### CONCORDIA UNIVERSITY

# SOEN 6481 - SOFTWARE SYSTEM REQUIREMENT SPECIFICATION

# Ticket Vending Machine **iGo**

## Deliverable 2

Team C

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Google Drive - https://drive.google.com/drive/folders/ 1vEFxx7GrXZmW6P5igyta-238Bn9SCu1t?usp=sharing

 ${\rm Git Hub} \text{ - https://github.com/Surya64/S0EN-6481-SRS}$ 

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#### 1 User Stories

#### 1.1 Description

We have aimed to elicit the user stories for iGo TVM which describes the requirement of the software system. The Quality of user stories are considered to be the driving factor for the software system as it describes the functionality of the system. The user stories are free from technical terminologies making it easily understand.

The user stories maintains the same theme and consistence. It contains meta information like identifier which are unique and look like TVM\_TC\_00X, name and individual constraint. We have prioritized the user stories based on high - medium - low which assists to choose the most important features what has to be dealt first as per the business value.

Some User stories are elicited from different types of users and each related to particular persona.

Type of User	Related Persona
Minor (12-19 years)	Janhavi W
Student	Maria Henry
Working Professional	Frederick James
Senior	Peter Hasting
Disabilities	Andrew Bond

Below are the some of the global constraints related to TVM product quality concerns.

- Maintainability specific: The TVM software is developed following all the coding standards namely,
  - consistent and proper use of code layout
  - Naming Conventions
  - Presence of comments to describe the functionality

- Security-specific: The Communication from TVM to server are protected end to end with data encryption.
- Sustainability-specific: the software is developed such that it consume low power and system goes on power saver mode whenever the system is idle
- Usability-specific:
  - The software involves few navigation and easily recognizable and understandable design features.
  - The Audio assistance volume can be varied to limit where it can heard up to 5m radius
- Accessibility-specific: the TVM is basically installed near the Metro station and screens at the position such that it can be accessible to disabled person.

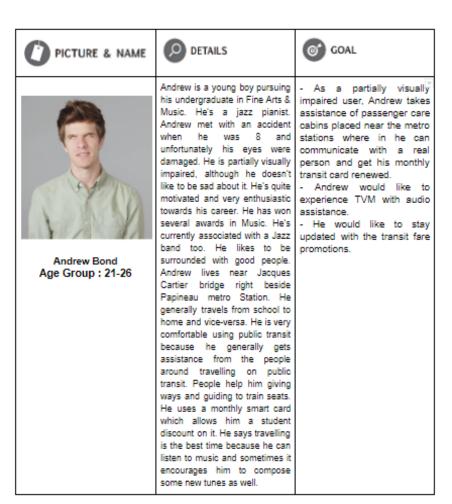
Other each local individual constraints for a user stories are mentioned in the user story template.

The User stories are estimated using the planning poker technique and story points are assumed as per the Table 1.

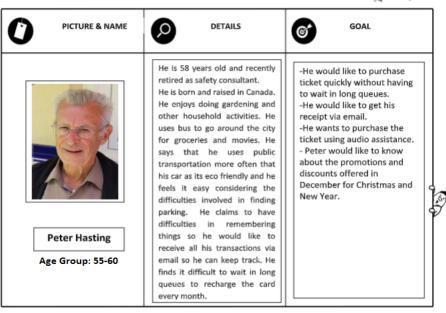
Type of Complexity	Fibonacci Series(Story Point)
Extremely trivial	1
Trivial	2
Slightly Complex	3
Complex	5
Very Complex	8
Too Complex(Can't fix in	13
Project Timeline)	19

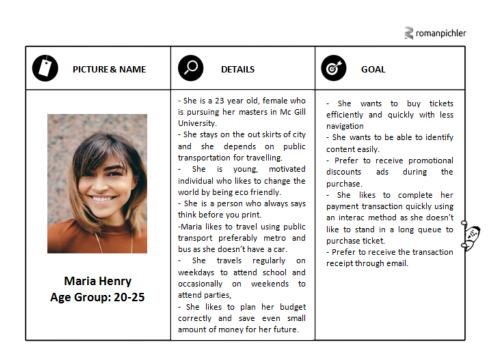
Table 1: User Story Estimation Based on Complexity

#### 1.2 Persona



#### romanpichler







### PICTURE & NAME



#### DETAILS



#### 



Frederick James Prinze Jr.

Age Group: 27-32

Fred is a young professional who commutes to work every day from downtown Montreal to Cote Vertu. On an average day, Fred leaves home at 7.50AM to arrive to the metro before rush hour peak time, and reaches his destination station by 8.20AM. He always ensures to renew his monthly pass ahead of time, but on some occasions, Fred forgets to do so and has to stand in line for a long time on the first day of the month when everyone else is also trying to do the same.

Fred has been looking into buying a used car as an alternative means of transportation, but with his company Summer's new incentives to subsidise transportation fees, he is less encouraged to do so. It is worth noting that Fred's favourite part about commuting by metro is being able to read his favorite fiction novels freely. Despite the surrounding noise, he is able to immerse himself in a separate universe altogether and truly experience the book he's reading. Having this active "breather" yet productive activity to start the day with allows him to thrive in his job.

- As a strictly anglophone user, Fred would like to be able to preview all available options in English
- Fred would like proceed with TVM purchases quickly. He spends time waiting for the receipt to print only to end up recycling the paper later. It would be nice to save time and resources and have the details emailed to him instead.
- Fred would like the ability to "add to cart" multiple types of fares, not just the monthly pass and checkout everything in a single transaction. That is mainly because on some days, Fred likes to purchase a few "single pass" and have them as backup alongside his monthly pass.

#### DETAILS 6 GOAL PICTURE & NAME - Janhavi is a high school - Being a student, Janhavi does payment by cash for his student. Her age is 20 years. OPUS recharge. And her She is using STM bus and main concern is to get a cash metro service since 1.5 year back when more amount is and had a nice experience till inserted into the TVM. now. Janhavi likes to receive - She daily uses STM metro discounts during festive for travelling to college and times. for attending her Tennis - Janhavi would like to classes. receive email of the receipt instead of printing it on paper. - The best part Janhavi talks Because she doesn't like about commuting through wasting paper and also when STM metro and buses is that, people sometimes throw she can study while those receipts on station travelling. It helps her during itself. exam times a lot, that she can prepare herself till reaching to the destination. Janhavi W. - The only disadvantage Age 17-21 Janhavi talks about is during winter where suburbs of montreal metros are not covered and buses are super late sometimes which made her wait for for several hours. - Janhavi also shared experience during new year's eve, that the service will be available all night and super busy and sometimes they give offers like free tickets, free rides.

## 1.3 List of User Stories

ID	TVM_TC_001
Name	Select Available Fares
	As: A user(Maria)
Statement	I want: be able to list all options in terms of available fares
	So that: I can select the pertinent option.
Constraints	1. User can select only one option in the available fare types
Priority	Medium
Estimation	2 Story Points
	1. The User inserts the iGo card in the TVM.
	2. Once, the card is authenticated and validated, the system
Acceptance	should display a button to redirect to all the fare options.
Test	3. On selection of the button, the available fare options should
	be displayed with respect to the iGo card inserted by the
	User.

ID	TVM_TC_002
Name	Select Preferred Language
	As: A user(Frederick)
Statement	I want: to change system language
	So that: I can understand my options.
Constraints	The User does not have an option to select a
Constraints	language other than English/French.
Priority	Medium
Estimation	1 Story Points
	1. The system should display options in English
Acceptance	by default.
Test	2. On selection of a preferred language, the options
	should be displayed in English/French.

ID	TVM_TC_003
Name	Summary of Ticket Purchase
	As: A user(Maria)
Statement	I want: to see the summary of my purchase before finalizing
	So that: I can confirm correctness.
Constraints	1. The user should select at least one fare to display the
Constraints	summary.
Priority	Medium
Estimation	1 Story Points
	1. The system should display the summary before directing to
Acceptance	payment.
Test	2. The TVM should display the fare according to the quantity
	of fares user selected.

ID	TVM_TC_004
Name	Choose Payment using card (Debit/Credit/Interac)
Statement	As: A user(Frederick) I want: choose to make a payment by card (Interac /credit / debit) So that: I can conveniently pay and complete transaction
Constraints	<ol> <li>Credit Cards accepted are only Master credit card and Visa credit card.</li> <li>Debit Cards accepted are only those issued by Canadian Banks.</li> <li>Cards should have an Interac functionality enabled.</li> <li>The currency accepted is CAD only.</li> </ol>
Priority	High
Estimation	8 Story Points
Acceptance Test	<ol> <li>The User has selected either the tickets or the Smart card recharge option and is required to pay the corresponding fee.</li> <li>The User selects card (credit/debit/Interac) as method of payment when prompted by TVM.</li> <li>The card (credit/debit/Interac) inserted is valid.</li> <li>The card (credit/debit) PIN entered is valid.</li> <li>The payment transaction is validated, approved by the Bank gateway and received by the TVM</li> </ol>

ID	TVM_TC_005
Name	Select Payment by Cash
	As: A user(Janhavi)
Statement	I want: to make a payment by cash
	So that: I can conveniently purchase the ticket.
	1. The User cannot insert other currencies apart from
	Canadian dollars.
Constraints	2. The User cannot insert fake currency.
	3. The User Should have enough money to complete the
	transaction
Priority	High
Estimation	5 Story Points
	1. After the User has selected "Pay by Cash", the system
	should show the amount due and accept Canadian currency
Acceptance	only.
Test	2. The User inserts the cash and TVM accepts the same.
	3. After all the validations, TVM returns if there's any cash
	back.

ID	TVM_TC_006
Name	Print Receipt of Ticket Purchase
	As: A user(Peter)
Statement	I want: to print receipt of my purchase
	So that: I can track my records.
	1. The user must complete ongoing transaction before
Constraints	requesting to print receipt.
	2. TVM contains blank cards/papers to print the receipt
Priority	Medium
Estimation	2 Story Points
	1. Once transaction completes, TVM will prompt option
	to user whether to print receipt or not.
Acceptance	2. If user selects to print the receipt detailing the transaction
Test	parameters as Data & Time, Ticket Type, Amount,
Test	Payment Mode
	3. TVM must not print the receipt, if user select option
	as not to print the receipt.

ID	TVM_TC_007
Name	Enable audio assistance
	As: A visually-impaired user(Andrew)
Statement	I want: enable audio assistance
Statement	So that: I can conveniently listen to and understand all my
	options
	1. Output audio from the physical TVM is tuned to an
	optimal volume which may be deemed low in a
Constraints	crowded public setting.
Constraints	2. Audio sentences may not be rewound once they are said.
	3. The voice assistant may not be able to adequately process
	voice input.
Priority	Medium
Estimation	5 Story Points
	1. The User is able to request voice assistant and receive initial
<b>A4</b>	guidance.
Acceptance Test	2. The User hears and understands the response from the
	TVM.
	3. The TVM hears and understands the requests from the user.

ID	TVM_TC_008
Name	System Maintenance
	As: A System(TVM) Maintainer (Operator)
Statement	I want :I want to be able to configure the system
	So that: TVM captures the latest fares and offered trips
	1. Maintainer must have access to secured storage areas of
Constraints	TVM wherein money, tickets and blank cards for printing
Constraints	receipts are stored.
	2. Maintainer must have authority to power off the TVM
Priority	High
Estimation	5 Story Points
	1. TVM must verify maintainers credentials/details before
Aggortongo	allowing access to secure storage area.
Acceptance	2. TVM must display the status, when maintainers completes
Test	loading of tickets, inserting blank cards for printing receipts,
	collecting money and configure changes

ID	TVM_TC_009		
Name	Use invalid credit card		
	As: A bad user (Crook)		
Statement	I should not: use an invalid credit card to make a payment		
	So that: I do not circumvent the security of the TVM.		
Constraints	The User can use any credit card (stolen or not) so long as it is		
	valid in terms of information and expiration date.		
Priority	High		
Estimation	8 Story Points		
Acceptance Test	1. The system should validate payment method.		
	2. On insertion of an invalid credit card, the transaction should		
	immediately be rejected.		

ID	TVM_TC_010		
Name	Manipulate the fares		
	As: A bad user (Crook)		
Statement	I want: should not be able to make config changes		
	So that: it would impact the users and owners of the system.		
Constraints	The user(bad) tries to use any credentials to login to the		
	server without undergoing authentication.		
Priority	High		
Estimation	3 Story Points		
Acceptance Test	1. TVM should not allow the hacker to change the fare details.		
	2.TVM should show error message when a hacker is trying to		
Test	login to the server.		

## 2 Traceability Matrix

The traceability matrix for user stories describes the tracing of every feature back to its associated requirement. It represents tracing each requirement back to its sources. Backward traceability also helps in verifying that the user stories are in scope with other requirement artifacts.

The Traceability Matrix for all user stories is presented in the table below.

User story	UseCase	Domain	User	Interview	Constraints
ID	Model	Model	Story		
TVM_TC_001	$\checkmark$			✓	
TVM_TC_002	✓	<b>√</b>			
TVM_TC_003				✓	
TVM_TC_004	✓	✓		✓	
TVM_TC_005	✓	<b>√</b>			
TVM_TC_006	✓	<b>√</b>		✓	
TVM_TC_007	✓	<b>√</b>		✓	
TVM_TC_008	✓				✓
TVM_TC_009	✓		✓		✓
TVM_TC_010	<b>√</b>		<b>√</b>		<b>√</b>

# 3 Implementation of User Stories

As part of implementation to ensure the realizable of each user stories, each member implemented below user stories and tested for the acceptance criteria.

Source Code are available in the below path: https://drive.google.com/drive/folders/1E3WD97q2F1XtsizKSM72uXV-VEQ8B\_Hn?usp=sharing

User Story ID	Implemented By		
TVM_TC_009	Jatan Gohel		
TVM_TC_002	Ghalia ElKerdi		
TVM_TC_003	Surya Prakash		
TVM_TC_004	Kundana Gangam		
TVM_TC_005	Ashutosh Ramesh		

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