



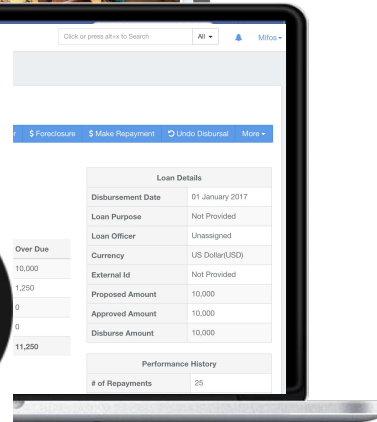
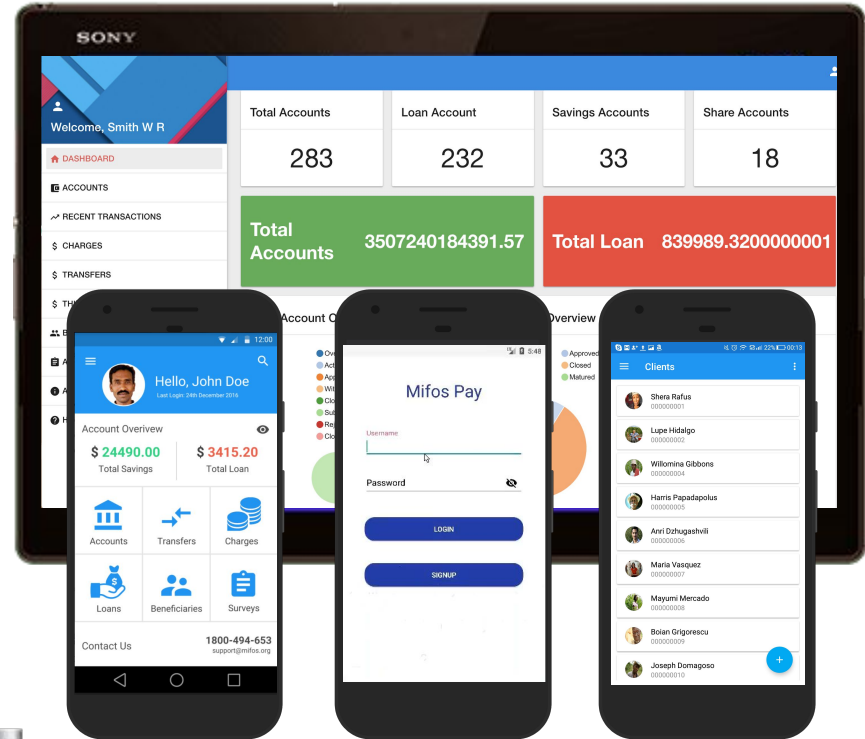
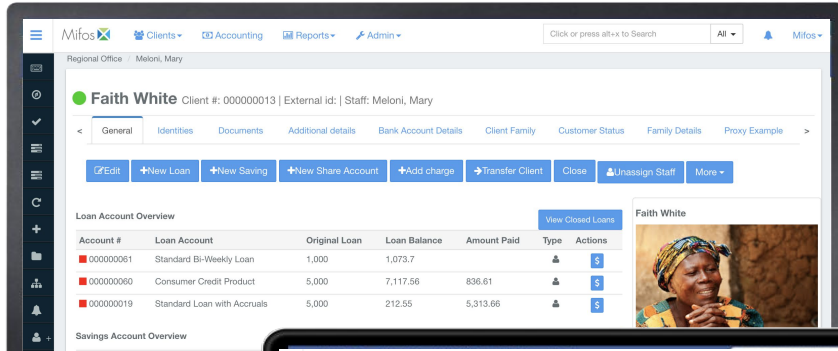
Mifos Technology Stack Overview

January 2019

Overview of Mifos X Architecture

Platform

Online Banking App



DFS Application Framework

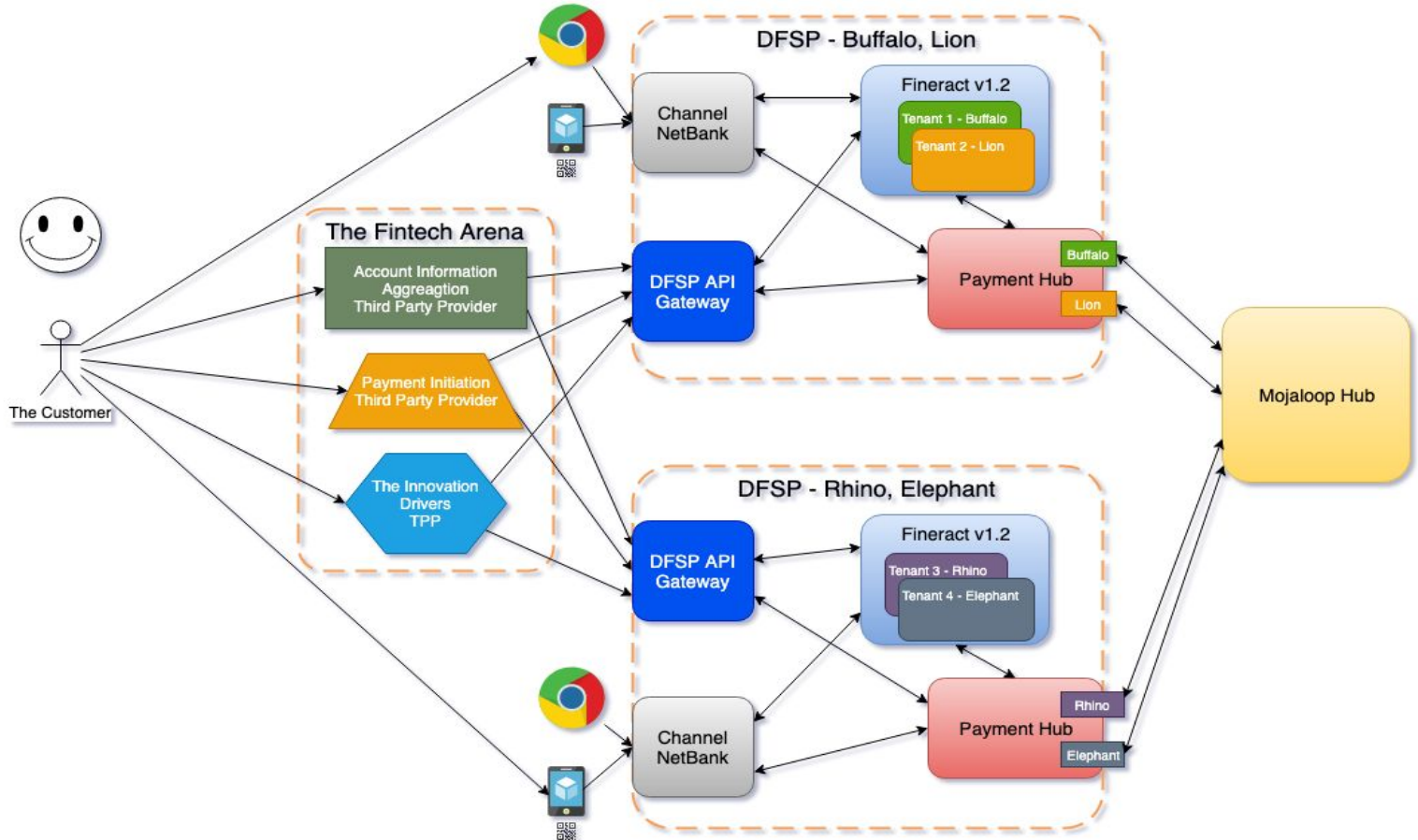
Web App

Mobile Banking

Mobile Wallet

Mobile Field Ops

Openbanking API - DFSP API Gateway



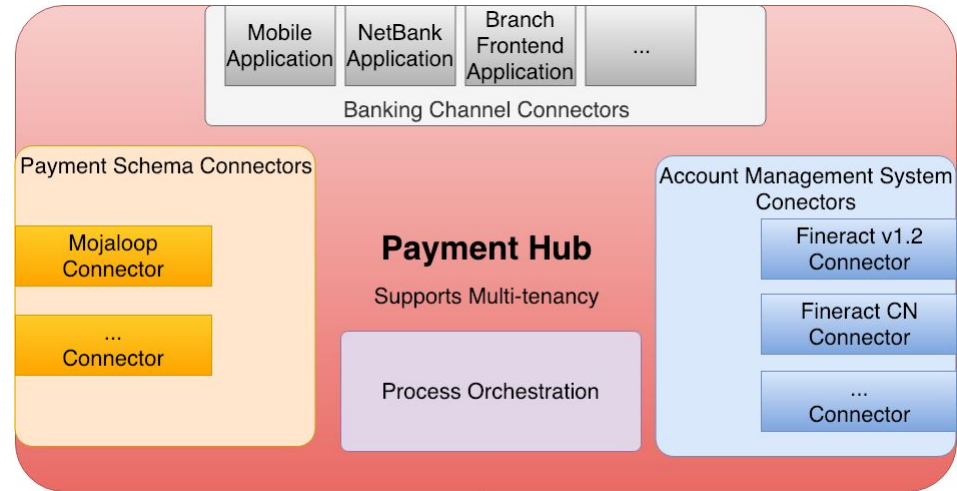
Payment Hub at DFSP

The role of a payment hub to connect:

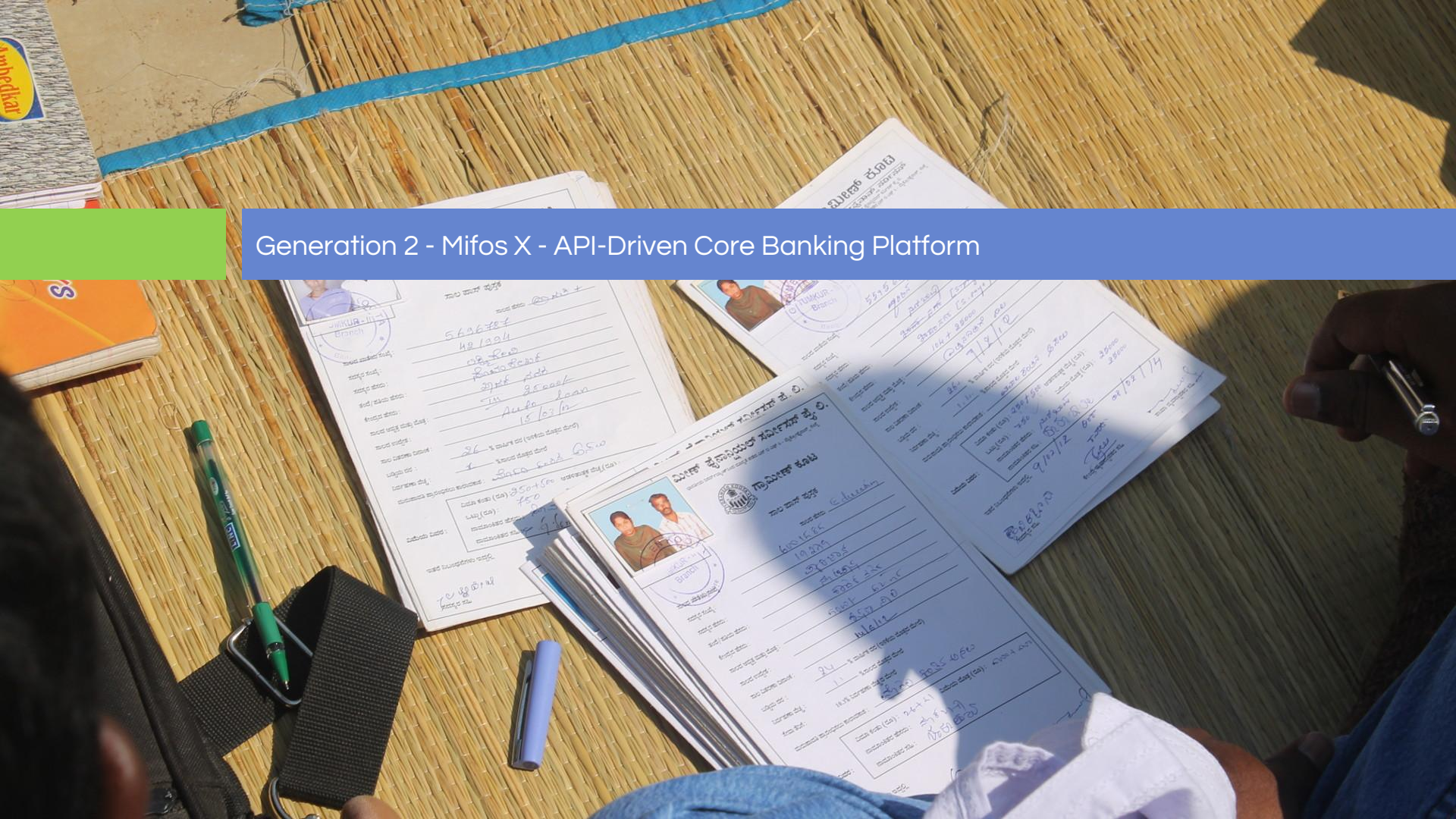
- Financial Institution channels (Mobile, Internet, Branch, Callcenter)
- Account Management System (AMS / Core banking platform)
- Payment Schemas, such as Mojaloop

Additional capabilities:

- Supports operation teams with investigation
- Could interface with Fraud monitoring system
- Automate reconciliation
- Manages the identifier – account assignment
- Trigger notifications



Generation 2 - Mifos X - API-Driven Core Banking Platform



- Core Banking Platform
 - ◆ **Flexible portfolio management** - support for all financial inclusion products & services
 - ◆ **Complete business management** - robust business intelligence, accounting & internal control
 - ◆ **360-degree client management** - know your customer, manage risk, and measure social performance.
 - ◆ **Mobile-ready** - seamlessly integrate with mobile money and empower clients with mobile apps.
 - ◆ **Accessible lightweight apps** - web apps for the office & Android apps for the field to keep your staff connected.

Financial Products

- Multiple Lending Methodologies
- Multiple Savings Methodologies
- Coop Shares & Members
- Current/Checking Accounts

Client Management

- Customer Approval Process
- Identity Management
- Unlimited Accounts

Institutional Management

- Office / Branch / Staff Hierarchy
- Cash Management
- Multi Language & Currency

Business Management

- Social Performance Management
- Accounting
- Reporting
- Workflows, User Roles & Permissions

Mobile Delivery

- Field operations with Tablet
- Consumer Android app
- Online / Offline
- SMS Integration

Readymade for the Cloud

- RESTful API
- Multi-Tenancy
 - ◆ Per Tenant Store

Mifos X Web App

Mifos X Clients Accounting Reports Admin

Click or press alt+x to Search All Mifos

Regional Office / Meloni, Mary

Faith White

Client #: 000000013 | External id: | Staff: Meloni, Mary

General Identities Documents Additional details Bank Account Details Client Family Customer Status Family Details Proxy Example

Edit +New Loan +New Saving +New Share Account +Add charge →Transfer Client Close Unassign Staff More

Loan Account Overview

View Closed Loans

Account #	Loan Account	Original Loan	Loan Balance	Amount Paid	Type	Actions
000000061	Standard Bi-Weekly Loan	1,000	1,073.7			\$
000000060	Consumer Credit Product	5,000	7,117.56	836.61		\$
000000019	Standard Loan with Accruals	5,000	212.55	5,313.66		\$

Savings Account Overview

View Closed Savings


Account #	Saving Account	Last Active	Balance	Actions
000000036	Sample Passbook Savings			

Shares Account Overview

View Closed Shares

Account #	Share Account#	Approved Shares	Pending for Approval Shares	Actions
000000001	Member's Equity Share	10	5	

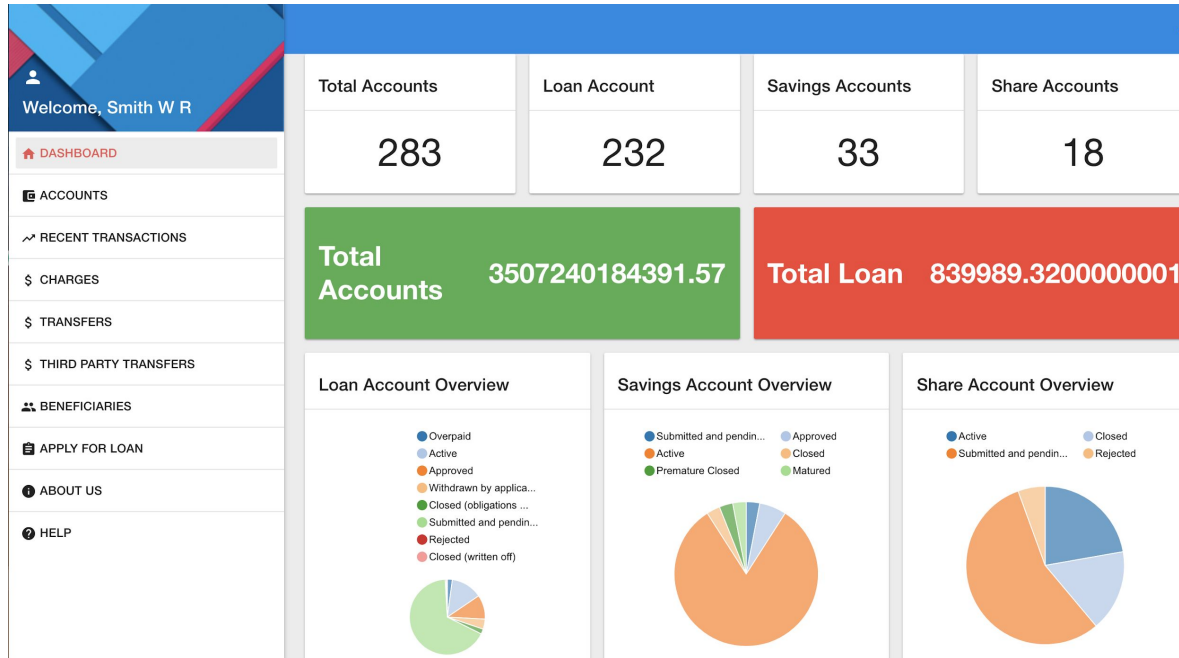
Faith White



View Client Signature

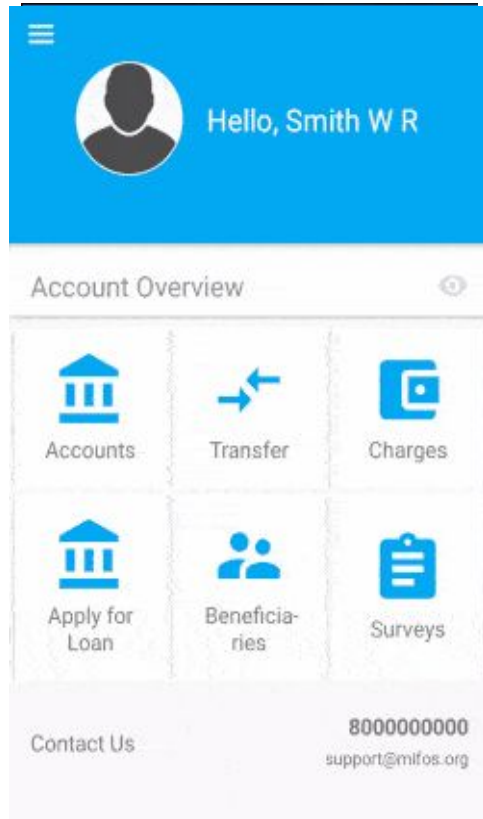
Activation date 01 August 2014
Member Of
label.input.isstaff
Mobile number 15353534324
Gender Female
Client Type Individual
Client Classification Women Business

Online Banking App



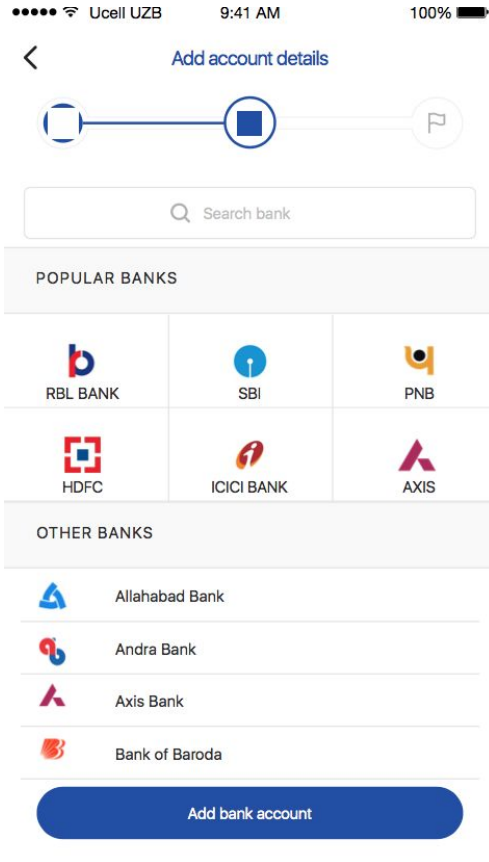
- AngularJS Web App
- Powered by Self-Service APIs
- Same functionality of Mobile Banking App but through Form factor of browser for online banking

Mobile Banking App - Mifos Mobile



- Native Android application with Material Design
- Powered by Self-Service APIs
- Can be branded for any Financial Institution
- Clients download and self-register for the app
 - Authenticate via passcode
- Personal Financial Management
 - View Summary and Details of All Accounts
 - View Account Statements
- Branchless Banking
 - Apply for New Loans
 - Payments & Transfers
 - Account to Account Transfers
 - 3rd Party Transfers
 - Add new beneficiaries via QR Codes
- Mobile Money Ready
- Notifications
 - Event & Campaign-based

Mobile Wallet Framework



- Modular framework for building mobile wallets
- Android Clean Architecture
- Based on Level One Project Mobile Wallet Requirements
 - Core functionalities for merchant and consumer use cases
- 2 Proof of Concept Applications
 - Mifos Pay
 - PixiePay

The Mifos X platform contains all the functionality needed for deploying a complete financial inclusion solution and can be configured for:

- Any combination of financial services
- For any market or demographic
- For any organizational type

Change language: English ▾



USERNAME

PASSWORD

Sign In

RESOURCES

[User Manual](#)
[Functional Specifications](#)
[Developer Zone](#)

COMMUNITY

[User Group](#)
[Developer Group](#)
[IRC](#)


CONTRIBUTE

[Key design principles](#)
[Working with code](#)
[Donate](#)

- We deliver the flexibility needed to provide the right mix of products and services that are in demand in your markets.
 - ◆ Centralized Product Configuration Engine
 - ◆ Ease of Integration with Mobile Money Systems
 - ◆ Deliver new products via self-service channels.

- We deliver the reporting, financial accounting, audit, and work rules needed to meet and exceed the requirements of investors, regulators, and stakeholders
 - ◆ Comprehensive Standard Reports
 - ◆ In-depth audit trails
 - ◆ Automated portfolio accounting

- Our modern API-driven architecture allows you to easily make the transition to digital financial services by seamlessly integrating with payment platforms, mobile devices and emerging technologies.

A screenshot of the MifosX web application interface. At the top, there is a navigation bar with the Mifos logo, a search box containing the text "Click or press alt+x to Search", and a dropdown menu set to "All". Below the navigation bar is a dark sidebar with various icons for navigation. The main content area features a "Welcome, mifos" message, a search bar with the placeholder "Search activities", and a section titled "You can navigate your way through MifosX using:" with three instructions: "←the shortcuts to the left", "↑the menu at the top", and "↑the search tool at the top-right". The Mifos logo is displayed prominently in the center. At the bottom of the page, the release information is shown: "Release Version: 17.07.01.RELEASE | Mifos X Release Date: 14/Jul/2017".

The modern Mifos X Technology stack allows you to scale and grow while still focusing on your social mission. The solution is cloud-based and mobile ready and evolves and scales with you. You can:

- Start simple with minimum needed functionality
- Grow the solution by adding apps
- Evolve into a complete solution for financial inclusion

Use Mifos X in the Cloud



Deploy on your own
with an image on:



Microsoft
Azure



Find a certified
Mifos Reseller



"The IBM Power Linux deployment architecture helps Mifos X to provide best-in-class solutions to microfinance institutions and help the customers have peace of mind on their growth prospects in the future."

Extensively performance-tested to support **5,000,000** active accounts and **3,000** concurrent users.

- Group Lending
 - ◆ Grameen-style Group Loans
 - ◆ Joint liability group loans
 - ◆ Group Loans with Individual Monitoring (Q2 2016)
- Individual Lending
- Secured Loans
- Guarantor-based lending
- Variable Installment Loans
- Secured Loans
- SME Loans

Active Loans by Disbursal Period

Office	<input type="text" value="...This Office"/>
Fund	<input type="text" value="Agricultural investment"/>
Loan Purpose	<input type="text" value="Agriculture"/>
Currency	<input type="text" value="Australian Dollar"/>
Loan Officer	<input type="text" value="All"/>
Product	<input type="text" value="--Select One--"/>
Start date	<input type="text" value="2017-08-17"/>
End date	<input type="text" value="2018-01-17"/>
Decimal places	<input type="text" value="Zero decimal places"/>

Run Report

- Passbook Savings
- Voluntary Savings/Mandatory Savings
- Current Accounts
- Overdraft Accounts
- Fixed Deposit Accounts
- Recurring Deposit Accounts
- Shares & Dividends

- Overdraft Accounts
 - ◆ Interest on Overdraft
- Standing Instructions
 - ◆ Automatic Loan Repayments
 - ◆ Transfers Between Savings
 - ◆ Transfers from Member to Member

Mifos Clients - Accounting Reports - Admin -

Create Standing Instruction

Name*

Applicant

Type*

Priority*

Status*

From Account Type*

From Account*

Destination*

To Office*

Beneficiary*

To Account Type*

To Account*

Standing Instruction Type

Amount

Validity from* To

Recurrence type*

Interval

Recurrence Frequency

On Month Day

Accounting functionality to run a small financial institution out of the box and/or seamlessly integrate with other 3rd party accounting packages for more sophisticated regional accounting needs.

→ Core Accounting Functionality

- ◆ Fully configurable chart of accounts for entire general ledger
- ◆ Migration of opening balances
- ◆ Accounting closure periods and end of period processing
- ◆ Support for cash and accrual-based (upfront & point-in-time) accounting.
- ◆ Manual transactions across entire general
 - Single and Compound journal entries
 - Frequent posting rules

→ Automated Portfolio Integration

- ◆ Automated posting from portfolio accounts to corresponding GL accounts
- ◆ Graphical user interface for configuring financial mappings
- ◆ Advanced accounting rules for mapping transactions by payment type,

→ Reporting & Transparency

- ◆ Standard financial reports
- ◆ Comprehensive searchable audit trail
- ◆ Adjustable accounting entries.

Accounting Chart of Accounts


Chart of Accounts

Expand All / Collapse All

- Accounting
 - ASSET
 - (9999) Suspense Account
 - (20800) Reserves for Possible Losses
 - (20700) Advance Payments
 - (20600) Interest Receivable
 - (20500) Lending Portfolio
 - (20400) Bank Accounts
 - (20300) Cash
 - (20200) Investments
 - (20900) Accrued Income
 - (20650) Penalties Receivable
 - (20610) Fees Receivable
 - (20950) Transfers in Suspense
 - (20100) Fixed Assets
 - LIABILITY
 - (10500) External Credits and Borrowings
 - (10600) Accrued Expenses and Provisions
 - (10700) Other Liabilities
 - (10200) Overpayment Liability
 - (10100) Deposit Accounts Portfolio
 - (10300) Interest Payable
 - (10400) Pass-Through Collections
 - (220004-Temp) Liability Transfer (Temp)
 - EQUITY
 - INCOME
 - EXPENSE

- KYC
 - ◆ Upload ID documents unique identifiers
 - ◆ Upload client signatures & photos
 - ◆ Upload and store documents
- Data Tables
 - ◆ Extensible module to collect any type of additional fields or data
- Surveys Framework
 - ◆ Full support for progress out of poverty index
 - ◆ Collect via web or mobile interface

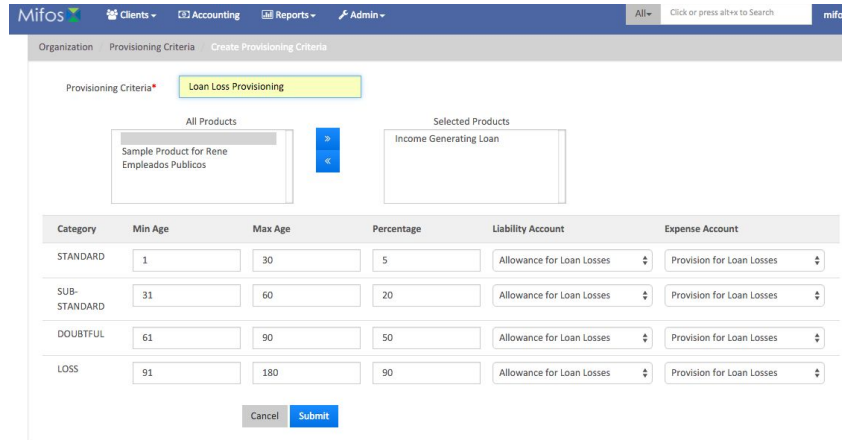
Faith White



[View Client Signature](#)

Activation date	01 August 2014
Member Of	Unassigned
Mobile number	15353534324
Gender	Female
Client Type	Individual
Client Classification	Women Business
Performance History	
# of Loan Cycle	0
Last loan amount	5,000
# of active loans	1
Total savings	753.17
# of active savings	1

- Loan Loss Provisioning
 - ◆ Automatic provisioning of underperforming loans into 4 different configurable categories
- Loan Rescheduling
 - ◆ Four different ways to adjust or reschedule a loan for clients unable to repay.
- Portfolio Aging
 - ◆ Reports with PAR Analysis
 - ◆ Performance history & summary
- Audit Trail
 - ◆ Fully indexed and searchable to monitor all actions.
- Product Mix
 - ◆ Limit the number and types of products that can be held concurrently to reduce over-indebtedness and risk.



The screenshot shows the Mifos Provisioning Criteria configuration interface. The page title is "Create Provisioning Criteria". The "Provisioning Criteria" dropdown is set to "Loan Loss Provisioning".

There are two product selection boxes:

- All Products:** Contains "Sample Product for Rene Empleados Publicos".
- Selected Products:** Contains "Income Generating Loan".

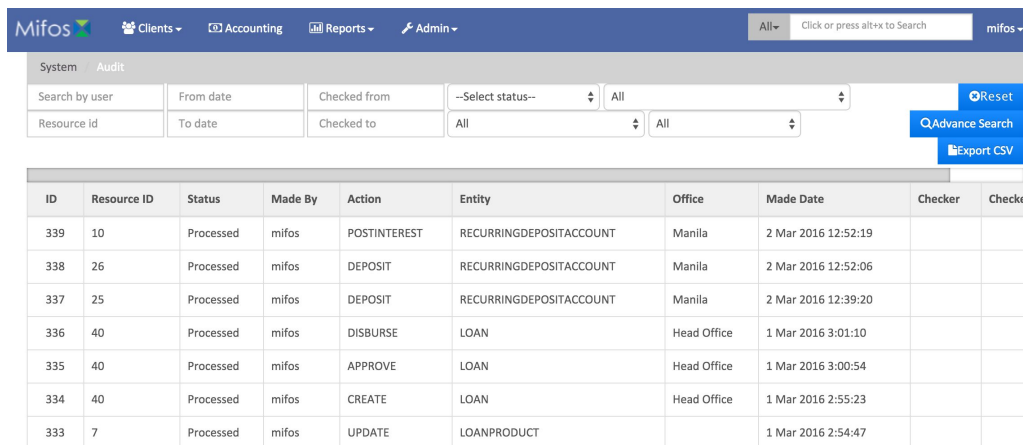
Navigation arrows (right and left) are between the boxes.

Category	Min Age	Max Age	Percentage	Liability Account	Expense Account
STANDARD	<input type="text" value="1"/>	<input type="text" value="30"/>	<input type="text" value="5"/>	<input type="text" value="Allowance for Loan Losses"/>	<input type="text" value="Provision for Loan Losses"/>
SUB-STANDARD	<input type="text" value="31"/>	<input type="text" value="60"/>	<input type="text" value="20"/>	<input type="text" value="Allowance for Loan Losses"/>	<input type="text" value="Provision for Loan Losses"/>
DOUBTFUL	<input type="text" value="61"/>	<input type="text" value="90"/>	<input type="text" value="50"/>	<input type="text" value="Allowance for Loan Losses"/>	<input type="text" value="Provision for Loan Losses"/>
LOSS	<input type="text" value="91"/>	<input type="text" value="180"/>	<input type="text" value="90"/>	<input type="text" value="Allowance for Loan Losses"/>	<input type="text" value="Provision for Loan Losses"/>

Buttons: Cancel, Submit

AAA Protocol

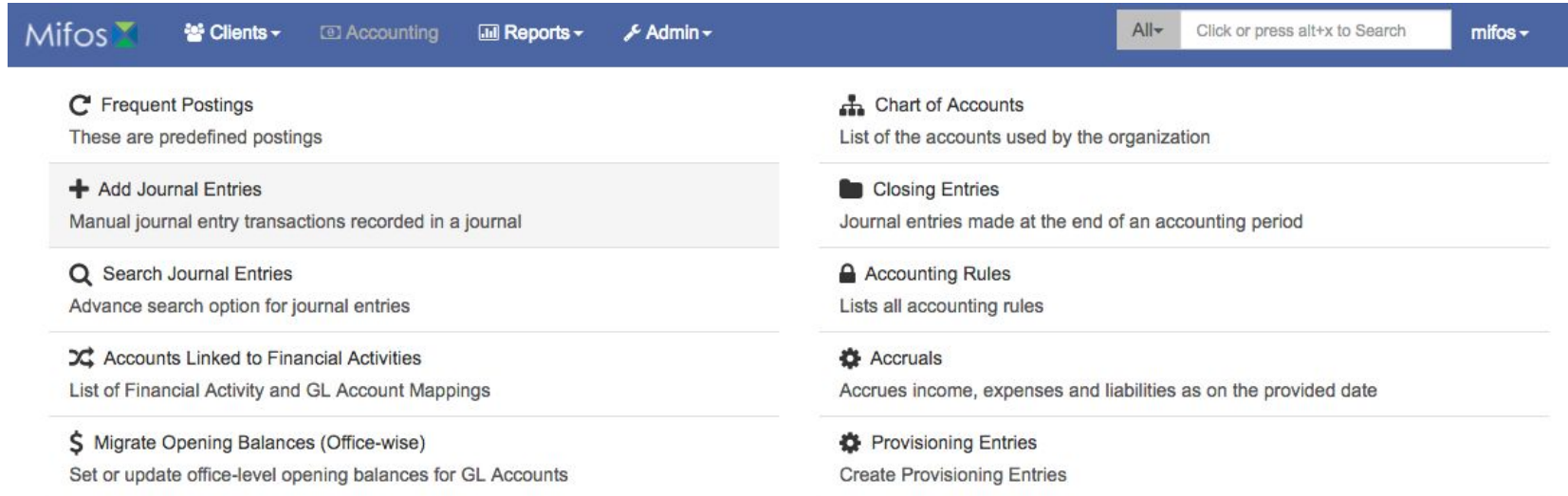
- **Authentication**
 - ◆ OAuth 2 or basic HTTPs
 - ◆ Unique User ID & authentication credentials
 - Password expiration policies
 - Configurable password lengths and preferences
 - ◆ Two-Factor Authentication (Q2 2016)
- **Authorization**
 - ◆ Spring Security & In-built components
 - ◆ Granular Role-Based Permissioning Module
 - ◆ Maker-Checker Feature to enable Four Eyes principle
- **Accountability**
 - ◆ Comprehensive, fully searchable audit trails with every attempted or executed system action logged.



The screenshot shows the Mifos system's audit trail interface. At the top, there is a navigation bar with 'Mifos' logo and menu items: Clients, Accounting, Reports, and Admin. A search bar is present with the text 'All - Click or press alt+x to Search' and a 'mifos' dropdown. Below the navigation bar, there are tabs for 'System' and 'Audit'. The 'Audit' tab is active, showing a search form with fields for 'Search by user', 'From date', 'Checked from', 'To date', and 'Checked to'. There are also dropdown menus for 'Status' and 'All'. Action buttons for 'Reset', 'Q Advance Search', and 'Export CSV' are visible. Below the search form is a table with the following columns: ID, Resource ID, Status, Made By, Action, Entity, Office, Made Date, Checker, and Checked.

ID	Resource ID	Status	Made By	Action	Entity	Office	Made Date	Checker	Checked
339	10	Processed	mifos	POSTINTEREST	RECURRINGDEPOSITACCOUNT	Manila	2 Mar 2016 12:52:19		
338	26	Processed	mifos	DEPOSIT	RECURRINGDEPOSITACCOUNT	Manila	2 Mar 2016 12:52:06		
337	25	Processed	mifos	DEPOSIT	RECURRINGDEPOSITACCOUNT	Manila	2 Mar 2016 12:39:20		
336	40	Processed	mifos	DISBURSE	LOAN	Head Office	1 Mar 2016 3:01:10		
335	40	Processed	mifos	APPROVE	LOAN	Head Office	1 Mar 2016 3:00:54		
334	40	Processed	mifos	CREATE	LOAN	Head Office	1 Mar 2016 2:55:23		
333	7	Processed	mifos	UPDATE	LOANPRODUCT		1 Mar 2016 2:54:47		

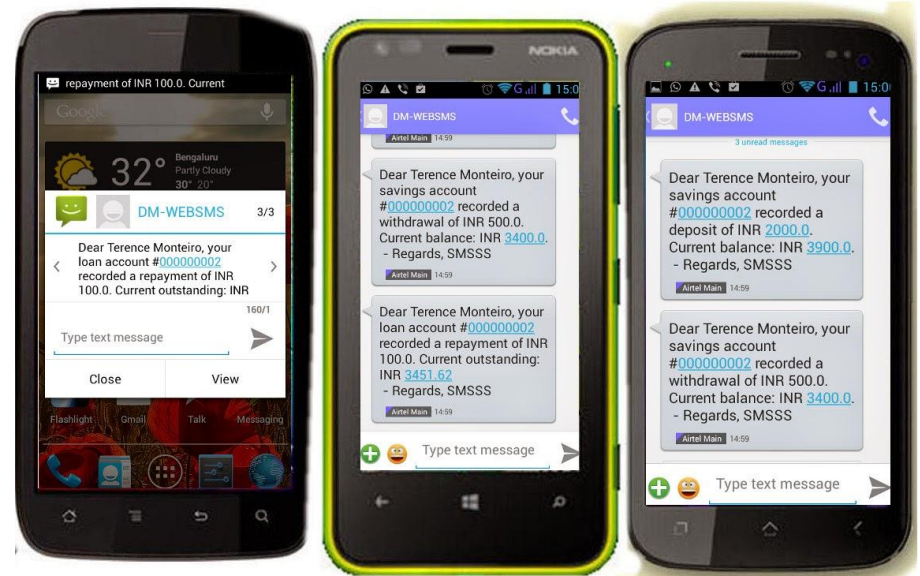
- 70 Standard Reports
 - ◆ Management, Operational, Financial, etc.
- Powerful Custom Report Generation Tools
 - ◆ Pentaho
 - ◆ Stretchy Reports - simply paste a SQL query.
- Export to multiple formats
- Centralized MySQL database
- Role-Based Dashboards



The screenshot shows the Mifos Reports dashboard. At the top is a navigation bar with the Mifos logo, menu items for Clients, Accounting, Reports, and Admin, a search bar with the text "Click or press alt+x to Search", and the Mifos logo again. Below the navigation bar are two columns of report cards. The left column contains: "Frequent Postings" (predefined postings), "Add Journal Entries" (manual journal entry transactions), "Search Journal Entries" (advance search option), "Accounts Linked to Financial Activities" (list of financial activity and GL account mappings), and "Migrate Opening Balances (Office-wise)" (set or update office-level opening balances). The right column contains: "Chart of Accounts" (list of accounts used by the organization), "Closing Entries" (journal entries made at the end of an accounting period), "Accounting Rules" (lists all accounting rules), "Accruals" (accrues income, expenses and liabilities as on the provided date), and "Provisioning Entries" (create provisioning entries).

Mifos allows you to stay in touch with your staff and clients with configurable alerts via SMS and Email.

- Configurable Email Services for Notifications
- SMS Bridge
 - ◆ Configure with your own Gateway
 - Twilio is default
 - ◆ Automated receipts, payment alerts, meeting reminders
 - ◆ Configure outbound messages for any events.
- SMS Campaigns



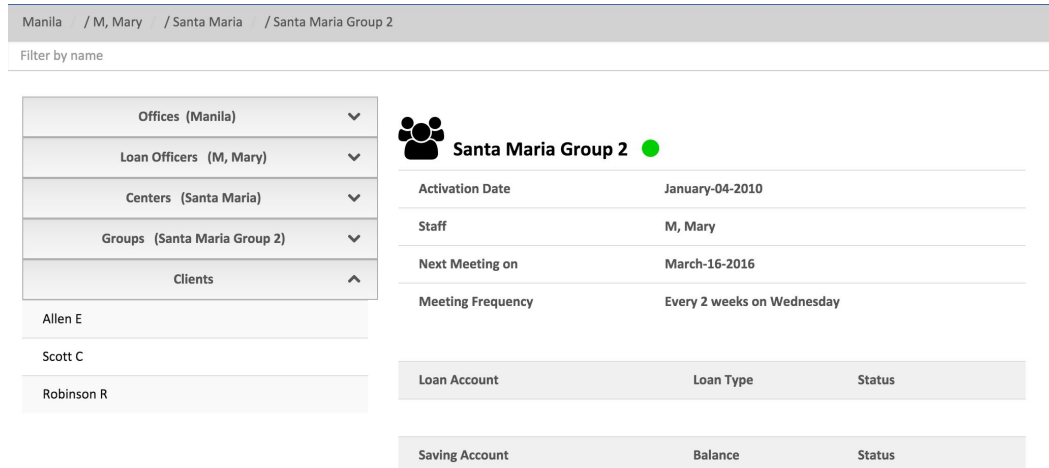
San Jose Solutions' Mifos X Messenger (powered by SMS bridge)

→ Simple, intuitive browser-based interface

- ◆ Breadcrumb trails
- ◆ Dashboard View with performance summaries at each record level
- ◆ Consistent action bar to perform transactions on accounts
- ◆ Tooltips & Context-sensitive help throughout the app

→ Powerful search & flexible navigation

- ◆ Drill-down navigation for center/group-based organizations.
- ◆ Navigation via keyboard shortcuts
- ◆ Activity bar for power users to quickly execute operations. or performing common tasks
- ◆ Drawer of quick links for common tasks
- ◆ Global & Advanced Search



Manila / M, Mary / Santa Maria / Santa Maria Group 2


Filter by name

Offices (Manila)	▼
Loan Officers (M, Mary)	▼
Centers (Santa Maria)	▼
Groups (Santa Maria Group 2)	▼
Clients	▲

Allen E

Scott C

Robinson R

 **Santa Maria Group 2** ●

Activation Date	January-04-2010
Staff	M, Mary
Next Meeting on	March-16-2016
Meeting Frequency	Every 2 weeks on Wednesday

Loan Account	Loan Type	Status
Saving Account	Balance	Status

- Collection Sheet
 - ◆ Enter collections in bulk across groups, centers, and individuals
- Templates
 - ◆ Mail-merge facility with WYSIWYG Editor for dynamically creating user-facing documents.
- Task Inbox
 - ◆ Bulk Creation, Approval, and Disbursal of Clients and Loans
- Excel Import Tool
 - ◆ Pre-configured Excel templates to import in transactions, clients, accounts & more

Checker Inbox & Tasks

Pending Tasks

Checker Inbox Client Approval **Loan Approval** Loan Disbursal Reschedule Loan

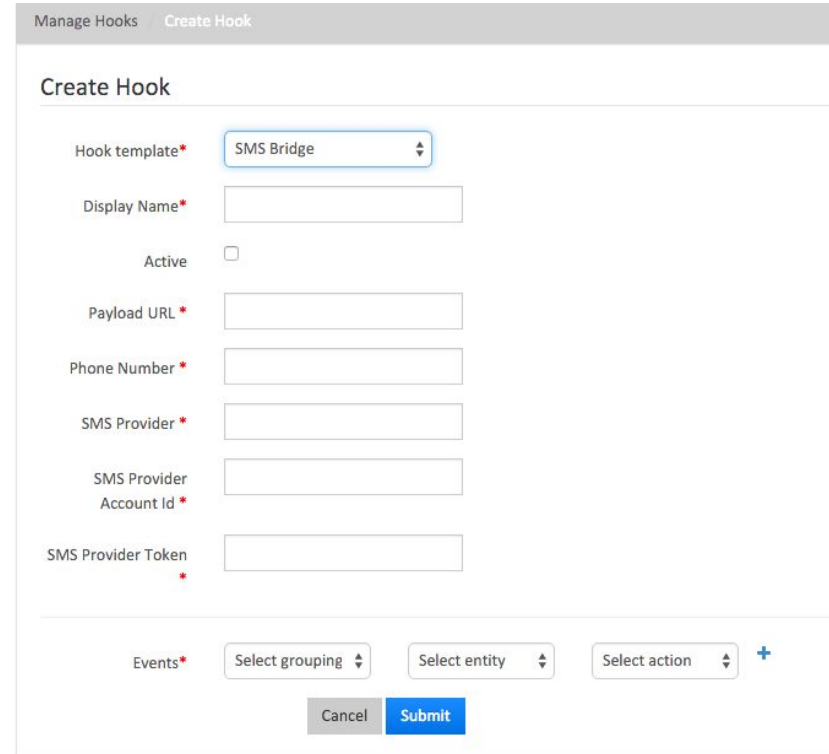
Filter by name ✓ Approve

Head Office

<input type="checkbox"/>	Client	Loan	Amount	Loan Purpose
<input checked="" type="checkbox"/>	Carlina De BB	Empleados Publicos(000000033)	5,000	
<input type="checkbox"/>	Carlina De BB	Neo Fund Product(000000037)	10,000	

Whether you're building a new solution or connecting Mifos X to another system, we make it possible.

- APIs
 - ◆ Every core service in Mifos is exposed via a RESTful API that is fully documented with live examples
- Web Hooks & Code Hooks
 - ◆ For integrating with other systems
 - ◆ Real-time data exchange via HTTP
 - ◆ Listen to or trigger actions based on events to call service and send relevant data.



The screenshot shows the 'Create Hook' form in the Mifos interface. The form is titled 'Create Hook' and is part of the 'Manage Hooks' section. It contains several input fields and a checkbox:

- Hook template***: A dropdown menu with 'SMS Bridge' selected.
- Display Name***: A text input field.
- Active**: A checkbox, currently unchecked.
- Payload URL ***: A text input field.
- Phone Number ***: A text input field.
- SMS Provider ***: A text input field.
- SMS Provider Account Id ***: A text input field.
- SMS Provider Token ***: A text input field.

At the bottom of the form, there are three dropdown menus for 'Events*': 'Select grouping', 'Select entity', and 'Select action'. A plus sign is visible to the right of the 'Select action' dropdown. Below these dropdowns are two buttons: 'Cancel' and 'Submit'.

Questions?



