Background Information on Mobile Money

CGAP - Open Mobile Money APIs

- Innovation in Mobile Money - what are the risks? - http://www.cgap.org/blog/innovation-mobile-money-what-are-risks
- Open APIs: http://www.cgap.org/about/people/open-apis
  - Digital Rails: How Providers Can Unlock Innovation in DFS Ecosystems through Open APIs - http://www.cgap.org/publications/digital-rails

    Blog Series: Open APIs: Unlocking Innovation in Digital Finance
    - Riding the "Rails": Unlocking Innovation with Open APIs(Dec. 2016)
    - Are Open Platforms Smart Business for Providers (Feb. 2017)
    - 5 Keys to Addressing the Needs of API Customers (Mar. 2017)
    - Open APIs in Digital Finance: We Opened Up, Here's What Happened (May 2017)
- CGAP Open APIs - http://www.cgap.org/news/partner-cgap-open-apis
- Microfinance and Mobile Banking - the story so far: http://www.cgap.org/publications/microfinance-and-mobile-banking-story-so-far
- http://www.cgap.org/topics/digital-financial-services
- Global Landscape of DF innovations - https://www.slideshare.net/CGAP/the-global-landscape-of-digital-finance-innovations
- Digital Finance Use Cases: https://www.slideshare.net/CGAP/digital-finance-use-cases
- Business Models in DFS: https://www.slideshare.net/CGAP/business-models-in-digital-financial-services
- Market for Digital Finance: https://www.slideshare.net/CGAP/the-market-for-digital-financial-services
- Posts on Digital Financial Services: https://goo.gl/gxP6lO

GSMA

- Mobile for Development - http://www.gsma.com/mobilefordevelopment/programmes/mobile-money
- Mobile Money Deployment Tracker - http://www.gsma.com/mobilefordevelopment/m4d-tracker/mobile-money-deployment-tracker
- State of Mobile Money in West Africa - http://www.gsma.com/mobilefordevelopment/programme/mobile-money/2016-state-of-mobile-money-in-west-africa
  - Presentation: http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/05/2016-State-of-Mobile-Money-in-Western-Africa.pdf
- State of the Industry Report on Mobile Money (10th year Edition) - http://www.gsma.com/mobilefordevelopment/programme/mobile-money/decade-edition-of-the-state-of-the-industry-report-on-mobile-money
  - Full Report: http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/03/GSMA_State-of-the-Industry-Report-on-Mobile-Money_2016.pdf
  - Executive Summary: http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/03/GSMA_Executive_Summary_State-of-the-Industry-Report-on-Mobile-Money-2016.pdf

Center for Financial Inclusion

- Mobile Money In Myanmar: https://cfi-blog.org/2017/03/01/mobile-money-in-myanmar-going-directly-from-cash-to-digital/
- Modelo Peru - https://cfi-blog.org/2017/02/07/modelo-peru-whats-next-for-the-groundbreaking-mobile-money-platform/
- Emerging Themes in Responsible Digital Finance: https://cfi-blog.org/2014/09/08/emerging-themes-in-responsible-digital-finance/
- Promising Developments in Mobile Financial Services - http://cfi-blog.org/2017/05/16/promising-developments-in-mobile-financial-services/
- Mobile Financial Services - a Technology Primer - https://cfi-blog.org/2017/04/24/mobile-financial-services-a-technology-primer-and-implications-for-financial-inclusion/
- CFI Posts on Mobile Money: https://cfi-blog.org/tag/mobile-money/
- CFI Posts on Digital Credit: https://cfi-blog.org/tag/digital-credit/

Better than Cash Alliance

Mobile Money Module Project Plan GSOC 2017

Note: This project plan was built based on the mobile money integration documentation of Skylabase.

Goals

- Generalize the mobile money module to support multiple mobile money apis
- Build a batch functionality for transactions that were not recorded directly in Mifos.
- Integrate the mobile money module with self service android applications.

Mobile Money Module Features

The system should support the following inbound/outbound transactions:

- Loans - Undo Disbursals - Can be triggered by MFI from Mifos or Mobile Money ui
- Loans Disbursal - Can be triggered by MFI from Mifos or Mobile money ui
- Loans - Make Repayments - Can be triggered via mobile money provider app or self service app.
- Loans - Prepay Loans - Can be triggered via mobile money provider app or self-service app.
- Savings - Deposits - Can be triggered via mobile money provider app or self-service app.(Need to handle failed transactions)
- Charges - Can be done through mobile money provider app or self-service app.(Need to handle failed transactions)

Features Requested by Thynn from Thitsawork

- Build a Mobile money gateway UI to display transactions for reconciling
- Build a Mobile money UI to display error report for monitoring purposes.
- In Mifos, allow users to save phone numbers of different Mobile money providers payment type.
- MFI should be able to use our batch system to record all offline transactions to Mifos.

User Stories

#	Description	Priority
1	Staff/Users of Mifos should be able to initiate transactions from current community app UI	2
2	Clients should be able to initiate transactions from Mobile money providers UI - USSD or smartphone(This will require working on the mobile money provider API itself - will this be possible?)	4
3	Clients/Staff of the platform should be able to initiate transactions from the mobile money UI(you can build of of the work Daniel did in 2016).	1
4	Clients should be able to initiate transactions from self service android application.	3

Project Timeline

For the project timeline, I will start by focusing on extending and generalizing Daniel's work so that I test it with Orange Money Cameroon. Then, I will work on integrating mobile money providers from East Africa (MPesa, Beyonic and others). Then I will build a batch system to record all offline transactions into Mifos using the Mobile money module. Finally, I will build a UI for monitoring transactions and errors.

In terms of the architecture and technical design, I have borrowed the architecture from the team at Skylabase. Here is their architecture;

blocked URL

Period	Tasks	Deliverables
Jun 1 - Jun 7	Learn more about Daniel's work and read about the api and learning how to do test-first development in Springboot. Write some test on Daniel's code. Get mentors and other people in the mobile money module channel to review this project plan. Research and read more about other mobile money apis	A couple of test on the Daniel's implementation of the module.
Jun 8 - Jun 15	Review and complete the database design. Together with the team on the mobile money module channel agree on which providers we will support. Implement test for the mobile money provider service. Research and read more about other mobile money apis	List of mobile money providers we will support. A reviewed design of our database. Test implemented for the mobile money provider bridge service.

Jun 16 - Jun 23	Extend Daniel's work and develop a generic service which support all our selected mobile money providers and allows for easy future integration. Research and read more about other mobile money apis	Generic service which should work with MTN mobile money.
Jun 24 - Jun 30	Write test for all the transactions that the gateway will support. Research and read about other mobile money apis.	Test for all inbound/outbound transactions in the system.
July 1 - July 8	Develop for the following transactions: Loans - Undo Disbursals, Loans - Make Repayments, Loans - Prepay Loans, Savings - Deposits, Charges	Mobile money gateway that supports the following transactions
July 9 - July 16	Test and integrate mobile money apis from East Africa.	Mobile gateway working with East african mobile money providers.
July 17 - July 24	Build a mobile money gateway UI which will display all successful transactions on the platform	Mobile money gateway UI for transactions
July 25 - Aug 1	Build a mobile money gateway UI for error reports. This UI will keep track of all the errors which occurred while a particular client was performing a transaction.	Mobile money gateway UI for transactions.
Aug 2 - Aug 9	Build a batch system which read offline transactions into the mifos. This is supposed to be used by MFI to pushed their offline records online.	Batch system which read offline transactions into mifos.
Aug 10 - Aug 17	Research on the following- Clients should be able to initiate transactions from Mobile money providers UI - USSD or smartphone(This will require working on the mobile money provider API itself - will this be possible?)	
August 18 - August 25	Work on an api for the mobile money gateway so that it can interface well with other mifos systems like self service apps.	Mobile money gateway api.
August 26 - August 30	Polishing the work I did for the whole summer.	

References:

The meeting with Thynn and Ed gave me a fair idea of the features which are expected from the Mobile money gateway. Aside from that, the document compiled by Daniel Carlson and Awasum Yannick from Skylabase has been a blueprint for me. It helped me craft this project plan. It has a detailed explanation of the whole project, with information about what has been done and what is left to be done.

Here is a link to that document:

Daniel Carlson and Awasum Yannick's Doc