

## ZAPTHINK ZAPNOTE™

### SKYWAY SOFTWARE A COLLABORATIVE, MODEL-DRIVEN APPROACH TO SERVICE DEVELOPMENT

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#### Abstract

As companies look to migrate to Service-Oriented Architecture (SOA) and adopt Service-oriented approaches in their organizations, the biggest challenge is often aligning, educating, and informing the IT teams on how to best make the transition. Too often, the business desires for Service Orientation outpace the capabilities of IT to deliver on the SOA vision. As such, companies often seek incremental approaches that get the organization closer to their SOA goals without requiring that they bite off too much at once.

While an iterative approach does not necessarily guarantee that a company will realize all the benefits of SOA, such as loose coupling, composability of Services, Service reuse, and increased agility, taking a step-wise approach to SOA can significantly increase a company's chances of realizing long-term SOA success.

Skyway Software's model-driven approach to Service development helps to transition firms that have well-developed, but entrenched experience in traditional software development to an iterative, Service-oriented approach that can help companies get the benefits they so desire without necessitating dramatic changes to the IT status quo.

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## Taking Incremental Steps toward SOA Adoption

Companies of all sorts are touting the benefits of Service-Oriented Architecture (SOA). While some of these firms are software vendors and consulting firms that see SOA as a new battlefield to sell their products, there are many SOA value propositions: loose coupling that enables ongoing change, composition of Services that enable business process, reuse of Services through shared Service capabilities, and increase of visibility and agility through the Service abstraction. Yet, achieving these benefits has proven to be a complex task for many IT organizations. Part of the challenge lies in the fact that SOA represents more of a change in the way things are done rather than a new technology or product that organizations can simply install, configure, and deploy. But a greater part of the challenge is that SOA requires changes to the very way that the business manages IT as an asset rather than a cost center, requiring changes not only to the method of IT development and delivery, but also IT management, governance, and value-creation.

While the business sees these changes as necessary and beneficial, the established IT organization often sees them as threatening and high-risk. What makes the SOA trend any different than others that preceded it, many of which failed for a wide variety of reasons? While SOA represents more of an evolutionary trend, rather than revolutionary, building upon the knowledge, best practices, approaches, and experiences of the past, many IT organizations would rather take a cautious, incremental, and trust-building set of steps towards the desirable benefits of SOA, rather than “pay and pray” that a dive into the deep end of SOA will be a success.

One of the methods that cautious companies that still desire the benefits of SOA are looking to enter the adoption curve is by separating the various concerns of IT and business in an incremental fashion. Developers have gotten used to separating the concerns of data and application logic, and increasingly presentation and application logic. Many are currently grappling with separating the concept of business process from the underlying IT systems that implement aspects of those processes. But even more fundamental is the idea of abstracting the requirements of the business that continue to change from the underlying IT systems and implementations.

Mastering ongoing change by abstracting the business requirements on the one hand and IT capabilities on the other is the first concrete step on the path to SOA. This abstraction requires a representation that allows the business users to communicate their desires for the IT capabilities as well as a means for IT implementation teams to map their capabilities and describe how they are composed to meet the current needs of the business. This representation often comes in the form of a model.

Increasingly, model-driven development, and as a larger concern, model-driven architecture is seen as a transitional step between today's tightly-coupled, brittle, and inflexible waterfall-style software development lifecycle that is poorly suited to meeting the continually changing needs of the business and the Service-oriented vision. While ZapThink often talks about the model as a runtime artifact that can serve as a direct representation of the system and

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business as it currently operates, companies can take an even smaller step by simply leveraging the power of a model during their design-time activities. These models serve two key roles: to shorten the development time, thus increasing the number of iterations in a development cycle, as well as making more precise and simplifying the mapping between business requirement and IT implementation.

## Skyway Software's Model-Driven Service Development

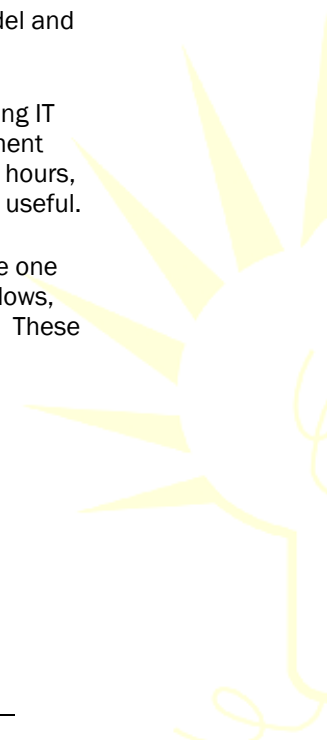
Pursuing the approach that advancing the state of IT development in both a beneficial and incremental manner towards SOA, Skyway Software's development and deployment products -- *Skyway Builder* and *Skyway Director* (which form *Skyway Visual Workspace*) -- help to improve the likelihood of long-term SOA success. The company built their offerings with the realization that a different group of people are involved in the requirements generation phase than in the development phase of a project. Using model-driven approaches, Skyway Software allows firms to generate and map business requirements to IT capabilities at a much higher level than is typically done in today's IT projects.

*Skyway Visual Workspace* provides a Model-Driven Development and Deployment environment (M3D) for rapid, model-driven Service development. A solution architect uses a Skyway Software workspace to model the requirements that represents the system in a manner analogous to a Platform Independent Model (PIM) as promoted by the Object Management Group (OMG) in their Model-Driven Architecture (MDA) documentation. The model serves not only as a design-time artifact that guides development, but also can run as a prototype to show how the system will behave and as a means to further elaborate and enhance the requirements.

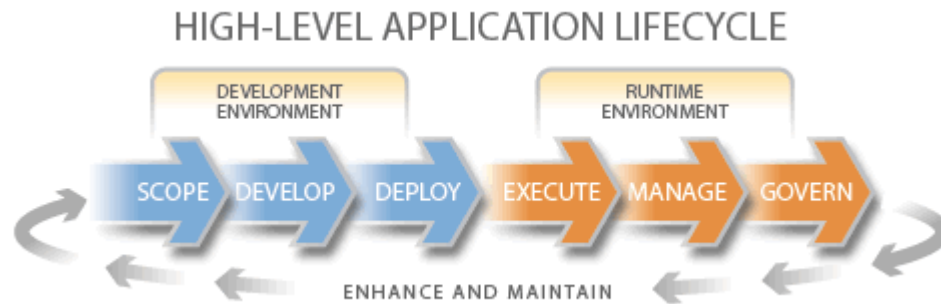
The modeling capabilities provide rapid prototyping as a means to enhance requirements generation, but are not meant to be deployed as such in production. The system enables users to model and prototype user interface as well as business logic and process flows. The system can consume Web Services and compose them for deployment as Java applications. In addition, the system can expose existing and legacy applications as atomic Services as well as consume other Services in the business logic, as well as wrap existing Java applications as Services. The model also serves as a baseline for production for both developers and consumers. The prototype instance has a JBoss and Postgres runtime that enables user interaction, although those systems are not intended for broad deployment. The resultant Java code produced by the system as a result of processing the model can then be placed into production at some later point as the requirements are finalized. As such, the model and prototype serves as a skeleton in production for real systems.

After the modeling and prototyping phase, the Skyway Software solution enables ongoing IT planning by providing cost-estimating, timeline estimating, and a variety of IT development planning capabilities. The cost estimates are based on actual efforts such as time and hours, rather than actual dollars expenditure, which are too variable and region-specific to be useful.

The company has two separate process flows between Prototyping and Planning on the one hand, and Building, Test, and Deployment on the other. Skyway integrates these two flows, and requires that stakeholders stay actively engaged during the development process. These flows are illustrated in the figure below:



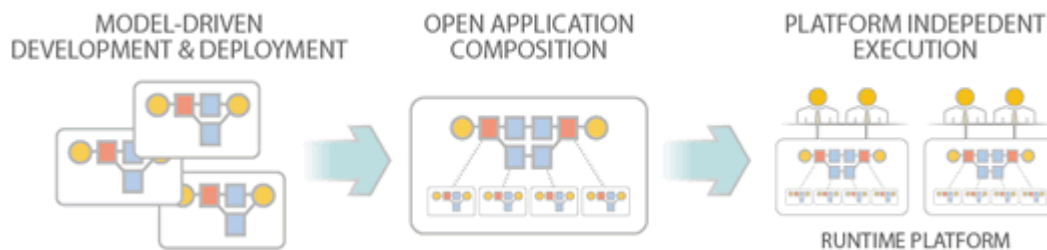
## Skyway Software's Application Delivery Ecosystem



Source: Skyway Software

Traditionally, IT organizations have separated the development and runtime environments for their IT projects. In the development environment, organizations plan, design, test, and ultimately deploy their capabilities, whereas in the runtime environment, companies focus on the execution, maintenance, modification, and operation of the existing systems. However, changes happen throughout the lifecycle of a given project, complicating development. Skyway Software seeks to close the loop and unify the design-time and runtime environments by adding additional capabilities on top of their Model-driven Visual Workspace detailed above. A view of the complete suite offered by Skyway Software can be seen below:

### Skyway Software's Perspective on the Full Software Lifecycle



Source: Skyway Software

Within the product suite, *Skyway Builder* provides a graphical modeling environment for simplifying and accelerating the creation of Services and composite applications. Skyway Builder models are managed in a single place allowing them to be viewed, used as templates or reused altogether in a completely different application. Collaboration ensures that distributed development teams can pass requirements, specifications and models between themselves regardless of geographic locations or time concurrency.

*Skyway Director* adds to the suite a graphical environment for generating and deploying applications built in the Skyway Software product enterprise-wide. Skyway Director generates infrastructure- and platform-specific code (database and application server) directly from models previously built within Skyway Builder without requiring any hand-coding or deployment of Java. The models are not translated into code until the infrastructure is selected, allowing solutions to easily move from one application server and/or database to another. Since the models are represented in metadata, and applications are generated from these metadata, developers do not need to concern themselves with infrastructure- or platform-specific code that the product embeds.



## Skyway Software Platform Features

### Skyway Software Platform

#### Overview:

Skyway Visual Workspace provides a Model-Driven Development and Deployment environment (M3D) for rapidly delivering SOA-based business solutions. What makes the Skyway Visual Workspace unique is its ability to deliver standard J2EE applications up to five times faster when compared to traditional hand-coding methods.

#### Features:

- **Model-Driven Development and Deployment (M3D):** Skyway's M3D differs from traditional model design approaches that simply provide use cases and high-level code skeletons. Instead, Skyway's M3D allows developers to model actual business functionality in a platform-independent manner. The M3D engine generates code from the models that can be compiled and deployed anywhere throughout the enterprise.
- **Open Application Composition (OAC) –** Skyway Visual Workspace is able to discover, identify, and leverage any Java service and database that pre-exists within the enterprise and import these existing assets into the Skyway development process. Skyway Visual Workspace easily integrates with pre-existing Enterprise Service Bus (ESB) and registry technologies and services generated within Skyway Visual Workspace are easily published to these technologies so that they can be reused throughout the enterprise.
- **Rich Internet Application Design –** Skyway Visual Workspace creates rich Internet and Web 2.0 applications with Asynchronous Javascript and XML (AJAX). Skyway capabilities allow developers to create rich Web applications without writing any Javascript or XML transformations.
- **Platform Independent Execution (PIE) –** Because Skyway Visual Workspace separates the business logic from implementation, its models are never technology specific. A decision to change the deployment infrastructure simply means a quick re-deployment of the application models without any changes to the existing code.

#### Value Propositions:

- *Acceleration of IT application development –* The code-reduction aspect of Skyway M3D results in much faster generation of solutions, anywhere from 3x to 10x depending upon the skill of the developer.
- *Platform-independent modeling and deployment –* Skyway's model-driven approach affords developers flexibility when beginning a new project because infrastructure deployment platforms (databases and application servers) can be selected "late cycle" during the actual deployment phase of the application lifecycle—saving tremendous amounts of time previously dedicated to planning the deployment architecture before beginning work on the application.



- Improves business-IT collaboration through collaborative and iterative approach to app development.
- Shortens iteration and time-to-market by supporting continual change, providing business agility both at the user interface and via composite applications.

## The ZapThink Take

While simply taking a model-driven approach to software development does not by any means guarantee that the organization will follow SOA best practices, it certainly offers the IT organization a much simpler and transitional path from established modes of IT development to future iterative and metadata-controlled architectures that SOA represents. Model-driven Service development minimizes the cost and overhead associated with iterative development. In particular, Skyway Software's approach unifies the formerly separate worlds of design-time and runtime to help accelerate the rate at which IT meets continually changing business needs. As the IT organization gets used to such accelerated, iterative modes of development, and comes to depend on the model as the source and communication point for business requirements, the transition to fully loosely coupled Services that meet the needs of the business will be much easier and less risky.

Profile: Skyway Software	August 2007
<b>Funding:</b>	Armada Venture Group, Guide Capital Ltd, Imlay Investments
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<b>Employees:</b>	N/A
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## Related Research

- *Rich Internet Applications: Market Trends and Technologies Report (ZTR-WS112)*
- *Composing Services into Enterprise Mashups White Paper (WP-0144)*
- *Tenfold ZapNote (ZTZN-1180)*



## About ZapThink, LLC

ZapThink is an IT advisory and analysis firm that provides trusted advice and critical insight into the architectural and organizational changes brought about by the movement to XML, Web Services, and Service Orientation. We provide our three target audiences of IT vendors, service providers and end-users a clear roadmap for standards-based, loosely coupled distributed computing – a vision of IT meeting the needs of the agile business.

ZapThink helps its customers in three ways: by helping companies understand IT products and services in the context of Service-Oriented Architecture (SOA) and the vision of Service Orientation, by providing guidance into emerging best practices for Web Services and SOA adoption, and by bringing together all our audiences into a network that provides business value and expertise to each member of the network.

ZapThink provides market intelligence to IT vendors and professional services firms that offer XML and Web Services-based products and services in order to help them understand their competitive landscape, plan their product roadmaps, and communicate their value proposition to their customers within the context of Service Orientation.

ZapThink provides guidance and expertise to professional services firms to help them grow and innovate their services as well as promote their capabilities to end-users and vendors looking to grow their businesses.

ZapThink also provides implementation intelligence to IT users who are seeking guidance and clarity into the best practices for planning and implementing SOA, including how to assemble the available products and services into a coherent plan.

ZapThink's senior analysts are widely regarded as the "go to analysts" for XML, Web Services, and SOA by vendors, end-users, and the press. Respected for their candid, insightful opinions, they are in great demand as speakers, and have presented at conferences and industry events around the world. They are among the most quoted industry analysts in the IT industry, and their recent book, *Service Orient or Be Doomed!*, is the leading book on the business concept of Service Orientation.

ZapThink was founded in October 2000 and is headquartered in Baltimore, Maryland. Its customers include Global 1000 firms and government organizations, as well as many emerging businesses. Its analysts have worked at such firms as IDC, marchFIRST, and ChannelWave, and have sat on the working group committees for standards bodies such as RosettaNet, UDDI, and ebXML.

Call, email, or visit the ZapThink Web site to learn more about how ZapThink can help you to better understand how SOA will impact your business or organization.

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