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Event Size Display

Real time monitoring tool of the DAQ system

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Introduction
Motivation and requirements

1. Device monitoring in real time
2. Clear and simple representation of the DAQ structure
3. Data flow visualisation of individual nodes
4. Statistical analysis of data flow

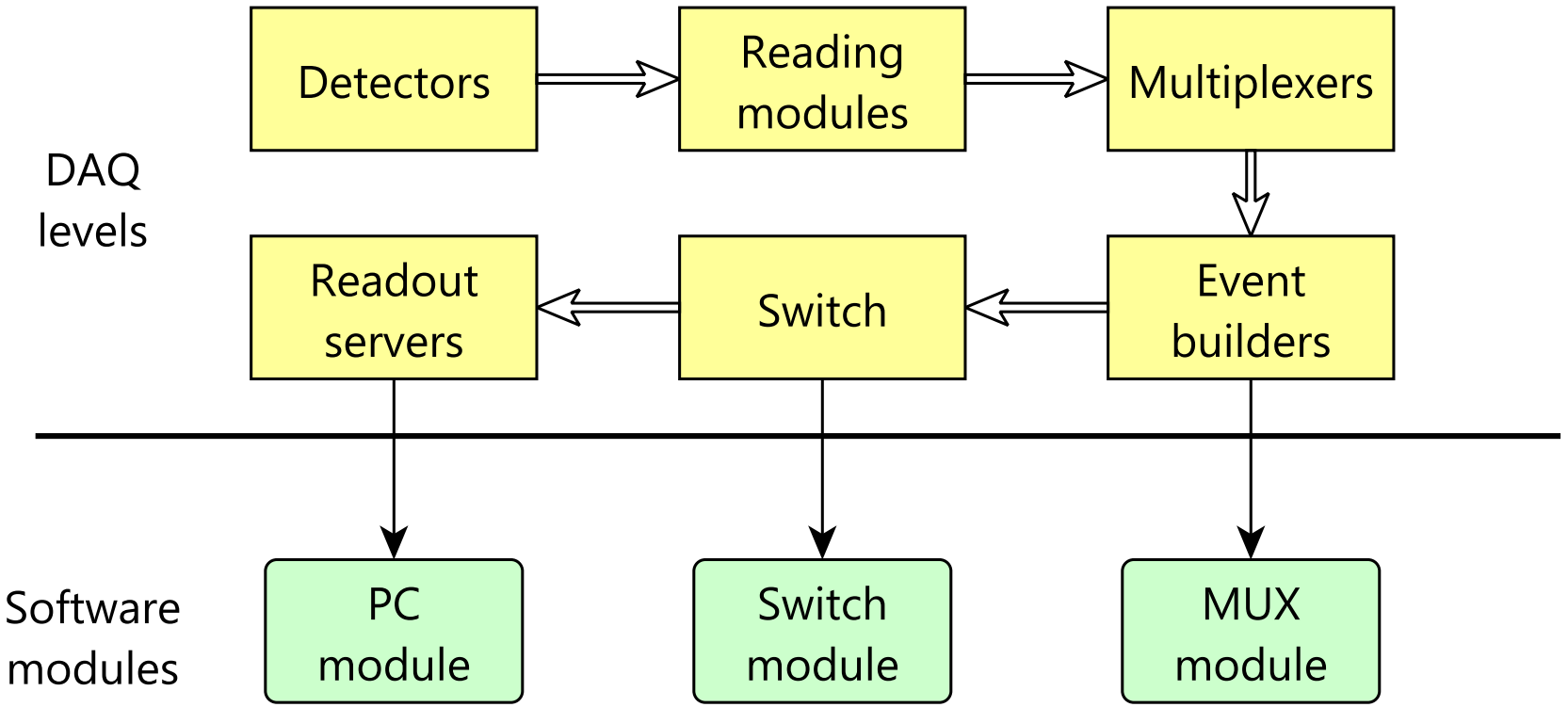
Development
First steps

- Analysis of the DAQ system was performed
- Several monitoring approaches were considered (progress bars, line charts, data flow diagrams)
- The best visualization approach, e.g. line charts, was chosen to be implemented in the application

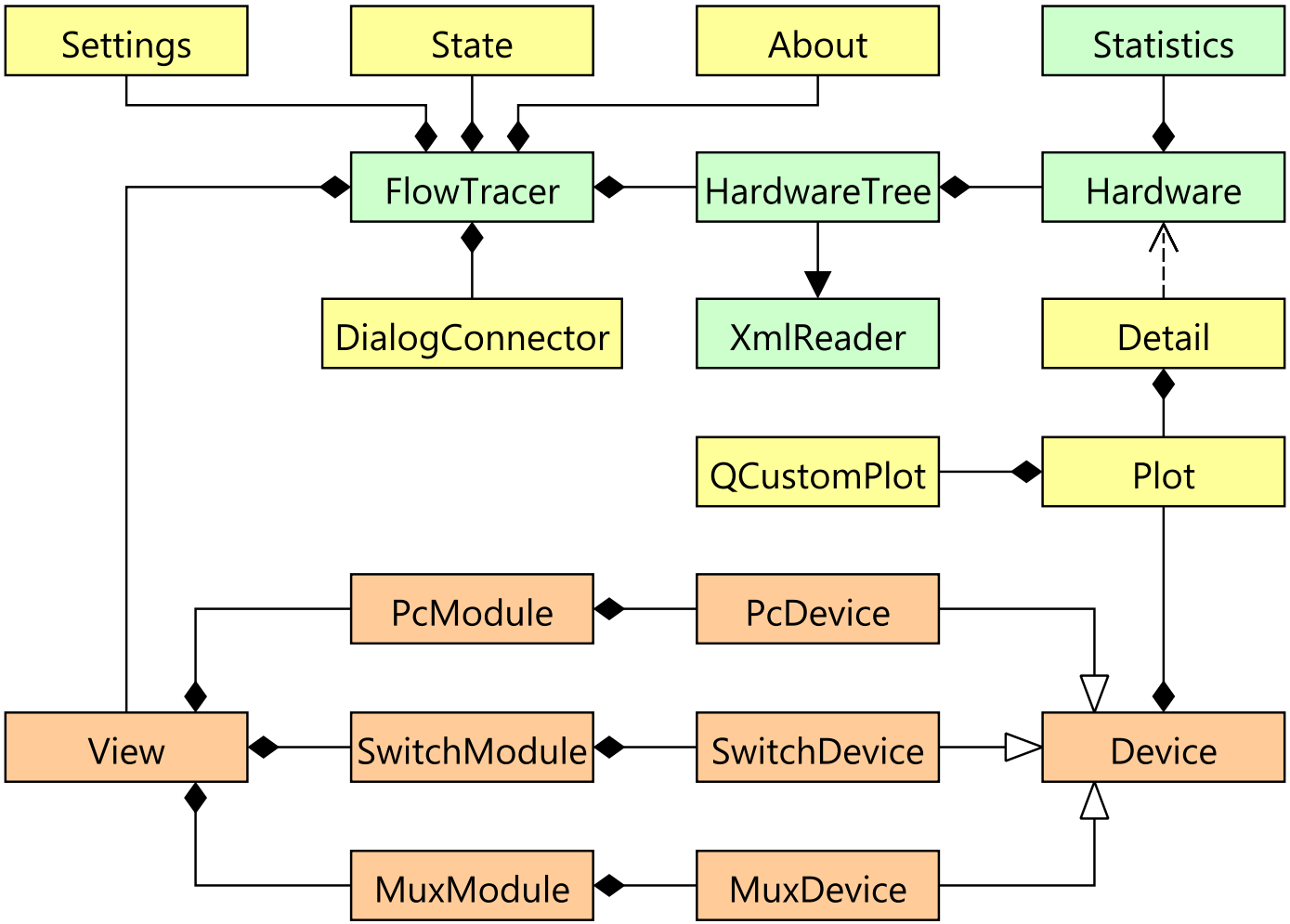
Development
Technical background

- Application is implemented in the C++ programming language with the Qt framework.
- Communication with the DAQ system is based on the DIALOG and ZABBIX interfaces.
- The DAQ structure is loaded from the XML files.

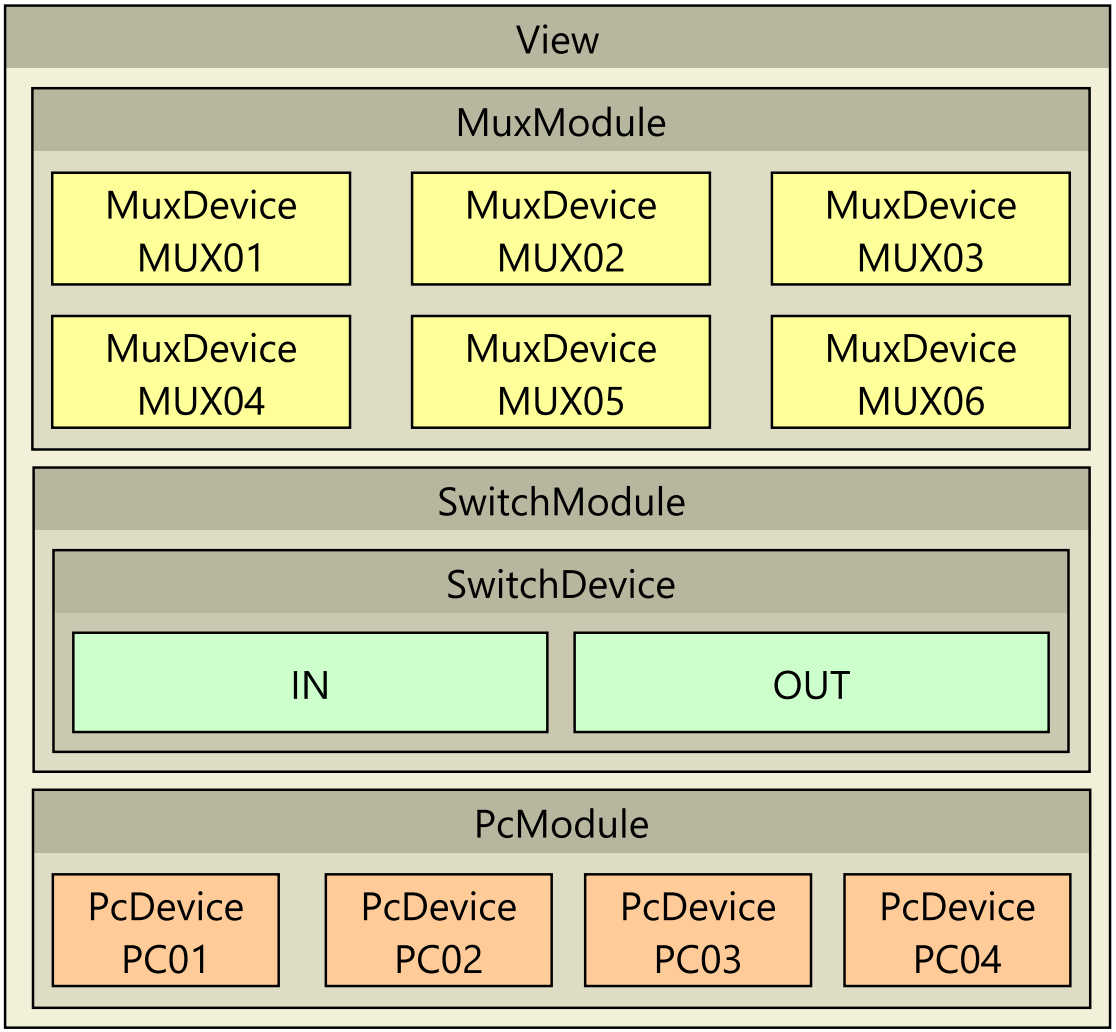
Development
Levels monitored by the application



Development
Class diagram of the application



Development
Layout of the application

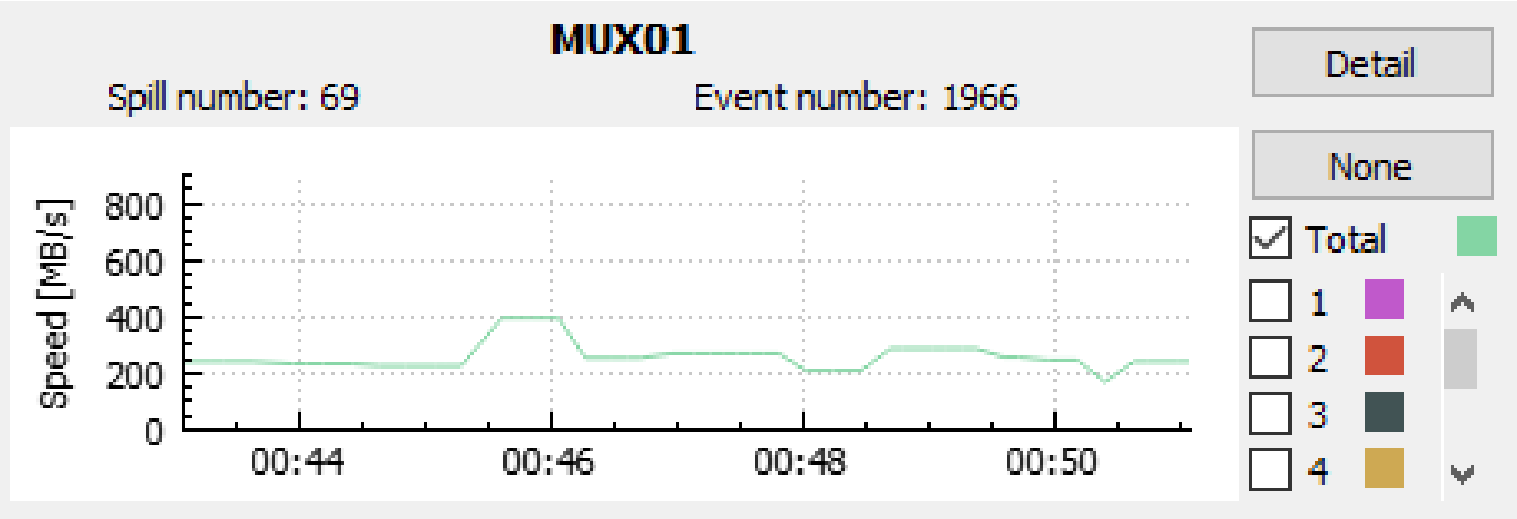


Become familiar with the application

Final GUI of the application

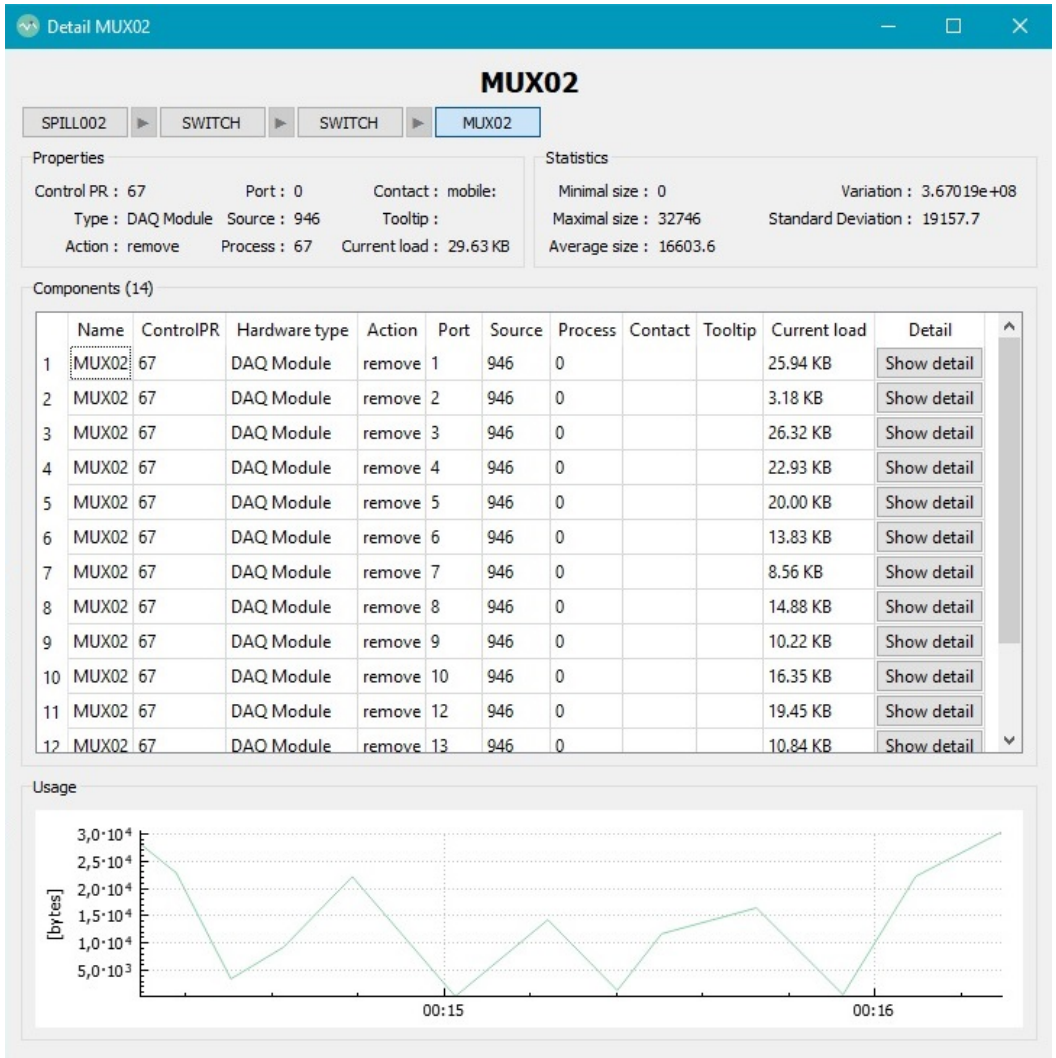
Become familiar with the application

Detailed view on the plot



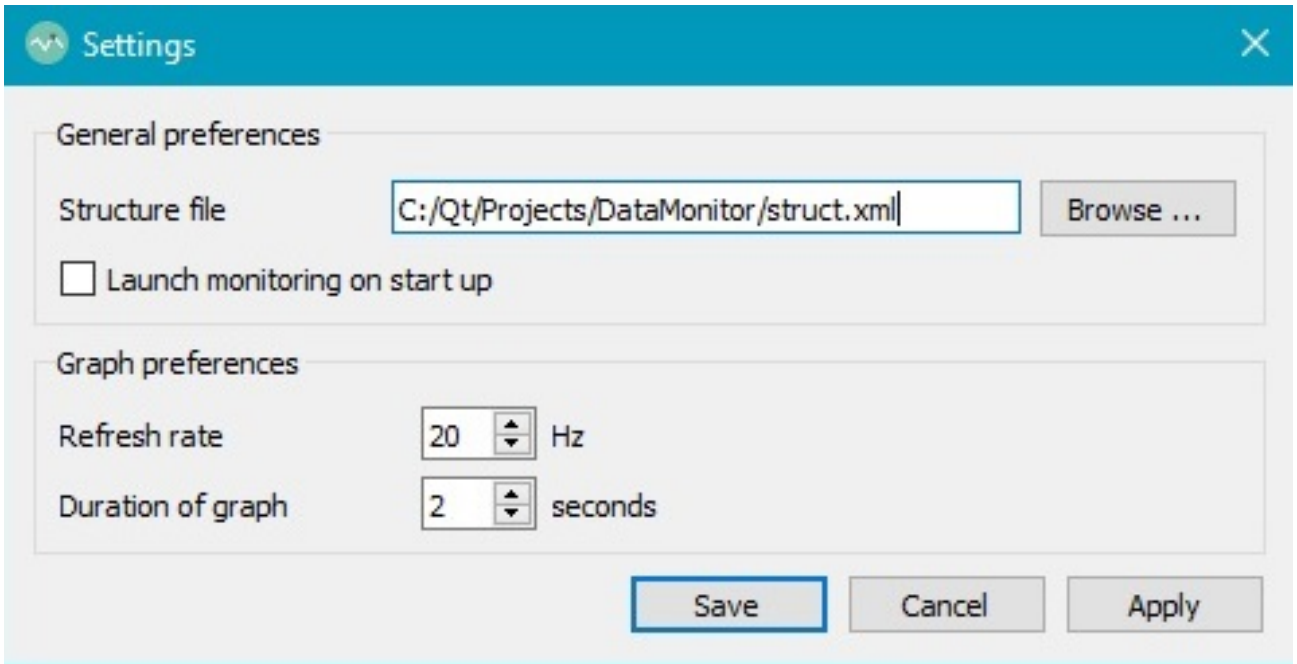
Become familiar with the application

Detailed view on the individual device



Become familiar with the application

Settings of the application



Conclusion
Testing and debugging

1. White box approach: unit and integration testing
2. Black box approach: basic scenarios, extraordinary scenarios
3. Stability and performance tests: 24-hour test run, run with limited resources

Conclusion
Benefits of the application

1. Simple representation of the DAQ structure
2. Intuitive monitoring because of the line charts
3. Individual graphs can be enabled or disabled (displayed or hidden)
4. Historical progress of data flow is displayed

Conclusion
Future development

- Simulation based on the data recorded
- Real time monitoring based on the physical data
- Adjustment to the new DAQ structure

Conclusion
Summary

- The Event Data Size is the new monitoring tool used in the COMPASS experiment
- The application monitors DAQ system and its data flow
- Results are shown in the line charts
- An expert can diagnose data acquisition errors with this tool
- The application can be useful in critical situations (when expert call is needed)

Thank you for your attention