

## Case Study - Objective

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Housey, a leading digital mortgage startup in the US is getting multiple complaints from its customers since the launch of its new app.

Housey wants to address the issues and improve the customer engagement

Housey also wants to find out new opportunities to grow its business

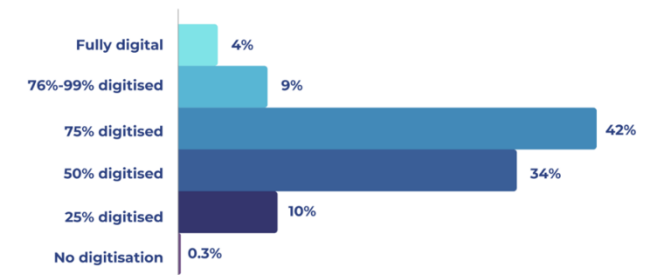


# Digital Mortgaging – Market opportunity

- ❖ Overall US mortgage debt has reached \$13 Trillion in 2022
- ❖ Mortgage origination volume totaled \$2.2 trillion for full year 2022
- ❖ US digital mortgage market is worth \$10 billion and expected to grow at 18% CAGR
- ❖ Foray of non-banking financial institutions has disrupted market by acquiring 59% share through the adoption of technology faster than conventional banks
- ❖ Fintech lenders can process loans 20% faster than non fintech companies
- ❖ As per a Forbes survey, 63% of consumers surveyed believe that presence of online mortgage process would influence their lender selection
- ❖ Market is looking for increased efficacy and reduced cost in the tough market condition which will further accelerate technology adoption



Mortgage Industry is moving from paper to digital



# Competitor Analysis

Product Segment	Major Players	Key Aspects
Online Lenders	Quicken Loans	2 <sup>nd</sup> largest lender in the country \$145 billion business in 2020
	LoanDepot	Deeper experience into homebuying. Avg closure in 30 days
Technology Providers	Encompass 360	Compliance checks Automated Underwriting Paperless document experience
	Blend	Realtime task coordination Collaboration Customized workflows
Online Marketplace	Lending Tree	Multiple lenders and quotes
	Better.com	Faster pre-approval Low-cost processing

# Deep Dive



## Housey – A Digital Mortgage Marketplace

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- **For borrowers** – It intends to transform the homeownership journey by delivering a seamless digital experience from application to close
- **For lenders** - Housey aims to make the loan origination and fulfillment more efficient, thereby assuring more conversions at lower operational cost
- **Key value props** : Faster loan processing(<20 days), Low cost, seamless experience
- **Target customer segments** : Millennials, First time buyers, Power users

# Personas And Empathy Mapping

## BORROWER



Age 28, working as a Marketing professional in Philadelphia  
Looking to buy a studio apartment in the city

Alice, Home buyer

- ✓ Nervous about first time buying experience. Needs transparency.
- ✓ Wants to avoid paperwork
- ✓ Looks for competitive rates to save money
- ✓ Early closure of the mortgage
- ✓ Comfortable with digital tools



Age 45, Working as a GM in Automobile industry in Texas  
Planning to buy a home for his family in Austin

Mike, Home buyer

- ✓ Needs a seamless experience of mortgaging
- ✓ Wants competitive rate with his solid credit score and downpayment
- ✓ Better compliance and data security while using from online tools
- ✓ Looks for faster closure

## LENDER



Bob, Loan officer working  
For ABC lenders,  
New York

- ✓ Reduce operational costs
- ✓ Ability to process applications in the shortest time
- ✓ Visibility to the application backlog and communication channels



Pam, Underwriter  
Working with ABC lenders

- ✓ Access to accurate information for decision making
- ✓ Avoid human errors
- ✓ Ability to assess risks better



Rachel, Agent working in Philadelphia

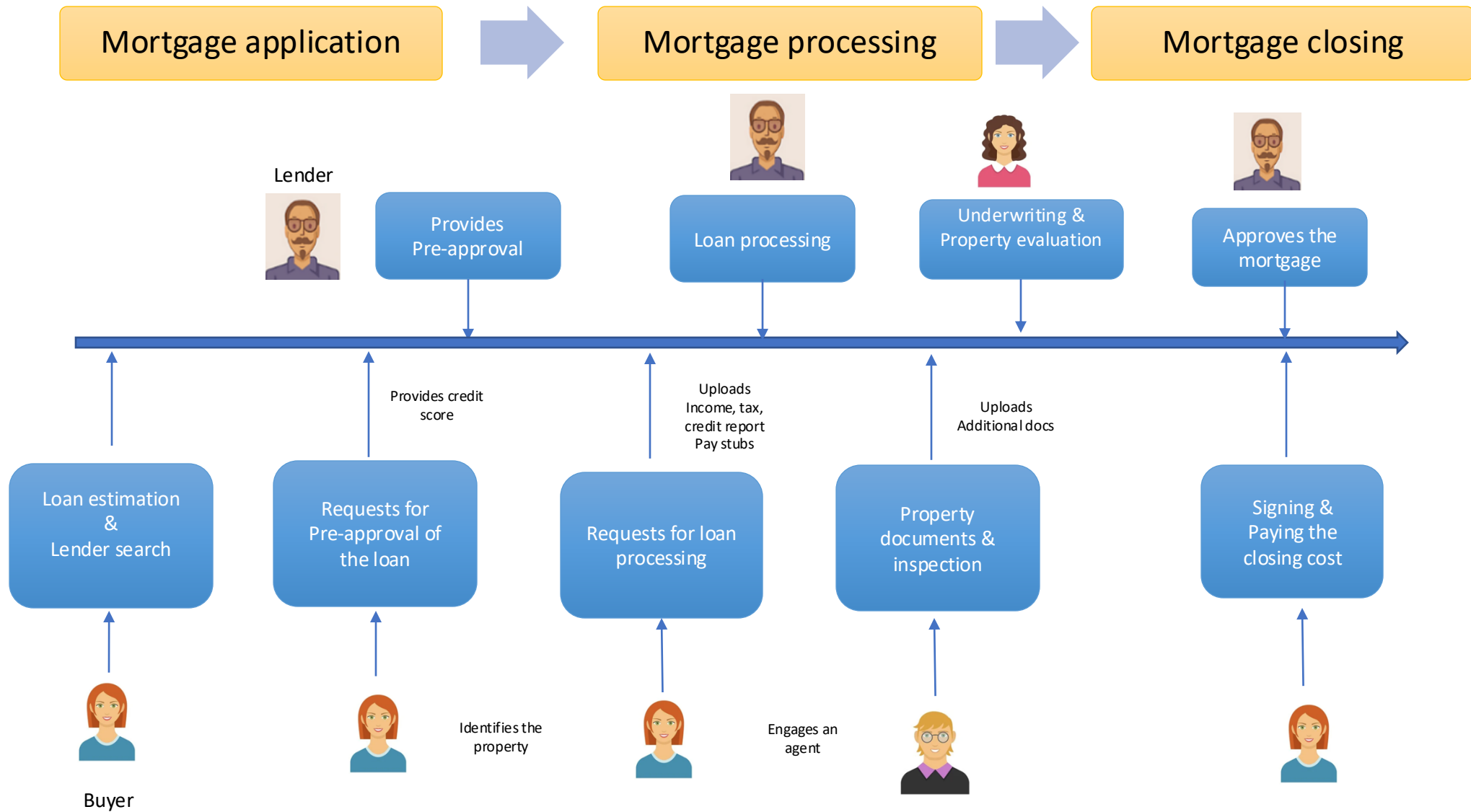
- ✓ Easy access to buyers
- ✓ Ability to provide real-time updates to stake holders
- ✓ Access to relevant documents for closure



Rahul, Agent working in Austin

- ✓ Easy access to buyers
- ✓ Ability to provide real-time updates to stake holders
- ✓ Access to relevant documents for closure

# Customer Journey



# Key Metrics

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- **Acquisition**

- Number of new borrowers signing up weekly
- Number of new lenders acquired monthly

- **Activation**

- Number of new loan requests per week
- Number of pre-approval requests per week

- **Retention/Engagement**

- Daily active users, weekly active users
- Loan closure rate (Number of loan applications closed in a week)
- Churn rate (Number of customer dropping after initiation)
- Avg. application closure time
- Number doc re-submission requests per application

- **Revenue**

- Average revenue per user
- GMV

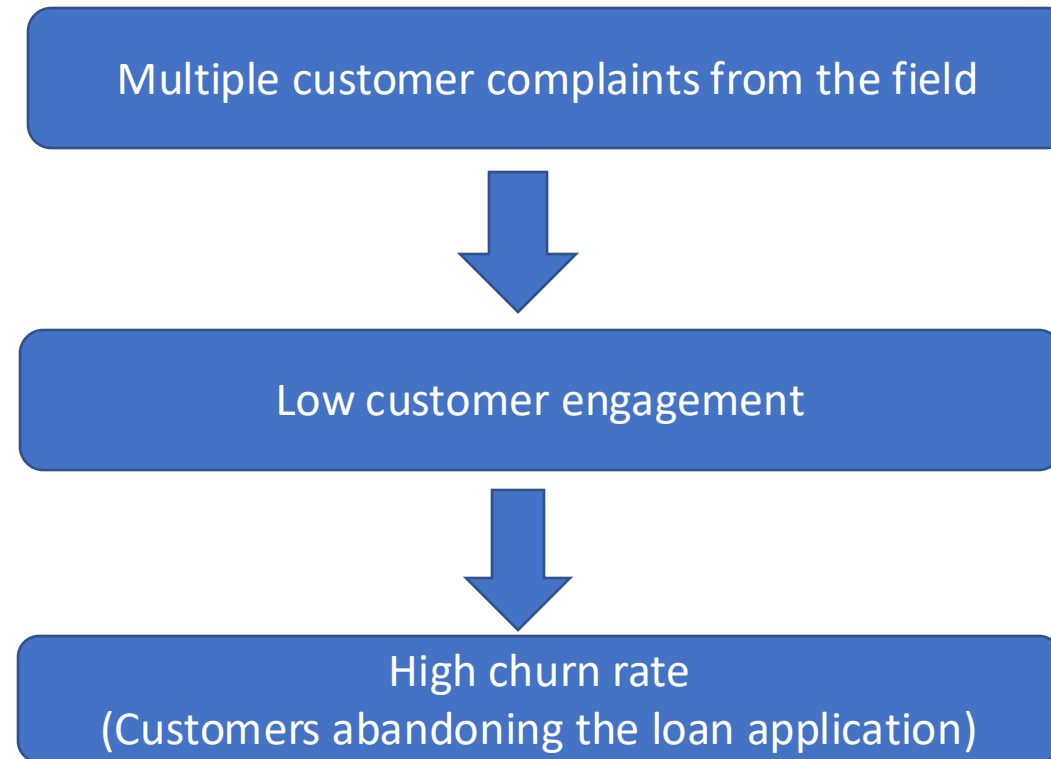
- **Referral**

- NPS



# Situation Analysis

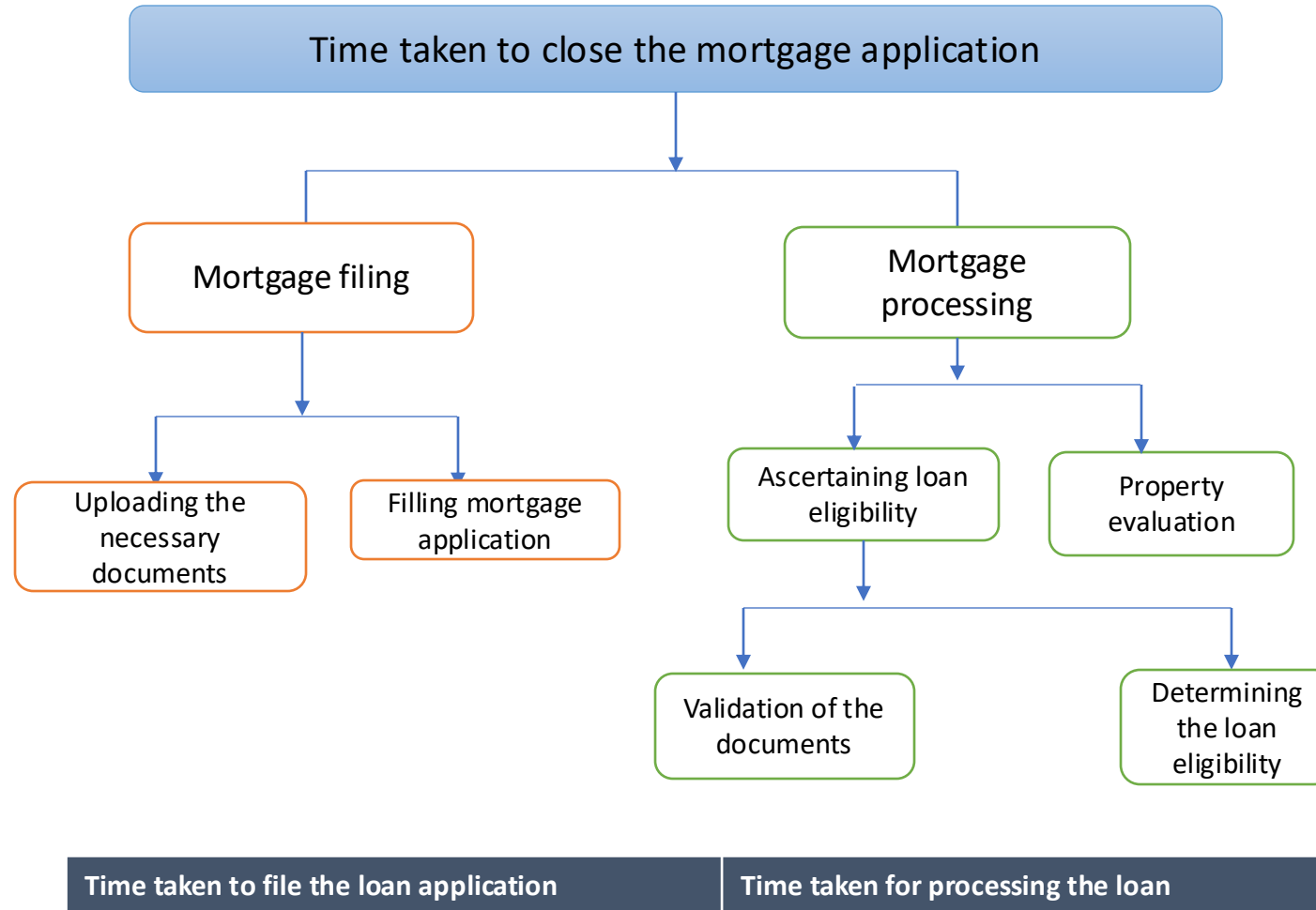
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If document processing time can be improved by 50%, churn rate can be reduced by 25%

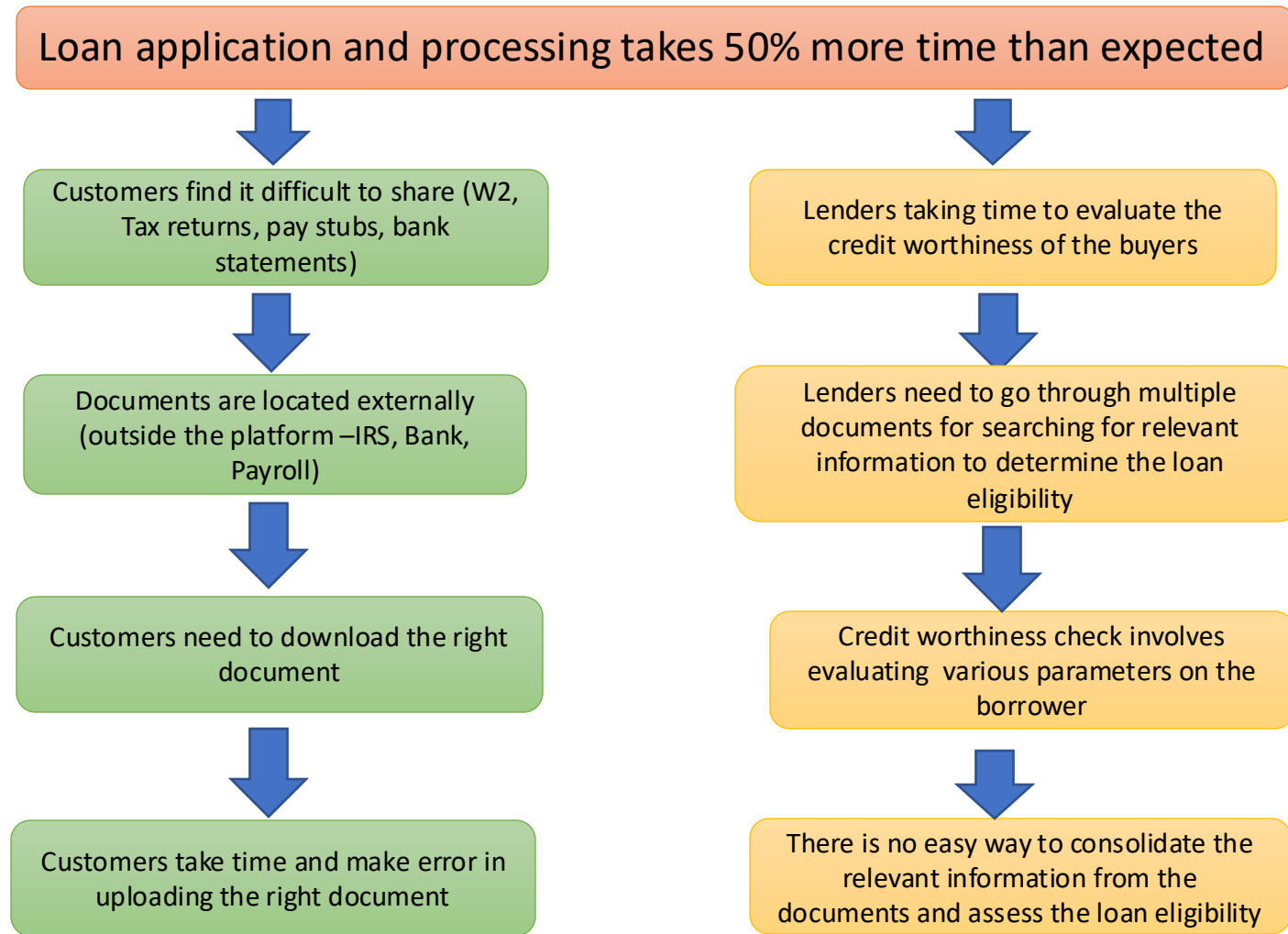
# Drilldown View

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# Root Cause Analysis

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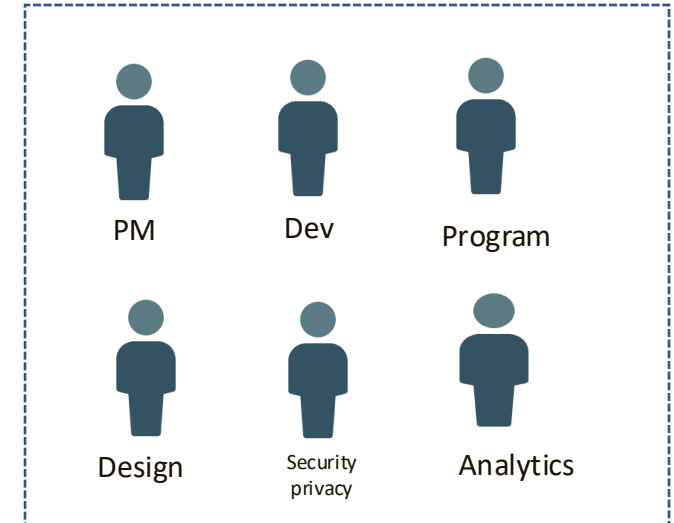


If manual work in managing the and processing the documents can be reduced, it can cut down the processing time

# Solution Approach

	FEATURE	REACH All customers - 5 Some customers - 3 Very few customers -1	IMPACT High -5 Medium -3 Low -1	CONFIDENCE High -5 Medium -3 Low -1	EFFORT High -5 Medium -3 Low -1	RICE Score
Phase-1	Platform capability to classify the documents	5	5	5	3	42
	Platform capability to extract relevant infoamtion from the mortgage documents	5	5	3	5	15
	Tool for underwriters to view the relevant data from the documents to make lending decisions	5	5	5	3	42
	Feature to alert the user on uploading wrong document	5	5	5	3	42
Phase-2	Automatic filling of mortgage application from the submitted documents	5	3	5	3	25
	Automatic downloading of documents from external sources (Tax, bank statements etc.)	3	3	3	3	9
Phase-3	Customizable rule engine for lenders	5	3	5	5	15
	Recommendation on loan eligibilty using ML alorithm	5	5	3	5	15

## Core Team



## Hypothesis testing for MVP

- A capability to classify and extract relevant information from the mortgage documents, will fast track loan processing

## Key Metrics to monitor

- Avg. loan processing time
- Churn rate
- Daily active users

## Testing methodology

- A/B testing for UX changes
- Beta testing with Lenders in selected states
- Measure the improvement on key metrics

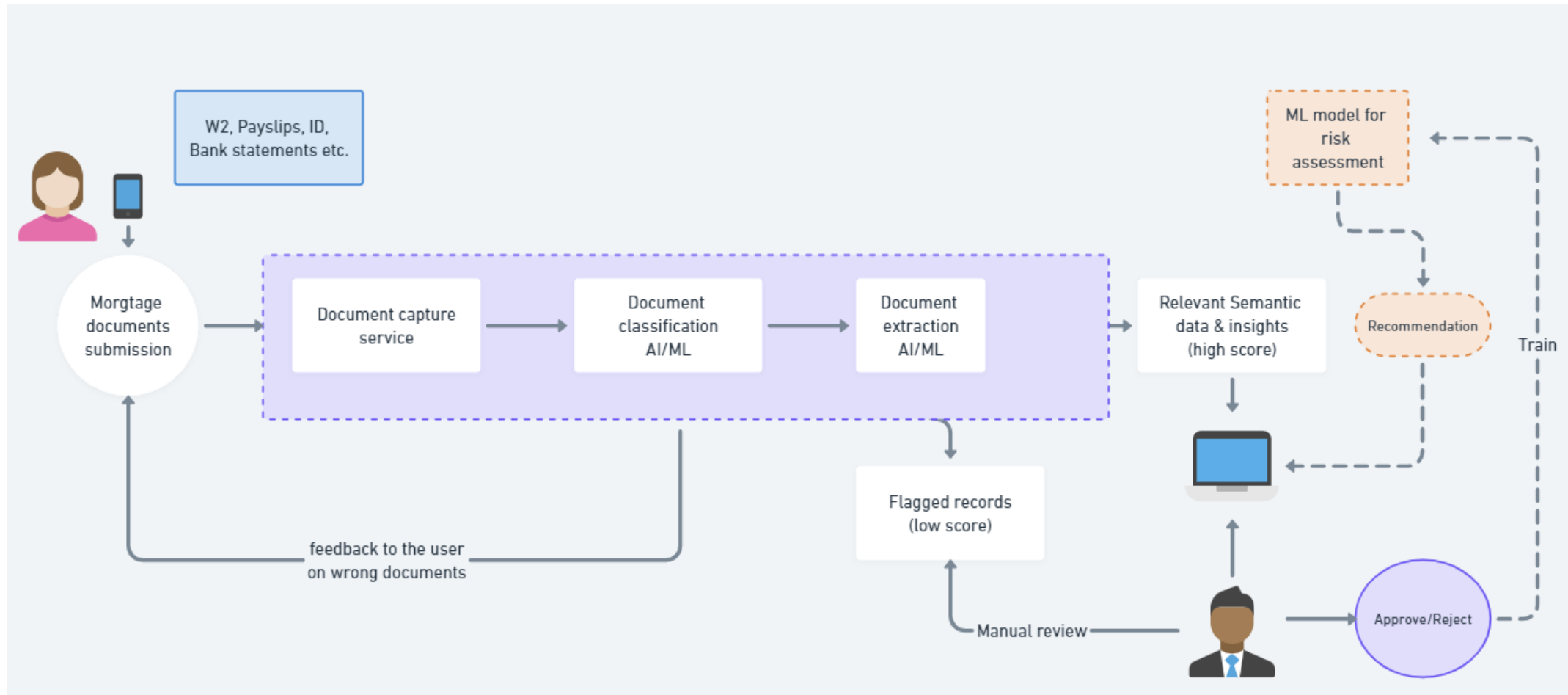
## Platform Metrics to monitor

- Precision/Recall of document extraction
- Golden Signals (Availability/Error rate)
- Latency



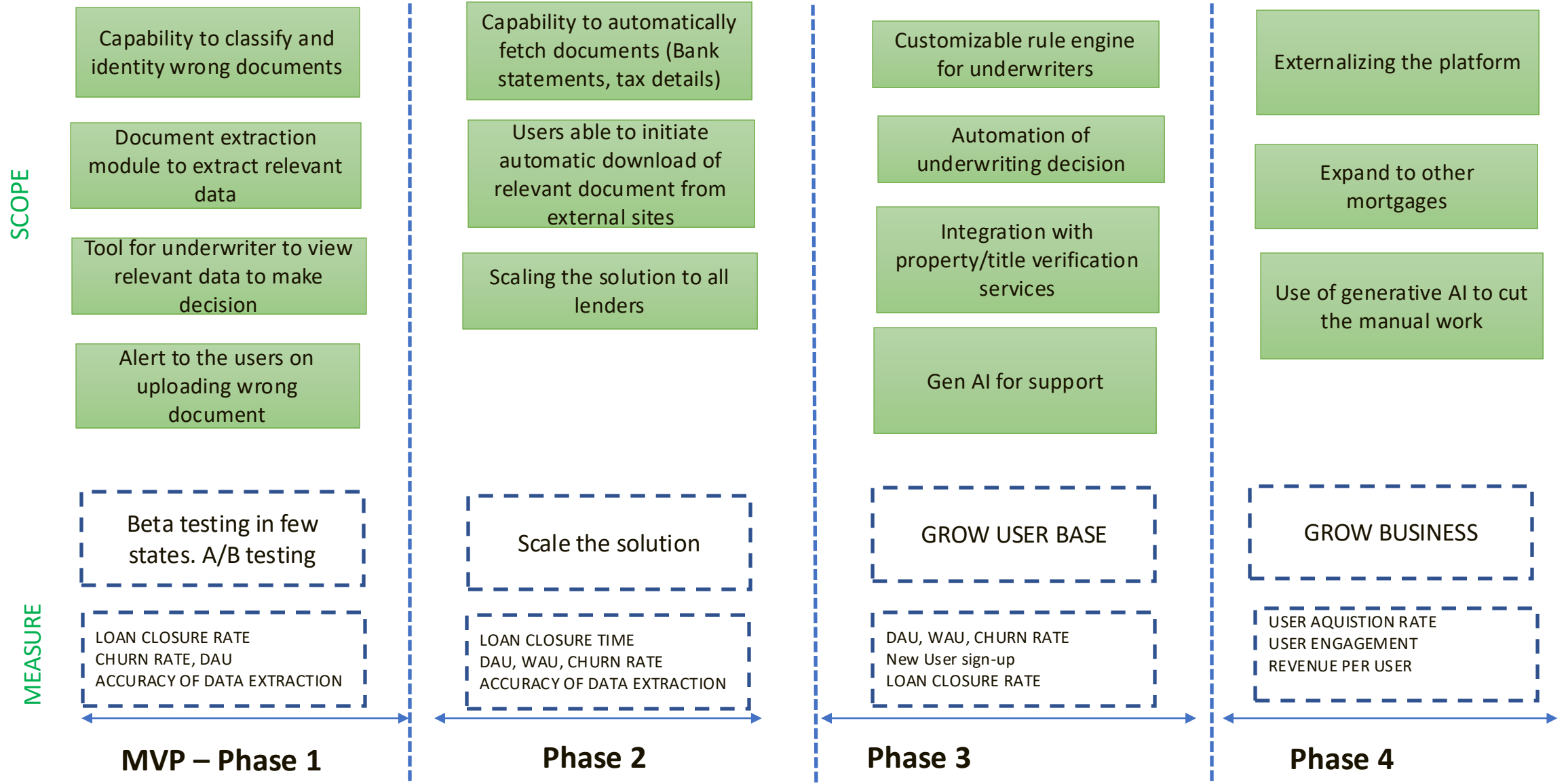
## Extended Team

# Key components



1. Document service (Capture, classification, extraction)
2. Data Aggregation module
3. UI component for alert for document submission errors
4. UI Tool for accessing the relevant insights (Approve/Reject)
5. UI tool for reviewing flagged records

# Roadmap Definition



# Loan application phase (wireframes)

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4G

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Apply for a loan

123

Search for a lender

Please fill in the following information

Loan Amount

\$

Loan Term

Enter Loan Term

Property Value

Enter Property Value

Credit score

Enter Credit score

Down Payment

Enter Down payment

Location

Enter location

Next →

9:28

4G





←

Apply for a loan

✓23

Pick a lender

Search for a lender

Lender	APR	Rate	Mo. payment	Sort by
 WestLand Financial	6.09 % July 16, 2023	5.09 % Points : 1.884	\$3,455 Fees: \$13k	Next →
 Sage Mortgage	6.09 % July 16, 2023	5.09 % Points : 1.884	\$3,455 Fees: \$13k	Next →
 Mortison Financial	6.09 % July 16, 2023	5.09 % Points : 1.884	\$3,455 Fees: \$13k	Next →
 PT Mortgage	6.09 % July 16, 2023	5.09 % Points : 1.884	\$3,455 Fees: \$13k	Next →

9:28

4G

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Apply for a loan

✓✓3

Upload Documents

Please upload the appropriate documents for the following

W2

Select

Give consent to download

Tax returns

Select

Give consent to download

Bank statements

Select

Give consent to download

Employment History

Select

Give consent to download

Upload →

9:28

4G

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Loan Application

Borrower's information

Name

Matt Damon

Marital status

Married

Address

Enter Loan Term

Employer details

Enter employer details

Assets

Enter Assets

Liabilities

Enter Liabilities

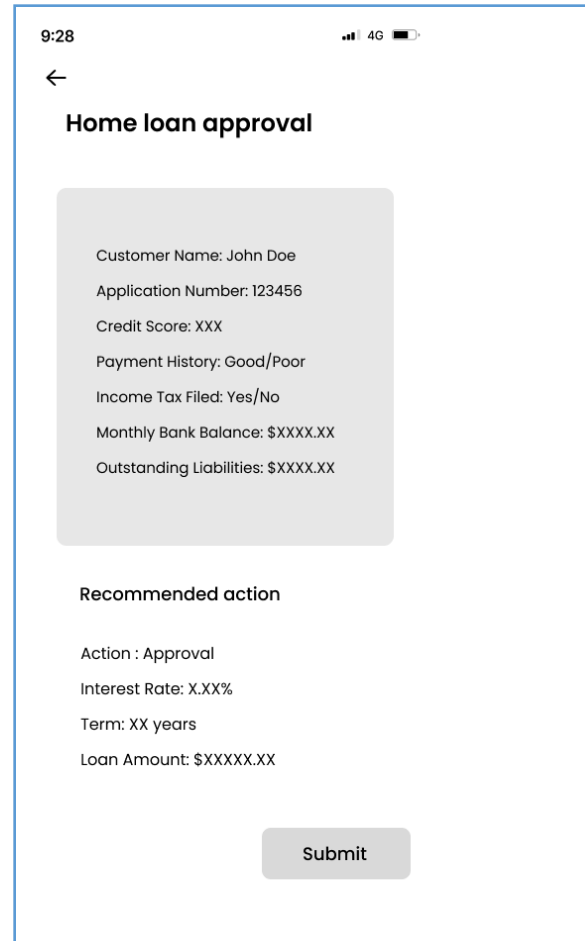
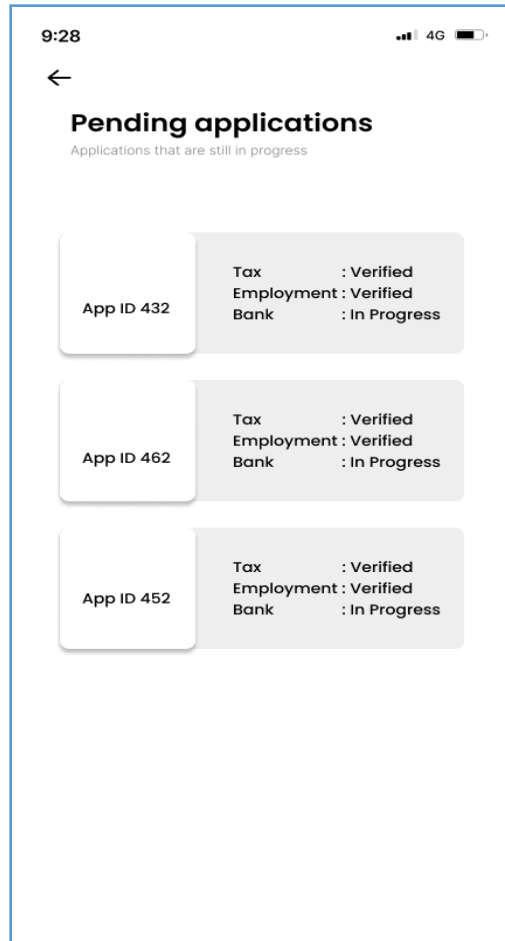
Property information

Enter property information

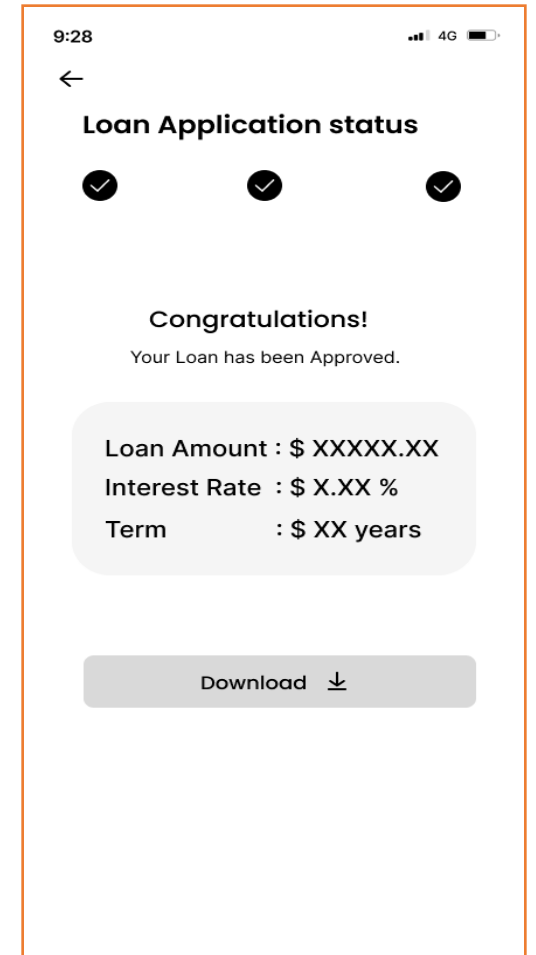
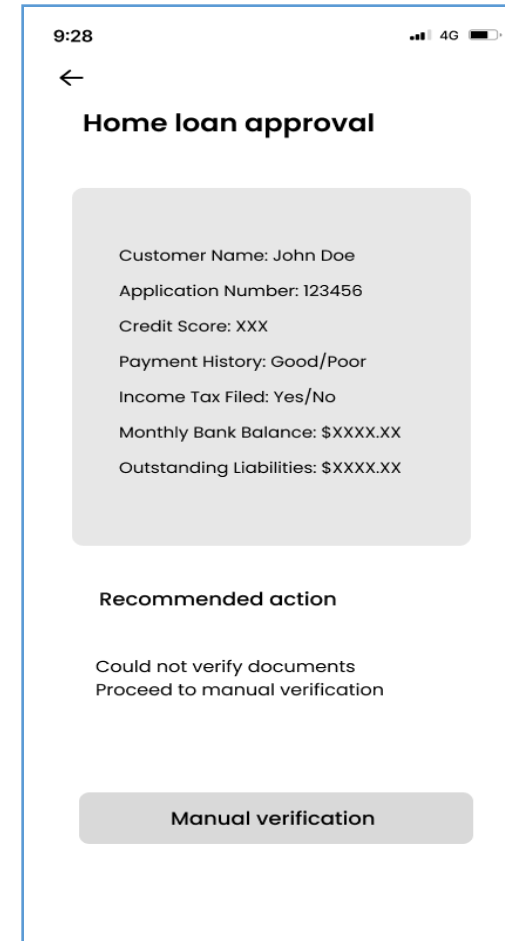
Submit

Borrower's view

# Loan processing phase (wireframes)



Lender's view



Borrower's view



# Next Steps

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# Growing the Business

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- Acquiring new borrowers
  - Referrals and discounts
  - Loyalty program for existing customers
- Acquiring new lenders
  - Attractive pricing plans based on acquisition/conversion
  - Offer customized workflow and 3<sup>rd</sup> party integrations
  - In app promotions of lenders
- Growing revenue
  - Premium services like expert consulting, property search to buyers
  - Providing predictive analytics data to lenders based on past data
  - Cross selling other financial products such insurance, personal loans
  - Externalizing platform capabilities
  - Offer other mortgages

Thank you!

# Appendix

# Assumptions

- Housey positions themselves in the mortgage marketplace segment
- Housey experiences a high churn rate indicating low customer engagement
- Solution focusses on the actions by the buyer and lender for simplification
- Excludes property verification/inspection tasks from the consideration

# References

- [https://files.consumerfinance.gov/f/documents/cfpb\\_2019-mortgage-market-activity-trends\\_report.pdf](https://files.consumerfinance.gov/f/documents/cfpb_2019-mortgage-market-activity-trends_report.pdf)
- [https://www.urban.org/sites/default/files/publication/100533/fintech\\_innovation\\_in\\_the\\_home\\_purchase\\_and\\_financing\\_market\\_0.pdf](https://www.urban.org/sites/default/files/publication/100533/fintech_innovation_in_the_home_purchase_and_financing_market_0.pdf)
- <https://www.nar.realtor/sites/default/files/documents/2021-home-buyers-and-sellers-generational-trends-03-16-2021.pdf>
- <https://www.rocketmortgage.com/learn/best-real-estate-markets>
- [https://www.forbes.com/advisor/mortgages/best-online-mortgage-lenders/#what\\_is\\_an\\_online\\_mortgage\\_section](https://www.forbes.com/advisor/mortgages/best-online-mortgage-lenders/#what_is_an_online_mortgage_section)
- <https://www.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/five-trends-resaping-the-us-home-mortgage-industry#/>

# Product requirements

- Goal
  - I am an underwriter trying to make the loan approval decision, but I need to go through multiple documents to gather the relevant insights, because of which I end up spending more than 4 hours on making the lending decision which makes me feel less productive and frustrated
- Scope
  - A platform capability that can extract information from various mortgage documents and present insights for the underwriter to make approval decision
  - Lender should be able to customize the relevant information and rules needed for decision making
  - UI tool for presenting the insights to the underwriter and make the approval decision
  - Document extraction should have high-level precision of 90%
  - Any records having <90% should be flagged for manual review
  - Asynchronous API
  - Self Serve

# Documents processed for mortgage approval

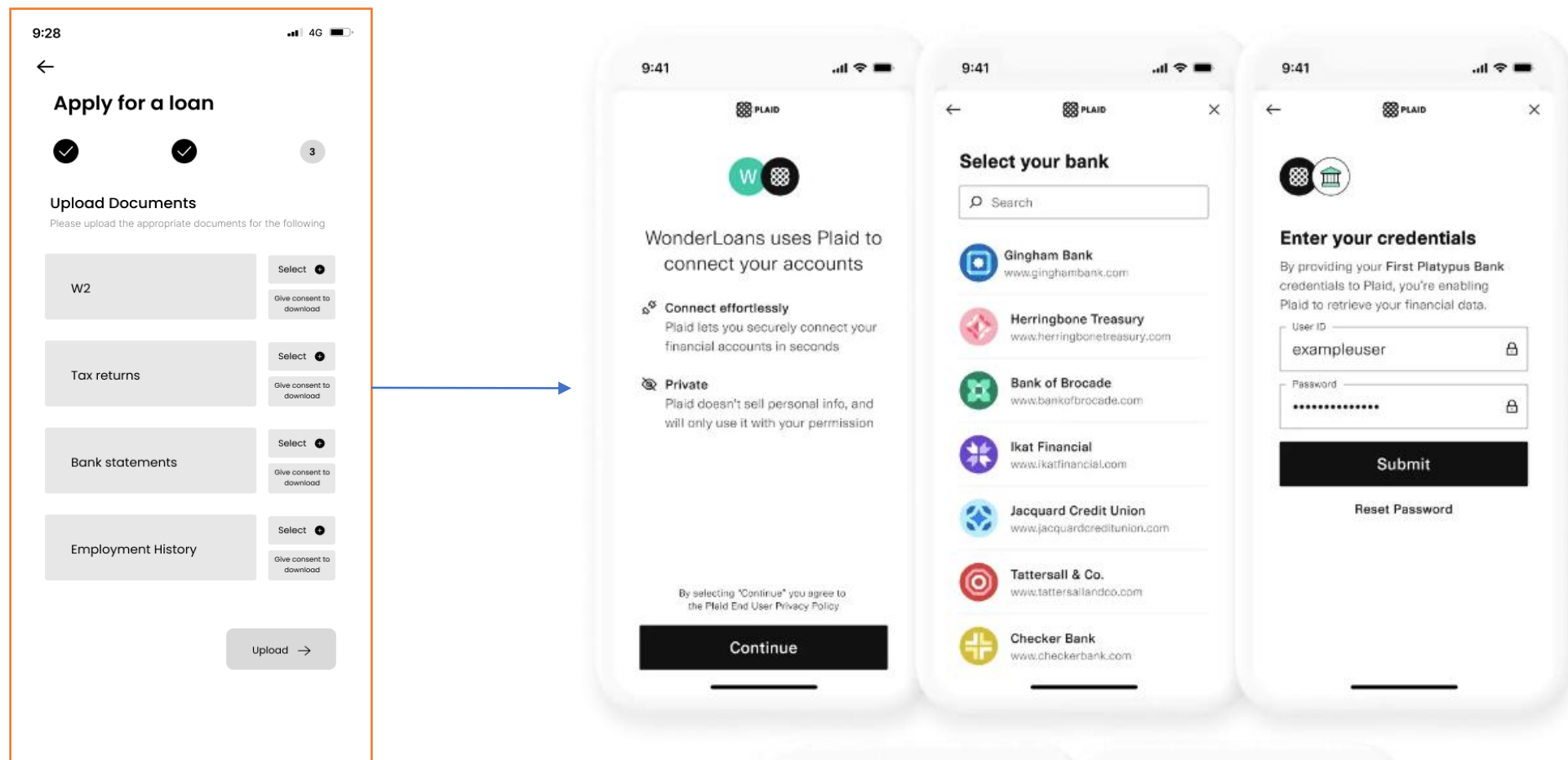
- Loan application
- Credit report
- Income verification documents (pay stubs, tax returns, etc.)
- Employment verification documents
- Bank statements
- Appraisal report
- Title report
- Homeowner's insurance policy
- Debt-to-income ratio calculation
- Asset verification documents (such as investment statements)

- Loan application - typically 5-10 pages
- Credit report - varies depending on the borrower's credit history
- Income verification documents - few pages to several dozen pages depending on the complexity of the borrower's income sources
- Employment verification documents - typically 1-2 pages per employer
- Bank statements - typically 1-2 pages per statement
- Appraisal report - can range from 10-50 pages depending on the complexity of the property and the appraisal method used
- Title report - typically 10-20 pages
- Homeowner's insurance policy - typically 10-20 pages
- Debt-to-income ratio calculation - typically 1-2 pages
- Asset verification documents - can range from a few pages to several dozen pages depending on the complexity of the borrower's assets.

**Around 120 pages**



# Document integration



# Customer segment & Personas

- Buyers
  - Age groups
    - 25 to 40 years (Millennials) – 37% of the home buyers (65% first time home buyers)
    - 41 to 55 (ready for technology adoption) – 24% of the home market (higher income group) – 22% of the first time
    - Top States – Pennsylvania, North Carolina
- Lenders
  - Non-Banking lenders, Credit Unions who wants to make use of digital lending platform (59% of the loans now issued by non banking institutions)
- Agents
  - A key stakeholder who liaison between buyer and seller and helps on closing the deal

# Key stakeholders & benefits

- Borrowers
  - Ability to find competitive rates from lenders
  - Low processing fees
  - Shorter time to close, 30% faster than offline
  - Transparency and convenience
  - Mobile friendly
- Lenders
  - Lower operational costs through automation
  - Reduced cycle time to acquire new customers
  - Customizable workflow
  - Better compliance due to less human error
  - AI/ML to assess risks quickly
- Agents
  - Easy access buyers' market
  - Ability to provide real time updates to the stakeholders
  - Faster closure to mortgage