noMad Business Plan

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I. Executive summary:

The product that we are building currently is an all-in-one platform that is able to take in a list of airports that they would like to visit along with a preferred number of days that they would like to stay in airport for, as well as the end and start dates of their vacation, and then receive from our backend a list of permutations of flights that would that have been optimized over by some metric such as price or flight time.

For the technical requirements of our project, we currently have a full stack web application with a React Frontend that is able to accept user input (such as the locations that they are trying to attend, how many days they would like to stay in each location, as well as what they are trying to optimize over: price or flight time). We also are running a Flask backend to host the web application due to its lightweight nature, but may switch to either Django or Node.js in order to offer more scalability in the future. Lastly, our core functionality is achieved by the combination of a Selenium driver web scraper that is able to scrape for fight data based on input locations and the dates of each flight based on user input, as well as our own algorithm that is able to generate the various permutations of flight plans that would then be sent back to the user once generated.

II. Value Proposition:

Currently, there is no clear way to figure out the optimum order in which to visit cities on a trip. Using a map is often not sufficient as flight prices and durations differ based on flight routes and size of airport as well as other factors. With noMad, you give the application the cities you want to visit, along with what you want to optimize for, whether that is price or time - and noMad gives you the best order to visit in. We seek to solve the issue that many vacation-goers, travel planners, and tourists have when trying to plan a multistage vacation. The solution and value that we provide is one that will help address the lack of automation and accessibility to flight planning that currently exists in the biggest companies and platforms that most use to assist in travel planning.

III. Engineering Innovation:

The main engineering innovation that our product provides is the introduction of a new platform that enables users to have an all in one place to plan an entire flight plan. From a technical standpoint, the pipeline that we create for the user to return the optimal flight paths is something that is unique. The feature of incorporating the number of days at each location is something that inherently throws in an additional layer of complexity to the platform given the fact that now a relatively simple graph problem of finding the shortest (cheapest/lowest time) path, we now have to deal with a new temporal aspect of when the flights will occur. As such, the main engineering innovation that noMad provides is the development of a full stack web application that is able to provide access to data that is normally barred from access to despite being publicly available in a way that is meaningful for people that would otherwise have to spend countless hours if not days trying to manually find them and construct their own itineraries and plans from.

IV. Stakeholders:

The primary stakeholders for our platform would be the end users, such as travelers and tourists, of our platform. Given that they would be the ones more directly impacted by the use of our software, they would be the most important stakeholders to consider. In order to provide the smoothest experience to our end users, we would need to work with not only to provide them with a simple means to organize their flights in their vacation, but also do so in a way that is painless for them as possible. That would mean taking the pain points of individually looking into flight prices for their given dates, planning on a spreadsheet for itineraries, and then figuring out whether their flight plan is even viable or not.

Additionally, stakeholders involved in vacation and flight planning, such as travel agents and airline companies, would also feel an impact from our application and platform. Given that our platform is directly involved in making the flight planning in vacations as painless as possible, airline companies would be directly involved in that process since it is through them that we are able to pursue valid flights in the first place. These would include the providers of the flight data that we are using from each airline to produce the results our end users experience. For travel agents, it is another tool that would enable them to improve the services that they provide to their customer base, and as such have a stake in the success of the platform in the sense that they seek to greatly benefit from it professionally.

V. Market research:

We conducted some small user surveys, aiming to cover different demographic, age and income groups. Although this was a small sample size of ~150 people skewed towards friends and family, the results clearly showed several insights. There is a clear indication from the population that we sampled that there are issues in flight planning that noMad can address. Nearly 78% of the users that we surveyed found that the worst pain point for them when they were planning their trips was the amount of time it took them to research and plan flights. Alongside this, we found that 72% of users mentioned that it was a big hassle to even plan within travel groups, citing that different people had different preferences for the order of countries traveled, the amount of time spent within each country, as well as their own availability for entering and exiting the planned vacation. Another major factor that we noticed within our survey was regarding the main reservations concerning the availability and accessibility of the application despite being paywalled. In our preliminary research, we found that many APIs were inaccessible to us for our project either due to the requirements of being in a corporate sponsorship with the API provider or due to the costs associated with making the API calls. As such, we wanted to go with an alternative approach (web scraping) which would drive the costs down by a great deal, but also would in turn cause latency in the results. The difference in this case would be between a few seconds to get the results to up to 3 minutes. However, when surveyed about this specific design choice, we found that 67% of those surveyed would not mind waiting the extra time so long as the results that they receive are free and accurate. As such, we found that opting into the web scraping strategy would enable us to create the application in a way that did not affect the user experience too much given the amount of people that would not mind this one specific bottleneck.

VI. Competition and differentiators:

Given the nature of our platform as an optimal flight planner application, the main competition that we would face would be from other applications that seek to automate the process of flight and vacation planning automation. For instance, some of the major competitors that noMad would face would be TripIt, Kayak, Expedia, TripAdvisor, and Google Travel. Most if not all of these platforms do seek to improve the process of planning vacations and flights alongside things like hotel and transportation bookings. However, they do fail to address the issue of creating the recommended itineraries from start to finish for a given set of vacation parameters such as the number of days spent in each location, and the cheapest ordering of countries to attend. Furthermore, it is actually the flight price discrepancies that exist within each of these platforms coupled with the lack of a means to obtain the cheapest or least time flights that inspired the development of noMad. Thus, while the market for travel planning and Online Travel

Agencies is very much dominated by a few large players, our platform seeks to provide a cheaper alternative that can enable end users to seamlessly plan their flights in the most time/cost efficient manner in a one stop place, which these current platforms do not provide a seamless solution or at the moment.

VII. Customer Segments + Market Opportunities

The main customers that we would be targeting in this case would be individuals that are seeking to determine the optimal flight plan for their vacation planning needs, travel agents that need to utilize this tool in order to plan more personalized plans to address their client's needs, as well as OTAs that seek to upgrade the services that they offer for vacation planning.

For the first segment, we plan to target individuals that often use currently established vacation planning services and flight price websites. Given the unwieldy nature of these websites and the crucial lack of being able to plan multi leg flight plans in a seamless and automated way, this would be the first step in addressing this need for this consumer base.

For travel agents and OTAs, we would seek to target them by showing them that our service can be used to improve the results that they provide to their clients/end users. By being able to access our services, they can improve the flight planning experience in a way that currently does not exist for their own platforms.

VIII. Intellectual Property

There is no protectable IP as such, since this is a tool using graph algorithms that are not protectable. However we do have first movers advantage, and can use viral buzz and the network effect to make full use of this. Along with this, eventually we would like to seek a patent/licensing with further refining of our MVP and before we enter into a stage that would fully support launching into the public sphere, along with protection of the name and brand assets of noMad.

IX. Costs:

We can break the costs of noMad down into several categories. The first category would be the cost of data acquisition. The core functionality of our platform depends on the ability to obtain flight price data in a real time state. That would mean making necessary API calls or web scraping that data in a very repetitive and constant manner in order to provide the most up to date information for our platform. Given that most real

time flight data API services are paywalled behind corporate partnerships, the ability to gain access to these APIs would be the main bottleneck associated with proper performance of the application. However, given that some APIs such as Skyscanner are free, they would enable us to gain access to this crucial data at no cost to us. If we are unable to access this API via a corporate partnership, we would most likely need to run a web scraper on the cloud, such as in the case of an AWS EC2 instance. We would estimate EC2 compute costs to be around $0.0096 / hour for an m5.medium EC2 instance. The second category would be for data storage, which could run up to $0.004 / GB based on AWS S3 tiers. As for business expenses, the main expenses that we would face would include marketing our platform, management costs associated with scaling up, labor costs (engineers that develop the app, PMs, etc.), as well as operation costs, and rent among other costs.

X. Revenue Model:

Three potential revenue models for different product maturity stages we identified are:

1. Advertisement: Banner advertisement space, as well as video advertisements to be shown to the user during processing time to get the free result. This could be done using programmatic advertising. This ad space would be of interest to companies in the travel and adjacent industries, as all web traffic would be from people looking to take a trip. Revenue from banner ads per click can average around 5 cents per click. Click rates can be as low as 1%, but on a web app such as ours which is targeted at a very specific segment, ads from supporting industries would tend to have a higher click rate, estimated at around 5%. Similarly, video ads tend to average out at 18 cents per view. We assume 20% of people who visit our website will go through the process of filling out a few destinations and waiting for the result.

   The revenue from this model would be based on the number of impressions on the website. A quick estimation with 100,000 impressions per month would lead to:
   Revenue from video ads:
   Views per month = 100,000 impressions x 20% view rate = 20,000
   20,000 impressions x $0.18 per impression = $3,600
   Clicks per month = 100,000 impressions x 5% click-through rate = 5,000 clicks
   Revenue from banner ads = 5,000 clicks x $0.05 per click = $250
   Total monthly revenue: $3,600 + $250 = $3,850
   Therefore, the estimated monthly revenue for this website is $3,850.

2. Freemium model: In this revenue model, in the basic (free) version we would allow less customizability over the user inputs, such as only allowing to minimize cost rather than accounting for time and other factors, along with a limited number of free uses. Alongside this, we would offer a paid subscription where you could unlock unlimited uses and full capability for a small price ($0.99/month). Although this may lead to a very low renewal rate as people would only pay for the vacation periods, it would lead to them paying again in the next vacation cycle, along with having a better perception than paying per itinerary.

3. Partnerships (at scale): This would involve entering into partnerships with OTA's such as Kayak or Expedia to direct users to their websites to complete the itinerary reservations, with direct links to book. This could also involve using their corporate API's, and so speeding up the processing time of the app. This could function as an affiliate partnership where noMad gets paid per click for traffic directed to the partner website.

XI. Future plans:

Future functionality would include more customization over the constraints, such as a blended metric for priority split between cost and time, along with factors such as time of day of travel, number of layovers, etc. Another future feature would be including different forms of transportation, such as public transportation and driving.