Problem Definition Document

Cover Sheet

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* **Degree Programme**: Computer Science with Games Technology
* **Project Title**: Crypto Currency trading mobile application making trading accessible locally with help of small business owners
* **Project Proposed By**: Fedil Al-Hayawi (Student)
* **Arrangements For Proprietary Interests**: None, at this stage
* **Proposal Word Count:** 984

Proposal

# Problem To Be Solved

The problem addressed with my project is the lack of accessibility to Crypto Currencies (referred to as **CC’s** from here on out) for the general public. With the increasing demand for Bitcoin, Ethereum and other Blockchain-Based digital currencies, and the scarcity of fast, reliable, secure and anonymous means to purchase and sell said currencies, the market has given opportunities to various types of businesses.

From a consumer perspective, there are 3 main ways to purchase CC’s:

1. Online Platforms such as: Coinbase, Gemini or Kraken.
2. Person-To-Person Trades facilitated by online platforms such as: LocalBitcoins, LocalEthereum or BitQuick.
3. Crypto Currency ATM’s.

Any one of these methods is flawed in many ways. Online platforms have incredibly high fee’s, are not anonymous, slow (due to identity checks) and more importantly, not safe. To individuals unfamiliar with the risks involved with using Online Wallets (Containers of CC’s), the 2013 “Mt Cox” exchange disaster that ended up in Bitcoin’s price falling by 23% within hours, clearly demonstrated the vulnerabilities of such platforms.

The problem with Person-To-Person trades is speed and security. The risks involved with carrying large sums of money and meeting a stranger for a trade are obvious.

As of now, ATM’s are rare, expensive (high fee’s) and also require identification in some cases. Due to the way ATM’s currently work, there is also potential risk. They can be manipulated just like, or even easier than, regular ATM’s to trick the user into exposing sensitive information, and of course, loss of money. Another risk is that most of these machines will print out a receipt that can be easily intercepted or stolen. This receipt contains the CC’s to be redeemed by the customer and is not obfuscated in any way.

The main competitor is a company called LibertyX. They provide a similar service, though restricted in some ways. Firstly, they are based in the US and only cover a small area. Locally, there is no competition and this project will offer a service that does not currently exist.

# Project Objectives

* I shall develop an Android and iOS application that enables users to buy and sell CC’s.
  + - The application must access a database of Wallets containing the currency to be sold and make it redeemable in some form (Receipt, code or similar).
    - The application must be able to verify a payment made by a customer.
    - The application must allow users to request and make payments to a bank account.
* I shall build a network of Vendors (owners of small businesses such as Off License shops) using the application.
* I shall build a website locating registered vendors, providing information such as opening times and fees.

# Project Beneficiaries

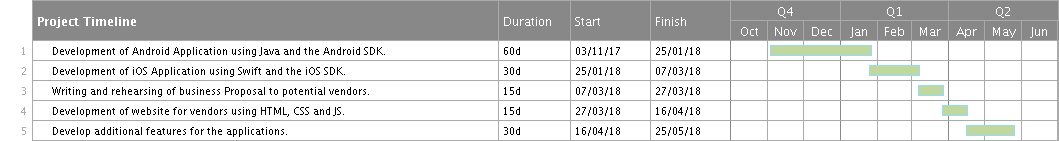
This project aims to provide a means of purchasing and selling CC’s locally, avoiding many of the downfalls of other services.

The application will be used by small business owners to sell and buy CC’s. They shall be found by customers using a website showing a map with all registered vendors.

Business owners will benefit from exposure as a vendor of CC’s.

The application will allow vendors to accept CC’s as an additional payment method. This will attract customers naturally.

# Work Plan

The main deliverable is the mobile application. Once it has been developed, a business proposal will be written and rehearsed to begin establishing a network of vendors. Once at least a single vendor has expressed interest, the website will be developed, to be used by the public.

The development process in tasks 1 and 2 will heavily rely on 3rd party libraries that enable interaction with various Blockchains. Depending on how smoothly development goes, several Blockchains will be included in these tasks. Otherwise they will be included in the “Additional Features” in task 5.

Task 5 will include a number of improvement to usability, visually presentation, and ease of use. Additionally, it will include the payment processing mechanism that allows vendors to pay and get paid by a centralised bank account, accessibly only by system administrators.

Task 3 encapsulates many sub-tasks. These include:

* Finding interested vendors.
* Educating vendors on Blockchain technology.
* Visiting small business owners in person and delivering a convincing business proposal.

Task 4 includes:

* Developing a responsive website.
* Adding a comprehensive map that displays the user’s location.
* Adding a registration form for vendors interested in joining the network.

# Work Plan

This project heavily relies on healthy state of CC’s and requires them to maintain their price. Stakeholder and vendors will be invested and a drop in price can heavily affect liquidity.

As a consumer-based project, it is essential there is demand. Bitcoin has faced many problems in the past. Recently, all CC exchanges were banned in China, causing first a drop in price, and of course more uncertainty in the community.

Such a ban in the UK would make this project redundant for the foreseeable future.

Other risks stem from the nature of Blockchain technology. To name a few:

* Slow transaction speeds. This is a major problem with purchasing as it takes ~30 minutes for 3 confirmations to go through. There must be a mechanism around this problem.
* Rapid price changes. Individuals may try to exploit the system if they identify a price difference between vendors and exchanges.
* Risk of losing funds. All funds will be stored in wallets that are transparent to the public. To gain access, only 1 private key is needed. Attacks to the system could compromise these keys.

There are also risks in the interaction with the vendors such as in the following example:

A customer purchases CC’s from a vendor. The vendor will be lending money, in form of CC’s, from a centralised bank account, open to all vendors, to pay the customer. The physical money (in £) is now in the vendors hands and they must be trusted to pay it back.

research ethics checklist

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| --- | --- | --- |
| **A.1 If your answer to any of the following questions (1 – 3) is YES, you must apply to an appropriate external ethics committee for approval.** | |  |
| 1. | Does your project require approval from the National Research Ethics Service (NRES)? For example, because you are recruiting current NHS patients or staff? If you are unsure, please check at http://www.hra.nhs.uk/research-community/before-you-apply/determine-which-review-body-approvals-are-required/. | **No** |
| 2. | Does your project involve participants who are covered by the Mental Capacity Act? If so, you will need approval from an external ethics committee such as NRES or the Social Care Research Ethics Committee http://www.scie.org.uk/research/ethics-committee/. | **No** |
| 3. | Does your project involve participants who are currently under the auspices of the Criminal Justice System? For example, but not limited to, people on remand, prisoners and those on probation? If so, you will need approval from the ethics approval system of the National Offender Management Service. | **No** |
| **A.2 If your answer to any of the following questions (4 – 11) is YES, you must apply to the City University Senate Research Ethics Committee (SREC) for approval (unless you are applying to an external ethics committee).** | |  |
| 4. | Does your project involve participants who are unable to give informed consent? For example, but not limited to, people who may have a degree of learning disability or mental health problem, that means they are unable to make an informed decision on their own behalf? | **No** |
| 5. | Is there a risk that your project might lead to disclosures from participants concerning their involvement in illegal activities? | **No** |
| 6. | Is there a risk that obscene and or illegal material may need to be accessed for your project (including online content and other material)? | **No** |
| 7. | Does your project involve participants disclosing information about sensitive subjects? For example, but not limited to, health status, sexual behaviour, political behaviour, domestic violence. | **No** |
| 8. | Does your project involve you travelling to another country outside of the UK, where the Foreign & Commonwealth Office has issued a travel warning? (See <http://www.fco.gov.uk/en/>) | **No** |
| 9. | Does your project involve physically invasive or intrusive procedures? For example, these may include, but are not limited to, electrical stimulation, heat, cold or bruising. | **No** |
| 10. | Does your project involve animals? | **No** |
| 11. | Does your project involve the administration of drugs, placebos or other substances to study participants? | **No** |
| **A.3 If your answer to any of the following questions (12 – 18) is YES, you must submit a full application to the Computer Science Research Ethics Committee (CSREC) for approval (unless you are applying to an external ethics committee or the Senate Research Ethics Committee). Your application may be referred to the Senate Research Ethics Committee.** | |  |
| 12. | Does your project involve participants who are under the age of 18? | **No** |
| 13. | Does your project involve adults who are vulnerable because of their social, psychological or medical circumstances (vulnerable adults)? This includes adults with cognitive and / or learning disabilities, adults with physical disabilities and older people. | **No** |
| 14. | Does your project involve participants who are recruited because they are staff or students of City University London? For example, students studying on a specific course or module. (If yes, approval is also required from the Head of Department or Programme Director.) | **No** |
| 15. | Does your project involve intentional deception of participants? | **No** |
| 16. | Does your project involve participants taking part without their informed consent? | **No** |
| 17. | Does your project pose a risk to participants or other individuals greater than that in normal working life? | **No** |
| 18. | Does your project pose a risk to you, the researcher, greater than that in normal working life? | **No** |
| **A.4 If your answer to the following question (19) is YES and your answer to all questions 1 – 18 is NO, you must complete part B of this form.** | |  |
| 19. | Does your project involve human participants or their identifiable personal data? For example, as interviewees, respondents to a survey or participants in testing. | **No** |