

Crowd Capital 'thryv'
PRD: Rule-Based Notification Service
10/2022

Background

Thryv is a web app designed to make digitize the loss mitigation process for homeowners facing foreclosure. The web app consists of a frontend Borrower Portal and a backend Loan Servicing portal in which Loan servicers help Borrowers facilitate their tasks in the Borrower Portal in order to come to a trial modification agreement.

The web app is still in its initial MVP release and the long-term vision for thryv is to expand services to Borrowers for post-modification services: viewing loan information and payment processing. As part of the MVP process, we have not expanded to push notifications and are designing the notification service for in-app and email notification, with the potential to expand to SMS.

Goals

1. Build a high-performance and fault tolerant notification service for our web app that supports multiple notification and user types and is easily scalable for new features.
2. Notify users of activity on their loan or loan application.
3. Support system requirements legal, security and regulatory requirements i.e. privacy policy/terms of service updates, email verification, password reset.
4. Reach inactive users to Increase in-app activity and accomplishment of pending tasks.

KPIs

- > 90% successful email delivery rate
- > 80% email opened rate
- > 80% of opened actionable emails clicked on (CTR)
- < 48 hour user response time to tasks and in-app messaging
- Increase time in app per user after notification

Functional Requirements

- **Support multi-channel notifications:** in-app, SMS, email
- **Support different types of notifications:** informational and actionable
 - Informational: time sensitive, user response optional
 - Actionable: time sensitive, requires some user response
- **Support rule-based and user-generated triggers:** Ability to send automated notifications based on in-app events and notifications based on one-to-one communication between users.

- **Support template-based notifications:** Notifications will be template based and content will vary depending on user, notification type and notification event.
- **Subscriptions:** User should be able to opt out of certain types of emails.
- **Event Store supporting multiple services:** The event store will support Notifications as well as other services (audit trail, task management, DMS).

Non-Functional Requirements

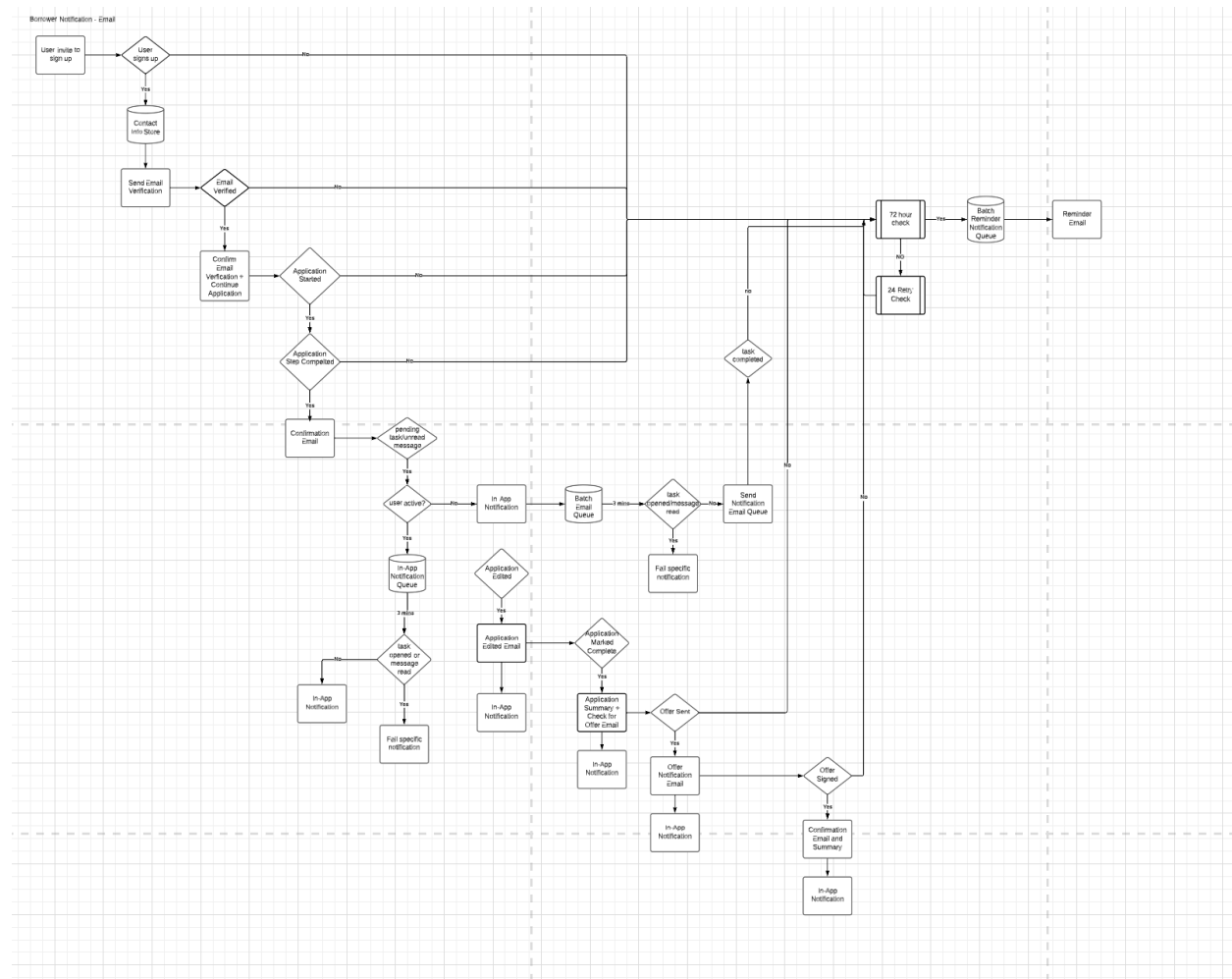
- **Scalability:** Service must be scalable to eventually services tens of thousands of users and hundreds of notification templates.
- **Adaptability:** Service must be configurable to accept new notification types and events as more features are added to the web app.
- **Rate Limiting:** Service must be able to limit the number of notifications sent to users within a certain time-period.
- **Batching:** Aggregate multiple notifications into a single email notification
- **Logging:** All notifications should be logged for monitoring.
- **Error-Checking:** Reporting to log if a notification fails to be executed or delivered.
- **Retry:** Inbuilt mechanism to retry if a notification fails.
- **Analytics and Tracking:** We should be able to track metrics on each application (delivered, opened, clicked and others in accordance with KPIs).

SEE NEXT PAGE

Roles and High-End User Flows

All users:

Borrower:



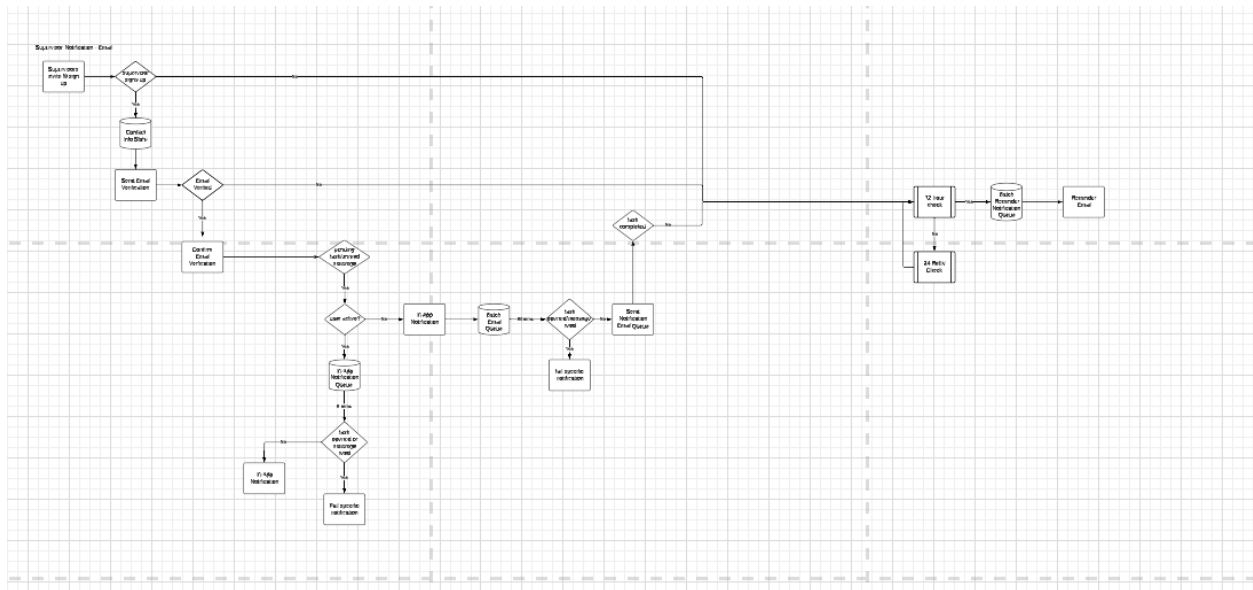
- As a Borrower, when I have a pending task to complete or unread message, I should receive a notification with an actionable link. {Actionable}
- As a Borrower, when I complete an application step, I should receive confirmation and summary of that step through an email notification.” {Informational}

SEE NEXT PAGE

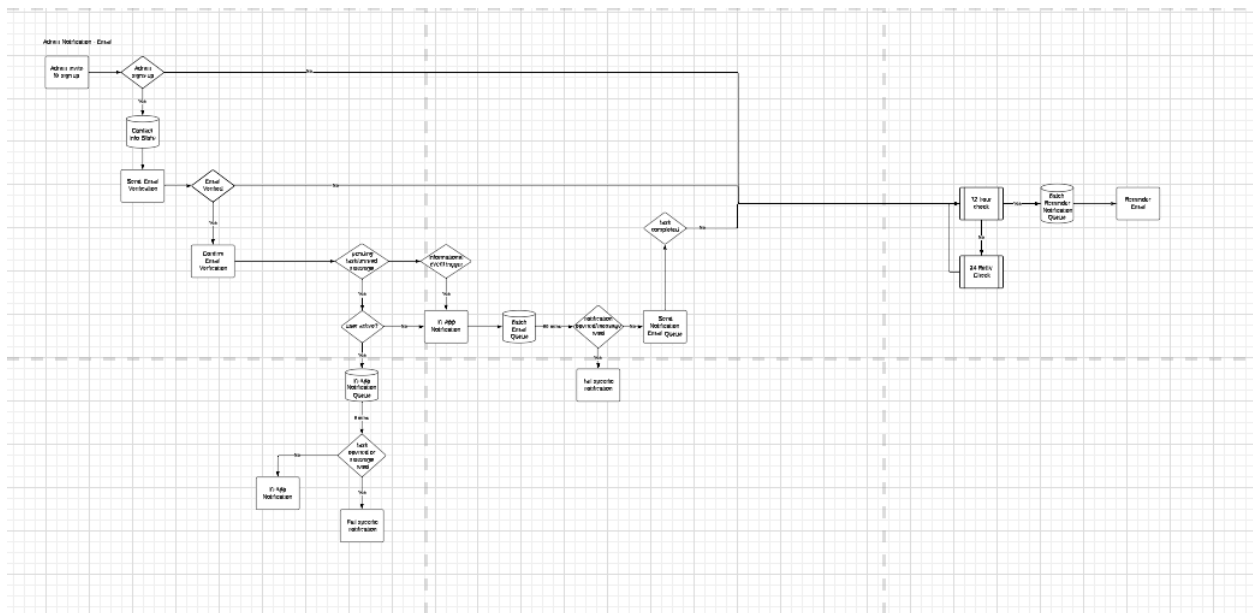
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Supervisor:



Admin:



SEE NEXT PAGE

Notification Types and Events

- All users (Borrower, BRM, Supervisor, Admin)
 - Informational:
 - Product Release Updates
 - Update to Terms and Service
 - Actionable:
 - Signup
 - Email Verification
 - Forgot Password
 - New Chat messages and pending tasks
 - Borrower
 - Respond to message from another user
 - Start application step
 - Submit application step
 - New document request
 - View offer
 - Sign offer
 - BRM:
 - Respond to message from another user
 - Approve document upload
 - Respond to application summary flags
 - Supervisor
 - Respond to message from another user
 - Admin
 - Respond to a message from another user
 - Review completed application w/ summary
 - Reminder emails to complete pending tasks
- Borrower & BRM
 - Informational:
 - Application Progress Updates w/ Summary
 - Application updates: - Also audit trail
 - document is deleted
 - document is added
 - change was made to your application
- BRM
 - Actionable:
 - New Borrower assigned to/removed from your applications
 - Application Progress Updates w/ Summary and Flagged Items
- Supervisor
 - Informational:
 - New BRM added to your organization
 - New Borrower added to your organization
- Admin

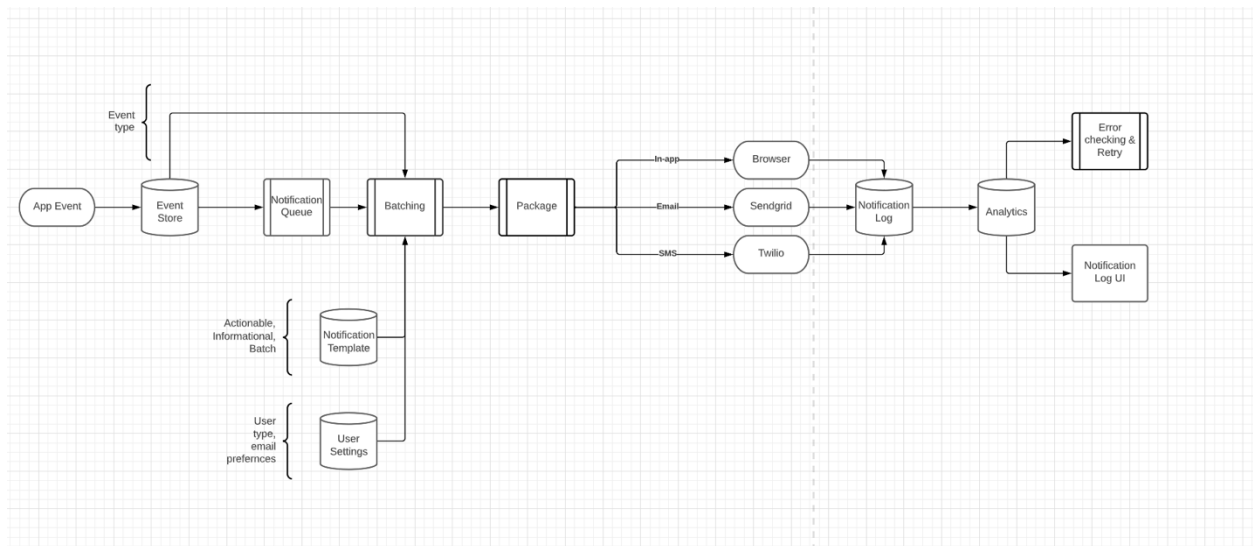
- Informational:
 - New Admins removed/added to the system
 - New BRM removed/added to the system
 - New supervisor removed/added to the system
 - New Borrower removed/added to the system

In-Scope Product Requirements

- As a Borrower, when I have a pending task to complete or unread message, I should receive a notification with an actionable link. {Actionable}
 - Given I am a borrower and the web app is open in my browser, when I receive a new task, I should be notified via the in-app notification anchor and a visual indicator on the browser tab and the notification will be clickable, taking me to the appropriate action.
 - Given I am a borrower and the web app is open in my browser, when I receive a new message, I should be notified via the in-app message anchor and a visual indicator on the browser tab and the message notification will be clickable, taking me to the appropriate direct chat.
 - Given I am a borrower and the web app is not open in my browser, when I receive a new task or message, I should be notified via the in-app notification anchor and message anchor.
 - Given I am a borrower and I have 1 or more pending tasks or unread messages, when I have been inactive on the app for 24 hours, I will receive a batch email notification.
- As a Borrower, when I complete an application step, I should receive confirmation and summary of that step through an email notification.” {Informational}
 - Given I am a borrower, when I submit an application step, I will receive confirmation of the completes step and a pdf summary of the information submitted.

SEE NEXT PAGE

High-Level System Design



Event store

Store events that take place in our system, storing the following information:

- Event Name
- User type (Borrower, BRM, Supervisor, Admin)
- Event Type (System-Generated, User Generated)
- Event Trigger
- Event Timestamp

Notification DB {Templates}

- **Borrower Notification:**
 - Informational:
 - Actionable:
- **BRM Notification:**
 - Informational:
 - Actionable:
- **Supervisor Notification:**
 - Informational:
 - Actionable:
- **Admin Notification Templates**
 - Informational:

- Actionable:

UI/UX

Visual Notification Components:

- Anchor: Where notification is displayed (bell)
- Indicator or counter
- Event Name (Subject)
- Event description
- Event type icon i.e. message/document
- Event time
- Read/unread indicators
- Opt-in/out or do not disturb toggle
- Action button – open, skip, delete, view
- Hover effects

Related Products/Features:

- User Settings: Users can make changes to their notification preferences via their settings in their user portal.
- Event Store
- Audit Trail
- Task Management
- Analytics: A way to view metrics for achieving KPIs
- Survey

Out of Scope Product Requirements

Push notifications

- Push notification with ios push service or android push service
 - Look into innovations with android lollipop and iOS8 notifications
- Push notifications in the browser
- Text message - twilio