RISK EVALUATION

&

UNDERWRITING

AI-POWERED BLOCKCHAIN-BASED MOBILE APPLICATION

TEAM - GREYLIFE

TEAM DETAILS

• Team Name	GreyLife	
• Institute	Indian Institute of Information Technology, Lucknow	
• Team Members	1 (Leader)	2 (Techie)
• Name	KSN Samanwith	Badri Akkala
• Course	B.tech, CS	B.Tech, CS
• Batch	2021-2025	2021-2025

# PROBLEM STATEMENT: RISK-EVALUATION & UNDERWRITING

OVERALL GOAL:

Assessing the degree of risk each applicant brings to the table to sanction a loan and proceeding accordingly.

WHY IS IT CRUCIAL TO ADDRESS THIS:

- This problem leads to Reduced profitability, Increased capital requirements, Damage to Reputation, Reduced liquidity.

- Ineffective risk evaluation and underwriting leads to increase in NPA. It is essential for financial institutions to make informed lending decisions, minimize loses and maintain financial stability.

- Addressing this challenge can lead to improved credit risk management, increased financial inclusion and reduces the number of bad loans

*NPA = Non Performing Assets of the company
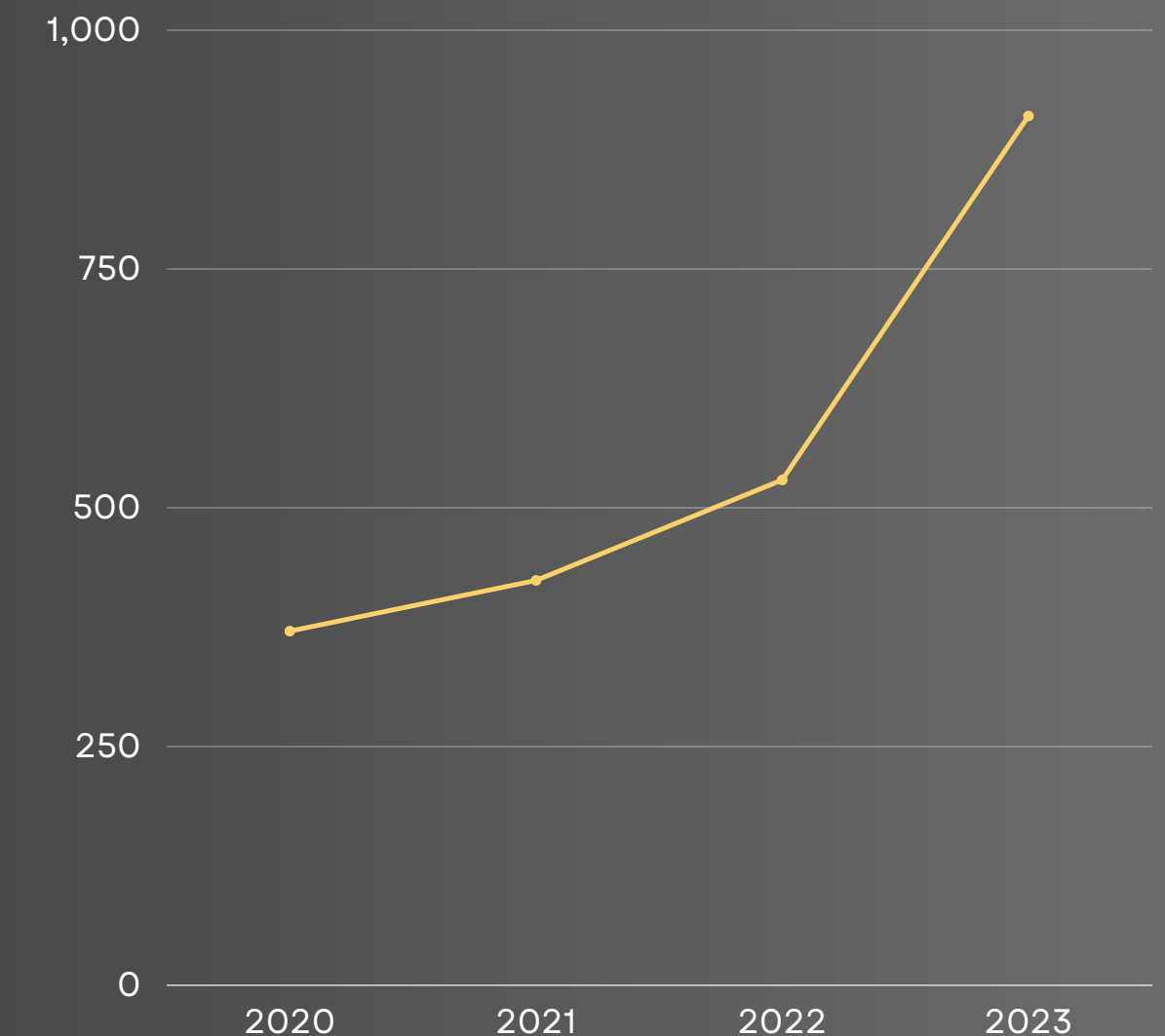
TVS CREDIT Subtotal NPA in crore

STATISTICAL RESEARCH

- *Non-Performing Asset is a loan or advance for which the principal or interest remains overdue.*

- By lowering revenue, profitability, and creditworthiness, Non-Performing Assets (NPAs) can hurt a business, potentially resulting in capital evaporation, liquidity issues, and reputational loss. To reduce these negative impacts, effective risk management and recovery measures are essential.

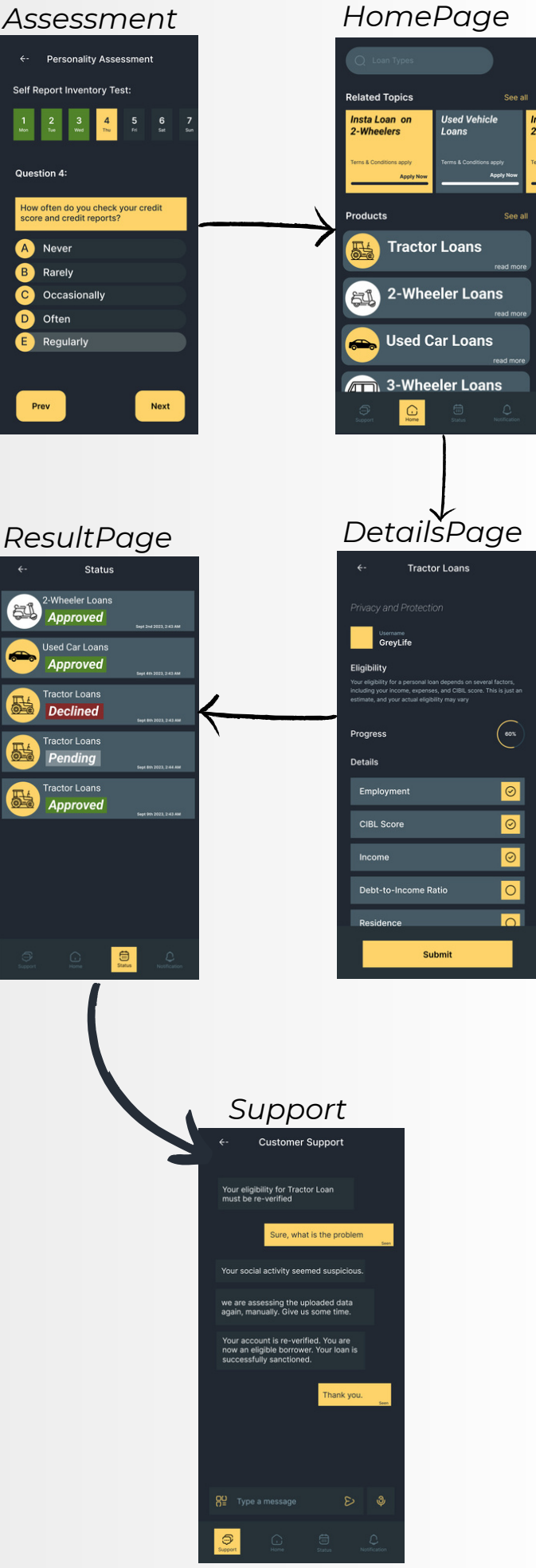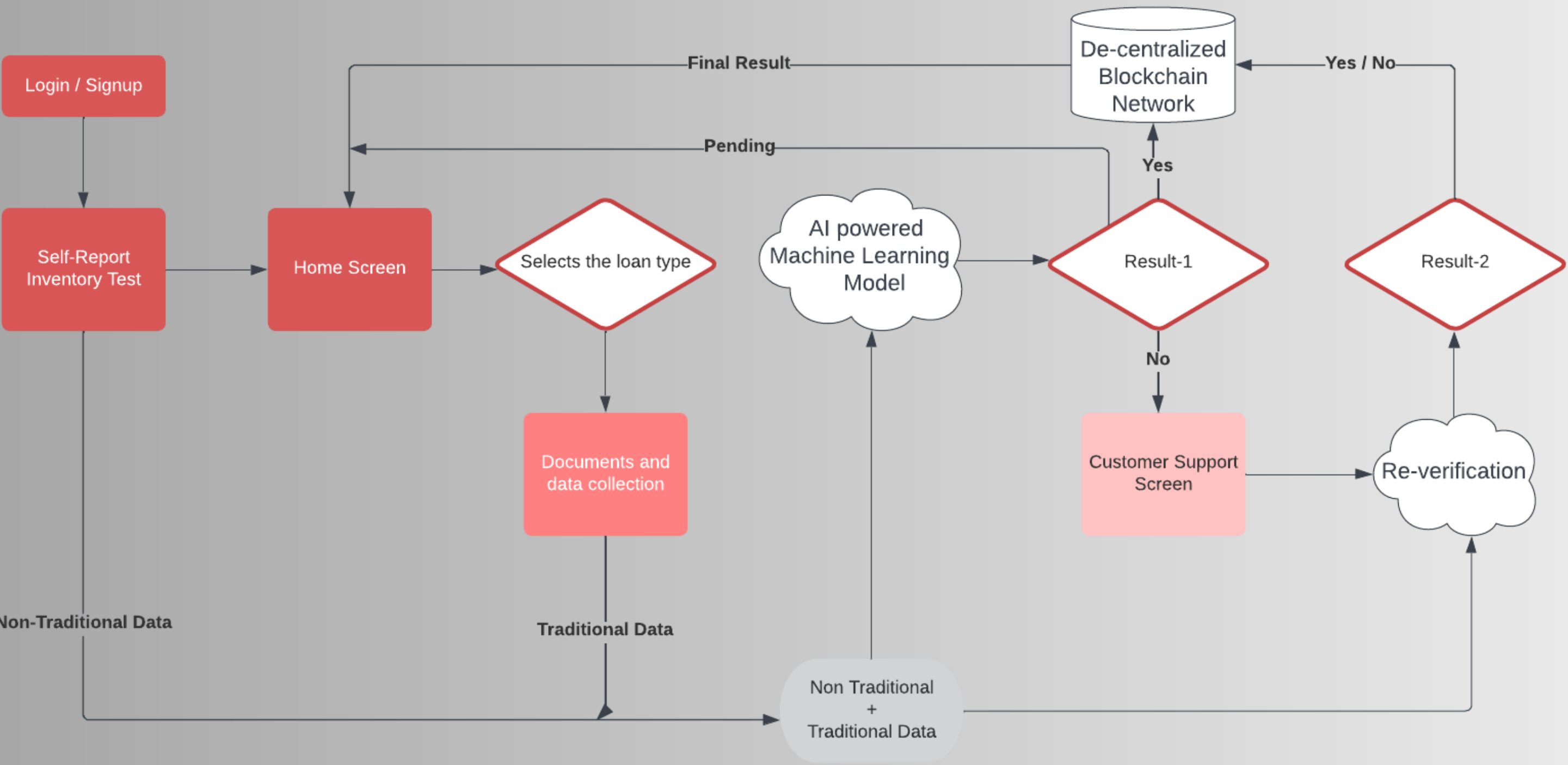| Asset Classification As Per RBI Norms	Gross Carrying Amount As Per IND-AS 109 (in Crores)
Performing Assets Sub Total – 2020	9277
Non Performing Assets Subtotal -2020	370.66
Performing Assets Sub Total – 2021	11020.87
Non Performing Assets Subtotal -2021	258.32
Performing Assets Sub Total – 2022	13873.97
Non Performing Assets Subtotal -2022	528.99
Performing Assets Sub Total – 2023	20345.13
Non Performing Assets Subtotal -2023	910.02

- The finance industry's substantial NPA losses can be significantly reduced through the utilization of advanced AI-based machine learning models which take into account both conventional and non-traditional data, enhancing the accuracy of loan eligibility assessments.

- As of March 31, 2023, the company's gross NPAs stood at Rs.910.02 crore which is highest of the past few years reducing the profits of the company.

PROPOSED SOLUTION & DELIVERABLES:

- We propose to develop an AI-powered blockchain-based mobile application that will help TVS Credit to assess the risk of borrowers more accurately..

- This app collects essential borrower data, such as credit scores, income, and debt-to-income ratios, alongside collects non-traditional data form the user in the form of personality assessment test to anticipate financial behavior and risk tolerance level.

- An Advanced ML model is then employed to ascertain whether an applicant qualifies as a low-risk candidate based on both traditional and non-traditional data.

- Notably, all borrower information will be securely stored in a decentralised blockchain network, ensuring the utmost security and privacy.

- The app contains a user friendly customer service assisted by Automated System and Live Human Interaction so that loan borrower can clear his doubts regarding the process etc.

- Furthermore, this application goes beyond risk assessment by offering borrowers personalised risk mitigation guidance through customer service. This approach encompasses financial education and tailored recommendations aimed at improving the borrower's financial well-being. By adopting a proactive stance, the application empowers borrowers to progressively diminish their risk profile over time.

WORKING APPLICATION STRUCTURE:

Login / Signup

Self-Report Inventory Test

Home Screen

Selects the loan type

Documents and data collection

AI powered Machine Learning Model

De-centralized Blockchain Network

Result-1

Result-2

Customer Support Screen

Re-verification

Non Traditional + Traditional Data

Final Result

Pending

Yes / No

Yes

No

Non-Traditional Data

Traditional Data

Assessment

HomePage

ResultPage

DetailsPage

Support

SELF REPORT INVENTORY TEST

This page is opened as soon as user logins and before entering the HomePage

- The SRIT (self-report inventory test) page Introduces a platform to assess non-traditional factors through interactive questions like:

  - "How do you -"
    - typically handle financial setbacks
    - handle stress

  - "What are your -"
    - weaknesses when it comes to managing your finances?
    - spending habits

- The underwriters can gain valuable insights into:

  - Applicant's financial behaviour
  - Decision-making skills
  - Risk tolerance.
  - For example, they can assess whether an applicant tends to be conservative or aggressive in their financial decisions.

- Applicants who score low on these measures are more likely to be considered high-risk borrowers, else they might be considered for a lower interest rate.

←- **Personality Assessment**

Self Report Inventory Test:

| 1 Mon | 2 Tue | 3 Wed | 4 Thu | 5 Fri | 6 Sat | 7 Sun |

Question 4:

How often do you check your credit score and credit reports?

A   Never

B   Rarely

C   Occasionally

D   Often

E   Regularly

Prev   Next

AI POWERED BLOCKCHAINED BASED MOBILE APPLICATION

Self-report inventory test is followed by a HomePage.

- The Homepage will contain the types of Loan TVS Credit offers to a user and any related content where the user can select the option based on his requirement and move a step forward in the borrowing process.

- The SupportPage is the activity where the user interacts with the help provided by the company, who also re-verify the result provided by the AI powered ML Model to check its legibility.

- The StatusPage contains the record of all the previous and on-going loan processes with the time stamps of their status at that time.
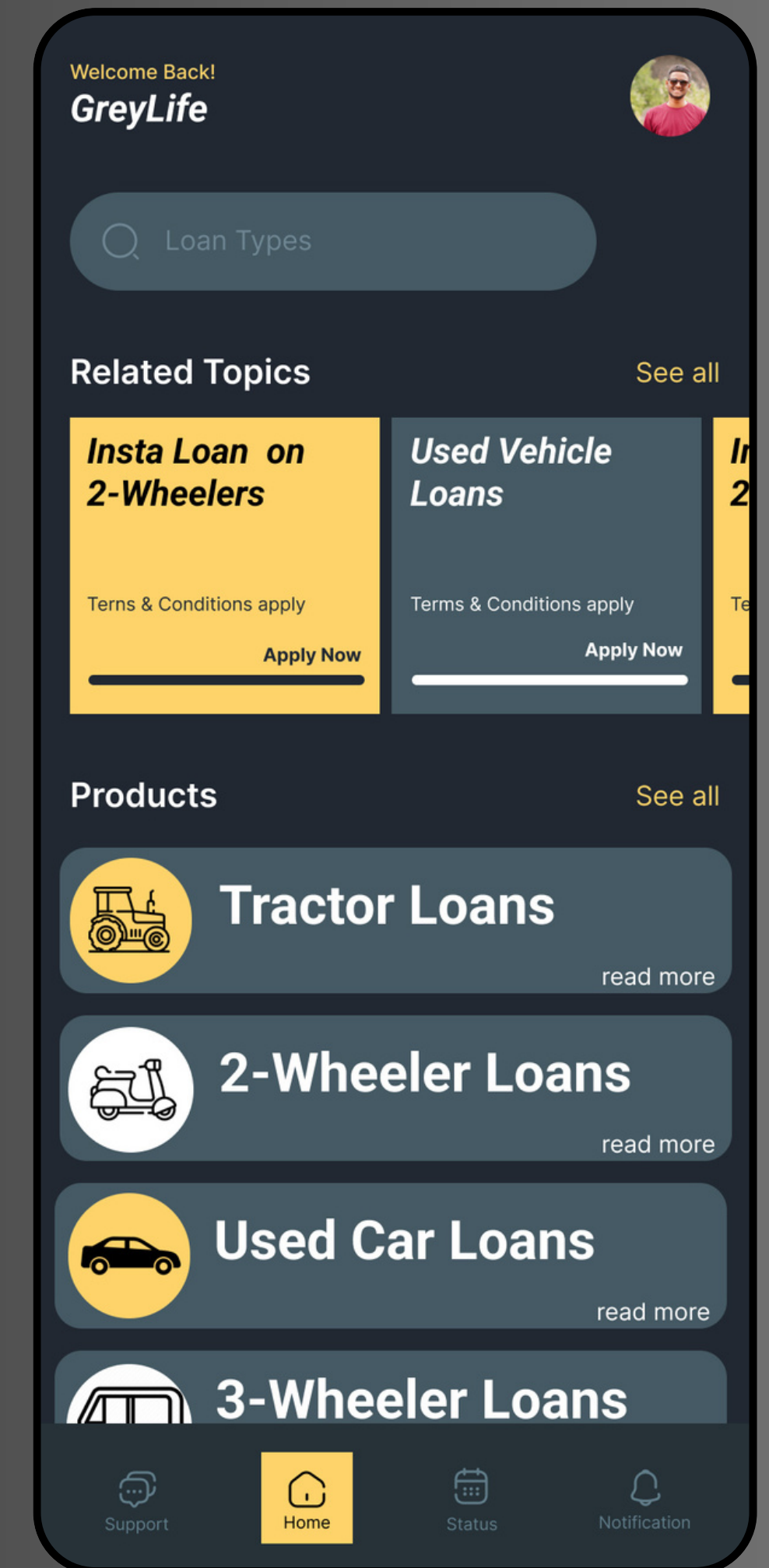
DETAILS AND DOCUMENTS

- Upon Choosing the type of loan and after successfully completing the SRIT assessment the user navigates to Upload section of our app where then can fill the neccesary details and documents needed for loan approval.

  - These documents and details along with the results of the SRIT Assessment are passed to the AI powered Machine Learning Model, which then generates the result i.e. if the borrower is eligible for loan or not.

    - Addition of both traditional data and non traditional data helps the ML model for predicting loan default probabilities and helps in predicting the risk percentage of the candidate more prec..
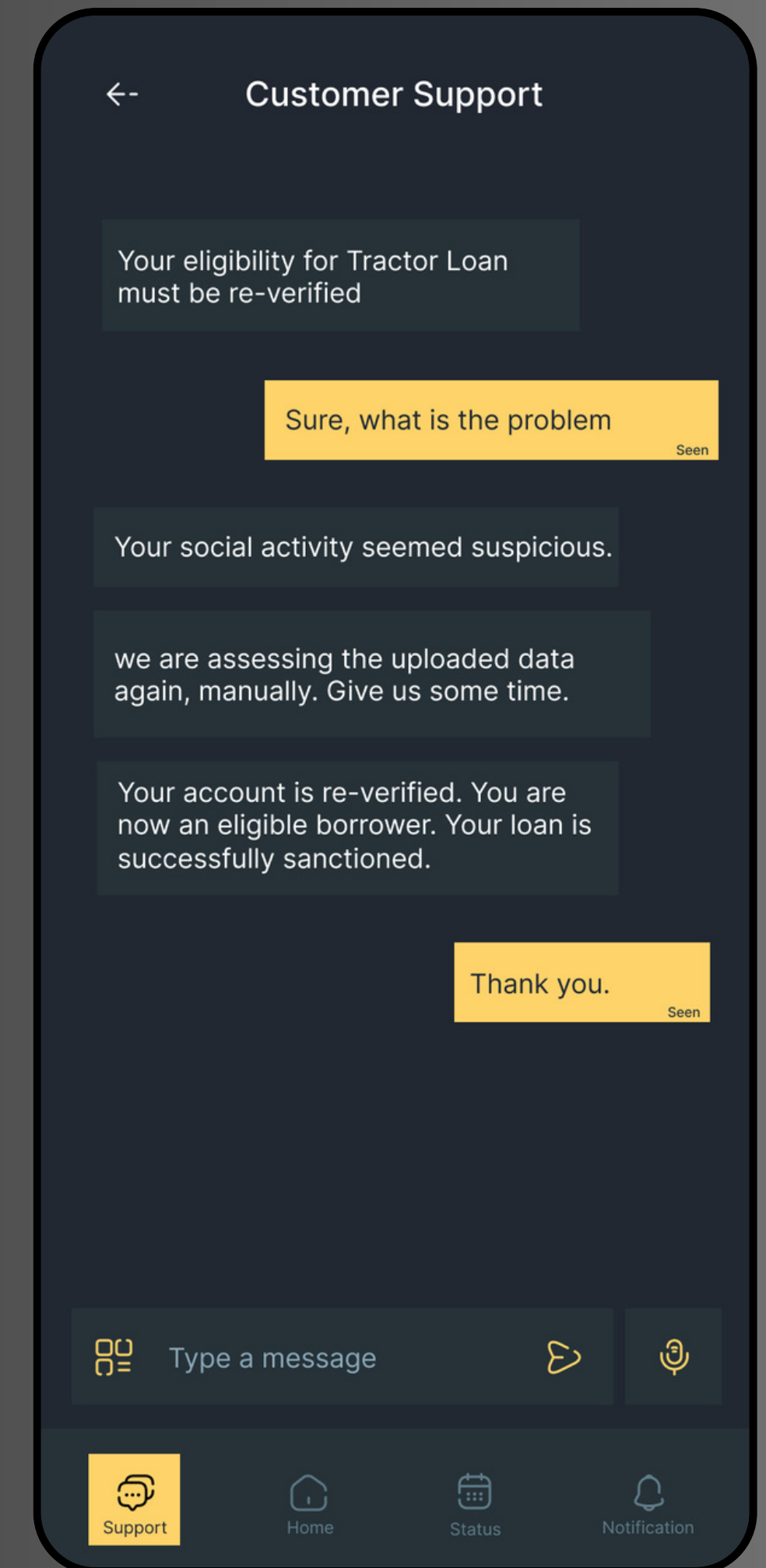
DECENTRALISED BLOCKCHAIN & STATUS

- After thorough assessment of the applicants profile the advanced ML model comes up with an answer regarding the decision of loan approval and sends an automated email/message to the applicant regarding the decision made.

- The app utilizes blockchain to store applicant's data. Blockchain ensures secure and immutable storage of borrower data, reducing the risk of data breaches and fraud.

  - The Blockchain contains user sensitive information like approval status, user ID, his/her credit score, income-to-debt ratio (which if tampered may lead to wrong assessment of user eligibility).

  - Blockchain's borderless nature allows for a broader and more inclusive lending ecosystem, benefiting both lenders and borrowers.
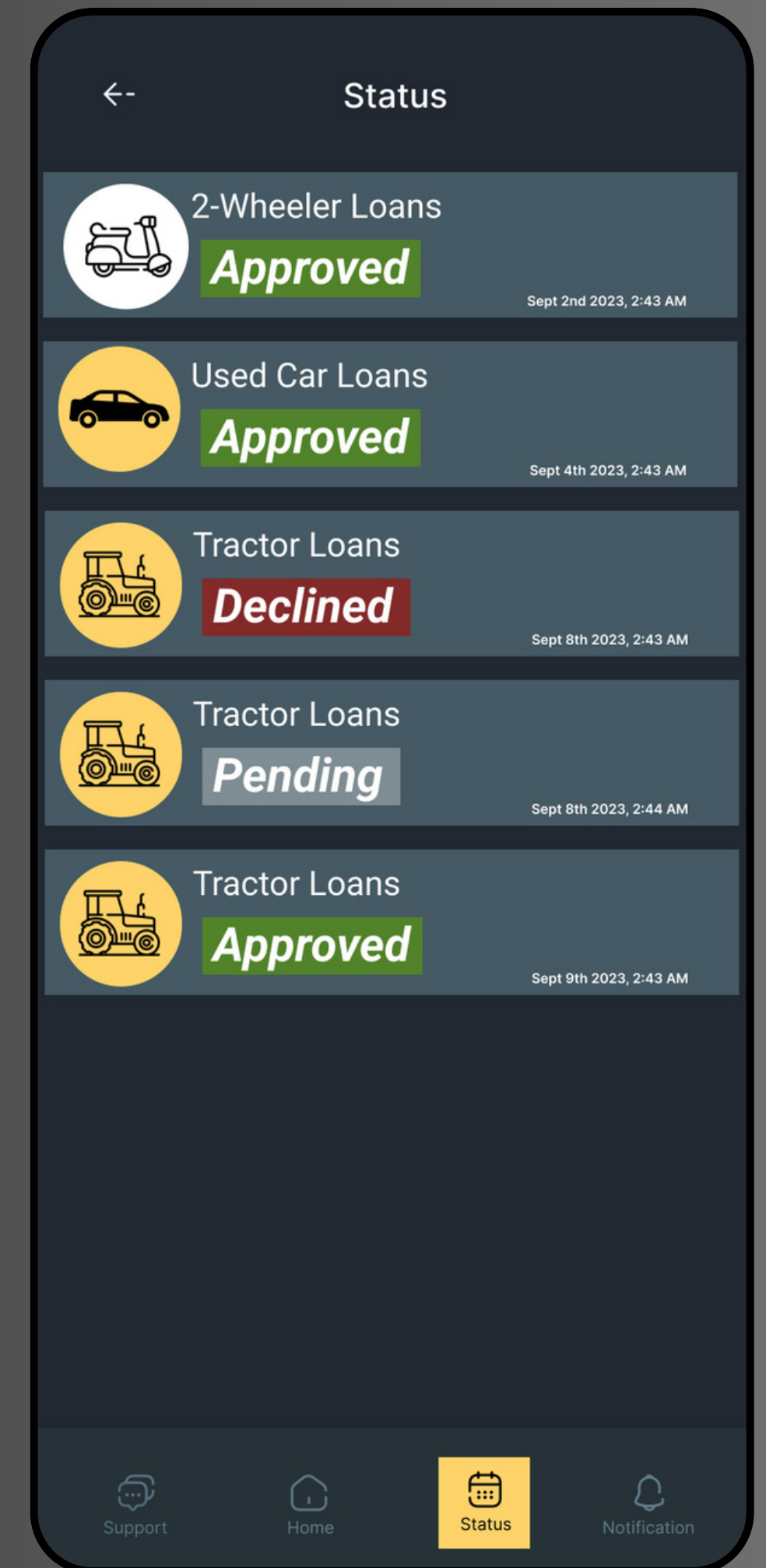
RISK MITIGATION AND CUSTOMER SUPPORT

- Risk mitigation refers to the strategies and actions taken to reduce or minimise the potential negative impact of risk.

- We work closely with borrower to understand their specific financial challenges. If a borrower is experiencing financial difficulties, we work with him/her to get the problem resolved.

- This enables the development of customised solutions, such as loan restructuring, grace periods, or adjustments to repayment schedules, that align with the borrower's financial situation, which make the company more trustable and user-friendly towards the borrowers.

- This allows them to address issues before the situation escalates and potentially preventing the loans from turning into bad loans, which increases the company's gross profit.

- In case of negative response from the ML model the data is forwarded to the customer support to re-verify it and give a final result on the status of their approval/disapproval.

Customer Support

Your eligibility for Tractor Loan must be re-verified

Sure, what is the problem
Seen

Your social activity seemed suspicious.

we are assessing the uploaded data again, manually. Give us some time.

Your account is re-verified. You are now an eligible borrower. Your loan is successfully sanctioned.

Thank you.
Seen

Type a message

Support   Home   Status   Notification

FUTURE SCOPE

Predictive Analytics

Utilize AI to provide users with insights into their future financial outlook based on their current financial behavior.

Security

The company can shift from Decentralised to centralised blockchain system which ultimately provides more flexibility on data storage.

Expansion

The application could be expanded into new emerging markets/rural areas. This would make it easier for borrowers in these markets to get the loans they need.