

Melt Monitor

Sprint 1 Documentation

Team 6

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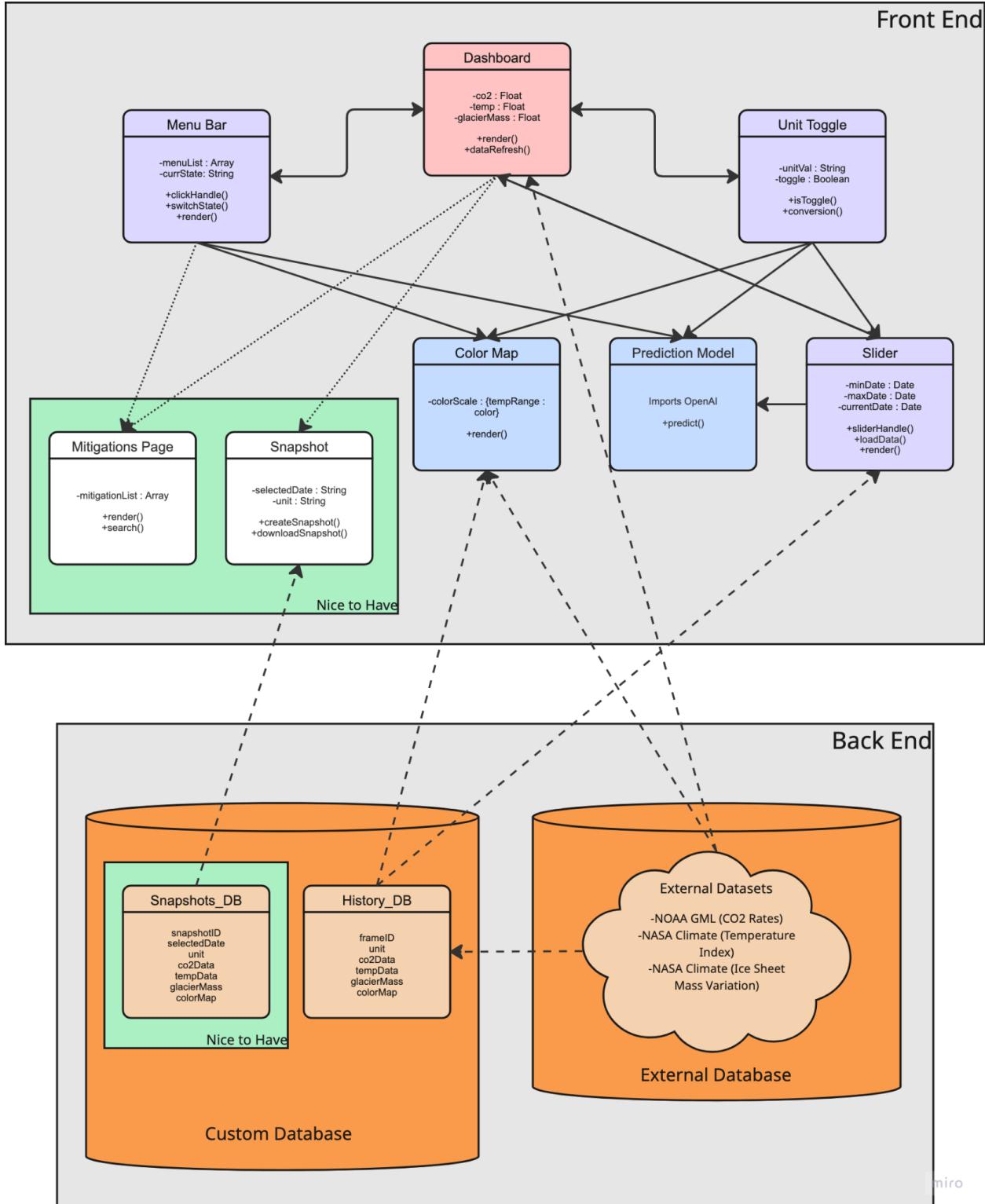
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High-Level System Architecture Diagram



High-Level System Architecture (Visual Keys, Relationships, and Tech Stack)

Visual Key

- Red = Parent Class
- Purple = Parent & Child Class
- Blue = Child/Inheritor Class
- Orange = Databases
- Green = Nice to Have Classes and Database

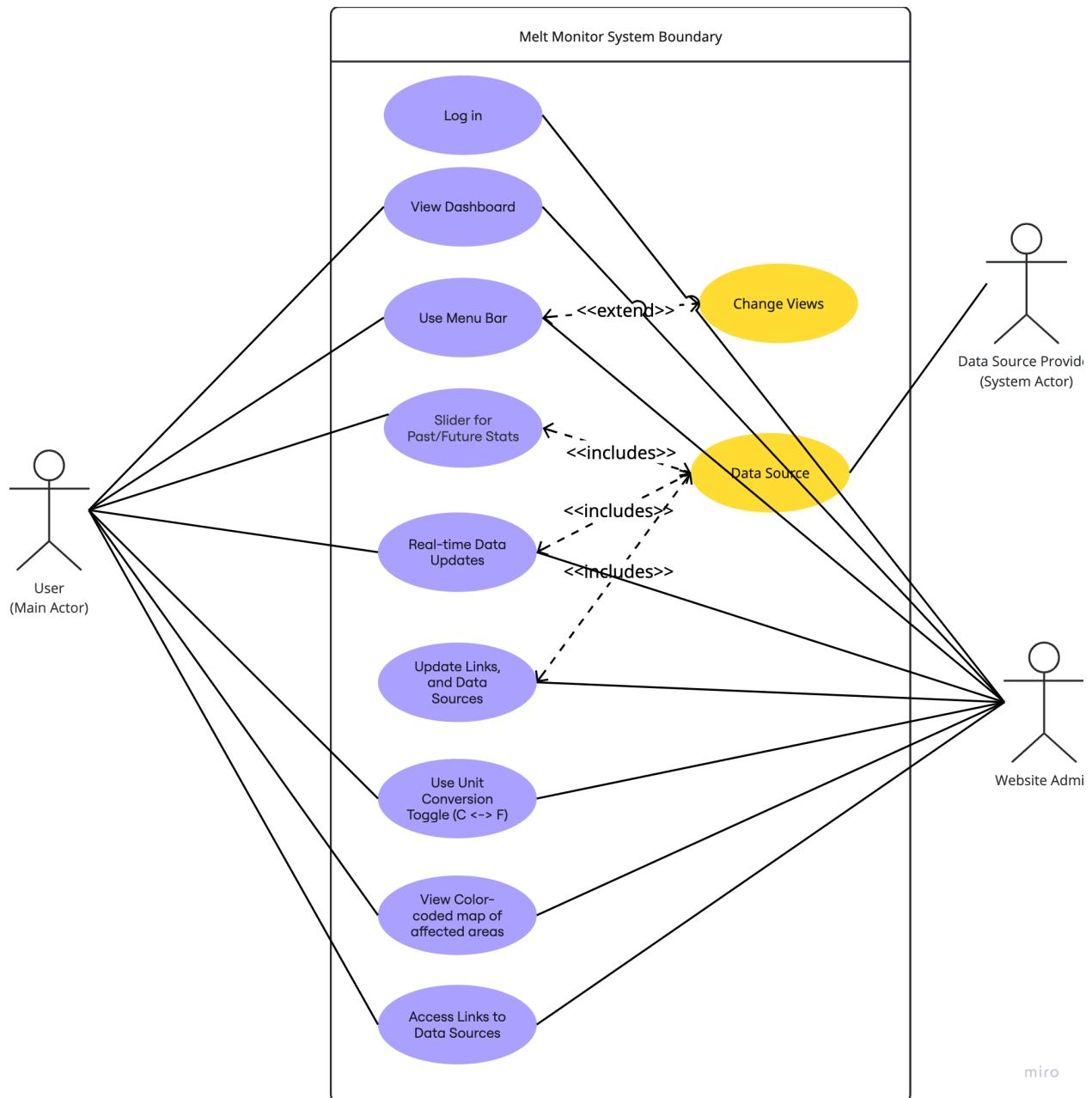
Relationships

- Dashboard is a parent class of Menu Bar, Unit Toggle, and Slider
- Color Map inherits Menu Bar and Unit Toggle
- External Database projects data to Dashboard and color map.
- Slider pulls from Custom Database
- External Database is filled with current and past data from NOAA and NASA

Tech Stack

- HTML, CSS, JavaScript, React
- Flask, OpenAI
- MySQL
- GitHub

Melt Monitor Use Case Diagram



Melt Monitor Use Cases

Use Case 1: View Dashboard

- Actor: User, Website Admin
- Goal: See the relationship between CO₂, temperature, and glacier mass.
- Steps: User opens the app -> Dashboard loads -> Data is shown in charts/visuals.
- Outcome: User understands data relationships.

Use Case 2: Use Menu Bar to Change Views

- Actor: User
- Goal: Navigate between different views (charts, maps, predictions).
- Steps: User clicks menu -> System changes the view.
- Outcome: User can explore different visualizations.

Use Case 3: Slider for Past/Future Stats

- Actor: User
- Goal: Explore climate trends over time.
- Steps: User moves slider -> System adjusts chart to show past or predictions.
- Outcome: User understands climate history and possible futures.

Use Case 4: Real-time Data Updates

- Actor: User (trigger), External Data Source (provides data).
- Goal: Keep dashboard updated.
- Steps: System fetches data from source -> Dashboard refreshes automatically.
- Outcome: User sees fresh, accurate data.

Use Case 5: Unit Conversion Toggle between Celsius and Fahrenheit

- Actor: User
- Goal: Change temperature units for clarity.
- Steps: User clicks toggle -> Dashboard switches between Celsius and Fahrenheit.
- Outcome: User reads data in preferred format.

Use Case 6: View Color-coded Map

- Actor: User
- Goal: See how regions are affected by climate change.
- Steps: User clicks “Map View” -> System loads map with colors by severity.
- Outcome: User identifies which areas are most impacted.

Use Case 7: Access Links to Data Sources

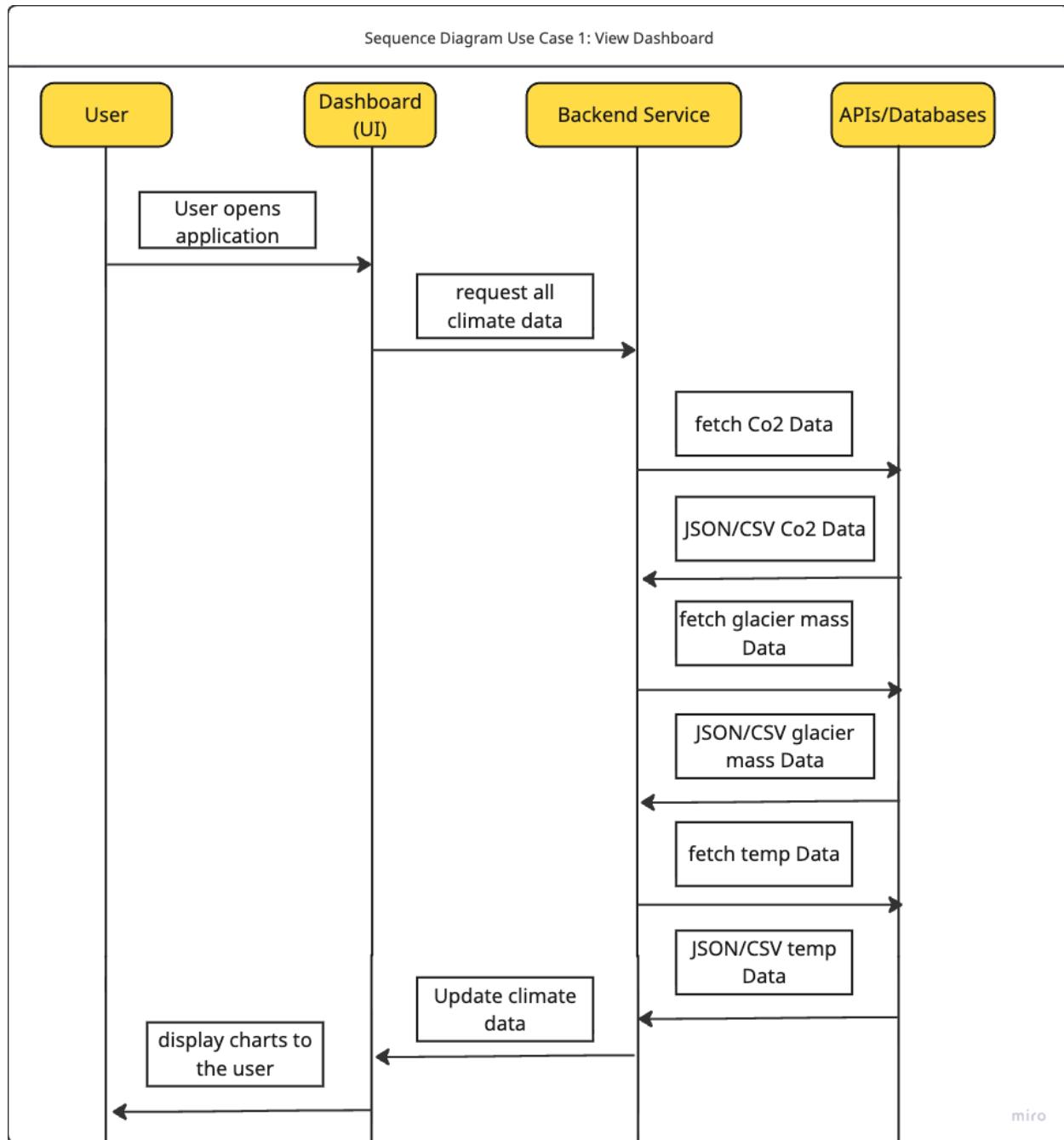
- Actor: User
- Goal: Verify information and explore official sites.
- Steps: User clicks data source link -> System opens external website.
- Outcome: User can validate the data.

Use Case 8: Update and Sync Links from Data Sources

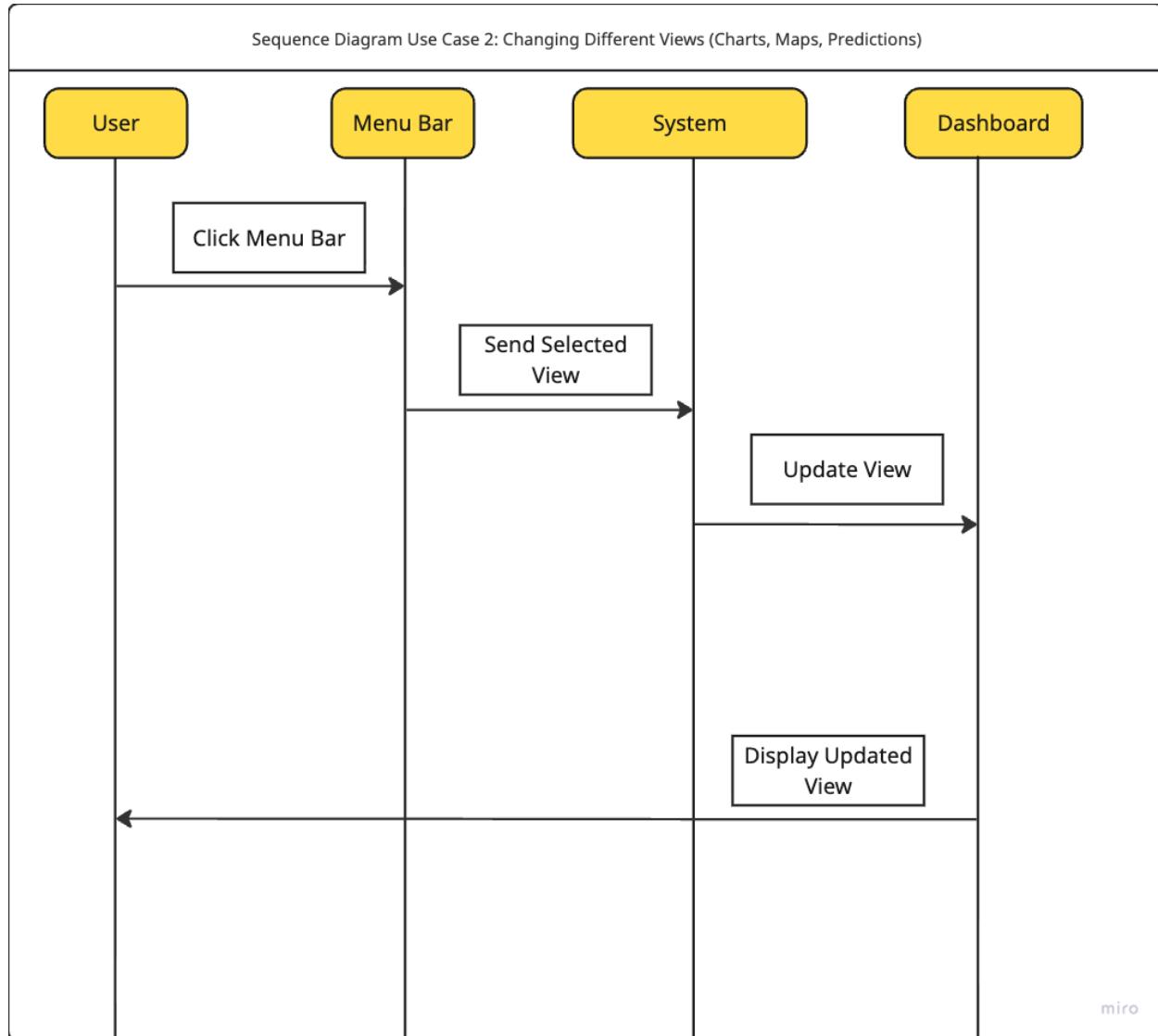
- Actor: Website Admin
- Goal: Keep all external data source links (e.g., NOAA, UN data) up to date so the system can fetch fresh climate information without errors.
- Steps: Admin logs into the admin panel -> Admin navigates to "Data Sources" settings -> Admin views, edits, or adds a new link -> System updates the records.
- Outcome: All external data sources are updated and synchronized.

Melt Monitor Sequence Diagrams

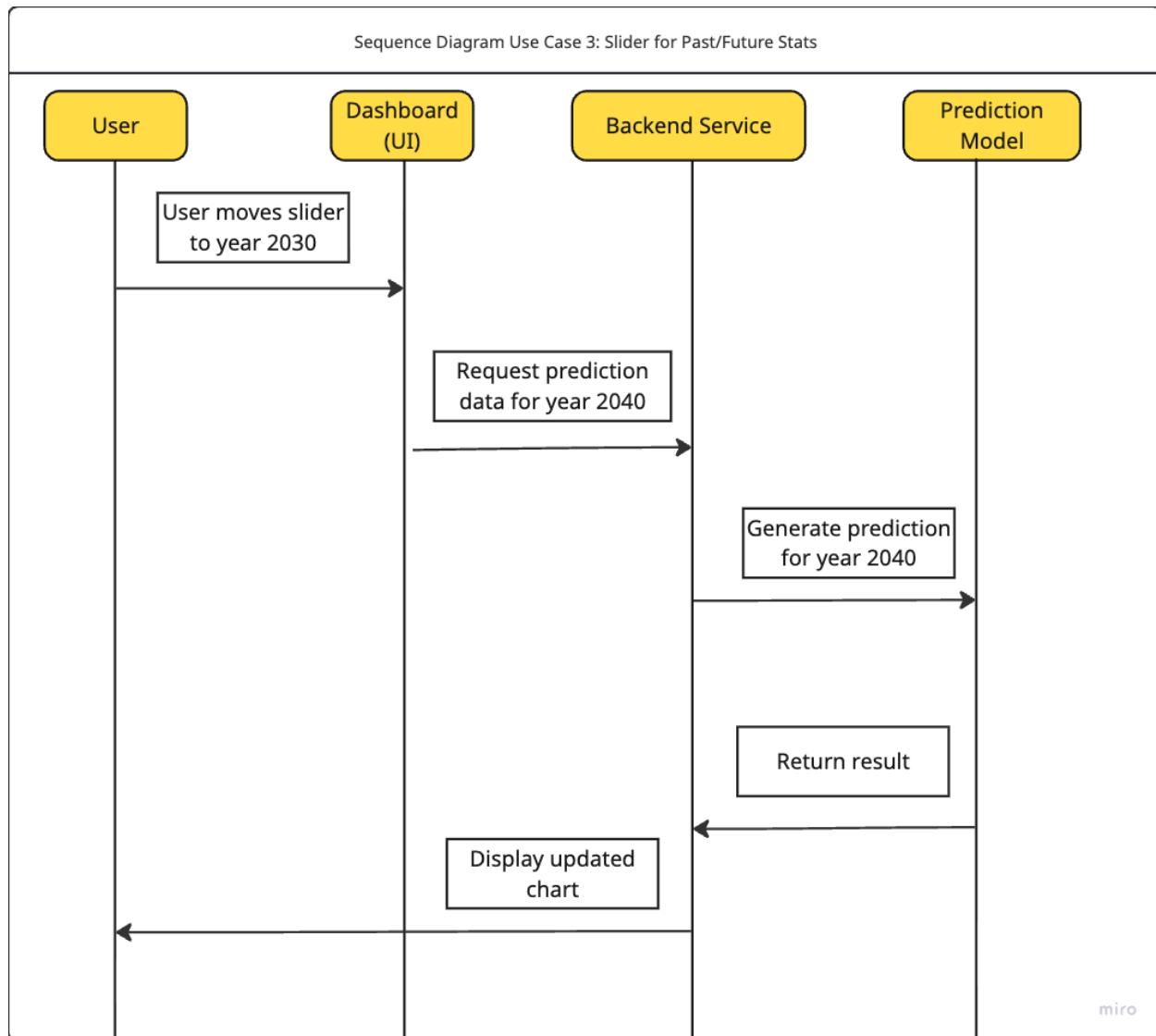
Use Case 1: User View Dashboard



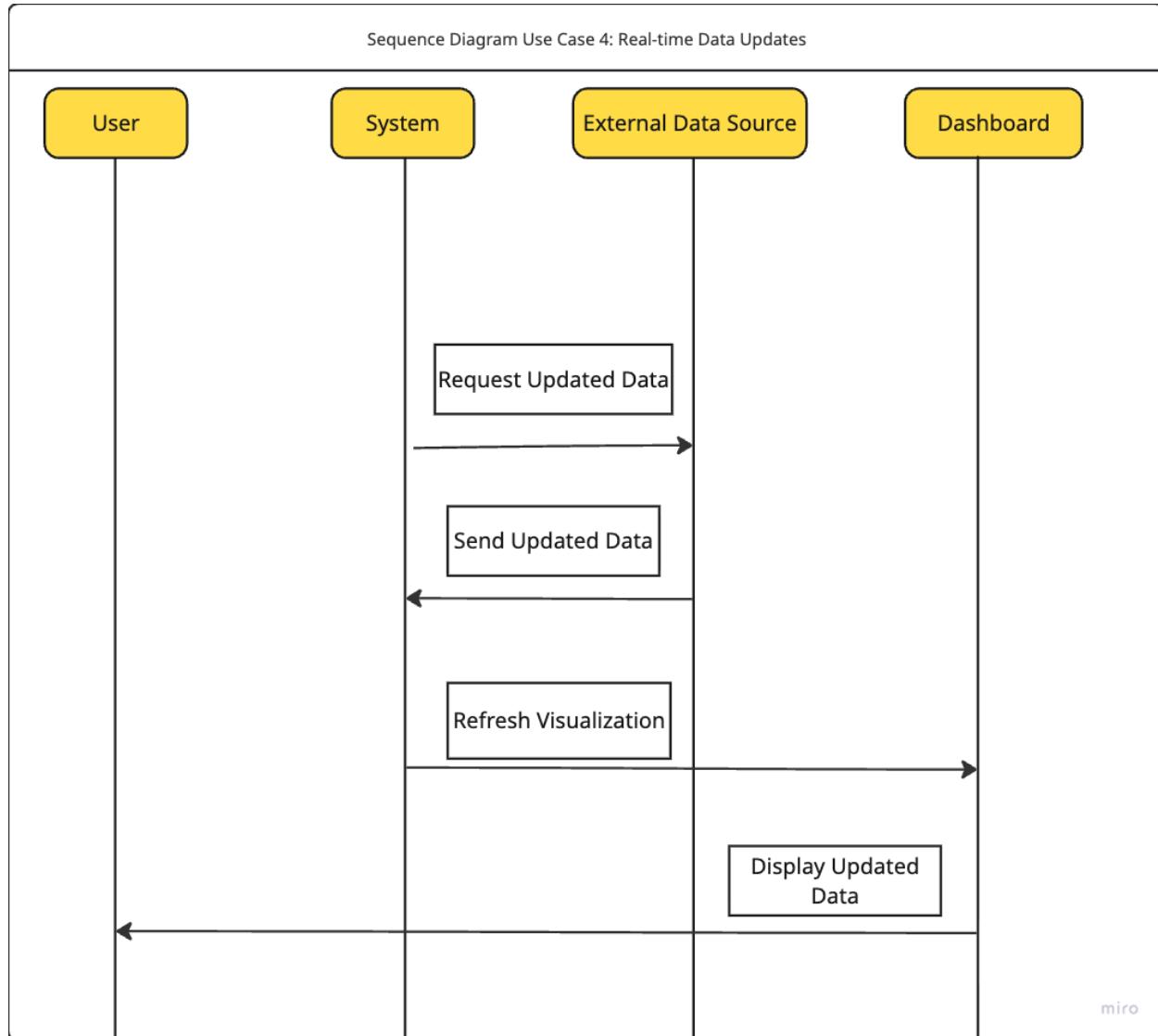
Use Case 2: Use Menu Bar to Change Views



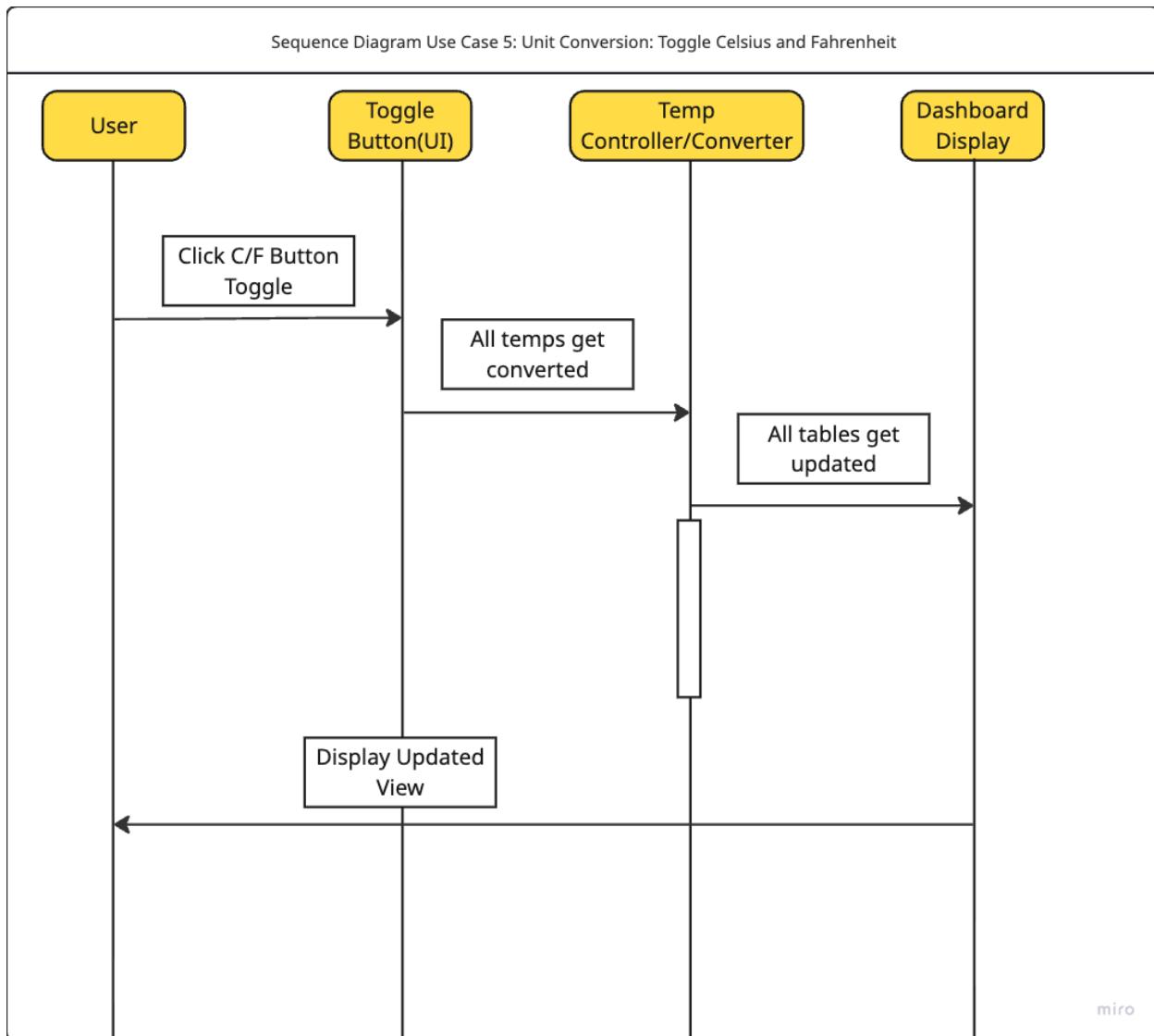
Use Case 3: Slider for Past/Future Stats



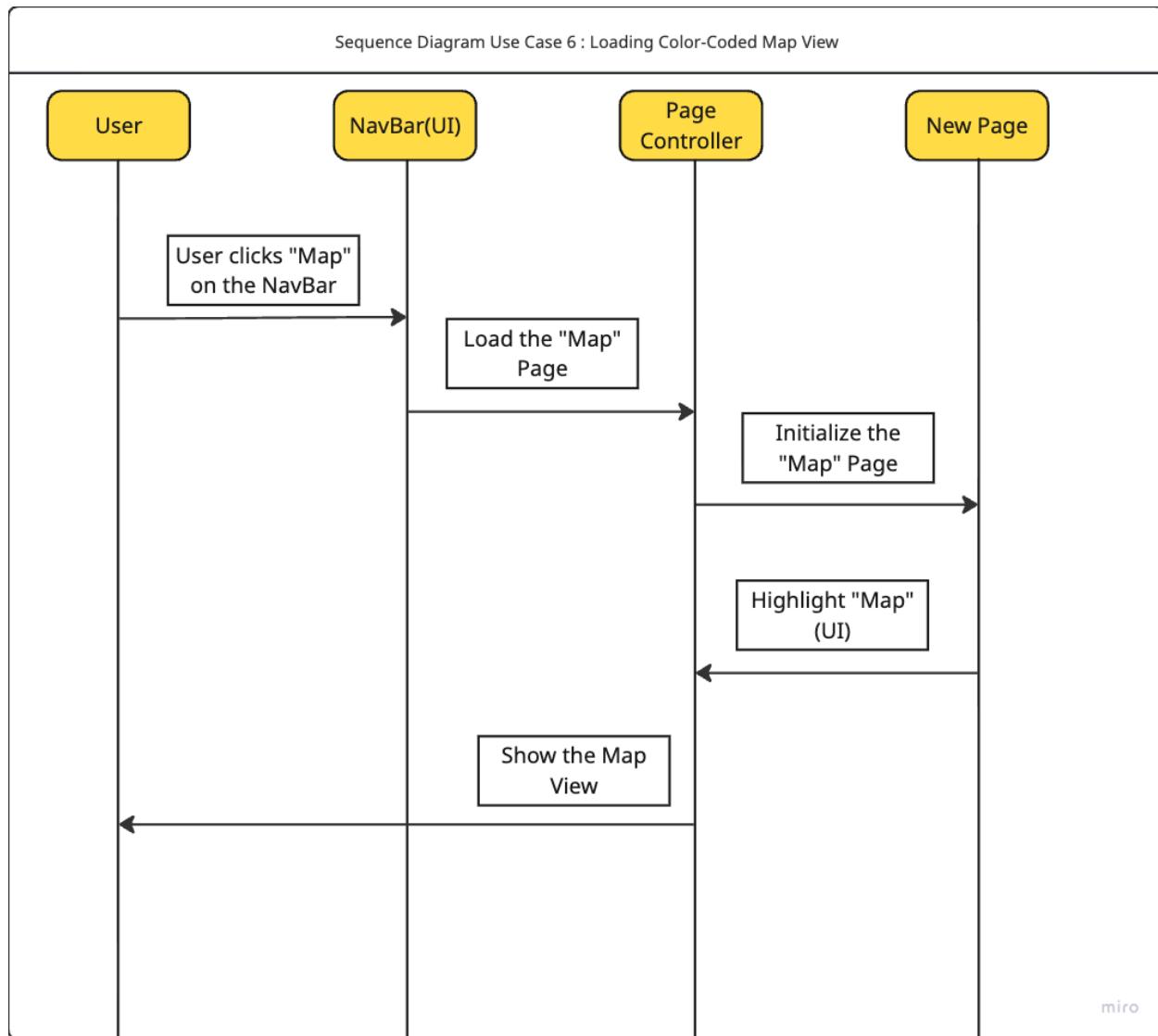
Use Case 4: Real-time Data Updates



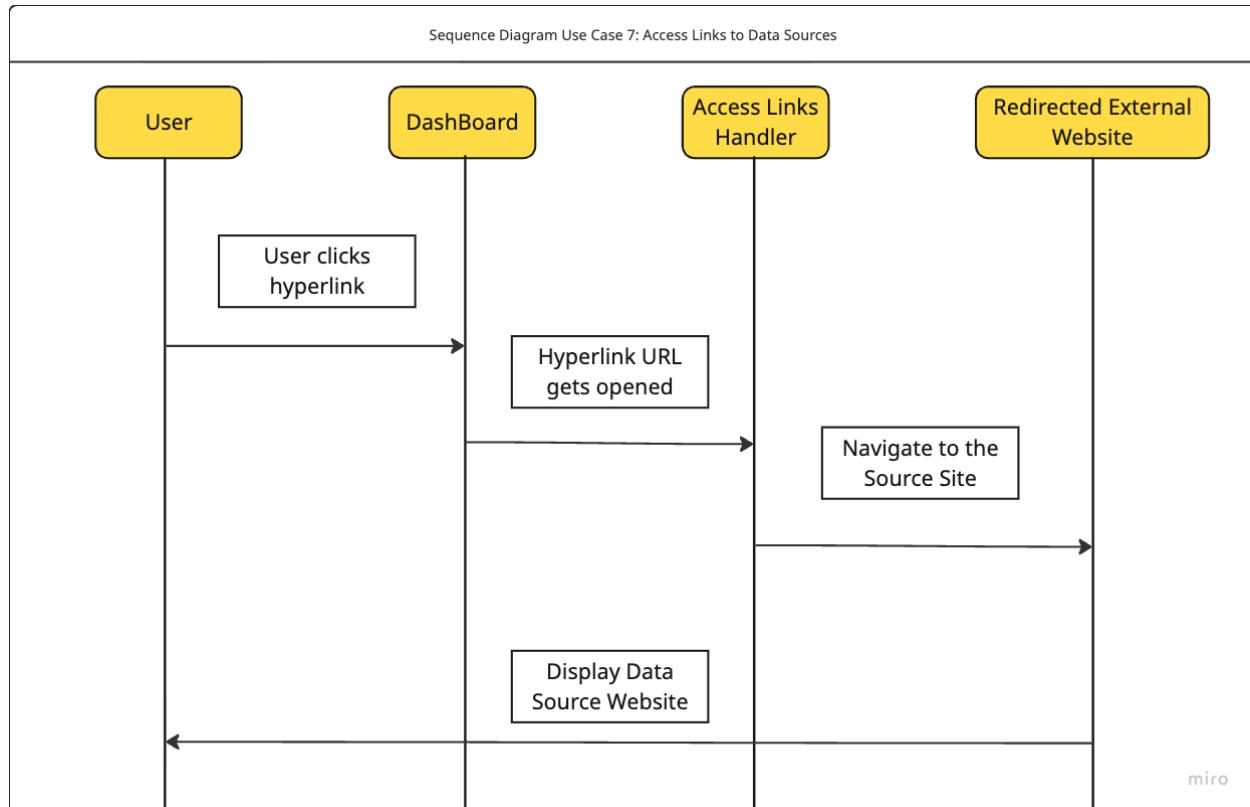
Use Case 5: Unit Conversion Toggle between Celsius and Fahrenheit



Use Case 6: View Color-coded Map



Use Case 7: Access Links to Data Sources



Use Case 8: Update and Sync Links from Data Sources

