**MTA App**

**Proposal, Technical Project**

**Plan 1**

**to be presented on April 12, 2018**

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# Summary/Synopsis:

The proposed technical project is the development of a Metropolitan Transportation Authority (MTA) operated mobile application that streamlines all of its current 65 mobile transit application services (Metropolitan Transportation Authority, n.d.b.), from Subway Time to eTix, and adds new features such as an option to refill a MetroCard from the application. This proposal is intended to help decrease the number of applications that the MTA needs to monitor, provide customers with one inclusive and straightforward application, and to provide new convenience to its day to day users. To measure the success of this application, the application will only be made available to City College of New York (CCNY) students as majority of the students travel to campus via MTA public transportation.

# 1. Introduction

The problem with the Metropolitan Transportation Authority (MTA) mobile application is that there is no streamlined application. There are currently 65 different mobile transit applications (Metropolitan Transportation Authority, n.d.b.) and most are not directly developed or licensed by the MTA. The proposed technical project is the development of an MTA operated mobile application that streamlines all of its 65 current mobile application services, from subway time to eTix, and adds new features such as an option to refill a MetroCard from the application. The most significant benefit of this project is that it simplifies 65 applications to 1. Additionally, the cost to maintain one application is around $20,000 a year (Moore, n.d.), 30 of which are directly affiliated with the MTA. By streaming the application to just one, the costs of $600,000 can be brought down to around $40,000 (assuming that additional costs may be needed to maintain an application of this magnitude). The application itself will only be available to City College of New York (CCNY) students to gather feedback and success measurement (Section 3.1).

## 1.1 Problem Statement

Many mobile applications currently exist to guide commuters through the MTA trains and buses, each doing similar things, developed by different companies, and without direct ties to the MTA itself. This affects people, specifically CCNY students, who may take various forms of MTA transit, from the MTA trains to the MTA buses, to the Metro North, to the LIRR. They might need to download multiple applications and check each one as they go about their daily commute. As of now, there are 65 apps in the MTA’s app gallery for the iPhone alone (Metropolitan Transportation Authority, n.d.b). Many applications like Transit come close to providing schedules and combining the features of the MTA in addition to other forms of public transportation but are not directly operated by the MTA. While these apps are beneficial, issues are raised since users cannot release their frustrations and suggestions directly to the MTA but instead have to deal with third-party developers who are often more focused on profits than general UX fixes. Reviews do show that this specific application is prevalent and loved by its users and will be the guideline to specific features that our application would follow (Transit App, Inc., 2016).

Of the 65 applications that do exist, none allow the new proposed feature of refilling a MetroCard. Wasting time swiping at a turnstile with an empty MetroCard balance is an additional commuter frustration. The MTA’s current solution for automatic refills, EasyPay (Metropolitan Transportation Authority, n.d.), is different from our proposed feature. Our feature allows the user to register for a MetroCard online and everything will be manually controlled after linking a credit card. With the EasyPay system, the EasyPay Xpress MetroCard is automatically refilled with a fixed amount ($30) after the card drops below a minimum value ($20). Our application would allow users to refill their card with any amount and will not limit the minimum or maximum amount of what their card needs to contain.

Overall, our solution to these problems is to develop a singular, streamlined application operated by the MTA itself. A user’s daily commute will be tracked, and as delays occur, the suggested route will automatically be adjusted to ensure the user knows the fastest route to take. Users will also be able to refill their MetroCards from their phones and will be alerted when their balance is running low, allowing less time to be spent waiting in long lines and swiping at turnstiles with an empty MetroCard. Additionally, existing features from other apps such as Transit, Trip Planner, and eTix will still be incorporated into this app.

## 1.2 Background

It’s no secret that New York City’s residents have long been displeased about the MTA’s management of New York’s subways, but being in the most densely populated city in America (NYC Department of City Planning, n.d.), few people have a choice in mode of transportation. Street traffic is slow, and parking spots are expensive and hard to come by. In 2016, almost 2 billion people rode New York’s subways (Metropolitan Transportation Authority, n.d.), many of them are students. In 2014, data from 240 American universities found that 89% of first-year college students live off campus or commute (Clark, 2014). Not to mention the people who only take buses, the LIRR, or Metro North. Commuters also have to wait in lines to refill their MetroCards and rely heavily on bus and train schedule applications to plan their commute. It is outside the scope of our abilities to change how the MTA runs. However, multiple aspects of the commute itself, such as those mentioned above can be improved, starting with the MTA mobile applications.

## 1.3 Needs Statement

As college students living in New York City and relying solely on the MTA for transportation, the project proposers know the struggles of taking New York City’s public transportation. Whether it’s the long lines to the MetroCard booth or the multiple applications that exist to guide people on their commute. Currently, people who take multiple modes of transit use different applications to go about their daily commute, which is an inconvenience that can readily be fixed. The MTA ridership also spends a significant amount of time refilling MetroCards and unintentionally swiping empty cards at a turnstile. It is these little inconveniences that make for additional headaches on trains that are already packed and slow. This proposal addresses the problems mentioned by developing a streamlined app run by the MTA itself.

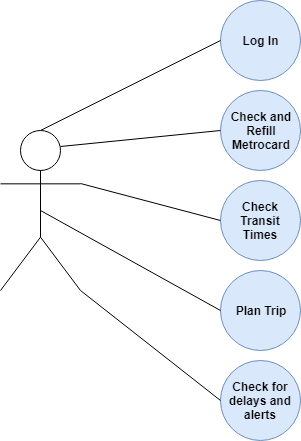
## 1.4 Objective

In implementing this project, the team hopes to make the commuting experience in New York City more pleasant by providing an application that consolidates all the features a New York public transit rider might need into one easily manageable application. This includes a commute planner, transit arrivals and delays, and the ability to refill MetroCards right from the user's phone. In doing this, the team hopes to decrease the inconveniences that a typical New York commuter experiences in an already detested public transport system.

# 2. Proposed Technical Approach

The work of developing the MTA mobile application will be split among four groups of developers, the front-end, the back-end, full-stack, and the quality assurers. The front-end developers will work on the HTML, CSS, and JAVASCRIPT to develop the design of the mobile application (refer to Figure 2 and Figure 3). They will be paid a median salary of $42,000 to $106,000 annually (Recruiter.com Inc., n.d.). The back-end group will gather in the MTA APIs to implement the delays and schedule components of the application, develop the new MetroCard refill option on the application, and other features (refer to Figure 1). The back-end team will also organize all of the previous applications that will be transferred to work with the new application, such as eTix and MetroNorth, etc. They will be paid a median salary of about $72,000 annually (Recruiter.com Inc., n.d.). The full-stack developer will work to connect the design of the application to the actual functionality using Node.js. They will be paid a median salary of about $72,000 annually (Recruiter.com, Inc., n.d.). Once all components of the application are pieced together by the full stack developer, the quality assurers will make sure that the MTA mobile application functions the way it is intended to and does not have any bugs that can crash the new application. The costs to create the application is expected to be $34,700, and the cost of development is expected to be $100,00 (Engard, 2017). The money gathered from the MTA’s current annual state and federal budget.

## 2.1 Requirements



*Figure 1.* Case system diagram for proposed application.

* Usability Requirements
* A Login to allow users to connect their MetroCard information to the application and enable users to develop personalized commute schedules, which will be used to keep track of a user's MetroCard information and update the user’s daily commute schedule.
* An application page that includes all the details about the MetroCard including balance, refills, and the expiration date.
* A "Check Transit Times" page which that includes schedules for all train lines.
* A "PlanTrip" page which will allow users to develop a trip in which the application figures out the best route for them.
* A "Delays and Alerts" page which will include all transit information regarding delays.
* Notifications to alert of delays and low balance in MetroCard.
* Also included but will not be mentioned are the features of MTA eTix, Train Time, Metro-North, LIRR applications that will be combined into the new MTA mobile application.

### Personnel Requirements

* Front-end developer team, back-end developer team, full-stack developer team, and quality assurance team.
* A designer/ developer that has design talent and a development team.
* Researchers to study and gather application analytics to inform the MTA of their riders better.

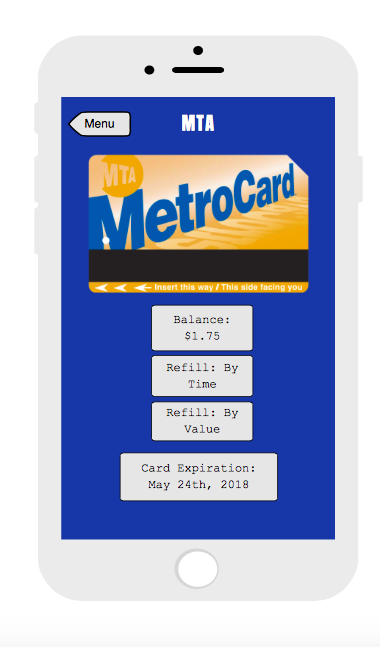
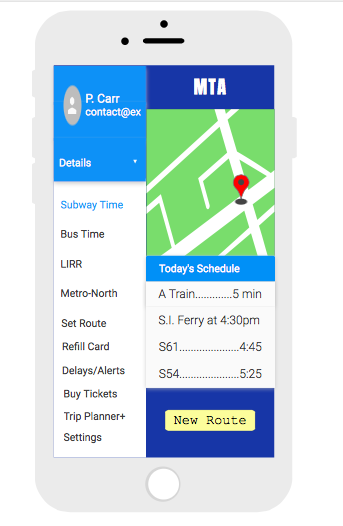
### Other Requirements

### Office spaces.

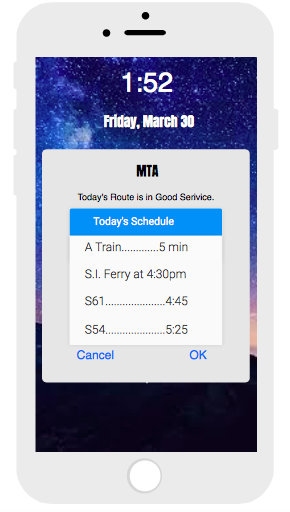
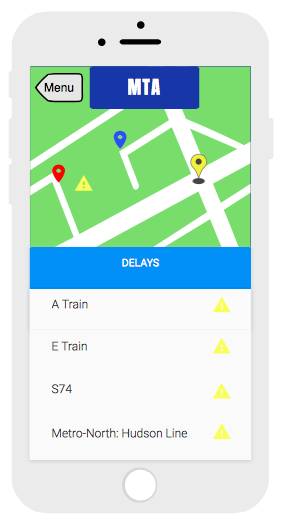
### Use wireframing to represent the structure of the mobile application.

### Servers to handle transactions.

## 2.2 Architecture Design



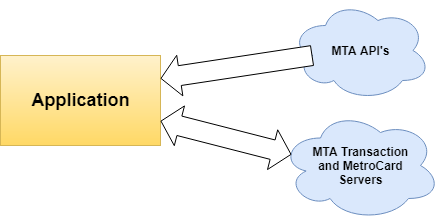
*Figure 2.* Interface design for home page (left) and MetroCard refill page (right).



*Figure 3.* Interface design for delays page (left) and train schedules (right).

* Hardware: iPhone and Android phone to test the application, and servers to handle transactions.
* Software: Java programming language for Android and Swift programming language for iOS. To fetch data, such as subway time, delays, construction work, etc., the official MTA API will be used. Applications, such as Citymapper and InTime NYC Bus (NYC Department of City Planning, n.d.) that produce schedules for MTA users utilize the same MTA API as the MTA itself. In continuing with this reliable and straightforward application, our MTA application will also utilize it. We can fetch the data and implement it to allow MTA employees to develop algorithms that update users on current schedules. The algorithm is currently under review but will most likely be a combination of the ones that the MTA already uses as users show positive reviews.
* Network Component: Data fetched in JSON or XML format from MTA servers. Transactions done on the app will be sent to MTA servers.

## 2.3 Implementation Design



*Figure 4.* This figure illustrates where the proposed application gathers its data from and where transactions will take place.

* The design of the application will be implemented using HTML/ HTML5, CSS/CSS3 and JAVASCRIPT by the front-end team.
* Using JQUERY is not a requirement, but it is preferred since it can provide the better user experience.
* Handling transactions and MetroCards will be implemented using MTA’s preferred programming language and stack by the back-end team.

## 2.4 Quality Assurance Plan

1. Outline goals
   1. Streamlined, acceptable load time, easy to use.
   2. Can handle stress load of NY commuters.
2. Personnel
   1. Ensuring proper qualifications and training
      1. Minimum BS in computer/software engineering field with prior experience working with transportation-centered software/app development.
3. Funding
   1. Preventing developmental delays
      1. Creating a project schedule and deadlines
         1. Require periodic audits of schedule adherence to ensure efficiency and prevent wasting time/money.
4. Bugs
   1. Quality assurance engineers
      1. QA Engineers will be in charge of creating tests the app must pass. For instance, testing different types of inputs and such.
      2. Will report any bugs to developers that are found.
   2. Beta testing program
      1. Letting beta testers find ways to exploit system (Time Out New York Contributors, 2017).
      2. UI and UX reporting and suggestions to pinpoint aspects of software users have trouble understanding.
   3. Slowed rollout
      1. After completing initial beta tests, start rolling out an updated app to top users of old apps and slowly switch everyone over.
5. Potential Failure Stating
   1. In the case that our application is not to be produced to our intended extent, our application will be one of many that already exists in the clutter of applications that attempt to guide commuters.
      1. Though, we can still advertise our application as produced/functioned directly by the MTA to gain users who want a more company reliable application.

# 3. Expected Project Results

* We expect more user satisfaction with MTA application services. Instead of users having multiple applications, users will have one app that streamlines all of the features.
* We expect the MTA to have fewer legacy-app maintenance costs.
* Additionally, we expect the MTA EasyPay component to be incorporated into the mobile application functions.
* We expect there to be fewer lines and MTA money machines at stations since users will now be able to reload their MetroCard via the MTA app.
* We expect fewer resources spent training workers on how to provide support for different applications.
* With easier access to refilling MetroCards, we expect MetroCard revenue to increase.
* Increase in retention rates of app users.

## 3.1 Measure of Success

* The star ratings of the application gathered from an app survey ad, and users responses in the App/Play store will be used to determine customer satisfaction with the application. The closer the application is to 5 stars ratings, the more we deem our application as effective. This will show that more customers rely on the MTA application itself compared to other developer application. Currently, the MTA apps receive 1 bad review for every 3 on the App/Play store. The proposed application is expected to have 1 bad review out of every 5.
* The number of downloads of the application vs. former MTA applications and ones produced by other developers will be used to determine government financial success. If the application has more downloads compared to others, it will be considered more useful and valued by customers.

## 3.2 Costs

|  |  |
| --- | --- |
| Requirements | Cost |
| Front-End Developer | $42,000 - $106,000 per year |
| Back-End Developer | $72,000 per year |
| Quality-Tester | $72,000 per year |
| Full-Stack Developer | $72,000 per year |
| Office Spaces | $70,000 per year |
| Servers | $150,000 per year |
| The application | $140,000 to $210,000 per year |
| The Maintenance Costs | $20,000 per year |

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# 4. Schedule

|  |  |
| --- | --- |
| **Date** | **Task** |
| 04/01/2018 | Meet up with MTA board members to discuss the basics of the application, what do we need, what do we not need to include. |
| 04/02/2018 | Document the system requirements and discuss the initial scope of the project, (include delay time and credit card feature first). |
| 04/05/2018 & 04/06/2018 | Plan the framework of the application. |
| 04/07/2018 | Advertise the development of the new MTA application. |
| 04/08/2018 - 08/26/2018 | Develop the application. |
| 08/26/2018  -  10/02/2018 | Test the Application (for bugs). |
| 10/15/2018 | Releasing of the MTA application on App Store/Play Store. |
| 12/28/2018 | Survey/Data of users. |
| 01/05/2018 | Meet with the board to figure out next steps for application. |

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# The Reflection Papers

## Fayrouz Mikhael

When I saw this assignment, I thought it would be like the technical description that I should gather information about an idea, but this assignment is to get a different idea that computer science students can make in the real world. So, my group and I decided to make an application called MTA application, which has all buses/ trains schedules. Also, you can refill your MetroCard from it as it is connected to your bank account and have the delays alerts. So, we have to do a lot of research to gather information on how to make the application, how much it costs. Also, we researched the developers that we are going to need and how much they will get paid. This assignment is my first project research to write that is related to computer science. We did a lot of research, and we tried to paraphrase, summarize and analyze the texts that we got.

This project is a challenge for all of us, so we have to think how to convince the citizens of the idea and how to make it works in real life. So, each one of us has to be responsible for a part, so my parts are to find the expected results/ measure of success/costs and the schedule. So, without the teamwork, I cannot be able to do it alone as it has a lot of parts that need to be considered as the general information about the MTA, the wireframe, the design of the application. So, from that assignment, I have learned the importance of the group and how the project will be affected by the group work.

The genre of this assignment is an engineering proposal. The engineering proposal is MTA application which is to gather all the applications like transit/google maps, etc. all in one application to make it easier for the user. As instead of opening much application, is to open one application that has all the features that the user need while riding from MTA.

The media of this assignment is through media and presenting. So, we as a group have to post our proposal through the blackboard, and also do a peer review for the other six groups by giving them our comments on their proposal. Then we will have to do a presentation to present our proposal and explain it and try to convince our instructor and classmates with the idea.

My stance toward this proposal is that I suffered from waiting on the line to refill my card and from the delays and also from using too many applications like to use transit to know about the subways/buses schedule, or to use the google maps to know which subway I should ride to go the place I want. So, by this MTA application will solve all of these problems as it will be all in one means that all other applications will be only in one application which is the MTA application, also will send you alerts with all the delays and tell you which subway/bus to ride instead. Also, by this application, you will not wait again in the line as you can refill your card from the application.

My purpose is to convince the government and the citizens with the idea and how this application will help them as they will be able to refill their cards anytime and anywhere as they don’t have to go and wait on line. Also, there will be alerts with any delays that might happen and which subway or bus can ride instead.

The exigence comes from the suffering that many people feel during the day from delays of the subways/buses/trains which lead them to get a delay in their work. Also, the time they waste on waiting in the line to refill their cards.

The audience is anyone(citizens/tourists) who ride MTA and suffer from waiting on the line or suffers from the delays and what to ride to reach his/her work/college/school on time. Also, to anyone who wants to know the schedules train/ buses/ subways.

This assignment meets Course Learning Outcomes 1,2,3,4,5,6, 7 and 8. It meets number 1 “acknowledges your and others' range of linguistic differences as resources, and draw on those resources to develop rhetorical sensibility,” as I have to go online and see how to make an application on the phone and what are the requirements that need to do it and how this application will be different than any other application. It meets number 2 “enhance strategies for reading, drafting, revising, editing, and self-assessment” because the assignments require a lot of reading /editing to gather the exact information that we need. It meets number 3 “negotiate your own writing goals and audience expectations regarding conventions of genre, medium, and rhetorical situation,” as we have to check what are the needs of the citizens and try to make it by developing the MTA application.

The assignment also meets number 4, “develop and engage in the collaborative and social aspects of writing processes,” as a group we have to work together to be able to reach our goal and convince the audience with our ideas. It meets number 5 “engage in genre analysis and multimodal composing to explore effective writing across disciplinary contexts and beyond,” as we have to do it as a presentation which is somehow different than just write a paper because in presentation we will face some challenges as the reaction of the audience to the idea and also, they will ask us questions. It meets number 6 “formulate and articulate a stance through and in your writing” as because I am a computer science student, so I was thinking how to make application that helps to make people’s life easier as instead of waiting on line to refill the MetroCard, they can just open the MTA application and refill it from there.

Lastly, the assignment meets number 7, “practice using various library resources, online databases, and the Internet to locate sources appropriate to your writing projects,” as we used a lot of online sources to each part of the proposal, and I also read a book from the library to know to write the proposal and how the format should be. It meets number 8, “strengthen your source use practices (including evaluating, integrating, quoting, paraphrasing, summarizing, synthesizing, analyzing, and citing sources)” as we did so much research on the internet, and we summarize and paraphrase the information that we gathered. Also, I read chapters from the book to know how to write a proposal as this is the first time for me.

## Maya Dara Sofia Pasiliao

It was refreshing to be able to work with a group of people on writing, although for once I’m glad it was not a creative writing task we had to do. The idea of building a streamlined transit application run by the MTA was not what we first came up with. One of the members initially had the idea of making something like E-ZPass, but for train turnstiles to save people time from lining up to buy a MetroCard or swiping an empty one at the turnstile. While thinking of the technicalities of writing a proposal for this idea, we realized we did not have enough knowledge about sensors and how it would be implemented to write a proposal about it. However, keeping the original purpose of the train E-ZPass in mind, another member came up with this application functionality to make a user able to refill a MetroCard from their phone instead, and that’s what we rolled with.

I feel like we had a good mix of levels of experience, some already had the technical skills and knowledge of the details of building a mobile application and was able to fill in the technical aspects, while the rest focused on background research and analyzing the possible outcomes of the project. Being a less experienced programmer, I decided it would be better for me to participate in the background and results in research instead of writing about the technicalities of building an application, as well as cleaning up the look of the proposal.

For our background section, it was difficult to look for sources about the history of mobile applications and transit outside of the MTA websites, so that is where we got most of our information from, as well as some outside sources about the NYC commuter population.

The assignment was a project proposal. A project proposal is a document that attempts to persuade the reader to fund or support an idea.

The media for this assignment is print, online, and oral. As usual, drafts had to be submitted online to be reviewed by other groups while a hard copy was submitted to the professor. Along with these, a presentation was given about the project proposal we wrote.

The stance, or attitude, in writing this assignment was one of formality and persuasion. In an effort to seem like professionals, we expressed formality in not using colloquial terms and contractions. To persuade the reader, we tried to make a convincing argument for why this is a problem and has to be fixed.

The purpose of writing this proposal is to persuade the reader to support and fund the proposed project.

The exigence of our writing the proposal is our desire to improve the lives of fellow NYC commuters, using the skills we have acquired as young people in the field of computer science.

The audience for this proposal is investors and supporters. The MTA is a public corporation, which means its goal is primarily not to make money, but to serve the people. The more support this project has, the more likely it will be to be funded. Therefore, it is important not just to have investors read it, but the general public as well.

The project proposal meets course learning outcomes 2, 4, 5, 7, and 8. It meets number 2, “enhance strategies for reading, drafting, revising, editing, and self-assessment,” because as mentioned above, this project went through multiple iterations, and with each new iteration, the draft had to be revised. It meets number 4, “develop and engage in the collaborative and social aspects of writing processes,” because along with the usual peer reviews we had to do, we had to write as a group, asking for opinions while writing instead of after the draft was finished. It was definitely more pleasant sharing the workload with other people, but also more pressure to work well with everyone and compromise on ideas. It meets number 5, “engage in genre analysis and multimodal composing to explore effective writing across disciplinary contexts and beyond,” because this is the first time we have ever done a presentation in this class. We’ve only ever had to write in papers. The structure for making a presentation is somewhat different from writing sentences on paper. Sentence lengths are shorter and text placement matters. It meets number 7, “practice using various library resources, online databases, and the Internet to locate sources appropriate to your writing projects,” because like with all the assignments so far in this class, credible sources are required to show the reader that the writer is trustworthy. Although it was difficult to find the sources I wanted, it improved my research skills by forcing me to look in many different places. It meets number 8, “strengthen your source use practices (including evaluating, integrating, quoting, paraphrasing, summarizing, synthesizing, analyzing, and citing sources),” because if sources were found, sources need to be used. Not just inserted haphazardly without grace or poise, but with elegance and form through summarizing and synthesizing. Point is we had to use a lot of sources, and any practice using these can only improve my citing skills.

## Bujar Sefa

When I was assigned this paper, I was indecisive on what I would talk about. While the world has so many problems to solve, it’s quite hard picking which ones are approachable with my level of knowledge. Little did I know that a problem such as a mobile application could affect the daily lives of millions of people in NYC. In this paper: I learned how to write a proposal, I learned how to incorporate rhetorical situations in a non-narrative paper, and I gained insight into all of the different aspects that it takes to get a project approved. I also learned how to incorporate the rhetorical situations that we learned at the beginning of the semester into this paper.

Speaking of rhetorical situations, one rhetorical situation that my group and I had to take into consideration constantly was audience. The proposal that my group and I worked on is intended for the board of the MTA, specifically those in the board who handle their public applications. Our paper consists of real-life steps that someone in the MTA can look upon and use as a project for the company. We developed wireframes for an easy to use MTA application that incorporates many of the components of current applications that they have. Our proposal can also be geared towards people who want to write a proposal for their organization as I believe we’ve followed the structure as directed. I also believe that anyone who’s willing to learn more about different MTA applications, or the process of developing an application, can look into our proposal as we specify certain tools and applications that are needed in such a process.

The second part of audience that we had to take into consideration was out Professor and classmates, specifically for the oral presentation aspect of the project. Since our paper was mostly geared towards the MTA corporations, there are certain applications and systems that the MTA currently utilizes that we do not need to state in detail. The opposite occurs in the classroom where we cannot assume that all students have prior knowledge of these applications. We also needed to use simpler vocabulary and negate certain information that won't be as relevant to the students in our class as it would to MTA employees.

My purpose for writing this paper was because I’ve realized that a mobile application can affect the lives of many by helping their lives move more productively and accurately, specifically regarding their modes of transportation. Not only would our proposed mobile application help users with figuring out their daily commute, but it could also be able to refill their MetroCard from at home, something in which they cannot do today. Additionally, I still believe in the same purpose as I did for my Lab report which stated: “If an application is built for a purpose, it needs to meet those requirements and satisfy the needs of its users.” Having multiple applications that cannot be reliable due to the developers not being directly from the MTA corporations justifies that there's a severe flaw in the system. With over millions of people utilizing the transportation, there needs to be some form of secure and reliable tool that commuters can utilize on their day to day travels.

The genre of this assignment is both a proposal and presentation. The proposal describes what the problem of the MTA mobile applications is and how our new development is a practical solution to the problem. My assignment also includes the different components of the process of building the application, to different things that must be worried about throughout, such as the quality assurance aspect of inspecting and removing “bugs.” The presentation aspect of this assignment included taking the proposal and transforming it into a dialog piece between me the seeker and the audience. A presentation is different than a paper in which the audience cannot refer back to what was stated as everything happens live. While the information for both the proposal and presentation remain the same, it’s the way that the work Is delivered that splits the two into two different genres.

My stance on this assignment is that if an application is meant to solve a problem, it should solve it. The MTA currently has 65 mobile web applications. As someone who commutes on a day to day basis via MTA, it gets frustrating when there’s not much you can do with the mobile applications. Additionally, each application is for a different aspect of the MTA, and some civilians use different forms of MTA transportation, and thus it becomes an issue when they must have 3 or 4 different applications.

The media/design of this assignment is both digital and print. The digital component comes from collaborating with my group mates via google docs to drafting up the proposal and proofreading one another’s work. It also comes into play when using tools such as Moqups and Google Drawing to develop the wireframes and diagrams of the potential MTA application. Additionally, the digital component of the project compromised in the development and presentation of the PowerPoint. As a group, we developed a presentation that can be screened and shown to the full class for easier access and simplicity of our proposal. The print component of this assignment was Professor Carr receiving a copy of our assignment in print as she prefers reading print documents to digital documents.

The exigence surrounding this paper has to do with the fact that I am someone who takes the MTA every day. On a day to day basis I take the L and A train, and at times I take the M14 bus. I find it difficult having to download multiple application or having to enter MTAbustime.com on safari just to get an accurate position of my modes of transportation. Additionally, I am someone who doesn’t own a credit or debit card and cannot be part of the EasyPay automatic refill that the MTA offers. By being able to refill my MetroCard via an application, I can quickly ask my parents for their card, rather than taking 121 dollars to the train station and having to speak with one of the employees to refill it. Being that this project had us figure out a solution to our problem, I felt as it was the right time to explore the MTA application problem and thoroughly develop a solution that could help users such as myself.

One big difference between this assignment and the ones in the past is that this proposal was a group project. As any group project it has had its ups and downs, but overall my group and I have fought hard together, worked through the challenges of picking an idea that isn’t currently being worked on, to selecting an idea that satisfies people’s needs, to choosing specific times to work on the project as a whole. No one member of this team had a particular role. Fayrouz was the one to come up with the MTA application, yet her original idea had to do with using our cellular device as a way to enter the station. It was Kevin who told the group that the idea Fayrouz was mentioning, is already taking way. It was then Maya who said why not streamline all of the 65 applications, and my idea to include the MetroCard refill option. We were all molecules in an aqueous solution that did everything together and worked with each other on every particular component. We all chipped in with what knowledge we had, and peer-reviewed our work over and over again until we all agreed upon our response. Additionally, for the oral presentation aspect, we expected to all chip in where we felt we were strongest in our knowledge.

I believe by working in a group, we each got to learn about each other’s strengths and weaknesses and help each other grow in this project. I think as writers we’ve all shifted in the way we present our ideas and how we even begin to develop them. For students like us, it is crucial to understand how to work as a team because not one person can do one thing. As computer science majors, working in groups is the only thing that helps us move forward. We need to be able to bounce ideas with one another. We need to be able to review each other’s code and look out for mistakes, as one bug can lead to the whole system fails. Just like this proposal, teamwork is crucial for us engineering students who are soon to be in the computer science field.

This assignment meets Course Learning outcomes 1, 2, 3, 4, 5, 6, 7, 8. It meets number 1: “acknowledges your and others' range of linguistic differences as resources, and draw on those resources to develop rhetorical sensibility,” because this assignment required me to figure out which images I needed for my audience to understand the MTA applications issue the best. With outcome 1, I also had to figure out what parts of the MTA history of were relevant for my audience to understand the MTA app difficulty. I also had to figure out which specific components of the proposal were necessary for to persuade the audience to vote in favor of the proposal. It meets outcome 2: “enhance strategies for reading, drafting, revising, editing, and self-assessment,” because the assignment required the peer-review process and exposing myself to other proposals. The peer review process helped me figure out what components of the proposal may be working well, or not working well.

The paper meets outcome 3: “negotiate your own writing goals and audience expectations regarding conventions of genre, medium, and rhetorical situation” as this assignment included both a proposal and presentation aspect of the project. Both components are in two different genres, in which the way the information is delivered changes. What that said, I had to take into consideration what specific components of the proposal can be included in my presentation and vice versa. It meets outcome 4: “develop and engage in the collaborative and social aspects of writing processes” as this assignment required us, as students, to work in groups. During the project, my group and I would communicate via Facebook to think of a project idea and what next steps to take, all while peer reviewing and working with one another on google docs to further out the information.

The paper also meets outcome 5: “engage in genre analysis and multimodal composing to explore effective writing across disciplinary contexts and beyond,” because I had to review different forms of technical descriptions, I had to review people's responses to certain MTA applications, and I had to figure out what specific components I needed for the proposal. It meets outcome 6: “formulate and articulate a stance through and in your writing” in which I had to describe why I was fit for this pros pal and what I can do. Being that I am someone who utilized the MTA daily, am a computer science major, and someone who has worked in the transportation industry, I am someone who knows the field and knows what steps and precautions need to be taken to make sure an application like this can be approved. My background allows me to develop my response to this problem and stick firmly in that position/stance. It meets outcome 7: “practice using various library resources, online databases, and the Internet to locate sources appropriate to your writing projects,” because the assignment requires finding sources on the problem related to the MTA, similar solutions, and how we will solve this problem. Lastly, it meets outcome 8: “strengthens your source use practices (including evaluating, integrating, quoting, paraphrasing, summarizing, synthesizing, analyzing, and citing sources),” as I utilized different sources in my text, anywhere from images to paraphrasing how some application of the MTA work.

## Kevin Alvarez

Writing an engineering proposal was a first for me, especially with it being a group project. An engineering proposal is a document that details a plan that solves a problem and tries to persuade the reader to support the plan. Coming up with an idea for the proposal wasn’t difficult for my group and me. The MTA metro card is a need of an upgrade along with all of the MTA apps. As a group, we discussed all the current problems with MTA apps and MetroCard.

Two of the major problems we encountered were not being able to refill one’s MetroCard through their phone and managing multiple apps for the MTA. We decided to propose one app that has all the functionalities of MTA apps with a MetroCard refill feature. With all of us being computer science majors, this idea was perfect for us.

The purpose of this assignment is to persuade the MTA and reader why this idea is beneficial over the current solution. The current solution of having to go to an MTA station to update your MetroCard is outdated and disorganized. We must raise awareness to this problem and let people know how it could be fixed through a single MTA app.

The exigence of this assignment comes from many people suffering not being able to quickly refill their MetroCard and checking for MTA alerts and delays. People currently have to refill their MetroCards at an MTA station. This can be a problem for people who live far from one, miss trains due to refilling and more. Additionally, people have to download multiple apps to get alerts and notifications from the MTA. This is inefficient and must be fixed.

The genre of this assignment is an engineering proposal. In this engineering proposal, we speak on the current problem, a plan to fix it, and expected results.

The audience of this assignment is the daily MTA riders and the MTA itself. Especially those who suffer from being late due to the MTA. In other words, all MTA riders. The primary audience is MTA since they can take action. Our secondary audience is the MTA riders; we need them to be aware of the current situation.

My stance towards this topic is something needs to be done about the current situation of MTA apps. I’ve missed trains due to long lines trying to refill my MetroCard, and the current applications of the MTA are simply not good. There are too many bad apps and not enough good MTA apps, and that must be fixed.

The medium of this assignment is media and presentation. Through the proposal, we can convey the problem and our solution. Additionally, we will be presenting our message to the rest of the class in hopes of convincing others why our idea should be implemented.

This assignment meets course learning outcomes 1,2,4,6,7, and 8. It meets number 1 since in this assignment we had to consider our reader's previous knowledge of the topic. It meets number 2 since the assignment required much reading, drafting, revising, editing, and self-assessment. Throughout the writing process, we had to make many changes to the project. It meets number 4 since we had to work together as a group towards one goal. We had to collaborate and interact to complete the assignment effectively. It meets number 6 since we had to come up with a stance which is, the MTA needs one application that allows for MetroCard refills. With this stance, we had to come up with a way to present it and back it up. It meets number 7 since throughout this project we had a lot of research and found sources to back up our claims. It meets number 8 since I had to practice effectively using sources throughout my writing.

I’ve never worked on a group project like this. With this assignment being a group project, it allowed us to get more experience working in a team, divide the work, and more. The project had too many sections to it, and without teamwork, it would’ve been tough and time-consuming to complete. With this assignment, we had to make sure we provided all correct information backed by sources while persuading the reader at the same time.