Dublin City University
School of Computing

BSc in Enterprise Computing
4th year project proposal (CA472)

Idea Proposal
2020/2021

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Project Title:

SCAN-N-GO
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Project Summary:

SCAN-N-GO is a revolutionary application whereby a consumer can enter a retail store, scan a barcode of any product(s) and pay using their phones' built-in payment system (Apple Pay, Google Pay etc.). Our application will allow consumers to bypass the traditional payment systems such as a cashier or self-service checkouts and pay for goods directly with their phone. The initial intention for SCAN-N-GO is to aid these traditional payment systems rather than replace them. This reduces the amount of people queueing in-store and allows for higher customer turnover. SCAN-N-GO's Customers would be owners of Fast Paced Retail Stores and Customers of the retail stores. SCAN-N-GO would primarily get its revenue from the Retail Stores as they will pay a nominal transaction fee on all payments made using our application.

The overall objective of this project is to provide value to both of our customers segments - Owners of Fast Paced Retail Stores & Customers of Retail Stores. For the owners of such retail stores we aim to reduce costs by reducing the need for additional staff during busy periods and increase revenue during busy periods. We aim to provide convenience and promote accessibility for customers of retail stores.

An example scenario of SCAN-N-GO:

- A Consumer enters a busy retail store.
- Scans a barcoded good with our SCAN-N-GO application.
- Proceeds through the seamless payment process within the SCAN-N-GO application.
- Has payment approved and provided with a digital receipt in-app.
- The Consumer can then exit the store with their goods.

We choose this idea for our project for two primary reasons. The first being, we as consumers of retail stores unanimously agreed that a pain point of busy stores is the queuing system and the time it takes to make a purchase - This prompted us to develop a solution to this problem. The second reason for choosing this idea for our project is related to Amazon Go & Tesco. These large retailers have begun to provide similar services to customers of large retail stores. This verified some of our assumptions and we believe there is an opportunity to provide a solution to smaller retail stores.

Expected Technical Delivery:

Our expected technical delivery will include two main parts; **a consumer facing front end** and **a business facing back end system.**

Front End Web Application:

Our consumer facing front end system will be a web page that can be accessed anywhere over the internet. It will be used entirely by mobile devices (iPhone, Android, Tablets) and will be secured by a user login. This front end web app will allow users to log in, scan products using their mobile devices built in camera, add products to a basket and pay using a 3D secure web payments gateway.

If a user wants to use our SCAN-N-GO application in a retail store environment they will have to “Scan-in” to that store. This can be done by the user by simply scanning the store’s Universal Store Code. These Universal Store Codes will be available on all applicable retail stores front doors and also scattered throughout the store. This is used as a security feature to allow the business to know in real time how many SCAN-N-GO users are in their store at any given time.

When a user scans product(s), creates a basket and pays an order / transaction will be created. This will recorded in our database and is viewable by the business from the back end system

Our entire front end web application will more than likely be built using Django, Python and Javascript, but this is to be confirmed when we learn more about Javascript front end development in CA4094 - App Development

Back End Web Application

Our Back-End web application will also be developed using Django, Python and Javascript, but again, this is to be confirmed by our near-future teachings from CA4094.

Our Back-End web application will also be accessible through the internet but it will be different to our front-end because it will mainly be used by desktop rather than smartphones.

The back-end web app will require businesses to login using their credentials to access the admin dashboard. From here, the business can view important statistics regarding their SCAN-N-GO presence in store. This includes information such as sales statistics and important information on how users are using SCAN-N-GO in store

Most importantly, businesses will be able to see how many active SCAN-N-GO users are in the store at any given time. This will be mainly used for security purposes and can be used by security alongside CCTV systems to monitor potential shoplifters

Market Rationale:

We have identified two customer segments for SCAN-N-GO. Owners of fast paced retail stores and customers of retail stores. SCAN-N-GO operates within a two-sided business model. We intend to target small-to-medium sized retail stores with high volumes of foot traffic, as a result of this we also intend to target the high volume of foot traffic.

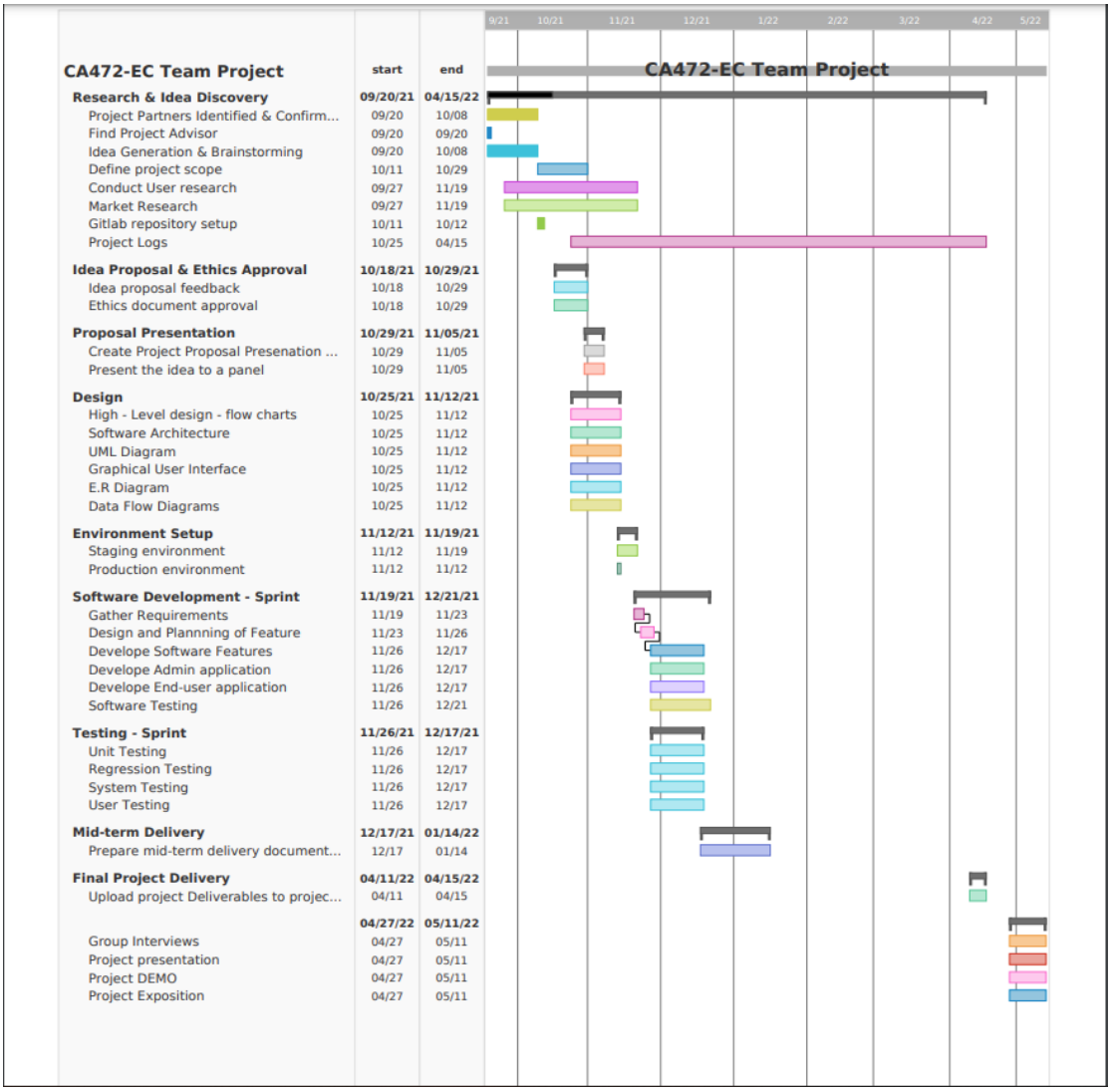
Similar solutions / checkout-less payment systems currently exist and are in the process of being implemented in large retail stores such as Amazon Go which is currently only available in the United States and Tesco which is currently in the process of rolling out a checkout-less system. Through our market research, we have discovered that there are no wide-spread or widely-adopted solutions that cater to smaller retail stores. Large retailers such as Amazon and Tesco implementing such systems validates some of our assumptions on a top-level. It shows that there is a demand for such payment systems within large retailers. We aim to further validate our idea through primary and secondary research targeting smaller retail stores in isolation to other retail stores.

We have begun to collect anecdotal / informal primary research and intend to conduct a structured approach to primary research going forward. We have spoken directly with participants of both of our identified customer segments thus far. We have spoken directly to an owner of a EuroSpar franchise who outlined their pain-points within their sector which inspired us to create our solution; SCAN-N-GO. We have spoken to many peers and students who have also expressed similar interest in our proposition, we identified that they shared similar frustrations with the existing systems. Going forward we intend to distribute a survey(s) to both customer segments. We will also continue to directly contact owners of retail stores and franchise owners. We have also planned observation sessions where we will monitor customer behaviour and how they currently participate and interact with existing payment systems.

In regards to secondary research, we have conducted an extensive amount of online research of current solutions, implementations, advantages and disadvantages, security / privacy concerns and the overall sentiment of the public in relation to similar solutions. We have researched Amazon and Tesco extensively thus far. We have gathered this information from online forums, reviews, social media and online documentation. We are aware this is an iterative process, we will continue to conduct such research as Scan-N-Go evolves.

We believe through further market research both primary and secondary, we will be able to validate our idea with a high degree of certainty. Our current outreach and research has already validated some of our assumptions and has contributed to our overall progress. We are currently confident that there is a demand for a checkout-less payment system in the market, this will be verified further through research.

Proposed Timeline:



The project can be split into 2 categories; Technical & Commercial components. Since our idea has a large technical component to it, we have decided to split management responsibilities for it to ensure our project progresses successfully.

Members mentioned below are responsible for leading their assigned component but workload is shared among all 3 of us and interchangeable between each project component.

Technical Leaders

- Bernard Mc Weeney - Administration Application.
- Shaun Kee - End User Application.

Commercial Leader

- Jamie Behan

Workload Distribution:

While our idea is ambitious, we feel being in a group of 3, we can produce a high quality project with the workload being evenly distributed among us. We each have equal responsibility for the success of this project and we will leverage our individual strengths and weaknesses to obtain the highest marks possible.

Technical Components - Shaun (33.33%), Bernard (33.33%), Jamie (33.33%)

- Planning and Feature Requirements
- Software Design & Architecture
- General User application
- Admin User application
- Testing

Commercial Components - Shaun (33.33%), Bernard (33.33%), Jamie (33.33%)

- Market Research & Analysis
- User Evaluation & Research
- Stakeholder Interview and Surveys

Staff Consulted:

Jennifer Foster, Enterprise Computing Chair, agreed to become our project advisor. We consulted Jennifer in the preparation of this document.

We also consulted Cathal Gurrin, lecturer of CA4102, High-Tech Innovation & Entrepreneurship for advice on our idea and business strategy as part of a CA4102 assessment.