GROUP FOUR

HADatAc Information Website Project

HADatAc

Matthew Hamlin | Peiliang Zou | Taoran Li | Bo Li

Dec 9th, 2015

Table of Contents:

Table of Contents:
1. Executive Summary
2. Introduction
3. Client Organization and Description
4. Project Team
5. Problem Statement
6. Testing Strategy
    6.1 Testing Methodologies
    6.2 Testing Process
    6.3 Testing Results
7. Process Methodology
8. IS/IT Design
    8.1 System Overview
    8.2 Requirements
        8.2.1 Functional Requirements:
        8.2.2 Non-Functional Requirements:
        8.2.4 Usability Requirements:
    8.3 User Interface Information Architecture
        8.3.1 Primary Audience:
        8.3.2 User Interface:
    8.4 Data Model
    8.5 Software Engineering Specifications
9. Financial and Cost-Benefit Analysis
    9.1 Financial Analysis:
    9.2 Costs:
    9.3 Benefits/Cost Savings:
    9.4 Return on Investment and Payback:
10. Project Management
    10.1 Project Management Approach
    10.2 Project Schedule
    10.3 Project Budget
    10.4 Project Challenges
11. Transition Plan
12. Results
13. Summary and Conclusion

1. Executive Summary

The rise of big data analytics is just beginning to take over most private companies. There have been several businesses that have developed products to simplify the process of data analytics for private companies but there are very few products out there for scientific research teams, especially those found at most universities and colleges around the world.

The client is currently building a product titled the Human Aware Data Acquisition Framework (HADatAc for short). They are based in the Tetherless World Constellation group at RPI with other developers who are also contributing to the project.

The HADatAc product aims to build a product to improve big data analytics, as well as data governance, for the research teams mentioned above. The client team has developed a unique framework to integrate the data and metadata for researchers. The framework utilizes breakthrough semantic web technologies to provide better tools for handling data analysis and data management related tasks.

The client team do not yet have suitable customer facing documentation on how to install their framework, nor do they have adequate information about the functionalities each of the individual features of the framework provides. It was here that the development team stepped in to help the client build an intuitive yet comprehensive user guide site.

The HADatAc Information website project began development in early September of 2015 and completed development in the second week of December. The development team utilized an agile development approach which enabled the team to efficiently build up the website according to the specifications in each of the four phases of the project.

As mentioned above, the project deliverable was a live website with six key pages. The first page is the landing page, welcoming past and potential users. The second is a descriptive page about the HADatAc Framework and the value HADatAc offers to research teams. The third includes a step-by-step installation guide specific to each of the three primary operating systems (Mac, Windows and Linux). The fourth is a comprehensive feature guide of the application. The fifth showcases other research projects currently using the HADatAc framework. The sixth is a page describing the background ontologies supporting HADatAc.

Development concluded in the second week of December when all six web pages were completed. The project was handed over as a zipped folder including source codes and extensive documentation on how to maintain the deliverable.

Throughout the development cycle the development team computed the expected return on investment and net present value the website would offer to the client. The calculated non-risk adjusted return on investment was 204% and the risk adjusted return on investment was found to be 98%. The net present value was found to be a total of $58,506. Although the risk was high the project offered a lot of value not only for the client but also for potential new users of the framework.

Overall the development team successfully developed and deployed a live website, which can be found here http://peiliangz.github.io/Capstone-2015, with all of the core requirements met, and felt satisfied that they had delivered a complete product to the clients.

2. Introduction

The HADatAc Information website project aims to provide potential new users with a clear and organized platform to introduce the overall HADatAc framework, the client, the instructions regarding how to install and run the application, and information regarding current research projects actively using HADatAc as well as the ontologies supporting the HADatAc framework.

Since the HADatAc framework is closely associated with semantic web technologies most of which are fairly abstract concepts which are very unfamiliar for most of the potential users; the goal of the HADatAc Information website project was not only to provide information about HADatAc, but also a user-friendly interface through which users can better understand how exactly the framework provides value to their data analysis and management.

3. Client Organization and Description

HADatAc is a product being developed by an independent research team from Rensselaer Polytechnic Institute's own Teatherless World Constellation. The team is composed of researchers working on providing a simplified data and metadata analysis product for research teams.

HADatAc is a piece of software from which research teams could get useful insight and information. HADatAc is an infrastructure that enables combined collections of data and metadata in a way that metadata is properly and logically connected to data. The HADatAc framework is repository storing data and metadata, supporting data management; data governance in terms of privacy, access and dissemination; uncertainty management; and (big) data analytics as quoted from the HADatAc Github repository.

4. Project Team

Group Four was composed of students who are enthusiastic about web technologies and want to learn more about operating a business involved around technologies. The team had ambient technical and design focused expertise with user facing websites. Bo Li had extensive background of business analysis and data mining experience, therefore he was responsible for Business wise analysis and website developement. Peiliang Zou was assigned with the role of project manager in the team, besides that, she was also the person who deal with client liason on a daily/ weekly basis. Taoran (Tom) Li gained relevant experience by working on past academic projects. He utilized such skills to re-factor the website code and hence make it more interactive. As for Matt, he had keen visual sense and tremendous

experiece with UX design. He built up the basis of the project upon which other team members could work.

However, there was no such strict boundary for the role of each person within the group. The development team got feedback from the client, and then distributed single tasks to every team member based on their specific skill sets.

5. Problem Statement

The HADatAc Information website project aimed to develop a simple website that met the two core requirements described below:

- The first core requirement was providing background information in a simple and intelligible format for any interested parties
- The second core requirement was to design a clean and user-friendly website

The scope of this project was to deliver a system aiming to simplify and automate the data curation procedures and hence improve (big) data analysis efficiency/quality.

The delivered system has six components:

1. Introduction Page
2. About Page
3. Installation Page
4. Feature Discription Page
5. Example Projects Page
6. Supporting Ontologies Page

6. Testing Strategy

6.1 Testing Methodologies

As the goal of the HadatAc Information website was to maintain an intuitive tutorial for the HADatAc product, with prospective end users being researchers that might utilize HADatAc, the testing philosophy used behind the website had to be non-conventional. The development team aimed to provide a smooth and user-friendly user interface with minimal references to the original HADatAc website, and hence the methodology will be to invite real users to walk through the various functionalities of the website, and see whether they are able to accomplish assigned tasks correctly and efficiently.

6.2 Testing Process

Per the architecture/design of the HADatAc Information website, the entire testing process can be divided into three sections, which are About Page Testing,

Installation Guide Testing, and Feature Walkthrough testing. Users can volunteerily select any testing subject or go through all of them if they are really interested. The tasks assigned in each testing section were:

About Page:
Scenario:
A new user who was handling large data sets on a research project finds it difficult to work and collaborate with the data sets produced by various organizations. She is currently researching available tools to maintain meta data efficiently and found the HADatAc through some reference/ web search. She wants to evaluate whether the tool is the right choice by simply glancing at the About Page. If the About Page either disinterests her for any reason, the user will provide negative feedback and walk away. The goal of this testing was to evaluate whether the About Page is able to attract potential users and give them a good introduction of the HADatAc framework.

Testing Task:
Go to the About Page and find out if the page can give a very intuitive introduction about HADatAc. If there is any confusion or uncomfortableness please write it down.

Installation Guide:
Scenario:
A WIndows/Mac/Linux user wants to dive into the technology and needs to follow the installation guide according to her platform. After being led to the page, the user can pick whichever platform she is interested in install HADatAc on and give it a try. Any troubles involved during the installation should be documented and corrected later on.

Testing Task:
Go to the respective installation section of the user platform and try to follow the installation guide. If she got stuck, note down the issue and seek help from developers. Hand in all the issues after completing installation.

Feature Walk Through:
Scenario:
An user unfamiliar with HADatAc product rcently just got directed to the website and wants to browse through the features to gain a better understanding of it. The development team wanted to assure that the user can gain a good grasp of HADatAc, as well as finding the exact information of the feature she wants to use.

Testing Task:
A new user to the HADatAc Information website, visits the Feature Walkthrough page and find all the information that might interest her. Write down the suggestions to the feature walkthrough, as well as the potential missing features that you think the website should have provided, if possible.

6.3 Testing Results

1) About Page:

Subject Description:
The development team found a research student from Winslow building who was condcting research related to HADatAc, and should be an ideal testing subject to the website.

Result Summary:
As the testing subject works in the same building as the HADatAc team, he has a certain level of familiarity with the product already. He gave very positive feedback in regards to the information we have included in the about page. It is concise enough to convey the essential ideas of HADatAc, and generalized enough to hold the interest of a new user.

3) Installation Guide:

Subject Description:
The development team identified another researcher who works in the Folsom library. After giving her a general introduction about the HADatAc Information website project, she showed keen interest to what were doing and kindly joined the testing as a testing subject.
Result Summary:
She was a Mac user and eventually got stuck at the same place where one of the team members got stuck at when installing the HADatAc on their laptop. We regretfully notified the testing subject that unfortunately she couldn't proceed any further. Overall the feedback to the installation guide was great. She told us that we did a great job in writing a very intuitive guide for a almost not functioning product, which showed how much passion we had into this project.

4) Feature Walk Through:

Subject Description:
We selected the same testing subject that we had been working with on the testing task for the About Page. The reasoning is that the user actually knows the product and can give us feedback both as a new user who just got introducted to the product, as well as the feedback from an insider. The feedback is much more valuable than the general feedback we could get from the HADatAc developers directly because they probably could barely sit on the end user's seat after developing the product for a year or so.
Result Summary:
The ser said that we have covered much more information than he originally heard from the HADatAc team, which was great. So far he did not find any trouble navigating from subject to subject, but he showed some concern regarding the maintenance of all the feature information. As the list of features grow, he was

wondering if the website would still be as intuitive as now and if it would still be as easy as now to find a subject's information. We took into consideration of his feedback seriously and are currently researching methods to engineer the feature walkthrough page to be more user friendly regardless of the size of the information we provided.

7. Process Methodology

The development team used a modified agile development process, focusing on weekly iterations and tasks. the team subdivided the project into four phases, and focused on quick development iterations to complete the individual tasks within each phase.

The team made extensive use of collaborative web applications including Github, Slack, Dropbox Paper, and Google Drive. All of the written assignments were completed within Google Docs within a shared folder for the entire team. The team primarily communicated between members through a Slack group. The code management was handled through a Github repository. The team also used Dropbox Paper to manage todo lists and tasks to follow up on.

As the project required the development team to undertake design and development of a new product for the client, cost-benefit analyses were performed as part of the financial justification process. The process was crucial in determining the project's financial returns by estimating costs and cost-saving opportunities for the client.

The development team's project management methodology was used efficiently to ensure that the team delivered a quality product on time and within reasonable costs while maintaining excellent communications and rapport with the client and within the team.

8. IS/IT Design

8.1 System Overview

The system that the team developed was built on Github using Github Pages. This significantly improved the system by making it easier and cheaper to update the website and is free to host. The website provided in depth information on the HADatAc product, instructions on how to use the HADatAc web app, and will serve as a great introductory place for people to learn about related concepts. The Github repository was broken down into two main branches, the first was the master which is where repository administrators can add content to the website, the second was the live website branch.

8.2 Requirements

8.2.1 Functional Requirements:

- A Github repository with a live website
- Documentation on the structure of the repository and the structure of the website

8.2.2 Non-Functional Requirements:

The entire website was based on HTML5, CSS3, and Javascript. Because the hosting and serving of the website is taken care of by Github this allowed the development team to focus on making an informative and user friendly website without needing to write any server-side code.

Development Environment

- Language: HTML, CSS, Javascript
- Web Server: Github Pages
- Integrated Development Environment (IDE): WebStorm, Atom, Brackets
- Text Editor: Sublime, Atom
- Source Code Version Control: Git

User Interface

Since the goal was to help users obtain necessary information as fast as possible, the development team intended to organize the contents into a tree-like structure where users have minimal selection at each level, and be able to get to the content they want within a few clicks at most. The development team did this using a simple UI framework and designing the website in a simple user-friendly way.

8.2.4 Usability Requirements:

The goal of the HADatAc information website project was to make a user-friendly interface for people to access information about the HADatAc framework, the website should be intuitive by nature. Hence, the development team aimed to use a simplified design to allow users access to whatever information as fast as possible within a few clicks. Below lists the requirements and goals of usability:

- Efficiency of use:
    - Users should be able to access each section of content within one click
    - The content should share similar structure and format for simplicity to improve the updating process and the consumption process.
- Intuitiveness:
    - The first page will provide a simple way for users to decide on what information they need in the moment as quickly as possible
    - Each link will redirect the user to the respective content

    - References are shown as links to the original HADatAc Github repository
- Low perceived workload:
    - The necessary steps a user needs to get to a specific content should be limited to 100 words. By keeping the amount of readable content to a minimum it allows the user to easily grasp the steps.
    - The tutorials themselves should use as many images as possible to limit the number of words used, hence allowing users to read the content quickly

8.3 User Interface Information Architecture

8.3.1 Primary Audience:

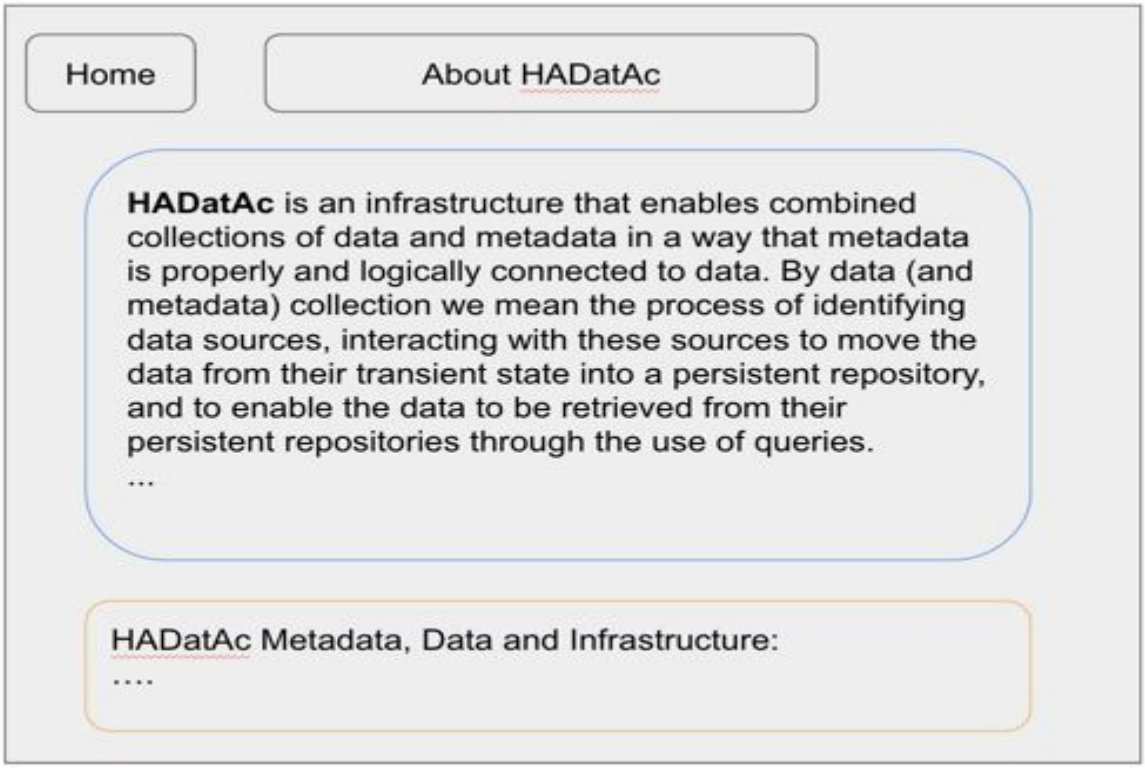
The primary audience for HADatAc Information website consists of the HADatAc team and any other research team or individuals who could be potential new users of the HADatAc framework.

8.3.2 User Interface:

- Prototype

Before the development team started working on building the actual website, the team first made up the wireframe prototype from which it was easier to get a clear idea about what the website would look like. Below are some selected screen shots of the prototype:

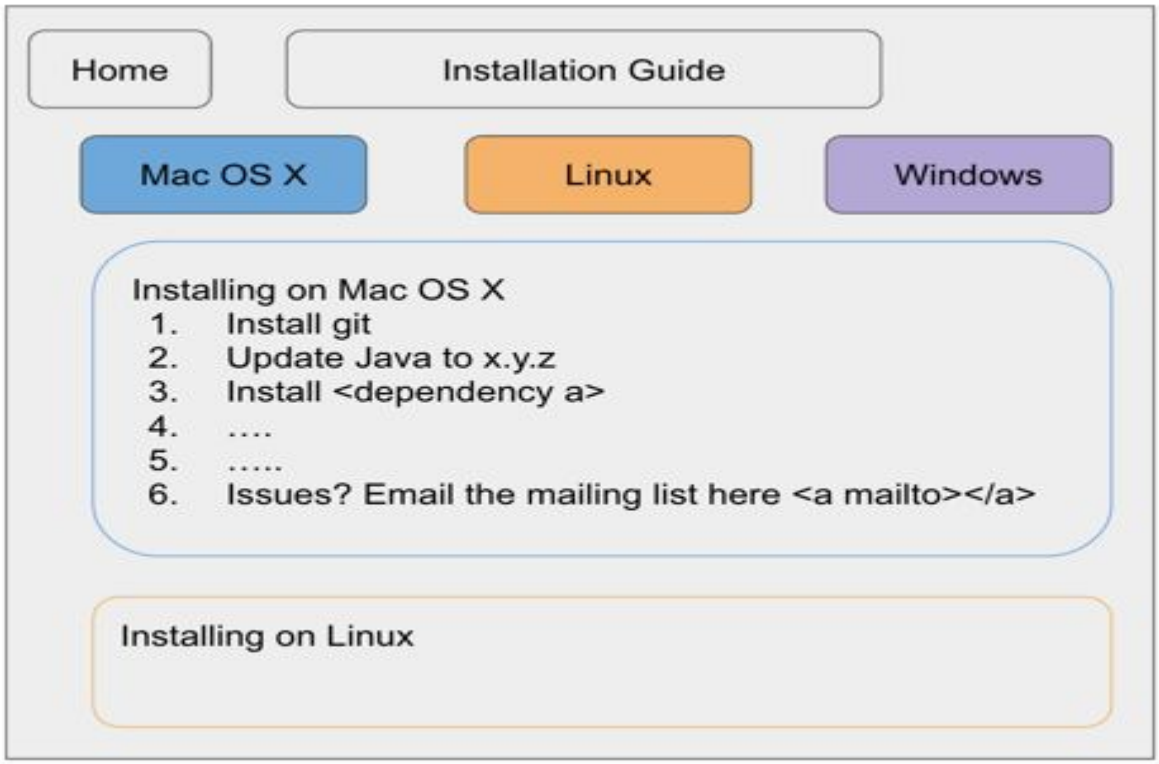
1) About Page



(About HADatAc webpage)

Once the user clicks on the first link “About HADatAc” they are taken to a webpage shown below in a simple wireframe. This page will be filled with simple infographics about how the HADatAc framework will actually work to increase the data analytics for research teams. This page will also include information about the development team, the Tetherless World Consortium, and other related projects using HADatAc currently.

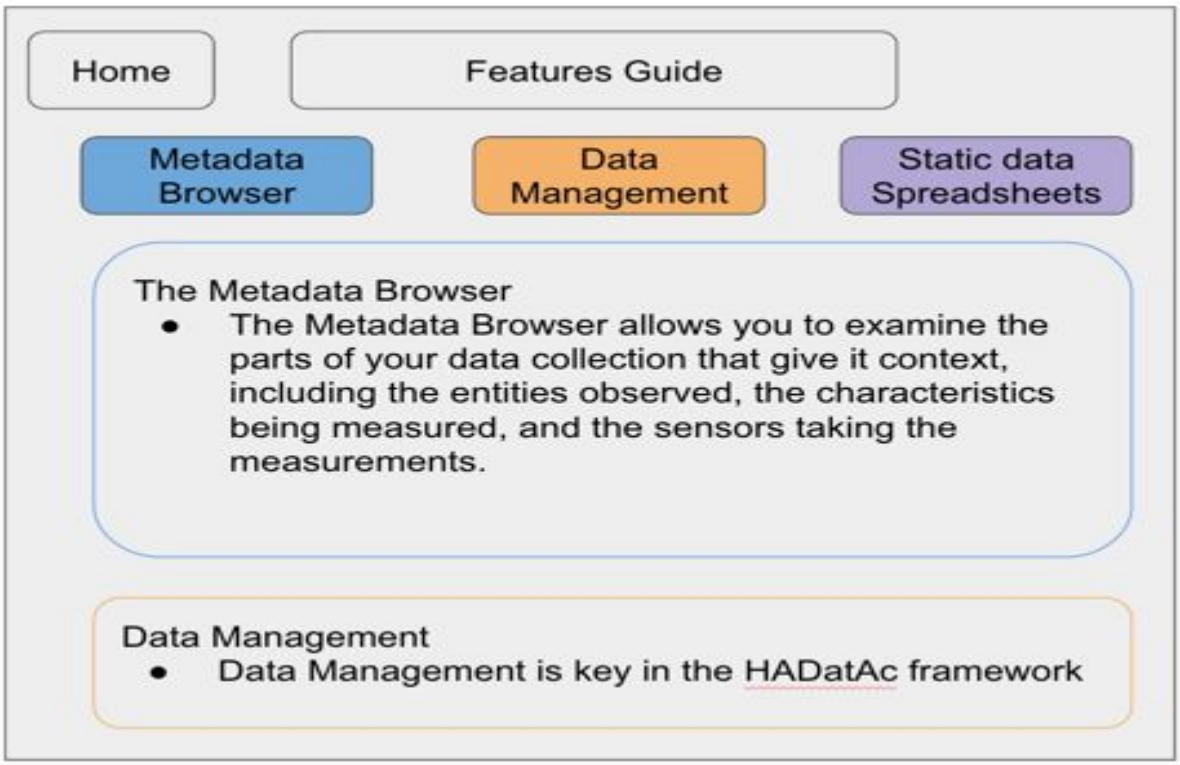
2) Installation Guide



(Installation Guide)

Once the user clicks on the home button in the top left of the page they will be taken back to the first webpage, and then can select the “Installation Guide” link. Upon clicking on this link, the user’s browser will be redirected to the installation guide web page. Here, as pictured below, the user will be provided with three options for the three kind of systems that one can install the HADatAc application. Upon clicking on their system they will be brought to the proper section of the webpage with informative steps on how to install on that specific operating system.

3) Feature Guide



(Feature Guide)

Once the user navigates back to the original homepage, they can go to the “Feature Guide” link where they will be presented with the webpage shown below. Here the user will be given in depth information on each feature of the HADatAc application.Here users can find more information on how to properly use each individual feature of the application.

- Website

After getting the feedback and suggestion from the clients, the final website was split into six seperate webpages, the first of which acts as a simple landing page to introduce what the website is for and how the visitor can learn more.

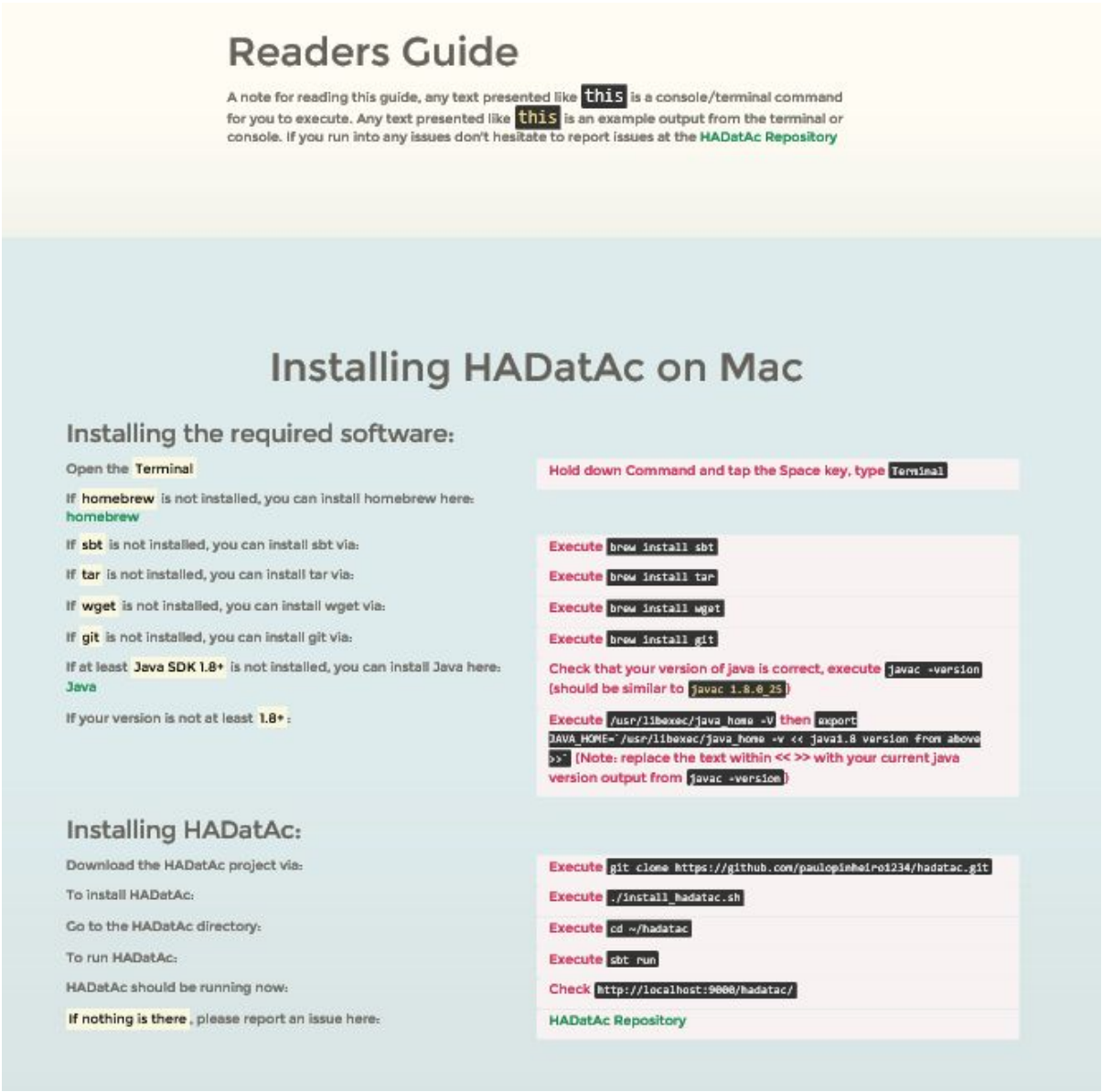
Figure 1: The landing page for the HADatAc website

The second page provided in-depth information about the HADatAc project and the reasons behind it's development.

Figure 2: The About page of the HADatAc website

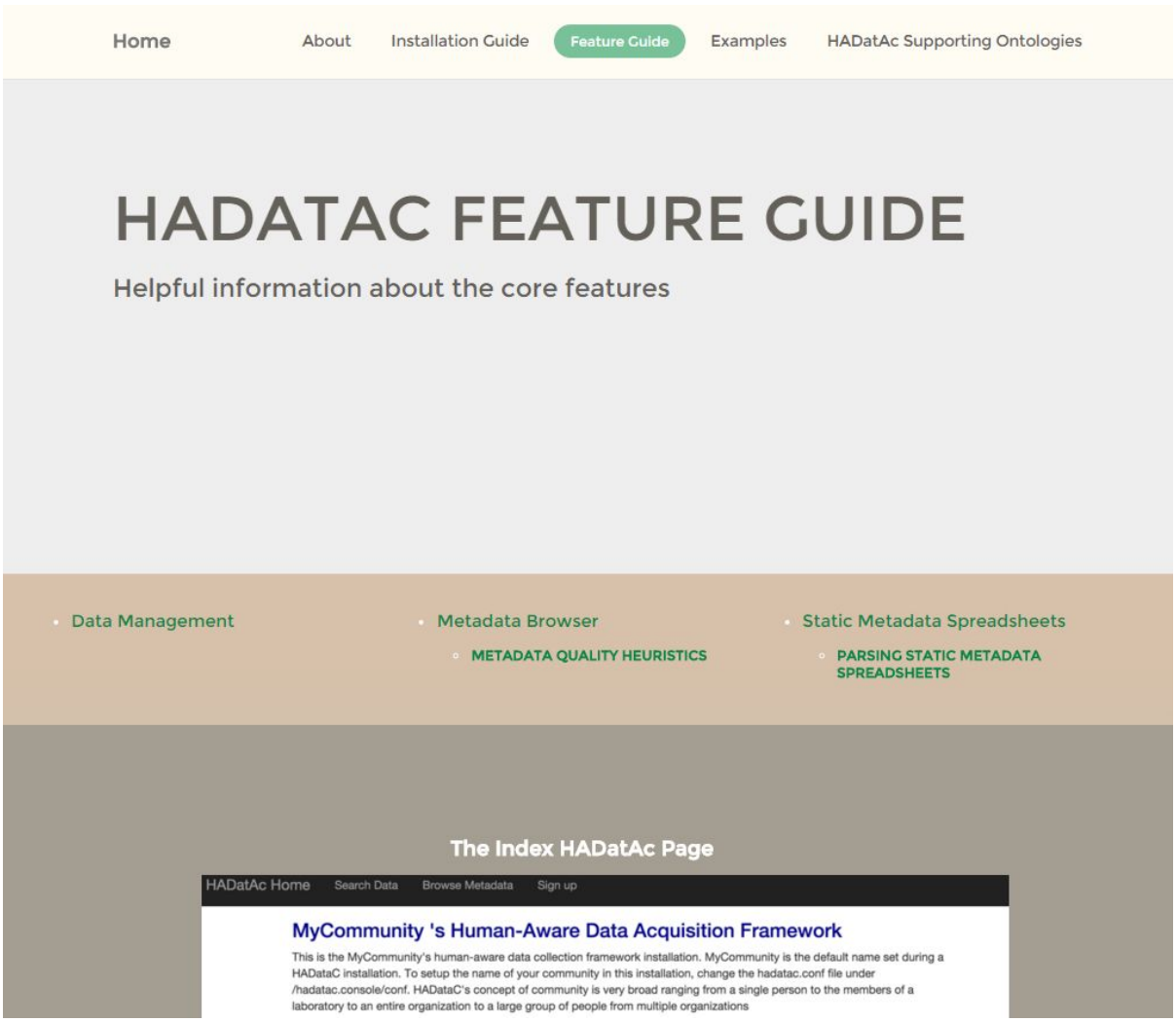
The third page of the website offered information on how users could install the framework on their system (Mac, Windows, and Linux) broken down into atomic steps for clarity.

Figure 3: The Install guide page of the HADatAc website



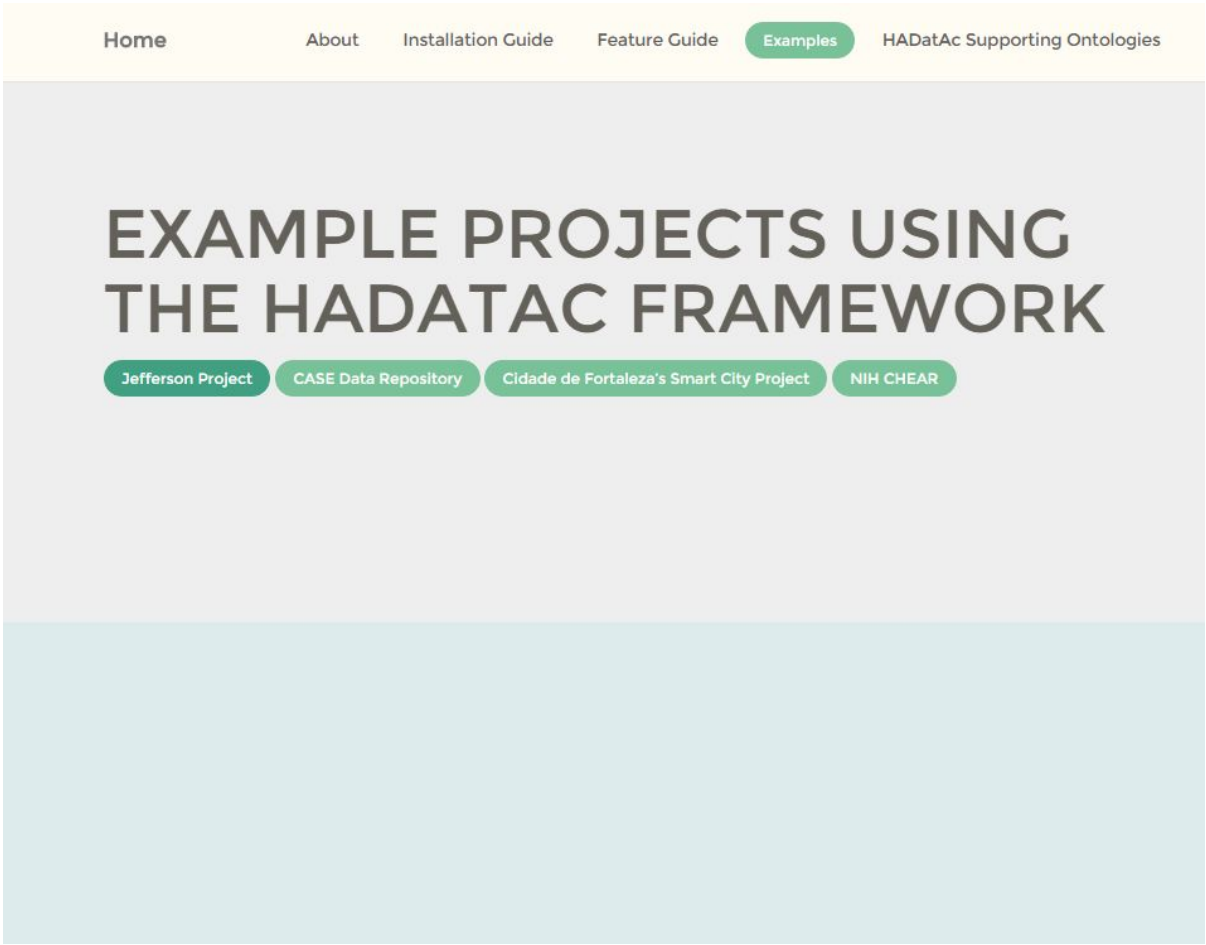
The fourth page of the website offers information about each feature of the application so users can better understand how to use the application.

Figure 4: The Feature guide page of the HADatAc website



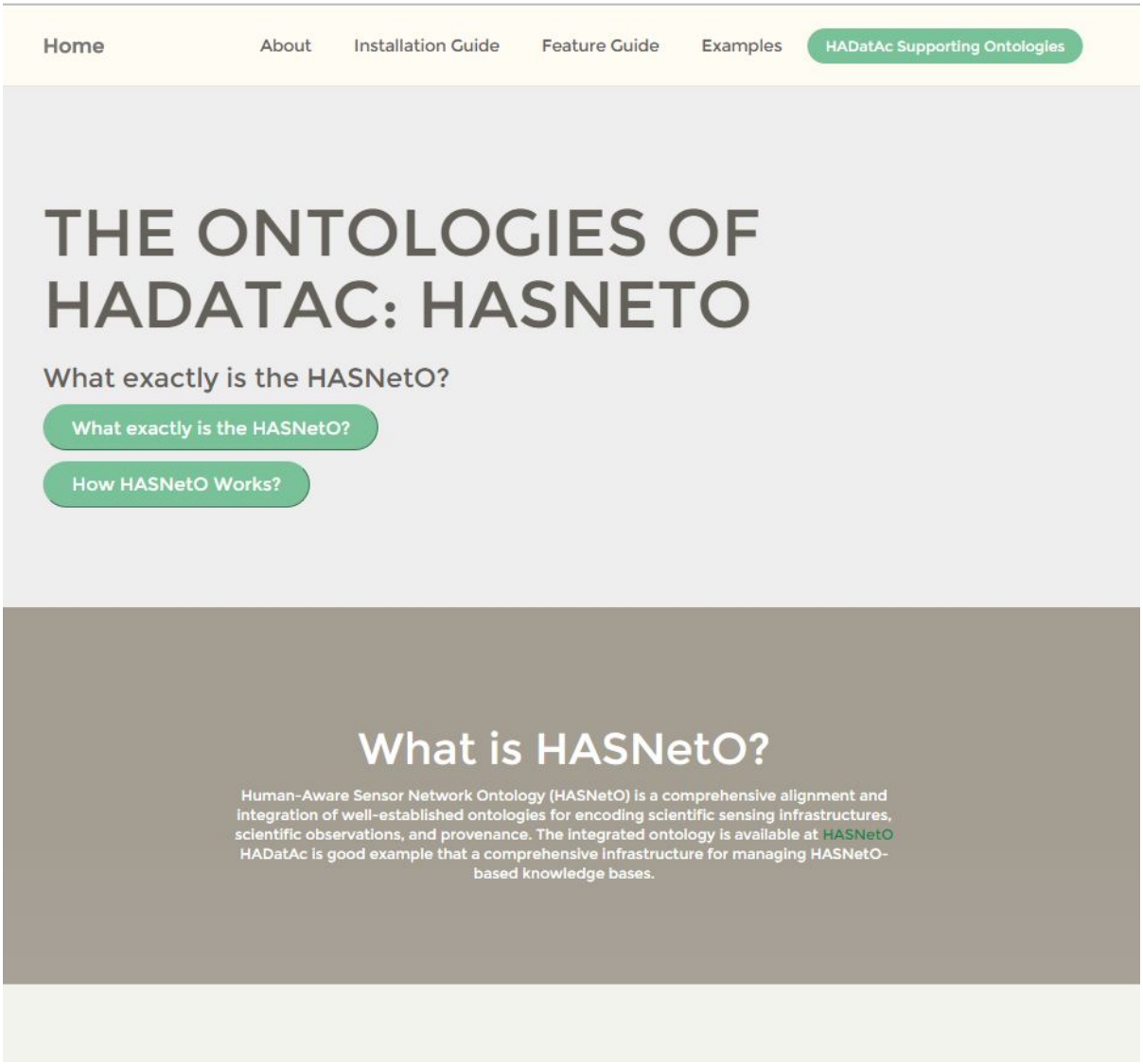
The fifth page shows the users several good research cases for using HADatAc, which includes link to each case introduction.

Figure 5: The Example page of the HADatAc website



The sixth page and also the final page of the website introduces the ontologies, HASNetO, the client has used to build their infrastructure.

Figure 6: The Supporting Ontologies page of the HADatAc website



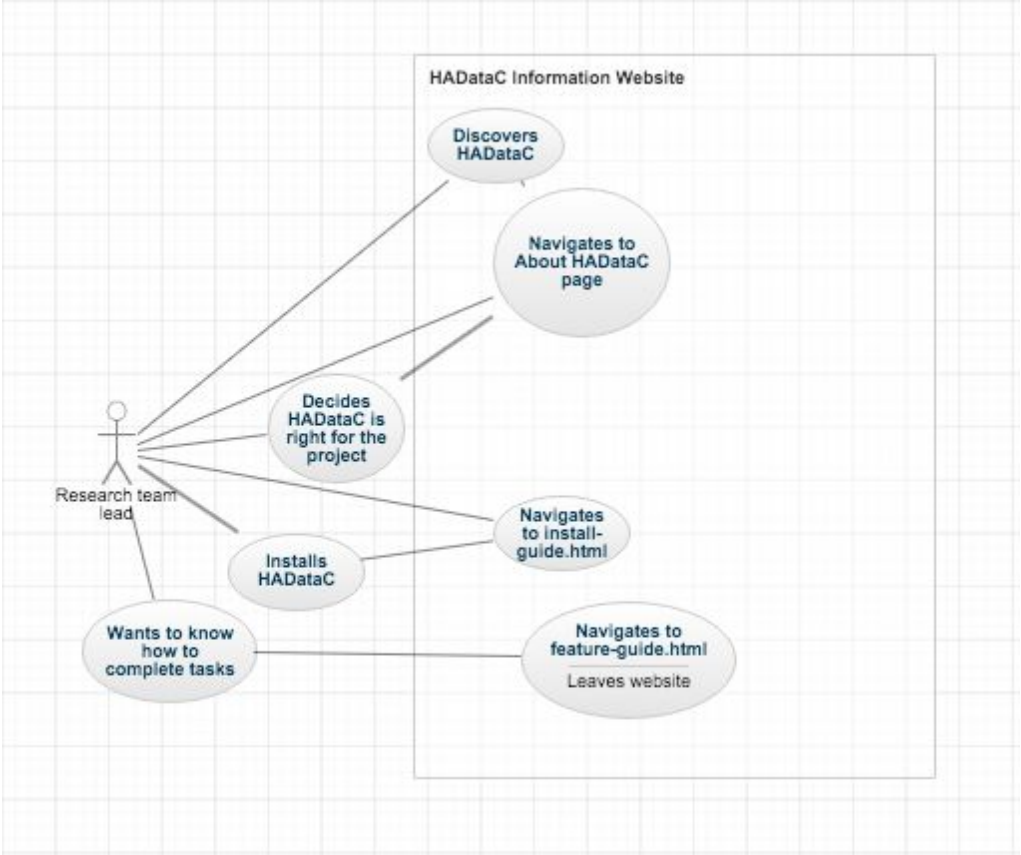
8.4 Data Model

Because the project was focused simply on providing information to potential new users of the HADatAc framework, the development team did not use any backend database or technologies. The website comprised of only flat HTML files and some CSS files for webpage styles.

8.5 Software Engineering Specifications

The development team focused on one specific use case for the HADatAc website. The use case analyzed was that of a potential research team that wanted to find a solution for their data analysis and management issues. The research team would find the HADatAc website by word of mouth (a dramatic simplification of user growth and attracting users to the information website) and would then discover what HADatAc is, how the framework is useful for their data analytics and management, and then would be able to find out how to both install the application and how to use the application's various features. This use case is shown in the diagram below.

Figure 1: Example use case for the HADatAc website



The HADatAc Information website was built using two key open frameworks, the first of which was Paperkit, the second was AngularJS. Paperkit offered the development team a great baseline for the CSS of the website. It included stylized fonts, default colors, and a core grid which dramatically improved development time. The second framework, AngularJS, offered the development team an excellent set of features to add interactivity to the site to improve navigation for the end user. The project also focused on developing using the full HTML5 standard in order to make the website human readable but also machine readable because of the focus on semantic markup.

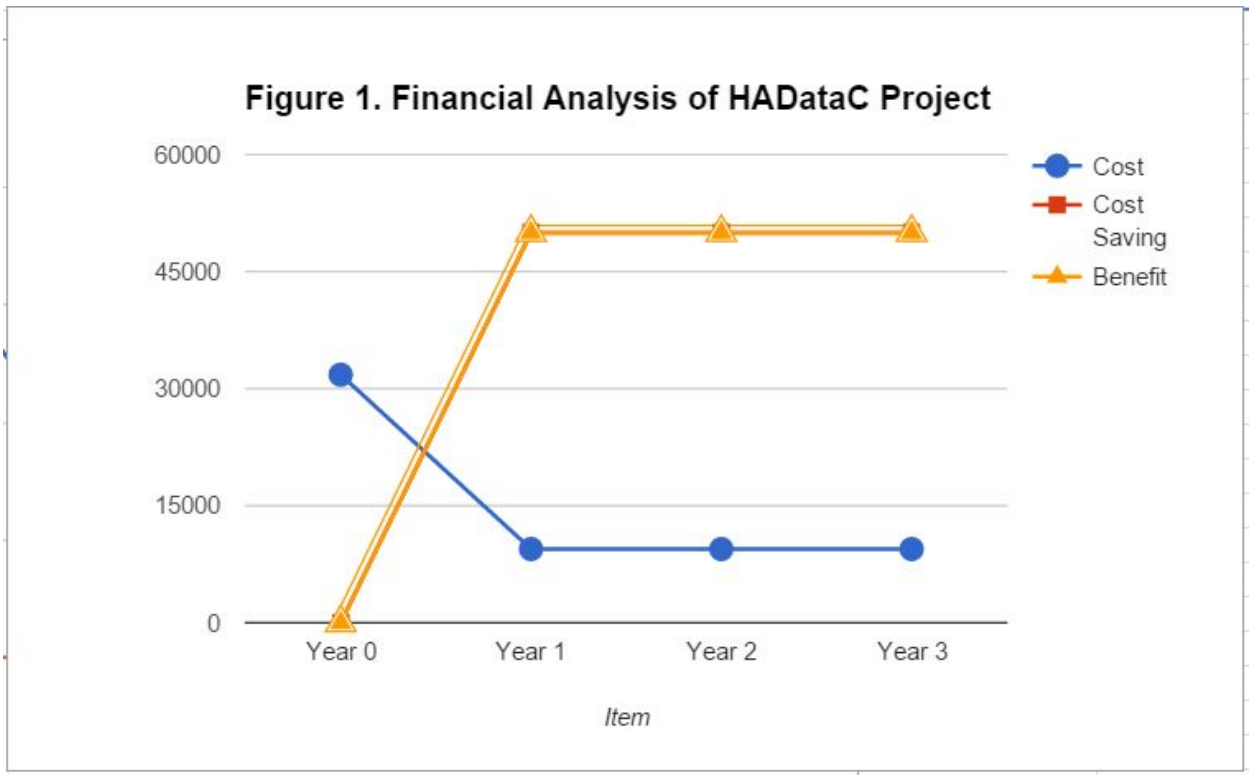
9. Financial and Cost-Benefit Analysis

9.1 Financial Analysis:

Unlike other projects or products targeted at customers in most markets, HADatAc is free of charge and hosted on github. Since it is an open source project, users could download and run it for their own preferences and purposes. Therefore, from this perspective, HaDatAc will not bring any lucrative profit by its own. The benefit of HaDatAc cannot be directly measured due to the nature of the project and the industry this project is going to have an impact on. The streamlined metadata integration functionalities provide researchers and developers in data mining field a convenient platform to collaborate with others and to think together more efficiently.

It is believed that the project is going to have a very disruptive impact on the field it resides in, but at the moment the direct benefit cannot be measured because this is correlated to the scale of data sets the future developers going to work on using this platform. Given the above facts, we picture that as more people start to use and get to know HaDatAc, the impact of the product will spread, hopefully resulting in bringing more people investing in the product and in other projects by the Rensselaer Tetherless World Constellation.

Figure : Cost, Benefits, and Net Return of Risk-Adjusted Approach



9.2 Costs:

Based on the resources the team used for building the HADatAc website, which were all free. Generally, project cost comes from human sources, including the product design and training fees.

- Labor

The costs project the alternative costs that doing the same type of work these developers could have earned. In the field of building a data mining infrastructure, developers are generally paid higher than developers in other fields. Factoring in the fact that Rensselaer Polytechnic Institute is a not for profit organization and the salaries for employees doing similar work are lower than those in the industry, we came out with below employee salary report: each team member has a fixed hourly rate. The three developers will be paid $50 per hour, mainly focusing on developing

HADatAc product. Since the project manager need to control the whole process of project besides designing the website, he/she will earn $60 per hour.

- Training

The second most important cost facing the project was the time it would take to train the HADatAc product team how the team structured the website, and to offer all documentation so that if future changes need to be done the HADatAc team could easily implement those changes.

Labor

	Year 0	Year 1	Year 2	Year 3	Total	Present Value
Total Cost	$21,190	$6,300	$6,300	$6,300	$40,090	$36,857

Training

	Year 0	Year 1	Year 2	Year 3	Total	Present Value
Total Cost	$4,000	$-	$-	$-	$4,000	$4,000

9.3 Benefits/Cost Savings:

Since HADatAc will remain a free and open source project to public. The revenue from selling HADatAc will be zero. There is benefit coming from cost savings for all people who use HADatAc. Actually the primary source of cost savings comes from the effective time reduction HADatAc is going to bring to researchers in data mining field through this efficient metadata metadata collaboration product. On average, a research team of a data mining problem involving Terabyte data scale consists of five developers, who directly benefit from the HADatAc project. The project should potentially reduce time involved in solving interoperability issues by half. Given that researchers who contribute to the data sets are paid on average $50 an hour and such projects last on average a year, the cost reduction can be calculated as following :

	Year 0	Year 1	Year 2	Year 3	Total
Total Cost Reduction	[1]	$50,000	$50,000	$50,000	$1,50,000
Total Benefits	$0	$50,000	$50,000	$50,000	$1,50,000

9.4 Return on Investment and Payback:

HADatAc the project itself is free and will not trigger direct benefit from users. Due to its open-source distinctive feature, it will attract abundant researchers and

developers contributing to this project, which will finally result in real benefit for the client. Let's suppose that for each year, there will be 50 researchers participating to provide their development efforts to HADatAc, the value they create is $1000 per person, which means a total of $50,000 per year.

As HADatAc gains popularity and begins to get widely used, the following benefit and payback would increase as well. We would expect to see a exponentially increase in total payback as number of users increase tremendously.

	Year 0	Year 1	Year 2	Year 3	Total	NPV
Cost	(36,118)	(9,450)	(9,450)	(9,450)	(64,468)	(59,619)
Benefits	0	47,500	47,500	47,500	142,500	118,125
Net return	(36,118)	38,050	38,050	38,050	78,032	58,506

10. Project Management

10.1 Project Management Approach

The development team decided to use a simple agile methodology to accomplish this project. This revolved around a few key stages during project development. The first stage of the project involved determining the team members, their skills and selecting a project to work on. The second stage was the groundwork stage where the development team completed various assignments relating to the project such as the project plan. The third stage was where the actual development began in which the team built the separate web pages for the project. Finally the fourth stage was the hand-off stage where the development team handed the code and documentation and the completed website over to the client

10.2 Project Schedule

Below is the original schedule of activities within each phase/iteration of the HADatAc Information website project.

Project Phases and Major Deliverables:

Inception Phase (09/01/2015 - 09/11/2015)
Iteration01 - 09/01/2015- 09/11/2015
Project Proposal

Elaboration Phase (09/14/2015 - 10/25/2015)
Iteration02 - 09/14/2015 - 09/25/2015
Mini-Strategic Plan **Requirements** **Cost Benefit Analysis** **Project Plan**
Construction Phase (10/08/2015 - 11/15/2015)
Iteration03 - 10/08/2015- 10/14/2015
Project Construction
Iteration04 - 10/15/2015 - 10/25/2015
Project Construction **Database Design** **Software Engineering Design**
Iteration05 - 11/01/2015 - 11/15/2015
Project Construction **HCI Design** **Network Design**
Transition Phase (11/02/2015 - 12/15/2015)
Iteration06 - 11/02/2015 - 11/30/2015
Draft of Final Report
Iteration07 - 12/01/2015 - 12/15/2015
Final Report **Final Presentation**

Table 8: Project schedule to iteration-level with major deliverables outlined. [2]

Gantt Chart View:

		Name	Duration	Start	Finish
1		**ITWS Capstone Project**	75d?	**09/01/2015**	**12/14/2015**
2		**Stage One**	19d?	**09/01/2015**	**09/25/2015**
3		**Organizing the Team**	19d	**09/01/2015**	**09/25/2015**
8		**Project Proposals**	11d?	**09/09/2015**	**09/23/2015**
13		Complete Team Organization	9d?	09/01/2015	09/11/2015
14		Complete Project Proposal step	8d?	09/14/2015	09/23/2015
15		**Stage Two**	19d?	**09/14/2015**	**10/08/2015**
16		**Mini Strategic Plan**	10d?	**09/15/2015**	**09/28/2015**
24		**System requirements**	10d?	**09/14/2015**	**09/25/2015**
32		**Cost Benefit Analysis**	10d?	**09/14/2015**	**09/25/2015**
37		Submit the Mini Strategic Plan	8d?	09/29/2015	10/08/2015
38		Submit the System requirements	10d?	09/14/2015	09/25/2015
39		Submit the Cost Benefit Analysis	1d?	09/25/2015	09/25/2015
40		**Stage Three**	47d?	**10/09/2015**	**12/14/2015**
41		Beginning Development	45d?	10/13/2015	12/14/2015
42		Start a Github Repository for the project	1d?	10/13/2015	10/13/2015
43		Create the Review branch	1d?	10/13/2015	10/13/2015
44		Create the github-pages branch	1d?	10/13/2015	10/13/2015
45		Decide on a frontend framework	1d?	10/13/2015	10/13/2015
46		**Begin project initiation**	1d?	**10/14/2015**	**10/14/2015**
49		**Content**	32d?	**10/09/2015**	**11/23/2015**
52		**Review Websites**	41d?	**10/12/2015**	**12/07/2015**
56		Push content to github pages branch	40d?	10/14/2015	12/08/2015
57		**Stage Four**	6d?	**12/07/2015**	**12/14/2015**
58		Content Review	1d?	12/07/2015	12/07/2015
59		Preparations for final hand off of project	1d?	12/07/2015	12/07/2015
60		Zip up all files and documentation	1d?	12/08/2015	12/08/2015
61		Email the zipped up content to the client	1d?	12/09/2015	12/09/2015
62		Add HADataC team members to github repository	1d?	12/09/2015	12/09/2015
63		Make final presentation	4d?	12/09/2015	12/14/2015
64		Deliver final presentation	1d?	12/14/2015	12/14/2015
65		Submit all project files to LMS	1d?	12/14/2015	12/14/2015

Figure 11: Current Gantt View of Project. Project is currently 100% complete.

10.3 Project Budget

The development team's approach to the project was from a perspective of an independent consulting company. The charge rate of $150 per hour per member takes into account the member's salary and all other cost expense related to the project (i.e. laptops, working space, etc).

10.4 Project Challenges

Luckily the project progressed without too many challenges face by the development team. The two core challenges face were inadequate communication between the development team and the client causing some re-scheduled meetings, and also the unplanned long-term for learning curve of the project. Before the development team began to write the content for the webpages they had to understand the core concepts behind the HADatAc framework and how exactly the application worked.

Without this knowledge potential future users would also struggle to understand how to install and use the software.

11. Transition Plan

The completed website will be handed off to the client by the second week of December upon completion of the final last details of the webpages. The transition plan involves two stages, the first was to hand over the code and documentation to the website via emailing a zipped folder with all files to the client. The second stage was to add the client team members Collaborator status to the used github repository in which the website was developed. This ensures that if the physical files are lost the client can download the code and edit as they see fit, and that the client will be able to see the incremental edits and changes that the development team made to make the website look and function as it does now in the case where another developer takes over the project.

12. Results

For the HADatAc Information website project itself, the development team expects to provide new potential users with a clear interface regarding how to install and run the HADatAc product and the value of using HADatAc as well. People should not be intimidated by the terminology of semantic web, metadata or data, in fact the things that people interact with on a daily basis are closely associated with these concepts that just mentioned, only they're not fully aware. The website is currently live at http://peiliangz.github.io/Capstone-2015/ for the client to use, and was provided to the client as explained in the Transition Plan section above.

As for the team, it was also a great opportunity for each team member to get full exposure to the semantic web technologies and get to know the brilliant researchers within Rensselaer Tetherless World Constellation. Last but not least, team collaboration was greatly emphasized throughout the process of working on HADatAc website; Nothing could be achieved without each of team member's endeavors.

13. Summary and Conclusion

The development team closely collaborated with client working on this project. In the beginning stage of project, the team found that the documents offered on the github wiki by the client was either half-complete or non-existent. Attempting to get more information about HADatAc only offered site visitors with some abstract terminology talking about metadata, data analysis and data governance; there were no supporting examples showing how could a the product be used for real life research projects. The development team hoped to develop a online platform from where visitors could get easy-comprehensible information instead of just buzzwords.

In order to successfully develop the website, the team did sufficient research on metadata, data and semantic web technologies. To make the content of website as

easy to digest as possible, the development team asked the client for multiple references and papers.

The agile development methodology employed by the development team ended up working as the project was completed within exactly 5 weeks of coding development time. The team developed a unique agile structure where weekly meetings on Saturdays offered time for the team to discuss the tasks at hand for the next week and also to collect feedback on the work that was completed last week. This development methodology also helped with the communication between the client and the team because the weekly client meetings happened in the middle of the week which offered enough time for the team to summaries any recent developments from the past team meeting. There were several weeks where these Wednesday meetings were not held in which case the development team would send email update to the client.

The development team encountered some issues mainly with scheduling meetings between team members but also with the client, however in the end constant communication between team members and with the client over email allowed the HADatAc Information website project to be completed on time.

Footnotes:
[1] Year 0 generates 0 cost reduction as the users are on training and can hardly take full advantage of the product until they become completely familiar with the product.
[2] Details can be found within the Microsoft Project Plan document attached.