

The new biopharmaceutical blueprint

Aligning business and IT with service-oriented architecture

Bringing a pharmaceutical or biologic product to market takes more than just good science. Changing market dynamics are placing pressure on virtually every area – research and development (R&D), manufacturing, and sales and marketing – to respond faster, become more efficient, and work together in an increasingly global market. Technology is required to help, and the challenges of integrating technology can hamper a company's ability to respond to such market dynamics. Service-oriented architecture (SOA) can help address this integration issue and serve as the new biopharmaceutical blueprint for aligning business and IT.

Today's biotech and pharmaceutical companies (BioPharma) are challenged by cost pressures, the availability of more complex scientific information, and the need to make faster, better business decisions – all in the context of a global marketplace. Many are actively collaborating and partnering to augment their core competencies and extend business beyond organizational and geographic boundaries. With this in mind, companies have invested in many forms of technology to improve business processes, integrate their organizations and drive innovation.

While IT solutions are required to enable business flexibility, current integration approaches cannot support the level of responsiveness needed to sustain continuous improvements. SOA has the potential to dramatically address this challenge and provide benefits when:

- Business users must exchange information across multiple systems
- Business processes span several applications across partner organizations
- Businesses are transitioning to newly merged or acquired owners
- Business users need information in near real time
- Point-to-point solutions prevail, with fixed interfaces that are costly to maintain.

But what is SOA, and how can this approach provide a BioPharma organization with the levels of efficiency and responsiveness it needs to effectively compete in today's changing market? We believe SOA is most easily understood through real-life examples. In the full version of this paper, we look at three critical, industry-specific areas in which SOA can help resolve problems and add more business value:

- *Research and development (R&D):* Here we show where SOA systems integration techniques can be applied to manage clinical trials more efficiently. With SOA, realtime integration between both internal and external clinical trial software applications is improved and accelerated – helping companies to build in efficiency and compliance across the organization to better manage and scale their clinical trials.
- *Manufacturing:* In the manufacturing environment, the product release process is hampered by enormous amounts of paperwork. This information, which is generated by various systems, must be shared with all pertinent players. SOA approaches can support enhanced connectivity between internal systems, and tighter integration among manufacturing partners. We show how an SOA-enabled Enterprise Content Management System can be integrated with both internal and external systems to improve the product release process.
- *Sales and marketing:* In the past, BioPharma sales and marketing teams relied on face-to-face communication with stakeholders. Today, channels have broadened to include phone calls, e-mails, conferences and meetings – all of which must be managed and integrated effectively. In addition to more channels and more



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partners, there is the challenge of remaining compliant with increasing global regulations, restricted budgets and stricter government policies – all of which can limit marketing and sales activities. We demonstrate how, when coupled with rules-based technology and common off-the-shelf tools that can help extract, transform and load data, SOA services can help enhance decision making, heighten efficiencies and improve regulatory compliance reporting concerning sales and marketing.

For each scenario, we describe the business problem and how the process works today. We then discuss how the problem could be addressed with an SOA-based approach to technology integration and how the systems could interact using SOA, with terms and diagrams for business executives. We conclude by discussing the business value of the solution and, in some cases, value brought directly from the use of SOA techniques.

Although the BioPharma industry is actively addressing its challenges, many current environments are not scalable or responsive enough to meet future demands or to efficiently compete on a global scale.

An SOA solution can be built by encapsulating services from your existing application portfolio, or through a combination of new and current applications. SOA is not a product. However, major software vendors have SOA-enabled solutions available. The collaborative nature of SOA can support a new level of partnering, and accommodate the global reach that is necessary to stay competitive in an evolving BioPharma industry. We expect that BioPharma leaders will make SOA a critical part of their organizational strategies to help them reach out to other companies and bring the intended benefits to society on a worldwide scale.

How can IBM help?

IBM Solutions: Each scenario in this paper relates to one or more different solutions.

1. Integrating partner systems for Research and Development
 - eClinical solutions/CTMS on demand
 - Life Sciences Hub & CDR
2. Integrating systems for Manufacturing
 - IBM's Supply Chain Transformation Solutions
 - Value Driven Compliance
 - Pharma Regulatory Compliance Solution - SCORE
3. Data integration to support sales and marketing regulatory compliance
 - One Pharma On-Demand Solution

Application Services Offerings:

- Application Development
- Business Application Modernization
- Complex Systems Integration
- Enterprise Architecture & Technology
- SOA Strategy & Transformation
- SOA Design, Development and Integration Services

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