Benefits to Canada

Increases Employment

Increase in the Firm’s total employees, by 8 full-time equivalent employees.

Increase in the Firm’s Technical employees, by 4 full-time equivalent employees



Increased Research & Development Expenditures

Increase in the Firm’s yearly R&D expenditures from $120,000 to $280,000

**Commercial Benefits**

Increase the Firm’s revenues from Goods and Services $209,000 to $203,000 in 2014

Increase the Firm’s revenues from Goods and Services $2,000,000 to $2,800,000 in 2015

**New Equity Financing**

Raise new equity financing in the amount of $500,000

**Social Benefits**

Every year about 2.4 million families move to a new home in Canada. Navut’s *raison d’etre* is to become a global leading portal that provides people moving, through its cutting edge tools, the foundation to successfully establish themselves in a new place. We believe that finding the best neighborhood with great schools, parks and amenities can make a hugely positive impact in a family’s life. Our tool will also recommend the most suitable service providers to each person and, at the same time, save them time researching and help them avoid making costly and irreversible wrong decisions.



Project Summary

Navut has developed an innovative web-application called Neighborhood Finder which allows people moving (Navut users) to a new city to find their ideal neighborhood based on their preferences. Currently, the Neighborhood Finder supports 1,000 neighborhoods within the seven largest cities in Canada. Users can choose from over 50 criteria (quality of schools, safety, proximity of amenities, availability of public transit, demographics, etc).

The product was successfully deployed in May, 2013 and has been gradually improved based on extensive feedback from users over the past months. Currently, our algorithm has an accuracy of over 80%. As part of the continuous enhancement to the application, Navut developed a data collection tool capable of gathering and safely storing data when users register to the application (contact information and current country), link their social media accounts (hobbies, interests, current city, language spoken, etc) and use the neighborhood finder tool (budget, preferred criteria, type of property, preferred neighborhood). The combination of this data is what we call *user detailed profile*.

As every person moving will have to buy or rent a property, Navut’s first revenue model is based on selling referrals to real estate agents and property managers (Navut customers). Once a person moving finds their ideal neighborhood, they have the option to connect with a neighborhood specialist (real estate agents specialized in the area) and share their detailed profile. To gain access to this market, our customers also have to create a profile and therefore, share some information (location, language spoke, list of properties, etc) which is called *customer detailed profile.*

This primary project objective is to use data from a user detailed profile and a customer detailed profile to create a “recommender” engine to match people moving with the best real estate agents or property managers. The secondary objective is to analyze the correlation between different data points to create standard profiles for users (young professionals, wealthy families, etc) and customers (upscale condos realtor, suburban middle class realtor, etc).

The Recommendation Engine is divided in two parts. The first part has the role of a data aggregator and processor as it monitors and saves every incoming data from users and customers using our tool and use them as input for specific algorithms that parse this data and interpret it based in business rules to transform this behavioral, analytic data into meaningful sources for the second part. The second part is the Recommendation System itself, that uses the interpreted data as input to provide the user suggestions that better fit his needs crossing *users detailed profile, customer detailed profile* and *behavioral data*.

We believe the recommender engine will help Navut to increase the accuracy of our neighborhood recommendation algorithm and ultimately, to recommend the best real estate agents and property managers to our users.



**Project objectives**

**Corporate Objectives**

To develop this project, Navut will required 4 employees for the period of four months. It will also be necessary to hire a data scientist specialized in recommender systems for about 200 hours.

Once the Recommender Engine is implemented, Navut will be able to increase the Revenue per User and consequently, generate more profit and grow faster. A positive response from users and customers will allow Navut to launch follow-on projects which should employ a larger team of 5 to 10 full-time employees.

**Product Description**

Navut is an unique set of online tools that helps people find and settle in the best neighborhood for them. Our innovative solution takes into consideration people’s personal needs and budgets to provide customized results in just a few clicks.

Navut’s ***Neighborhood Finder*** is the only web application enabling the identification of the most suitable neighborhood for ourselves by cross-referencing preferences and official, reliable data.

The ***Personal Budget*** tool let users compare potential income and cost of living in two locations based on their own criteria, instead of just looking at averages. Our user interface allows movers to build a fully customized and detailed budget in less than five minutes.

With the ***Fitting In*** tool, Navut adds social interaction to its service by connecting prospective or recent movers that share similar interests, professions and hobbies with local suppliers, schools and professional associations.

Our business model is based on the match-making of people moving into a new area and local suppliers offering services and products this audience need prior, during and after the move process.

Suppliers understand the great value of being able to clearly identify this target audience, especially prior to the move, and are willing to pay considerable amounts for these connections. On the other hand, Navut’s users will have access to customized promotional offers of products and services they need (housing, telephone, Internet, banking...), when they need them the most.

**Overall Project Objectives**

The development of a Recommendation Engine that will allow the aggregation and analysis in real-time of several data sets that could be extensible to provide different outputs.

This engine will be composed by one aggregator component responsible for parsing all inbound data and by applying defined business rules, transforming this data into human readable analytical information and processing input data for the recommender component. Thereafter, the second component of the engine, the recommender, will be in charge of analyzing heterogeneous data sets and, according to business parameters, will apply specific algorithm to provide a response as a recommended item (single data or set of information).

As our strategy is to provide fast response and processing in real-time, our system needs to use cloud-based technologies that allow us to maintain high scalability for those data intensive tasks.

**Quantifiable Project Objectives**

It will be possible to measure the effectiveness of the Recommendation Engine when, in environment consisting of 2 cloud servers with large amount of RAM memory, it will be able to perform the following operations:

1. Aggregate analytical data in real-time of requests from Neighborhood Finder in less than 1 second

2. Process queued, aggregated data of 10,000 requests each 30 seconds

For a data set of 100 client specific data, 1,000 user specific data, and at least 25 requests on Neighborhood Finder, the Recommendation Engine must perform in less than 5 seconds:

1. Execute 1 data-analysis algorithm

2. Parse the result as recommended client data (realtor)

Also given a data set consisting of 100 million processed analytic records, 100 neighborhoods data and different profile data across 1,000 clients the Recommendation Engine must perform in less than 15 seconds:

1. Execute 2 data-analysis algorithms on different instances

2. Parse the result as recommended data (neighborhood, services, and criteria)



Plan description

In order to achieve the objectives above our engineering team will perform the following plan:

Build a data analysis platform composed of:

A) A data processing middleware that will:

* Monitor specific inbound requests
* Queue analytical data
* Process sets of data
* Record aggregated data

B) A recommendation component featuring a REST service that will:

* Gather client-specific data from multiple data sets
* Perform data analysis algorithms for specific scenarios of recommendations
* Supply information in different formats

Due to the particularity of the environment, the system will need to be built aiming for high availability and scalability. Therefore, the following directives must be followed:

1. Use of flexible, less restrictive (less normalized) data model as provided by NoSQL technologies

2. Use of automatic and horizontal scaling technology as provided by cloud computing services

3. Use of technologies that allow the processing of hundreds of requests per minute without drawbacks on the response time like memory caching and job queues

4. Processing of large amounts of data

5. Providing compatible response times less than 15 seconds

**Project benefits**

Currently, real estate agents and property managers are randomly recommended by Navut to its users. With the implementation of this project Navut will be able to recommend service providers that better serve the needs of its users (comes from the same background as him, has the kind of properties he is looking for, speaks his language, etc). We believe this will increase the Click Through Rate which means higher Revenue per User and profit for Navut.

On the other hand, by allowing the best match to happen Navut will increase the odds that a deal is closed in between both parties and therefore, increasing the value given to each lead provided by Navut. Our customers will be motivated to increase the portion of the marketing budget that they allocate to Navut, leading, consequently, to a higher revenue and profit.. This metric will be measured based on the Revenue per User and the Number of Referrals sent each month.

Generating a higher Revenue per User doesn’t only results in profit increase for Navut, but also in faster growth and more job creation as the company can bid higher on PPC campaigns and attract a critical mass of users to the website. It will also allow Navut to speed up the growth to the US and other international markets.

There are also several qualitative project benefits such as better neighborhood recommendation to users, increased customer satisfaction and development field expertise within our team. Foremost, the contribution from IRAP will dramatically increase our long-term competitive advantage by allowing Navut to gather intelligence on users and customers and new insights in this market.



Project financing

Navut has been, and will continue to be, primarily funded by its founders. So far, Navut invested approximately 80% of its budget in research and development and will continue to do so in the next 12 months.

Apart from internal equity, the company received a loan from the Canadian Youth Business Foundation and a grant from the Société de Développement Économique Ville-Marie that will help covering the company costs in the coming months.