

# Project Overview

The Cardano Ticker project was developed as an open-source, user-friendly display solution that allows users to visualize key blockchain and price data. The project aligns with the Cardano Use Cases: Concept challenge by providing an easy-to-assemble, customizable, and low-power device that enhances accessibility and usability within the Cardano ecosystem. Our primary goals were to create:

- A hardware-agnostic solution supporting both Raspberry Pi and ESP32-based configurations.
- A modular, easy-to-install software system that allows users to build and customize dashboards.
- A well-documented assembly guide and 3D-printable case for seamless DIY deployment.

## Milestone Achievements

During the final milestone, we successfully delivered:

- **Expanded hardware support:**
  - **Raspberry Pi (Zero, 3, 4, 5, etc.)** with LCD or ePaper displays (color or black & white).
  - **ESP32-based wireless version** with ePaper display (color or black & white).
- **Optimized memory usage for ESP32:** Implemented efficient data handling techniques to accommodate low memory constraints, particularly for color ePaper displays.
- **Improved ease of installation:** Users can quickly set up their ticker with minimal technical expertise.
- **Customizable widgets and dashboards:**
  - Users can create and configure custom dashboards.
  - Predefined examples for different use cases: Price Dashboard, Blockchain Dashboard, Pool Dashboard.
- **Command-line user interface:**
  - Allows users to manage ticker settings (dashboard selection, refresh intervals, etc.).
- **Reliable data fetching system:**

- Multiple data fetchers for price data with automatic fallback in case of service unavailability.
- Simple integration of new data fetchers.
- **Flexible display support framework:**
  - Interfaces for integrating new display types in Python and C++ (Raspberry Pi/ESP32 support).
- **Enhanced 3D-printed case design:**
  - Multi-part snap-fit mechanism, eliminating the need for extra materials or assembly components.

## Challenges and Lessons Learned

- **ESP32 memory limitations:** Engineering the color ePaper support required significant optimizations to fit within the low memory constraints.
- **Balancing modularity with ease of use:** Ensuring the system remains highly customizable while keeping installation and configuration straightforward was a key focus.
- **Hardware compatibility testing:** Extensive testing was needed to validate performance across different Raspberry Pi and ESP32 models.

## Community Engagement & Feedback

- GitHub repository serves as the central hub for feedback, contributions, and issue tracking.
- Open-source contribution model encourages users to extend functionality, report bugs, and suggest improvements.
- Multiple channels for user engagement:
  - GitHub Issues for bug reports.
  - GitHub Discussions for feature suggestions.
  - Community-driven feedback forms for usability assessment.

# Budget Utilization

- Funds were allocated to hardware procurement, prototyping, development, and testing.
- Cost-effective components and sourcing strategies optimized budget usage while ensuring high-quality deliverables.

# Final Deliverables

- **Open-source repository** with all software, hardware documentation, and setup instructions.
- **3D-printed case files** in STL format
- **Demo videos covering:**
  - Configuration of different setups:
    - (Raspberry Pi + ePaper - Connected)
    - (Raspberry Pi + LCD - Connected)
    - (ESP32 + ePaper - Wireless)
  - How to create a new widget and configure the layout/dashboard.
  - How to adapt the 3d printable case to your display

# Next Steps

- **Website Development:** Launch a dedicated website featuring instructional videos and guides to help users create and customize their own tickers.
- **Mobile Application Support:** Enable device configuration through a phone app for easier setup and management.
- **Dashboard Slideshow Feature:** Implement an option to rotate through multiple dashboards at set intervals.
- **Additional 3D-Printed Case Variations:** Expand case designs to accommodate more customization and display configurations.
- **Continuous Software Improvements:** Enhance performance, add new data sources, and refine user experience based on community feedback.

# Conclusion

The Cardano Ticker project has successfully delivered a fully functional, versatile, and customizable display solution for the Cardano ecosystem. The combination of Raspberry Pi and ESP32 support, modular dashboards, and easy DIY assembly makes it accessible to a broad user base. The project will continue to evolve through community contributions, ensuring long-term sustainability and feature expansion.