraSuite's sophisticated set of graphical modules can be easily and quickly assembled to create a custom-configured collaborative workspace. The plug-and-play components can function within a web-based application, or as a stand-alone application, ensuring seamless integration with existing SOA environments.

CollabraSuite's UI:

- Contains real-time end user collaborative components, such as whiteboards
- Provides seamless integration into portal applications via WSRP
- Enables single sign-on through SOA security mechanisms (authentication is required from both a UI and service perspective)

Organizations are able to monitor collaborative activity in the environment:

- Post messages to ESB whenever thresholds are met or exceeded
- Monitor who's online, how many are online, the amount of activity, etc. and respond appropriately by activating business processes within the SOA via the ESB. CollabraSpace enables participants to see things in real-time in the environment and publish actions into the collaborative environment
- Via a dashboard display, participants can view and report on and the amount of collaborative activity.

The flexible, dynamic and secure platform supports injecting events into a collaborative environment. Some examples of this are:

- Create virtual workspaces (buildings/floors/room), documents, sending pages, etc. by posting an activity to the ESB
- Coordinates the facilitation of a virtual meeting

An IED Detection Scenario

Consider the following application of CollabraSuite, used by the DoD to monitor the movement of assets in several regions throughout the country. With CollabraSuite, DoD uses a portal as the display mechanism through which users monitor geospatial representations of critical areas. The DoD collaboration portal contains displays of several different applications, such as:

- Radar
- Satellite Imagery
- Real-time text chat, a/v conferencing, white boarding and document sharing
- Video surveillance of key targets within the critical areas
- A custom application called a 'decision matrix' used during a crisis, e.g. when activity is detected in a critical area to make decisions on how to respond to the current crisis.

Working in a SOA environment, CollabraSuite enables DoD to manage critical areas in real time:

- The video surveillance application can be configured to post messages to the ESB whenever activity is detected in a critical area. Notifications contain information about the location of the activity and other specifics, e.g. sensor registration as vehicle or pedestrian.
- The BPM process reads the message from the ESB and parses the information. Based on the geographic location of the intrusion, the process can determine the level of threat. As the intrusion gets closer to the critical area more messages are sent to the ESB. For each event the BPM increases the threat level. Information posted to or retrieved from the CollabraSuite environment includes:
 - Initial threat level: watch officers are sent real-time page notifications
 - Mid-threat level: the system finds users from particular group and sends them a notification (e.g., officers responsible for monitoring the critical area)
 - Threat level: the BPM creates a virtual crisis room, places detailed information about the intrusion into the room, and loads the customized decision matrix application. Text chat, A/V, etc. are engaged to handle the threat.

In this scenario, all actions are driven by the BPM based upon messages received through the ESB by various services within the enterprise environment.

Conclusion

CollabraSuite meets the requirements of users and developers of SOA environments for real-time collaboration services. Users in a geographically-dispersed organization are able to work as a team to resolve problems; SOA developers are able to speed time-to-market and significantly reduce the cost and time required to create and maintain the collaborative environment. Providers of SOA suites will find in CollabraSpace a partner capable of providing real-time, SOA based collaboration tools that can be integrated out-of-the-box into existing SOA deployments. CollabraSpace, and its products CollabraSuite and CollabraSuite SDK, are an effective solution for integrating legacy applications into a collaborative, SOA services-based work environment.

The business of intelligence collection, analysis, dissemination, and decision support may be transformed through the implementation of CollabraSuite. Thus, decision makers are provided with comprehensive and timely information to counter the IED threat.