### **Specification Document: Notecard Flow Application**

Version: 1.0 Date: May 24, 2024

### **1.0 Overview**

Notecard Flow is a dynamic, visual knowledge management tool designed to help users capture, organize, and connect ideas. Using a digital canvas, users can create and manipulate virtual notecards, group them into stacks, and draw relationships between them, creating a fluid and interconnected web of information. The system leverages spatial organization, color-coding, and a unique timeline feature to provide multiple dimensions for exploring the knowledge base.

### **2.0 Core Data Model**

The application is built on two primary data entities: Notecards and Connections.

#### **2.1 Notecard Entity**

A Notecard is the fundamental unit of information. Each notecard has the following properties:

| **Property** | **Type** | **Description** |
| --- | --- | --- |
| title | String | The main title or heading of the notecard. |
| key | String | An optional identifier used to create logical links between cards in different stacks. |
| date | Date | A date associated with the notecard, used for the timeline feature. Defaults to the creation date. |
| content | String | The main body of text for the notecard. |
| tags | Array of Strings | A list of tags for categorization and filtering. |
| color | String (Enum) | A color theme for the card's appearance (e.g., cream, blue, green). |
| position\_x, position\_y | Number | The X and Y coordinates of the card (or its stack) on the canvas. |
| stack\_id | String | The ID of the stack the card belongs to. null for individual cards. |
| stack\_position | Number | The card's ordered position within a stack. |

#### **2.2 Connection Entity**

A Connection represents a directed relationship between two stacks of notecards.

| **Property** | **Type** | **Description** |
| --- | --- | --- |
| name | String | An optional descriptive label for the connection. |
| fromStackId | String | The ID of the source stack. |
| toStackId | String | The ID of the target stack. |

### **3.0 User Interface**

The application interface consists of a fixed sidebar for controls and a dynamic main canvas for interaction.

#### **3.1 Sidebar**

The sidebar on the left serves as the application's control panel. It includes:

* Card Creation: A button to open a form for creating a new notecard.
* Connection Controls: Buttons to enter "Connect From" and "Connect To" modes for linking stacks.
* Timeline Control: A "Create Timeline" button to toggle the visibility of the timeline view on the canvas.
* Search & Filter:
  + A global text search field to filter cards by title or content.
  + A tag filter section that dynamically populates with all available tags. Users can select multiple tags to filter cards.
* Canvas Zoom Control: A panel with buttons (+, -), a manual percentage input, and a reset button to control the zoom level of the main canvas. The scroll wheel also works when hovering over this panel.
* Statistics: A display of the total number of notecards.

#### **3.2 Canvas**

The canvas is the main workspace where all visual elements are rendered and manipulated.

* It displays all individual notecards and stacks at their specified positions.
* It renders directed, named connection lines between stacks.
* It provides the space for all drag-and-drop interactions.
* When activated, it displays the Timeline feature at the bottom.

### **4.0 Feature Specifications**

#### **4.1 Card & Stack Manipulation**

* Card Creation: New cards are created via the sidebar form. They appear on the canvas at a random position with the date field pre-filled to the current day.
* Real-Time Dragging: When a single card is dragged, its visual representation follows the cursor's movement precisely until it is dropped.
* Stacking:
  + Creation: Dragging a card and dropping it onto another individual card creates a new stack.
  + Adding: Dropping a card onto an existing stack adds it to that group.
* Stack Visualization (Rolodex view): Stacks are rendered with the top card fully visible and the headers of subsequent cards staggered behind it. A visual boundary box groups the elements.
* Stack Interaction:
  + Scrolling: Using the mouse scroll wheel while hovering over a stack cycles through the cards, bringing the next or previous card to the front with a smooth animation.
  + Dragging: Entire stacks can be moved by dragging the boundary box or the top card.

#### **4.2 Connecting Stacks**

* Users can enter a connection mode from the sidebar.
* First, click a source stack ("Connect From").
* Then, click a target stack ("Connect To").
* A directed line is drawn between the centers of the two stacks.
* Connections can be named and deleted by clicking on their name label.

#### **4.3 Filtering and Data-Driven Views**

* Focus & Filter: When a user clicks to focus on a card that has a key, the system automatically filters all downstream connected stacks to show only cards that share the same key. This allows for powerful, context-sensitive data exploration.
* Search & Tagging: Cards on the canvas and in the timeline are filtered in real-time based on the search term and selected tags.

#### **4.4 Timeline Feature**

* Activation: Toggled by the "Create Timeline" button in the sidebar.
* Display: A horizontal bar appears at the bottom of the canvas, spanning its width. It represents the date range of all currently filtered cards.
* Card Representation:
  + Each card with a valid date is represented by an icon on the timeline, positioned chronologically.
  + If multiple cards share the same date, they are represented by a single group icon.
* Interaction:
  + Hovering:
    - Hovering over a multi-card icon displays a tooltip listing all associated card titles.
    - Hovering over a card title in the list highlights both the card on the canvas and its connection line to the timeline.
  + Clicking: Clicking a timeline icon (or a title in a list) scrolls the corresponding card to the front of its stack (if applicable) and briefly highlights it with a yellow glow for visual feedback.
* Visual Cues:
  + Connection Lines: A line is drawn from each timeline icon to its corresponding card on the canvas.
  + Weekly Markers: Subtle vertical dashes mark the start of each week (Monday) on the timeline for better temporal orientation.

a minute ago

