



Channel Quality Database for the JUNO Experiment

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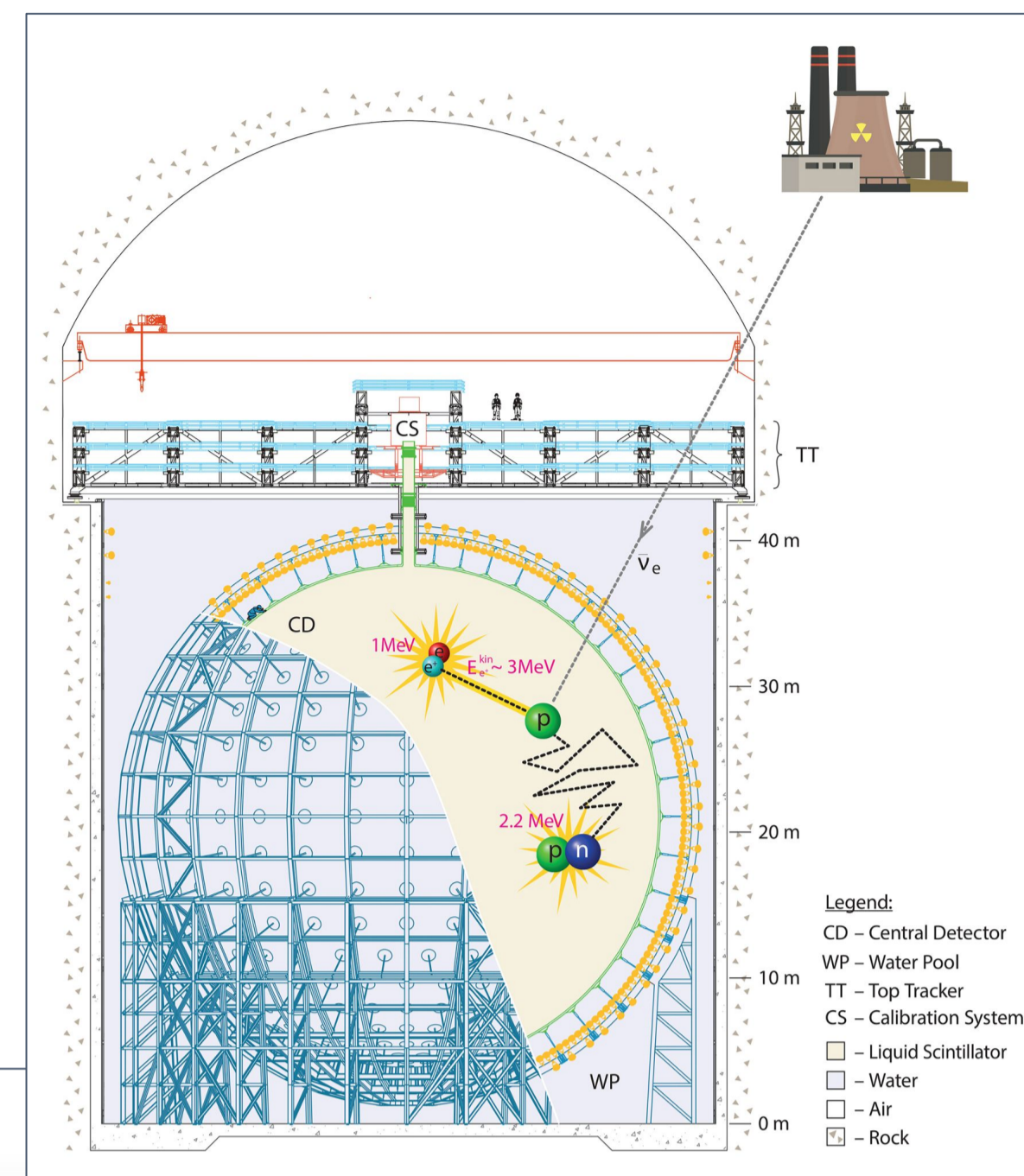
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Introduction

- International neutrino experiment located in China
- Designed to study fundamental properties of neutrinos
- Detector contains 20 kton of liquid scintillator
- More than 40,000 20-inch and 3-inch photomultiplier tubes (PMTs)

System Objectives

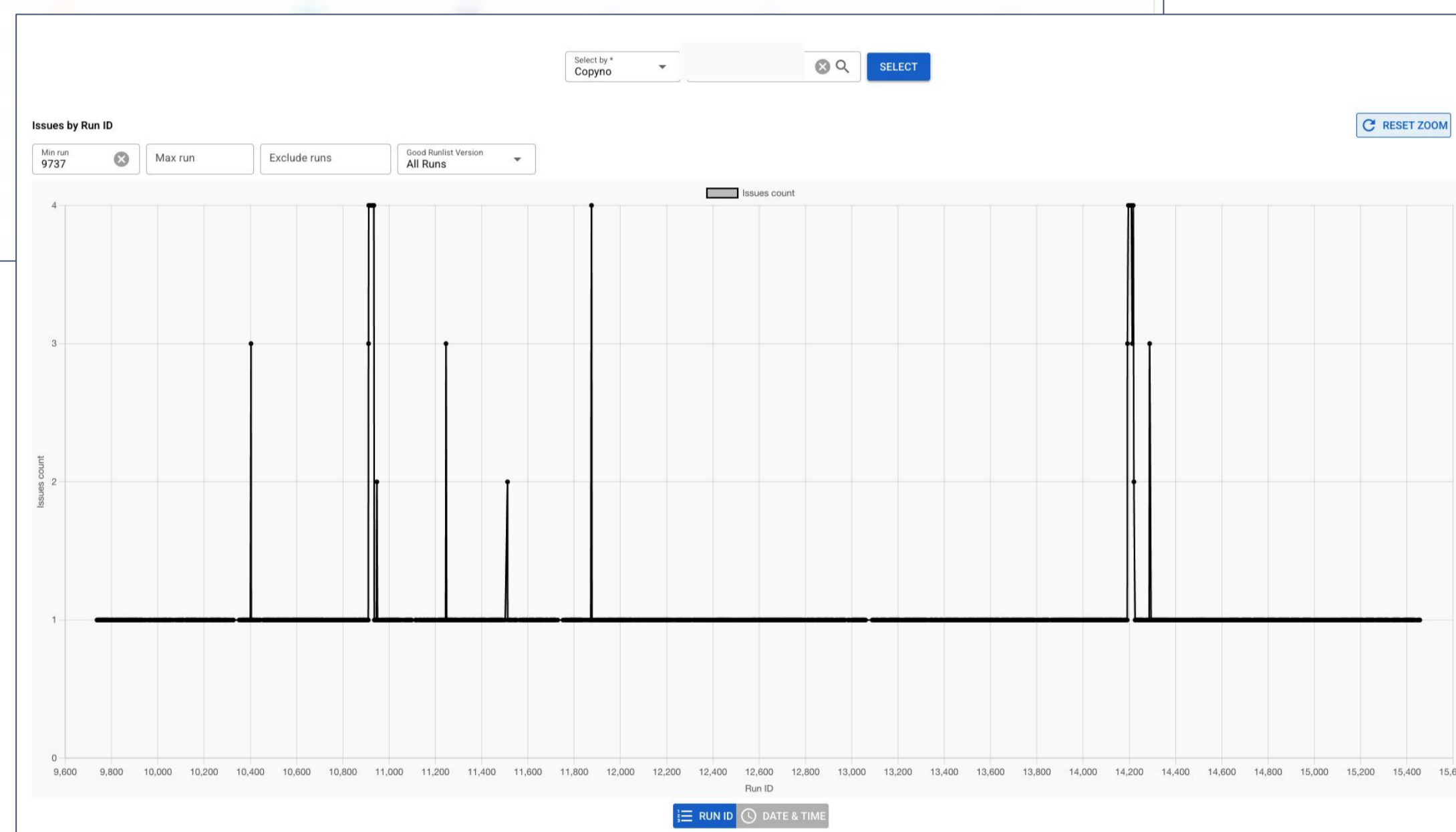
- Monitor photomultiplier status for each data run
- Identify problematic detector channels
- Store and view the history of channels



Run Statistics Dashboard

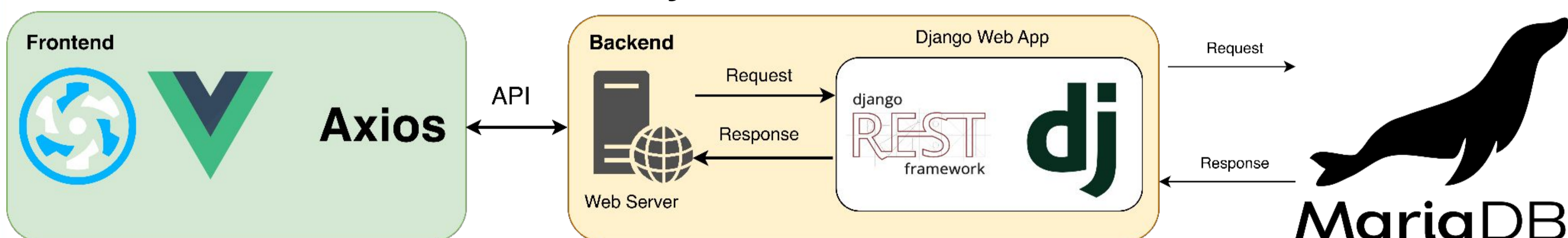
Implemented Features

- Run Statistics Dashboard
- Channel History Visualization
- Selection of Issue Entries by Date Range
- Channel Status Inspection for a Specific Run



Channel history visualization

Project Architecture



Project Architecture Diagram

- Frontend
 - Framework – Vue 3
 - UI-components – Quasar
 - API – Axios
- Backend
 - Web Server – NGINX
 - Backend – Django
 - API – Django Rest Framework
- Database – MariaDB

Future Plans

1. Integrate the functionality into JUNO Offline Data Monitoring
2. Implement SPMT status filling
3. Extend the detector issue tagging system

Conclusions

- The project is currently under active development, with many additional features planned for future implementation
- The system already enables monitoring of channel statistics and tracking the history of individual detector channels