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# FINDING A GROWTH BUSINESS MODEL AT STACK OVERFLOW, INC.

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*Professors Micah Siegel (Stanford University) and Fred Gibbons (Stanford University) guided the development of this case using the [CasePublisher](#) service as the basis for class discussion rather than to illustrate either effective or ineffective handling of a business situation.*

## Introduction

Joel Spolsky and Jeff Atwood had launched Stack Overflow less than two years ago, and it had already crossed the 175,000 mark in terms of registered users. The creation of an open platform where programming questions were promptly answered was an achievement in itself. However, Spolsky and Atwood faced their next challenge: coming up with a revenue model to monetize the popularity of Stack Overflow.

Led by their frustration with other programming related Q&A websites, Spolsky and Atwood had started Stack Overflow to enable users to find answers to programming questions. The community-driven site was an open alternative to earlier forums, providing a platform for programming experts to share knowledge for free. The founders strongly believed in the adage “Environment influences behavior”. Therefore, they sought to launch a collaborative platform that served as a one-stop shop for all programming needs. They incorporated various features to motivate contributors. For instance, Stack Overflow identified the best experts within a specific domain by tracking their activity and awarded reputation points to users who showed their technical expertise and contributions. As pointed out on Stack Overflow's career website, by earning reputation points, “Stack Overflow Careers help top developers get great jobs at great companies.”<sup>1</sup> Stack Overflow describes itself as a fusion of a wiki, blog, forum, and social rating website, emphasizing itself as a platform for open and free exchange of information.<sup>2</sup>

While Spolsky and Atwood were pleased with the initial interest in StackOverflow.com, they were unsure of how they should capitalize on the success. After some consideration, they came up with four options: licensing the platform to third parties, offering the platform through a software-as-a-service model, recruiting experts to create a proprietary network, or opening up the platform and focusing on generating a high volume of traffic and monetize it with advertisements. Each option had its own advantages and disadvantages, but Spolsky and Atwood both knew that they had to make a decision, and they had to make it soon. It was time.

## The Founders

### JOEL SPOLSKY

Joel Spolsky is a software developer and a widely known expert on software project management. He graduated from Yale University in 1991 with a BS in Computer Science. He immediately joined Microsoft as a program manager on the Excel team, and later drove Microsoft's strategy on Visual Basic for applications.<sup>1,1</sup> In 1995, he moved to New York to work

on web programming for Viacom, after which he joined Juno, an early Internet Service Provider, where he developed a highly popular Internet client that eventually gained millions of users.<sup>1.2</sup> In September 2000, he co-founded Fog Creek Software with Michael Pryor, and became the company's CEO. Spolsky and Pryor's primary goal was to build a software company that considered software developers as the primary asset. Its flagship product, Fog-Bugz, was a popular project management system for software teams.<sup>1.2</sup> With merely 50 employees, Fog Creek Software had revenues of approximately \$6 million in 2009.<sup>1.3</sup>

Spolsky authored Joel on Software, a popular blog amongst software developers, which he started in March 2000. His blog focused mainly on software development and was widely popular, and even translated to over 30 languages.<sup>1.3</sup> He used the blog as a canvas to discuss recommendations for hiring programmers and observations on evaluating the performance of a development team.<sup>1.4</sup> The blog was voluntarily shut down in March 2010, so that Spolsky could focus on other projects. In addition, Spolsky also wrote five books, including User Interface Design for Programmers, Joel on Software, and Smart and Gets Things Done: Joel Spolsky's Concise Guide to Finding the Best Technical Talent. He also worked as a contributing editor for a monthly column in Inc. Magazine.<sup>1.2</sup> Spolsky's stated mission for Fog Creek Software, including Stack Overflow is to, "help the world's best developers make better software".<sup>1.5</sup>

## J E F F A T W O O D

Jeff Atwood is a software developer, author, podcaster and the blogger behind Coding Horror. He co-founded three Q&A websites: Stack Overflow for computer programming questions, Server Fault for system administrator issues, and Super User for general computer-related questions. Atwood has always been a strong proponent of blogging as an effective means for exchanging ideas, questions, and answers. He started his software career with BASIC in the 1980s, and moved on to work with Microsoft on Visual Basic 3. He wrote in Pascal for early versions of Delphi. From 2005 to 2008, he worked for Vertigo Software in Point Richmond, CA, as a Technical Evangelist.<sup>1.6</sup> His current focus is on VB.NET and C#.

Atwood considers himself an experienced Windows software developer with a keen interest in the human side of software programming.<sup>1.7</sup> He said, "Computers are fascinating machines, but they're mostly a reflection of the people using them. In the art of software development, studying the code isn't enough: you have to study the people behind the software, too."<sup>1.7</sup>

(See Exhibit 1 for information on other members of the management team.)

## History of Online Q&A Sites

Q&A websites allow users to post questions on a range of topics and receive answers from other users. The success of a Q&A website is heavily dependent on its ability to attract targeted traffic. This can be accomplished by increasing exposure and visibility in search engine results. An early example of a Q&A website is AskJeeves.com, launched in 1996. Users submitted queries to a fictional valet “Jeeves,” who returned search results as answers. However, the results were often off-topic and the rigid question-query format made it difficult to provide relevant terms to the search engine. These deficiencies eventually led to its demise.<sup>2.1</sup>

Major search engines Google and Yahoo! entered the game by offering human-powered Q&A communities Google Answers and Yahoo! Answers respectively. Yahoo! Answers, launched in July 2005, was created to replace Ask Yahoo!, Yahoo!'s former Q&A platform, which was discontinued in March 2006. According to comScore, Yahoo! Answers is the second most popular Q&A site on the Internet, only behind Answers.com.<sup>2.2</sup> Yahoo! Answers' staff claim to have 200 million users and 15 million daily visitors. Google Answers was an online knowledge market offered by Google, where users would pay for well-researched answers to their questions. In November 2006, Google announced that it planned to shut down the service, but made the site's archives available to users.<sup>2.3</sup>

Integrating Q&A websites with social networks has been an emerging trend lately. An example is Quora, a Q&A website founded by Adam D'Angelo, former Facebook CTO, and Charlie Cheever. Quora allows users to link their online Quora identities to their Facebook profiles. This increases credibility of users as well as answers. Moreover, users with certain subject knowledge are tagged in specific categories, and alerted of questions specific to their domain.<sup>2.4</sup> This forms a virtual group of experts in each domain, thus creating a pool of talent categorized on the basis of knowledge. Similar to Twitter, users can follow questions, topics, peers, and receive notifications on latest updates. This model emphasizes social networking as an integral part of the Q&A experience. In March 2010, Quora received funding from Benchmark Capital and was valued at \$86 million<sup>2.5</sup> (See Exhibit 2 for other popular Q&A websites). Another popular example in this category is that of LinkedIn Answers offered by LinkedIn - a popular professional networking site. It launched LinkedIn Answers to offer a professional question-answer service. It offers the incentive of being able to strengthen one's professional identity by active participation on the the site's QnA forums.

## History of Stack Overflow

As part of the growing software development community, Spolsky and Atwood often got frustrated with the quality of solutions to programming queries on search engines. Searches often directed users to a forum trapped behind a “paywall”, whereby the site would require a paid subscription to view technical responses. Another major issue was that search engines would prioritize older pages with obsolete information. The founders of Stack Overflow identified six major flaws with existing Q&A websites: sign up scams where fake Q&A sites solicited contact information, incorrect answers, users' inability to edit incorrect or incomplete responses, lack of comprehensive answers to complicated programming problems, inability to find multiple solutions to a question, and obsolete results.

To address these issues, Spolsky and Atwood built Stack Overflow to provide high-quality, relevant information in a freely accessible way. They envisioned that Stack Overflow would be a combination of collaboration technologies, including open editing (like Wikipedia), feedback driven user ranking (like Reddit or Digg), moderated content (like blogs), and forums to create a distinctive format (see Exhibit 3 for their position).

Atwood involved the readers of his blog, Coding Horror, early in the development process. In July 2008, these initial users helped test the beta version of the website and aided the decision making process (specifically for the name and logo of the site.) In September 2008, the beta release became available to the general public (see Exhibit 4 for a typical StackOverflow.com page).

Stack Overflow chose not to advertise. Much like Digg and Reddit's systems, users vote for the best response. Users are rewarded for responding and voting with Badges and Karma. This system encourages users to return and make positive contributions to the site, greatly increasing the quality of responses posted. Stack Overflow immediately received positive reviews like “it's a Q&A site where the right answer isn't buried on page fifty, it's almost always at the top.”<sup>3.1</sup>

Spolsky and Atwood designed the website keeping search engine optimization (SEO) in mind, optimizing answer pages to ensure that they were easily indexed by search engines, and were displayed in the top search results. This effort quickly paid off, as approximately 90% of traffic comes from Google.<sup>3.2</sup>

Spolsky and Atwood also hoped to reduce the time to obtain responses compared to other Q&A sites. According to Spolsky, for most questions, it only took three or four minutes before users posted answers. This was a significant improvement over traditional discussion forums, where it often takes up to two days to receive a response. Spolsky said, “What's awesome about Stack Overflow is that the act of asking a question is also the act of search-

ing for an answer. And so if an answer is there, you will find it, and if it isn't, it's just one extra click to actually commit to asking that question and you will get an answer in quick time.”<sup>3,2</sup> The large decrease in response time encouraged more users to post questions. It also had a positive effect on the Stack Overflow ecosystem, transforming it into a one-stop shop for programming questions.

Stack Overflow quickly gained large popularity, getting 3 million unique visitors within four months of its public launch. In February 2010, it had approximately 135,000 registered users and hosted 515,000 questions. Given the interests of the founders, most early users were .NET-centric software developers. The topics covered have since expanded to cover many other programming languages and platforms, including C/C++, Java, PHP, JavaScript, C#, and the iPhone platform (see Exhibit 5 for the top 10 languages on Stack Overflow). Inspired by the success of Stack Overflow, and to change the way all questions are answered on the internet, the founders decided to apply its technology to a wider selection of websites. In October 2009, the company announced Stack Exchange, a service that offered whitelabel installations of the Stack Overflow platform for use by third parties on a software-as-a-service basis. In December 2009, Stack Exchange was selected by Google to power its Android developer support forums.

## METRICS

To avoid the issues that plagued previous Q&A engines, Spolsky and Atwood studied the behavior of users on similar Q&A sites. They analyzed the quality of answers, the kinds of questions asked and the visitor demographics. For instance, they found that Yahoo! Answers primarily attracted teenagers and Mahalo Answers contained questions related to free or discounted products and services. In contrast, Spolsky and Atwood wanted Stack Overflow to target professional programmers. The following 'building blocks' were incorporated into Stack Overflow's strategy to gain the right market segment:

1. **Voting:** To increase the quality of answers, visitors are encouraged to vote on answers they found useful. The answers are arranged by the number of votes received. This process ensures the best answers are displayed at the top, quickly showing the best solution in the presence of multiple possible answers. Users gain reputation points when others vote for their questions or answers (Exhibit 6 shows the reputation system).
2. **Tags:** To facilitate an easy retrieval of previous questions that have been answered, each question is associated with a variety of tags (see Exhibit 7 for an example). Tags help direct questions to experts from a specific field, improving the quality and speed of re-

sponses. Users may also customize the Stack Overflow website by specifying tags of interest and filtering out uninteresting ones, making their search experience more efficient.

3. **Badges:** To encourage participation and improve the quality of discussion, Stack Overflow introduced the concept of badges. These awards, shown on the user's profile, are given to users who consistently provide high quality answers or ask popular and relevant questions.
4. **Karma and Bounties:** Karma is a type of currency system that encourages and rewards participation. Users who earn enough karma enjoy special privileges. For example, only a user with sufficient karma can comment on answers and even modify questions. Users win karma by selecting the correct and most relevant answer to their questions.
5. **Data Dump:** Stack Overflow provides a “data dump”, which stores all the site's user-generated content under a Creative Commons license.<sup>33</sup> This license allows people to share and adapt content as long as it is correctly attributed to its author. Under the Creative Commons license, any derivative works must also be distributed under an “open” license. Monthly snapshots of the database are available for download via BitTorrent.
6. **Pre-Search:** Pre-Search provides a list of potentially related questions to a user before the user is allowed to post a new question. This prevents having multiple copies of the same question, enabling efficient retrieval of relevant answers.
7. **Search Engine Optimization:** It is critical for Stack Overflow to score top results in searches to increase its user base and to build its reputation as the “one stop shop” for all programming related questions. Therefore, it uses various search engine optimization techniques to increase its visibility on search engines. For instance, the URL of a particular page on the site contains keywords from the corresponding topic.
8. **Critical Mass:** Atwood and Spolsky used their blogs to promote Stack Overflow and direct traffic to it, ensuring the presence of an initial community. Atwood answered questions so quality answers were available on the website from the outset.
9. **Performance:** Built on a Microsoft software stack, Stack Overflow achieves high performance at a very low cost. Spolsky boasts that Stack Overflow's performance is comparable to websites with similar traffic, but only requires one-tenth of the hardware.

According to Spolsky, 91 percent of all questions at Stack Overflow have been answered where he defines answers as: “Questions which have received replies that have been voted up by other users”. Although Stack Overflow's unique fusion of social voting and Wiki-based approach solved many of the problems associated with programming-related Q&A websites,



new problems also appeared. Aside from “edit fights” between users, three potential drawbacks to the reputation system exist:<sup>3,4</sup>

1. Users who have recently joined have a lower reputation score than older users, though they may be more knowledgeable.
2. Reputation points are automatically rewarded and one up-vote is worth five times more than a down-vote. Because there is a daily limit on reputation points, mildly helpful contributors may gain the same points as more helpful contributors.
3. Responses to non-technical questions still count towards user reputation.

## MARKET REACTION

Stack Overflow had over 3 million unique visitors in March 2009 alone. Google Analytics estimate that there are 9 million developers worldwide. Therefore, Stack Overflow has a large user base with potential for increase (See Exhibit 8 and Exhibit 9 for unique visitor figures). According to Google Analytics, in January 2009, 36.3% of Stack Overflow's users were from the US.<sup>3,5</sup> In May 2010, Quantcast ranked them as the 940th most popular website in the US, with 6 million unique visitors a month worldwide<sup>3,6</sup> (See Exhibit 10 for a comparison of daily page views among top programming websites).

## Revenue Models

Spolsky and Atwood must also decide whether to maintain their current revenue model, or pursue additional avenues for capturing value from the Stack Overflow community. Currently there are four primary revenue models for Q&A sites:

1. **Advertising Model:** The Q&A website offers services for free while displaying third-party advertisements to obtain revenue. This model works when traffic volume is either large or highly specialized. Relevant sponsored advertisement is the order of the day, as it is most effective and most likely to work. An example is registry cleaner software banners displayed on a page with questions about Windows registry. In contrast to paid search, sponsors pay for keywords related to the Q&A post and not the user's initial search term. Hence, ad revenue per question may be higher than ad revenue per search for a search engine. However, it is difficult to predict the return on investment since advertisers lack a definitive method of determining how popular a particular keyword will be. From a business perspective, this model requires the least amount of resources. Another way to use advertising to increase revenue is to provide sponsored answers, similar to the way Google displays sponsored links alongside non-sponsored results. In such a



case, the sponsored answer will appear at the top of the answer list for any question, even above the highest-voted, and likely, most sensible, answer. However, Joel Spolsky is clearly against this model and says “Stack Overflow succeeded because it was not plastered with flashing ads, paid membership, and corrupt “sponsored” answers. Nobody is going to mess with that.”

2. **Subscription-Based Model:** Some Q&A websites, such as Experts Exchange, follow a subscription-based model, where users pay a monthly fee to access available content. Most Q&A websites do not follow this model primarily because it deters casual visitors, who usually form the bulk of traffic. Some websites implement hybrid strategies where certain content is free, while premium content still requires a subscription. This model is often coupled with advertising. Alternatively, some websites allow users to use the service for free for a trial period before committing to a long-term subscription.
3. **Pay-Per-Question Model:** Q&A websites like Uclue and JustAnswer, set prices on individual queries. Each question is displayed with the price that its owner is willing to pay for an answer. Once the best answer is selected, revenue is shared between the author of the best answer and the website.
4. **Job Posting Model:** Employers and recruiters pay for job postings on Q&A websites. A typical pricing strategy involves charging a fee to post a job opening and another fee for the ability to search the resume database. Some Q&A websites charge users to submit resumes and make them available to recruiters. Stack Overflow charges \$29 to post a resume(See Exhibit 12 for a sample list of job postings on StackOverflow.com).

## Overall Market

A recent Business.com study on usefulness of Q&A websites found that 49% of companies using social media post questions on Q&A sites, while only 29% said they use Twitter to collect business related information. This figure does not include companies retrieving information from Q&A websites provided by search engines.<sup>5.1</sup> The majority of traffic goes to a few large, general-purpose Q&A sites like Answers.com and Yahoo! Answers. As of August 2009, Answers.com had 56 million unique monthly visitors throughout the US and 83 million visitors worldwide.<sup>5.2</sup> In September 2009, Answers.com was ranked as the 13th most visited site in the US by comScore.<sup>5.3</sup> In contrast to general-purpose Q&A websites, Stack Overflow is fueled by a new niche programmer market and user base. Software developers have undergone a shift from using technical books to a trial-and-error approach, supplemented with querying search engines for specific problems (See Exhibit 5.1 for a survey on the usefulness of the Business.com Q&A site). Consequently, the number of forums and Q&A sites dedicated to software development have recently surged.

One of Stack Overflow's largest competitors is Experts Exchange (EE). EE allows users to post questions and view answers to technical questions. They feature a system with rankings, certificates and EE hall of fame memberships. Unlike Stack Overflow's open user community, EE designates page editors who oversee content, change articles and award points.<sup>5.4</sup> EE generates revenue by charging a subscription fee of all its users.<sup>5.4</sup> (See Exhibit 5.2 for EE payment options). With the advent of open Q&A websites that provide similar services at no charge, EE has seen a dip in membership growth. Thus, in order to keep the site's functionality, EE may have to start paying IT professionals to answer questions. According to Gavin Jones, "This concept in itself will reinvent the financial directive of online forums and will create revenue streams for thousands of IT professionals online."<sup>5.5</sup> In 1999, J.P. Morgan backed Experts Exchange with \$1.2 million in funding.<sup>5.2</sup>

Vendors like Microsoft and Adobe also host product-specific Q&A websites. Such huge companies use forums as one of their primary technical support channels. However, response time on these sites can be slow compared to Stack Overflow. It is also common to find company-specific knowledge databases that provide answers to frequently asked questions about their products. LinkedIn Answers is a knowledge market service by LinkedIn. It is somewhat similar to 3form Free Knowledge Exchange, Naver Knowledge iN, Yahoo! Answers, and other knowledge markets. LinkedIn Answers has an extensive user base, since it makes use of LinkedIn's network topology.

Experts believe that Q&A websites can be profitable, especially based on the revenue generated from the subscription-based model. However, the rapid growth of open Q&A websites raised questions of long-term profitability and sustainability for these sites.

## User Growth Models for Stack Overflow

Stack Overflow is predicted to follow a Logistic Growth Model, where the initial growth is exponential, but reaches a plateau at maturity.<sup>6.1</sup> Most of the simple programming questions are answered early in the life-cycle of the website and newer questions become increasingly difficult. As a result, in the later stages, the majority of questions will be answered by a handful of experts.<sup>6.2</sup> However, this model may be overly pessimistic due to the wide variety of programming languages being introduced and their growing user base.<sup>6.3</sup>

### HOSTED WHITELABEL

A "whitelabel" product is designed to be rebranded under another company's name.<sup>6.4</sup> Spolsky and Atwood recently launched a whitelabel infrastructure for Q&A websites called Stack Exchange. Stack Exchange uses the Stack Overflow engine to build Stack Exchange sites. However, Stack Exchange was largely considered unsuccessful. Spolsky ob-

served that very few communities were able to generate enough excitement to develop a consistent user base. He believed that for the community to succeed, it needed to be led by someone capable of both managing and monetizing it. Unfortunately, many potential clients lacked these abilities.

In April 2010, Spolsky announced significant changes to Stack Exchange and the upcoming launch of Stack Exchange 2.0.<sup>6.5</sup> According to Spolsky, the new model was inspired by the way Usenet newsgroups were created. (See Exhibit 16 for an outline of the Stack Exchange 2.0 site creation process.)

The changes made were:

1. The service will be free.
2. The content of all new Stack Exchange websites will be publicly owned under a Creative Commons license.
3. Stack Exchange employees will constantly conduct reviews of Stack Exchange sites to ensure interesting communities are pursued, while sites not generating enough attention are closed.

#### NETWORK OF EXPERTS

One of Stack Overflow's core assets is its community of professional programmers. This network of experts can be monetized in multiple ways. Stack Overflow could potentially charge for accessing the opinions and expertise of its users, however Spolsky and Atwood strongly oppose this model as it contradicts the fundamental purpose of the site, which is to make it a free and open platform for information exchange. The founders can also increase revenues by focusing on potential employers and advertisers interested in Stack Overflow's professional user base of advanced developers.

Stack Overflow Careers, a job site run by Fog Creek Software, currently monetizes this strategy by charging recruiters for access to its users' resumes and job postings. In fact, Stack Overflow Careers generates half of Stack Overflow's revenues. Dissatisfied employers can request a refund within 90 days of subscription. Job postings currently are one of the main revenue sources of Stack Overflow.<sup>6.6</sup> Stack Overflow Careers also generates profit by charging \$29 to job seekers for posting a resume.<sup>6.7</sup>

The main advantage of linking a job site with Stack Overflow is allowing professional software developers to combine their portfolios with their online peer reputations<sup>6.8</sup> (See Exhibit 17 for reputation statistics). Finally, programmers that have higher reputation at Stack

Overflow are more likely to submit resumes to Stack Overflow Careers (See Exhibit 18 for a plot showing this trend).

## MONOLITHIC SITE

Stack Overflow's early success can be partially attributed to its focus on quick delivery of high-quality answers to programming queries. Its fast response time and focused user base make it a popular resource for all programmers. As Spolsky described in a Google Tech Talk, "Our hope is that a large body of the questions that are in Stack Overflow will become the canonical place on the Internet to learn about very very narrow specific questions about very very narrow and specific programming topics."<sup>6,9</sup> A large user-base enables Stack Overflow to provide solutions to the most unique problems.

If Stack Overflow were to truly become a monolithic "one stop shop" software development website, it would need to offer other programming resources as well, including how-to guides, tutorials, code samples and links to additional valuable resources. This would expand its function from being a Q&A service to a full fledged programming resource, not only making it harder to maintain and scale, but also potentially putting it head-to-head with technology publisher O'Reilly and its O'Reilly Answers service. Additionally, this website would also compete with dedicated sites belonging to industry heavyweights like Adobe and Microsoft.

## Recent Financing Activity

Unlike many Q&A sites, Stack Overflow has been profitable from the start. Spolsky and Atwood's first goal was to improve how programmers got answers online. The founders accomplished this goal by bootstrapping Stack Overflow without outside funding. Expanding their vision, the founders shifted focus to change the way that all questions were answered on the Internet.<sup>7,1</sup> On April 13, 2010, Spolsky and Atwood announced their decision to seek venture capital funding.

Given Spolsky's previous and widely-known critical position on venture capital funding, the decision to seek VC investment was unexpected. However, the founders felt that venture capital funding gave them the confidence to expand their vision and build a useful network of Q&A websites instead of focusing on monetizing the project from the beginning.<sup>7,2</sup> Spolsky recognized the importance of expanding quickly, since Stack Overflow would soon face more competitive forces. Finally, having big investors back Stack Overflow could increase the site's visibility.<sup>7,3;7,4;7,5</sup>

In May 2010, Stack Overflow announced it had raised \$6 million in its first round of venture capital funding. The VC support came from a group of well-known investors led by Union

Square Ventures, with participation from angel investors, Ron Conway, Chris Dixon, Caterina Fake, Naval Ravikant, Nirav Tolia, Joshua Schachter, Micah Siegel, and Bob Pasker.<sup>7.6</sup> Industry luminaries Clay Shirky and Anil Dash also joined Stack Overflow as advisers.<sup>7.7</sup>

Spolsky wrote on the Stack Overflow blog:<sup>7.10</sup>

“The money we’ve raised means that, for the next (\$6m / monthly burn rate) months, we can take on new projects, hire new people, and build new expert Q&A sites on a wide variety of new topics. Instead of opening sites in exchange for money, we’re about to launch a new, democratic system where anyone can propose a Q&A site; and if it gets a critical mass of interested people, we’ll create it.”

Andrew Parker, member of the investment team at Union Square Ventures, wrote:<sup>7.8</sup>

“We at Union Square Ventures see Stack Overflow as a substantial step forward in the innovation of forums. Borrowing the best features from popular user-generated platforms like Reddit and Wikis, users can edit and correct any answer to questions, and vote up the best answers so that a casual consumer arriving from a Google search can quickly and confidently determine the right answer to the original question, we were delighted to see a couple candidates point us to their Stack Overflow reputation points and profiles as a piece of their web presence, which is an evidence that Stack Overflow users really care about their reputation on the site.”

Several investors have encouraged the founders not to focus on a revenue model too early.<sup>7.6</sup> This would enable the company to develop sites with large communities regardless of the potential for monetizing them from the outset. However, this lack of a business strategy, coupled with the failure of the previous Stack Exchange platform, has raised doubts about the long-term sustainability of the company.<sup>7.9</sup>

## The Future

Stack Overflow and Stack Exchange face many challenges in the near future. So far, Stack Overflow has been successful in serving the programming community. An easy way to increase revenue is to expand user base and figure out a way to monetize the traffic. However, with more than 175,000 registered users as of May 2010 and a history of fast growth, the user growth rate of Stack Overflow will ultimately be limited by the population of professional programmers. Therefore, the first challenge is to determine whether Stack Overflow should pursue a larger user base by expanding into domains other than programming, or if the focus should continue to be on software developers. Pursuing other fields has potential but may require expertise that the core team lacks.

The second challenge is to balance the quality and quantity of Stack Overflow's content. As the user base grows, expertise is bound to deteriorate, diluting the quality of content. Stack Overflow has enjoyed its early success partially because it attracted a group of highly skilled programmers to join. The likely decreasing expertise of new users poses special challenges that are not faced by social networks.

Finally, another challenge involves designing a revenue model to successfully monetize the Stack Overflow platform. So far, Spolsky and Atwood have four possible revenue models at their disposal to monetize the Stack Overflow concept:

1. **Software product** – Stack Overflow could be licensed to large corporations. To adopt this model, the major challenge would be to convince companies that Stack Overflow has a long term sustainable value.
2. **Platform product** – The Stack Overflow platform could be sold as a generalized tool to entities hoping to create knowledge expertise services using the software-as-a-service model. Spolsky and Atwood embraced this model with the initial incarnation of Stack Exchange but this approach has already proved unsuccessful.
3. **Owned-and-operated network of expert websites** – This option involves recruiting experts to develop knowledge sites as part of a vertically integrated Stack Overflow owned network. This could be used to build a large number of products in various technical fields (i.e. Stack Overflow for tax accountants). As the company ventures into fields where the founders lack domain expertise, both scalability and ability to maintain high standards are major challenges.
4. **High-traffic network of websites** – Stack Overflow could give away its platform for free to experts in order to start Q&A websites, then monetizing the high volume, highly focused traffic of each site. This is essentially the planned model for Stack Exchange 2.0.

## Discussion Questions

1. What business is Stack Overflow in? Who are its customers?
2. What is the overall market environment for online Q&A websites?
3. Is Stack Overflow's Q&A platform applicable to other knowledge exchanges? If so, what challenges might they face in expanding into new domains?
4. Who are Stack Overflow's competitors? What business models do they have? Are these sustainable?
5. What are the competitive forces operating in this business ecosystem?
6. How can Stack Overflow's current revenue channels be evaluated?
7. What alternative revenue and profit generating opportunities are available to them?
8. How should Stack Overflow invest the \$6 million in funding that it recently received?
9. Does Stack Overflow have the necessary team to expand from its current position and move in the direction chosen by its founders?
10. With the non-stop development in this industry and the prospect of new technologies or similar business ventures emerging, where will Stack Overflow stand in a few years? Will they be required to make major changes to guarantee long term success?



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## EXHIBIT I: OTHER MANAGEMENT MEMBERS OF STACK OVERFLOW

### **MICHAEL PRYOR - CFO**

Michael Pryor co-founded Fog Creek Software with Spolsky in September of 2000. He served as the company's president from its inception and has been the CFO of Fog Creek since 2006. Michael graduated from Dartmouth College with an Honors B.A. in Computer Science (Phi Beta Kappa, magna cum laude). After graduation, he joined Juno Online Services as a Windows client developer. He currently writes a column called "Puzzle This" for Make Magazine and also runs the popular interview website [TechInterview.org](http://TechInterview.org).

### **ROBERT CARTAINO - COMMUNITY COORDINATOR**

Robert Cartaino has 21 years of industry experience as a software engineer, program manager, and business owner. He is also an online pioneer with an extensive background in online communities pointing back to the modem and BBS era. In 1993, to evangelize the use of online technologies as a viable business model, Cartaino formed True Media Inc. His services were among the earliest to promote virtual communities as a primary focus of telecommunications. His early "digital cash" services paved the way for hobbyists and website owners to begin accepting payments online.

### **BRAD BURNHAM - BOARD MEMBER**

Brad Burnham graduated with a BA in Political Science from Wesleyan University and began his career in information technology with AT&T in 1979. He held a variety of sales, marketing, and business development positions until 1990, when he spun Echo Logic out of Bell Laboratories. Echo Logic was a catalyst for the creation of AT&T's venture capital arm, AT&T Ventures, and in 1993, Brad joined AT&T Ventures as an Executive in Residence. He was promoted to Principal in 1994 and General Partner in 1996. Currently, he is a partner in Union Square Ventures and a board member for a number of Web 2.0 companies.

Adapted from:

- "About - Stack Overflow." Stack Overflow. Web. 17 May 2010. <<http://stackoverflow.com/about/management>>.
- "Fog Creek Software - About the company." Fog Creek Software. Web. 17 May 2010. <<http://www.fogcreek.com/about.html>>.

## EXHIBIT 2: POPULAR Q&A SITES

### FREE SITES

- Answers.com - The most popular Q&A website; branches to WikiAnswers & Reference Answers.
- Yahoo! Answers - The second most popular Q&A site. Yahoo! Answers created a free question and answer community.
- WikiAnswers - A Q&A community based around a wiki where anyone can answer a question and edit an answer.
- LinkedIn Answers - Focused on business questions.
- Rediff QnA - A Q&A site from the Indian portal Rediff.
- Math Overflow - A site dedicated to the math community that runs on the Stack Overflow engine.
- Mahalo Answers - A Q&A site featuring the unique option of users giving tips to those who respond to questions.
- Zolved.com - Allows technical questions on any gadget or computer. Aids in finding user manuals.
- Quora - A social networking based website.

### PAID SITES

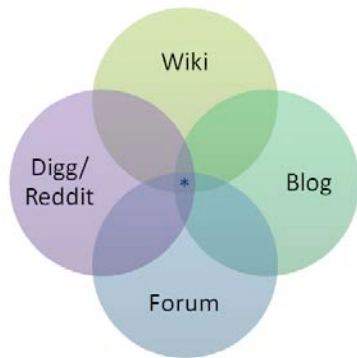
- Uclue - Uclue is very similar to the old Google Answers. Users can ask a question, set a price, and get an answer.
- Kasamba - Provides live chat with paid experts who charge by the minute.
- Ask.MetaFilter - In order to cut down on spam, MetaFilter's Q&A site charges a one-time \$5 registration fee.
- ExpertBee - Experts bid on questions at ExpertBee and the user picks one expert to answer.
- Experts Exchange - Allows asking questions directly to experts, and charges a monthly fee for participation.

### OTHER SITES

- ChaCha - Experts guide a web search and help the user find the desired results.
- Ether - Ether allows users to set themselves up as paid phone consultants.
- Qunu - Provides direct talk to experts via the Jabber IM client.
- Everyday Questions - Turns questions and answers into funny flash cartoons.

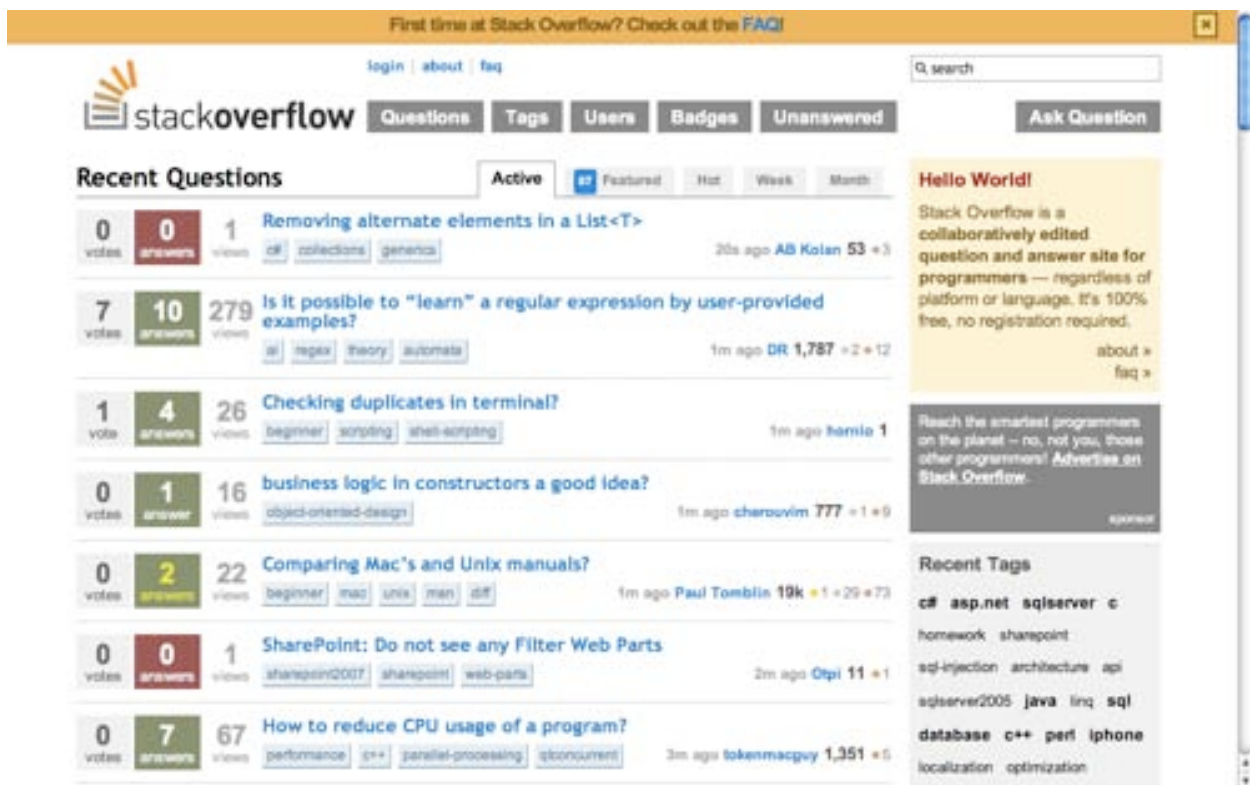
Adapted from: "Who's Asking? A Roundup of Q&A Sites." ReadWriteWeb. Web. 17 May 2010.  
<[http://www.readwriteweb.com/archives/question\\_and\\_answer\\_sites.php](http://www.readwriteweb.com/archives/question_and_answer_sites.php)>.

### EXHIBIT 3: STACK OVERFLOW'S POSITION



Source: "About - Stack Overflow." Stack Overflow. Web. 17 May 2010. <<http://stackoverflow.com/about>>

### EXHIBIT 4: A TYPICAL STACKOVERFLOW.COM PAGE



Source: "Stack Overflow." Stack Overflow. Web. 17 May 2010. <<http://stackoverflow.com>>.

## EXHIBIT 5: TOP 10 PROGRAMMING TAGS AT STACKOVERFLOW.COM

- C# - 80573
- Java - 47777
- .NET - 41111
- PHP - 39693
- ASP.NET - 36588
- JavaScript - 34763
- C++ - 30136
- jQuery - 27696
- iPhone - 24536
- Python - 24177

Source: "Tags - Stack Overflow." Stack Overflow. Web. 17 May 2010. <<http://stackoverflow.com/tags>>.

## EXHIBIT 6: SO'S REPUTATION SYSTEM

### Point system used to gain/lose reputation points

- Answer is voted up: +10
- Question is voted up: +5
- Answer is accepted: +15 (+2 to acceptor)
- Post is voted down: -2 (-1 to voter)

### Responsibilities given based on accumulated reputation

- 15 - Vote up
- 15 - Flag offensive
- 50 - Leave comments
- 100 - Vote down (costs 1 rep)
- 100 - Edit community wiki posts
- 200 - Reduced advertising
- 250 - Vote to close, reopen, or migrate your questions
- 250 - Create new tags
- 500 - Retag questions
- 1000 - Show total up and down vote counts
- 2000 - Edit other people's posts
- 3000 - Vote to close, reopen, or migrate any questions
- 10000 - Delete closed questions, access to moderation tools

EXHIBIT 7: EXAMPLE OF TAGGED QUESTIONS IN STACKOVERFLOW.COM

Tagged Questions











stats

iphone Questions











158 This Week  
 857 This Month  
 3,245 All Time

Top Users Answering iphone Questions

This Month

- 66  Marc W  
2,415 ● 1 ● 11
- 64  Rob Napier  
1,708 ● 6
- 56  Kriem  
1,237 ● 10
- 49  Roger Nolan  
2,113 ● 2 ● 11
- 49  Jane Sales  
1,854 ● 1 ● 9
- 46  Marc Charbonneau  
7,402 ● 4 ● 15
- 45  pgb  
2,529 ● 1 ● 10
- 39  Jim Dovey  
1,320 ● 1 ● 7
- 37  Ramin  
534 ● 3
- 36  mmc  
999 ● 10

All time

- 422  Ben Gottlieb  
6,916 ● 2 ● 12
- 261  August  
3,775 ● 10
- 250  Andrew Grant  
12k ● 16 ● 46
- 198  Kendall Helmstetter Geln  
3,618 ● 3 ● 14
- 184  Marc Charbonneau  
7,402 ● 4 ● 15
- 173  Brad Larson  
3,793 ● 8
- 162  Stephen Darlington  
3,509 ● 2 ● 17
- 147  Roger Nolan  
2,113 ● 2 ● 11
- 130  Jason Coco  
6,601 ● 6 ● 25
- 126  Chris Hanson  
6,746 ● 10 ● 20

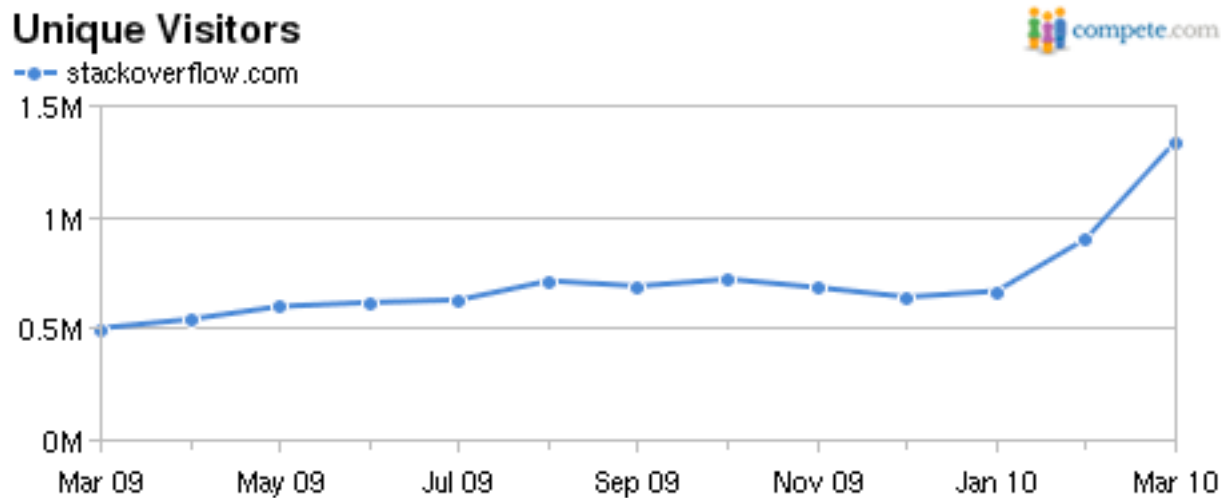
Source: "New Tag Statistics." Blog – Stack Overflow. Web. 17 May 2010. <<http://blog.stackoverflow.com/2009/06/new-tag-statistics/>>.

EXHIBIT 8: UNIQUE VISITORS (AUGUST 2008 TO MARCH 2009)



Source: "Learning from StackOverflow.com." YouTube. Web. 17 May 2010. <[http://www.youtube.com/watch?v=NWHfY\\_lvKIQ](http://www.youtube.com/watch?v=NWHfY_lvKIQ)>.

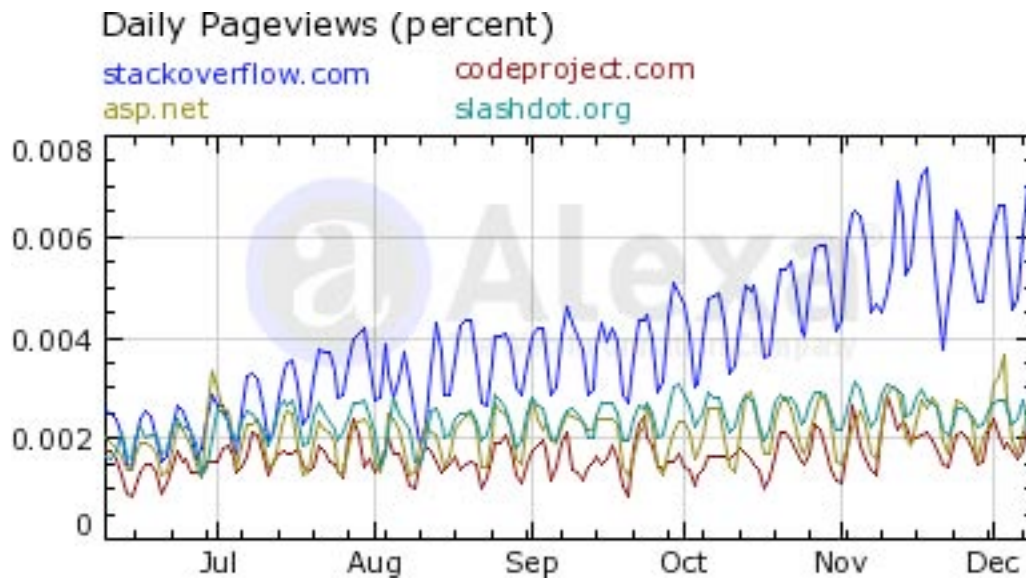
EXHIBIT 9: UNIQUE VISITORS (MARCH 2009 TO MARCH 2010)



Source: "Site Profile for stackoverflow.com." Site Profile Search | Compete. Web. 17 May 2010. <<http://siteanalytics.compete.com/stackoverflow.com/?metric=uv>>.

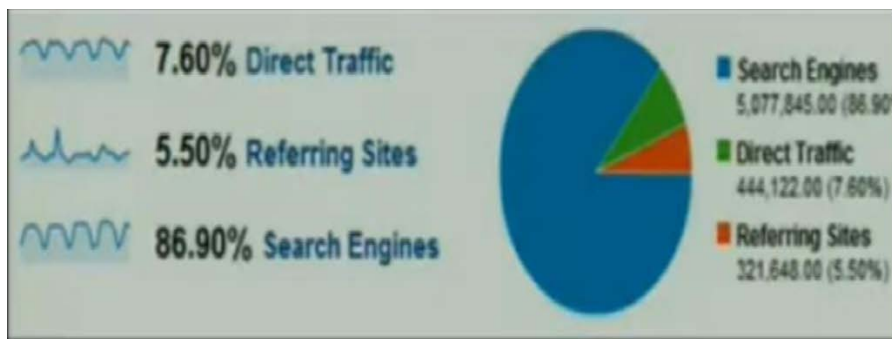


EXHIBIT 10: SURVEY ON DAILY PAGE VIEWS AMONG TOP PROGRAMMING WEBSITES (2009)



Source: "StackOverflow.com - Site Info from Alexa." Alexa. Web. 17 May 2010. <<http://www.alexa.com/siteinfo/stackoverflow.com>>.

EXHIBIT 11: DISTRIBUTION OF TRAFFIC ON STACK OVERFLOW (MARCH 2009)



Source: "Learning from StackOverflow.com." YouTube. Web. 17 May 2010. <[http://www.youtube.com/watch?v=NWHfY\\_lvKIQ](http://www.youtube.com/watch?v=NWHfY_lvKIQ)>.

EXHIBIT 12: SAMPLE JOB POSTINGS AT  
STACKOVERFLOW.COM

Stack Overflow displays Programmer/Developer jobs in the following format, Posted Date, Job and Location. It allows users to view a list of jobs, search, post jobs and provides special search for employers.

- 3 hours ago – Director of Back Office Systems at Rent The Runway – New York, NY
- 4 hours ago – Application Developer at Maui Media Inc – New York, NY
- 5 hours ago – Portal Developer at Cisco – San Jose, CA
- 5 hours ago – Storage Architect - MobileMe at Apple Inc. – Cupertino, CA
- 6 hours ago – Software Engineer – New York, NY – Yodle at Yodle – New York, NY
- 6 hours ago – Malware Analyst at Vulnerability Research Labs – Reston, VA
- 6 hours ago – DSP/FPGA Engineer at Dobra Resources – Reston, VA
- 7 hours ago – Hedge Fund Software Developer at Ada Investment LP – New York, NY
- 7 hours ago – Java Developer at JetBrains Inc – Framingham, MA

Source: "Jobs.StackOverflow.com." Stack Overflow. Web. 16 May 2010. <<http://jobs.stackoverflow.com>>.

EXHIBIT 13: GOOGLE ANSWERS



Ask a Question

Enter your question below

Question: The more details you provide, the better the results you'll receive. [How to ask a great question.](#)

Who founded Wikipedia?

Subject: Enter the topic of your question for our researchers (e.g. "Hiking in New Mexico").

Founder of Wikipedia

Price: Set a price between \$2.00 and \$200.00. [How do I price my question?](#)

\$ 2.50 A non-refundable \$0.50 listing fee will be added.

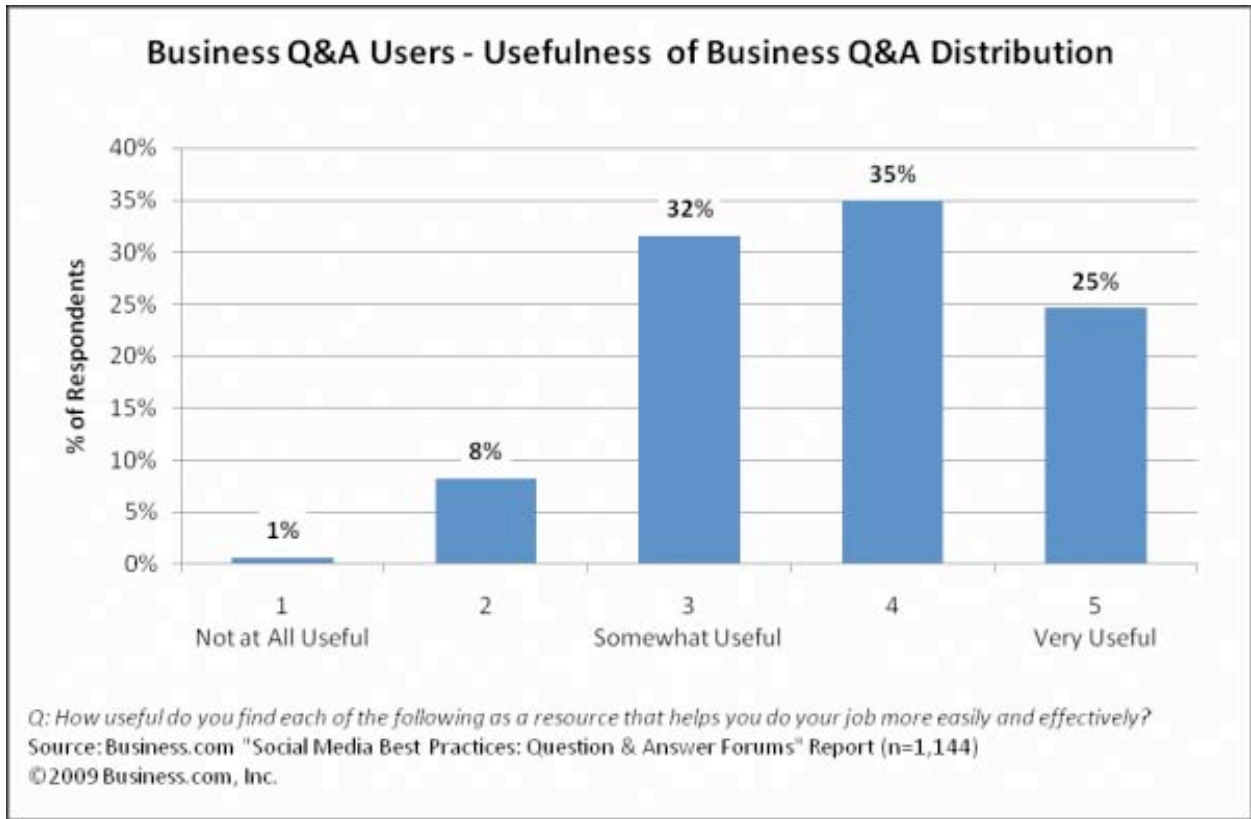
Category: Select the category most appropriate for your question.

<p>Choose One</p> <ul style="list-style-type: none"><li>Arts and Entertainment</li><li>Business and Money</li><li>Computers</li><li>Family and Home</li></ul>	>	<ul style="list-style-type: none"><li>Games</li><li>Graphics</li><li>Hardware</li><li>Internet</li><li>Operating Systems</li></ul>
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Continue to payment information >>

Source: "Google Answers." Wikipedia. Web. 17 May 2010. <[http://en.wikipedia.org/wiki/Google\\_Answers](http://en.wikipedia.org/wiki/Google_Answers)>.

EXHIBIT 14: BUSINESS.COM SURVEY ON USEFULNESS OF Q&A SITES



Source: "Social Media Best Practices: Question & Answer Forums." Business.com. Web. 17 May 2010.  
<<http://www.business.com/info/social-media-best-practices-q-and-a>>.

## EXHIBIT 15: EXPERTS EXCHANGE PAYMENT OPTIONS

The image shows a screenshot of the Experts Exchange website. The top section is titled "Expert Comment" and features a sign-up prompt: "You must sign-up to view this comment". It lists benefits: "Search our knowledgebase of proven solutions.", "Ask unlimited question to our field of experts.", and "Cancel any time". There is a "Sign Up Now" button and a link for "Already a Member? Log in.". To the right is a magnifying glass icon with the text "a password in have.com".

The middle section is titled "Author Comment" and shows a user profile icon and a comment that has been redacted with a grey box.

The bottom section is titled "Pay Plan:" and lists four options:

Pay Plan	Price	Additional Info
Monthly	\$12.95	
6 Months	\$59.95	1 month free (\$17.75 savings)
1 Year	\$99.95	4 months free (\$55.45 savings)
2 Year	\$189.95	9 months free (\$120.85 savings)

Source: "Experts Exchange should be removed from Google search results." Rusty Razor Blade. Web. 17 May 2010. <<http://www.rustyrazorblade.com/2007/07/experts-exchange-should-be-removed-from-google-search-results>>.

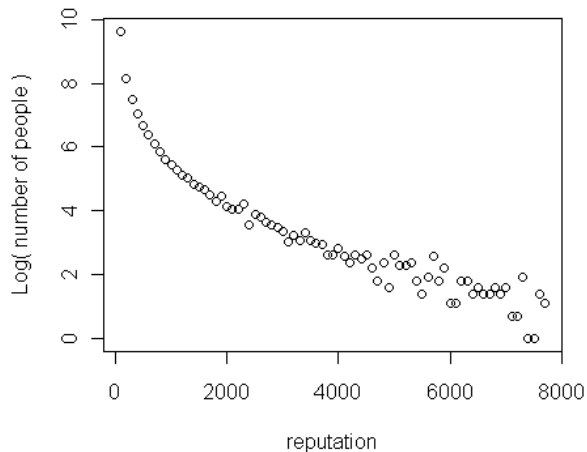
## EXHIBIT 16: STACK EXCHANGE 2.0 SITE CREATION PROCESS

Jeff and Joel decided that every new site created on Stack Exchange 2.0 must undergo a six phase review process:

1. **Discussion:** The Stack Overflow meta site should provide a forum for discussing potential new ideas labeled a future Stack Exchange site.
2. **Proposal:** A public proposal must be drafted and posted so that any member of the community can discuss the proposal and vote on it. This allows a collaborative proposal to emerge over time. The proposal must address these four key issues:
  - a. the topic of the website
  - b. the targeted audience
  - c. a list of five exemplary on-topic questions
  - d. a list of five exemplary off-topic questions
3. **Commitment:** Users interested in the new site are asked to formally commit and support the site by actively participating and contributing to it.
4. **Closed Beta:** If the concept receives 100% commitment, the site enters the closed beta phase, where committed members begin actively using the site and publicizing it.
5. **Open Beta:** The site is open to the public for a 60-90 day period. This allows the creators to ensure that the site reaches critical mass before it is fully launched.
6. **Full Citizenship:** The site is evaluated on multiple criteria such as the number of answered questions, new questions per day, and registered users. If it meets these criteria during the 90 day trial period, it is granted a “full citizenship” and fully launched.

Source: “Stack Exchange 2.0.” StackExchangeBlog. Web. 17 May 2010.  
<<http://blog.stackexchange.com/post/518474918/stack-exchange-2-0>>.

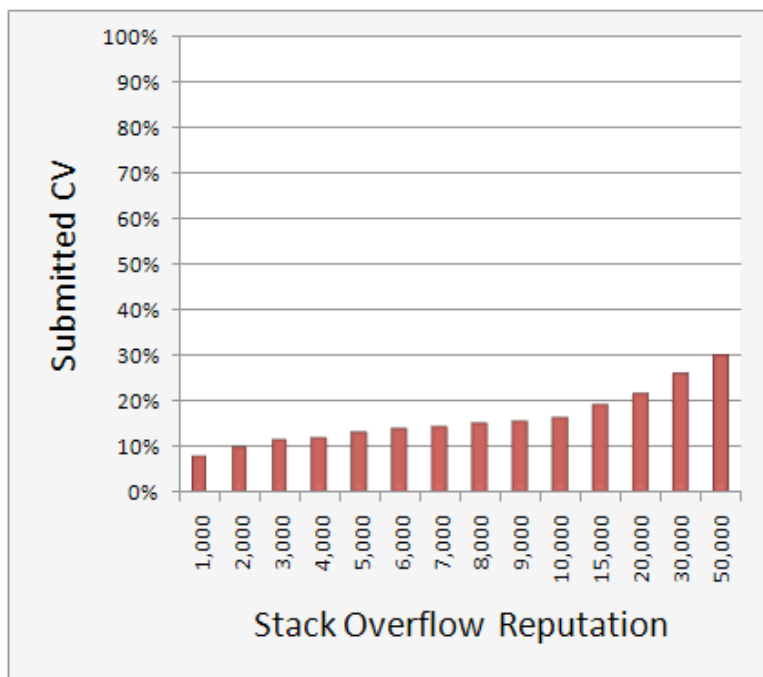
EXHIBIT 17: SO REPUTATION STATISTICS



(SEMI-LOG PLOT)

Source: "StackOverflow reputation statistics — The Endeavour." John D. Cook. Web. 17 May 2010. <<http://www.johndcook.com/blog/2009/03/02/stackoverflow-reputation-statistics>>.

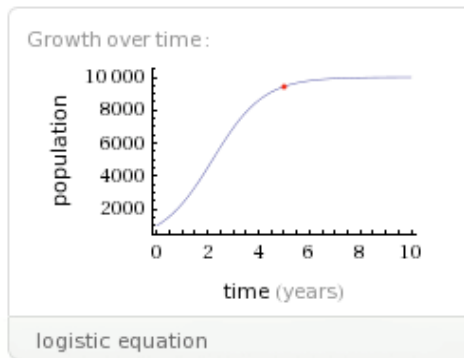
EXHIBIT 18: PERCENTAGE OF PEOPLE WHO SUBMIT THEIR CV VERSUS THEIR REPUTATION VALUE



Source: Spolsky, Joel. "Stack stats." Joel on Software. Web. 17 May 2010. <<http://www.joelonsoftware.com/items/2009/12/13.html>>.



## EXHIBIT 19: EXAMPLE LOGISTIC GROWTH MODEL



Source: Wolfram Alpha Web. 17 May 2010. <<http://www.wolframalpha.com/input/?i=logistic+equation>>.

## EXHIBIT 20: WEBSITES AFFILIATED WITH STACK OVERFLOW

Jeff and Joel decided that every new site created on Stack Exchange 2.0 must undergo a six phase review process:

1. **Serverfault.com:** Server Fault is a free Q&A site for system administrators and IT professionals. Users can register to collect karma and win valuable flair such as badges which appear next to their names. Server Fault is collaboratively built and maintained by fellow system administrators and IT professionals. Similar to Wikipedia, users can edit anything once they have gained the system's trust. Serverfault.com hopes to provide good answers to every question a system administrator or IT professional might have.
2. **Superuser.com:** Super User is a free Q&A site for computer enthusiasts. It is collaboratively built and maintained by its users. Their goal is to provide a valuable repository of software and hardware Q&A.
3. **Doctype.com:** Created by David Smalley, Paul Farnell and Mathew Brindley, Doctype is a free Q&A site for web designers, it provides fast solutions to CSS, HTML, web design and email design problems. For each question, Doctype can generate screen-shots of the design on any browser or email client. This makes it easier for other people to visualize the problem thus enabling them to fix it. Just like Wikis, everything on Doctype is editable content. Answers are accurate, neat and up-to-date. However, similar to Stack Overflow, a user needs a reputation score of at least 100 before he can edit other people's posts.
4. **Howtogeek.com:** How-To-Geek was launched in October 2006 and contains content that is easy for beginners to use and useful to “geeks” as well. How-To-Geek aims to be the friendliest source of online “how-to” articles. It also provides information on miscellaneous topics including games and computer products. How-To-Geek's generates revenue primarily based on advertising.

Adapted from:

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## Authors of 2010-204-1

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