

Sunbank Webpage Systems Analysis and Design

Business and Systems Requirements Specification Document

SOCIO-INFORMATICS / INFORMATION SYSTEMS MANAGEMENT 354 STELLENBOSCH UNIVERSITY

01 October 2017

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Sunbank Webpage Systems Analysis and Design

Sunbank Webpage Proposal

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Version Control - Revision History

Version #	Date	Authorization	Responsibility	Description	
1	01/10/201 8		Aatiekah Solomons Cath Dow Chad Van Wyk Darren Bates	Analysis and Design Basic overview of the project being completed, which business use cases, systems case and requirements of the project that is necessary for overall success.	
0	01/10/201 8		Aatiekah Solomons Cath Dow Chad Van Wyk Darren Bates	HTML Mockups Mockups of interface	
3	22/10/201 8		Aatiekah Solomons Cath Dow Chad Van Wyk Darren Bates	Implementation Actual development of the designed system and how it should work and be fully available on the World Wide Web with the use of GitHub	

RACI Chart for this document

The purpose for the RACI chart is to identify the persons who need to be contacted whenever changes are made to the document.

Codes used in the RACI Chart

* (Authorize) R (Responsible) A (Accountable) S (Supports) C (Consulted) I (Informed)

Codes Used in RACI Chart

- * This individual has ultimate signing authority for any changes to the document.
- R Responsible for creating this document.
- A Accountable for accuracy of this document (for example, the project manager).
- S Supports services in the production of this document.
- C Consulted provides input (interviewee, etc.).
- I Informed Must be informed of any changes.

Name	Position	*	R	Α	S	С	I
	CEO	Х				Х	Х
	CIO	Х			Х	Х	
	Developer					Х	
	User					Х	
	Project Manager			Х			Х

EXECUTIVE SUMMARY

OVERVIEW

This project involves the design and partial development of a modern, cross-platform online banking application and website, as requested by Sunbank, South Africa.

BACKGROUND

Sunbank is a small, tightly focused organization that provides local banking services to the residents and businesses of Stellenbosch, located in the Western Cape, South Africa. The overall aim of Sunbank is to provide sufficient, effective and easy to manage banking services to its clients. Sunbank thus aims to develop and implement a modern, cross-platform online banking application and website to enhance convenience and aid its clients in being able to bank from remote locations. The advantages of creating an effective online banking system are that users will be able to:

- Managing cash and accounts easily and remotely
- Have access to all of their accounts at any time.
- Simplify their payrolls and business-to-business payables.
- Take advantage of multiple services from the comfort of their own home.
- Reduce administrative procedures.
- Apply for a variety of new accounts online.
- Make use of instant payments such as debit orders and the payment of utilities.
- Have access to online and informative support provided by Sunbank

The overall outcome of these advantages is that users will become more independent with regards to the management of their personal finances and accounts. A large majority of Sunbank's customers consist of students and small local businesses. This emphasizes the importance placed by Sunbank on user-friendliness and communication while providing an adequate amount of student-based services.

The design and development of this system is supported by the CEO, CIO and developer of Sunbank whose ultimate reasoning for their request is due to the fact that Sunbank's internet system is prehistoric and reflective of old-fashioned technology. Sunbank was established in

the early 2000's and as a result of rapidly increasing industrial and technological developments, Sunbank considers its online system outdated and inadequate with regards to usability in the modern environment. Sunbank has reported complaints made by customers, regarding their online system, who have requested a modernized internet banking website, including an online banking, cross-platform application that could make clients lives and transactions easier and faster.

As a result, the CEO has asked for an online banking website and application which reflects modern-times and demonstrates proper functionality as requested by the customers of the organization.

OBJECTIVES

The most crucial objective of the project is to update Sunbank's current online system to one that is able to provide online banking services which are technically appropriate and operational within a professional, mechanical environment. To achieve this objective, the system will have to reflect a similar design to modern banking websites and services today and this means that a cross-platform, online banking application is mandatory.

REQUIREMENTS

The fundamental requirement of this project is that the online banking system needs to display a core functionality of four key processes. These include the ability of users to:

- View bank statements of various accounts.
- Perform inter-account transfers between different accounts.
- Make payments to different account holders or banks.
- Be able to apply for new accounts

Other requirements are that the banking system needs to allow users to have various types of accounts such as a cheque, savings and credit card accounts. It also needs to allow users to view all their current accounts, deactivate accounts, schedule payments, create beneficiaries, allow access to online support and enable the use of an online banking application across multiple devices. The user also needs to be able to make use of services such as instant

payments and various utility payments. The online system needs to be reliable and fast with a sufficient level of security such as basic encryption, secure network portals, unique profile numbers combined with strong user passwords as well as two-factor authentication when a user makes payments or significant changes to their profile or accounts.

PROPOSED STRATEGY

An extensive analysis and evaluation of the business rules, requirements, and business use-cases will be performed, where-after our team will create and integrate elements of systems designs in the form of business use-case, systems use-case diagrams and descriptions, activity diagrams and various other UML features where appropriate. Following this, our team will develop an initial set of functional HTML mockups for the purpose of being presented to Sunank as an opportunity for feedback regarding overall design and usability. Finally, we will begin with the partial development and implementation phase which will include aspects such as user documentation, basic software coding and design as well as software requirements.

A mainly iterative project approach will be taken due to the fact that numerous cycles are undergone such as planning, and analysis/design which encapsulates the business cases and UML diagrams with strategies so that more information on the project can be clarified. Followed this, we will begin coding and testing of the website on the World Wide Web. Apart from being an iterative project approach, it should be mentioned that the project may fall into waterfall approach stages. The reason for this is because the CEO of Sunbank wants all the requirements to be met but he will not deny his clients and users any extra online enhancing attributes which will be created.

NEXT STEPS

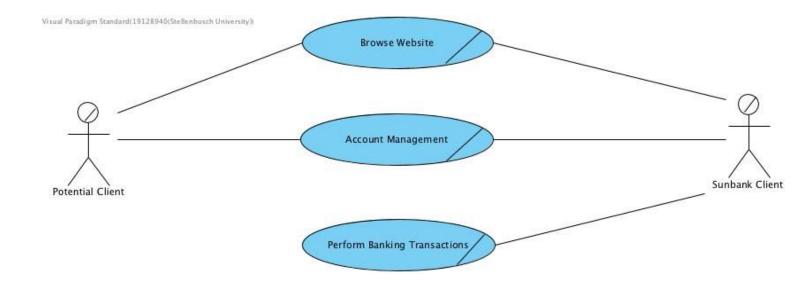
• **Action:** Software Development

• Responsibility: Aatiekah Solomans ; Catherine Dow ; Darren Bates ; Chad Van Wyk

• Expected Date: 22nd October 2018

BUSINESS USE CASES

BUSINESS USE-CASE DIAGRAM



BUSINESS USE-CASE DESCRIPTIONS

Business Use Case: Browse Website

Flow:

- 1. Any internet user has access to Sunbank's website.
- 2. Once on the website, the user may choose between various tabs with different functionalities:
- 3. Contact Us
 - a. Here the user can find all the available contact information for Sunbank in order to answer any queries that they might have.
 - b. This contact information consists of:
 - i. Telephone numbers.



- ii. A link to the Sunbank community where they will have access to a Sunbank forum on which they are able to ask questions and receive answers from other Sunabnk members.
 - ii. Branch locations.
 - iii. Email.
- iv. The option to leave a comment.
- v. Have Sunbank contact them directly instead.

4. Help Center-

- a. This is where the user can find additional information that they might need regarding banking with Sunbank, this page will contain various information such as:
 - i. A link to the 'Contact Us' page in case the user does not find the information which they require.
 - ii. Information regarding lost or stolen cards.
 - iii. Various other information relating to banking with Sunbank.

5. Online Banking-

- a. The user may only have access to this portal if they are a member with Sunbank.
- b. If they are not a member they will be directed to the 'Join us' page.
- Once a member clicks on this tab they will be asked to log in with their unique log in details.
- d. There will be a two-factor authentication security process to ensure the validity of the log in initiation.
- e. Once the user has logged in, they will be redirected to the online banking page where they are able to handle all of their banking needs such as, performing banking transactions and managing their various accounts.

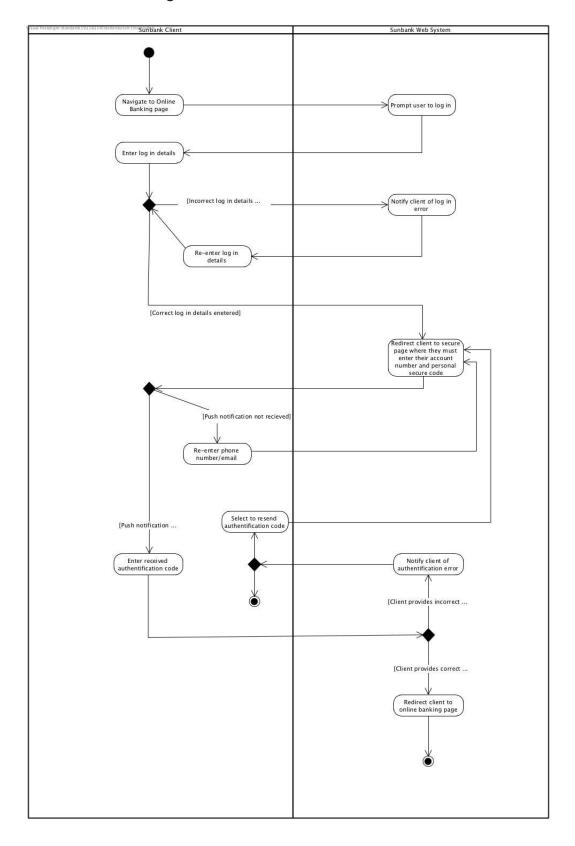
6. Join Us-

- a. If a user is already a client with Sunbank they will be diverted to the 'log-in' prompt.
- b. The 'Join-us' tab is where a user can become a member with Sunbank.
- c. This page starts by giving the potential member various information regarding why they should bank with Sunbank.

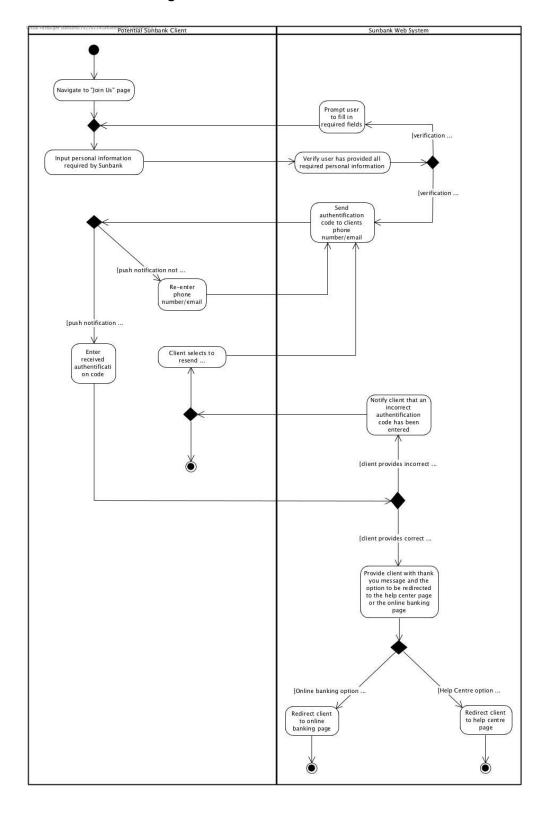
- d. If the user decides to register with Sunbank they will be asked to provide a certain amount of information such as:
 - i. Personal information.
 - ii. Contact information.
 - iii. Banking history and past statements
 - iv. Proof of identity, address and statements.
- e. The user will have to confirm their application through a two-factor authentication process.
- f. Once the user has been accepted as a client, they will be able to access Sunbank's online banking and apply for various accounts and services with Sunbank.

The following activity diagrams depict the process of logging in and registering with Sunbank via browsing the Sunbank website:

Browse Website: Log-in



Browse Website: Register as Sunbank Client



Business Use Case: Account Management

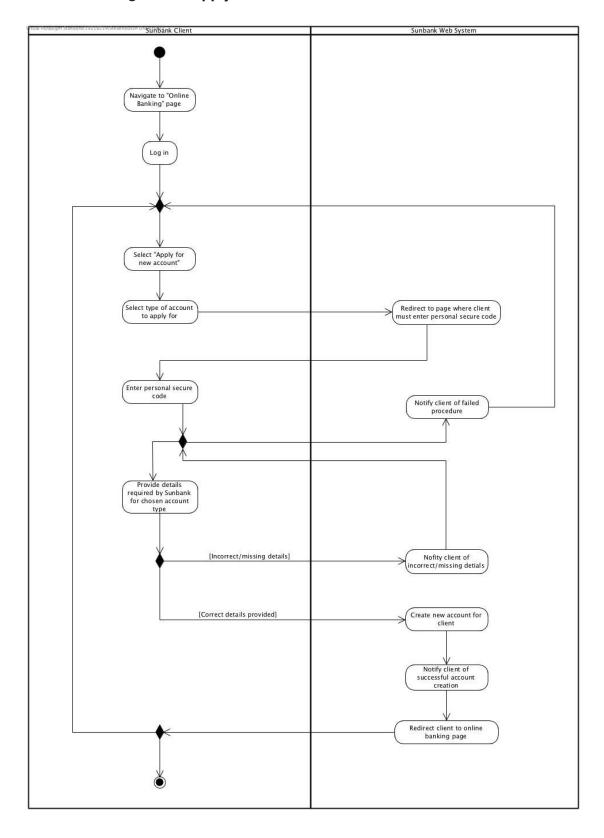
Pre-condition: A user must be a member of Sunbank.

Flow:

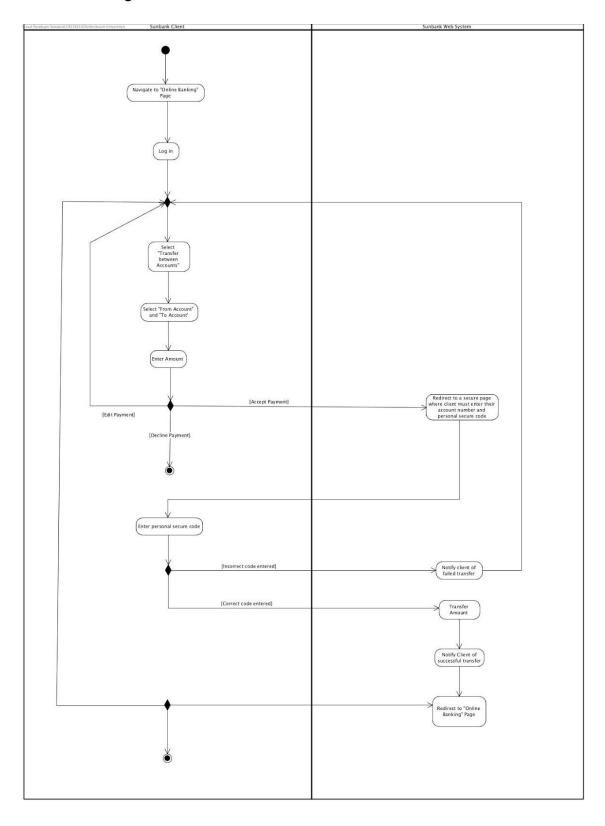
- 1. Once a user is a member with Sunbank they will have the ability to manage their various banking accounts online.
- 2. In order to do this, they will need to log into the online banking portal with their unique log in details.
- 3. Once they have logged in there will be a whole section within the online banking which is dedicated to account management.
- 4. Two of the main functions will include:
 - a. applying for a new account:
 - i. A Sunbank member can have various accounts with Sunbank and they can be of different types too (investment, savings, cheque, etc). Members are able to manage all of these accounts via the online banking website.
 - b. Inter-account transfers-
 - A Sunbank member will easily be able to do inter-account transfers via the online banking website with not external difficulties.

The following activity diagrams illustrate the processes of applying for a new account and doing inter-account transfers:

Account Management: Apply for new account



Account Management: Inter-account transfers



Business Use Case: Performing Banking Transactions

Pre- condition: A user must be a member with Sunbank.

Flow:

- After becoming a member with Sunbank, the user will have access to Sunbank's
 online banking website which provides various banking transaction functionalities
 and services.
- These include:
- 3. Scheduling Payments
 - a. A Sunbank member will be able to create multiple scheduled payments- this is an automatic, recurring payment.
 - b. This payment consists of a fixed amount to a specific beneficiary who needs to be a part of the member's current beneficiary list.
 - c. The member will be able to edit their scheduled payments as they wish.

4. Utility Payments-

- a. Sunbank gives members the ability to pay for certain utilities via the online banking website.
- b. These utilities will include services such as electricity, water, airtime, wifi, etc.

5. Instant Money-

- a. Members will have access to the instant money feature which allows the users to make instant payments to any beneficiary.
- b. This feature will make it extremely easy for members to send instant cash to their beneficiaries by simply selecting the amount that they would like to send to a specific beneficiary.
- c. The system will automatically send the beneficiary a code via SMS which they can enter at any ATM nearby.

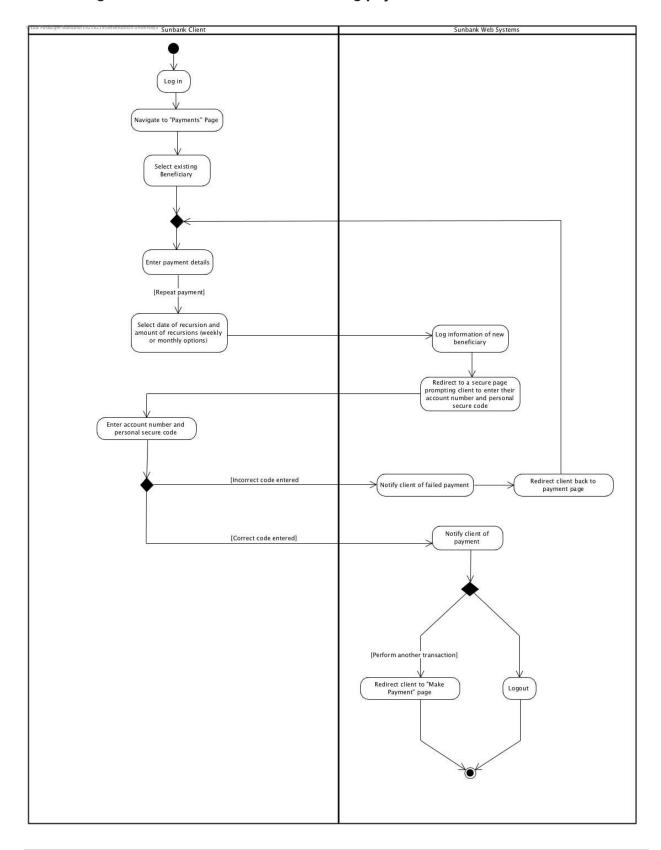
6. Make Payments-

- a. To make a payment to an individual/company, a member will have to add that individual/company as a beneficiary.
- b. Sunbank members will be able to make payments to any other bank account holders.

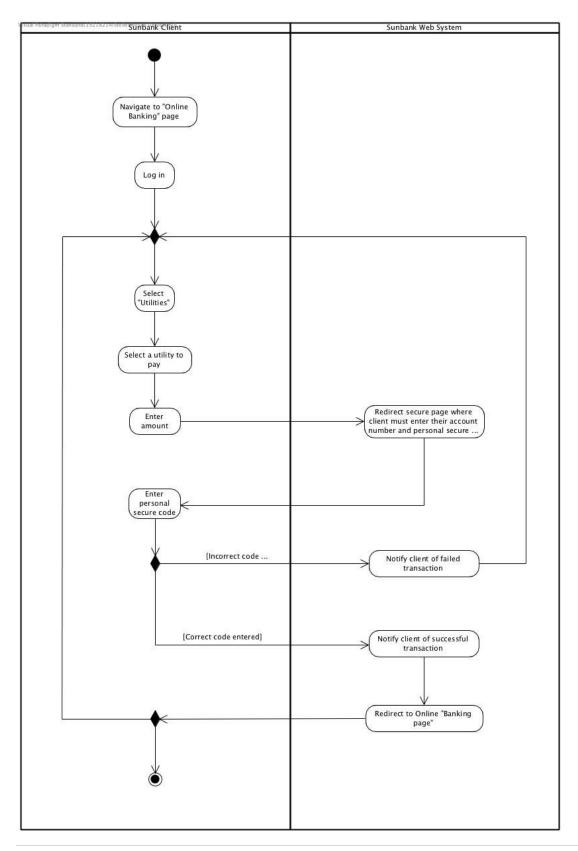
c. There is no limit to the amount of payments that one can make however, a member will have the option to set a limit on how much they are allowed to transfer on a daily basis.

The following activity diagrams depict the processes of scheduling payments, utility payments, instant money and making payments using Sunbank's online banking functionalities:

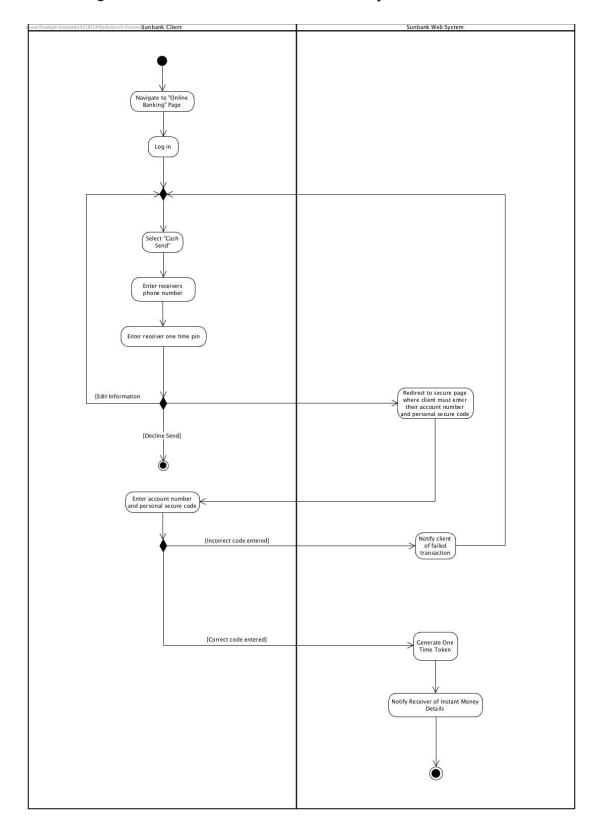
Performing Business Transactions: Scheduling payments



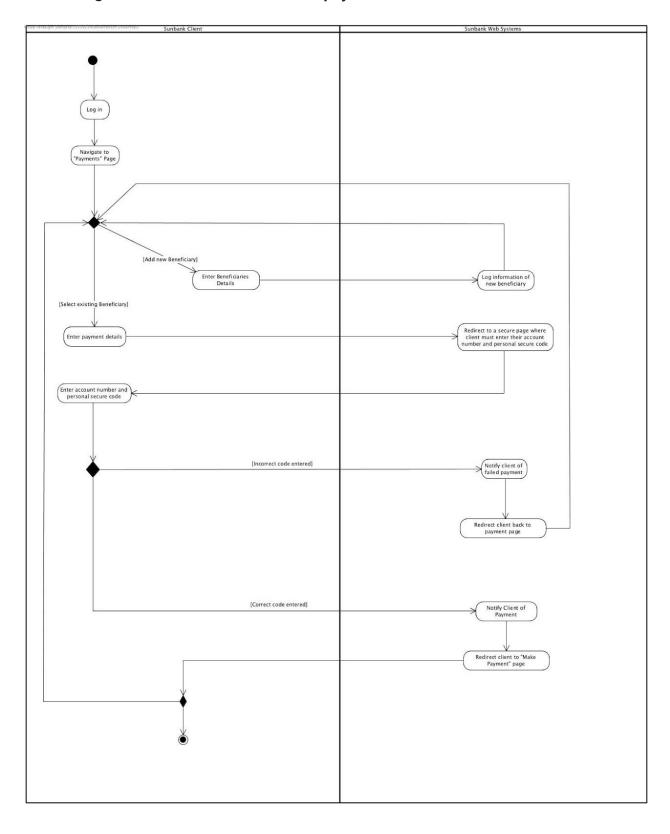
Performing Business Transactions: Utility payments



Performing Business Transactions: Instant money



Performing Business Transactions: Make payments



ACTORS

WORKERS

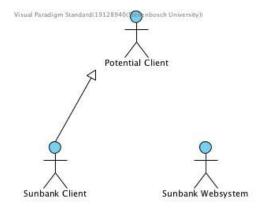
Department/Position	Impact on Project
CEO	Outlined basic user experience and functionalities of the website
CIO	Provided an explanation of the system information technology
Developer	Gave requirements needed to match the system functionality

BUSINESS ACTORS

Actor	Impact on Project

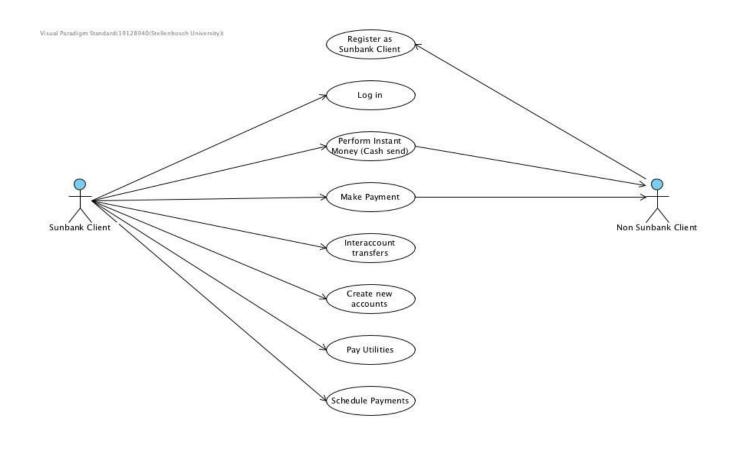
Potential Client	Member of the general public that is not yet a registered as a Sunbank client. A Potential client will be able to browse the Sunbank Websystem, but will be restricted from the "Online Banking" page until such time they have successfully registered as a Sunbank client.
Sunbank Client	Registered client in possession of 1/more active accounts. Sunbank clients will be able to browse the Sunbank Websystem and will have access to the "Online Banking" page and it's full functionality.
Sunbank Websystem	Websystem that is being developed. This will function as an actor in many ways. The websystem will need to receive, process, validate a wide range of information inputted by both Potential and Registered clients. It will also need to prompt and act independently of users on many occasions.

ROLE MAP



USER REQUIREMENTS

SYSTEM USE-CASE DIAGRAM



SYSTEM USE-CASE DESCRIPTIONS

System Use Case Description: Register as Sunbank Client

Basic flow:

- 1. Potential member navigates to Sunbank website and clicks on 'Join-Us' tab.
- 2. The system takes the potential member to a new page where they are asked to fill in various information.
- 3. The user fills out all the required information and clicks submit.
- 4. The system verifies that all the required information has been submitted.
- 5. If all information has been submitted the system sends an authentication SMS/Email to the potential clients cell phone or email address.
- 6. The client verifies their application via SMS/Email.
- 7. The system notifies the client with a pop-up message, letting them know that their application has been received and they that are now a potential client.
- 8. The system will redirect the client to the 'Help Center' or 'Online Banking' page.

Alternate flows:

Fields missing:

- 1. If the user did not enter/did not enter correctly, all the required information the system will decline the application.
- 2. The system will send a pop-up which asks the user to check that they have filled out all the required information.
- 3. The user clicks okay and can scroll through their document and edit any details before clicking 'submit' again.
- 4. The system will, again, verify that all the required information has been submitted.

Authentication error:

- 1. While awaiting authentication, the system will display a pop-up which reads 'If no authentication message received pleases click *here*'.
- 2. If the user did not receive an authentication message they can click on the here link.
- 3. The system will ask the user to verify their cellphone number and email address.
- 4. Once the user confirms their information they click send.
- 5. The system will send the authentication message again and wait for verification.

System Use Case Description: Log-in

Basic flow:

- 1. Member navigates to sunbank website and clicks on the 'Online Banking' tab.
- 2. The system prompts the member for their unique log-in details.
- 3. The member inserts their details and clicks 'log-in'.
- 4. The system confirms the users details and sends a push notification to the users cellphone.
- 5. The user verifies the notification.
- 6. The system confirms the verification and redirects the user to the 'Online Banking' page.

Alternate flows:

Incorrect details:

- 1. If the system cannot confirm the member's details it will display a pop-up, asking the member to re-enter their details.
- 2. The member re-enters their details and clicks 'log-in'.
- 3. The system will continue to the push notification authentication.

Push-notification failure:

- 1. If the user does not confirm their log-in attempt via the push notification, after a few seconds it will send a failed attempt to the system.
- 2. The system will display a pop-up message asking the member if they would like to resend the notification or if the would like to verify their log-in attempt though an alternative method.
- 3. The user can ask to resend the push-notification where the basic flow continues or they can ask to verify using an alternative method.
- 4. The system will ask the member to verify via Email or SMS.
- 5. The member will click either or both.
- 6. The system will send an authentication Email or SMS.
- 7. The user verifies the authentication Email/SMS.
- 8. The system continues with the basic flow.

System Use Case Description: Make Instant Payment

Basic flow:

- 1. The member logs in to online banking and navigates to 'Instant payments'.
- 2. The system displays a list of the members current beneficiaries.
- 3. The member can select any beneficiary.
- 4. Once a beneficiary is selected the system will prompt the user to enter a cash amount.
- 5. The member enters an amount and clicks send.
- 6. The system will send a code and a notification SMS to the chosen beneficiary via SMS or Email.

System Use Case Description: Make payment

Basic Flow:

- 1. The member logs in to 'Online banking' and navigates to the 'Make payments' tab.
- 2. The system will ask the member to either select from a list of existing beneficiaries or to add a new beneficiary.
- 3. The member selects from the list of existing beneficiaries.
- 4. The system prompts the member to enter the amount they would like to transfer and various other details.
- 5. The member enters the details and selects 'pay'.
- 6. The system will redirect to a page where it prompts the member to enter their unique account details for security reasons.
- 7. The member enters their details and clicks 'confirm'.
- 8. The system validates their details and displays a pop-up message notifying the member that the beneficiary has been paid.
- 9. The system redirects the member to the 'make payments' page where they can continue making payments.

Alternate flows:

Add new beneficiary:

- 1. The system will ask the member to either select from a list of existing beneficiaries or to add a new beneficiary.
- 2. The member selects 'create new beneficiary'.
- 3. The system redirects the member to a new page where it prompts the member to add the new beneficiary details.
- 4. The member adds the new beneficiary details and clicks 'add'.
- 5. The system validates that the information is correct and adds the new beneficiary to the list of beneficiaries.
- 6. The system redirects the member to the page where they enter the amount they would like to pay and various other details and continues with the basic flow.

Invalid beneficiary:

- 1. The member adds the new beneficiary details and clicks 'add'.
- 2. If the details are invalid or there is information that is missing the system will notify the member that there is missing or invalid information.
- 3. The system will redirect the member to the page where they must add the new beneficiary details.
- 4. The member can edit any of the details and select 'add', again.
- 5. The system validates the information and if correct the system will continue with the basic flow.

Invalid details:

- 1. If the user enters incorrect information for their unique account details the system will decline the payment.
- 2. The system will send a pop-up notification telling the member that their details are incorrect and redirect the member to their previous 'make payment' page.
- 3. The member will have to click 'pay' again.
- 4. The system continues with basic flow.

Related Artefacts:

1. Decision Table: Make Payment.

		1	2	3	4
Condition	Beneficiary (Valid/Invalid)	V	V	I	I
	Secure Code (Correct/Incorrect)	С	I	С	I
Action	Accept	Х			
	Reject		Х	Х	Х

System Use Case Description: Inter-account transfers

Basic Flow:

- 1. Member logs into Online banking and navigates to the 'Inter-account transfers' tab.
- System redirects the member to a new page where it asks the member to confirm the two accounts that they would like to make inter-account payments between, as well as the specific amount.
- 3. The member enters the relevant details and clicks 'confirm'.
- 4. The system prompts the member to enter their unique log in details.
- 5. The member enters their details and clicks 'confirm'.
- 6. The system validates the member's details and notifies the member that the transfer has been made.
- 7. The member redirects the client to the 'Inter-account transfers' page.

Alternate Flow:

- 1. If the member enters invalid details relating to their uniques account details the system will decline the transfer.
- 2. The system will redirect the member to the previous page with a pop-up that says their account details were incorrect.
- 3. The member can click 'transfer' again.
- 4. The system will continue with the basic flow.

System Use Case Descriptions: Create New Accounts

Basic Flow:

- 1. Member logs into Sunbank's online banking and navigates to the 'Create new account' tab.
- 2. The system redirects the member to a page where it asks the member to select the type of account they would like to apply for.
- 3. The member selects the account they would like to apply for.
- 4. The system prompts the member to enter their unique account details.
- 5. The member enters their details and clicks 'submit'.
- 6. The system validates the details and redirects the member to a new page where it asks the member to add in various information relating to the new account.
- 7. The member enters the required information and clicks 'submit'.
- 8. The system validates the information and creates a new account for the member.
- 9. The system notifies the member that a new account has been created and redirects the member to their 'Accounts' page where all their current accounts will be displayed.

Alternate flows:

Invalid account details:

- 1. The member submits their unique account details.
- 2. If the account details are incorrect the system will notify the member that their details are incorrect and prompt them to re-enter their personal account details.
- 3. The member re-enter their details and clicks 'submit'.
- 4. The system validates the information and if correct, the system continues with the basic flow.

Incorrect/missing information:

- 1. The member enters the required information for the chosen account type and clicks 'submit'.
- 2. The system checks the information provided and if the information is invalid or if there are fields that are missing the system will decline the 'submit' process.

- 3. The system will return to the page where the client must enter the required information and notify the member that there are invalid or missing fields.
- 4. The member can then edit any of the information and click 'submit' again.
- 5. The system validates that the information is correct and if it is it continues on the basic flow.

System Use Case Description: Pay Utilities

Basic Flow:

- 1. Member logs into Sunbank's online banking and navigates to the 'Utilities' page.
- 2. The system redirects the member to a new page which displays all the various utilities that a member can select from.
- 3. The member selects the utility that they would like to pay, such as electricity.
- 4. The system prompts the member to add in a specific amount that they would like to pay.
- 5. The ember adds an amount and clicks 'pay'.
- 6. The system prompts the member to enter their personal account information.
- 7. The member enters their details and clicks 'pay'.
- 8. The system validates that the details are correct.
- 9. If the details are correct the system notifies the member that their selected utility has been paid and redirects them to the 'Utilities' page.

Alternate flows:

Invalid account details:

- 5. The member submits their unique account details.
- 6. If the account details are incorrect the system will notify the member that their details are incorrect and prompt them to re-enter their personal account details.
- 7. The member re-enter their details and clicks 'submit'.
- 8. The system validates the details and if correct, the system continues with the basic flow.

System Use case Descriptions: Schedule Payments

Basic Flow:

- 1. The member logs in to 'Online banking' and navigates to the 'Make payments' tab.
- 2. The system will ask the member to either select from a list of existing beneficiaries or to add a new beneficiary.
- 3. The member selects from the list of existing beneficiaries.
- 4. The system redirects the member to a page where they enter the amount they would like to pay and various other information.
- 5. Here the member can select 'recurring payment'.
- The system will prompt the member to add in the fixed amount and to select a certain number of days which will act as the recurring time period that the selected beneficiary is payed.
- 7. The member adds in the additional information and clicks 'pay'.
- 8. The system prompts the member to enter their personal account information.
- 9. The member enters their details and clicks 'pay'.
- 10. The system validates that the details are correct.
- 11. If the details are correct, the system will notify the member that the beneficiary has been payed and that the scheduled payment has been created.
- 12. The system will redirect the member to the 'make payments' page.

Alternate flows:

Invalid account details:

- 9. The member submits their unique account details.
- 10. If the account details are incorrect the system will notify the member that their details are incorrect and prompt them to re-enter their personal account details.
- 11. The member re-enter their details and clicks 'submit'.
- 12. The system validates the details and if correct, the system continues with the basic flow.

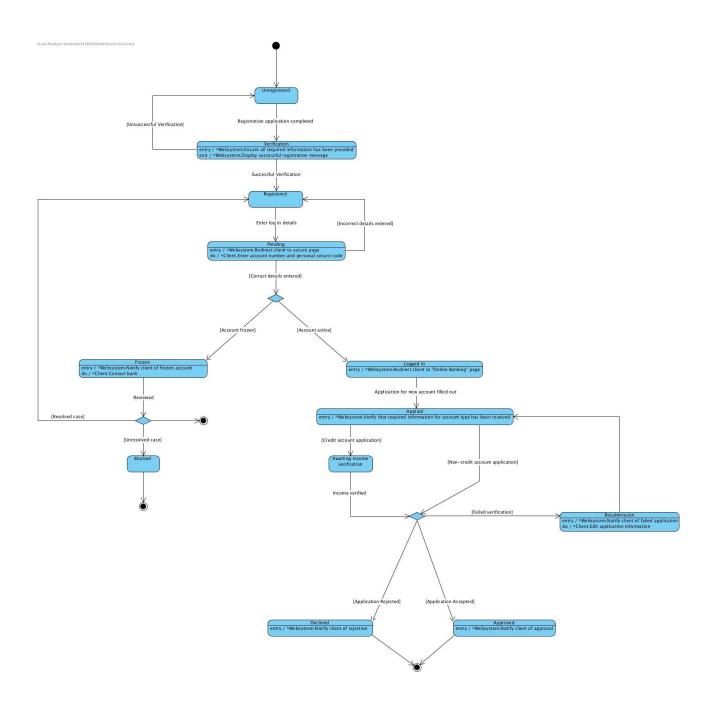
Invalid scheduled payment details:

- 13. The member adds in the additional scheduled payment information and clicks 'pay'.
- 14. If the details are incorrect the system will notify the member that the information is invalid or missing.

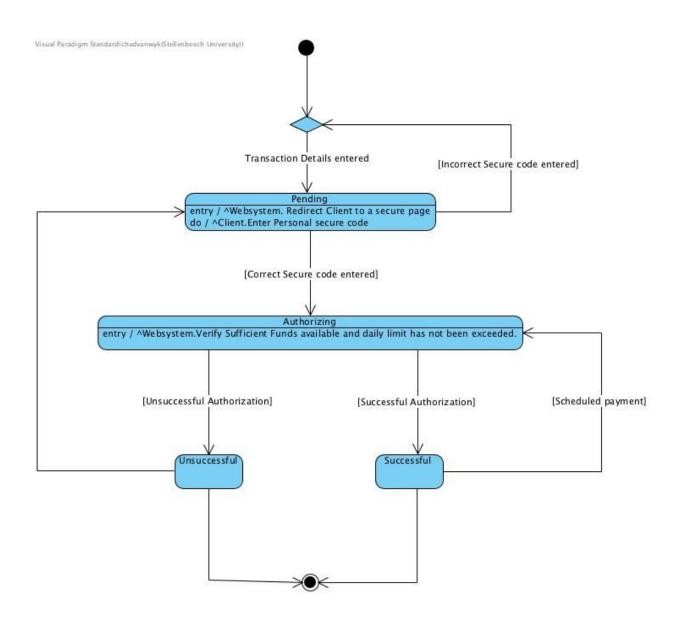
- 15. The system will prompt the member to re-enter the scheduled payment details.
- 16. The member enters the details and selects 'pay'.
- 17. The system validates that the details are correct and if correct, it continues on the basic flow.

STATE-MACHINE DIAGRAMS

STATE-MACHINE: CLIENT



STATE-MACHINE DIAGRAM: TRANSACTION



Non-functional Requirements

1. Stress Requirements

The system must be able to support 1000 clients accessing the web application simultaneously. Expansion will be implemented as Sunbank grows.

2. Response-Time Requirements

Three seconds.

3. Usability Requirements

Usability of the web application should be self intuitive. All functions should be able to be completed without any assistance.

4. Security Requirements

HTTPS encryption.

5. Volume Requirements

4000 accounts should be supported, which will expand as the bank grows.

6. Configuration Requirements

PC and Mobile Device Compatible.

7. Compatibility Requirements

System must interface with existing API.

8. Compatibility Requirements

Compatible with the existing API.

9. Reliability Requirements

Total daily downtime must not exceed 1 hour during normal business hours (9:00 a.m. - 5:00 p.m.).

10. Backup / Recovery Requirements

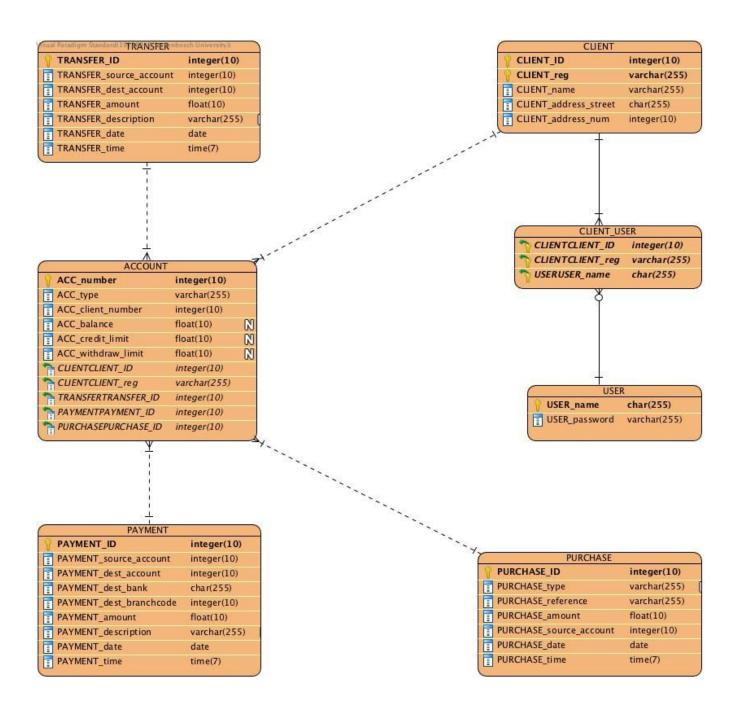
Daily backup of data files onto a cloud services. Weekly backup of entire system.

11. Training Requirements

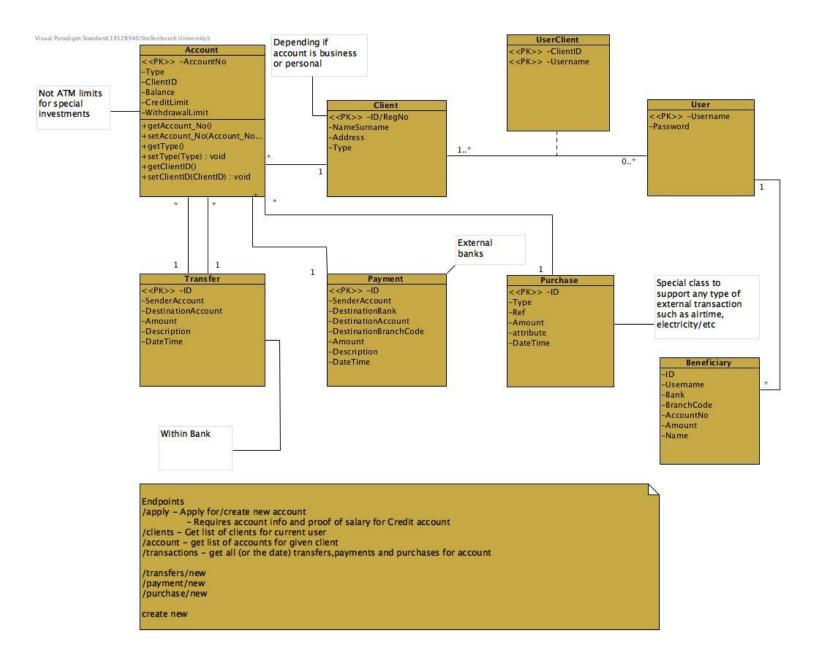
End user training to be done by the client themselves.

STRUCTURAL MODEL

ENTITY RELATIONSHIP DIAGRAM



CLASS DIAGRAM



Sunbank Webpage Systems HTML MOCKUPS

Business and Systems Requirements Specification Document

SOCIO-INFORMATICS / INFORMATION SYSTEMS MANAGEMENT 354 STELLENBOSCH UNIVERSITY

01 October 2017

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Sunbank Web Page Systems HTML MOCKUPS

Sunbank Web Page Mockups



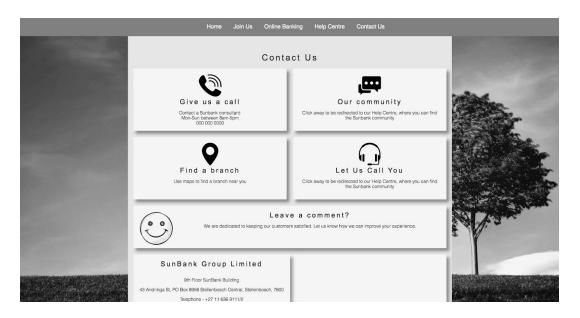
Landing page



Home Page



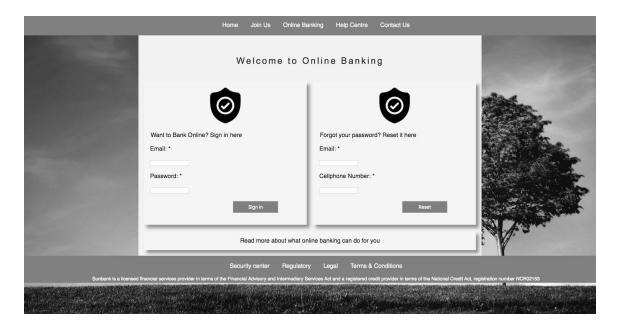
Join Us Page



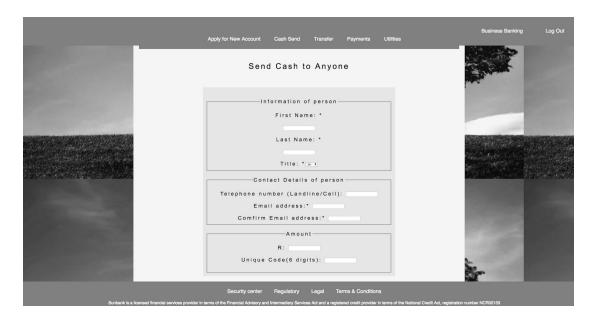
Contact Us Page



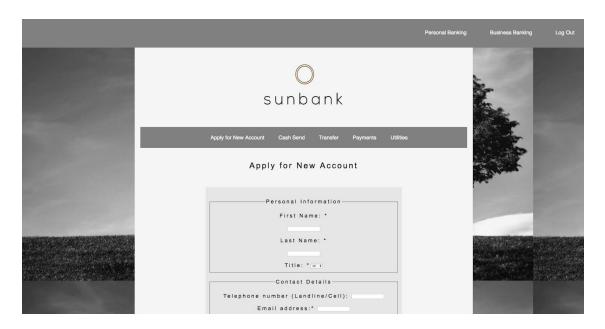
Help Centre Page



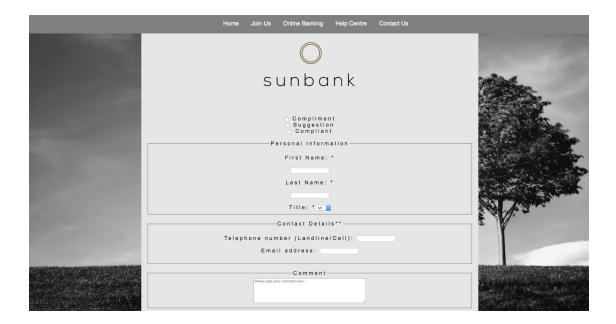
Online Banking Page



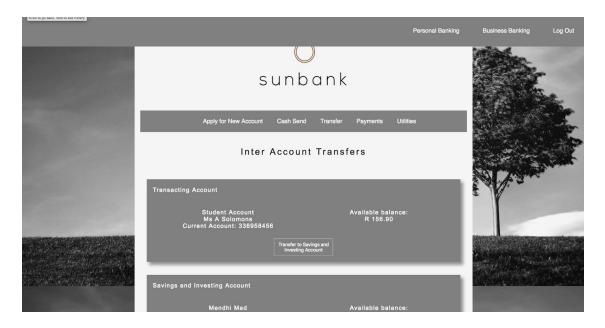
Cash Send Page



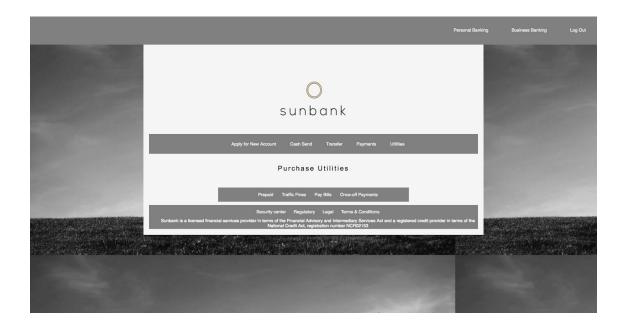
Apply for New Account Page



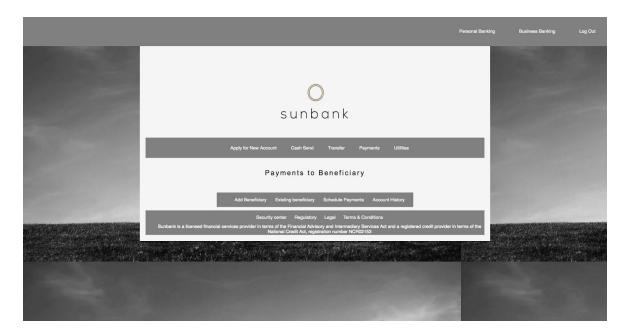
Comment Page



Inter Account Transfers Page



Purchase Utilities Page



Payments to Beneficiary Page