



A Business Whitepaper

Calculating the Value of Software-as-a-Service to Your Organization

Business leaders rightfully question some value calculations of software-as-a-service. What passes for 'financial analysis' often amounts to little more than cost reductions linked loosely to a wish-list of service features. In reality, SaaS-based solutions such as Astoria On-Demand deliver tangible value, and the value is clearly evident when properly calculated.

There are three steps to building a credible financial justification for software-as-a-service. First, select unique, independent benefits, carefully avoiding the trap of mistaking a solution feature for a benefit. Second, use company and industry data to calculate a monetary value for each benefit. Third, understand and employ effective financial tools to calculate cash flow, net present value, and return on investment. Adhering to this approach shows business leaders that a SaaS-based solution is strategic to the organization, not merely tactical to one department.

To calculate the value of software-as-a-service to your organization, use the research and conclusions in this document as a guide, and then contact Astoria Software to schedule a free ROI analysis of Astoria On-Demand. The value of SaaS-based solutions is waiting to be unlocked.

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Introduction

By 2009, business executives worldwide will spend \$10.7 billion on Software-as-a-Service (SaaS).¹ By 2010, global organizations will fulfill 25 percent of their application demands with hosted software.² Many essential business applications are now available over the Internet via SaaS (see sidebar entitled “**Software-as-a-Service in Brief**”) and the list is growing. Tools for building, managing, and assembling dynamic product documentation now join this list of key back-office applications that can be “rented” from a software service provider.

Why is the popularity of software as a service rising? A Cutter Consortium study of 118 IT professionals, conducted in October 2005, found that 86 percent of respondents expect SaaS to generate cost savings, achieve greater ROI (27 percent), smaller staff requirements (24 percent), improved reliability and performance (21 percent), quicker/easier deployments (18 percent), and systematic upgrades and updates (8 percent). Bill Cannon, vice president of consulting for AMR, summed up the growing market interest in SaaS this way:

“Users are saying I would be nutty not to at least give [software-as-a-service] strong consideration going forward. Whether they do it is another item, but upwards of 60% of customers are saying to get on my short list, software-as-a-service is one of the key criteria I am looking for. What they are saying is they recognize all the promised benefits of decreased cycle time, faster time to value, lower cost per user, lower [total cost of ownership], not to mention the change in the economic model from a capitalized expenditure to a manageable [monthly] expense.”³

The first step in justifying a move to SaaS is gathering details on how these claims are established and supported by operational data. Unfortunately, those considering an

Software-as-a-Service in Brief

Software-as-a-Service (often abbreviated as “SaaS”) initially looks like “ASP Hosting” of the 1990s with a new name. Both models provide software access from a remote location, and in both models the hardware is managed by a service provider. Beyond these commonalities, the two concepts diverge. Key distinctions are:

- **Software.** In SaaS, the software is likely a back-office application, such as a CRM package or an office productivity suite.
- **Access.** In SaaS, access to software is over the public Internet.
- **Pricing.** In SaaS, the software is rented; invoices appear as usage accrues, usually on a monthly basis.
- **Strategy.** In SaaS, the Service Provider delivers both the software and the hardware.

¹ “Worldwide and U.S. Software as a Service 2005-2009 Forecast and Analysis: Adoption for the Alternative Delivery Model Continues”, IDC # 33120, March 2005.

² Kaplan, Jeffrey M. “SaaS Soaring with Web Hosts,” Web Host Industry Review, October 17, 2005.

³ “The Rise of Software-as-a-Service,” CIO Today, December 27, 2005.

on-demand solution are often left on their own to construct a clear business case for software-as-a-service, complete with financial justification. This may be asking a lot when there is little hard data available in the public domain, and may explain why respondents to a May 2004 survey by IDC identified tactical rather than strategic catalysts for adopting SaaS⁴.

This paper addresses this problem in three steps. First, it gives criteria for identifying the actual benefit of a SaaS-based service. Second, it describes the financial analysis necessary to make the business case for SaaS. Third, it shows how to use that data as input to key financial metrics. Throughout this paper, real-world examples are drawn from Astoria On-Demand, a SaaS-based solution for dynamic product documentation.

Building the Benefit List

The first task in calculating the value of a SaaS-based service is gaining clarity on its actual benefits. Most organizations can enumerate a half dozen or more ways to cut costs, minimize risks and focus IT on strategic, mission critical projects. However, identifying benefits that are clear and quantifiable rather than grand and sweeping remains a challenge.

For example, Saugatuck Technology's⁵ recent analysis of first-generation SaaS providers found the following broad messages in common:

- Reduction in software costs and total cost of ownership (TCO)
- Service-level guarantees
- Rapid implementation
- Aligning IT expenses with business activity⁶

There are four critical reasons the foregoing messages do not constitute quantifiable SaaS benefits. First, the typical office worker does not have access to all the operational data required to back up the claims. For example, TCO calculations require information that is not usually widely available, and may not even be

⁴ "Software as a Service QuickLook IT Survey, IDC, May 2004. The two tactical catalysts identified were: 1) a drive to reduce IT costs, and 2) the need for a major software upgrade.

⁵ McNee, Bill, "Get Ready for SaaS 2.0", Sandhill.com, May 08, 2006.

⁶ To differentiate their respective messages, SaaS vendors talk about "horizontal solutions," varying levels of application configuration and data integration (perhaps through some use of web services), and the range of their subscription pricing options.

collected. To be sure, companies do keep data on the actual maintenance fees paid each year. But what about the aggregate costs to use the software *productively* throughout the organization? What about those costs projected over the lifetime of the software? Or the lifetime of the organization's current business? Or the lifetime of the organization itself? *When establishing a benefit, sufficient operational and financial data must be available to clearly support the claim.*

Second, it is the rare organization that can equate specific benefits of a software package with specific cost savings or revenue increases. This is not to say that such equations don't exist; they do. However, the value ascribed to any one benefit of a software application requires an ability to isolate that benefit—at least to some reasonable degree—and then quantify its value to the organization. For example, one benefit of an on-demand document production solution might be to eliminate, automate or improve key editing, revising, reviewing and publishing tasks for the technical publications group. A second, independent benefit might then be reducing the technical publication burden that falls upon Engineering teams. By contrast, phrasing this second benefit as "reducing the costs to produce technical publications" would overlap with the value achieved through the first benefit. *Each benefit must stand alone, representing clear and specific cost savings or revenue increases.*

The third common problem is that features are mistaken for benefits. Features of a hosted content management service, for example, include:

- Zero installation costs
- Complete platform independence
- Anywhere/anytime access
- Continuous product improvement

These features are not benefits in themselves and are not quantifiable. A true benefit is a goal or objective that the organization wants to achieve with a new solution (SaaS-based or installed). Furthermore, a true benefit is independent of any specific vendor's solution or capability.

The following table describes several true benefits for adopting a SaaS-based content management solution. Note that 'zero installation costs' from the feature list above

will allow fulfillment of the benefit statement ‘eliminate annual cost of maintaining the legacy system.’ Other such mappings are possible but the guiding principle is *each benefit must be independent of any other in the list, and none can be a feature masquerading as a benefit.*

Category	Benefit Statement
IT Cost Savings	Eliminate annual cost of maintaining the legacy system. Reduce paper printing and distribution costs. Reduce cost of localization or translation.
Productivity Gains	Eliminate, automate or improve key editing, revising, reviewing and publishing tasks for the technical publications group. Reduce technical publication burden on Engineering teams.
Quality and Compliance	Increase competitiveness by improving information quality, ease-of-use, consistency and timeliness. Reduce litigation liability.
Future Digital Initiatives	Improve competitiveness with better targeted digital products. Leverage data in other company departments. Reduce cost of supporting new standards.

The fourth problem is that there is rarely a fair comparison of benefits and value between a SaaS environment and an on-premise environment. Instead, there is a tendency to ascribe the same benefits and value to SaaS software that in fact exist in on-premise software. *Benefits must stand in contrast to alternative approaches—a benefit is only relevant when it offers unique value.*

To discover the actual differences in value derived from the two environments, the Astoria team examined key drivers for acquiring an on-demand dynamic product documentation system such as Astoria On-Demand (see sidebar entitled “**Astoria On-Demand in Brief**”) and then constructed a set of questions designed to isolate the actual benefits that customers derived after implementing an Astoria solution. The interviews—conducted by an outside agency—identified independent benefits, each of which was then correlated with supporting data and quantified into dollars saved or earned.

The results were startling. Astoria found that companies were spending enormous amounts of money to implement XML-based content management—well above the one-time license cost of a CMS. These additional costs came in the form of hardware and IT resources to install and configure the system, and the resource and labor costs for customization of the solution.

On-demand solutions, by their very nature, would have had zero costs in these areas.

The data also debunked the myth of a “tipping point” at which an on-premise solution appeared to be more cost-effective than an on-demand solution. Some IT managers assumed that an on-demand service’s attractive initial implementation curve and net-present value would be eclipsed by those of an on-premise solution after roughly five years. Instead, research results indicated two trends: 1) unexpected upgrade costs at the five-year point substantially decreased the value of an on-premise solution; and 2) there was turn-over in software systems after five years, and the installed system was replaced. Hence, the “tipping point” was never reached.

Calculating the Value of Each Benefit

The generalized approach to assigning a reasonable cost reduction or revenue increase to each benefit is:

Astoria On-Demand in Brief

Some of the drivers for subscribing to a service like Astoria On-Demand are:

- **Timely Deployment.** Astoria On-Demand is typically up and running in 30 days.
- **IT Resource Efficiency.** Astoria On-Demand eliminates all hardware and internal system maintenance requirements.
- **Internet Access.** Astoria On-Demand provides anywhere/anytime access over the public Internet.
- **Pursue New Revenue Initiatives.** Astoria On-Demand drives additional revenue from new markets or new services through greater operational efficiencies and faster access to newer content and streamlined translation.
- **No Risk Solution.** Astoria On-Demand eliminates the cost of hardware and software acquisition, and provides an option to “pull the plug”.

1. Define the supporting logic for each benefit
2. Identify several factors as inputs to calculating the benefit's value
3. Develop independent validation of the final calculated value

Suppose a benefit of “Increasing the number of days available to sell a product” is identified. The next step would be to build a traceable link between the benefit and a revenue increase (see sidebar entitled, “**Calculating the Value of Increased Selling Days**”). With this linking information in hand, other departments within the organization can study and agree with the rationale for the benefit, and even modify some of the input factors to build defensible revenue projections. Hence, a traceable link between a claimed value and a benefit forms the basis for financial modeling and—ultimately—prudent business decisions.

To illustrate the power of this approach, Astoria Software analyzed four benefit “categories”⁷ related to Astoria On-Demand and SaaS in general: IT cost reduction, productivity gains, cost savings and revenue opportunities.

Benefit Category: IT Cost Reduction

Astoria On-Demand eliminates the need for on-site hardware, software and human resources. It also reduces or eliminates the involvement of IT in the implementation process because there is little or no need for assistance. To quantify the value of this benefit, “IT Cost Reductions” is expressed as the difference in cost for each IT function when comparing an on-premise configuration of a comparably featured product documentation system versus Astoria On-Demand. The following

Calculating the Value of Increased Selling Days

“Increased selling days” is a key benefit for Astoria On-Demand. To ascribe an actual value to this benefit, the process would be:

- **Supporting logic.** More selling days exist by significantly reducing the document development cycle to enable technical documentation to be released in sync with new product introductions.
- **Input factors and formula.** Factor #1: new products introduced each year multiplied by the average annual revenue per product divided by the number of selling days yields the daily revenue per product. Factor #2: the contribution to margin of each product sold. Factor #3: the estimated increase in selling days that exist after implementing Astoria On-Demand.
- **Independent validation.** Surveys of other divisions (or even customers) that have experienced an increased number of selling days.

⁷ Benefit “categories” are used in place of detailed benefits because the value of each benefit within these categories depends on highly specific factors such as industry, application, engineering involvement, size and current state of the document collection, and the particular financial methods of each company. Such variable details cannot be approximated within the context of this paper, although actual calculations must take these factors into account. Specific benefits within each category are show in the table on page 5.

tables list the input factors to that expression, drawn from information gathered from a variety of industry sources, for both startup and ongoing IT costs.

Start-up IT Costs	On-Premise	On-Demand
Fees/Licenses	On-premise licensing fees are usually much higher than the first-year fees for a comparable SaaS-based system	
Services/Training	\$128,500 ⁸	\$0
Conversion Effort	The effort to convert existing documentation to an XML-based structure is based on 3½ months for gathering requirements, 1½ months for modeling, 6 months for style sheet creation, and 12 months to convert 50,000 pages of material.	
Maintenance & Support	Maintenance fees estimated at 18% of the license fees	\$0
Hardware (first year)	\$10,000	\$0
IT Implementation	\$45,000	\$0
IT Infrastructure	\$45,000	\$0
IT Overhead ⁹	\$34,425	\$7,425

On-going IT Costs	On-Premise	On-Demand
Fees/Licenses	\$0	Varies by number of subscribers
Internal Maintenance	\$101,250	\$23,625
Maintenance & Support	Estimated at 18% of the license fees	\$0
Hardware	\$10,000	\$0

The hard-dollar savings of Astoria On-Demand are compelling. Typical start-up costs for Astoria On-Demand are 48 percent lower than those for a comparably featured on-

⁸ Includes third-party professional services and training to integrate a structured editing package and a composition engine.

⁹ Calculations for IT overhead vary by company. This tables assumes 2.2 months of a full-time engineer's salary, allocated for basic infrastructure costs such as electricity, air conditioning, and server replacements.

premise XML-based product documentation system. Furthermore, recurring IT costs are not limited solely to those listed in the preceding tables. When evaluating the benefits of Astoria On-Demand versus a comparably equipped on-premise system, there are several other IT resource comparisons to calculate:

- IT can focus limited resources on other strategic and mission critical projects. The value of this benefit is the indirect cost reduction of having these projects operational faster than previously expected.
- Implementation will be considerably faster, so the system can be in use much sooner. The value of this benefit is better net-present value of the solution since the payback period is shorter.
- Any authorized user may access the system from any Internet location at any time without any additional IT involvement. The value of this benefit is the direct cost reduction from eliminating training and IT management needed to provide users with anytime access over a proprietary network.
- A stronger vendor relationship exists with on-demand, because both parties have a stake in on-going success. The value of this benefit is lower support costs, higher user productivity and product pricing incentives.
- Updates and upgrades are significantly easier to introduce, because there is no need to test for hardware and software compatibility. The value of this benefit is the direct cost reduction of a typical upgrade for comparable software that is now covered by the Astoria On-Demand service fees.
- The system can easily scale up and down based on need. This tunes the cost in a way not possible in an on-premise model. The value of this benefit is the direct cost reduction of license fees by projecting the number of user licenses required over each documentation phase for each product and adjusting usage accordingly.

The Astoria On-Demand model eliminates up front capital costs, reduces IT involvement, and speeds time to usage, time to value, and adoption of system changes. While some of these benefits are easier to quantify than others, together

they make a strong business case, even before considering other benefits in productivity, cost savings and incremental revenue.

Benefit Category: Productivity Gains

A SaaS-based service must improve the productivity of each user or else the service is at best a tactical replacement for an on-premise system. Why? Because the retraining necessary to use the on-demand system effectively, coupled with losing any previous customizations to the on-premise system that an on-demand system replaces, always causes an initial reduction in overall productivity. Once the training and adjustment periods have elapsed, if there is no net improvement to user productivity, the new on-demand system is just a cheaper—and less flexible!—replacement of the older system, and it isn't too long before an even cheaper system becomes available.

An on-demand system moves from a tactical replacement to a strategic investment when there is demonstrable evidence—expressed in financial terms—that users are more productive than with a customized on-premise solution. To calculate the value of productivity increases, key information is required including number and salaries of personnel using the service (including subcontractors) and percent of time spent by each group on each process affected. Also, there must be defensible projections of the percent of productivity improvement expected after the training and adjustment periods have elapsed. The financial analysis is more robust when “fringe benefit” burden is added to the salary figures, and the number of days worked accounts for vacation, sick days and other non-work time. In addition, a conservative estimate of productivity gains is wise since not all time saved will be

Astoria On-Demand Drives up Productivity

Astoria On-Demand improves product documentation efficiency through:

- **Element reuse instead of cut-n-paste.** Instead of copying content from one place to another, make a link in the new document to the reusable text in the source document. When mass changes are required (e.g., a change in corporate identity), change only the source content and the linked content is updated automatically. Element reuse improves author efficiency by 30 to 45 percent.
- **Reduced Engineering burden.** Element reuse means that each engineer shaves off a few minutes from every review of a technical document. This small time savings is magnified by the number of engineers conducting reviews, so that a minor reduction of reviewing effort from five percent to three percent, for example, delivers significant savings across the organization.
- **Separating content from format.** Store content as XML and use style sheets for defining and formatting information. Authors now focus on the accuracy of the information; layout is left to a lower-skilled function.

productively used. Industry data can be helpful in validating your own assumptions about productivity improvements.

Astoria On-Demand is a worthy example of a strategic investment in building and managing dynamic product documentation. It has a standards-based feature set and an architecture that encourages a more efficient process for building and managing product documentation (see sidebar entitled, “**Astoria On-Demand Drives up Productivity**”, on the previous page). To validate claims of improved productivity, Astoria interviewed customers in multiple industries, comparing productivity measurements before and after adopting Astoria On-Demand. The following table shows how these productivity measurements are expressed in financial terms.

Productivity Measurement	Without Astoria On-Demand	With Astoria On-Demand	Savings
Improved editing and publishing process	\$1,350,000	\$1,066,500	\$283,500
Reduced engineering burden	\$351,000	\$266,760	\$84,240
Reduced new product support	\$351,000	\$175,500	\$175,500
Repurposed content	\$500,000	\$375,000	\$125,000
Flexible data structures	\$31,154	\$5,192	\$25,962
Total	\$2,583,154	\$1,888,952	\$694,202

In general, Astoria On-Demand enables a more efficient process for building and managing product documentation. This is because Astoria On-Demand improves individual efficiency for everyone involved in product documentation—authors, reviewers, managers, and contributors from outside the documentation group—plus those who use product documentation as source material, such as customer service and training personnel. The result is a net savings to the organization.

Benefit Category: Cost Savings

Another key contributor to overall return on investment is cost savings, but it takes a good definition of ‘cost’ and careful refinement to quantify this benefit. To define ‘cost’ properly, it is necessary to distinguish productivity improvement from

expenditure. Productivity improvements arise through gains in process efficiency. For example, if a SaaS-based implementation enables a one-third reduction in the number of processing steps, then the financial impact of that improvement is attributed to increased productivity. Yes, there is also a cost reduction in executing the overall process, but the savings are due largely to the increased efficiency of the process.

By contrast, expenditure savings accrue through reductions in the costs of an *existing* process. For example, suppose a SaaS-based implementation for ordering supplier components collates and “prints” each supplier’s monthly purchase orders to PDF instead of a laser printer, and then a link to the PDF is provided to each supplier. The purchase-order process itself doesn’t change, but the SaaS-based system reduces the costs for paper, print toner, laser printer maintenance, and postage.

Further refinement is necessary. Observe that one or more of the costs identified in the preceding example accrue to the IT organization: laser printer maintenance and (arguably) print toner. Any savings in these areas would fall under “Benefit Category: IT Cost Reduction” (see page 7). Furthermore, additional cost savings may exist downstream of the process, such as better customer service due to fast access to digitized vendor purchase orders. Therefore, a true measure of “cost savings” attributed to a SaaS-based system will exclude some direct expenditures and include other indirect reductions.

Calculating the cost savings due to Astoria On-Demand is not difficult, but the factors vary by industry segment. Astoria Software’s research has identified more than ten differentiable cost categories within the creation, production and maintenance of product documentation. These range from the obvious—printing and translation—to the obscure—non-compliance fines and litigation costs. The following five categories are common to seven different industries¹⁰:

- **Displace old publishing system.** Most organizations have a system in place to help manage their publishing process, and this system has support costs associated with it. These costs should be included in the ROI calculation, as they affect the overall costs.

¹⁰ The industries are airline, aerospace, military defense, high-tech manufacturing, discrete manufacturing, medical device manufacturing, and print publishing.

- **Digitize paper manual.** Often it makes sense to move documents currently published in paper format to an electronic deliverable. While there may be some documents that remain in paper, this shift still delivers a very large savings.
- **Reduce customer support costs.** Live agent calls are typically very expensive, and yet customers often choose that support route because of the poor quality of knowledge-bases or email support channels. With better information available through these alternate channels, organizations can reduce the number of live calls.
- **Reduce non-compliance fines.** With accurate information, compliance should be significantly easier to achieve and to prove. As a result, fines go down.
- **Reduce risk of litigation.** With accurate and consistent information, the likelihood of litigation is also reduced.

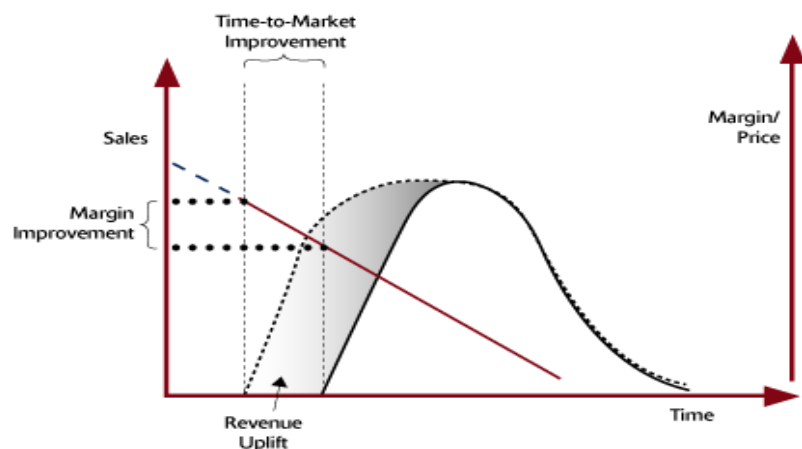
The table below provides an example of cost savings when Astoria On-Demand replaces a comparable on-premise solution. Calculating the actual savings for most of the categories is straightforward if there is data on current costs and risk levels. For more indirect cost savings, such as those attributable to 'reduced customer support costs,' Industry data helps to calibrate the potential extent of improvement.

Cost Reduction	Without Astoria On-Demand	With Astoria On-Demand	Savings
Displace old publishing system	\$100,000	\$0	\$100,000
Digitize paper manual	\$630,000	\$126,000	\$504,000
Reduce customer support costs	\$1,687,500	\$1,603,125	\$84,375
Reduce non-compliance fines	\$100,000	\$50,000	\$50,000
Reduce risk of litigation	\$1,000,000	\$800,000	\$200,000
Total	\$3,517,500	\$2,579,125	\$938,375

Benefit Category: Revenue Opportunities

When a SaaS-based solution alleviates a bottleneck in a product-launch sequence there can be measurable revenue contribution. If the process is on the critical path to a product launch, the downstream effect of that productivity improvement is a product that enters the market sooner than otherwise expected¹¹. Faster time to market yields greater price control, thereby driving higher margins and higher revenue. Additional revenue-generating opportunities will depend on the process being improved by a SaaS-based system.

Astoria On-Demand provides new revenue opportunities from dynamic product documentation. As expected, it enables a faster time to market than comparable on-premise solutions. It also makes a company more competitive. The following data makes a clear case for both of these claims:



- **Faster time to market.** Products cannot be introduced to market until everything is ready, including documentation in the local language. By improving the speed with which documentation can be authored, reviewed and translated, Astoria On-Demand makes it possible to have documentation available earlier, leading to both higher market share and more selling days.
- **Increased competitiveness.** Astoria On-Demand enables companies to offer digital products not previously possible. A publishing industry customer reports that, “With Astoria we can move from creating 50 [configurations] to 100,000 configurations. We could not have previously satisfied this customer request.” A high-tech customer, realizing the inherent value of their XML content, says, “Looking to the future, we chose an XML tool that could help us exchange B2B

¹¹ Image is courtesy McKinsey & Company

data directly with other companies (Rosetta Net compliant). This initiative supports [our] objective to be the primary source product.”

The following table summarizes the amount of increased revenue *each year* from these two opportunities projected over a five-year period. Conservative “what-if” estimates are used; for example, the table shows the revenue increase if time to market were improved by just one day. Similarly, revenue improvements for increased competitiveness are estimated at 0.01 *percent*.

Increased Revenue	Year 1	Year 2	Year 3	Year 4	Year 5
Faster time to market ¹²	1,095,890	1,095,890	1,095,890	1,095,890	1,095,890
Increase competitiveness	400,000	400,000	400,000	400,000	400,000
Projected Revenue Benefits	\$1,495,890	\$1,495,890	\$1,495,890	\$1,495,890	\$1,495,890

Assembling the SaaS Financial Model

The business case for SaaS boils down to a relationship between net financial benefits and implementation costs, otherwise known as “return on investment” (ROI). The preceding sections of this paper describe how to identify and calculate the raw value of each benefit. What follows in this section are the steps for building the cash flow projections, payback period, net-present-value calculations, and ultimately the ROI. To give context to these calculations, this paper cites financial data calculating the ROI for Astoria On-Demand.

Calculating Cash Flow

‘Cash flow’ compares the money going out of the organization attributed to SaaS (e.g., paying the license fees, implementation fees, etc.) with the money coming into the organization from the benefits of using the on-demand product (e.g., direct cost savings, productivity gains and incremental revenue). Since some costs take time to expire and some benefits take time to accrue, cash flows are forecasted over a five-year period.

¹² Assumes 10 new product releases per year, each product generating \$100 million annually.

For example, some SaaS benefits may be tied to the rate at which that service penetrates the organization. Astoria On-Demand, for example, delivers a number of efficiencies because of its heavy use of DITA for structured document management, but large enterprises cannot possibly shift to DITA-based authoring overnight. So, the revenue benefits attributed to Astoria On-Demand are factored by the adoption rate of Astoria On-Demand across multiple divisions projected over a five-year period, as demonstrated in the following table.

Increased Revenue	Year 1	Year 2	Year 3	Year 4	Year 5
Faster time to market ¹³	1,095,890	1,095,890	1,095,890	1,095,890	1,095,890
Increase competitiveness	400,000	400,000	400,000	400,000	400,000
<i>Projected Revenue Benefits</i>	<i>\$1,495,890</i>	<i>\$1,495,890</i>	<i>\$1,495,890</i>	<i>\$1,495,890</i>	<i>\$1,495,890</i>
Adoption Rate of Astoria On-Demand ¹⁴	10%	25%	50%	75%	100%
Actual Revenue Benefits	\$149,589	\$373,973	\$747,945	\$1,121,918	\$1,495,890

The following table summarizes the five-year net cash flow within an organization after acquiring the Astoria On-Demand service.

Net Cash Flows	Year 1	Year 2	Year 3	Year 4	Year 5
Cost Savings ¹⁵	\$93,838	\$234,594	\$469,188	\$703,781	\$938,375
Productivity Gains ¹⁶	69,420	173,550	347,101	520,651	694,202
Increased Revenue ¹⁷	189,589	473,973	947,945	1,421,918	1,895,890
Total Benefits	352,847	882,117	1,764,233	2,646,350	3,528,467

¹³ Assumes 10 new product releases per year, each product generating \$100 million annually.

¹⁴ Since it is not realistic to expect complete adoption of Astoria On-Demand in the first year of service utilization, the net revenue increase graduates from 10 percent to 100 percent over the five-year period.

¹⁵ Includes cost reductions due to lower support costs, lower non-compliance fines, and lower risks of litigation.

¹⁶ Includes improvements due to more efficient editing and reviewing processes, reduced burden on Engineer, etc.

¹⁷ Includes new revenue due to faster time to market, higher quality and compliance, and offering new digital initiatives.

Net Cash Flows	Year 1	Year 2	Year 3	Year 4	Year 5
Investment ¹⁸	(317,400)	(225,225)	(225,225)	(225,225)	(225,225)
Net Cash Flows	\$35,447	\$656,892	\$1,539,008	\$2,421,125	\$3,303,242

Payback Period versus Net Present Value

Payback period provides a sense for the limit of the downside of SaaS, or expressed another way, “How fast do I recoup the money I’ve invested?” It’s easy to calculate the payback period—just break the net cash flow into monthly increments and find the point at which the value is zero.

Payback period has a serious drawback. It does not account for the upside of the investment over time. For example, one investment may pay back in a few months, while another may pay back in one year. If only one option may be chosen, hasty analysis based solely on minimal investment risk would suggest adopting the first option. But what if the second option would generate an incremental \$1 million per year while the first option only generates \$10,000? Payback cannot account for this condition.

Another drawback: payback period doesn’t account for the time-value of money, expressed as ‘net present value.’ NPV is one of the most commonly used financial analysis techniques, largely because it accounts for the magnitude of returns and the time-value of money. NPV is defined as the value, in today’s dollars¹⁹, of future net cash flows (cash in minus cash out) over a specified period of time. NPV is always quoted as a single dollar figure, and a higher number is better.

The following table compares the net present value of Astoria On-Demand with a similarly configured on-premise XML document management system. Calculations for cost savings, productivity gains, and revenue gains have been projected over a three-year and five-year period. The cost of capital is same for both configurations.

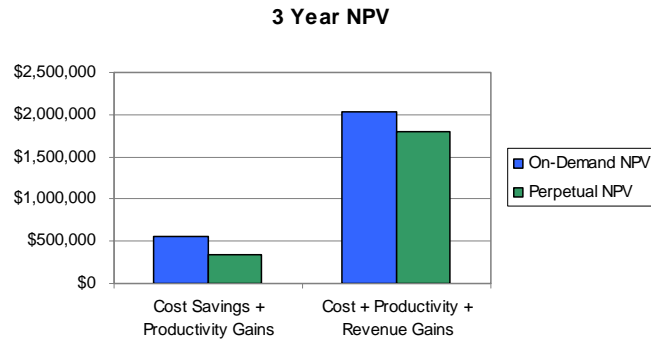
¹⁸ Investments beyond the service fees for Astoria On-Demand include converting documents to XML and administration of user accounts in Astoria On-Demand.

¹⁹ Today’s dollars, or “present value,” invokes the time-value of money: a dollar today is worth more than a dollar five years from now. Factors such as inflation, opportunity cost and uncertainty all contribute to a dollar tomorrow being worth less than a dollar today. The typical cost of overall capital (debt and equity) in the banking industry and for utilities is about 5 percent and for industries like telecom and cable is about 9 percent. In this paper, the cost of capital is set at 10%.

	3-Year NPV		5-Year NPV	
	On-Demand	On-Premise	On-Demand	On-Premise
Cost Savings only	\$27,063	\$(203,615)	\$1,110,432	\$1,014,273
Cost Savings + Productivity Gains	\$563,491	\$332,814	2,751,272	\$2,655,113
Cost + Productivity + Revenue Gains	\$2,028,497	\$1,797,820	\$7,232,467	\$7,136,308

The following graph illustrates the three-year NPV calculated above. The numbers in these calculations point out two important facts about on-demand:

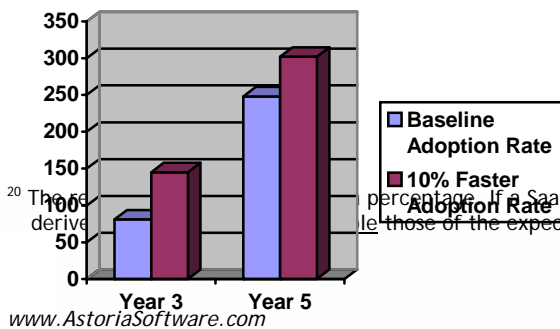
- A SaaS-based service generates a greater overall value compared with similarly configured on-premise solutions, especially in the first three to five years of usage.
- Focusing analysis solely on cost-savings ignores the real value of productivity gains and new-revenue gains, an omission that weakens the argument for SaaS.



Calculating Return on Investment

With the value of all actual benefits expressed in “today’s dollars,” it is relatively easy to subtract the present value of the investment from the present value of the returns and divide the result by the present value of the investment²⁰. This is the true ROI of an on-demand solution, and there is strong temptation to “run the numbers” just to

get to this figure. Stopping at ROI would be a mistake.



²⁰ The percentage derived from the percentage of the expected total costs to implement the solution.

ROI is truly useful when the variables upon which it is based are adjusted in what-if scenarios. For example, what if the adoption rate is accelerated each year?

The preceding chart depicts Astoria On-Demand's ROI when considering cost savings and productivity gains. With a mere 10 percent improvement in the adoption rate each year of Astoria On-Demand, the result is a 79 percent higher ROI at Year Three and 22 percent higher²¹ ROI at Year Five²².

Conclusion

The value of software as a service, properly calculated, is staggering. When actual benefits are identified and separated from simple solution features, these benefits can be translated into real money saved or earned. Then, the correct application and understanding of financial tools yields a defensible return on investment for SaaS. With this kind of analysis, any business case to gain management approval for a SaaS implementation will be approved *because it's in the numbers*.

There are two keys to building the financial model. First, select each individual benefit carefully and ensure that there is data within the organization to determine its validity and value. Second, include projections for productivity gains and new revenue opportunities to show that a SaaS-based solution is strategic to the organization, not merely tactical to the department. These keys will unlock the inherent value of software-as-a-service, forming the foundation of a business case built to support the organization's primary business and financial goals.

Astoria Software has a sophisticated ROI tool that it uses regularly to assist in building the business case for Astoria On-Demand. This tool provides a framework based on industry norms and customer interviews, and incorporates cash flow, payback period and return on investment calculations. In addition, it allows the user to choose which benefits to include and modify variables to match their own organization. Contact the company at roi@astoriasoftware.com to learn more.

²¹ Astoria On-Demand has its biggest impact in the early years of implementation; by Year 5 virtually the whole organization is using Astoria On-Demand, so the projected financial benefits have already been realized.

²² Incidentally, 10% improvement in the adoption rate cuts the payback period for Astoria On-Demand in half—from 10.8 months to 5.4 months—in a typical configuration.

About Astoria Software

Astoria Software, Inc. is the leading provider of standards-based, dynamic product documentation solutions for advancing business-critical initiatives. Astoria's object-based model enables companies to efficiently re-use and repurpose digital material in support of new revenue initiatives; it drives reductions in cost-of-goods sold; and it heightens levels of customer satisfaction. Astoria On-Demand, a SaaS-based solution for creating, editing, managing and assembling dynamic product documentation, delivers a compelling ROI to business leaders competing in worldwide markets. Customers of the Astoria On-Demand enjoy a more rapid return on investment than they do with any other comparable offering. Astoria's customers are some of the most recognized, progressive organizations from around the world, and include: Texas Instruments, Honeywell, Nokia, Siemens Medical Solutions, General Electric Healthcare Solutions, Milliman Care Guidelines and others. Astoria is based in San Mateo, California. You can reach us at www.astoriasoftware.com or +1.650.357.7477.