



Digital Strategy

Business requirements specification for digital ecosystem

October 2023



1. Introduction:

SaveAct and partners are developing relevant support measures for 5 000 savings groups, comprising of 100 000 members in six provinces in South Africa. More than 90% are women residing in rural, underdeveloped regions. Support measures are designed to be accessible to a diverse range of vulnerable groups, including youth, the elderly and disabled. They are intended to be adaptive and scalable and should lend themselves to being reinforced by remote digital communication with members.

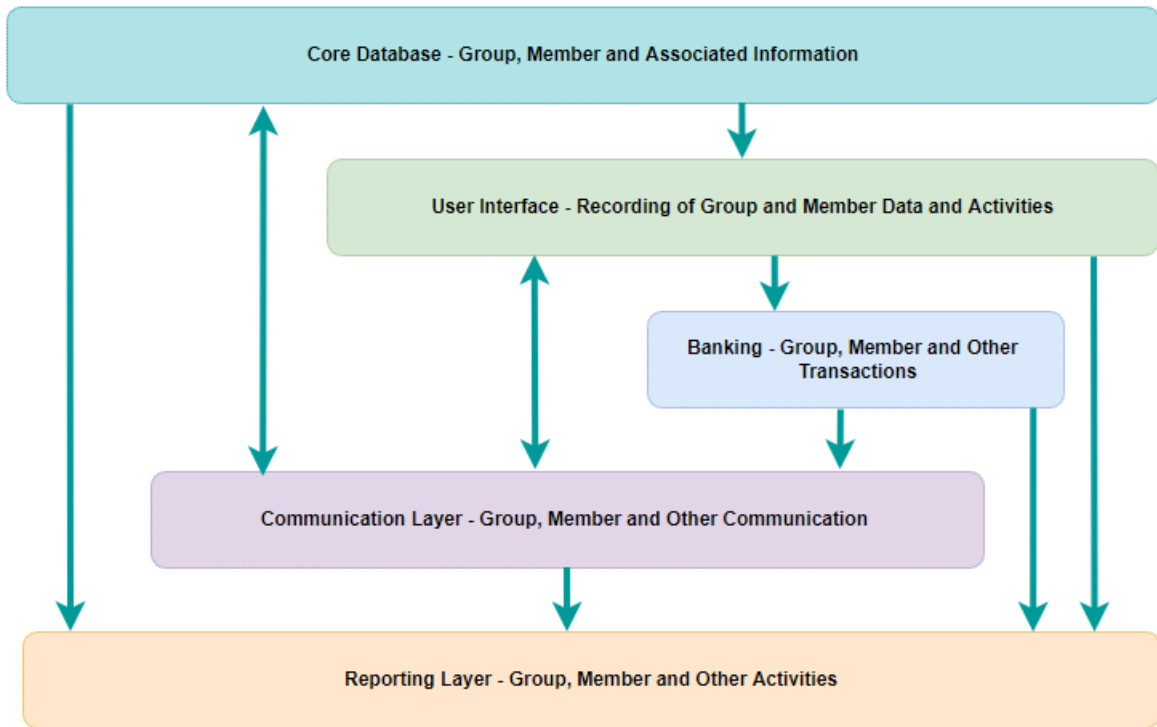
SaveAct's methodology brings robust and transparent systems that offer assurances and attractive returns to members of its savings groups. To improve functionality of the groups and to track their performance SaveAct uses various digital reporting tools to record and monitor the savings group transactions both at individual member level and at group level. SaveAct also aims to build a sense of a shared identity and mutual support amongst savings group members. Access to relevant information forms a part of this. SaveAct is building a digital communications strategy for which it needs assistance in its implementation.

The sustainability of SAVEact relies on the organisations ability to adapt to the changing digital landscape in the context of its largely rural members and groups. Building a digital ecosystem is paramount for SAVEact to support rural communities in achieving financial independence and livelihood development. This integrated digital framework should facilitate efficient operations, enabling the organization to reach and serve a broader audience in remote areas. It will empower individuals by providing access to digital financial services, foster savings, and improve financial literacy. Moreover, a digital ecosystem enhances transparency and accountability in program delivery, ensuring that resources are allocated effectively. It facilitates real-time data collection and analysis, offering valuable insights for program optimization and evidence-based decision-making. Through digital tools, the organization can deliver tailored training and resources, building the financial literacy and capacity of rural community members. This interconnected system not only expands the organization's reach but also creates a sustainable foundation for economic growth and self-reliance within these communities.

2. Scope:

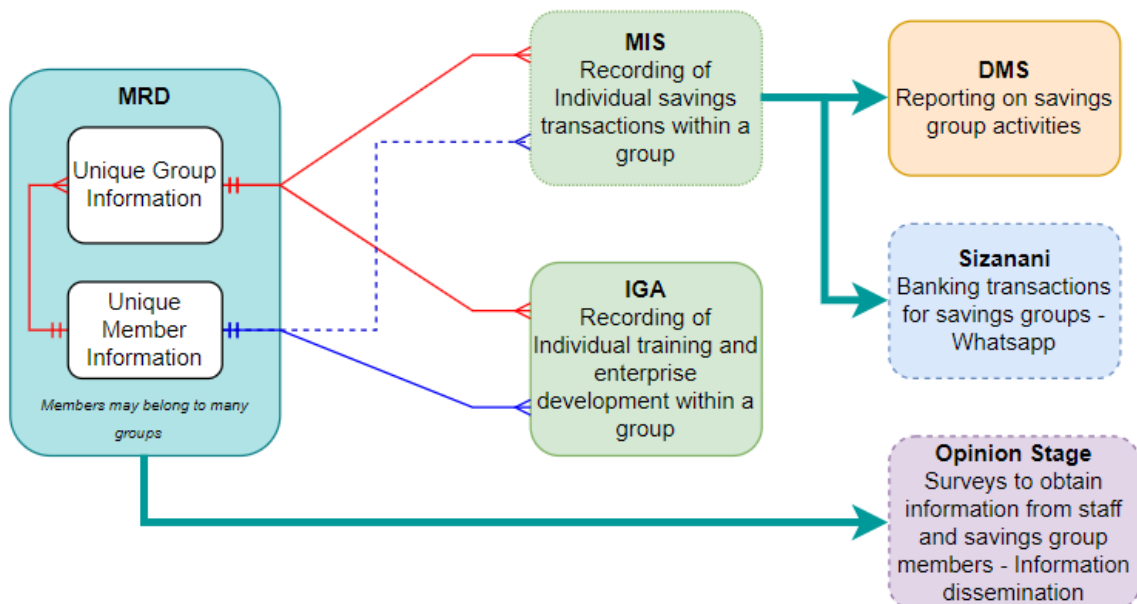
Saveact currently runs a number of disparate systems which should linked on common unique keys. Whilst this is the intention in practice this has not been implemented. The primary objective of this requirements specification is to ensure that any future system development or system integration takes cognisance of this requirement. The diagram below describes the primary structure of the digital platform.

Figure 1: SAVEact Digital Platform



SAVEact is an agile organisation, that is dependent on doner funding and in future intends to self-fund through the savings groups and members. This introduces a level of complexity that requires the organisation to be flexible in their ability to both manage operational information and subsequently comply with funder reporting requirements. Current systems are detailed in the diagram below:

Figure 2: SAVEact Information Systems



The scope of this project includes but may not be limited to:

- Development of the Core Database Layer
- Development of the Activities Recording Keeping Layer – User Interface
- Development of the Communication Layer

- Development of the Reporting Layer
- Integration with Banking / Payment providers

3. Objectives:

SAVEact has over time implemented numerous digital systems to support its operations. The objective of this specification is to lay the foundation for a digital ecosystem that will provide an integrated approach to information management. This will ensure that the following key objectives are met:

Efficient Data Management: Streamline the collection, storage, and retrieval of data. This ensures accuracy, reduces the risk of errors associated with manual record-keeping, and allows for easy access to information when needed.

Enhanced Transparency and Accountability: Provide real-time visibility into the activities of savings groups and livelihood programs. This transparency builds trust among participants, donors, and stakeholders, as they can track progress and monitor the utilization of funds.

Record-Keeping and Reporting: Enable comprehensive record-keeping, including financial transactions, meeting attendance, and progress towards savings goals. This data is critical in the support of the groups and their members as well as for generating reports, which are required for monitoring, evaluation, and reporting to funders.

Remote Access and Connectivity: Members and program administrators should be able access information from anywhere with an internet connection. They should also be in a position to make use of the digital tools off-line with accurate data synchronisation once connections have been established.

Automated Financial Transactions: Facilitate secure and automated financial transactions, including deposits, withdrawals, and transfers. This reduces the risk of fraud or mismanagement associated with cash-based systems.

Financial Inclusion and Access to Services: Integration with mobile banking or digital payment systems, providing savings groups with access to formal financial services.

Training and Capacity Building: Digital platforms can be used to provide training materials, resources, and interactive tools to build the financial literacy and capacity of savings group members.

Monitoring and Evaluation (M&E): Enable real-time monitoring and evaluation of program activities and outcomes. This facilitates timely adjustments and improvements based on data-driven insights.

Risk Management and Security: Incorporate security features to protect sensitive data and financial transactions. This reduces the risk of theft, fraud, or loss associated with handling physical cash.

Scalability and Replicability: The digital platform must be capable of scaling to accommodate a growing number of savings groups or similar livelihood programs. This will improve opportunities for replication of successful models in different regions or communities.

Data Analytics and Insights: By leveraging data analytics, the digital platform should be able to generate valuable insights into the performance and impact of savings groups and livelihood programs. This information will inform strategic decisions and program improvements.

Adaptability to Changing Needs: The Digital ecosystem should be flexible to allow for evolving program requirements, ensuring that they remain effective and relevant over time.

An overriding requirement of this requirements specification is that the digital ecosystem should be based on an open architecture. An open architecture is a software architecture that is designed to be transparent, flexible, and interoperable with other systems. It is an essential component of digital

ecosystems because it enables the development of integrated services that can span beyond organizational boundaries and deliver holistic and seamless experiences. Open architecture also promotes innovation by allowing developers to build on top of existing systems and create new services that benefit the entire ecosystem. It also enables more rational planning of IT investments, cost savings due to reusable and interoperable systems, and better architectures designed faster. By using an open architecture, SAVEact can create digital ecosystems that are more agile, scalable, and customer-centric.

4. User Profiles:

System administrator: The system administrator is an individual who is responsible for maintaining and operating multi-user computer systems. For SAVEact this individual will be responsible for:

- Ensuring all IT systems are functional for the times required by SAVEact
- Ensuring that all systems and associated data are backed up at a frequency required by SAVEact
- Ensuring that all authorised users have access to the systems.

Business Intelligence analyst: This individual will provide assistance to SAVEact in making data-driven decisions by analysing complex data sets. They will make use of software tools provided in the **Reporting Layer** to extract data, identify trends, and develop reports. The role is defined by the below activities:

- **Data analysis:** A Business Intelligence Analyst gathers, cleans, and analyses data like savings group financial transactions, group demographics or group engagement metrics.
- **Interpreting the data:** Finding patterns or seeing areas in the data that signal a potential for improvement in business practices is a key part of a Business Intelligence Analyst's job. For example, a Business Intelligence Analyst might analyse group savings trends to understand how SAVEact might need to adapt its support programs.
- **Sharing findings:** Sharing findings can include anything from visualizing data in graphs and charts to putting reports together for distribution to the organisation. The primary location for this data visualisation will be the **Reporting Layer**

Field Officers

Savings Group Administrators

Savings Group Members

Partners

5. Functional Requirements:

The functional requirements section of this specification outlines the specific capabilities and features that the system must possess to meet the needs of its users and stakeholders. These requirements serve as the foundation upon which the system's design, development, and testing will be based. They define the core functionalities, interactions, and constraints that are essential for the system to operate effectively and deliver its intended value. This section will detail the key operations, data processing, user interfaces, and system behaviour, providing a comprehensive roadmap for the development team to follow. This section aims to provide a clear and precise overview of what the system is expected to do, ensuring that all stakeholders have a shared understanding of the system's functional scope.

5.1. Technology:

Server Architecture

All applications relating to his specification should be hosted on a ¹Microsoft Azure server. The preferred server operating system is Microsoft Server 2019. The use of any other operating system should be motivated and agreed to by SAVEact.

Data

Cloud hosted database: The database technology should be either open source or ²Microsoft. The chosen technology should take into consideration the requirement for extensibility as well as scaling.

Data management interface (DMI) / User Interface (UI)

Web: the DMI for the management and maintenance of the core data should be based on an open application development architecture

Mobile: the DMI for the capture and maintenance of core data in the field should be based on an open application development architecture and must run on the Android operating system.

5.2. Core Database

Core Database - Group, Member and Associated Information

The core database forms the foundation for all SAVEact systems. It is envisaged that the existing data and all data derived from current operations will be stored in this database. There may however be requirements in future to host data in separate databases which may or may not be hosted on the same server infrastructure.

The core database is to be structured in such a way as to ensure that not only are the foundation data requirements considered, but that all current operational data is included in the structure.

Data Structure

The following critical data requirements must be considered in the design of the Core Database:

Members

Each member served by Saveact must be uniquely identified. This identifier must be a natural string that is easily recalled by the member. An obvious option is for the use of an Identity number. This should be suitable for a large majority of members. There are however members that will not have a documented identity number. For these members an alternative approach needs to be considered. This could include the use of a passport number or a system generated identifier that combines identifiable characteristics for each individual. This might include birth date, components of names and random numbers. Care needs to be taken to ensure that the chosen methodology does not infringe on any privacy regulations. The individual should be able to recall the identifier to ensure that same individual is not duplicated on the database with a different identification number.

Groups

Each group served by Saveact must be uniquely identified. This identifier must be a natural string that is easily recalled by the members. The identifier must be a system generated string that combines identifiable characteristics for each group. This might include location, formation date and random numbers. Care needs to be taken to ensure that the chosen methodology does not infringe on any

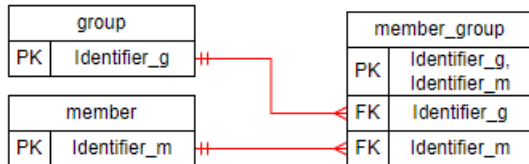
¹ SAVEact are a registered as a non-profit organisation and have registered for a and have been granted significant discounts on Microsoft products

² See 1 above

privacy regulations. The individuals should be able to recall the identifier to ensure that same group is not duplicated on the database with a different identification number.

An example of the data structure for groups and members is provided in the figure below:

Figure 3: Group - Member Entity Relationship Diagram



Other data

Apart from lookup data no change to the data structure should be considered unless it includes either the group identifier or member identifier as a foreign key. It is anticipated that SAVEact will transact with external databases, banking for example. In cases such as these it is critical that agreement is reached with the provider that a common unique identifier be included in any transactional data. **At no point should consideration be given to manual data linkage manipulation.**

5.3. Application Layer – User Interface

Application layer - Recording of Group and Member Data and Associated Activities

SAVEact currently host and run a number of data driven applications that have little or no integration. The intention is to combine all existing applications into a single application layer that will provide an interface which will allow for the management of all data stored in the **Core Database**.

5.3.1. Application layer foundation

Whilst it is accepted that not all future applications will run on the same platform, the initial intention is to provide for as many of the required user interfaces through a platform that provides advanced form builder functionality and includes workflow automation. This application layer comprises two primary components:

5.3.1.1. Web application

System users need to view, manage and manipulate data that is housed in the Core Database. This will be done through a web-based interface with user authentication and varying privileges for different users. This will allow for different role-based access points. While the database will encompass the entire SaveAct data network, some functions may only refer to subgroups. The application should reside on the same infrastructure as the Core Database and as such should be built for execution on a Microsoft windows platform. This application should provide the following functionality:

- User access management
- User role and data separation configuration.

- Definition of views on the Core Database and other data sources
- Viewing, verification and editing of data stored in the Core Database.
- Spatial (Map) views for spatially enabled data. This should include the ability to represent spatial themes.
- Data extraction / download of data for external analysis
- Upload and retrieval of supporting documentation at various levels in the data hierarchy
- Deployment of data capture applications
- Deployment of fixed format reports (RDLC)
- Embedding and viewing of data summaries / dashboards developed in business intelligence software.

5.3.1.2. Mobile application requirements

Almost all information that is managed by SAVEact is acquired or disseminated in the field. The information relating to savings groups and members and their associated activities is obtained through support and training provided as well as other activities. It is a key finding of the Digital Strategy that all data managed by SAVEact be digitised at source. This requires a robust mobile data collection and management platform. Due to the nature and location of the SAVEact groups and members, any work that is done in the field using SAVEact systems requires the systems to function without an internet connection. The systems must allow for the synchronisation of required data prior to departure for field operations. The functionality for gathering and management of data in the field must be available in situations where the mobile device does not have an active internet connection. The synchronisation of data gathered in the field with the core database once the field work is complete and the internet connection to mobile device is restored must be. A clear methodology for the management of **unique identifiers** for both Groups and Individuals needs to be implemented to ensure that the risk for the creation of duplicate entries is minimised. This mobile application platform should provide the following functionality:

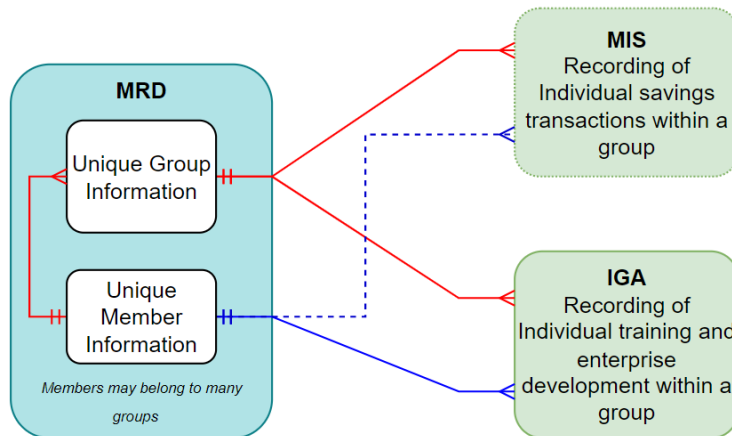
- Development and deployment of mobile applications using XML form builder methods
- All data transactions must be executed with the Core Database as data source and repository
- Applications must be capable of complex data collection including branching, data validation and input rules
- Applications must be capable of Bi-directional data synchronisation to enable longitudinal surveys. This includes the population of predefined lists as well as attribute data to allow for prompting or data confirmation / update
- Applications must function off-line
- Data synchronisation must include error checking with automated rectification

The platform must be capable of developing applications that provide for the following data types:

Text	Date	Image
String	Time	Signature
Decimal	Select one from a list	Audio
Integer	Select multiple from a list	Video
Location		Barcode

5.3.2. Existing Applications

It is a requirement of this specification that the following operational systems be integrated into the application layer to set SAVEact on trajectory that will achieve the primary objective of an integrated digital ecosystem. The diagram below describes the systems currently in use and how they are **to be** integrated. It is important to note that the diagram indicates the keys that are critical to linking the applications. These linkages in all cases have not been enforced in the existing data structure. To ensure that the future systems are integrated the existing data will need to be harmonised.



5.3.2.1. Membership Registration Database (MRD)

Status: Operational

The Membership Registration Database (MRD) is an application that is currently operational and provides an interface which allows the SAVEact team to interact with the central database. As described in detail above this database stores details of all persons and their associated groups served by SaveAct, no matter which SaveAct programme they belong to or which app they use. It has the critical function of **uniquely** identifying all groups and associated members. This application must provide the following functions:

- Member registration and management.
- Group creation and management.

Mobile application

A mobile application is required for in-field capture of new group and member information as well as for the updating of group and member information

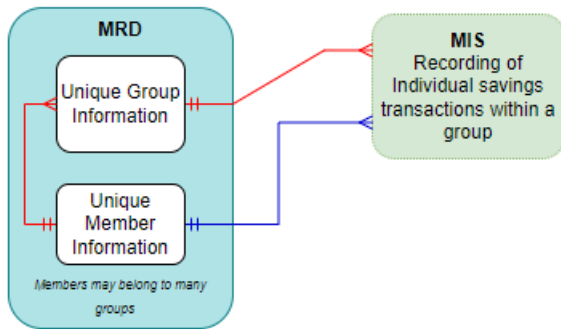
Web application

An interface is required to allow for validating, viewing and editing group and member information

5.3.2.2. Management Information System (MIS)

Status: Operational

The MIS digitizes group meetings and groups' financial/transactional records and is loosely integrated into the reporting infrastructure. The current MIS does not provide member-level granularity of financial records only at group-level. This shortcoming has become a critical SAVEact requirement and the intention is to change the way the data is captured in-field as well as the way the information is managed in the digital ecosystem. The system structure diagram below clearly indicates the linkage to the data captured in the MRD and stored in the Core Database. This linkage is critical and must be maintained through any data management functions.



This application must provide the following functions:

- Savings group information management
- Savings group meeting information management including any training provided
- Savings group member information management
- Savings group member transaction management. This includes the recording of all data relating to the transactions for each member.

Mobile application

A mobile application is required for in-field recording of savings group information and its associated activities. This includes the transaction concluded as well training provided.

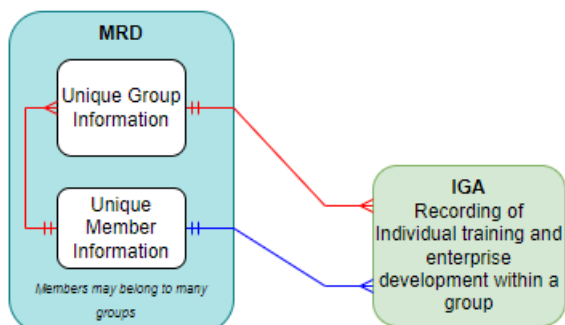
Web application

An interface is required to allow for validating, viewing and editing of savings group and activity information

5.3.2.3. Income Generating Activity (IGA)

Status: Operational

The Income Generation App was developed in house by Save Act for WAYSE project reporting. It provides a platform for income generation tracking and is used in the planning for and support of members, learning. The IGA is run at the commencement of the participant joining the project, as a follow up and as an endline for participants involved in enterprise development. The functional requirements for this system have changed and given the requirements to integrate all SAVEact data, the intention is to redevelop the IGA to cater for information management related to the revised program. It should be noted that the revised system architecture is intended to allow for flexibility in future requirements. This is not limited to only the IGA but to any of SaveAct’s future programs. The system structure diagram below clearly indicates the linkage to the data captured in the MRD and stored in the Core Database. This linkage is critical and must be maintained through any data management functions.



The application must provide for the following functions:

- Food security information management
- Awakening enterprise (FE Module) information management
- Income generating activities information management

Mobile application

A mobile application is required for in-field recording of information relating to this program,

Web application

An interface is required to allow for validating, viewing and editing of information captured in-field

5.4. Communication Layer – Group, member and Other Communications

Communication Layer - Group, Member and Other Communication

Given how the SAVEact programme is evolving in scale and funding and the accelerated necessity for a reduced reliance on personal engagements as well as an improvement in how SAVEact communicates with its members, an integrated communication platform is required. This platform should be capable of managing large scale communication across regions and languages, and should include opportunities for running basic feedback questionnaires.

Opportunities exist for the establishment of communication protocols which relate to sending and receiving of communications based on the stage a group has reached, i.e. information that is relevant to members at that point in their development, and for farmers, according to their regional climate and season, etc. In addition to this, given the nature and scale of the information that is managed in the Core Database, tailored communications to all or selected groups of members should be possible.

It is a requirement of this specification that consideration be given to the most appropriate platform for achieving the above. The recommendation should also provide a road map for roll-out taking cost and application into consideration. Some use case examples are provided below:

All savings groups

- All groups should have a 'point person' for primary communication
- The point person/peer trainer will engage in remote communication content and share information with others. This person is to be nominated as part of the management committee.
- Each group should be represented or participate in the clustered learning communication groups
- All supervised groups should be requested to be ready to participate in a short monitoring survey (using the most appropriate tool) upon selection so as to verify some key indicators
- All groups to be ready and commit to participate in sending their summary transaction records via the communication platform for spot check verification upon selection.
- Ongoing communication, region by region and language by language is to be used to establish the terms of engagement with SaveAct CBPs, promote learning and share any opportunities relevant to them.

Mobile application

A mobile application is required for in-field receiving and replying to communication

Web application

An interface is required for setting up communication workflow as well as for processing, validating, editing and viewing communication data.

5.5. Reporting Layer – Group, member and Other Activities

Reporting Layer - Group, Member and Other Activities

The reporting layer plays a crucial role in an information management system by acting as the interface through which users interact with and extract insights from the underlying data. It integrates seamlessly into the system's architecture, sitting atop the data storage (Core Database) and processing layers (Application Layer). This layer is responsible for generating a variety of reports, dashboards, and visualizations that transform raw data into meaningful, actionable information for decision-making. Business Intelligence (BI) tools are instrumental in supporting this reporting layer. These tools, such as Tableau, Power BI, or Looker Studio, provide powerful functionalities for data visualization, ad-hoc querying, and report creation. They enable users to explore and analyse data, create visually compelling reports, and share insights with stakeholders. Additionally, BI tools often offer features like data connectors, ETL (Extract, Transform, Load) capabilities, and advanced analytics, enhancing the reporting layer's capabilities and providing a comprehensive solution for extracting value from the underlying data. Standard reports, on the other hand, serve as predefined templates that present specific sets of information on a regular basis. They play a crucial role in providing routine, structured reports to stakeholders, ensuring that critical information is consistently communicated. By leveraging BI tools and traditional reporting methodologies in conjunction with a robust reporting layer, SAVEact can drive informed decision-making, gain deeper insights, and ultimately improve overall business performance.

Existing reporting mechanisms are primarily manual in nature and rely on manually extracting raw data from existing data capture processes and converting these into aggregated reports and dashboards - Data Management System (DMS). The requirement of this specification is that suitable BI and static reporting tools are identified and integrated into the digital ecosystem. These tools should allow for rapid development and deployment of reports and dashboards based on current and future requirements. The reporting layer initially need to cater for the existing operational reports used by SAVEact:

- Group finances and member savings (DMS)
- Funder program performance (IGA)
- Support for auditing and financial transparency
- Other?

Mobile application

A mobile application is required for the receiving and viewing of reports

Web application

An interface is required for setting up of standard reports and BI reports and dashboards. The presentation of these reporting outputs must include Internal publication, external publication (public), with the ability to export the reports in various formats.

5.6. Banking Layer – Group, Member and Other Activities

Banking - Group, Member and Other Transactions

Notwithstanding the recommendations of the diagnostic assessment, SAVEact urgently require a solution for the conversion of Savings Group from cash-based transactions to electronic banking. A number of attempts have been made at implementing solutions, but currently none have been successful. Whilst this specification is not able to make any recommendations in this regard, it is a requirement that options for banking the savings group members must be investigated in conjunction with the SAVEact team. There are currently two options that will require initial investigation:

Sizanani – This application was developed as a pilot with a third-party provider who has subsequently ended support for the pilot, but has agreed to make the source code available to SAVEact. This application and its source code will need to be reviewed with a view to determining if any or all of the development might be suitable for enhancement and continued roll-out.

Wizzit – The Wizzit SDK has been integrated into an app facilitating enhanced transactional accessibility for rural woman in Egypt. The Tap on Phone technology enables a cashless, safe, and secure way to save, transact and deposit money. This project provides an opportunity to evaluate a solution in deploying Tap on Phone technologies in rural areas that appears to have achieved success and more importantly acceptance from the end users.

5.7. Security and Access Control:

- User authentication and authorization.
- Data encryption and protection.

5.8. Integration:

- Ability to integrate with payment gateways for transactions.
- API integration with other financial tools or systems if necessary.

5.9. Multilingual Support:

- Support for multiple languages for the diverse regions SaveAct operates in.

5.10. Data Backup and Recovery:

- Regular data backups and a plan for disaster recovery.

6. Non-Functional Requirements:

- Performance:

- Define acceptable response times for various functions.
- Scalability:
 - The platform should be able to handle growth in the number of users and groups.
- Security:
 - Compliance with data protection and privacy regulations.
- Usability:
 - Intuitive user interface and user experience.
- Reliability:
 - Minimal downtime and system failures.
- Accessibility:
 - Ensure the platform is accessible to users with disabilities.
- Compliance:
 - Ensure the platform complies with relevant financial regulations.

7. Constraints:

- Budget and timeline limitations.
- Technology stack and platform choices.

8. Risks and Mitigation:

- Identify potential risks (e.g., data breaches, technical issues).
- Outline strategies to mitigate these risks.

9. Testing and Quality Assurance:

- Define the testing procedures and quality standards.
- Specify the testing environments and methodologies.

10. Project Timeline:

- Create a timeline for development, testing, and deployment.

11. Cost Estimation:

- Provide an estimate of the project's budget, including development and maintenance costs.

12. Approval and Sign-Off:

- Specify who needs to review and approve the BRS.