The Web Services Derby:

Enterprises Race for Competitive Leadership

Murthy Nukala

M.R. Rangaswami

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Sand Hill
group

How Can Web Services Improve My Business?

Web Services is today's hot technology. But many corporate execs remain unsure about its potential. So why dive in?

Because Web Services has the potential to help your business grow profitably.

The current economic malaise has forced corporate chieftains to go back to Job One: find sustainable, profitable growth.

In the short term, the emphasis is on strengthening the core business and bringing costs in line with revenue expectations. Executives also realize that the old organizational and enterprise models failed to predict — and then react to — the dramatic market changes of the recent past. Quarter after quarter, CEOs blankly profess that they have no idea what the next fiscal period will bring in terms of revenues and profit.

Given this climate of economic uncertainty, the ability to react quickly to changes in business conditions has gained newfound importance in CEO circles. Further, shrewd execs are viewing the downturn as a hiatus from market pressures, and are using this period to plan for growth.

This corporate mindset has given prominence to a new organizational model: The "Real-Time Enterprise." This dream corporation calls for organizations to react and capitalize on changes in market conditions in real time. This notion has been promoted in various forms by a variety of technology vendors (Microsoft's "Agile Business", IBM's "On Demand Computing", and so on.)

Think of a Real-Time Enterprise as a stock price in an efficient market: all information related the stock's value is immediately factored into the price as it becomes known.

In a Real-Time Enterprise, information about a specific, company-related event is immediately disseminated to all relevant parts of the organization. The implications of the event are assessed, decisions are made, and appropriate actions taken — all instantaneously. This responsiveness enables the enterprise to adjust to changes in its business environment.

Of course, today, this dream remains just that. In reality, several types of operational inefficiencies prevent corporations from achieving this vision, including informational, capital and organizational latencies. While technology is often portrayed as the key to establishing a Real-Time Enterprise, the reality is that factors such as the company's culture and competitive environment also play a big role. However technology *can* improve information access which would bring the Real-Time Enterprise much closer to becoming a reality.

That's because the inability of traditional business systems to interoperate and communicate with each other is one major cause of operational inefficiency.

To be fair, inter-system communication was not part of these applications' original design criteria. They were "silo-ed," monolithic systems installed to achieve a large, one-time cost reduction. When enterprises realized their inflexibility, the integration solutions which promised to decompose and integrate these systems were themselves proprietary, heavyweight and inflexible.

Enter Web Services.

IT experts today are buzzing about the promise of a "Services-Oriented Architecture." This model speeds progress toward the Real-Time Enterprise – and Web Services plays an important role in it.

In simple terms, this architecture breaks apart large, complex business systems into more basic components. These components are then able to communicate using Internet-based standards. Leading market vendors are working together to create a specific set of standards called SOAP, WSDL and UDDI, which combined with the Internet and XML, collectively form "Web Services" – one incarnation of a Services-Oriented Architecture in action.

Deployed properly, Web Services makes inter-application communication and integration much faster, easier and less expensive than ever before. And that in turn speeds dissemination of critical information across the enterprise, thereby helping pave the road to the Real-Time Enterprise.

Today, Web Services projects have enabled businesses to reduce operating costs and asset intensity, create opportunities for leveraged growth, and react more quickly to changes in market conditions.

This study found that early adopters of the technology have streamlined interactions with both internal and external constituencies in developing intimate relationships with their customers, automating interactions with suppliers and channel partners, and enabling internal collaboration. All this has been accomplished through small, discrete projects with modest investments and short payback periods.

The Internet once promised to make "companies" obsolete. However, the Internet simply became a transport medium over which applications can communicate. Now, corporations can use this ubiquitous medium to streamline applications and processes which will ultimately redefine the boundaries of the enterprise —allowing corporations to outsource non-core activities and generating opportunities for leveraged growth.

Ultimately, Web Services has the potential to help corporations achieve what all CEOs dream about these days: profitable growth and sustainable competitive advantage. This report details what pioneering enterprises are doing with Web Services and how other corporations can follow their lead.●

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Executive Summary

Web Services projects have already delivered meaningful business value to many leading enterprises. Most major software makers have pledged their support and made large investments in the technology. The key question has switched from "If?" or "When?" to "How?" corporations should adopt and make use of Web Services.

This is the overall conclusion of the Web Services Derby project. The Sand Hill Group interviewed 117 executives at 76 major corporations and enterprise software vendors about their current and future plans to adopt Web Services, as well as the drivers of their decisions regarding the technology. Additional findings of the study are synthesized below.

Think ROI, Not SOAP:

Early Adopter Corporations Realize Value from Web Services Projects

First reports from pioneering Web Services enterprises are very positive. The earliest customers said they have Web services projects in production and are realizing significant benefits. Further, Web services projects are mushrooming across these enterprises as organizations learn from their early successes. Surprisingly, the study did not find tales of failed or significantly delayed projects, nor did it hear of unhappy customers. The participants believe that 2003 will be the year when Web Services goes mainstream and is adopted by most corporations.

Rather than adopting the technology because it's the cool, new thing, enterprises are adopting Web

Services because of its ability to provide real, bottom-line benefits to their companies. Three-fourths of the 60 Web Services projects analyzed had business goals associated with increasing operating profitability, while the remaining quarter focused on reducing IT total cost of ownership. These business goals included reducing operating costs (38 percent) and increasing revenue (22 percent). More than half of all projects with business goals were aimed at improving customer or channel relations. Encapsulated case studies for all Web Services projects studied are appended to this report.

Contrary to conventional wisdom, these enterprises aren't just installing solutions behind the firewall: customers reported that 32 percent of their Web Services-related efforts were externally-focused. Most early adopters maintained that the security problem was not as big a roadblock as most enterprises think and work-arounds were common.

In particular, the study often found corporations automating interactions with a fragmented set of channel or supplier partners when these connections did not warrant the cost of investing in expensive EDI or B2Bi solutions. These solutions primarily focused on cases where information

exchange (as opposed to transactions) could directly reduce operating or clerical costs.

Just Do It:
Completing Small, Discrete Projects Will Power the Web Services "Engine of Value"

Early adopter tales about successful Web Services projects had many characteristics in common. These similarities were synthesized into three main phases of implementation.

First, learn. Most companies conducted pilots and trials to become familiar with the technology. The goal of these efforts was to maximize learning about the advantages and disadvantages of Web Services and the business problems it can address.

Next, jump in. Conduct small, focused implementations which address a specific business goal. These discrete projects will serve as the "Engine of Value" from Web Services. Pioneering enterprises established metrics of success and audited projects to measure returns against expectations. Some corporations found it easier to intercept ongoing projects and add a Web Services element rather than waiting to starting new ones. Surprisingly, few corporations reported failed projects.

Finally, realize global benefits. As more applications become Web Services-enabled through the completion of discrete projects, developing new applications and integration points takes less time, effort and money. These benefits will accumulate quickly across the company and provide its systems with enhanced speed and flexibility.

In order to reach the stage of global benefit accumulation, many technical and organizational strategies must be implemented. A two-year roadmap for reaching this stage is provided in section 3 (see page 35). Successful enterprises have IT and business groups working closely together all along the life of these projects.

The study also found that companies have adopted one of two organizational models to leverage cross-project synergies: Appointing an executive responsible for Web Services, or creating a cross-functional council to oversee Services-Oriented Architectures.

At varying points along the implementation life-cycle, corporations establish top-down, strategic blueprints for their Services-Oriented Architectures. This involves auditing their current IT assets, as well as getting input from lines of business about pressing business needs; and then comprehensively describing services to be created. Centralized organizations with top-down management styles, and newer companies report quicker achievement of global benefits.

The ability to achieve exponential value further highlights the significant cost of inaction: Businesses who choose to wait on the sidelines will find their Web Services-adopting competitors pulling away at an ever-increasing pace once they reach the global benefit stage.

Explore the Project Pantheon:
Web Services Enables New and Improved Integration Markets

The Web Services projects studied crossed a broad spectrum of functionalities. Specific types of implementations included data access and integration, process integration, and new appli-cation development. These projects incorporated server, client, and services architectures. In each of these categories, the technology is enabling new technologies or enhancing old ones.

Web Services technology makes its most dramatic impact on the market for integration products. It enables companies to integrate applications quicker, easier and less expensively compared to traditional methods.

But contrary to popular opinion, Web Services will not replace or eliminate the need for EAI products and services. The study found Web Services will be adopted by, and become inseparable from, the entire integration continuum: from portals offering

visual integration on the one extreme, to EAI or EDI projects providing deep semantic integration on the other.

Web Services will also fuel the growth of two new integration markets, called "EAI Lite" and "B2B Lite." These solutions will address enterprise customers' integration needs that do not justify the investment of an EAI or EDI solution but require more semantic integration than an enterprise portal. These two Lite applications accounted for 44 percent of the 60 Web Services projects studied.

EAI Lite is being used to establish quick, low cost connections between disparate applications and between applications and users within the firewall. B2B Lite projects focused on streamlining interactions between a corporation and its many channel partners or suppliers outside the firewall.

These integration projects tended to be one-fifth to one-tenth as expensive as EAI or EDI solutions, averaged 3 to 6 months in length and were local (project or departmental) in focus rather than enterprise wide. They were largely based on J2EE or .NET standards, and were primarily built atop application server or equivalent technologies.

Rich client technology will enjoy a resurgence where users form an important part of a business process and need to act on data they access. The study further found that familiar desktop applications (such as Excel) are being used to access, manipulate and update data residing in backend systems. Other areas of growth include Business Process Management and in-house development.

Minimize Culture Shock:

Best Practices for Achieving Success with a Services-Oriented Architecture

Economic conditions today are pressuring businesses to seek new avenues of growth and cost containment. Business systems must become more responsive and flexible. One way of achieving this agility is by migrating to a Services-Oriented Architecture. This model leverages the global benefits

accumulated through Web Services implementations and moves the corporation down the road towards becoming a Real-Time Enterprise.

But migrating to a Services-Oriented Architecture will challenge most organizations. Technical challenges are numerous. Organizations should pay close attention to developing coarse-grained, business-oriented services, separating business process representations from application logic, and managing internal semantic standards. While leaping the technical hurdles, companies found they also needed to manage organizational and cultural changes.

However, it is important to note that an enterprise need not realign its entire IT strategy to a Services-Oriented Architecture in order to realize value from Web Services implementations. The study found that the appeal of the technology lies in its ability to make incremental improvements and provide substantial value through locally-deployed, discrete projects.

It's Real:

Both Enterprises and Vendors Believe Web Services Will Become Widely Adopted

Overall adoption of Web Services will depend three main factors: lowering technological risk, providing evidence of real business benefits for corporations and being adopted by the enterprise software industry. Indeed, respondents indicated that the industry is moving quickly down the road to adoption.

The study found both customer and vendor participants believed core Web Services standards – SOAP, WSDL and a security standard – have emerged and will be adopted. Clearly, these core standards are already being deployed to achieve business objectives by corporations.

And although several thorny technical issues remain unresolved – including semantic, workflow and transactional integrity standards – 87 percent of interviewees were confident that these would be overcome because of the significant investments being made by major vendors.●

Research Methodology

The purpose of the Web Services Derby project was to better understand how the technology will change the enterprise software industry.

The study consisted of 117 in–depth, confidential interviews with executives from 76 organizations (see tables). The interview gathered both quantitative and qualitative information and took place in April and May 2002. These interviews resulted in more than 150 hours of conversation and 1,200 pages of transcripts, the synthesis of which lie in the pages to follow.

In the summer and fall of 2002, follow-up interviews were conducted with most of the initial respondents. These informal conversations served to present the results of the initial study, receive feedback on the accuracy of its conclusions, as well as to refresh and update the findings.

Study Participants:

The Most Influential Web Services Decision Makers

The first group of interviews were conducted with large corporate customers. These executives are mainly CIOs, VPs, and managers of IT at global 2000 companies. Nearly all the participating corpo-

Respondent Segment	Participating Companies	Executives Interviewed
Enterprise Customers	25	37
Application Vendors	30	45
EAI Vendors	4	8
Platform Vendors	10	13
Systems Integrators	5	12
Standards Bodies	2	2
Total	76	117

Job Title	Executives Interviewed
CTO and Chief Architect	33
SVP/VP of Engineering	16
VP/Director of Product Management	21
Managing Director/Partner	11
Chief Information Officers	9
VP of Information Technology	20
Manager of Information Technology	7
Total	117

rations have more than $1 billion in revenue, with half generating more than $10 billion. Participants from all major industries were represented: automotive, consumer packaged goods, high technology, manufacturing, pharmaceuticals, financial services and many others.

Enterprise software executives made up the second group of interviewees. Job titles of these participants include CTO, VP of engineering and development, VP of product management, chief architect, and managing partner. These interviewees represent a cross-section of leading vendors in four overall categories: application vendors, EAI vendors, platform vendors, and systems integrators.

Interviewees were assured of the confidentiality surrounding their responses and therefore the identities of individual interviewees cannot be revealed.

Information Usage:

Directional Insight for Strategic Development

The respondents were not scientifically selected and therefore are not necessarily representative of any larger enterprise or vendor population. However, the technologists interviewed represent an impressive cross-section of Global 2000 companies. And the industry interviews amounted to a census of leading enterprise software vendors and systems integrators.

Therefore, the results represent a unique compilation of the current state of Web Services technology and are appropriate for directional insight during development of products, marketing plans and corporate strategy.●

Annual Revenue	Enterprise Companies
$10 Billion or More	14
$1 Billion to $9 Billion	7
$200 Million to $999 Million	3
Less than $200 Million	1
Total	25

Industry	Enterprise Companies
Automotive	2
Business Services	3
Consumer Goods	3
Electronics	3
Energy	1
Financial Services	2
Government	1
Health Products	2
Retail	2
Technology	3
Telecommunications	3
Total	25

The Business Case

Web Services in the Works at Global 2000 Companies

In This Chapter

Here's where the rubber meets the road: real evidence of Web Services solving business problems for early-adopter enterprises. This chapter takes a detailed look at the business cases, goals and characteristics of 60 actual Web Services projects.

○ Which companies will adopt Web Services — and when

○ Detailed profile of Web Services projects

○ Business needs addressed by Web Services projects

SYNTHESIS: It works. That's the consensus among early users of Web Services in the enterprise. An analysis of 60 pilot and implementation projects found business needs — rather than technological merits — were driving the use of Web Services projects. This means corporate customers were not only conducting small trials within the firewall. In fact, a significant portion of projects took place outside the firewall connecting partners and customers. A tremendous amount of information was gathered on these projects (see page 15.) Although approximately 10 percent of large corporations have either completed Web Services projects or have embarked on such efforts, the "Mass Market" won't take on Web Services until late 2003.

Context

During the 1990s, many enterprises embarked on a "Big Bang" approach to information technology investment. This strategy involved taking on giant IT projects which yielded large, one–time cost reductions. Wall Street happily digested these savings and immediately demanded more.

But this approach sacrificed the future flexibility and interoperability of the enterprise's systems. It seriously curtailed the company's ability to deliver continuous cost improvements, and led to a spaghetti–like mess of hardware, operating system, middleware and applications platforms. It has become the major roadblock which is preventing companies from becoming Real-Time Enterprises.

Today, CIOs are taking on smaller, more well–defined initiatives. IT project "must–haves" now include a clear return on investment (ROI), built–in performance milestones and the option to renew or cancel at each milestone.

While vendors and research analysts hype Web Services' endless possibilities, companies are trying to figure out how it might solve their business problems. This section takes an in–depth look at what innovative companies are doing with Web Services and the business needs these efforts address.

Market Segmentation

The technology adoption curve is often used to show how and when a new product or technology will gain widespread acceptance (see figure 2.1). The survey asked vendors to estimate what portion of their customers fell into each segment based on whether their customers were actually implementing Web Services projects, running pilot projects, working from a defined Web Services strategy or doing nothing.

The study found that the earliest adopters —called "Innovators" — accounted for approximately 3 to 4 percent of customers. These firms are now finishing up pilot projects they began six to eight months ago and have moved on to actual implementation projects.

The Innovators surveyed reported largely positive results from their Web Services projects and do not report plans to abandon their Web Services efforts. But now they say they will need a business reason to pursue further Web Services projects. According to the study, the next steps for these customers will follow one or more of the following paths: 1) conducting another small Web Services project with a definite ROI, 2) taking on a more substantial Web Services implementation, or 3) setting in place the next generation of enterprise architecture using Web Services.

Web Services Innovators are typically eager users of new technology and come from financial services, telecom, high–tech and consumer– electronics industries. Other Innovators hailed from the automotive, manufacturing, travel and consumer packaged–goods worlds. Surprisingly, the energy and education sectors also showed a strong interest in Web Services technology, according to vendors.

"Typically [Innovator] customers first attacked a 'problem child' — a project they've always wanted to do but could never cost justify until Web Services came along. Now I see two things happening from here. There could be a

2.1 Innovators Have Already Completed Pilot Projects

Web Services Adoption by Customer Type
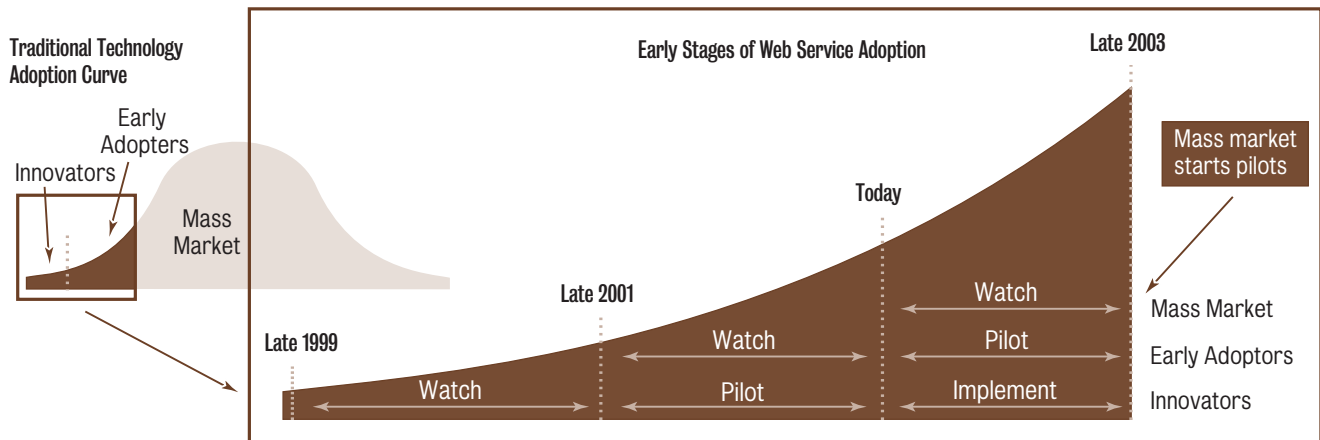
From the Field:

The Web Services Decision Process

"Web Services makes it easier to extract common data and services out of internal applications. For example, a product ID number that is used by every division could be standardized. And Web Services enhances dynamic access to that information.

Our decision criteria for when to use Web Services internally include the following:

- How dynamic is the information or the need for that information? The more dynamic, the stronger the case for Web Services.

- How broadly is the information used across the corporation? The wider the need, Web Services is more attractive.

- Is it okay to have a coarse–grained security model? Fine–grained models will result in high administrative costs.

Applying these criteria, we determined parts, product and employee information could be extracted and converted to Web Services. We also separated out the directory function from the application logic, offering, in essence, security as a Web Service.

And like a directory, individual services will point to locations where you can drill down to get much more information. Essentially, the service becomes the key by which you can call for more information." **—CTO, Fortune 10 enterprise**

viral effect where lots of small Web Services implementations mushroom around the company. At the same time, some CIOs and architects are putting in place a Web Services–based corporate architecture the for next eight to ten years. One thing is certain: Innovators are definitely past the tire–kicking stage right now." **—VP, platform vendor**

"Early Adopters" are the second–most aggressive users of Web Services technology. This group accounted for 7 percent to 8 percent of the customer base of the vendors surveyed. These customers are now beginning their pilot projects with expected average lengths of six to eight months.

The next group of enterprises — "Mass Market" customers — to adopt Web Services will make up the majority of remaining corporations. These organizations will not start pilot projects until standards gel and a viable security model emerges, which is expected to happen sometime in the second half of 2003.

Profile of Web Services Projects

Pioneering Web Services enterprises have gone from checking out the technology to leveraging it to solve business problems. To better understand the specific motivations behind such projects, the study gathered detailed data on 60 pilot and implementation projects that companies have in the works. A profile of each of these projects is included in the appendix (see page 56).

Project descriptions were aggregated from both enterprise customers and systems integrators. Because these projects were completed by Innovators and Early Adopters, more than three–quarters of these projects were actual implementations and one–fourth were pilots.
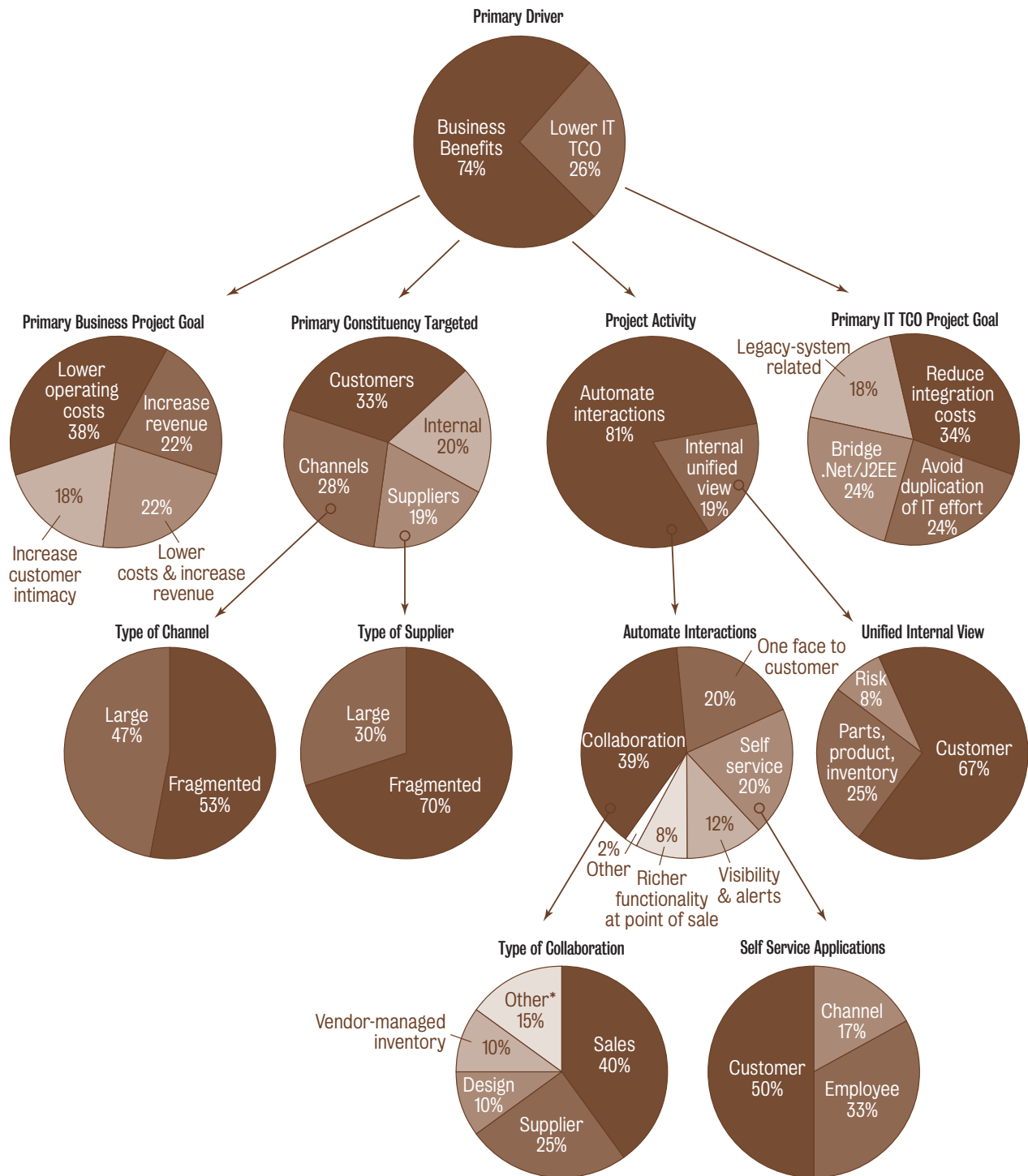
Respondents provided many details about their Web Services projects (see chart 2.2). The business drivers of each Web Services project were categorized based on the following framework:

- Why? Goals of the Project

60 Web Services Pilot & Implementation Projects

Primary Driver

Business Benefits 74%
Lower IT TCO 26%

Primary Business Project Goal

Lower operating costs 38%
Increase revenue 22%
18%
22%
Increase customer intimacy
Lower costs & increase revenue

Primary Constituency Targeted

Customers 33%
Internal 20%
Channels 28%
Suppliers 19%

Project Activity

Automate interactions 81%
Internal unified view 19%

Primary IT TCO Project Goal

Legacy-system related 18%
Reduce integration costs 34%
Bridge .Net/J2EE 24%
Avoid duplication of IT effort 24%

Type of Channel

Large 47%
Fragmented 53%

Type of Supplier

Large 30%
Fragmented 70%

Automate Interactions

One face to customer 20%
Collaboration 39%
Self service 20%
2% Other
8% Richer functionality at point of sale
12% Visibility & alerts

Unified Internal View

Risk 8%
Parts, product, inventory 25%
Customer 67%

Type of Collaboration

Other* 15%
Sales 40%
Vendor-managed inventory 10%
Design 10%
Supplier 25%

Self Service Applications

Channel 17%
Customer 50%
Employee 33%

Note: All projects categorized based on the primary driver. From an analysis of 60 Web Services pilot and implementation projects as described by 25 enterprise customers and 5 systems integrators. *Including new product introduction, service and planning.

- ○ For Whom? Constituency Targeted
- ○ What? Activity Undertaken
- ○ Where? Inside vs. Outside the Firewall

Why? Project Goals

At the end of the day, all projects were aimed at increasing revenues or lowering costs. Most projects were directed at solving business problems (74 percent) and the remaining projects were aimed at lowering IT total cost of ownership (TCO).

Among business–oriented projects, 38 percent were aimed at lowering operating costs, 22 percent were focused on increasing revenue and 22 percent tried to do both. Eighteen percent of projects aimed to increase customer intimacy— a short–term goal which will affect the bottom line over the long term.

For projects aimed at lowering IT TCO, 34 percent attempted to reduce integration costs of ongoing EAI projects. The remainder intended to eliminate duplication of effort within IT, bridge .NET and J2EE, or manage legacy systems. Legacy–related projects included both extending the life of those systems as well as replacing them.

For Whom? Constituencies Targeted

One–third of projects were aimed at customers. Channel partners, internal employees and suppliers completed the list of targeted users. Most channel and supplier–aimed projects dealt with reigning in a fragmented group of partners.

What? Activity Undertaken

The majority of projects allowed enterprises to automate interactions with their constituencies (81 percent). Of these projects, 39 percent dealt with improved collaboration; the most common functional focus was sales collaboration.

Where? Inside vs. Outside the Firewall

Prevailing opinion paints a neat picture of customers first implementing Web Services within the firewall, and then smoothly transitioning their efforts beyond the firewall. In reality, this transition is not so clean.

Both the vendor survey and the project analysis found that more effort is going on outside the firewall than conventional wisdom dictates. Although Web Services technology is thought to be too immature for use outside the firewall, customers are finding the cost of working around security issues to be justified by the business benefit. Enterprise customers seem to be looking for how Web Services can create business value, regardless of where that value lies — in other words, they are following their "ROI nose."
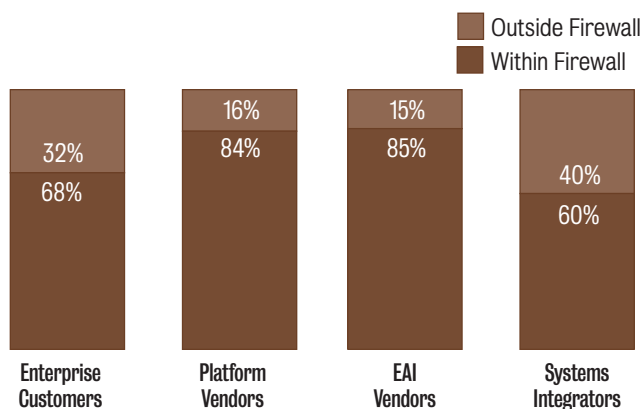
The project analysis found that 36 percent of projects took place at the edges of the enterprise. Separately, the survey showed 32 percent of customers are working on projects outside the firewall. Vendor respondents reported a similar proportion of their customers' projects were going on outside the firewall (see chart 2.3).

Real–World Business Cases

In order to better understand the actual scenarios that are driving Web Services adoption, all 60 projects were classified based on their primary business goals.

2.3 Many Web Services Projects Happening Outside the Firewall

Location of Current/Planned Web Services Projects

Legend:
- Outside Firewall
- Within Firewall

	Enterprise Customers	Platform Vendors	EAI Vendors	Systems Integrators
Outside Firewall	32%	16%	15%	40%
Within Firewall	68%	84%	85%	60%

Vendor responses estimate the portion of their customers' projects that are inside vs. outside the firewall.

Projects that aim to **reduce operating costs** typically provide increased efficiency of assets, reduce in–process and finished–good inventory, or enable faster reaction to manufacturing problems. Examples of such efforts include the following:

- Provide a unified view of parts and finished–goods inventories across plants and divisions, which yields increased negotiating power, reduced parts duplication, and improved ability to shift parts and products from one plant to another depending on demand.

- Give customers access and visibility into manufacturing status so they can recognize problems and react in real time.

- Reduce finished–goods inventories by quickly alerting supply–chain partners to production schedules and product completion.

- Lower administration costs through employee self–service for benefits administration.

- Automate interactions with a fragmented supply chain where primary mode of interaction today is FTP, phone, fax and email.

- Allow business analysts real–time access to data embedded in backend systems.

Projects focused on **increasing revenue** were typically customer or channel facing.

- Allow sales collaboration activities with fragmented as well as large channel partners by providing access to backend systems and presenting a richer experience at the point of sale.

- Streamline sales lead sharing between partners where "hot leads" have a limited life and quick reaction is critical.

- Provide a uniform face to the customer to give them a streamlined multi–channel buying experience.

- Improve the visibility of channel inventory to reduce stock–outs, thereby increasing revenue and customer satisfaction.

Self service and collaboration were key themes for projects aimed at both increasing revenue and lowering costs.

- Allow customers access to backend systems so they can track orders themselves.

- Provide suppliers real–time access to inventory data so they can better manage inventory.

- Give partners visibility into manufacturing floor operations, which is especially important in outsourced manufacturing situations.

- Improve product design collaboration.

- Better demand forecasting through planning collaboration with partners, especially important in a build–to–stock industry such as consumer electronics.

- Integration of key functions and systems following a corporate acquisition or merger.

All sixty Web Services projects were also categorized in terms of the primary constituency the project aimed to serve.

One-third of projects were directed at **customers** because most companies have customer data distributed in multiple data sources across multiple access points.

- Get a unified view of the customer.

- Give customers a uniform experience across all access points.

- Accelerate the move toward customer self-service.

Nearly half of projects were aimed at **suppliers and channels.** Large corporations have invested heavily in automating transactional interactions with their largest channel and supplier partners through expensive and inflexible technologies such as EDI, B2Bi or private exchanges. However, the study found these large companies have automated fewer than 5 to 10 percent of these external relationships using these technologies.

- Enhancing already-automated channel/supplier relationships with Web

From the Field:

Web Services Reigns in Fragmented Channel Partners

As with most large corporations, this giant manufacturer maintains mature EDI connections between itself and its largest channel partners. However, interactions with the next-largest set of channel partners tended to be unreliable which resulted in stock-outs or inventory buildups. Using Web Services, the manufacturer was able to dramatically improve the quality of its revenue numbers and inventory information while lowering operating costs and freeing up sales resources.

This Web Services-based solution differed from a Web application because the required message was generated automatically from the channel partners' backend system. This method is opposed to a user from the channel interacting with a Web application or using FTP to send the message, both methods which would require the daily involvement of an employee at each channel partner.

Old Situation

- Channel partners sent sales and inventory information to manufacturer by phone, fax or email, leading to inventory buildups and stock-outs.

- Clerical staff collated all information and entered into system resulting in a high degree of clerical error.

- Manufacturer's salespeople forced to spend majority of their time being "glorified order status checkers" with channel partners, rather than selling.

Web Services Solution

- Manufacturer specifies format for inventory message.

- Channel members wrap their backend systems to send message electronically in specified format in near-real time.

Web Services ROI Analysis

- **Operating Cost Reduction.** Reduce call center staff, lower asset intensity due to better view of channel inventory, fewer errors in reported sales figures.

- **Revenue Efficiency Increase.** Salespeople have more time to sell.

- **Level of Investment.** Less than $500,000 for entire project.

- **Payback Period.** 4-6 months

Services, mainly by assembling data from multiple sources before an EDI transaction, and distributing the data to all relevant applications after the transaction.

- Automating interactions with the second largest group (20 to 30 percent) of channel and supplier partners using Web Services. These projects tended to involve information exchange rather than transactions in part because Web Services does not yet have a well defined transactional model for use outside the firewall (see "From the Field," at left). Businesses are primarily addressing problems where information exchange reduces operating or clerical costs.

Other Web Services projects were **internally focused.**

- Increase employee self service by allowing employees to manage their own benefits, stock options, and so on. This lead to increased employee satisfaction and decreased costs.

- Access a unified view of materials within manufacturing plants. This data is typically distributed across six to eight applications within the plant. Plant operations managers need visibility into real-time status of finished goods inventory, work in process inventory, spare parts, and so on.

- Access a unified view of risk within a company, because data about risk is distributed across multiple systems.

The Bottom Line

Innovator Web Services companies are thinking business value. As one Fortune 500 respondent put it, "Think ROI, not SOAP."

Web Services are generating real business value for enterprises today. Facing intense pressure to drive profitable growth, business executives should identify the areas of maximum operating inefficiency – the "leakiest pipes", so to speak.

A subset of these problems is addressable using Web Services-based solutions, both inside and outside the firewall. Businesses are largely addressing external constituencies (customers, suppliers and channels) through internal projects. Outside-the-firewall projects were principally focused on areas where information exchange led to reductions in operating costs.

Surprisingly, the study did not uncover very many negative reactions and perceptions of Web Services technologies, or failed projects. Corporations can therefore be confident that the technological risks can be worked around.

⤷ TAKE ACTION NOW

Pioneering enterprises have experienced success with a variety of Web Services implementations. Companies wishing to follow their lead can learn from which projects have brought the most success.

First, a checklist of common characteristics helps identify business cases that can be tackled with moderate investments in Web Services technology.

Second, lists of the most-frequently completed implementation are presented. These lists were created by compiling information from this study and other industry sources.

Finally, the most popular projects completed within major industries are shown. In many cases, Web Services' impact on these industry-specific applications has provided significant business value.

Common Characteristics of Web Services Projects

1. **Inaccessible data:** What critical business data are being requested by multiple constituencies? Is that data locked up in inaccessible backend systems?

2. **Highly distributed data:** Where is there an urgent need to aggregate data and information from multiple sources in one central location?

3. **Highly dynamic:** Is the information itself, or the need for it, highly dynamic?

Top 10 Web Service Projects
at Global 2000 Companies

1. Creating services of data and functionality to be used at multiple locations, applications, and/or access points. This included wrapping and accessing legacy applications (for example, auto vehicle identification, insurance rating engines, retail configurators, etc).

2. Integrating multiple outward-facing Web sites by componentizing and integrating backend systems.

3. Using Excel as a front end for backend applications such as ERP so that business analysts can access critical data in real time.

4. Customer self-service applications for specific pieces of information, such as order status.

5. Integrate within enterprise portals to consume backend applications for visual co-location

6. Integrate within private exchanges or integration hubs

7. Automating information exchanges with fragmented channels and suppliers, replacing phone- and fax-based interactions.

8. Providing employees self-service applications for benefits, 401K, stock options management, and so on.

9. Establishing a unified internal view of customers, inventory or risk.

10. Facilitating collaboration with trading partners to share sales leads, design products jointly, or conduct vendor-managed inventory projects.

From the Field:

Choosing the Ideal First Project

"You need to start small. Pick two to three prototypes and put team members on them who are going to learn fast. These prototypes are more about learning than the actual end project goal itself. Therefore, it is important to make learning a primary objective and disseminate the experience of these early project members as widely as possible.

After the prototypes are finished, launch twenty parallel efforts all at the same time. In general, it is more useful to intercept ongoing projects and add a Web Services component rather than starting entirely new ones.

Make sure these projects adhere to a few basic rules — like your enterprise data model and budgetary constraints. Then sit back and watch a thousand flowers bloom." — VP of IT strategy and business development, consumer electronics corporation

Top 10 Web Service Projects
by Vertical Market

1. Automotive

○ Access a unified view of inventory (including finished goods, work in-process, and spare parts) within a plant.

○ Automate interactions with dealer network, including inventory information and sharing sales leads.

2. Electronics

○ Give customers a real time view into exceptions on manufacturing line so that they can react quickly to changes in supply.

○ Design products collaboratively with customers to optimize manufacturability.

○ Access unified view of inventory to make better procurement decisions, and to get more negotiating power with suppliers.

3. Financial Services

○ Enhance functionality at point of sale to increase revenue through cross-selling and up-selling.

○ Give customers a unified experience across all access-points (Web, phone, ATM and branch).

○ Automate pre- and post-trade settlements of transactions to minimize cycle time and labor costs.

○ Automate manual claims processing.

○ Expose information from backend systems in order to provide better information to analytics applications.

4. Government

○ Improve efficiency of case and record management by providing a single point of customer interaction among various connected agencies.

○ Speed delivery of tactical information to the military via a range of devices.

- Create streamlined systems for filing and revenue collection that span various agencies and departments.

- Share criminal information from disparate local and state information systems to aid real-time criminal analysis.

5. Healthcare

- Improve claims management and administration process to reduce claims payout and processing times.

- Connect disparate systems and thereby improve the process of ordering prescriptions, lab equipment, and tests by health care professionals.

- Enhance physician productivity with real-time access to information via a variety of devices.

- Better manage supporting documentation for clinical trial processes.

- Allow collaborative access for payers, providers, drug companies, and patients in order to reduce treatment costs.

6. Insurance

- Make insurance ratings engine available across the enterprise and to channel partners.

- Automate claims-handling process and access claims information in a standard fashion from customers.

- Integrate with claims network of repair shops to so that shop can verify coverage, do the repair work and get paid.

7. Oil and Gas

- Automate interactions (including revenue data collection and order management) with service station channel partners.

- Create collaboration extranets to streamline drilling operations involving two to three oil companies and approximately 100 suppliers.

- Access a unified view of risk.

8. Retail

- Enable richer interactions at point-of-sale by making additional functionality available and unlocking data from legacy systems.

- Provide a consistent experience across all access points: Store, call center or Web.

- Create a unified view of inventory thereby improving replenishment cycle time and gaining procurement efficiencies with suppliers.

9. Technology

- Design products collaboratively with partners to speed development of short-life-cycle products.

- Give customers and partners a real-time view of their order status.

- Forecast revenues collaboratively with partners.

- Improve sourcing ability and thereby increase the ability to withstand sudden changes in demand or design.

10. Telecommunications

- Provision new DSL customers.

- Consolidate and integrate billing systems.

- Decrease churn and increase revenue by offering compelling experiences across a range of devices, and by rapidly aggregating internal and 3rd party content.

- Provide customer self-service solutions using portal infrastructure.●