

**KnM Bursary System
V1.2**

Prepared by Erisn Africa

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1. Document Control

Version	Date	Sign-Off
1.1	26-10-2022	
1.2	04-08-2023	
1.2		KnM

2. Contributors

Name	Role	Date
Yemi Ajibade	Author	26-10-2022
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Lesego Mofomme	Peer Review	
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Lesego Mofomme	Peer Review	11-08-2023
Maropeng Thaba	Reviewer	
	Update for Handover	15-04-2025

3. Acronyms

Acronym	Definition
API	Application Programming Interface
CPU	Central Processing Unit
CRON Jobs	The cron command-line utility, also known as cron job, is a job scheduler on Unix-like operating systems
CSV	Comma Separated Values
HTPPS	Hypertext Transfer Protocol Secure
InnoDB	a general-purpose storage engine for MYSQL database
MS	Microsoft
OS	Operating System
PHP	Hypertext Preprocessor programming language
RAM	Random Access Memory
SDK	Software Development Kit
SMS	Short Message Service
SQL / MySQL	Structured Query Language (Database)
SSL	Secure Sockets Layer
WIP	Work in progress

4. Background and purpose

The purpose of this document is outline the existence of the front-end and the admin panel of the KnM system and its features.

The KnM Bursary App is designed to enable students to capture bursary applications online and upload required documents and quotations, so that this enables the Bursary Administrators an easy process in terms of monitoring and due-diligence. The system has been designed to generate reports as per KnM requirements in order to approve recommended students.

The KnM Bursary App populates captured data into various variables that enables administrators and KnM to make sound decisions in the award of bursaries.

The system enables storage of documents for both audit and reconciliation purposes.

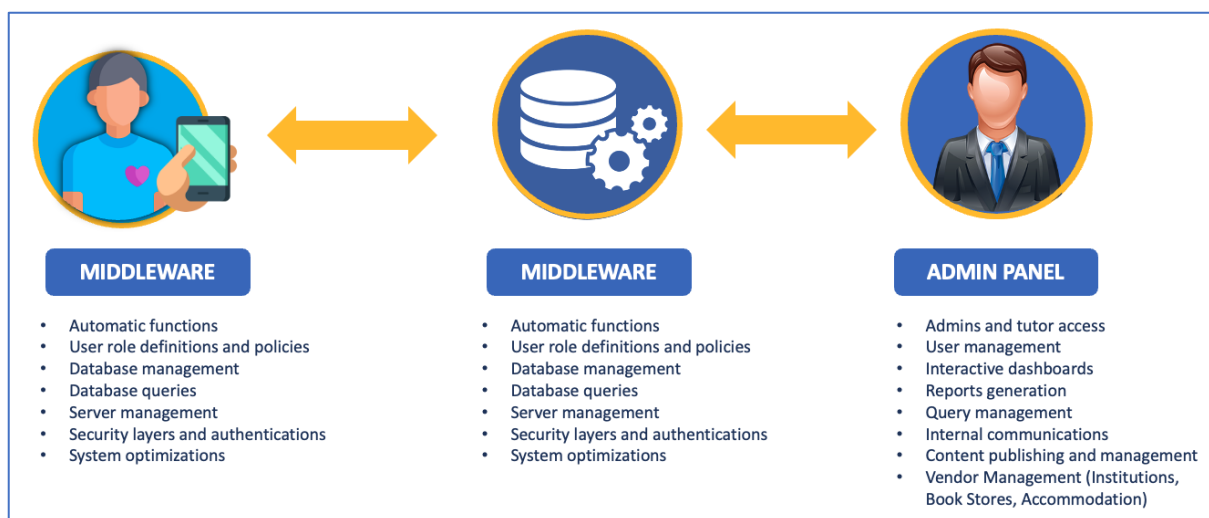
5. How the information is filtered for ease of evaluation

The system is configured to automatically populate information required and categorize students who captured and uploaded documents, into Incomplete and Potential. At the backend, the Bursary Administrators can accept or reject uploaded documents after evaluation and verification. The Administrators can at this stage communicate with students through an in-app messaging and SMS to further information for application completeness.

The administrators on the basis of completeness and correctness then can change the student status to Recommended.

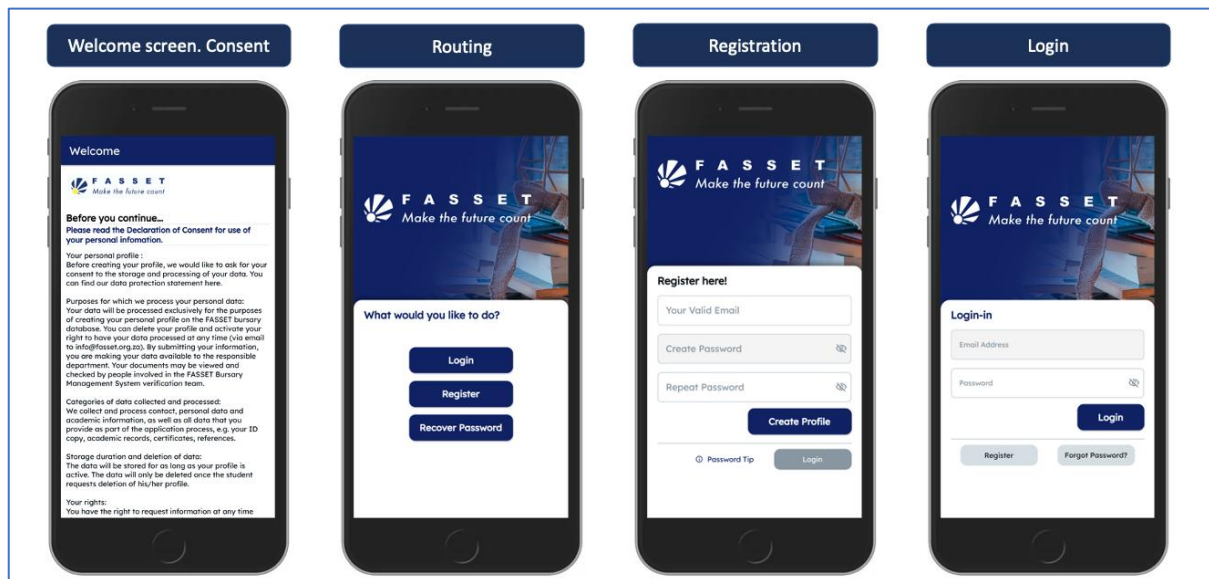
KnM has access to the back end to Approve recommended students.

6. System Framework

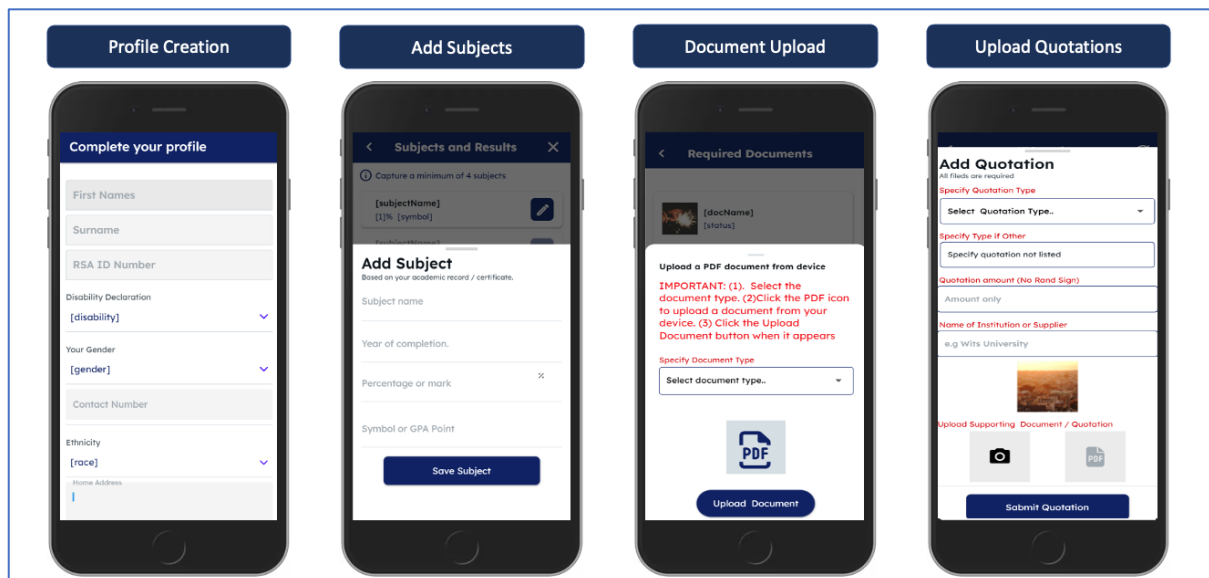


7. End User Access – App

4.1. Access to the App

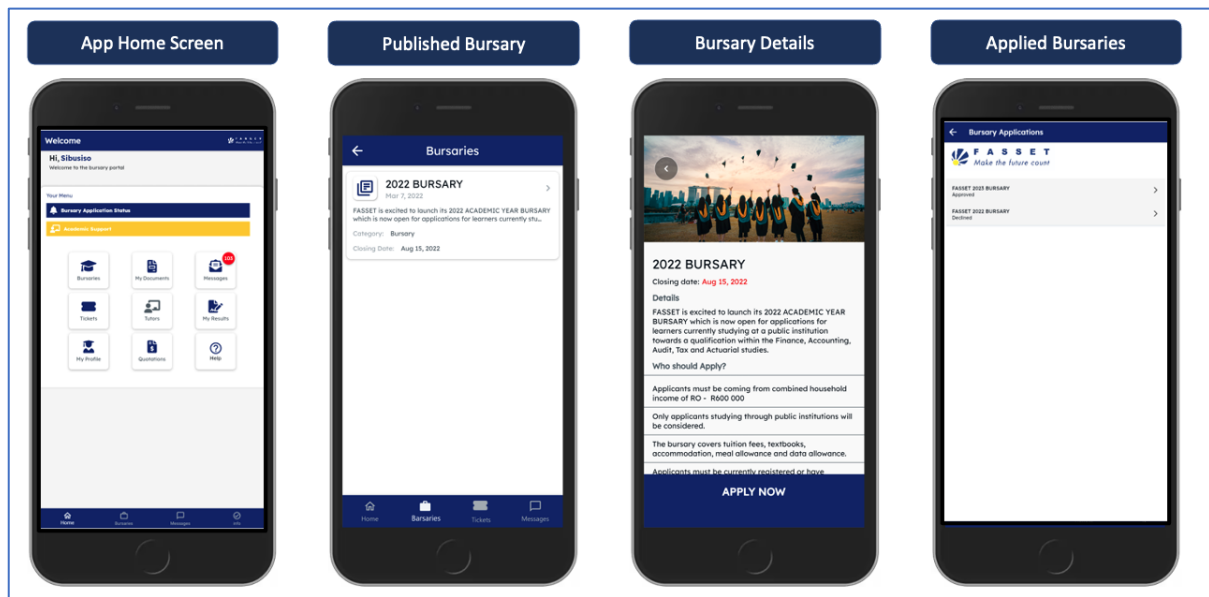


- Consenting:** Students are required to acknowledge and agree to the use of personal information declaration
- Routing:** Redirects the user to onboarding and authentication modules.
- Registration:** Student can start the onboarding process when the bursary window is open. They will then proceed to Profile Creation (e)
- Login.** A login or authentication page for returning students



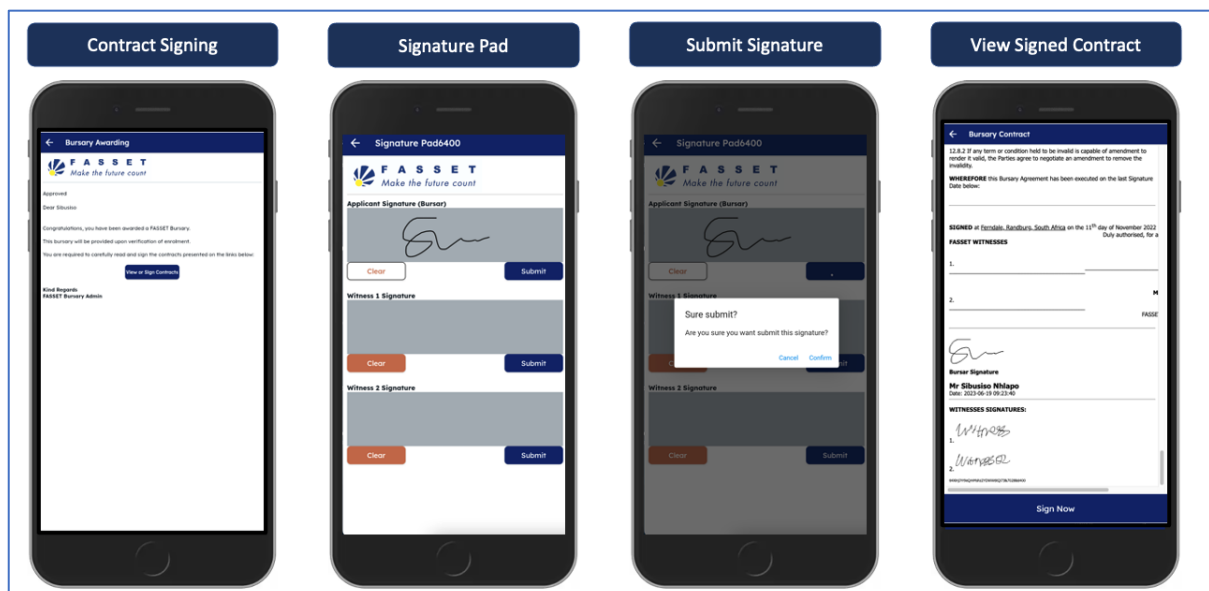
- Profile Creation.** Students will then enter details according to the bursary required information.
- Add Subjects.** Students are required to add their subjects based on their matric certificate or academic record
- Document Upload.** Students can upload their required documents during the onboarding process.
- Quotation Upload.:** If available students can upload their Tuition quotation, Transport Quotation, Books and Accommodation quotations.

4.2. App Home page and Bursary Application



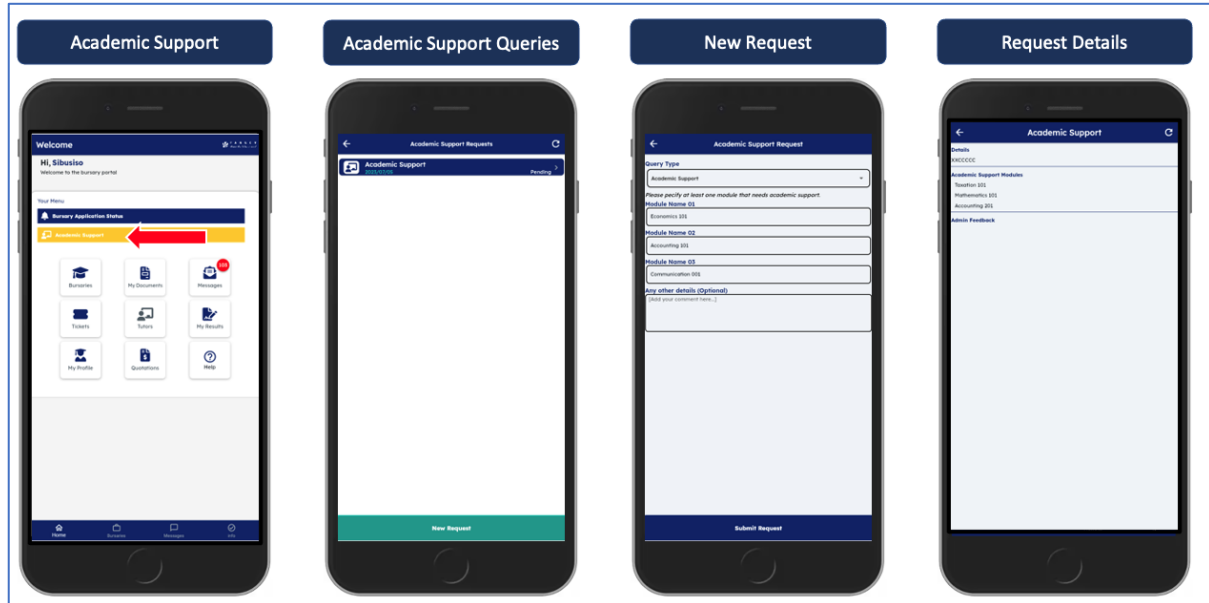
- Home Screen. The landing page of the app with app functionalities
- Published Bursaries. Available bursary depending on the bursary window
- Bursary Details: Bursary details with an option to apply by clicking APPLY NOW.
- Applied Bursaries. Students can view the bursaries they applied for and their applications status. If the Bursary is declined, the students can also view the decline message. If approved students can be able to sign digitally. (Manually captured students receive manual contract)

4.3. Digital Signature and Contract



- Contract Signing. Approved students can view the contract and start the signing process.
- Signature Pad. Approved students can sign the contract using the digital signature pad
- Submit signature: The desired digital signature gets attached to the contract.
- View Signed Contract. The approved student can view the contract with the signature attached

4.4. Academic Support



- Academic Support. Approved students can request academic support.
- Academic Support Queries: A list of academic support queries by the student.
- New Request: Approved students can request a new academic support query.
- Request Details: Academic Support query details.

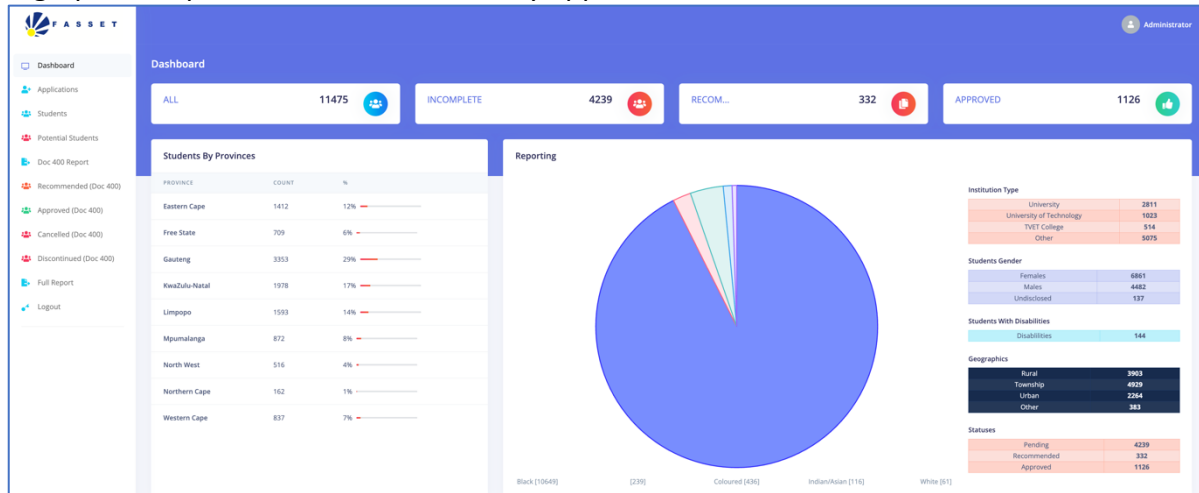
4.5. Other App Modules

- Profile Management. Updating of the student's information
- Messages. In-App messaging system with the message counter.
- Contact Details: Detailed contact information of the bursary admin team

8. Admin Panel System

5.1 Dashboard

A graphical representation of the bursary applicants information .



- Top: Number of the overall applicants, applicants with incomplete information and documents, recommended students and approved students.
- Left Panel: Main Navigation
- Students view by province
- Students view by ethnicity
- Student view by institution type
- Student view by gender
- Students with disabilities
- Student view by geographics
- Applications view by statuses

5.2 Application List

A list of the students who have applied for the bursary.

The Applications page displays a list of bursary applications. It includes a search bar and a table with the following columns: BURSARY YEAR, APPLICATION DATE, NAME, SURNAME, ID NUMBER, COURSE, and INSTITUTION.

BURSARY YEAR	APPLICATION DATE	NAME	SURNAME	ID NUMBER	COURSE	INSTITUTION
2023	19942	Lethakuhle Shirley	Ndimande	0509251012084	Diploma in Accountancy	University of Johannesburg
2023	18852	Mpho	Majedibodu	0108100170084		
2023	22257	Monwabisi	Ishana	0307185894085	Financial Management N4	Business Management N4
2023	22455	Lifa	Mazibuko	0502046450081	Bachelor of Accounting	University of Johannesburg
2023	20483	Makabongwe Ofentse	maseko	0202260625084	Internal auditing	Vaal University of Technology
2023	19376	Siyanda	Gugweni	0011195238081	Diploma in accounting	Cput
2023	22696	Khutiso	Mabala	0302165047085	Bachelor of Architectural Studies	Nelson Mandela University
2023	22966	Jacob Thabang	meale	0010315533082	Bachelor of Science in Computer information systems	University of Free state
2023	21607	Mwongweni Lifaiahe	Ntuli	0311025348088	Information and communication technology	Tshwane University of technology
2023	20043	Sethembile Thabo	Mathe	0412055648080		

NB: It should be noted that not all students who are onboarded on the system are automatically considered as bursary applicants. Students must click the PPLY NOW button in the app as outlined in 4.1.(c) to be considered.

5.3 Academic Support List

A list of the students who have requested academic support. This module is still under review.

Tickets									
Current Tickets									
Show 10 rows • CSV Excel PDF Print									
NAME	ID NO.	STUDENT NO.	EMAIL	PHONE	INSTITUTION	COURSE	MODU		
Dimphe Matala	9911160487086		dimpheatala16@gmail.com	0630142822	University of the Free State	Post Graduate Diploma in General Accountancy	Accou		
Dineo Manyaselo	9509115535081	26426373	dineomanyaselo@gmail.com	0679689445	North-West University	Bcom in Financial accountancy	Accou		
Faith Adams	0401290725085	222297204	faithadam056@gmail.com	0693147630	Cape Peninsula University of Technology	ICT in Applications Development	busin		
Fikile Abigale Matlala	9912161109084	218073095	fikileabigale@gmail.com	0762536821	University of Johannesburg	BCom Hon in Internal Auditing	Advan		
Gabriel Maghote	9702295116086	219098218	maghotegabriel@gmail.com	0722433144	University of Johannesburg	Financial services and operations	tradi		
GRIETA STEPHANAH SINDANE	9403290539086	213405853	sindanegri4@gmail.com	0713464528	Tshwane University of Technology	ADVANCED DIPLOMA IN INTERNAL AUDITING	inform		
Itumeleng Webster Mamel	0011085176086		2018320636@ufu4life.ac.za	0635790380	University of the Free State	Post-Graduate Diploma in General Accountancy	Financ		
Kubelo Makete	9909155214086	14331233	kubelomakete99@gmail.com	0733275285	University of South Africa	BCompt in Financial Accounting	Manag		
Karabo Catherine Moabi	0106040227089	2141909	karabomabikm7@gmail.com	0610801700	University of the Witwatersrand	Postgraduate Diploma in Accountancy	Manag		
Nganyo Makurube	9709075100088	10339344	nganyamakurube@gmail.com	0760544429	University of South Africa	BCompt Financial Accounting	FAC37		

5.1 Student List

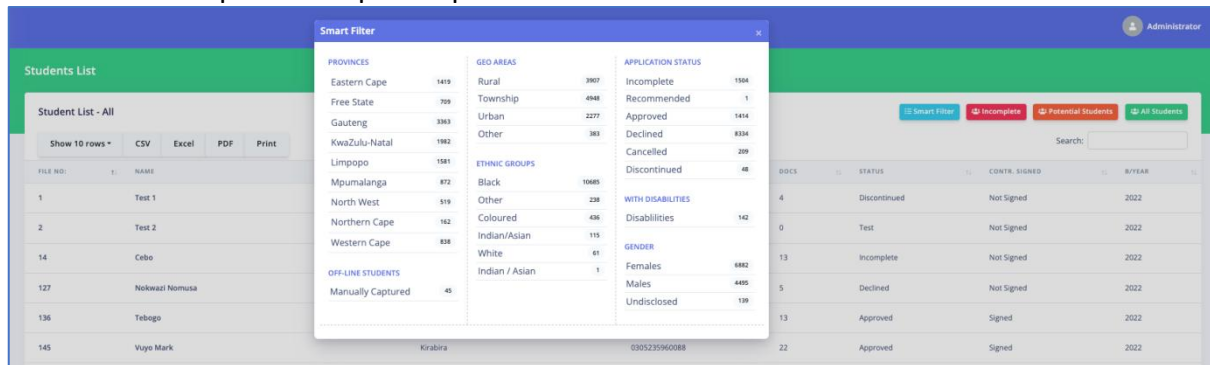
A list of the students who have onboarded the system. It also includes the student who were manually onboarded.

Students List									
Student List - All									
Show 10 rows • CSV Excel PDF Print									
FILE NO.	NAME	SURNAME	ID NUMBER	DOCS	STATUS	CONTR. SIGNED	B-YEAR		
1	Test 1	Test 1	9110230143081	4	Discontinued	Not Signed	2022		
2	Test 2	Test2	9110230143081	0	Test	Not Signed	2022		
14	Cebo	Mdetye	0104116346081	13	Incomplete	Not Signed	2022		
127	Nekwazi Nomusa	Dube	9610303030081	5	Declined	Not Signed	2022		
136	Tebogo	Ledwala	9710255085081	13	Approved	Signed	2022		
145	Vuyo Mark	Kirabira	030523590088	22	Approved	Signed	2022		
187	Thabani Mxolisi	Mponshane	0208076270080	0	Declined	Not Signed	2022		
272	Mokhele Sylvester	Tau	9201295764083	2	Declined	Not Signed	2022		
276	Yolanda	Oludla	0110300093082	12	Incomplete	Not Signed	2022		
278	Yogelwa	Xaka	9408040457083	8	Declined	Not Signed	2022		

- The list can be viewed in 10, 25, 50 100 items per page
- A quick search or instant search is also available on the list
- The list can be exported as CSV, MS Excel and PDF file formats
- Filters can be applied according to name, surname and bursary year. More filter options can be enabled.
- A smart filter has also been enabled on the list for quicker navigation. See 5.4 below

5.2 Smart Filter

The Smart Filter gives the Admin Panel user the ability to navigate to the required information quicker and easier. It also provides a counter for each item. At a glance the Smart Filter can provide a quick report and overview.

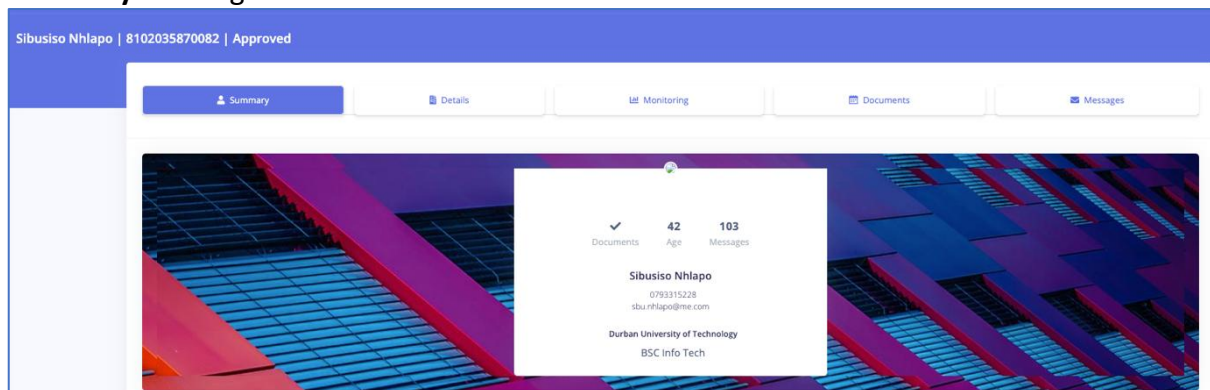


- Province: Navigate to students by Province
- OFF-LINE Students: Manually captured students
- GEO Areas: Navigate to students by geographical area
- Ethnic Groups: Navigate by ethnicity
- Application Status: Navigate by application statuses, including declined students
- With Disabilities: View students that have declared their disabilities
- Gender: Filter students by gender

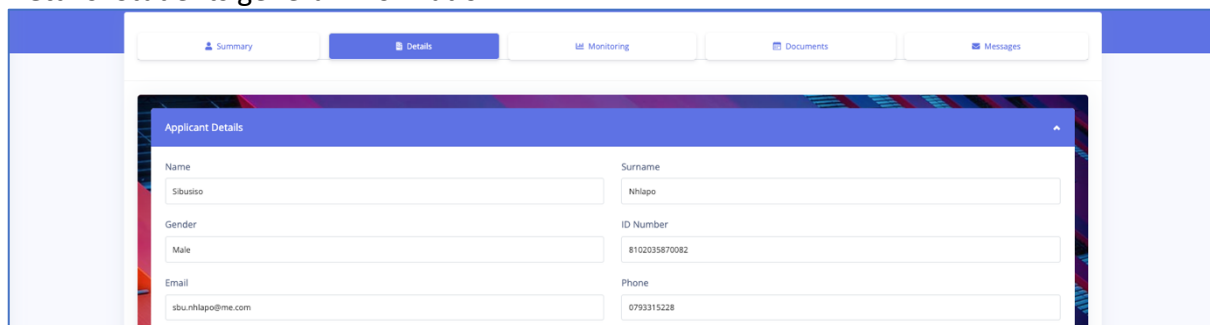
5.3 Applicant / Student View

The student's view includes 5 tabs for navigating the student's profile:

Summary: The high-level students information



Details: Students general information



Monitoring: Various monitoring sections for the applicant

The screenshot shows the 'Monitoring' section of the KnM Bursary System for an applicant named Sibusiso Nhlapo (ID: 8102035870082, Status: Approved). The interface includes a top navigation bar with tabs for Summary, Details, Monitoring (active), Documents, and Messages. Below the navigation bar, there's a header with the applicant's name and ID, and buttons for 'Go Back' and 'Status Change'. The main content area is divided into two sections: 'Bursary Application and Contracting Details' and 'Intended Course Details'. The first section contains a table with columns for Bursary, Date Applied, Outcome, Signed, and Contract. The second section contains form fields for Institution, Inst. Type, and Course.

BURSARY	DATE APPLIED	OUTCOME	SIGNED	CONTRACT
FASSET 2022 BURSARY	7/11/2022	Declined	Not Signed	
FASSET 2023 BURSARY	2/21/2023	Approved	✓ Signed	View Contract

Intended Course Details

INSTITUTION	INST. TYPE	COURSE
Durban University of Technology	University of Technology	BSC Info Tech

- **Bursary Application Details:** A list of the bursary applications by the students with outcome, statues change actions. A contract for application can also be viewed on this section.
- **Intended Course details:** Includes the institution, institution type drop-down and course. The Admin user can also update the course details if necessary
- **Academic Performance Results:** Academic performance results are monitored here as captured by the applicant. The admin user can also capture academic performance results on behalf of applicant
- **Quotations:** Academic financial statements and invoice are viewed here.
- **Notes:** Admin users can capture activity notes here

Documents: Documents uploaded by the applicant. Admin user can reject or approve documents. Furthermore they can upload on behalf of the students.

Monitoring: SMS, Email and In-App messaging

5.4 Potential Students

The module is designed to filter all the students who have filled the application form with all the details and also uploaded their documents. The module is meant to enable the Admin user to focus their attention on the potential students during the recommendation stage.

5.5 Reports

The reports are generated based on the SETMIS report

- DOC 400 Full Report
- DOC 400 for recommended students
- DOC 400 for approved students
- DOC 400 for cancelled students
- DOC 400 for discontinued students

5.6 Vendor Management

This module is under review. The purpose of the module is to enable the system owner to view all the vendors and service providers associated with the bursary programme, namely:

- Tutors
- Transport service providers
- Accommodation services
- Bookstores and etc

5.7 Tutor Onboarding

This module is under contraction. The purpose of this module is to simplify the onboarding process for tutors who will be providing academic support for eligible applicants as outlined in section 5.3

New Profile	New Login Details
<div>NEW TUTOR PROFILE</div> <div>Next</div> <div> <div>Your Info</div> <div>Login Details</div> </div> <div>Name *</div> <div>Sibusiso</div> <div>Surname *</div> <div>Nhlapo</div> <div>E-mail *</div> <div>sbu.nhlapo@gmail.com</div> <div>Phone *</div> <div>0793315228</div> <div>Province *</div> <div>Gauteng</div>	<div>NEW TUTOR PROFILE</div> <div>Submit</div> <div> <div>Your Info</div> <div>Login Details</div> </div> <div>Username *</div> <div>sbu.nhlapo@gmail.com</div> <div>Password *</div> <div>*****</div> <div>Confirm Password *</div> <div>*****</div>

Document Upload – Select Type	Document Upload – Add Document
<div>UPLOAD NEW DOCUMENT</div> <div>Add Cancel</div> <div>Document Type *</div> <div> <div>✓ --- Select ---</div> <div>ID Copy</div> <div>Poof of Address</div> <div>Certificate</div> <div>Diploma</div> <div>Degree</div> <div>Other Qualification</div> </div> <div>* Required field(s)</div>	<div>UPLOAD NEW DOCUMENT</div> <div>Add Cancel</div> <div>Document Type *</div> <div>ID Copy</div> <div>Upload PDF Document *</div> <div>Sbu ID copy.pdf</div> <div>Drag a file and drop it here</div> <div>* Required field(s)</div>

The module is as follows:

- Tutor Registration Form
- Document upload
- An input form to list the subject they are qualified to tutor.
- List of students allocated to the tutors
- Messaging
- Attendance register
- Calendar
- - Tutors must submit their schedules to the admin team
- - Admin team will capture the schedules
- Learners will attend the scheduled sessions

9. User Roles (Front-end and Back-end)

The following is a list of user roles, definitions and permissions on the KnM system:

Administrator (Back-end Admin / Operations Team)

- Application management and recommending students to KnM
- Student onboarding
- Manage Academic queries
- Internal communications with applicants
- Document management
- Upload and capture quotation
- Report generations

User (Applicants / Candidates / Students)

- Registration Form
- Login form
- Profile management
- Academic performance
- Academic Query logging
- Submit academic support timesheet
- Contract viewing and signing
- Internal communications
- Document management

Auditor

- Verify the information validity
- Provide audit report

Vendors (Currently Tutors)

- May be defined as per KnM requirements
- View and action queries assigned to them
- View students list assigned to them
- Submit attendance register
- Submit progress reports

10. System Admin Activities

The following are some of the performed by the system administrators on the sever and outside of the system:

- Bulk approval and communications for eligible applicants after CEO sign-off.
- Bulk Contract Download for approved students
- Bulk status changes and communications for declined students
- Bulk communications via SMS, Email and In-App message

11. Technical Specifications and APIs

11.1. Platform

- Supported platforms: Web
- App URL: <https://qa-fassetapps.co.za/web>
- Admin URL: <https://qa-fassetapps.co.za/admin>

11.2. Databases

- **Firestore:** Firestore helps you develop, measure, improve and grow your mobile app. It's backed by Google and covers a wide range of services, including real-time database, authentication, crash monitoring, analytics, push notifications, and more. Firestore provides all backend, platform-related tools as a service so you can focus more on building the app's core features.
- **MySQL** is a database management system. It may be anything from a simple shopping list to a picture gallery or the vast amounts of information in a corporate network. To add, access, and process data stored in a computer database, you need a database management system such as MySQL Server. InnoDB, with a limit on table size of 64 terabytes and a MySQL row-size limit of 65,535 there can be 1,073,741,824 rows. That would be minimum number of records utilizing maximum row-size limit. However, more records can be added if the row size is smaller

11.3. App Programming Languages

- The Front-End App was developed using the Flutter programming language. Flutter is Google's portable UI toolkit for crafting beautiful, natively compiled applications for mobile, web, and desktop from a single codebase. Flutter works with existing code, is used by developers and organizations around the world, and is free and open source.
- **PHP APIs.** The app also includes PHP APIs that enables the app to communicate with the Admin Panel
- **PHP for Admin Panel.** The KnM Bursary Admin Panel was developed in PHP.

11.4. Authentications and Security

- Firebase – Authentication. The Front-end App uses the The Firebase Authentication SDK provides methods to create and manage users that use their email addresses and passwords to sign in. Firebase Authentication also handles sending password reset emails.

11.5. Storage

- Firebase Storage is used to store documents uploaded by students and admin users

11.6. Server Specifications

- Database – MySQL
- Programming Language – PHP
- Web Server: 4CPU Cores | 8GB RAM | 500GB SSD storage | OS Debian Linux | Apache Server | Wildcard / SSL Certificate

12. System Updates Tracking

The following are some of the updates performed since the inception of the system:

12.1. Change Request Date: 01/05/2023

#	Change Request	Status
1	Digital Signature Re-engineering. To align with each bursary window and application	
2	Academic Support module for applicants	
3	Academic support - Tutor onboarding	
4	Application status check. To align with each bursary window and application	
5	Other bug fixes and security updates	

12.2. Change Request Date: 01/07/2022

#	Change Request	Status
1	Add alert to confirm submission of information	
2	Change submit button to read "Save Info"	
3	Add information title for a minimum number of required subjects	
4	Add alert to confirm submission of subjects	
5	Add Western Cape to the Province Drop-down	
6	Change nationality to Race / Ethnicity	
7	Fix the "How did you hear about us" title to, Information Channel	

12.3. Change Request Date: 29/06/2022

#	Change Request	Status
1	Email Validation during registration	
2	Form validation on all forms	
3	Characters to strengthen security on Password (Minimum of 6 characters, at-least 1 special character, Capital letter and 1 integer/number)	
4	Students must consent before logging-in or registering to fully comply with POPI.	
5	Remove other branding.	
6	Add breadcrumbs to the App	
7	Implement phone number login (add on).	
8	Uploading of documents will be re-engineered as follows:	
8.1	The user should select the document type option first, for other options to be visible	
8.2	The Camera / PDF icon will only appear after the document type (option) has been selected	
8.3	A loading indicator will appear while the document is been uploaded to the system's cache memory.	
8.4	The document will be previewed after it is loaded to the cache memory.	
8.5	The upload button will only appear after the document has been cached.	

12.4. Change Request Date: 15/06/2022

#	Change Request	Status
1	Allow candidates to edit Subjects in the App	
2	Allow candidates to delete Subjects in the App	
2.1	Warning notification before delete	
2.2	Confirmation notification after delete	

13. Challenges – 27/07/2023

The following are some of the challenges we experienced

- **Storage keeps on increasing.** A retention plan needs to be formulated to archive especially for declined applicant and non-responsive applicants.
- **Optimal system usage.** The system is not being used to its full potential. Many spreadsheets are still being used to duplicate the system's work.

Most challenges are often raised during reporting time which leads to risky urgent updates and frustration.

- **Extraction of documents.** The system is a central repository for documents, and it can be used to store documents instead of extracting them and storing them in other places.