Global IT Solutions
An ISO 9001:2015 & ISO/IEC 27001:2013

Early Warning Platform: Detect Early Stress in Borrower Accounts

About the Client

It is an integrity risk analytics start-up, specialising in monitoring creditworthiness of the borrowers and identifies early warning signals i.e. red flags on near real time basis facilitating lenders in making informed decisions

Client's Product Offerings

The platform is an advanced analytical and collaborative application to help credit players take proactive actions and reduce significant losses in event of default or winding up by the borrowers. This platform minimizes the inherent information asymmetry between lenders and borrowers and enables early identification of potential problems by providing incipient signals of stress in borrower accounts. It helps lenders to take efficient remedial measures

- Synthesizes data from multiple sources internal to the lender as well as numerous external sources in varying formats (structured, unstructured and semi-structured)
- Integrates not only the internal data from banks but also the various external data points and provides insights based on collated and synthesized data
- Designed to provide an end-to-end 360 view of borrowers by aggregating relevant information of the entire value chain of the borrower and affiliated parties on a common platform
- In addition to robust appraisal processes, an 'Early Warning Mechanism' is the most effective way of preventing loan defaults

Key Challenges

- Preparing structured data for analytical purpose from numerous unstructured & semi structured external data sources to draw insights
- Integration of various different technologies like Python, Java, Neo4j and SQL Server together
- Writing various fraud detection algorithms over a wide variety of data
- Identifying most appropriate charts to depict the generated information and external data to make it more understandable and less complex
- Avoiding unnecessary and less relevant noise and highlight the critical warning signals
- A scalable analytics platform to identify risk indicators in near real time and empower decision makers to capitalize on risk events
- Enable timely and cost effective identification of potential 'Willful Defaulters'
- Bake extensive domain knowledge & experience of forensic and fraud detection into a platform that enables Predictive Modelling with AI/Machine Learning/Deep Learning
- Relationship mining and link analysis by constructing a proprietary relationship model with interconnected data

Solution Approach & Methodology

- Analyzing and understanding the product requirements and financial risk management domain using readily available third party information sources
- Designing the platform architecture based on discussions with the client's technical team and integrate the data sources into the same
- Execution of pre-defined fraud investigation rules by creating 'Rule based Engine' in Python over unstructured and structured data
- Identify the abnormalities and early warning signals by the analysis and pattern matching
- Represent the findings in one integrated application to visualize any deviation and take corrective measures

Key Highlights of the Approach

- Risk identification based on mapping the internal bank data with the secondary available data
- Graph database is being used to analyze risk relationships of single entity identified as willful defaulter or risk in whole ecosystem
- Rule based engine to execute pre-defined forensic rules automatically on data captured in an incremental way
- Entity score displays the complete picture of borrower's business dynamics and is updated on weekly basis
- Interactive dashboards make the data easily interpretable without any expertise in the financial forensic investigation domain
- Flexibility to capture more data for specific entities, on request
- Reports are saved in hard copy for loan appraisal to help end users take decisions

Achievements

- The team not only developed the prototype but also released the first version of the MVP, which has been successfully deployed in a blue chip bank in India
- Successfully architected and integrated the multi technology solution forming the unified platform
- Developed the algorithms for 'Relevancy' scoring of the external media content
- Successfully implemented algorithms for text mining and developed a proprietary relationship model
- Developed algorithms to implement the scoring model to classify accounts based on risk in terms of ability to pay on time
- Implementation of analytics over integrated external data sources of different nature through APIs, crawling public data and lenders internal data in a very short duration
- Implementation of business rules framework for various business rules that played a major role in detection of earning signals
- Conducted the platform performance test for over a 100 companies put together on platform
- On time releases of prototype as well as the first release of MVP

Project Highlights

Client	Integrity Risk Analytics Start-up
Location	India
Industry	Financial Sector
Duration	1+ year
Team Size	5 people
Delivery Model	Hybrid
Engagement Model	Retainership

Technology Deployed

Authentication and Authorization Frameworks	Spring
Presentation Tier Frameworks	JSP, jQuery, High Charts, D3JS, HTML5, CSS, JS
Business Tier Frameworks	Spring
Persistence Framework	Hibernate and Spring Data Neo4j
Application Servers	Tomcat
RDBMS Systems	Microsoft SQL Server
NoSQL/Graph DB Systems	Neo4j
Operating Systems	Windows
Integration Services	Python, Talend Data Integrator, Spring Data, Spring MVC, Spring Security, Hibernate, Spring Schedulers, Velocity framework
Automation Tool	Jenkins (CI and CD)
Build Tool	Maven

About PSI

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