Community Healthcare Analytics Solution – Case Study

This document describes a case study to build A Community Healthcare Analytics solution for Community Health care provider.

Project overview

The objective of this Project is to design Information System to manage Social Protection Help Desks (SPHDs) functioning at different locations across India for NGO (Non Government Organization) client. The information system will facilitate access to social protection for most at risk populations as well as People living with HIV (PLHIV). Social Protection activities are provided at Targeted Intervention sites (TIs), ICTCs, ART Centers, STI Clinics, Community Care Clinics (CCCs), and PLHIV Networks.

The major functions of SPHD are:

a. Provide information and create awareness on social protection schemes.

b. Raise awareness on rights, entitlements and schemes with the community.

c. Provide assistance with filling applications and ensure that they are completed with the right details and documentation.

d. Setup and maintain a system for filing the application and following up.

e. Provide advocacy support and linkages with government departments.

The document specifies the technical and conceptual architecture for the envisaged Social Protection Information System illustrating how the system addresses the requirements.

Project Scope:

Project involves designing and developing Information System to capture data for Social Protection Help Desks

- Web application
- Mobile application
- Analytics application

ABC Analytics application includes 2 phases as mentioned below.

ABC Analytics Dashboard

ABC Analytics dashboard is designed to give the end users an overview of multiple analytical items like maps, charts, pivot tables and reports, which together can provide a comprehensive overview of the data for monitoring and evaluation.

Data Warehouse

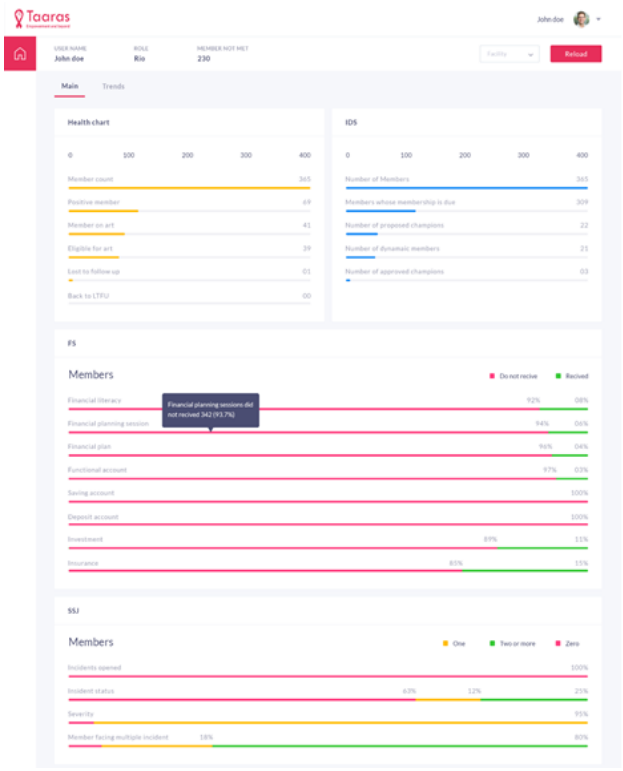
ABC Data warehouse facilitates the aggregation of data from the lowest to the highest level in the organization unit hierarchy and arranges the aggregated data in flat tabular structure. The visualization module such as Data visualizer, Pivot table and GIS when used for data analysis fetch data from the analytics tables.

Reports and Dashboards

Dashboards are created at different hierarchy. Below table represents the hierarchy and responsibilities. All KPI data is first calculated at lowest level is field worker. Then Data aggregated at next higher level till top most level ie National officer.

Dashboards are accessible for all roles CO and above on web platform. At Field worker level dashboard is accessible on ABC mobile app only.

Role	Responsibility
FIELD WORKER	Site
HELPDESK FACILITATOR	Multiple Sites
FACILITY MANAGER	CO
FS MENTOR	Multiple CO
REGIONAL OFFICER	Region
STATE OFFICER	State
NATIONAL OFFICER	Country



Taaras
Empowerment and beyond

John doe

USER NAME
John doe

ROLE
Rio

MEMBER NOT MET
230

ELT RUN DATE
ELT in progress

Reload

Main | Trends

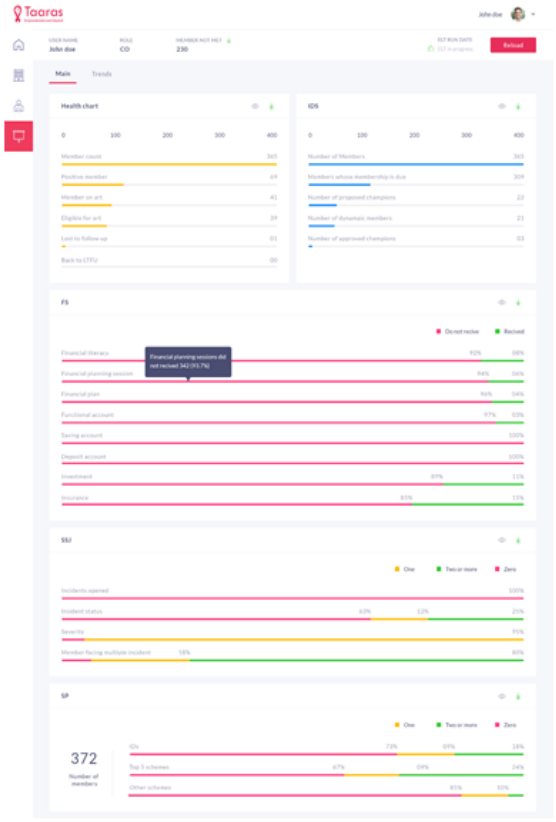
Health chart

Member count	365
Positive member	69
Member on art	41
Eligible for art	39
Lost to follow up	01
Back to LTFU	00

IDS

Number of Members	365
Members whose membership is due	309
Number of proposed champions	22
Number of dynamaic members	21
Number of approved champions	03

IDS



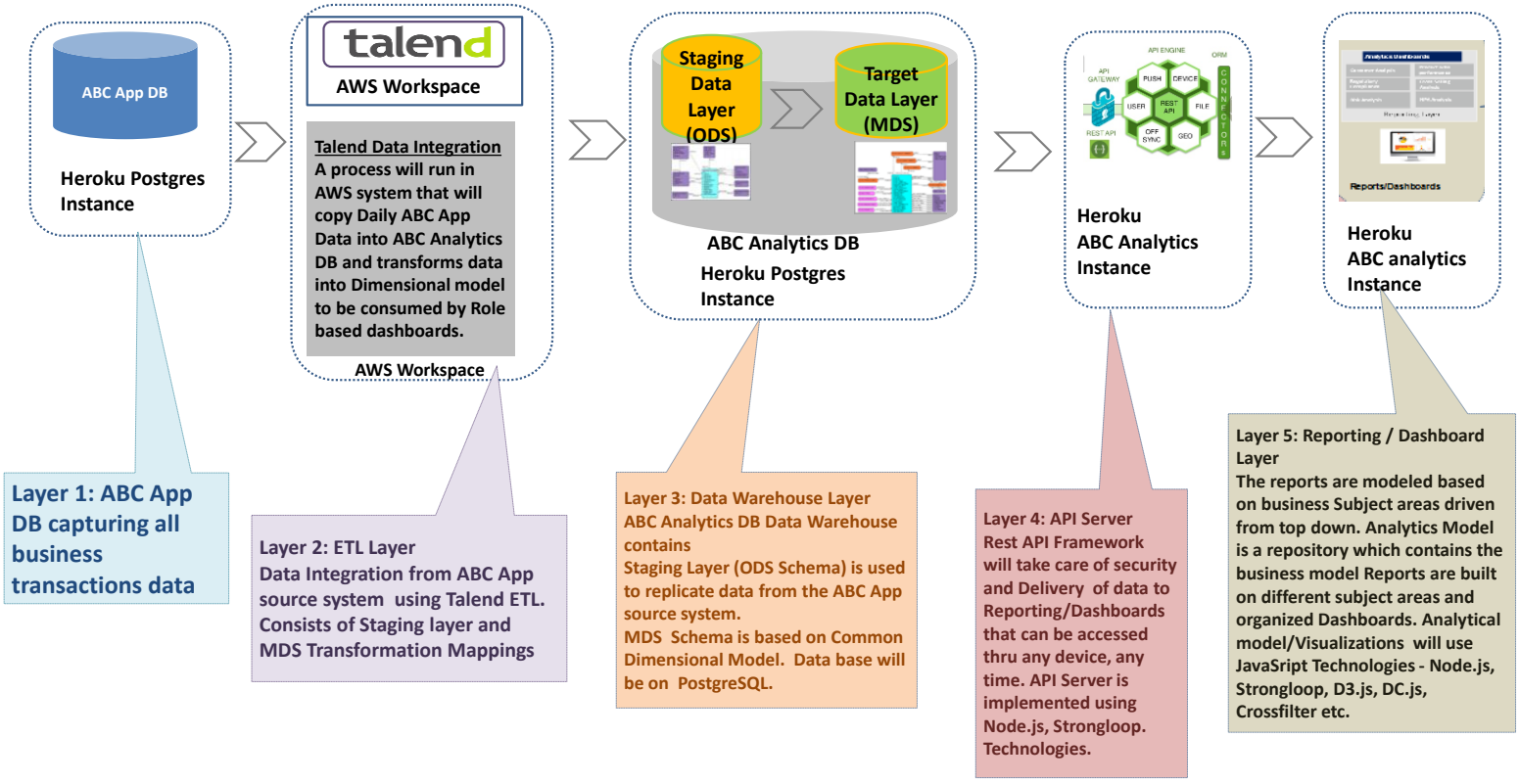
Technical Challenges : Businesses spend lot of effort in developing and maintaining IT Solutions. As innovations are occurring at rapid pace in Analytics space, it is still big question whether it is actually simplifying running IT solutions for businesses. We all understand how Cloud platform is transforming the way IT Services are being delivered. We are also seeing how Data Science/ Analytics technologies are adopting to Cloud model. Big IT Product companies are transforming the way they deliver their product in Cloud model.

Here are key technical complexities that exist for Companies to deploy new Analytic Solutions.

- Integrating and data extraction with multiple sources in different forms and different geographic locations on cloud platform.
- Building common data model to serve diverse data sources and providing single source of truth and adopting to changing data sources.
- Building Role based Dashboards that will enable business analysis with visualizations (charts and graphs) that will enable slice and dice data top to bottom from large amount of data in real time.
- Adopting to stringent security rules to ensure data is secure and is delivered from a cloud location to business user looking at Dashboards on his mobile device or on desktop.

Here is the simplified representation of typical Analytic Solution hosted on cloud platform.

ABC Analytics Architecture



API Server plays key role adhering to stringent security rules and ensuring data is safely delivered to dashboard user.

ETL Layer can be implemented using open source ETL tools such as Talend, scripting languages such as Python. 3rd party tools are available as software as service on cloud platform. Eg. xPlenty.

PostgreSQL is widely used as data store in cloud platform.

Analytical Dimensional model is implemented based on crossfilter.js and Dashboard /Visualization is based on charting libraries such as D3.js, Dc.js

Node.js is used to host the dashboard.

All of these technologies are open source technologies available on cloud platform, without compromising scalability, flexibility and security.

Using open source technologies and scalable architecture Client is able to reduce and gain huge performance and main Objective of simplifying IT for businesses on cloud platform has become realistic. Now they can focus on their core strength to maximize their business potential.

Reference : My article https://www.linkedin.com/pulse/simplifying-analytic-solution-businesses-cloud-platform-sridhar-pai/