

IDeal: The Innovative Alternative to Plastic ID Cards

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Abstract

With seemingly everything on the internet already, why are we still using plastic ID cards on a college campus? IDeal is the next step in convenience and simplicity for ID cards by making a digital ID card available as a mobile phone app. This logical progression will bring together technology and education to make life easier for every student and faculty member alike. With prototypes for both iPhone and Android, our system will be available to anyone that has a smart-phone or a similar device. We plan to sell this product directly to the universities, so this will not be an added expense to college students who do not need any additional purchases.

1. Introduction

According to the device tracking company Tile, 19% of students lose their ID cards every year, 4 million ID cards go missing every year, and 83 million dollars are spent on replacing them. Our product aims to fix and to profit from this significant market opportunity.

1.1 The Problem

As universities across the globe continue to introduce modern technology and services onto their campuses, certain aspects of the college experience have remained unchanged and are beginning to show their ages. One example at the University of Arkansas is the student ID cards which continue to be an annoying but necessary tool for every student. The ID card is required for several day-to-day activities on campus, such as eating at any university dining facility, test registration, and bookstore purchasing. These cards create hassle for students, as they are easy to lose and expensive to replace. The first card is included in freshman fees, each consecutive replacement costs \$18. In an environment where students are already on a tight budget this can be a frustrating concern. When plastic ID cards were implemented to college campuses, small purchases significantly increased simply because students no longer had to take the time to pull out cash (Schaffhauser, 2014). An even greater leap could be taken to further improve the convenience of these processes.

1.2 Our Solution

Today, it is almost impossible to find an individual who does not carry a smartphone, particularly members of newer generations. Statistics show that now almost 90% of U.S. college students have smartphones; even students from low income homes have smartphones at a rate of 77% or more. These devices are powerful, allowing the user to perform a wide range of tasks with relative ease. Since most college students have access to a smartphone, the solution to a new ID card is to develop a simple application that allows students to import their identification information already on file with the university to be scanned in situations where a swipe or manual reading was previously necessary. The main scanner systems commonly used by universities are the traditional scanner (laser/optical) and the proximity scanner (NFC). At first the application will be compatible with optical scanners only as Apple is not yet allowing companies access to their NFC readers in the most common smartphone, the iPhone. Our product will significantly increase convenience and efficiency for students and faculty alike, by minimizing the time taken to get through these tasks every day. It will also save students money and the university resources as ID cards are eventually phased out and that production cost diminishes.

1.3. The Market - Customers

Evaluating the market, we are targeting colleges with the potential to expand into IDs for corporation and military sectors. The state of Arkansas itself has 30 colleges, 7 of which enroll over 5000 students. An annual fee system of payment based on the schools' size and incoming freshman class is the best option for pricing. The price could be adjusted to how many people would be on the system per school and it would be priced similarly to how much the school is already spending on ID's. The University of Arkansas has been selected as the starting point for our product because it is the largest school in the state and it can most easily integrate to our product's system in that it already has the infrastructures necessary for our product to operate. The school creates thousands of ID cards a year for the new freshman class alone as well as for new graduate students, faculty and staff that update their ID, and for those of us that lose our ID's. Our product eliminates almost all the need for a physical card by being more safe and reliable, more useful to the individual using it, easier for the college to monitor and update, and ideally it would increase the quantity of small purchases on campus.

1.4. The Market - Competition

Plastic ID cards:

The traditional plastic ID card that can be swiped for everything across campus from sporting events to dining halls. Student ID cards range in price from \$5 to 50 and the average cost of replacing a card is \$22. This is old technology and can be improved upon to increase efficiency, but most of all to increase convenience for students and faculty members. These are used at almost every school across the nation and have been used for many years; because of their prevalence and popularity, this will be our toughest competition.

One Card Mobile:

One Card Mobile's app serves as a payment system for purchases on campus and as a virtual ID card has been around the longest, since 2014, and therefore has had time to add a variety of different features. Their app also includes "configurable icons," that can show "campus information

such as athletic events, dining menus, bus schedules and more," (One Card Mobile Google Play description). This app suffers from lacking design and visuals for the user interface.

ID123: Digital ID Card App:

ID 123 is the most similar product to our own idea. Their system is simple, with an easy-to-use interface and this is also the only competitor that advertises allowing different types of barcodes. This company's competitive advantage is how good the app looks. Their interface looks modern, with a clean ID card shown on screen that displays your name, picture, ID number, and a QR code corresponding to your ID number.

digiID™ UNLIMITED:

First of all, digiID is not a college ID mobile app; it is simply a storage app to hold images of your identification cards securely on your phone. This application's advantage is being usable for all ID cards such as Driver's Licenses, Health Insurance cards and more. Although this app can be useful, it only displays the picture that you take of your ID and may not be considered as actually having the ID since it is not the original copy of a state issued identification card, and merely a picture of one.

1.5. Our Objectives

Our objectives are to address the concerns associated with our competitors. We want to create a simple app that can be used as a college ID card with potential to expand to other industries. Our app will have only a sign in screen and then a second interface that displays the barcode and QR code needed to uniquely identify each student. Some of our competitors have extra features, but as of right now, we will focus first on a simple app that can be scanned via a barcode reader for anything across campus. Then we could expand to include some of the helpful extra features our competitors have already implemented. For example, one extra feature we are interested in adding is fingerprint scanning or face scanning technology for login. This is something we have considered and will try to implement after we successfully build our minimum viable product.

1.6. Limitations and Restrictions

The introduction of such a service would not come without constraints, one being the cost of new scanners to any and all locations that require ID card use on campus. Luckily most places on the University of Arkansas campus where students and faculty would use their ID's already have laser/optical scanners. They will simply need to be reprogrammed to send the information from the barcode to the software that then sends that information to each individual database for meal plans and other things that require a swipe of our card. This is something we are already working with the University of Arkansas ID Campus Card Office to solve. Our apps software design is in a sense limited to working inside infrastructural parameters specific to each college, which is a large constraint due to this varying at each college. Another limitation on our project will be security standards. We are currently working with the UA Chief Information Security Officer, Alan Greenberg, to ensure our app is up to all university standards for mobile app security since we will be handling personal information.

1.7. Our Plans for this Class

During this course, we hope to design a working software prototype. We plan to use both Apple's app design software, Swift, and Android Studio, the Android counterpart, to create a simple user interface that will allow for an ID to be scanned. We plan to first design our product to display a barcode for the optical scanner to scan. Although we have been intrigued by other features, our main focus will be to develop the main feature of a virtual ID card. If time allows we plan to start working with the University to look into what necessary steps must be taken to implement such a service here at the University of Arkansas.

2. Presentation of Design

2.1 Our Design

Our product will be a smart phone application on both Android and IOS that works as a university ID card. We envision our product to be simple and easy to use both functionally and aesthetically, so we will limit the number of interfaces our app will have to make the digital ID card quickly accessible. When we connect to the university servers, students will login to the university on the first page. With that information our app will display both a linear barcode along with a QR code for convenience on the university as seen in Figures 2 and 3.



Figure 1. The opening screen of our prototype.

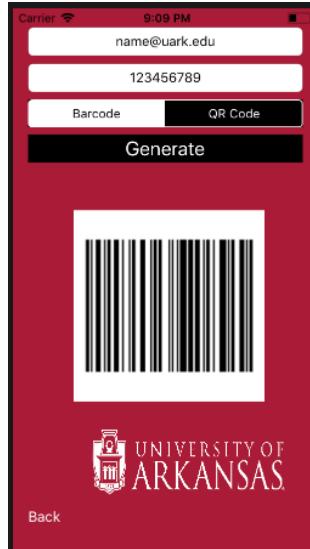


Figure 2. The Barcode screen of our prototype.

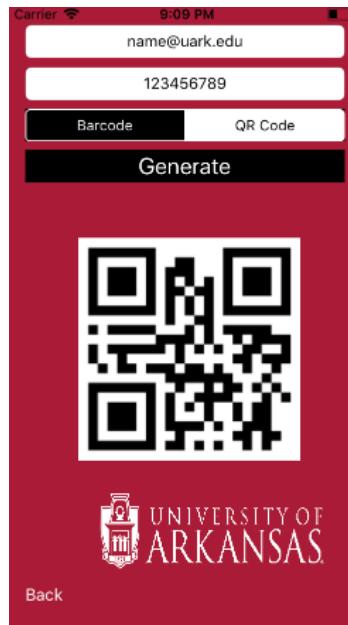


Figure 3. The QR code alternative on our prototype.

2.2 Competitive Advantage

Simplicity will be our main advantage. While these competitors complicate their interface with features, we will give the students exactly what they want and need. Our application will employ an intuitive and aesthetically pleasing user interface, allowing ease of access for every user. As university students, we understand what our consumer base truly wants out of such a service. The development process will be orchestrated by students for students. Our product will also be tailored to the specific university in terms of the app's design and interface. This would keep the process of transition as streamlined as possible by mimicking and improving how we already interact with the identification process at cafeterias, test centers, etc. Our product provides a competitive advantage over plastic ID cards in that it facilitates a higher level of convenience and a

lower overhead cost of identification for both the user and the university while still offering all the same functionality as current ID cards.

3. Product Market

Our product, IDeal, is a new, unique, and powerful take on identification. The market for our product is massive; there are thousands of schools in America looking to incorporate exactly what we have created. The perceived user value we calculated below visualizes where we aim to fit into the market. We see our product floating around the low range price for a near-top of the line product. What sets ID 123 apart is its extra features, but we do not see that in the vision for our project as it takes away from its actual purpose. This should enable us to keep the cost to a minimum and make this an affordable and innovative option for ID cards at every University. This should be the ideal (no pun intended) product on the market for schools to incorporate. The PUV below is based primarily on relative cost from where other services value their product. This will definitely be a subscription-based service for schools. We are not so sure about exact pricing because this is potentially a very real business and the balance between being affordable but very profitable is a subject we need some real marketing data and advice on, our makeshift PUV will not cut it for reality. However, we plan to rival the price of Plastic ID cards and predict that our product will sell in the range of \$5-20 per student. Overhead for our product should be initially very low, so that most of the money we make will go right into marketing the idea to more schools. We plan to take this product to market and reality by doing a test run here at the University of Arkansas in the next year; if successful, we plan to expand to other universities quickly: first in Arkansas, and then throughout the rest of the country. This will require many additional expenses such as hiring software engineers and marketing teams as well as traveling to sell the product.

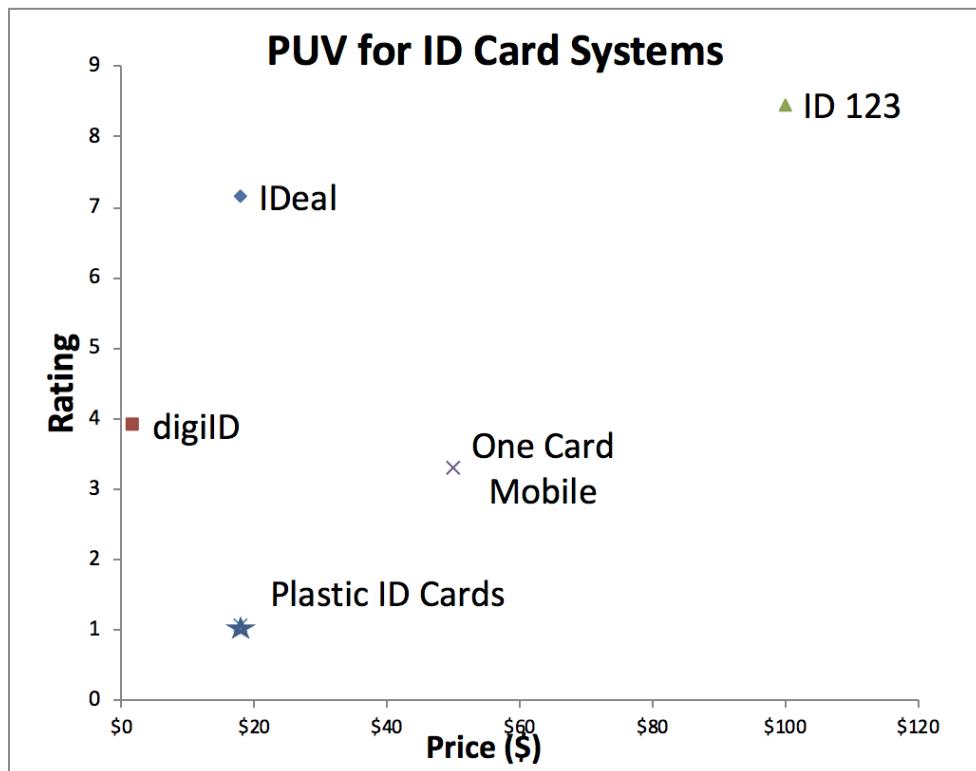


Figure 3. PUV for ID card systems, both IDeal and competitors.

4. Business Plan

IDeal is a viable product because we believe it is more efficient than the current student ID system. By having digital identification on their smartphones, students will not have to worry about a physical card. The UA Director of the Campus Card Office, Kelley Line, has been interested in implementing this system for some time. Line says she has “dreamt” of such an implementation for as long as three years. The University of Arkansas will be our first location. We plan to use the university as a beta testing location, where we can figure out how to implement our product and fine tune our product. When we met with the Chief Information Security Officer, Alan Greenberg, he advised us to look deeper into the security aspects of the application. Security is a priority in our product so that no confidential student information will be breached. Our app will follow the university guidelines on app security and following this we will be ready for implementation. We plan to pursue legal options such as a patent to secure our intellectual property in the near future. After we finance our product and fine-tune the application, we will pitch it to the University of Arkansas and eventually to other universities in and outside the state. In addition to the current members, we plan to expand the team once the product is closer to release. To finance our product, we will pitch to investors interested in IDeal and also possibly compete in start-up competitions.

5. Conclusion

Should it be successfully implemented, IDeal will redefine the identification system at the University of Arkansas, and optimally at many other universities after that. Its scannable ID codes will maximize efficiency and convenience for students and faculty members alike. No longer will a lost ID card force a college student to cough up an exorbitant replacement fee. With smartphone compatibility, almost every student will have easy access to this service. In an increasingly digital world, plastic ID cards have proven themselves to be relics of the past that have yet to be replaced. IDeal is the replacement: it is the innovation that is required to progress in a field wherein noteworthy updates have not been made in far too long. While a final price for our service has not yet been determined, we are confident that it will be feasible for universities to easily adopt IDeal. We expect our service will challenge plastic ID prices and fit in the \$5-20 range per student. Our potential customers would probably be willing to pay even more than that expected value due to the extremely innovative and student-friendly nature of the application. Our team has become extremely invested in the future and success of IDeal, and we hope to attract investors and mentors alike to assist us in finally making this vision a reality.

6. References

“Digital Student ID Card App for Schools.” ID123, Identidee , www.id123.io/student-id/.

Schaffhauser, Dian. “Heartland Goes Mobile with ID Card.” Campus Technology, Public Sector Media Tech, 30 Apr. 2014, campustechology.com/articles/2014/04/30/heartland-goes-mobile-with-id-card.aspx?CTMO.

“The Cost of Lost College ID Cards -.” Tile, Tile, www.thetileapp.com/en-us/blog/the-cost-of-lost-college-id-cards.