Service-Oriented Mobile Business Process Execution

Steve Stephansen

Business processes are the essence of any organization: They uniquely define how work gets done through people and IT systems. Examples of business processes abound within the enterprise and the extended value chain. One will find a business process in any area where work gets done in a company - product design, supply chain management, finance, marketing, sales, and field service operations. Companies are increasingly automating processes to improve real time responsiveness, business agility, and operational efficiency.

In order to achieve these objectives, business process modeling and automation is now a key initiative in every major enterprise. Virtually every major software vendor is either offering or planning to offer business process capability with their application or middleware. This is in recognition that the business process is the higher level functionality that comprehends roles, activities, events, and business logic. Furthermore, every company has a unique way of doing things, of which an off-the-shelf software application is just a part, and the business process captures this uniqueness.

Business processes are typically modeled in a modeling tool, either standalone or part of an integrated business process management product. If the process is to be automated, the runtime is virtually always a centralized server based product. The runtime will typically be tightly coupled with data integration middleware and simple request-response user interactions. This traditional architecture has limited business process automation projects because of the relatively high cost of integration and tight coupling of the business process to the IT implementation. Real world business processes and IT implementations change, and the cost of change management in tightly coupled systems is often prohibitive.

New and emerging service-oriented architectures (SOAs), loosely coupled integration, and the emerging Business Process Execution Language (BPEL) specification are changing the way both organizations and vendors think about automating business processes. The service-oriented theme supports the notion of agility and of meeting the dynamic needs of the business. SOAs embrace the ability for applications and users to be represented as services and to register themselves and their metadata in running systems, thus simplifying their invocation within a business process.

In close association with service orientation is the concept of loose coupling. Much is being written on loose coupling, but in the context of business process management, it is a means to minimize total cost of ownership in supporting dynamic change management in both changing processes and underlying implementations.

The Business Process Execution Language (BPEL) is an emerging OASIS standard being advanced by IBM, Microsoft, SAP, Siebel, (plus others), and is an important industry development. BPEL provides business process interoperability and portability, which in turn enables the scaling of business processes across highly distributed environments and organizations. The BPEL specification offers the promise of multi-vendor and best-of-breed products interoperating in the modeling and execution of business processes across distributed and federated organizations.

All of these innovations in business process management are enabling very powerful new products and capabilities and will dramatically increase the adoption of business process automation in the coming years.
One of the more interesting emerging BPM products, that leverage these innovations, is WebV2’s distributed and decentralized business process execution and run time. The solution is a complete business process execution solution but also works in cooperation with industry standard platforms, like WebSphere. The company is partnered with IBM to extend the WebSphere Business Integrator with decentralized execution and to include business process execution as part of IBM’s mobile WorkplaceClient. The idea is that BPEL enables business processes to be interoperable across run times and for execution to be shared. Given that mobile users are occasionally connected to the network, there are many instances where it is desirable to have some business process execution capability on a mobile device, irrespective of being connected to the network.

The solution supports a consistent programming model across organizations and enterprise systems, simplifying application and business process development, and supporting an overall low total cost of ownership. Given the solution’s services orientation and compliance with industry standards, other best-of-breed functionalities are easily integrated and invoked within the execution of a process.

As workers become more mobile and work is often done offline, that work must be seamlessly integrated with the enterprise when a connection is re-established. This requires the ability to support asynchronous connectivity to business processes.

WebV2’s solution enables the asynchronous participation of applications and human users in business processes. As the solution is lightweight and based on pure Java, it runs on heterogeneous platforms, including mobile devices (e.g. PocketPC). This enables easy mobilization and incorporation of mobile devices in the enterprise and its business processes. The solution enables mobile users to participate in enterprise business processes with a consistent experience – independent of being connected to a network. With traditional request-response integration, if a mobile user lost a network connection or connection with the central business process server, their participation in the business process would end. The desired experience is for the mobile worker to have a nearly identical application and business process experience independent of the network connection. For example, if a field sales or field service worker is at a customer site and is missing a network connection; their launching of a customer specific process should not be any different with or without a network connection. The individual may need to rely on local synchronized data to initially launch or execute the process, and then when a network connection is restored, the business process may continue with full state maintenance and network resident data.

This capability permits the mobile worker to be asynchronously integrated into enterprise business processes and enables the mobile worker to launch and orchestrate processes that are critical to their work, such as in sales, field service, and supply chain processes. This capability is a step beyond the mobile middleware application and data integration products that have been introduced in recent years.

The mobile field sales person can be in front of their customer and initiate a process whether it be related to placing a purchase order, obtaining a price and delivery quote, entering a return material authorization request, tracking/updating where they are in a sales process, updating the SFA system, collaborating with others, etc. If the mobile worker is connected to a network, these processes can be launched independently, using service-oriented mechanisms. If the worker is not connected to the network, they still have a consistent experience with the process, can operate on locally cached data, and then transparently launch the process when reconnected to the network.

The mobile worker can also download process actions from an enterprise process and then, while offline, work through their “process work list” with full business process context. When reconnected, their process actions are re-launched with full state preservation into the central runtime of the business process.
WebV2’s product is called a ProcessMobiizer™ platform, which is built upon lightweight Java-based components called ProcessCouplers™ that install on a mobile device (e.g., laptop, PDA, cell phone). Each ProcessCoupler contains a BPEL (Business Process Execution Language) process execution engine that coordinates the execution of a long running business process with other ProcessCouplers in the network. The solution utilizes Web Service standards and executes the emerging BPEL standard.

Each ProcessCoupler represents a specific participant (system or user) in a BPEL business process. The collection of ProcessCouplers creates an execution fabric where BPEL processes may discover and execute services in the network. ProcessCouplers may be installed anywhere—embedded on a mobile device, wrapping a legacy application, or executing within an application server. The ProcessCouplers coordinate with one another through dynamic registries and interaction patterns. The solution includes mechanisms for centralized reporting and control for IT and business process owners. The solution also includes a dynamic, real time registry of services that support ProcessCoupler interactions.

The solution may be used as a standalone orchestration solution or in conjunction with centralized business process management systems that are marketed by leading enterprise software companies. The WebV2 solution promises to bring greater productivity to the mobile worker and improved execution of enterprise processes by being able to more intelligently invoke mobile users in the execution of enterprise processes.

-------

Steve Stephansen is the CEO of WebV2, a company that helps other companies develop mobile business process systems. For more information, check www.webv2.com