**Machine Learning Micro Loan System**

**(*FinTech Example*)**

Last Revision: 8/30/18

**Customer Summary:**

A not-for-profit corporation which lends to private citizens in developing nations in Africa and Asia (Mali, Madagascar) for the betterment of those countries and their people. Where there is no major financial apparatus in place, their clients can secure micro and nano loans through their services. They were partnered with telecom providers (such as Orange) to provide this service via mobile phones in lieu of absent wired internet technologies

**Challenge:**

With no financial apparatus and structured lending systems in place in these countries, especially in rural areas, there was a lack of data to determine the credit worthiness of a potential loan customer. However, there are other tangible metrics that are available which we were able to aggregate and use to help establish a risk profile.

**Solution:**

In order to accomplish the goals of this project, we set up a cloud software environment that was accessible from mobile and edge devices to store and access the data sets of their loan customers. Our solution was to use their legacy, manually driven analysis of existing data (ATM withdrawals, analysis of assets, etc) to train our an AI driven machine learning algorithm to determine a scoring model for their credit worthiness. This model was able to more accurately predict if their customers were credit worthy and assign them a score based on their risk profile. Using our score, they could arrive at a Yes/No decision of whether to approve a loan. If the loan was approved, our solution used mobile architectures (Android/Apple) to interface with their payment systems and facilitate the payment of the approved loans to the customer via their mobile devices.

We used the methodology of:

1) Development
2) Testing
3) Staging
4) Production

These environments are maintained to support the Development, Testing, Customer Acceptance, and Deployment phases of the Software Development Life Cycle (SDLC), which is patterned after CMMI-3 SDLC requirements.

**Accomplishments and Results:**

- The customer saw a 97% loan repayment rate (the KPI) as a result of using our solution, which is nearly a 20% improvement from their previous rate.

- The customer indicated that they would like to give us follow-on work and extend this product to other emerging markets with more robust capabilities

**Technologies Used:**

- Machine Learning (Python, Tensor Flow), custom protocols for interface with telecon provider infrastructure

- Private cloud environment, SQL Server backend

**Cost/Schedule:**

$120k over 14 months