LE/EECS3461 A - User Interfaces (Summer 2021-2022)

Assignment 1 Report

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# ~ Gathering Data

Brainstorming was the main method used for gathering data for the problems, this was done alongside interviews with other students. We decided the best approach was to create questions relevant to the issues of transitioning back to in-person. That way, we can create clear benchmarks of potential issues, and brainstorm with other students to see what trends would appear.

Using our own personal experiences as well as online student forums expressing their own concerns, the questions we came up with were the following:

**School life:**

1. Are you familiar with the services in York? E.g. Academic Advising
   What kind of services do you use?
2. Do you have any difficulty in finding services or facilities on campus? E.g. Gym room, library
3. What do you normally do to find your course locations? Any difficulty in the process?
4. Which York societies/clubs do you recall the name of? How easy is it to track whether you have memberships for the ones you attend?
5. Do you have any difficulty enrolling in courses?
6. What do you value or look for in a school environment?
7. How easily can you find after-school activities like clubs, job opportunities, volunteering, etc?
8. How have your social skills been affected?

**Friendship:**

1. How have you made friends at York during the online period and in person? What challenges do you come across to make friends?
2. How many classmates do you know in your major in the same year?
3. How important are friendships at York in regards to school life?

**In-person courses:**

1. Can you easily find a group and work well on group projects?
2. Do you think in-person courses are harder than online courses?

3. What difficulties did you have during online courses, and how did you adapt?
4. How much of a change was it when transitioning back to in person? Did your habits from online learning help you, or hurt you?
5. Do you think it is hard to catch up on the notes in in-person courses?
6. How much do you utilize lecture recordings?
7. Do you change the way you take notes after attending in-person classes?
8. What learning strategies did you change from online to in-person?
9. What was your learning environment like when you were doing online classes?
10. What makes the in-person learning environment different compared to online? Which areas were harder or easier?

**Commuting**

1. How do you normally commute to school?
2. Do you know the schedules of bus routes? How easy has it been to find it?
3. How easy is it to find routes to school?
4. Do you have any other issues with how you commute to campus?

**Time Management**

1. How would you compare managing your time online versus in-person?

**Food and Diet**

1. Where do you normally eat? How close are they to your classes?
2. How easy is it to know where you can locate certain kinds of foods around campus?
3. How well do you know the food places? Name some cafeterias.

**Other**

1. If an app can assist you in the in-person courses, what kind of help would you like?
2. What is your feeling about going back to an in-person class from an online class?

We then interviewed a total of 8 York students to see what their answers were to the questions, as well as to give us an idea of what kind of app we should consider. Afterwards, we analyzed our data to get a better idea of the trends and patterns present in our interview pool, which can be seen in the image below.

| **Name** | Lili Ma | Kingsley Wong | Ian | Jessica | Dan | Han | Apeiron | Edwin |
|---|---|---|---|---|---|---|---|---|
| **Gender** | Female | Male | Male | Female | Male | Male | Male | Male |
| **Major** | Digital Media | Media Art | Nursing | Computer Secur | Applied Maths | Digital Media | Digital Media | Digital Media |
| **Status** | International | Local | Local | International | Local | International | Local | Local |
| **Age group** | young student | young student | young student | young student | young student | young student | mature Student | young student |
| **Computer** | programmer | normal user | normal user | programmer | normal user | programmer | programmer | programmer |
| **Goal** | skills & carrier | skills | carrier | knowledge & car | knowledge & car | knowledge & car | knowledge & car | knowledge & carrier |
| **Living** | on campus | on campus | on campus | outside campus | outside campus | outside campus | on campus | outside campus |
| | | | | | | | | |
| Time management harder in online style | ✓ | | | | ✓ | | ✓ | |
| Time management harder in in-person style | | ✓ | ✓ | ✓ | | ✓ | | ✓ |
| Difficult on finding classroom | | ✓ | ✓ | ✓ | | ✓ | | ✓ |
| Have studying issue in in-person style | | | | | felt too heavy in in-person lesson | | | |
| Have difficulties to find clubs | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Online lesson better | | | | ✓ | ✓inperson lesson get a lot more distracted | | | ✓ |
| Online lesson distracted | ✓ | ✓ | ✓ | | | ✓ | ✓ | |
| Make friends difficulty | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

We noticed that most of the concerns were not in relation to eating and commuting. Instead, most of the students' concerns were in regards to time management, managing their study habits in person, and finding locations for clubs and classrooms. These trends seemed to lean more towards an app for easy locating of clubs and classroom info, and a time management app that also accommodated classes and club events. This was further backed up by some of the app suggestions they gave, such as an interactive map that showed where facilities like washrooms were. This was the main basis we thought for deciding what requirements were going to be needed for our potential product.

## ~ User Profiles

# User Profile 1st Year (New) Student

### User Demo Info

- **Program:** All programs
- **Gender:** All genders, including Transgender, LGBT, etc.
- **Language:** English
- **Living:** In / outside campus
- **Way to come to School:** Driving, Walking, Subway, by bus, etc.
- **Student type:** Local / International student

### User Goals

- Enjoy school life
- Making new friends
- Join some clubs and activities at York
- Familiar at York (Building locations, restaurants, services, library, gym, etc.)

### User Needs

- Timetable for time management (York Life)
- York Map to help them find classrooms or services (academic advising, library, etc.)
- Opportunities to make friends
- Opportunities to join clubs
- Some places / platform can ask questions about school (Gym, car park, class enrollment, etc.)

YORK U

# User Profile 2nd -4th Year Student

### User Demo Info

- **Program:** All programs
- **Gender:** All genders, including Transgender, LGBT, etc.
- **Language:** English
- **Living:** In / outside campus
- **Way to come to School:** Driving, Walking, Subway, by bus, etc.
- **Student type:** Local / International student

### User Goals

- Getting good grade
- Making new friends
- Join some clubs at York
- Social Networking
- Find Co-Op / jobs related to major

### User Needs

- York Map to help them find classrooms or services (academic advising, library, etc)
- Some discuss platform can discuss after lectures
- Opportunities to make friends
- Opportunities to join clubs and know club's news

YORK U

# ~ Personas

## Barry Allen

Barry is a new international student majoring in Business. He is living on the campus, so he always visits campus and is familiar around York. He is a new student, so he has never joined online courses. He is a hardworking student and pays attention in class. However, he cannot take notes very quickly because English is not his first language. Sometimes he will forget his course timetable, so he sometimes runs late for clubs and classes.

**Age:** 19

**Year of study:** 1st Year(New)

**Student type:** International Student

**Language:** English / Spanish

**Major:** Business

*Dependent* ----* *Independent*

*Thinking* *---- *Feeling*

*Extrovert* ***-- *Introvert*

**Goals**

- Getting good grade at school
- Making friends
- Join some clubs at York

**Interest**

- Soccer
- Play Video games
- Basketball
- Climbing

YORK U

## Anya Swift

Anya is a local 2nd-year student majoring in Computer Science. She is living downtown. She prefers taking courses in-person because she is unable to pay attention during online courses. She did not come to York University in the past 2 years due to the pandemic, and she did not join the in-person orientation. She has difficulties finding classrooms in York, has no opportunities to make friends, and doesn't know how to join clubs at school.

**Age:** 21

**Year of study:** 2nd Year

**Student type:** Local Student

**Language:** English

**Major:** Computer Science

*Dependent* **--- *Independent*

*Thinking* ***-- *Feeling*

*Extrovert* --*** *Introvert*

**Goals**

- Able to find jobs related to Computer Science
- Making new friends
- Join some clubs or activities in York life

**Interest**

- Watch movies
- Play computer games
- Reading

YORK U

# ~ Scenario

**(Persona 1)**

Barry is a new international student at York University, majoring in Business. On the first day he arrived at York University, he was already lost due to the sheer size. Then, he found a York application in the Apple App Store. He opened the map function in the app and put the address of the school dormitory and followed the directions. After 10 minutes, he arrived there and put all his luggage inside.

Barry stayed at the school dormitory to take a rest. He was excited and wanted to know more about York University, so he opened the app again. First, he re-opened the map function and browsed around the facilities at York University, such as the library, gym room, canteen, York Lane, etc. He also found out about the academic advising and register centre. He decided to go there tomorrow. Second, he found out there is a "Club" button in the app. As Barry loved soccer, basketball, and video games, he inputted those prompts and came across a bunch of clubs. He joined all of the ones he was interested in and turned on notifications, so he will not miss any news and activities of them. After that, he found out there was a discussion forum. There was a discussion post for new students and he learned there is going to be an orientation day next Monday. By scrolling through more posts, he later figured out how to enroll in courses and how to use the in-app timetable for time management.

After two weeks, Barry got used to the campus so he did not need to pull out a map every time. However, the map function on the app still came in handy, since it gave him directions to the specific room he wanted to go.

Since English is not his first language, Barry was slow to take notes in lectures. However, he found some people who organized study groups in his class through the discussion forums. He interacted with the posts and made even more friends. He thought this York application was powerful, easy to use, and user-friendly.

**(Persona 2)**

Anya is a 2nd-year local student majoring in Computer Science, living downtown. She found herself unable to pay attention in online classes because there were too many distractions at home. She attends in-person courses this semester, but she forgot how long commuting to school takes and it takes longer than she expected. Anya also has difficulty locating the classrooms, since she did not visit York University in person in the past 2 years. In the registry webpage, she knows the short form of the classrooms, but she is only able to find the building her classroom is in on Google Maps. Since this was her first time seeing this building, she has to look at every floor until she eventually finds her classroom. By then, she’s already late for class and realizes she has to redo her plans to prevent this from happening again.

There was no orientation day in person this year, so Anya did not have the opportunity to make any friends. She was not able to figure out anything about clubs, since orientation is the place to go for seeing different clubs. After tirelessly going through the club lists, she eventually finds a computer science club at her college and pays the student union fee to be a member. However, she had a hard time trying to figure out when events were happening, so she ended up attending nothing.

Anya knew this could not continue unless she had a new plan to sort all these out. She hears about a new app for York classrooms and events, and she installs it. She sees there's an option for entering her course codes, so she does it and a timetable of her classes is generated. She also notices a section for clubs, which prompts her various categories like arts or religion. She selects the ones she's interested in and gets a list of clubs in the app. All of them seem interesting to her, and she finds one that clicks with her interests. Immediately she sees the list of events and their times on another timetable. She pressed join for those events she is interested in, and the events instantly appeared in her timetable. She swipes right and switches to the timetable for next week, and she can see the next events, one of them highlighted in red. That event starts just after the class, and the app calculates it will take 5 minutes to walk there, which suggests that she will be late. She pressed on in the event and found the listed details, as well as the replies of other users.

Suddenly, the app rings the alarm, and a message box says that her class will start in an hour and a half. The app calculates it will take her an hour to travel there from her previously inputting her travel route. After she gets dressed and goes downstairs, she goes to the map page of the app and follows the guide to take a streetcar, and then take the TTC subway to the university. After she arrives at the building, the map switches to a floor plan. She sees the whole third floor of the building, and a red spot indicates her classroom. All she needs to do is take the lift to the third floor and then find the classroom with the help of the floor plan.

One semester later, she became a committee member of a club. The chairperson of her club added her account to be a committee member of the club, so she can post events and ask members to join. She can also edit the event time, date, location and description, as well as post replies.

# ~ Requirements (based on Volere)

## *Functional Requirements

1. The product should display a map of the classrooms
    - Fit Criterion: The product should display a visual map of specific interiors of buildings and have labels for each room. It should also be able to show different building floors, showing one floor plan at a time.
2. The product should show directions from the user's current location to a specified building room
    - Fit Criterion: The product should be able to show an arrow from the user's location to a building.
3. The product should give notification of when an event is happening, whether a class or club event
    - Fit Criterion: The product should use the timetable it created and set notifications of when events are happening.
4. The product should generate a timetable for classes and other events like clubs
    - Fit Criterion: The product should allow students to input what clubs and classes they are in, and the product will generate a timetable based on class times and club meetings/events
5. The product should be able to receive information about clubs
    - Fit Criterion: It should allow students who are club organizers to input their information about clubs, such as club descriptions, keywords for searching, and event times.
6. The product should be able to give information about clubs
    - Fit Criterion: The product should prompt users for general keywords that they are interested in for clubs (e.g. programming, music, religion). Then they can get a filtered list of clubs that match their interests. Users should also be able to have a search bar for more filtering options.
7. The product should contain an in-app discussion forum
    - Fit Criterion: The product should allow users to open a new topic post and ask questions in the discussion forum. They could ask any questions, such as course enrollment, academic advising, clubs, making friends, restaurants, etc. Other students should be able to reply for answering or discussing.

# *Non-Functional Requirements

## Look and Feel Requirements

### Appearance Requirements

The product shall be attractive to young adults and university students.

- Fit Criterion: After encountering the product, the users will feel impressed by the interface.

### Style Requirements

The product will appear informative.

- Fit Criterion: After encountering the product, most of the users will feel like the product gives them the information they need.

## Usability and Humanity Requirements

### Ease of Use Requirements

The way to use the product will be intuitive.

- Fit Criterion: After using the product, the users will feel like it wasn't difficult learning how to use the product.

The product will give feedback whenever an action is carried out

- Fit Criterion: After carrying out tasks with the product, the users will get feedback letting them know whether an action was carried out successfully or not.

### Personalization and Internalization Requirements

The product will remember the prompts that the users last searched for

- Fit Criterion: After using the product, the users will not need to enter prompts that they have entered before.

The product will have the option to change the language and interface so they are more comfortable with it.

- Fit Criterion: After they use the product if they wanted to, the product will be in a way the user prefers.

### Learning Requirements

University students should find it easy to learn

- Fit Criterion: After explaining how it works, students should be able to use it in a set amount of minutes without getting lost or having to ask how to use the product

### Understandability and Politeness Requirements

The product will by default use a language that we expect to be understood by most of our expected users, but give the option to change to a language they are more comfortable with.

- Fit Criterion: After using the app the user will be able to understand the information provided to them in the interface.

### Accessibility Requirements

The product should be usable by people with colorblindness.

- Fit Criterion: Colourblind users will say that they can easily identify areas of the app even if they cannot identify the colours used.

The product should be usable by people with hearing impairments.

- Fit Criterion: The product is linked to Google Assistance & Apple Siri so hearing-impaired people can use voice control to use the map functions.

## Performance Requirements

### Speed and Latency Requirements

The product will update within 1 minutes after changes are made to the information i.e. class locations etc.

- Fit Criterion: Users will have the latest information updated on the product not more than a minute after it is added.

The time between the user's request and response will be less than 2 seconds.

- Fit Criterion: After using the product the user will not feel frustrated about time delays.

### Safety-Critical Requirements

The product will protect the privacy of the user.

- Fit Criterion: After using the product the user's information will be safe and the user will feel like their data is safe.

**Precision or Accuracy Requirements**

The product should be able to locate building rooms accurately.

- Fit Criterion: Users should say that they can easily find the classroom or clubrooms through the app.

**Reliability and Availability Requirements**

The product will be available 24 hours a day every day of the year.

- Fit Criterion: Users will be able to access the product at all times.

In times when the product may not be available like during server updates, users will be informed, through notifications or emails.

- Fit Criterion: Users will not try to access the product whenever it is down, because they will be aware that it is not accessible.

**Robustness or Fault-Tolerance Requirements**

If disconnected to the internet the product will use the last information downloaded to help the user achieve the goal they are trying to achieve.

- Fit Criterion: If the users are disconnected from the internet, they should still be able to meet some of their goals.

**Capacity Requirements**

The product should be able to accommodate the number of people that existing York university services can accommodate for.

- Fit Criterion: As long as they are below the limit of York services, the product should still be able to accommodate the users.

**Scalability or Extensibility Requirements**

The product should be able to handle the number of people using already existing York university products and should be able to scale up as York grows.

- Fit Criterion: As York services grow and improve, the products capabilities also grow.

## Operational and Environmental Requirements

### Expected Physical Environment

The product will be used on peoples computers and mobile devices.

- Fit Criterion: People will be able to download the product on their mobile device

The product will be used by York university students on York university campuses

- Fit Criterion: York university students will be able to use the product on York campuses

### Requirements for Interfacing with Adjacent System

The information saved on the computer will also be saved on people's mobile devices

- Fit Criterion: When people search for a prompt on their computer, they will see that it is also stored on their mobile device.

### Productization Requirements

The product will be distributed through the google play store and apple app store.

- Fit Criterion: Users will have no issues downloading the product of the supported app stores.

### Release Requirements

Maintenance updates will be released every 6 months

- Fit Criterion: Users will get maintenance updates every 6 months

Software updates will be released after adding new features.

- Fit Criterion: Users will get software updates that give them new features.

## Maintainability and Support Requirements

### Maintenance Requirements

Software and maintenance updates must be available at most a day after they are completed.

- Fit Criterion: All users receive the updates at most a day after it is released

### Supportability Requirements

Support for the product will be available via an FAQ section and extra support for the product will be available via email.

- Fit Criterion: Users find information to help them with their concerns in the FAQ section, and if not their problems will be solved via email.

### Adaptability Requirements

The product should be available on Android, IOS, Macintosh, Windows and Linux devices.

- Fit Criterion: Android, IOS, Macintosh, Windows and Linux users have access to the product.

## Security Requirements

### Access Requirements

Only users have access to user information at all times.

- Fit Criterion: Users have access to their information at all times.

Tech support staff have access to user information, but only in extreme cases where the user requires assistance.

- Fit Criterion: Tech support staff are only able to access user information when the user requires assistance.

### Integrity Requirements

The product will protect itself from unauthorized access to important data.

- Fit Criterion: Unauthorised access to important data will be protected against.

### Privacy Requirements

Users will be informed of the information policy before they start using the product.

- Fit Criterion: Users will only use or continue using the product if they are content with the information policy.

Users' information will only be used according to the information policy.

- Fit Criterion: The user’s information will be protected under the most recent information policy.

Users will be informed if there are any changes to the information policy

- Fit Criterion: Users are always aware of the most recent information policy update.

### Audit Requirements

The product will adhere to the appropriate audit requirements.

- Fit Criterion: When evaluated, the product will not have any issues with audit requirements.

### Immunity Requirements

The product will make use of firewalls to protect itself from malicious actors.

- Fit Criterion: The product will be able to defend itself from malicious actors.

The product will inform the developers if it encounters any malicious actors

- Fit Criterion: The developers will be aware when the product notices any malicious actors.

## Cultural Requirements

The product should not exclude any religious groups or ethnicities.

- Fit Criterion: Users will find the language non-offensive, and will find the language encouraging for anyone to use the product.

The product should allow easy use of finding groups/clubs for religious and ethnic groups.

- Fit Criterion: Users will not have a hard time finding clubs or groups related to their ethnicity or religion.

## Legal Requirements

### Compliance Requirements

The product will follow the Privacy Act of Canada.

- Fit Description: Law experts will agree that the product follows the Privacy Act of Canada

### Standards Requirements

The product will adhere to formal software development standards.

- Fit Description: Users will not think the product falls short when compared to other products that claim to follow the same standards.

# ~ Use Cases

**Use case A: Student going to the classroom**

1. The user clicks on the top bar button “class” at the main menu.
2. The product prompts the user to input the codes of the user's courses.
3. The user inputs the course codes.
4. The product creates a timetable with the user’s classes.
5. The user edits the timetable notifications to alarm them 40 minutes later.
6. The product gives a notification to the user 40 minutes before the user’s class.
7. The product also gives a note that it will take a certain amount of time to commute.
8. The product prompts the user with a “GO” button in the middle of the screen.
9. The user clicks on the “GO” button.
10. The product switches to a map, showing the directions to the classroom.
11. The user goes to the building.
12. The product switches to a floor plan and shows a red spot indicating where the classroom is.
13. The user arrived the classroom.

**Use case B: User searching and joining a club**

1. The user clicks on the “clubs” button on the main menu.
2. The product switches to the clubs menu.
3. The user clicks on the “preferences” button.
4. The product prompts a list of categories for clubs, such as arts and programming.
5. The user clicks on the prompts that interest them.
6. The product gives a list of clubs that match the prompts.
7. The user clicks on a club that interests them.
8. The product goes to that club menu, which has the description, event times and other details.
9. The user clicks on the “Join Club” button.
10. The product adds the club to the user’s club list.
11. The user swipes right to see the timetable of events for the clubs.
12. The product changes to a calendar with club event times.
13. The user clicks on a club event and clicks “Join event”.
14. The product adds the club event to the timetable.
15. The user goes to the timetable menu and sees the club event on the timetable along with their class times.

Alternative Courses

3. The user clicks on the “search” button.
4. The product prompts the user to type in words.
5. The user types some keywords.
6. The product gives a list of clubs that match the keywords.
   6.1 The product returns to step 7.

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