GRAPHICAL USER INTERFACE PROGRAMMING CHALLENGES MOVING BEYOND JAVA SWING AND JAVAFX

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Objectives

Motivation : Oracle to stop support for Java Swing and JavaFX technologies

Identifying the best programming language to write GUI

Outlook for improving our GUI software architecture

Results

Python using PyQtGraph chosen.

Quick learning curve

Scientific and mathematical libraries

Performance of charting components

Documentation and huge web community

Long-term maintainability

More guidance for code structure

Standardization vs. ad-hoc development

Outlook

Big interest for web interface

Fixed displays tested

Multi-platforms

Client-server mechanism

GUI standardization

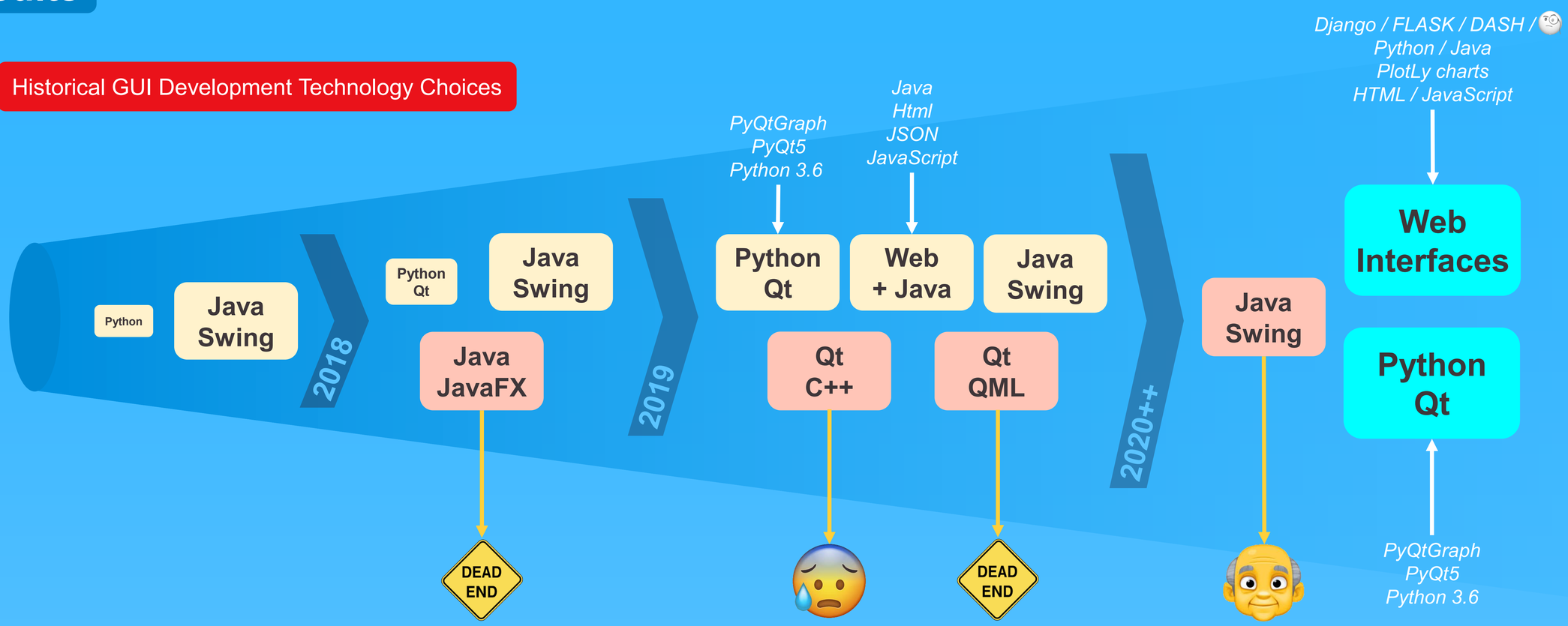
Combination with Python

Security

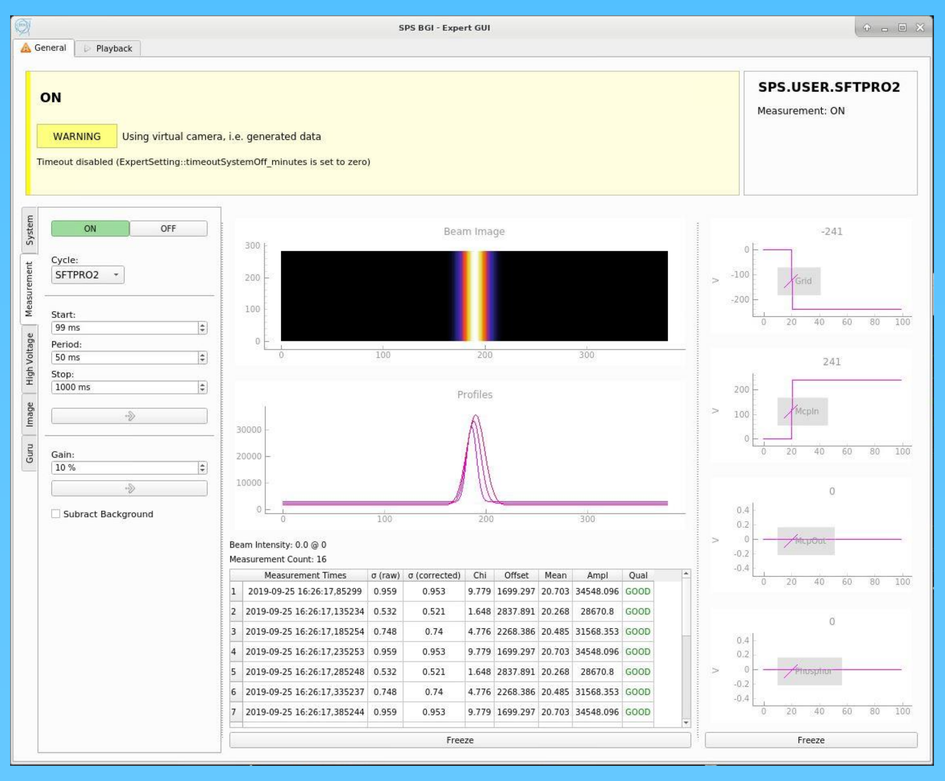
Real-time chart performance

Results

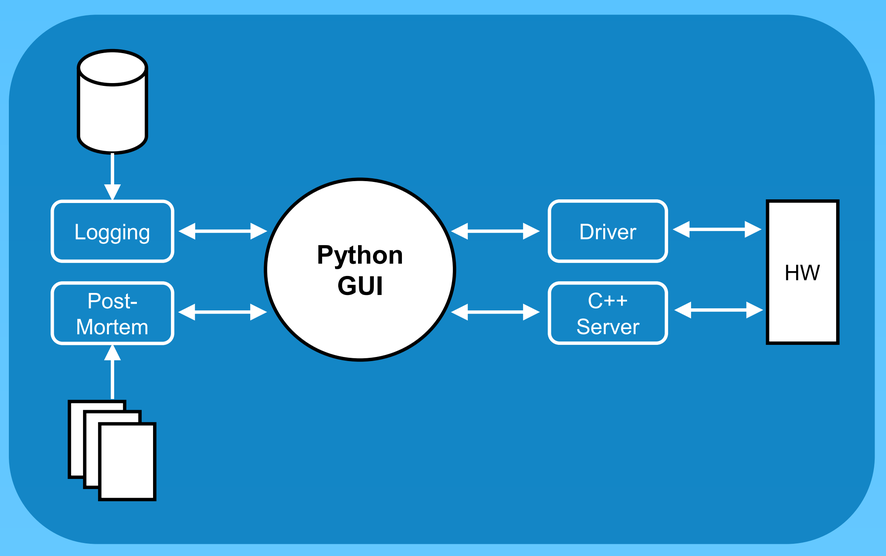
Historical GUI Development Technology Choices



Example : Python/PyQt Expert GUI



Links between the Expert GUI Program, the Hardware and the Databases

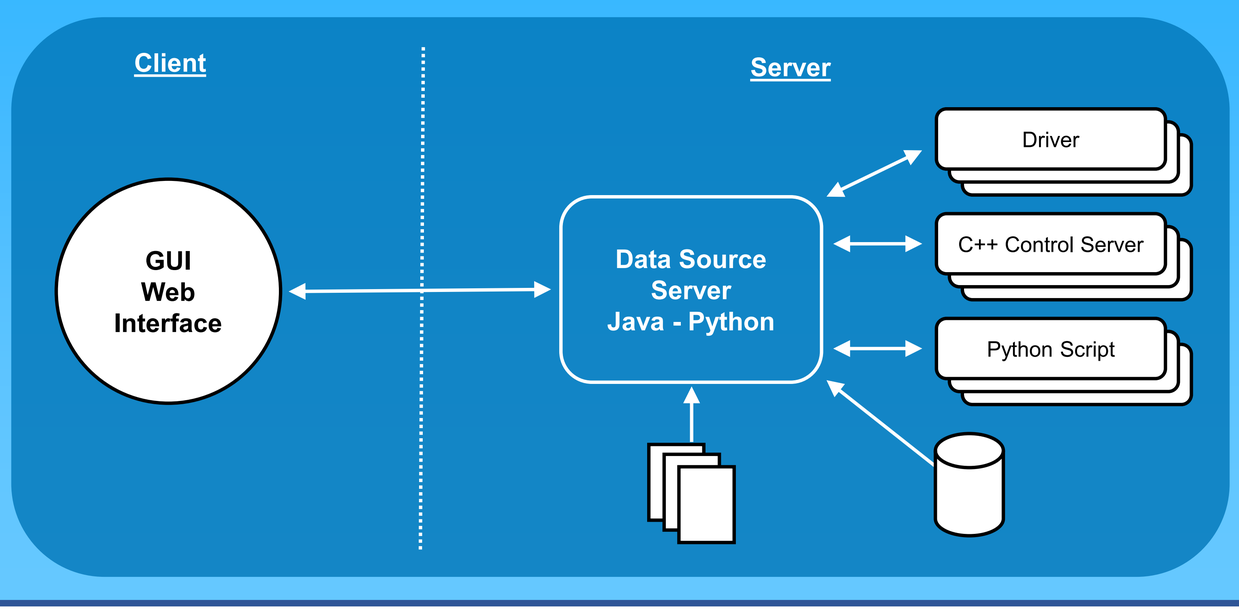


Requested Graphical Performance

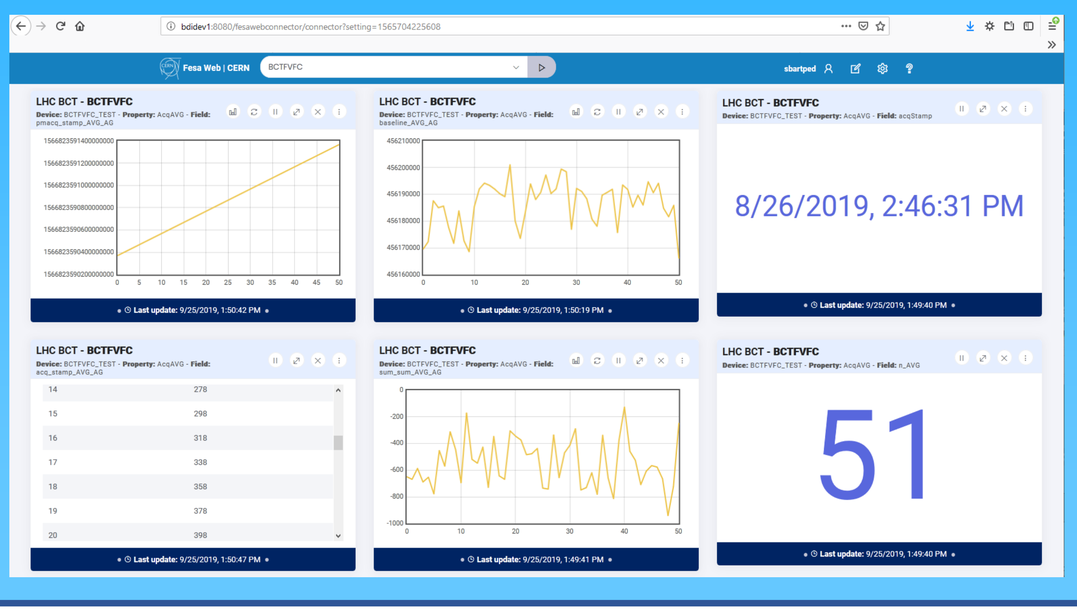
1D Array	10000 points	10 Hz
5 x 1D Array	2000	10 Hz
2D Array	100 x 100	10 Hz
10 x 1D Array	10000	1 Hz
4 x 1D Array	100000	1 Hz
2D Array	512 x 512	1 Hz

Outlook

Web Interface Combined with Java or Python Data Source Server



Example : Web Interface for Fixed Displays (Acquisition Data)



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