Graphical User Interface (GUI)

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Our section

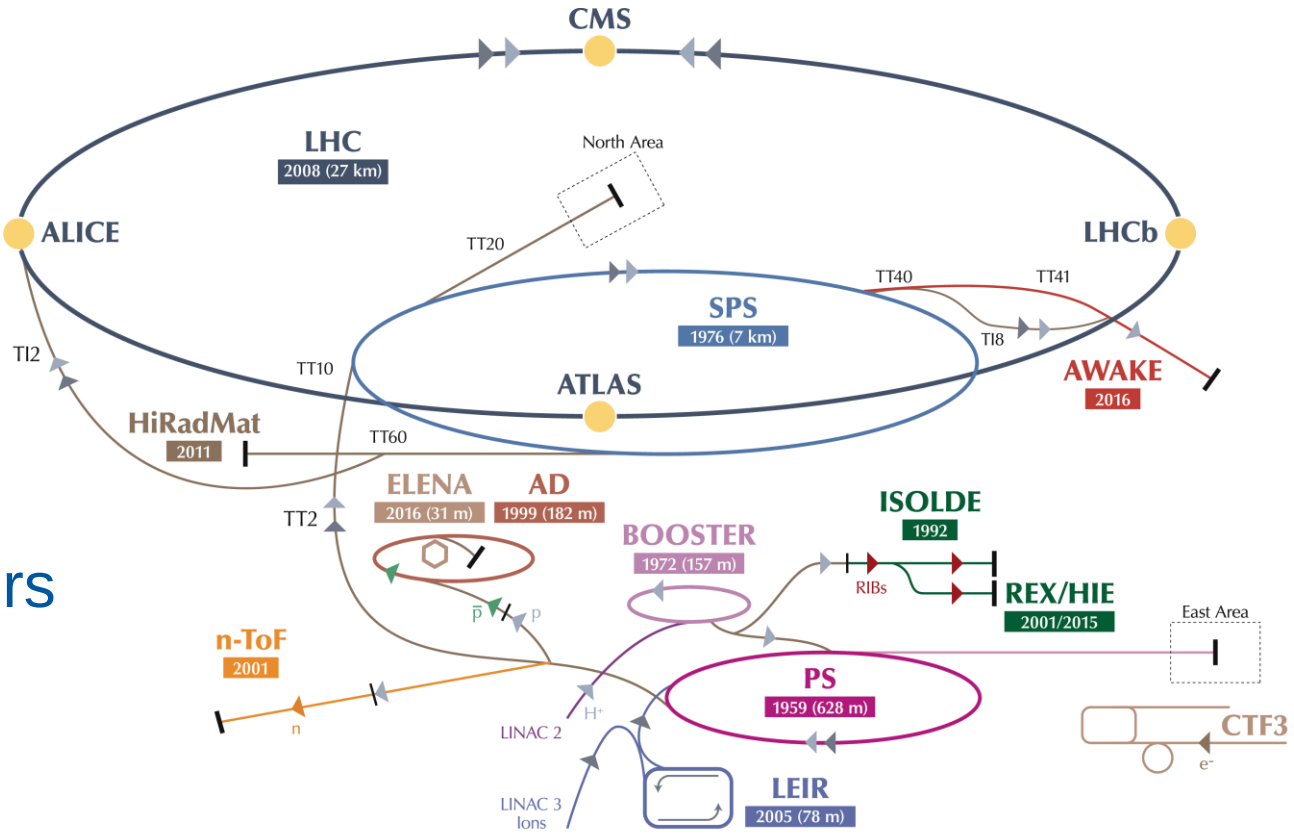
TE
Technology Department

Electrical Power Converters Group

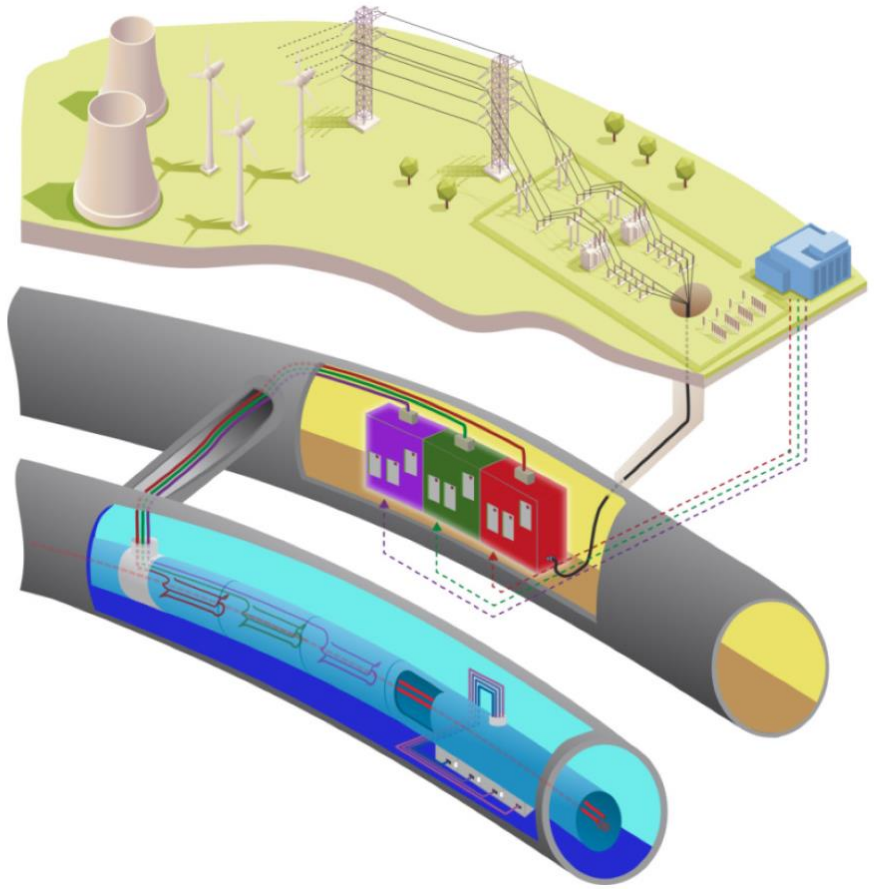
Converter Controls Software

Power converters at CERN

- The magnetic field (B) bends
- Lorentz force
  $\bar{F} = q(\bar{E} + \bar{v} \times \bar{B})$
- B is induced by a current (I)
- I is provided by power converters



Control systems at CERN



The power conversion needs to be precise to prevent unwanted consequences.

Solution: Control systems

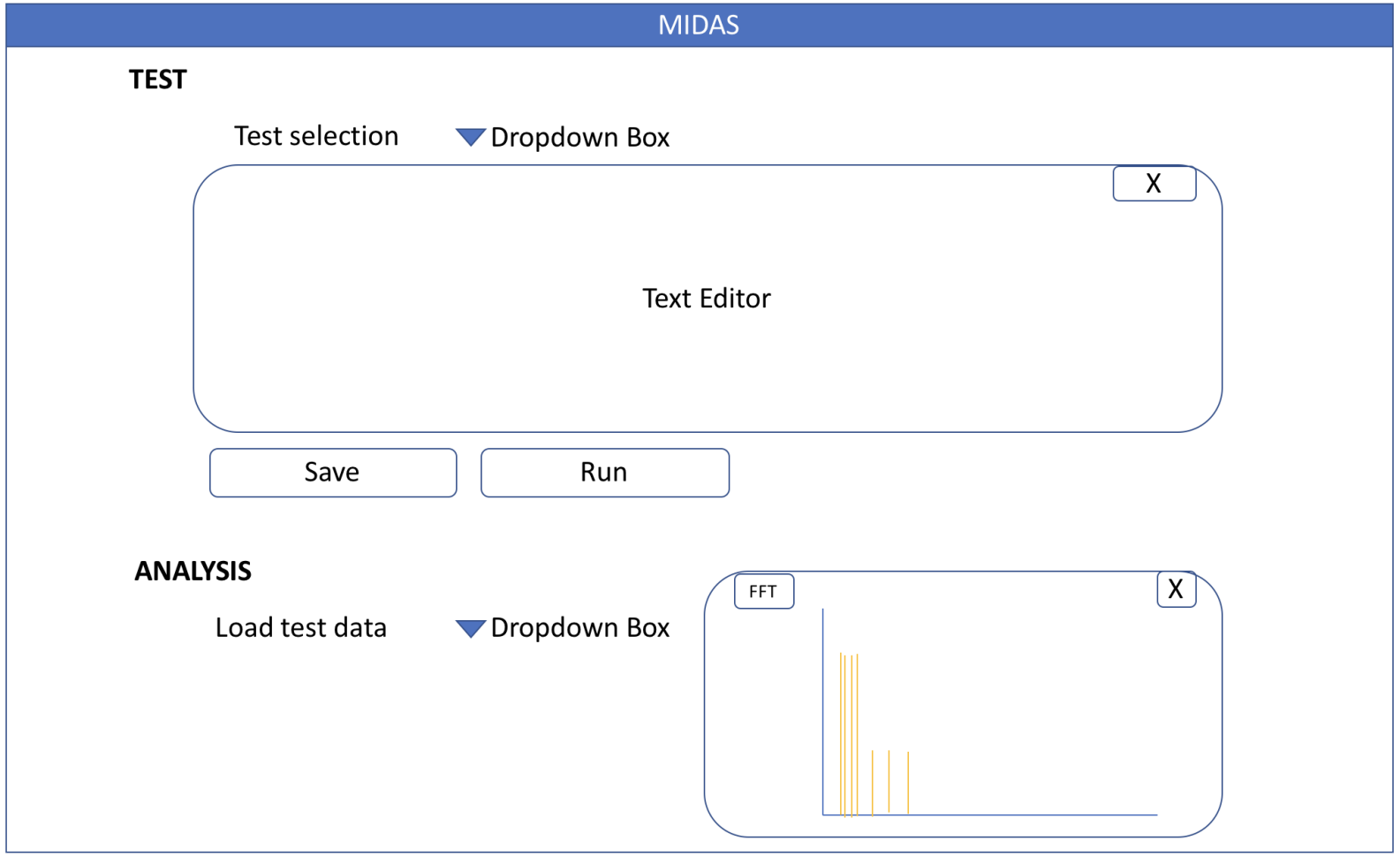
- Hardware
- Software
- Calibration of control systems
  - Laboratory equipment
  - GUI

The Project

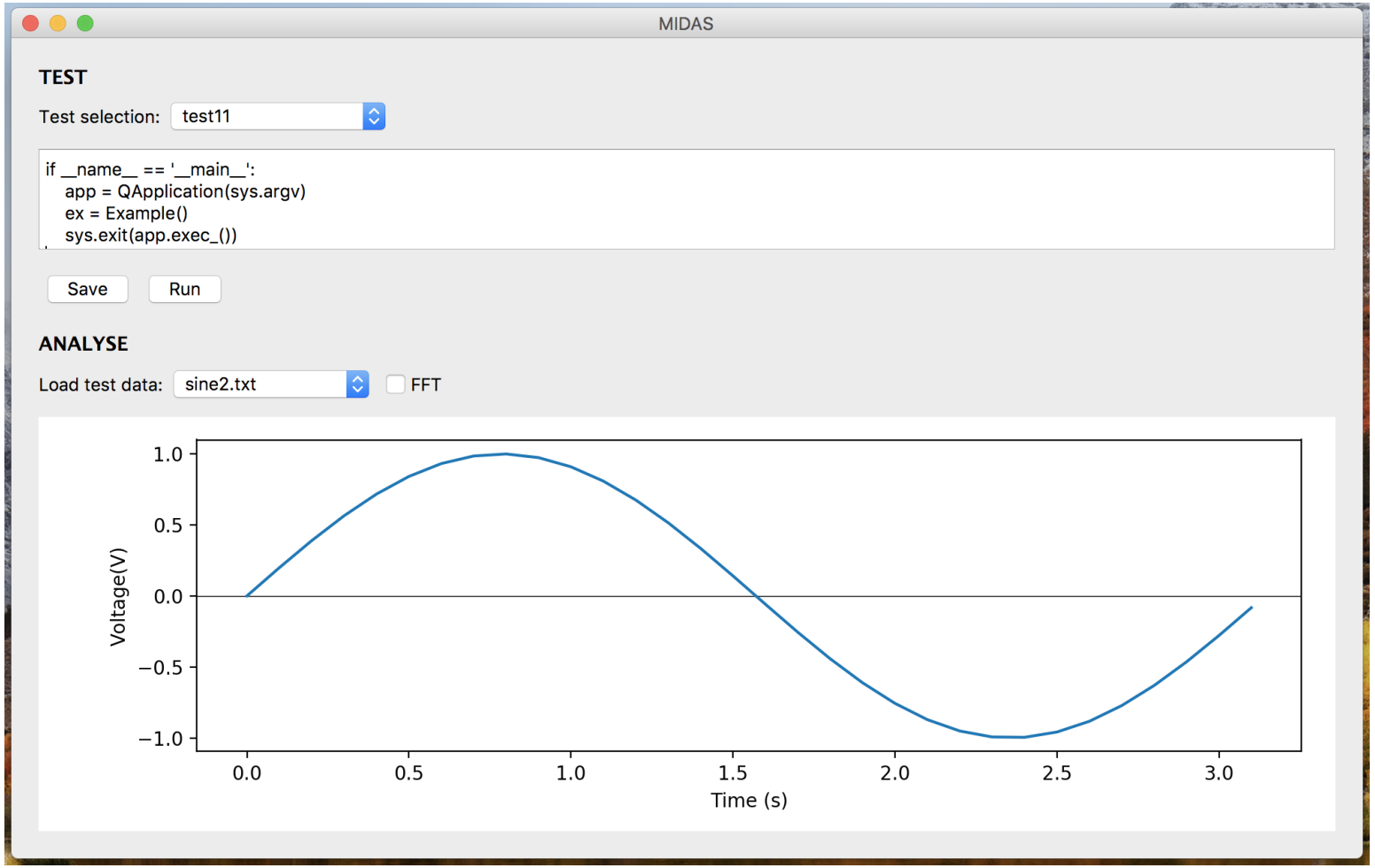
- Purpose: To create a GUI for calibration of the control systems
- What we used:
  - Python
  - PyQt5
  - PyCharm
  - GitHub

Approach

- Mock-up
- Introductory lectures
- Tutorials
- Google



The program…


MIDAS
TEST
Test selection: test11
if __name__ == '__main__':
app = QApplication(sys.argv)
ex = Example()
sys.exit(app.exec_())
Save
Run
ANALYSE
Load test data: sine2.txt
FFT
1.0
0.5
0.0
−0.5
−1.0
Voltage(V)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Time (s)

Conclusion

- What we have learned:
  - Programming
  - Working as part of a software team
  - Software behind CERN

- In the future:
  - Engineering and physics research
  - A future at CERN?

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