# Case study: SoA implementation at CIGNA

**Source:** Book: Service Oriented Architecture for Dummies

Many companies in the financial services market segment have been early adopters of new technology. The various company types included in this sector — banks, insurance, investment, and brokerage companies — all have a common need to manage very large amounts of data very fast, with a high degree of security and accuracy. Advanced technology has been leveraged to support an increasingly complex network of global financial transactions managed by the financial services industry. However, as the global financial crisis of 2009 underscores dramatically, even the most sophisticated use of technology can play only a supporting role to the business decision makers leading the business.

The need for the new world order of technology we discuss in Chapter 1 is intensified by the challenges of economic discord. There is an urgent need for "smart" business decision makers who are able to cooperate with a "smart" IT team to make even "smarter" decisions. The complexity of the technology infrastructure at many companies in the financial services sector makes it very hard to leverage IT services in a coordinated way across the enterprise. Many large companies have either merged or acquired other very large companies resulting in the integration of new business units with very different work cultures and widely different information infrastructures. The need to be able to trust and understand the information about the business across its many disaggregated parts has been a prime motivator for change in the IT infrastructure at these companies.

Financial services companies require strong, supportive, and well-integrated IT infrastructures to manage future change. The industry needs to be able to become more customer focused, to respond to increasing levels of regulatory compliance, to continue to build up levels of security and privacy surrounding financial transactions, and to provide increased attention to fraud prevention.

Given the complexity of the IT infrastructure in many financial services companies, it's no wonder that they have been some of the pioneers of the SOA movement. Companies like CIGNA, which is highlighted in the case study in this chapter, recognize that having the ability to take existing business logic and turn it into a business service can become a strategic advantage.


We think that the most important parts of the discussion of real-life experiences with SOA are the lessons learned. Because companies have had both success and failures, they have a lot to teach all of us about how to do SOA in a way that brings financial and business benefits. So read on and get smart about SOA.

# CIGNA

"Think like a business person" is a message that resonates with the IT folks at CIGNA. In fact, this philosophy has fostered a partnership between business and IT at the company and helped to make it successful. So, when CIGNA Group Insurance — the part of CIGNA that manages disability, life, and accident insurance products — realized that it needed to fundamentally shift how it viewed its customers, IT was on top of it.

Historically, CIGNA viewed its primary customers as corporate employers who purchased products and services on behalf of their employee population, their beneficiaries, and their dependents. Several years ago, CIGNA began to evolve its thinking around this to address employer concerns over the ever-increasing costs of employee benefits, particularly in the healthcare space due to the trend of skyrocketing medical costs. To address this issue, CIGNA looked to leverage its data assets, along with its clinical and vocational expertise.

As a result, CIGNA continues to focus on the core capability of processing claims, while at the same time placing greater emphasis on providing products, services, and data assets that help keep individuals healthy. By proactively addressing — and in some cases predicting — medical conditions before they become serious, medical costs tend to decrease, fewer people take disability leaves, and work-related absences are better managed. In a nutshell, sharper focus is placed on the individual, not just the employer, and everyone wins.

This all sounds good on paper. However, CIGNA had supported its traditional customers — the employers — using an account management structure that didn't lend itself easily to directly dealing with the individual population. CIGNA had developed many of its systems to support innovations to launch new products and services as well as deal with immediate business capability gaps in its current systems. The result? Over time, CIGNA built a complex infrastructure using a variety of different technologies. The company needed to change its underlying infrastructure and architecture to support this new individual-centric business view, but it knew it couldn't simply replace all of its systems. A service oriented architecture (SOA) provided the means for CIGNA to incrementally move away from its legacy environment. At the same time, it enabled the company to introduce new business functionality.

# Business and IT Cooperation

The architecture team realized that to solve the business problem, it needed to bring the thought process up a level from services and instead develop a more business-focused enterprise-level architecture. To do this, the architecture team is using what Brian Mitchell, chief architect for CIGNA Group Insurance, calls a "capability mapping and modeling approach." The team is defining core business capabilities and then mapping these capabilities to core business functions and end-to-end business processes. It's looking at how business functions map to the products and services that the company sells, and it's also evaluating how products and services are distributed in the marketplace. By carefully defining and grouping related business functions, the architecture team has established a number of enterprise services in its overall SOA.

So how does this all work? CIGNA's enterprise architecture has defined several hundred business capabilities, each defined in terms of one or more business functions. A business function is like a mathematical function in that it takes in several input parameters and produces a single output parameter. For example, the *calculate benefit business* function is needed in support of several enrollment, eligibility, medical underwriting, self-service, and claims business capabilities. This business function determines for a particular individual (the input) the benefit structure (the output) for the products and services that have been purchased from CIGNA. For example, it can help determine whether an individual is eligible for a flat amount of $100,000 of life insurance or entitled, instead, to receive a multiple of his or her salary as a life insurance benefit. This function is defined in CIGNA's enterprise service for managing benefits for individuals, called Consumer Service. This process of grouping related business functions resulted in the definition of all of CIGNA's core enterprise SOA services, and it helped determine the necessary responsibility and functionality each service needed to have in the end-state architecture. All in all, CIGNA defined and mapped more than a thousand business functions into approximately a dozen enterprise services.


So, whereas the business had thought about eligibility and enrollment as two completely different functions, from an enterprise architecture perspective with a lens on the individual, they are one. The SOA framework allows CIGNA to orchestrate a series of business-process-aware services around the individual — one for enrollment, one for eligibility, one for billing, and so on. As an example, the enrollment service will interact with the consumer service to determine the benefits that an employer has purchased on a particular individual's behalf, as well as determine any additional benefits for which an individual is eligible to purchase directly. Currently, the team is building out most of its individual-related service interfaces using the Human Resources XML (HR-XML) schemas. HR-XML is a library of XML schemas developed by the non-profit HR-XML Consortium. These industry-standard schemas support a number of business processes related to benefits administration and human resources.

A unique aspect of what CIGNA did to make this architecture more business-focused was to work with the business directly. The members of the architecture teams met with their business counterparts on a regular basis. They participated in business strategy and planning meetings and partnered with their counterparts to better understand their business issues. The team even briefs the division president. Through this level of engagement and two-way dialogue, IT asserted itself as a more valued business partner and showed the business how IT can improve overall business capabilities, not just solve localized problems on a reactive level.

CIGNA has a good view of the enterprise architecture and how the components eventually integrate. The team is making sure that each individual project is being designed and developed in a fashion where they can eventually hook services together. As CIGNA builds out its new capabilities, it is redirecting existing legacy systems to use and integrate with the new services or the underlying databases to support these enterprise services. In this way, CIGNA is able to move forward thoughtfully and incrementally, and not risk breaking legacy systems.

Architecture team members are quick to point out that they didn't invest in SOA strictly for reuse because they don't think about services this way. Rather, CIGNA views the primary benefit of SOA as extensibility, so that a service built to meet today's needs can evolve to meet future requirements. It's also common to have requirements where enterprise services need to behave somewhat differently in different business scenarios. By using what's commonly referred to as a *message-centric approach* toward service design, a developer can add further attributes or behaviors to the services without endangering backward compatibility by updating the service's interface schema.

## Lessons Learned and Best Practices

CIGNA believes that taking a business-focused approach helps make its SOA effort successful for the following reasons:

- SOA can help solve a real business need. In CIGNA's case, one primary driver was repositioning technical capabilities more around the needs of the individual in support of CIGNA's overall health improvement strategy.
- At a high level, the business understands the benefits of SOA in business terms — such as cost reduction and efficiency. For example, service-enabling the systems used by the contracting department will also enable CIGNA to implement new cases faster by improving the integration with the existing legacy systems and providing them with accurate post-sale data from a single source.
- The enterprise architecture helps the business see that services built for one part of the business can also be used and extended for other parts of the business, thus benefiting everyone. Projects are now defined in terms of the entire business. In other words, CIGNA is now positioned to build capabilities that better support up- and down-stream business processes, instead of simply focusing on building localized departmental functionality.

**Exercise**

1. How did CIGNA go about identifying common business functions?
2. Draw an architecture diagram of the system.
3. What benefit did CIGNA get from this architectural approach?