

SOA ROI, Deconstructed

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The search for technology return on investment (ROI) is an on-going endeavor that seems to receive more or less attention depending upon the success of the market and/or pressure from stockholders. Some measure of ROI is nearly always used as a justification for major technology investments within large enterprises. The veracity and level of detail for such measures, however, is suspect. Moreover, Service Oriented Architecture (SOA) introduces some unique challenges in measuring ROI. SOA is an approach and a paradigm shift as much as it is a tangible technology set. In spite of these obstacles I believe that an ROI for SOA initiatives can be determined and that SOA value is definable.

The Elusive ROI Monster

ROI is notoriously difficult to calculate. Many speculate that it is more often measured after the fact in order to either justify or punish previous endeavors.



The dirty little secret within the technology space, however, is that few enterprises employ any sort of defined process for measuring ROI. In fact, according to e-Skills, a UK-based not-for-profit organization, in their 2005 Q4 ICT Inquiry report, only 11% of companies calculate ROI for IT expenditures through any sort of formal methodology. The other 89% rely upon “informed guesswork” or “personal intuition” for measuring the productivity returns for technology investments. CIO

Insight conducted a similar study in 2006 and found that over half of all executives, both IT and business execs, doubt that ROI measures used within their organizations are even accurate.

In a marketplace where agility is the order of the day and Service Oriented Architecture (SOA) is the latest silver bullet, ROI calculations for SOA can be particularly tricky. Adopting SOA is as much about transforming the organization and aligning business and IT as it is about exposing enterprises assets as configurable services and business processes. Combine this with the notoriously large upfront investments that most SOA infrastructures require and it is easy to see how traditional ROI calculations can become daunting or even unrealistic.

Measuring SOA Value

The value of an SOA initiative can be easily expressed in terms of soft benefits like flexibility and customer satisfaction, as well as hard benefits such as reduced total cost of ownership (TOC) and increased revenue. Most discussions of SOA ROI focus upon the soft benefits of SOA as these are easier (and safer)

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to discuss. It is the hard, quantifiable SOA benefits that are more elusive and, consequently, the most important to explore.

The quantifiable benefits of SOA can be grouped into three categories:

- **Tactical ROI** as a result of standards-based service oriented integration
- **Operational ROI** based on service and process reuse
- **Strategic ROI** due to business and technology agility

As we explore these three categories, we will also examine any measurement criteria, formulas, and/or formal methodologies that may exist for quantifying a return on your SOA investment.

Tactical ROI

In the short-term, SOA initiatives can yield immediate, tactical ROI in the form of cost reductions. Primarily, these cost savings are realized in the form of reducing (or in some cases eliminating) middleware licensing fees, reduced development time, and in lower costs for system maintenance and system configuration. The reason for this is two-fold:

- SOA enables enterprises to reduce or even eliminate redundant functionality and integration mechanisms. Capabilities can be consolidated, or in some cases centralized, reducing licensing and maintenance costs.
- By using standards-based interfaces, integration solutions can be provided without the need for costly vendor-specific and/or platform-specific conduits. This opens up the systems integration landscape and allows for less expensive (or even free software) to be utilized and keeps staff training costs low due to the use of well-known standard protocols.

Computing Tactical ROI

No real cost models exist for tactical ROI calculation; you just need to clearly define the project scope, the initial investment, the short-term financial objectives, and then use a good spreadsheet, calculator, or abacus to compute the tactical value for the SOA initiative.



Computing tactical ROI is pretty straightforward:

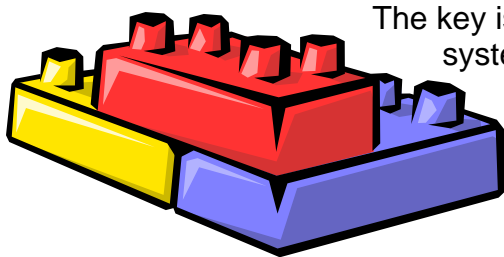
1. Compute the savings realized due to reduced middleware licensing costs
2. Compute the savings afforded due to reduced development time
3. Project savings due to reduced maintenance costs
4. Add the results of steps 1-3 together and fold that into whatever ROI formula your organization uses (i.e. net gain divided by investment)

Tactical ROI is typically used to justify an initial SOA pilot project or as a way to reduce financial risk associated with a SOA initiative. Tactical ROI alone is not sufficient, however, to provide significant value to an organization. The next business value made available by SOA is that of *operational ROI*.

Operational ROI

In the short to medium time frame, SOA can provide a return on investment in the form of supporting day to day operations through enterprise asset reuse. Enterprise reuse has really taken center stage with many Fortune 500s as a key way to reduce development and maintenance costs and speed time-to-market. Through the use of standard protocols and messaging formats as well as loosely-coupled interfaces, service and business process reuse has been given real momentum by SOA.

Case studies and industry research reveal some pretty startling efficiency available through reuse. Developing a solution by reusing existing components and business rules can reduce costs by as much as 75% (though most metrics peg the number closer to 20%). Maintenance cost savings are even more significant, with some research identifying a 5x or even 10x savings factor.



The key is to identify areas of commonality between legacy systems and build common services and/or processes. These common services may be developed locally or provided via a 3rd party. Common services may be developed for a particular line of business or may support an entire enterprise.

There are a couple of cost models available for calculating SOA operational ROI:

- **Iterative reuse model** – Investment return is measured based on number of times a service or process is reused rather than an arbitrary time frame
- **Calculated reuse model** – This mathematical model computes SOA value based upon a few key variables such as number of services available for reuse, degree of reuse, and service complexity

Operational ROI – Iterative Reuse Model

The initial investment in developing reusable enterprise assets is significant. Some experts identify an increased cost of 60% for initial development of reusable components. Once you have developed a reusable component, however, consuming existing services/processes reduces development costs. Leveraging an existing component in this way can cost as little as 20% of the base cost for developing that capability from scratch. As these reusable enterprise assets are leveraged in later projects, an ROI emerges. ROI is typically realized on the second or third instance of reuse (some see it as early as the first instance). This leads organizations to begin measuring SOA ROI in terms of reuse instances (i.e. ROI will be achieved on the 2nd instance of reuse) rather than an arbitrary timeframe.

Operational ROI – Calculated Reuse Model

This model aims to compute the value of an SOA initiative based upon a few key data points: initial service development cost, cost per operation, number of reusable services, service complexity, and a reusability factor. Successful use of this model requires an established cost baseline for your non-SOA development.

Heavier initial investments are needed to develop reusable enterprise services, but over time, across multiple projects and instances of reuse, an ROI emerges.

You will need some metrics on current development costs (per function, per object point, per line of code, etc.) so that you can compare those against the costs associated with service oriented reuse.

Regardless of which model is used, operational ROI is realized in terms of service and process reuse. Heavier initial investments are needed to develop reusable enterprise services, but over time, across multiple projects and instances of reuse, an ROI emerges. While operational ROI offers tremendous value, in order to reap the full potential of SOA, an even more ambitious investment will need to be made. This is where *strategic ROI* comes into play.

Strategic ROI

In the medium to long-term timeframe, there is a more strategic ROI made available via business agility. Strategic ROI is manifested through cost controls, risk mitigation, and new revenue generation as a result of agility. An agile architecture provides cost savings in development and maintenance and risk mitigation in the form of improved regulatory compliance (e.g. HIPAA, Sarbanes Oxley, etc.). Agility also serves as a revenue driver, by enabling the rapid creation of new products and services to meet changing client and market demands.

Strategic ROI is the ultimate expression of what SOA is all about. It's about making a strategic investment in an agile enterprise infrastructure and at the same time aligning the business and technology sides of the organization to work toward common, shared objectives. Rather than viewing IT as a cost of doing business, it becomes a strategic partner that enables the organization to effectively and efficiently manage information and capture new business by making the enterprise nimble and more responsive to opportunities and risks.



Computing Strategic ROI

Similar to Tactical ROI calculation, no real cost models exist for calculating strategic ROI. There are, however, some key elements to consider:

- System development and maintenance costs saved due to the ability to modify information systems with little to no coding required (simply modify or rearrange the orchestration of several services)
- Estimated legal costs and fines avoided due to faster and more reliable responsiveness to regulatory changes
- Revenue generated via the rapid creation of new services as well as the manipulation and reconfiguration of existing ones

- Revenue generated due to ability to expose internal capabilities as consumable services by business partners and clients (this potentially generates completely new streams of income)

Calculating strategic ROI is fuzzy and prone to significant margins for error. The elements outlined above are provided as a guide, but many organizations choose to make a strategic investment in SOA to gain agility without hard numbers to quantify this move.

Managing Schedule and Risk

Two important considerations when evaluating ROI are the timeframe for investment return and the sponsor’s tolerance for risk. The three ROI categories outlined earlier are typically realized in three very different time frames with escalating potential for both risk and reward. The following table illustrates the spectrum of possibilities:

ROI Type	Time Frame	Associated Risk	Potential Return
<i>Tactical</i>	<i>immediate to short</i>	<i>low</i>	<i>minor net gain</i>
<i>Operational</i>	<i>short to medium or based on reuse instances</i>	<i>low to moderate</i>	<i>significant return beyond 2nd or 3rd reuse</i>
<i>Strategic</i>	<i>medium to long</i>	<i>moderate to high</i>	<i>risk reduction and lucrative revenue driver</i>

To some degree, the above chart begs the question of exactly what constitutes short, medium, and long time frames. The reality is that this will vary depending upon the size of the SOA initiative. For a relatively small SOA deployment, a short-term time frame might be two months and a long-term time frame might be nine months. For a more substantial SOA deployment, we might talk in terms of six months for short and three to five years for long. Also keep in mind that when viewing the Operational ROI time frame, we may even throw out an arbitrary time line and instead think in terms of achieving a return on investment after a certain number of reuse instances.

Adopting SOA without Losing Your Shirt

Adopting SOA within your organization doesn’t have to be scary and it doesn’t have to break the bank. You need to define your financial constraints and business objectives up-front before your head begins to spin as some SOA software vendor paints a glorious pie-in-the-sky picture for you. Set a budget for your SOA initiative and be certain to include funding for knowledge transfer, SOA tools, extensive documentation efforts, and corporate governance to ensure that your initiative stays on track and meets the stated goals. Then you’ll want to define and document your ROI objectives, the metrics that will be used for measuring success (both functional and financial) and then set up timelines (sometimes jokingly called ‘defined points of deviation’).



Once you have your SOA initiative scoped, budgeted, and you have a means to measure success, then it is time to draft a roadmap. Many organizations will

begin with small, focused pilot projects. Often these projects will focus upon achieving a tactical ROI in order to offset or in some cases completely return the initial investment. After achieving initial success through one or more pilot projects, it is time to incorporate lessons learned and plan for a larger roll-out. Here it is necessary to plan for a larger investment, accept more risk, and prepare for a longer timetable before a return is realized. In this way, companies can build upon their success incrementally beginning with short-term tactical SOA initiatives, progressing to more extended operational SOA initiatives, and finally crafting more comprehensive strategic SOA initiatives. This mitigates risk and allows an organization to mature their SOA infrastructure and supporting corporate processes in a more natural way.

In Search of SOA Value

Once you get past the hype surrounding Service Oriented Architecture (SOA) and take a close look at it, there is significant, practical value for organizations to capitalize upon. Moreover, this value is tangible and a definable ROI for SOA can actually be determined. The calculation of SOA ROI is still fairly immature. In time we will no doubt have more comprehensive models for calculating and measuring the value of an SOA initiative. For now, we have some solid guidelines for short term (tactical) and long term (strategic) SOA ROI and two ROI calculation models that have emerged in the middle (operational).

SOA adoption does not need to be approached blindly. Clients, investors, and sponsors expect tangible data to base investment decisions upon. SOA should not get an exemption. An ROI for SOA initiatives can be provided and a roadmap for SOA adoption can be

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undertaken using incremental, measured steps. SOA can align and transform your organization and you don't have to harvest your internal organs or lease your office as a bingo parlor on the weekend in order to pay for it.

Bio

Kyle Gabhart is a subject matter expert specializing in Service-Oriented technologies and currently serves as the SOA Lead for [Web Age Solutions](#), a premier provider of technology education and mentoring. Since 2001 he has contributed extensively to the SOA community as an author, speaker, consultant, and open source contributor. He maintains a SOA blog at [SOAMatters.com](#). You can reach him by email at kgabhart@webagesolutions.com.