

## Project Brief

### Motivation

The ultimate goal of this project is to build online marketplace infrastructure that will change American consumer life for the better. Some of the implications of this idea include creating a vibrant market for personal services (grooming, housekeeping, catering...etc), breaking the pricing power of big corporations, and solving the vaporware problem of crowdfunding platforms. We believe all this has to begin with turning consumer purchase decisions from a chaotic, impulse driven, emotionally driven, trust driven place to an organized, transparent, competitive, third-party moderated place with built-in checks and balances between solicitor and the soliocited.

### Project Context

1. Due to the ambitious scope of this project, students are not expected to finish the development of the entire project within the duration of COMP 523. Rather, students should read the brief and scope out a reasonable workload with the teaching faculty's approval.
2. This is an idea-stage project. While extensive description of the idea may give an impression that the idea is set in stone, it is in fact not. Students are welcome to contribute specific ideas so long it builds on the goals of this project. Just let me know of your thoughts and if I find it good I will incorporate it into the project.
3. Students are allowed to propose any paid external tools or software services that will speed up development. This will be reviewed on a case by case basis. If approved, Domanu, Inc. will pay for them so that no cost is incurred by the students.
4. Students will work with external software developers for this project who will periodically check in and provide feedback on progress, direction and code quality.
5. Because this project is going to get worked on by a lot of people, maintaining readable documentation and adhering to a consistent style guide and set of best practices is of utmost importance. Failure to do this may result in a poor or even a failing grade.
6. If you do a good job, I'll personally write a good reference for you to help with your job search. Furthermore, if this idea takes off, there may be career opportunities as well.

### Project Steps

- 1) Create APIs/libraries that can be used to configure marketplace software applications
- 2) Dogfood the above mentioned API/libraries to create three initial prototype online marketplaces.
- 3) Integrate the above mentioned online marketplaces to external services such as SaaS, fintech services, cloud computing and/or microservices where necessary to ensure proper functioning of the marketplaces.
- 4) Develop a maintainable codebase with proper documentation to ensure that the project is sustainable and is approachable by external software developers.

### Project Deliverables

- 1) Syndication API

- 2) Commitment Device API
- 3) Auctioneering API
- 4) Bargaining API
- 5) Common Utility API
- 6) User & Developer Documentation (Hosted on an internal website)
- 7) Domanu Mobile App (used for browsing, identity verification, location tracking and transaction verification - links all Domanu Marketplaces under one app)
- 8) Domanu PeopleHelpPeople (Marketplace for personal services that can be carried out by ordinary people)
- 9) Domanu Incumbent (Negotiation platform for people who are current customer of a product/service that they are willing to switch to collectively negotiate for better terms with the incumbent or opening their syndicated purchasing intent for bidding by competitors)
- 10) Domanu Proof of Demand (A vaporware proof crowdfunding platform that issues proof of funds to the kickstarter so that the kickstarter may raise debt or venture capital to fund the project.)

#### Parties to the Project

**Client / Project Owner / Zu Yan Tee** - The person who came up with this idea and wrote this plan, whose final approval is needed for any detailed work plan. Founder of Domanu and MBA candidate at Kenan-Flagler Business School Class of 2026.

**Domanu / The Platform** - Domanu is the name of this project and also the corporation this project is associated with. It is responsible for operating the infrastructure borne out of this project. Owner of all marketplaces created by Designers. Ultimately responsible for maintaining the security and integrity of this infrastructure. Serves as the highest court for the bigger disputes across the platform.

**Designer / Licensee** - Anyone who wishes to create an online marketplace using the infrastructure created by Domanu. Shares revenue earned by Domanu. Licensee of marketplaces created using this infrastructure. Responsible for adapting API configuration to a specific type of marketplace. Responsible for resolving any initial disputes that arise in this marketplace.

**Infrastructure / Platform** - Includes the user & developer documentation, APIs, integrations, databases, websites and custom code written to create the marketplaces.

**Members** - Users who have an account with Domanu. May have access to buying features only, selling features only or both. Superusers with membership may be given additional responsibilities.

**Buyers** - Users who use the platform for buying products or services. Includes members and non-members.

**Sellers** - Users who use the platform for selling products or services. Includes members and non-members.

### API Description

#### Syndication API

The purpose of the syndication API is to combine small transactions into big transactions based on certain criteria chosen by the user of the API.

#### Syndication API Mechanism

The API takes in a stream of packets of data, each packet is associated with data about a potential transaction that is to be syndicated with others to form a bigger transaction. Each packet of data consists of fields defined by the API designer, the fields are filled in by the buyer/seller, then sent to the API. The API inspects each packet's data, checks what are the criteria set by the API user for syndication, then sends the packet (transaction) to the correct syndicate.

The role of the designer is to decide what information is required for each transaction and how it is treated. Once the designer has determined how many fields of information is required to characterise the transaction, the designer can then label each field and determine its expected input. Possible inputs include numbers, numbers within a certain range, decimal numbers, text, text with character limits, multiple choice answers, check all apply boxes, etc.

For example, consider a marketplace for haircuts. Barbers don't have the time or energy to bid on an individual haircut, which costs approximately \$20. But syndicate it to form a large purchase contract size, say \$1000 (say a commitment to purchase 50 monthly haircuts across say 4 years), then it becomes worthwhile for the barber to give discounts.

Suppose that the designer chooses to syndicate based on the user's home address. This is appropriate because it doesn't make sense for customers or barbers to travel far to get a haircut. The designer chooses "location" as a syndication criteria and sets the radius in miles to consider per syndicate. Then, as the API reads the incoming haircut order requests, extracts the location information, figures out which syndicate it is the closest to and whether it has any room left, and then assigns it to the most appropriate syndicate.

#### Commitment Device API

The Commitment Device is a ledger that tracks, records and updates the status of commitments that have been confirmed by the buyers and sellers. Commitments are expressed in terms of inflow and outflow of refundable deposits of money into the accounting system. It is an essential component to the smooth functioning of Domanu Markets. It aligns the incentives of the buyers and sellers to make deals happen and encourages a long term partnership between buyer and seller.

#### Commitment Device Terms

Account Balance - The sum of refundable deposit of money the user paid into the accounting system, the sum of all money received from other users and the sum of commitment deposits for all ongoing commitments.

Minimum Account Balance - The minimum balance the user must maintain in order to remain as a member of good standing. The amount is a function of several factors (age of the account, location in the world, activity of the account, reputation of the user, number and size of transactions, amount of ongoing commitments etc. The Designer must be able to customize the minimum account balance amount based on the various factors of his choice.

Free Balance - The proportion of dollars of the account balance that is available for staking. Commitment Bonds and Platform Stake are paid from the free balance. Positive balances can be withdrawn from the account up to the minimum account balance.

Commitment Balance - The proportion of dollars of the account balance that has already been staked on ongoing commitments. The size of the commitment balance is a metric for the activity of the user. If something goes wrong with a transaction goes wrong or if a long term commitment is cancelled, part or the whole commitment balance is transferred to the buyer or seller depending on who is at fault. The sizing of the commitment balance is customized by the Designer. Both buyers and sellers are required to pay a commitment bond upon agreeing on a long term agreement.

Staked Balance - A small fraction of dollars that's withheld by the platform for a period of time after a transaction is concluded. A metric of the importance of a particular user which is considered as a factor in disputes.

Cashback Balance - For sellers that do not offer personalized discounts at point of sale, sellers are required to pay a cashback balance that will be paid out to buyers periodically when they submit proof of buying volume.

#### Example Customer Journey

- 1) Eric signs up for Domanu and deposits \$150 to meet the minimum account balance for new members. His account now has \$150 of Free Balance.
- 2) Eric pays for a long term commitment to purchase haircuts from a specific hairdresser on Domanu PeopleHelpPeople (in person services platform) after going through an auctioneering process. The contract value of this long term commitment is 100 haircuts at a discounted price for \$1000 and requires a commitment balance of \$60. His Free Balance is now \$90 and his Commitment Balance is now \$60.
- 3) Eric offers long term scheduled transport services in his local area via the PeopleHelpPeople Platform. He bid and won a contract for 50 trips worth \$800 and is now required to post a commitment bond of \$48. His Free Balance is now \$42 and Commitment Balance is now \$108.
- 4) Eric receives a haircut. Eric is happy with the haircut. Domanu asks if he's happy with the service and Eric said yes. Domanu releases one third of the hairdresser's

commitment deposit (\$20 out of \$60) to the hairdresser. Eric's commitment deposit remains at \$60. However, his free balance has been deducted by \$10 to pay for the hairdresser's service. Eric's Free Balance is now \$31 and Commitment Balance remains at \$108. Eric's account balance is now \$140 which is below the minimum account balance. He receives a notification telling him to bring his balance back up to at least \$150 by the end of the month by either topping up his balance with his money or earning from others by performing services.

- 5) Eric provides a scheduled transport service. His rider is also happy with his service and informs Domanu. Domanu returns  $\frac{1}{3}$  of his commitment bond, which amounts to \$16. He also receives payment for his service worth \$16. As per terms of use, Domanu withholds \$1.60 of his income as a Platform Stake. It will be withheld for 3 years before it is returned to him. His Free Balance is now \$62.40, his Commitment Balance is now \$92, his Stake Balance is \$1.60 and his Account Balance is now \$156.
- 6) After reviewing his expenses, Eric realizes he spends too much on auto insurance (around \$2400 annually) and decides to enter into negotiation with his provider via Domanu Incumbent. He signs up for a commitment to change his auto insurance should negotiations fail, paying a \$60 commitment bond. Under the terms of the bond, he along with everyone else in his syndicate who are all disgruntled customers of the same insurance provider, needs to make good on their promise to change his provider if negotiations with the current provider fails. Eric's Free Balance is now \$2.40, his Commitment Balance now \$152, Stake Balance \$1.60, and his Account Balance \$156.
- 7) Eric performs another scheduled transport service and earns \$16. Again, as per terms of use, another \$1.60 is withheld from his \$16 pay. Eric's Free Balance is now \$16.80, his Commitment Balance \$152, Stake Balance \$3.20, Account Balance \$168.80
- 8) Eric got the great news from Domanu that his auto insurance responded favorably to the neegotiation and reduced his annual premium by \$200 to \$2200. The mechanism of this reduction is done via cashback instead of changing the terms of the policy which he has already signed a long time ago. Domanu charges \$20 to his Free Balance as Platform Stake. Domanu also informs that the auto insurance provider has paid up \$100 cashback that he was entitled to after remaining with his provider for the next 6 months. As part of the terms of this negotiation, Eric must remain as the customer of this insurance provider for at least 5 years. Therefore, his commitment bond will not be returned to him until then. His Free Balance is now negative, at -\$3.20, his Commitment Balance \$152, Stake Balance \$23.20, and Account Balance \$148.80. Eric now also has a Cashback Balance of \$100.
- 9) Eric was late to perform his scheduled transport service this time and as a result he did not check in with the customer in time. After Eric apologized profusely for the error, the customer graciously waived the standard penalty so Eric is able to receive his pay of \$16 as per usual. Otherwise, \$8 of \$16 would have been withheld from Eric for a month as a penalty for this infraction. His Free Balance is now \$11.20, his Commitment Balance \$152, Stake Balance \$24.40, Account Balance \$163.20, and Cash Balance of \$100.

The purpose of the bidding API is to matchmake buyers and sellers to cause a transaction to happen between them. The Bidding API should allow for bi-directional auctions, which means allow buyers to bid or sellers to bid. Depending on the ratio of buying and selling entities and whether syndication of buyers or sellers is involved, three configurations should be made available, which are: one-to-many, many-to-one and many-to-many. The API should also allow for various types of auctions to be chosen, though for the initial prototype, we will use a ranked vickery auction system. It's an extension of the classic vickery auction, where the highest bidder wins the auction but pays the second highest bidder's price. The other bidders will then be asked if they want to be entered into a waitlist where they pay/receive the second highest bid price if they are called to deliver on their commitment should the original original bid winner be unable to deliver. The waitlist is ranked according to their initial bid in the vickery auction.

### Bargaining API

The Bargaining API comes into play when a user deems that bidding is not suitable or preferable. It typically involves either many-to-many or one-on-one interaction. Buyers post bids, and sellers post asks. The app will notify the other party to respond with a message and/or a counter offer once a reply is received. A party may respond by accepting the bid/ask, or move to a price point somewhere within the bid-ask spread, or holding firm at the current bid/ask. Buyers and sellers are expected to go back and forth and reduce their bid-ask spread and eventually converge on a price. If a bid-ask spread persists, however, then either the seller or the buyer can propose a virtual coin-flip to break the deadlock. In that situation, heads buyer wins, tails seller wins.

### Common Utility API

As indicated elsewhere in this document, the end product of this project is to launch a superapp mobile application that contains all Domanu Marketplaces, with the first three developed by Domanu itself. The Common Utility API contains all the shared functionality across all marketplaces, such as payment processing, account system, location tracking, transaction verification, user referral system, CRM integration.

### User & Developer Documentation

In addition to maintaining developer facing documentation, students should also document the intended ways the app is meant to be used.

### Domanu Mobile App

Mobile app that consolidates all marketplaces into a single app and account system. The app needs to:

- 1) Track location and relay that information to Domanu Servers and/or a different user.
- 2) Detect nearby Domanu app users to confirm that two designated Domanu users have in fact, met in person.
- 3) Have a common login/Single Sign On for all marketplace.
- 4) Have a common payment system for all marketplaces
- 5) Be able to use take control over the phone camera verify that it is being used to take a photo of a live person (and not a static photo of someone's headshot)

### Domanu Marketplaces (PeopleHelpPeople, Incumbent, ProofOfDemand)

The customized aspects of Domanu Marketplaces are highly dependent on the specific nature of each type of marketplace. Students who are interested in working in this area are expected to engage in extensive discussion with me before starting any work. Students may find it helpful to do extensive UI/UX development before any software development for this stage.