

# Strategic Technology Review of NewTechCo

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*Presented to VCPartners*

*January 2008*

*By CSC, Inc.*



**Technology Due Diligence**

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**This document is a sample Strategic Technology Review for the purpose of showing the methodology, analysis-process and presentation format of a technical due diligence report. The firm reviewed, NewTechCo, is fictitious. The data and results have been adapted for presentation purposes from multiple actual reviews. This is a sample Strategic Technology Review in which all client data or proprietary information has been removed to ensure privacy.**

CSC, Inc. 2008



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## I. Executive Summary

At the request of VC Partners (VCP), CSC Inc. (CSC) has performed the following technology focused due diligence to assess the overall investment feasibility of the investment candidate, NewTechCo. VCP has retained CSC for this technology due diligence effort with the express purpose of vetting NewTechCo from a technology perspective in order to better understand the company and make an investment decision.

The purpose of this Strategic Technology Review (STR) is to assess NewTechCo and its flagship software line, *Social Dynamics*, in the following critical respects:

- Overall viability of core technological intellectual property
- State of infrastructure and ability to implement core technology successfully as a business
- Recommendations for post-acquisition strategy

The STR process was performed over a period of 10 days and was achieved via the following resources:

- 1) Direct interviews with key personnel at NewTechCo
- 2) Limited review of business plan and financials projections and budgeting
- 3) Review of technical specifications provide by development staff and access to all technology facilities
- 4) Extensive industry analysis and review of accepted technical standards

## II. Exclusions to scope

The STR findings presented here were created with the exclusion of a detailed review of internal financial documentation to maintain confidentiality. Certain topics that lay outside the scope were purposely omitted to maintain the technical focus of a Strategic Technology Review.

Basic budget forecasts and intended funds allocations were reviewed to complete the technology due diligence but are not meant to be a definitive critique of the company's financial status. This report is intended to be a summary of technology and high-tech market strategies of NewTechCo and not a financial analysis of the firm's operations or valuation.

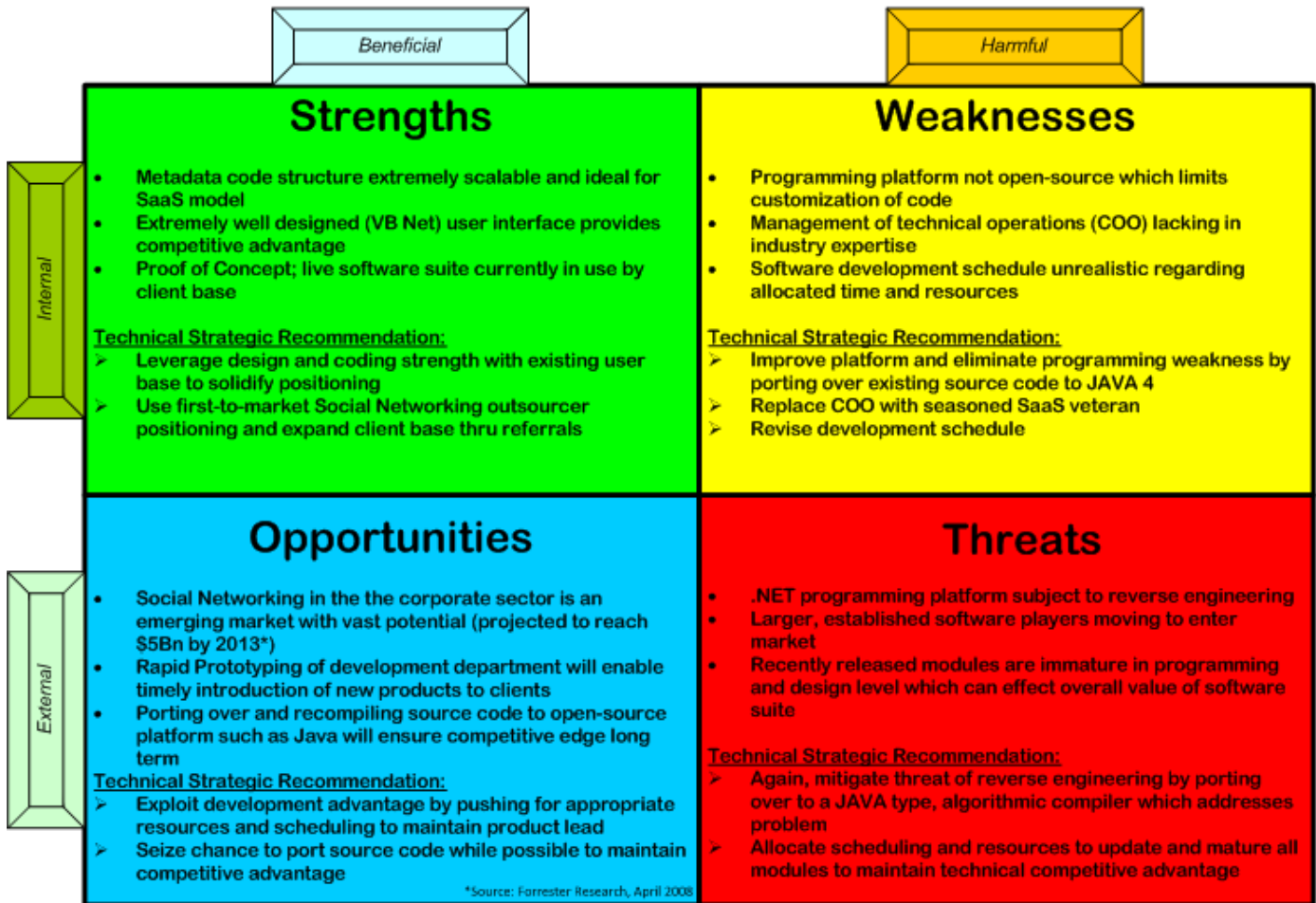
### III. Key Findings

The major findings of this report of NewTechCo are provided in this section with an overview of each issue. Comprehensive details are found in section V. *Technology Assessment* which addresses each composite aspect of the findings.

In addition, a Technology-Focused SWOT Analysis is provided as a summary tool at the beginning of this section to present the findings in a standardized format.

## *NewTechCo SWOT Summary*

# Technology-Based SWOT Analysis



**Figure 1.** A standard SWOT analysis with specific focus on the technology-related aspects of the NewTechCo and their *Social Dynamics* product line.



## A. Positive Findings

### **Market for Technology**

The industry market size for Web 2.0 implementation and social networking in the Enterprise environment presents promising growth potential. A newly released market study shows that as social networking continues to enter the mainstream, spending on Web 2.0 for the Enterprise as a market is projected to increase over the next 5 years with a CAGR of 43% and will represent a market size of \$4.6Bn by 2013<sup>1</sup>.

### **Metadata Code Structure**

The SaaS model is very robust when hosted as a base code-server that processes client data. This model which is based off of CLI (Common Language Infrastructure) on the .Net Framework is extremely efficient as it allows instantaneous code updates for entire client base rather than individual installations.

Licensing software and delivering in this manner is extremely scalable and extensible and is ideal for software providers in this sector. In addition, any customization is made for clients on their web portals rather than source code so it is customer-specific and reflected only on their account.

### **Proof of Concept**

Existing, live client list heavily validates product and proof-of-concept for the active software package in a professional environment. The software modules still need development but are currently active and viable products used by client base. Feedback from client interviews has been consistently positive with all flagship software modules in the overall suite.

The interface of the Social Dynamics products line is particularly well-built and subscribes to the major, accepted tenants of usability engineering and HCI (Human Computer Interaction). Since the focus of this product is on social networking and collaboration this is a critical competitive advantage in selling the product to its target clientele.

### **Technical Leadership**

Existing management leverages in-depth core competencies in the software for associations sector. The current CEO and CIO are veterans and display extensive knowledge of software services for this target clientele. A balance of industry experience and deep knowledge of their target demographics' needs are crucial to success and are generally met with the existing technical leadership.

While there are issues raised regarding leadership within the business development and marketing departments the overall technology management is very sound.

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<sup>1</sup> Source: Forrester Research, April 2008



## B. Issues of Risk

### Product Platform code

CSC has identified several explicit areas of concern within the programming platform used by NewTechCo for the development of their social networking service package. The issues identified do not affect the actual functionality of the software but do affect the competitive advantage of the product suite in a long-term scenario. Details of the issues raised here can be found within section V. *Technology Assessment*. A summary of the concerns are as follows:

1. Software product based on Microsoft .Net platform which is inherently restrictive due to proprietary ownership by Microsoft.
2. Lack of open source-code limits customization of product development.
3. Generic, standardized platforms such as .NET are classified as JIT (Just-In-Time compilation) languages which are non-algorithmic and, therefore, leave software more easily open to reverse engineering.

### New Entrants

Threat of new entrants is extremely high as many large competitors are creating COTS products and hosted solutions for the pre-packaged Social Networking sector. While the immediate industry landscape is limited the shift for large companies to create and deploy outsourced, enterprise, social networking is occurring.

### Resource for Development

Current development team & budget resources are inadequate for existing product development timeline. Expectations of team to rapid-prototype for all modules within given time frame are unrealistic unless programming resources are increased substantially.

## IV. Overview of Technology Concept as Product

### A. Business Description

NewTechCo provides highly customized social networking packages to associations and nonprofit organizations allowing them to effectively manage the increasing complexity of today's enterprise communications needs while taking advantage of the social web. NewTechCo is capitalizing off the explosion of Web 2.0 or social web which is defined as a means for people to interact using on-line tools such as wikis, blogs and discussion boards. Unlike generic social media sites such as Facebook/MySpace, NewTechCo succeeds by targeting specific core industries with expandable products and complementary services provided via a Software-as-a-Service model.

The service is offered thru a concurrent-user connection licensing model and is served through a web accessed portal. Additionally, companies who are clients receive technical and administrative support but must also pay for customization or branding of their social networking sites. The flagship software modules for the NewTechCo's *Social Dynamics* product line are:

1. *Social Web*
2. *Social Wiki*
3. *Social CRM*
4. *Social Resources*
5. *Social NewsFeeds*

### B. Market Size

NewTechCo competes in the new and emerging marketplace of social media/web and software as a service (SaaS) offerings. For the past decade, the user experience online has been framed by search engines that use highly developed algorithms to connect users with information and content. The trend now, is to pattern and harness information and communication driven by human interactions which supports the social media software market.

A newly released market study shows that as social networking continues to enter the mainstream, spending on Web 2.0 for the Enterprise as a market is projected to increase over the next 5 years with a CAGR of 43% and will represent a market size of \$4.6Bn by 2013<sup>2</sup>.

The target market that NewTechCo wishes to pursue which is a subset of the enterprise social networking market offers large potential but is highly competitive. Focusing on the associations and non-profits is a conservative and realistic goal for the company. NewTechCo's target customer base is small to large organizations investing in enterprise level new media solutions.

NewTechCo's target market will consist of national trade and professional associations, state and regional associations and community and fraternal organizations. Currently, there are over 1.4 million

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<sup>2</sup> Source: Forrester Research, April 2008



non-profits and associations registered in the United States<sup>3</sup>. Nonprofit organizations in America have combined revenues of approximately \$621.4 billion, which represents 6.2% of the nation's economy.<sup>4</sup>

### C. Competitive Landscape of Existing Technologies

The landscape consists of two competitor classes: Large generic social media sites (Myspace, etc) with organically grown user interest groups and direct competitors with similar products such as Collective X, The Port & Leverage Software. Threat is highest from the direct competition as they offer similar services but Higher Logic intends to mitigate this risk by relying on its open platform approach and comprehensive feature offering which no competitor is currently matching.

The following is breakdown of existing competitors and their technical threat level:

Company Name	Rating	Key Points	Mitigation
<i>Leverage Software</i>	1	Key Product feature: “People Map” strong good selling point which drives popularity. Overall, product limited and lacks comprehensive models	NewTechCo creating equivalent product to compete with this feature
<i>GoLightly</i>	2	Long time player in associations service software with nascent social networking products. Large	Currently creating strategic partnership with parent firm, Asi
<i>MemberFuse (NFi Studios)</i>	3	Limited product that lacks the AMS integration – only offer SSO.	Continue to pursue Nfi clientele looking for larger feature set
<i>The Port</i>	4	Strongly focused on the Non-Profit sector but do not utilize AMS data but do offer SSO.	Leverage more complete software package and AMS
<i>Socious</i>	5	No social networking software yet but are attempting development	Currently discussing creating strategic partnership
<i>iCohere</i>	6	Outdated software package with no updates in 2 years	Aggressively pursuing client base
<i>SmallWorld Labs</i>	7	Very new market entrant focused on the non-profit side and only provide SSO.	Leverage more complete software package and AMS
<i>myAmphi</i>	8	Outdated software package focusing more on CRM technology	Aggressively pursuing client base

Figure 2. A competitive landscaping tool to summarize key players in the enterprise social networking industry and rate their threat to the Social Dynamics software platform

<sup>3</sup> Source: National Center for Charitable Statistics, 2007

<sup>4</sup> Source: Learning to Give, 2007



## V. Technology Assessment

The following section is a detailed and granular assessment of the technology components of NewTechCo in regards to its software product line, Social Dynamics. This Strategic Technology Review is presented with the intent of providing VCP a comprehensive understanding of the technology and technical personnel with which to make an investment decision. An overview of results and recommendations that were yielded from this report is presented at the beginning of this document. Again, all results presented were derived from analysis of internal sources and industry standards as well as direct interviews with key staff at NewTechCo.

NewTechCo is a Software-as-a-Service provider which hosts client information which is presented online via their proprietary software package and accessed via a web browser. The product is built on a Microsoft .NET Framework utilizing C# code with a VB Net compiler. The software kernel resides on a virtual Apache Web Server within a Windows 2003 Server host and is used to parse and process client information via a Metadata construction. This a standard and very efficient SaaS model allowing huge scalability for new client accounts as there exists only one version / one set of the source code which is applied to all account data and delivered to each internet portal.

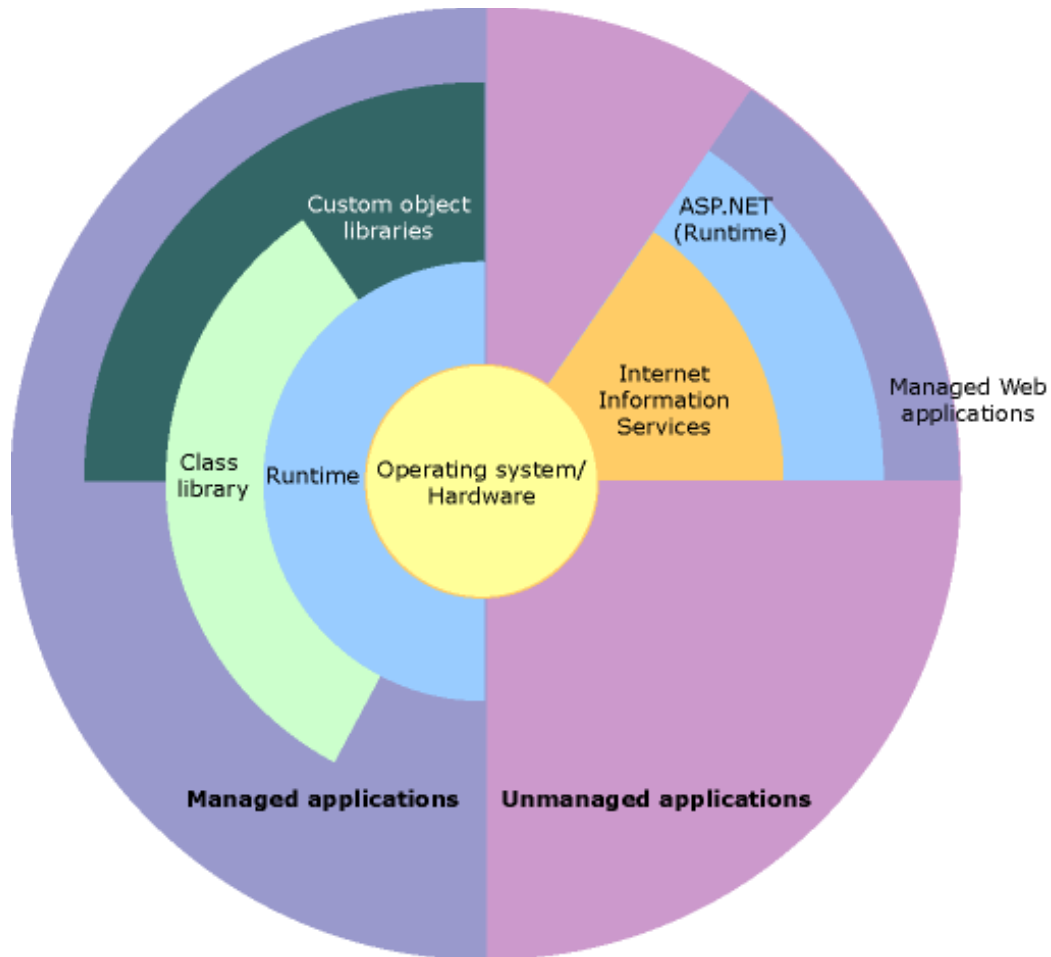
### A. Source Code validation

The source code is written in C# on a .NET Framework which is a very stable and standardized programming language convention. C# programming language is a general purpose programming platform using object-oriented code developed by Microsoft for its .NET platform making it a suitable and secure basis for NewTechCo's service offering.

All current versions, updates and hosting software have been implemented. A detailed review of the source code by an SME (Subject Matter Expert) revealed only minor issues of syntax but otherwise standard C# programming procedures. While the code itself is stable and well-written, the level of innovation for the product is relatively low placing the majority of the competitive edge on the interface design.

Overall, .NET provides a developing platform that integrates across the programming and network stack allowing for one-time coding and subsequent compatibility.

A diagram providing an overview of the .NET framework and how it functions is provided below for general illustrative purposes.



**Figure 3.** A .NET Conceptual Framework

***Recommendation:***

Prioritize the updating of the current code to the newest version of C# which is 4.0. This newer version is projected to be the new standard for .NET development emphasizing cross-compatibility and portability between hosting environments. Scheduling this as a priority task will ensure stability for the product on a code level with 12-14 months coinciding with release of next version.

**B. Programming Language/Platform Substantiation**

The Microsoft .NET Platform overall is an accepted standard in the industry as it is established and highly extensible. Further, the .NET framework includes a comprehensive set of pre-designed class libraries and APIs (Application Programming Interface) allowing an extremely stable development and performing environment.

**Recommendation:**

**Source Code:** It is a strong consensus in the programming language industry that while .NET is adequate the best-in-breed choice is Sun Microsystems Java platform primarily because it completely and functionally platform agnostic. This ensures that any interaction with the software, whether it is server or browser-based, will function and is not tied to the Microsoft proprietary family of operating systems. It is recommended as a long term goal to begin recompiling the source code in Java for use with the JVM so that future versions can be developed purely in the JVM (Java Virtual Machine) environment and maximize interoperability.

**Interface code:** For the reasons as detailed above it is highly advisable for the VB and C# code (used to create the visual interface) to update to a newer more scalable programming language. In this case it is recommended that either C# be use or LINQ as a basis to ensure portability and cross-platform compatibility.

## C. Design Process

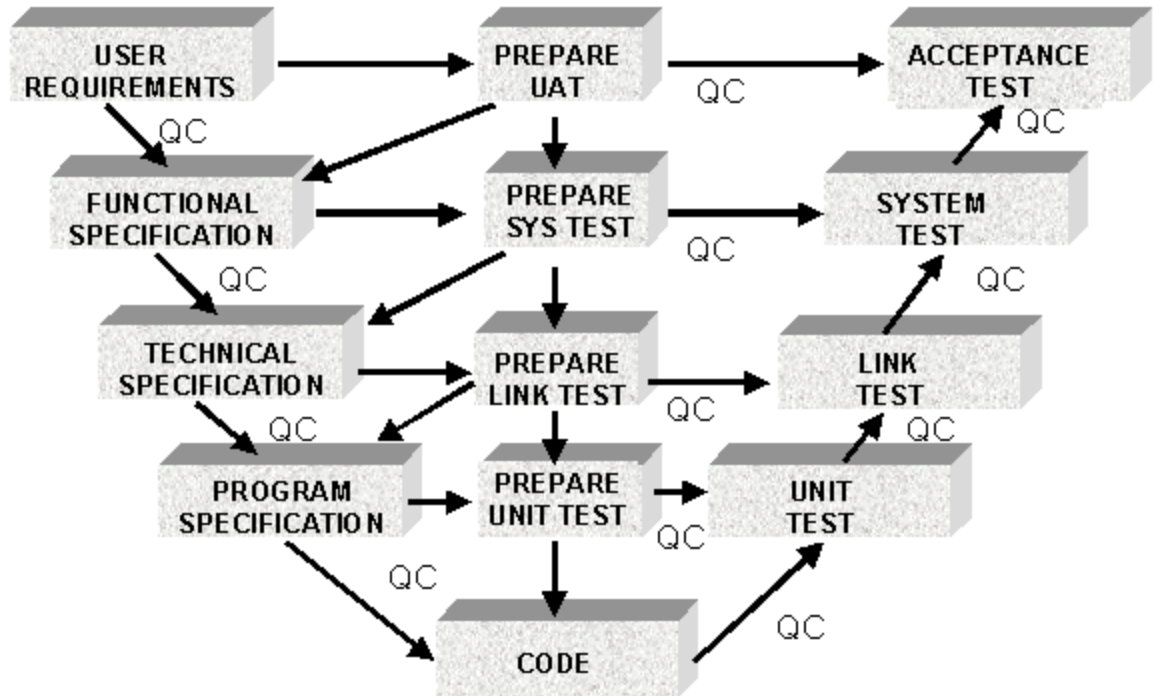
It is a key step for software design teams to follow standardized procedures and often generally accepted processes in order to clarify their Software Development Life Cycle or SDLC. The SDLC is a generally accepted methodology for creating software incorporating all the interdependent steps necessary to produce a functional and well thought out end product.

Currently, NewTechCo incorporates and modified version of this standard with particular focus on Functional Specification and Link Testing due to the code-level interaction of the differing software modules in their overall suite.

While aspects of the proprietary SDLC used by NewTechCo are non-standard, overall they adhere to the generally accepted tenants of this software design specification and, therefore, there are no perceived threats at this stage in the development process.

To illustrate this process in regards to evaluating the NewTechCo procedure the following image is provided. Below is the “V” model of the Software Development Life Cycle which is particularly relevant to understanding all Service-Oriented Architectures (SOA) which rely heavily on incorporating the usability and rapid-prototyping design.

# THE “V” MODEL



**Figure 4.** A standard V model for the Software Development Lifecycle illustrating the process and methodology for software creation within the industry.

## Recommendations:

While it is not mission-critical, it is highly advisable for NewTechCo to document and standardize their SDLC process in order to maintain transparency. This type of documentation is necessary to have in place to reduce the risk of problems during a change-management phase. Also, it is advisable to create this documentation in order to expedite the trademarking of Intellectual Property in regards to this software functionality, coding and design.

## D. Infrastructure Review

The current technical infrastructure maintained by NewTechCo consists of the following elements:

- 1) Network: Server farm located in Newark, NJ hosted by XO Communications which includes 14 (fourteen) Dell PowerEdge 2750 Servers running Windows 2003 Enterprise Server. The server farm maintains a disaster

recovery configuration with data mirrored to an offsite location in Houston, TX. Additionally, the server farm collocation facility maintains redundant T3 Internet connections as well as onsite power-generators as fail-safes.

- 2) **Development:** The programming team is located in NYC and Washington, DC with directly remote accessibility to entire server network. The majority of client customization and ongoing code revising (the exception of major version updates) is off-shored to an Indian-based programming team called I-Vantage. All programming performed for NewTechCo is project managed by internal development leads and reviewed in real time via conferencing systems.
- 3) **Call Center:** The Center is implemented by offshore firm, I-Vantage, which provides all client administrative contacts with Monday-Friday 9am-7pm EST coverage for live technical support. Technical support allows access to updates client data & content and updates to hosting solution.

## E. State of Development

### 1. Software Modules:

NewTechCo suite of software services known as Social Dynamics includes the following 5 modules currently active as live releases used by the existing client base.

- a) *Social Web:* uniquely customized & individually branded sites providing user profile creation social networking similar to FaceBook.
- b) *Social Wiki:* Wikipedia-type site created & branded for the client firm allowing employees and extended customer database to post and edit information relevant to their industry.
- c) *Social CRM:* a customized contact relationship management database allowing a client firm to track and organize sales information for their own customers.
- d) *Social Resources:* a hosted, document management & creation system allowing dynamic editing and revising of shared documents for internal use of client's employees.
- e) *Social NewsFeeds:* a customized web portal allowing client members to access industry related newsfeeds & RSS feeds in one easily accessed website

Below is an assessment tool provided to summarize the level of development maturity for the individual software modules in regards to basic software rating criteria, defined as follows:



*Robustness*: ability of a software program to withstand abnormalities in data processing and continue to perform as intended

*Stability*: the performance of a software package to operate as intended without upgrades or changes, measure of a versions applicability

*Usability*: Measure of HCI (Human-Computer Interaction) programmed into a system which defines the ease of which a person can use the software as a tool for productivity

Software Module	Current Version	Development Maturity			Version Upgrade
		Robustness	Stability	Usability (Interface)	
Social Web	2.3	Mature	Immature	Immature	Q1 2009
Social Wiki	1.5	Immature	Immature	Mature	Q3 2008
Social CRM	1.7	Immature	Threat	Immature	Q1 2009
Social Resources	1.5	Immature	Immature	Immature	Q3 2008
Social NewsFeeds	1.5	Immature	Immature	Threat	Q1 2009

**Figure 5.** An overview of the software modules that comprise Social Dynamics and a rating of the software development maturity

## 2. Schedule

A review was performed of NewTechCo’s development projections in regards to their feasibility and practicality. The following criteria were used to gauge the validity of their development schedule in terms of each type of resource:

*Financial Resources*: funds necessary to implement software development. The assumption is that current investment ear-marking for further development is in place.

*Technical Resources*: technological ability, in-house or outsourced, necessary to meet the projected goals. The assumption is investment funds would be allocated to allow the completion of these development targets.

*Project Management*: the managerial organization and expertise to implement the development of the software upgrades to spec, on time and within budgetary constraints

### 3. Budget / Resource Evaluation

An assessment of the technology development budget allocations provided in the complete business plan and financial projections was completed for these results.

The focus of this section was to assess the accuracy of the intended use of invested funds for development and how they would translate to the necessary resources to reach the proposed goals.

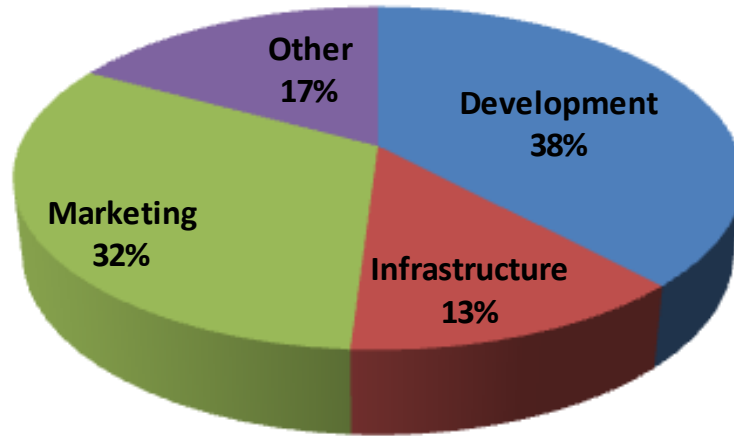
<i>Budgetary Goals</i>	<b>Projections Appraisal</b>			<i>Projected Completion</i>
	<i>Financials</i>	<i>Schedule</i>	<i>Technical Yield</i>	
Technical	<b>Accurate</b>	<b>Inaccurate</b>	<b>Accurate</b>	Q1 2009
Strategic	<b>Accurate</b>	<b>Accurate</b>	<b>Inaccurate</b>	Q4 2008
Marketing / Sales	<b>Accurate</b>	<b>Accurate</b>	<b>Inaccurate</b>	Q2 2009

**Figure 6.** A review of the major aspects of NewTechCo’s budget forecasting and rating of its data

Additionally, the proposed usage of requested funding is provided in the business plan and supporting financials documentation. Provided below is a summary of the projected budget allocations with the suggested adjustments juxtaposed for review.

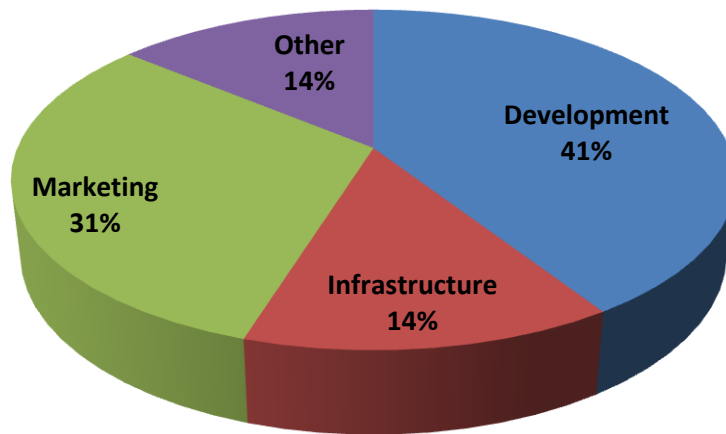
The suggested reallocations are provided with the above findings regarding marketing efforts and technical efforts lacking in necessary funding.

## Proposed Budgets Allocation



**Figure 7.** A chart showing the current proposed budget allocations maintained by NewTechCo.

## Suggested Budget Allocations



**Figure 8.** A chart showing the recommended budget allocations by CSC in proportion to their necessary developmental scheduling and requirements.

## F. Review of Technical Team

Interviews of key personnel within the technical and strategic teams were made at the NewTechCo offices in NYC and Washington, DC.

The key personnel were rated in terms of their relevant experience in their roles within NewTechCo and are a mean of three axes including High-Tech Industry, Career Overall, and (time at) NewTechCo Overall experience.

Summary of each of the personnel, title held and ratings are provided in the following chart:

Name*	Title	Experience Rating (1-10)			Average Score
		Tech Industry	Career Overall	NewTechCo Overall	
XXX	CEO	8	6	10	8.0
XXX	COO	5	8	7	6.7
XXX	CIO	10	9	10	9.7
XXX	Chief Software Engineer	9	9	9	9.0
XXX	Director of Sales	9	10	3	7.3

\*Names Hidden for Privacy

**Figure 9.** A chart showing a review of the technical abilities of key personnel and an average for each role.

These interviews served to emphasize the perception that the key strength of the company lies within their technical prowess but they are lacking in operational and business development resources, relatively speaking.

As illustrated above, the COO and the Director of Sales are lacking in experience either in the technology sector or within the NewTechCo firm itself. These findings are not meant to be reviews of their ability but rather a quantitative rating within their peer group.

## VI. Company Background:

CSC, Inc. provides technology-focused due diligence services for investment firms seeking to make the best decisions possible. CSC, Inc specializes in assessing all technology platforms and infrastructures to properly advise clients on their investment decisions in the form of a *Strategic Technology Review (STR)*. An STR is a report which provides a comprehensive assessment during the due diligence stage on all technology related issues and are industry specific.

VC firms often require a formal, technical assessment of a target firm's technological intellectual property as part of the vetting process. This provides the VC with in-depth research of the technology platform that the target company is basing its competitive advantage.



## VII. Appendix

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**Figure 3.** A .NET Conceptual Framework as presented by Microsoft Inc.

**Figure 4.** A standard V model for the Software Development Lifecycle illustrating the process and methodology for software creation within the industry.

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