

Open Source Deployment via the Browser

From Python Quant Platform to datapark.io

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Dr. Yves J. Hilpisch is the founder and managing partner of The Python Quants, a group focusing on the use of Open Source technologies for Quant Finance and Data Science.

He is the author of "Python for Finance" (O'Reilly, 2014) and "Derivatives Analytics with Python" (Wiley, 2015).

Yves lectures on computational finance at the CQF Program (<http://cqf.com>) and Saarland University.

He is organizer of Meetup groups and conferences about Python and Open Source for Quant Finance in Frankfurt, Berlin, London and New York.

Yves is a regular speaker at Python and other technology conferences as well as at Quant Finance conferences.

Feel free to take pictures and to tweet.

@dyjh @dataparkio

#Python #QuantFinance #Finance #osqf

#PythonQuantsConf

- I. **Our Market and The Problem**
- II. How We Solve The Problem
- III. Concrete Use Cases

Mega Trends

Some mega trends that influence quant finance



Today's standard is "open source", even for key technologies.



More and more data sets are "open and free".



Complex analytics work flows are coded in the browser.



Dynamic communities evolve to professional networks.



Infrastructure is a standardized commodity, billed by the hour.

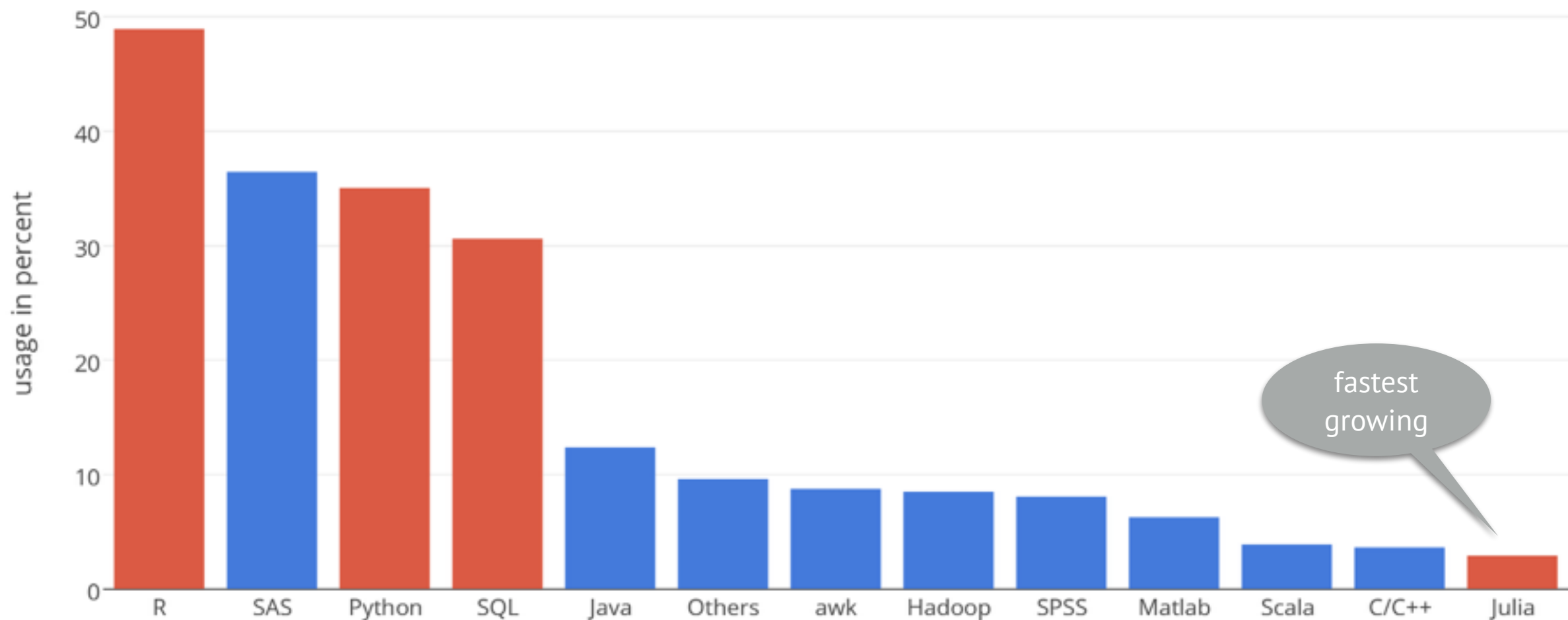


Even individuals can trade real-time and with high leverage.

Open Source Data Science

OS languages dominate data science these days

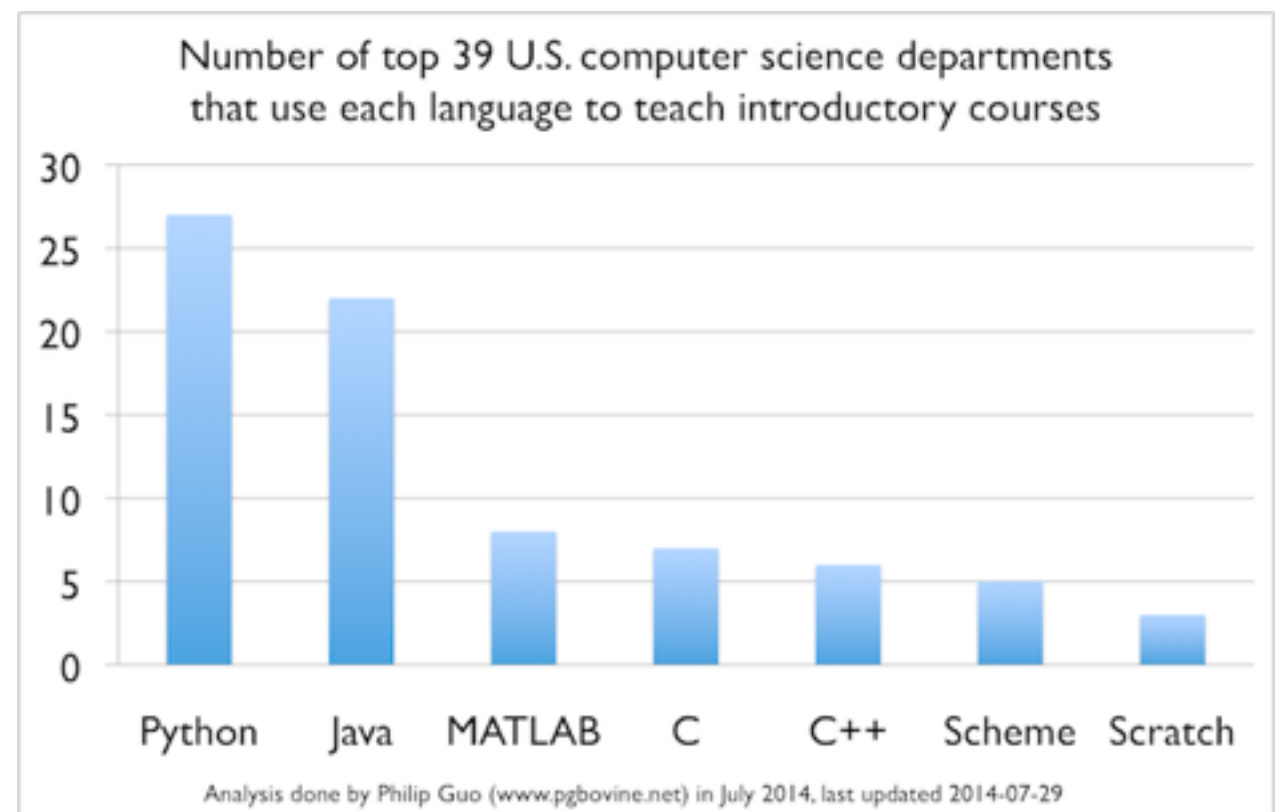
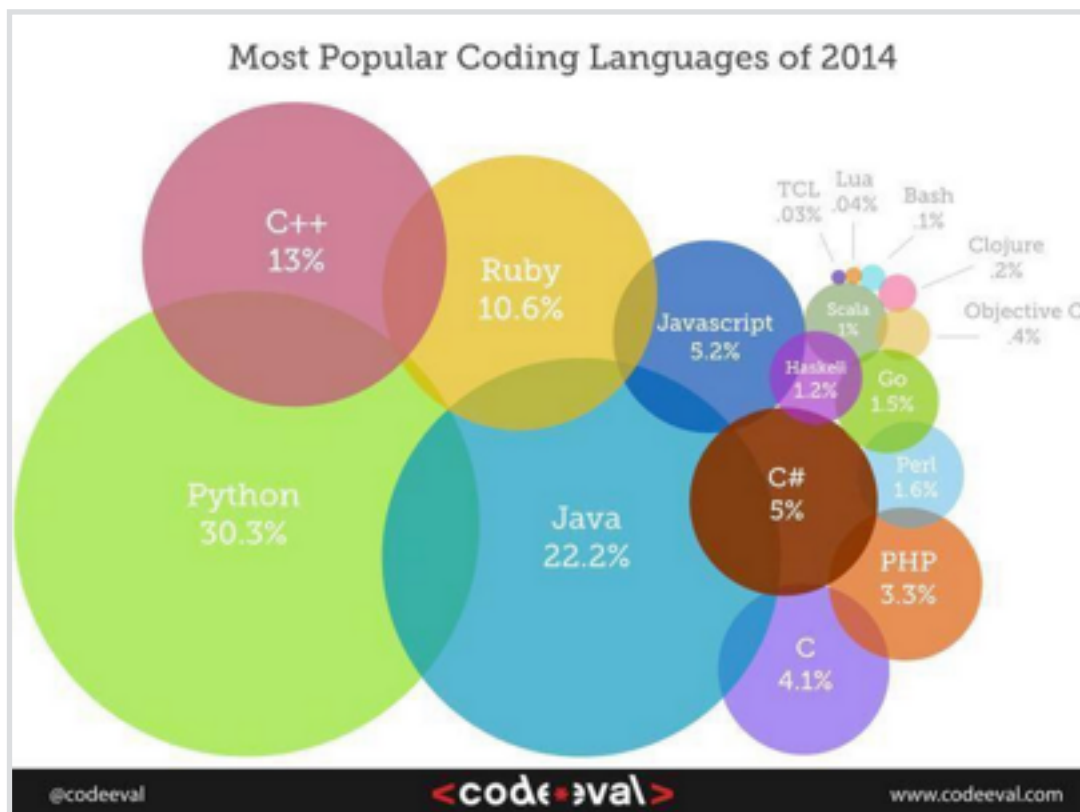
Data Science Languages



Poll data from August 2014. Source: <http://www.kdnuggets.com>

Python as Strategic Platform

Python plays an important role in the open source ecosystem



Open Source Revolution

Both in the front and back end OSS revolutionizes finance

FRONT END

In the front end, open source software revolutionizes how quantitative analysts and developers work on a daily basis.

BACK END

In the back end, open source software revolutionizes how analytics workflows and financial applications are deployed and scaled.

IP[y]: IPython
Interactive Computing

Open Data Science Conference



openstack
CLOUD SOFTWARE



CLOUD FOUNDRY



“DigitalOcean is a simple and fast cloud hosting provider built for developers. Customers can create a cloud server in 55 seconds, and pricing plans start at only \$5 per month for 512MB of RAM, 20GB SSD, 1 CPU, and 1TB Transfer.”

The Problem

Obstacles to using Python & Open Source for Quant Finance

Open Source

fast changing
environment

Vendors & Partners

almost no Python for
Quant Finance experts

Libraries

for financial analytics
mainly missing

Tools & Processes

no real standards,
isolated applications only

Deployment

complex, costly,
lengthy, risky

Maintenance

how to update,
maintain infrastructure?

Diverse End Users

computer & data scientists
as well as domain experts

Training

how to train and
re-train people?

Start

where and how to
start, who to talk to?

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The Python Quants

We provide everything to solve the problem

Products
Technology
& Books

Services & Training
Consulting, Development
& Training

Community
Conferences,
Meetups & Web



Eurex Advanced Services



For Python Quants



Quantshub Training



Python for Quant Finance

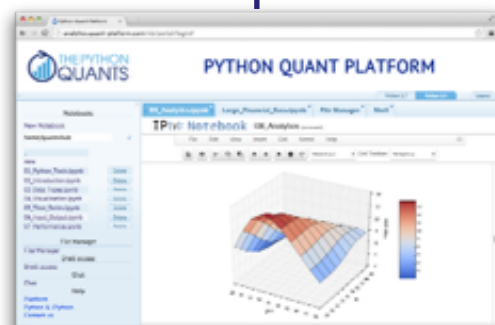
The Python Quants

Our current focus and value proposition

Current Focus

Front end (tooling)
& financial libraries

IP[y]: IPython
Interactive Computing



Future Focus

Back end deployment
& scaling

Business Model

Similar to Red Hat:
strong partner for OSS



“The software is free. The subscription is invaluable.
Red Hat customers enjoy the latest security fixes, award-winning support, and committed product life cycles.”

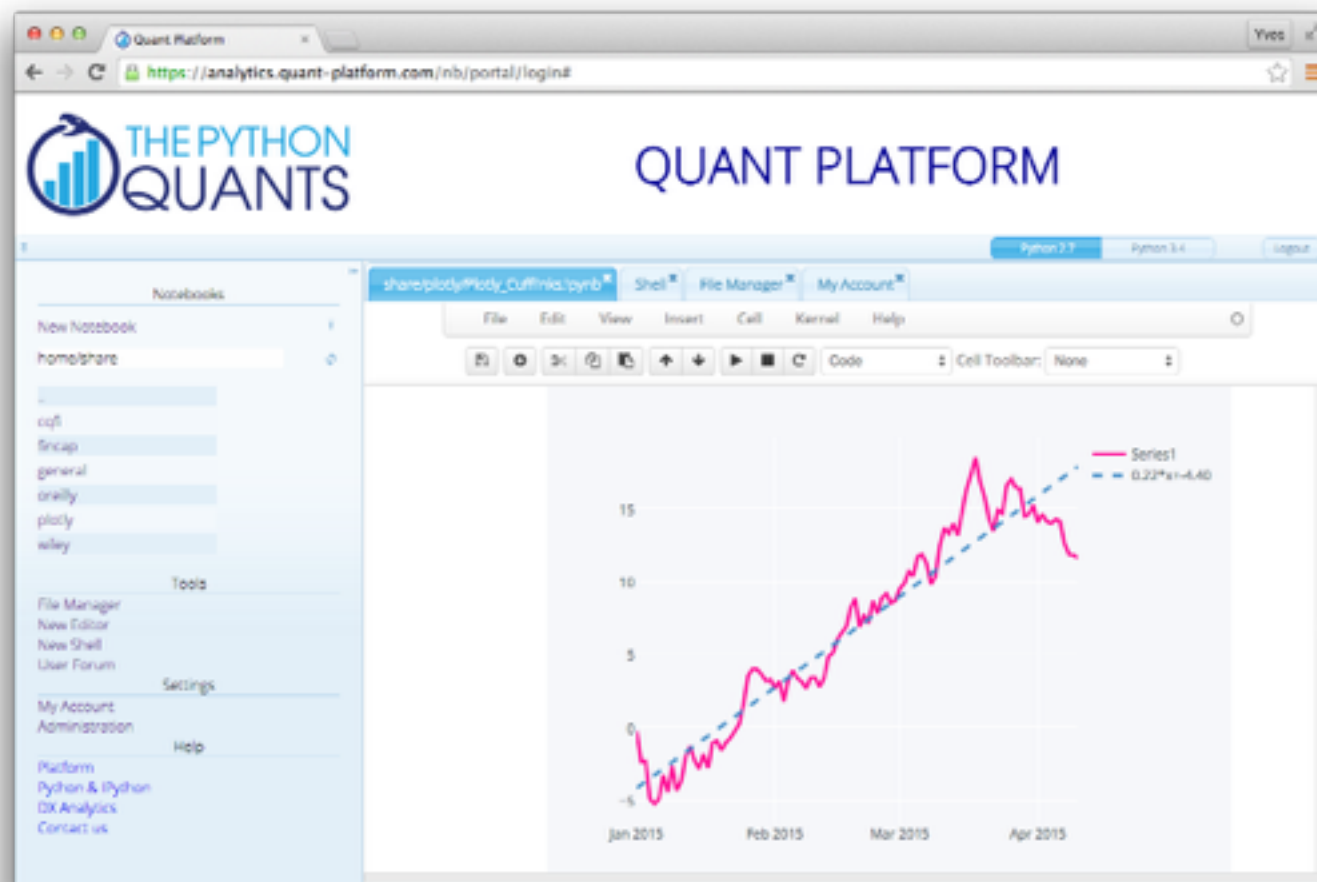
Python Quant Platform

Paradigms in data analytics (as we see it) and where we fit in

- 1. Generation: Move Data Around** – data analytics started by moving data from one place to another, analyzing it locally and moving results back to the remote data source
- 2. Generation: Move Code Around** – moving tons of data is costly and time consuming; moving small code sets is faster and less costly
- 3. Generation: Don't Move Anything** – the Browser and Web technologies allow to work directly and in real-time on the infrastructure where data and code are stored (replacing remote ssh/ftp access and emulating desktop experience)

Quant Platform

Browser-based, collaborative financial and data analytics



The Python Quant Platform offers Web-based, scalable, collaborative financial analytics as well as rapid financial engineering and application deployment for individuals, teams and companies. Easily deploy it anywhere via Docker containers & browser-based access.

<http://trial.quant-platform.com>

Quant Platform

It offers a number of popular technology components

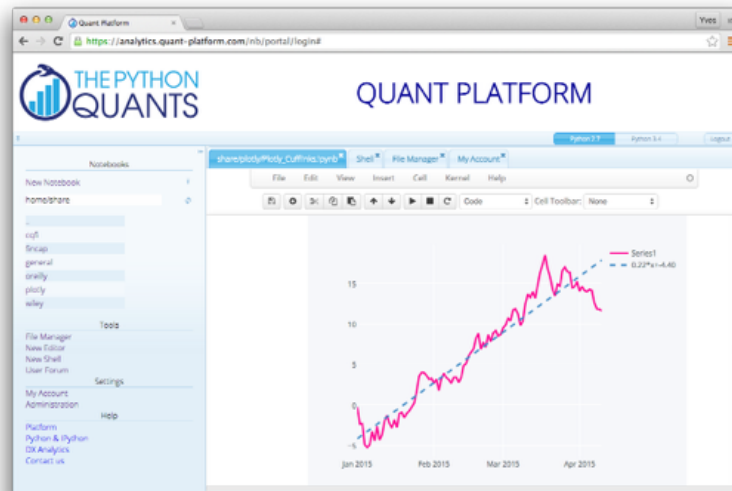


Tools and technologies quants and data scientists know and love.

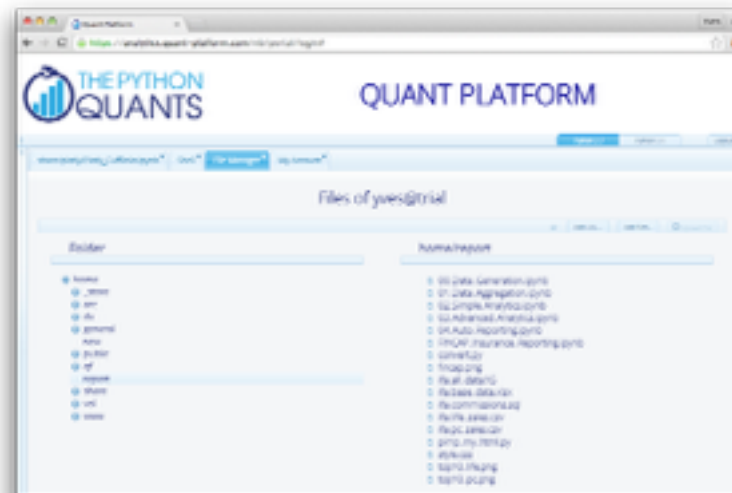
Python Quant Platform

It integrates all that is needed for modern data analytics

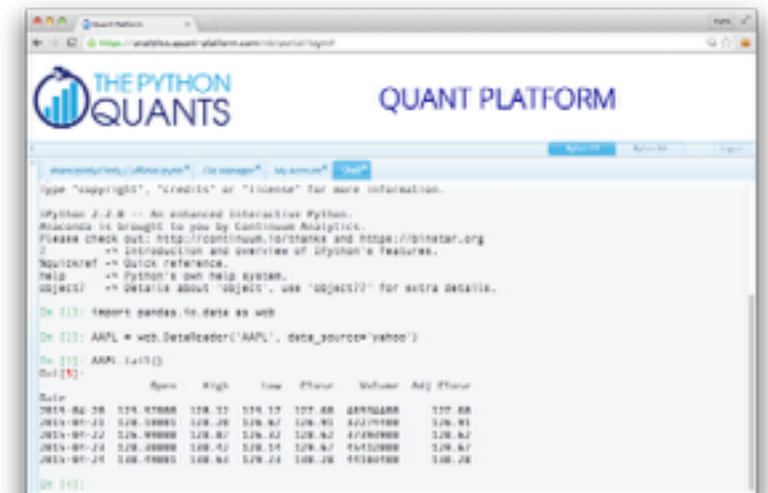
IPython Notebook



GUI-based File Management



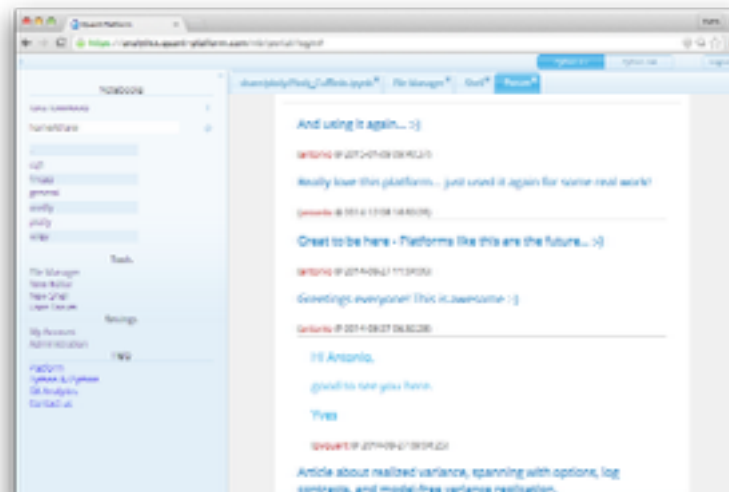
Linux & IPython Shell



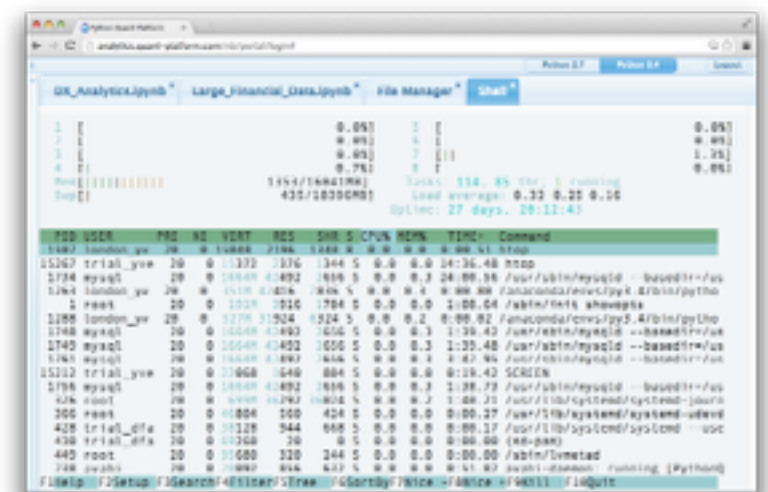
"Absorb what is useful, discard what is not, and add what is uniquely your own."—Bruce Lee



Code Editing



Chat & Forum



Resource Control

Python Quant Platform

Multiple languages, flexible infrastructure and collaboration

Python & More Full-Fledged Python Stack



NumPy, SciPy, pandas, PyTables
h5py, matplotlib, IPython,
numexpr Cython LLVM, LLVMpy
Numba, Scikit-learn, many more



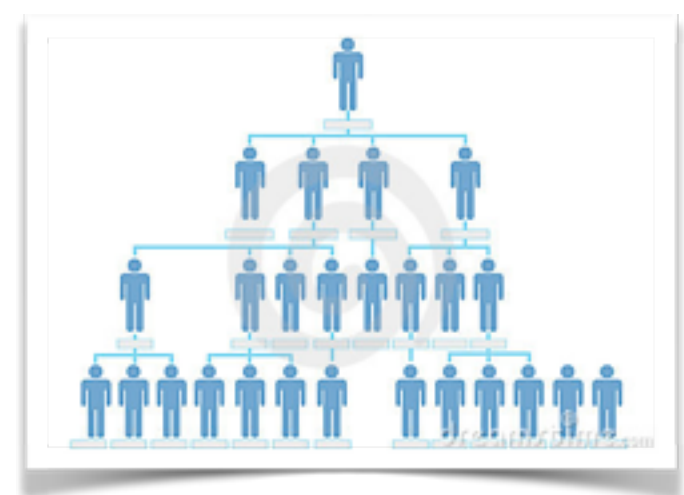
Cloud & Dedicated Linux-based Infrastructure



PQP can be even deployed on the smallest DigitalOcean droplet for 5 USD per month. User registration in 30 seconds, client-specific deployment in 30 minutes.

PQP can be deployed on dedicated servers in a data center or on client premise—directly or based on Docker containers.

Users & Collaboration Accounts, Rights, Sharing and Security



Using the unique, decade long developed and matured user and rights & role management of Linux as the basis (“bottom-up approach”)

Adding standardised features for team sharing and public sharing.

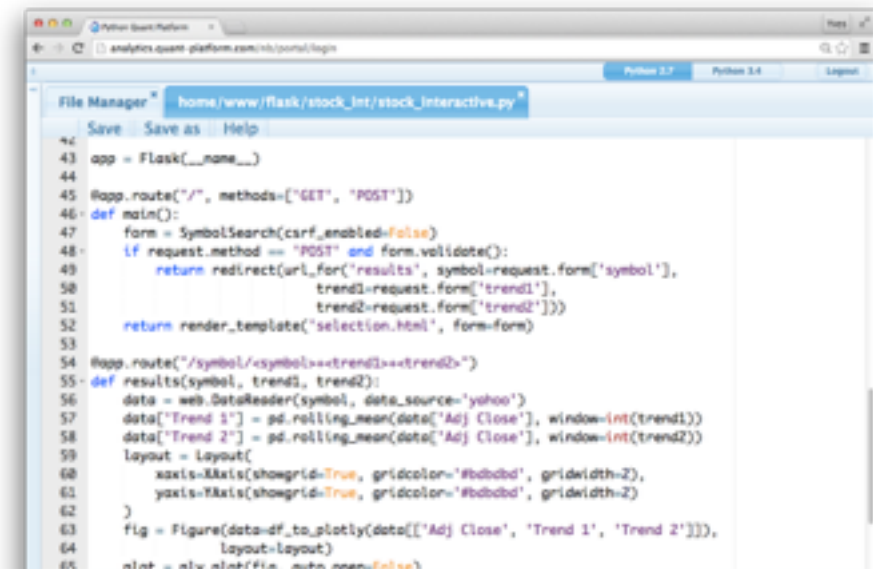
Application Development

You can manage projects and edit all typical file types

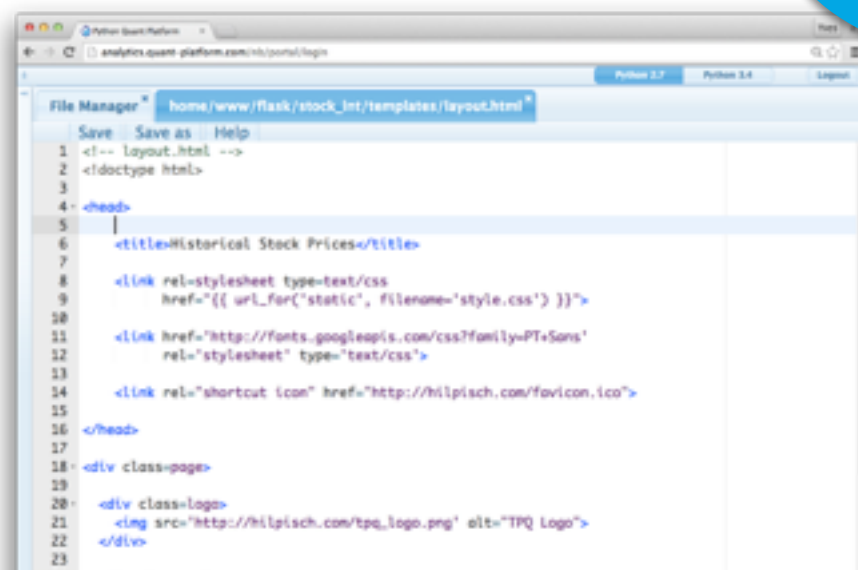
Project File Management



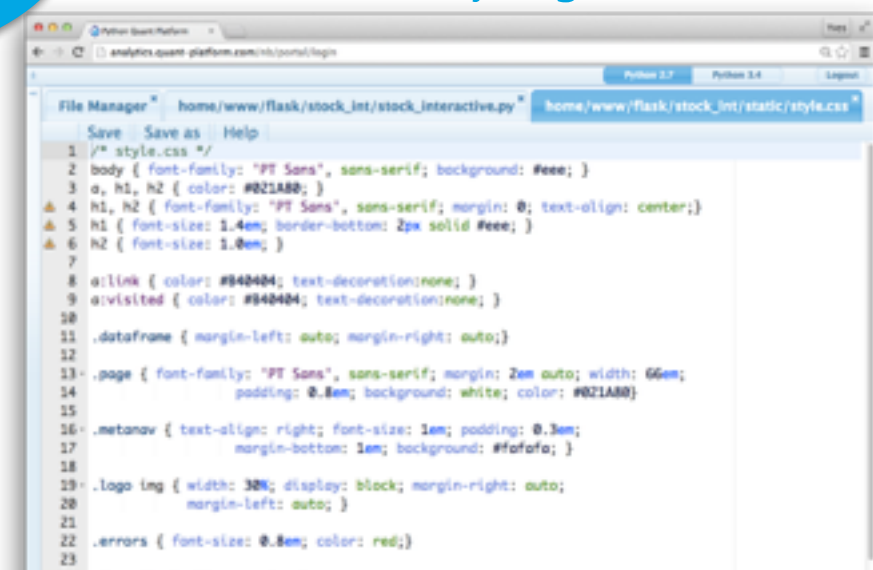
Python Application Logic



HTML Content



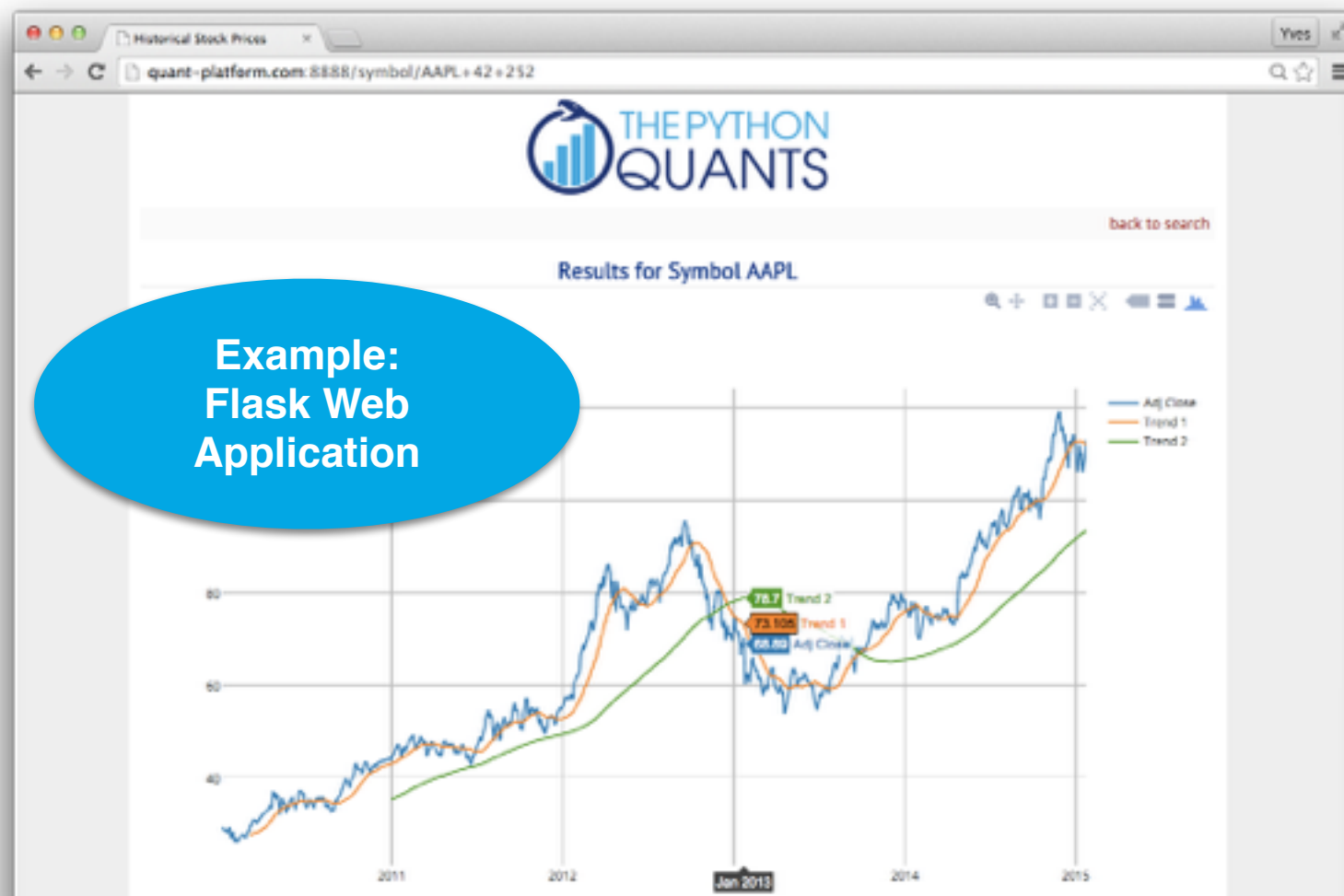
CSS Styling



Example:
Flask Web
Application

Application Deployment

Your applications can then be directly deployed on the platform

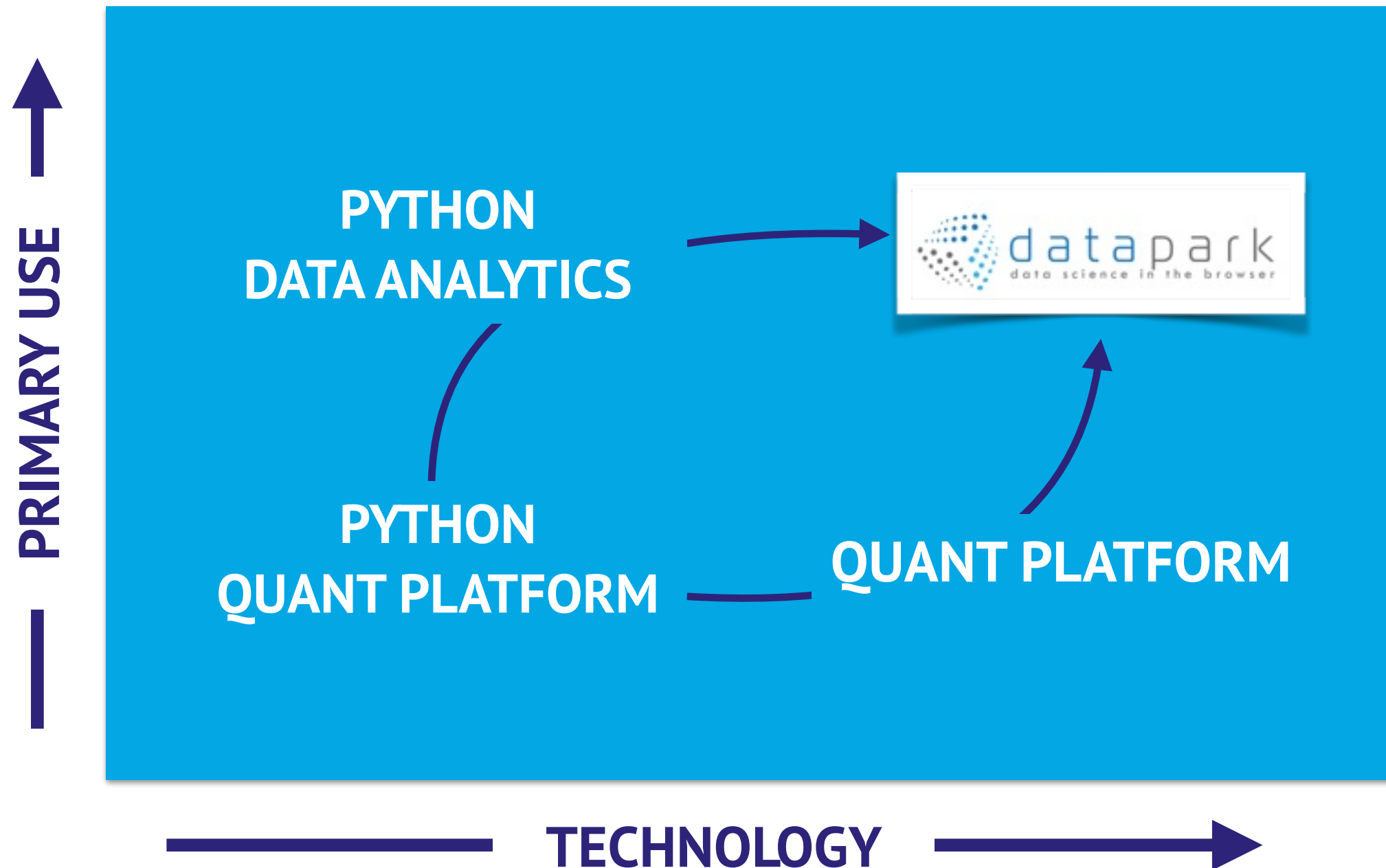


The Python Quant Platform is based on standard Linux servers. This allows you to easily deploy Web- and browser-based applications on any kind of infrastructure—both for internal and external users.

[Link to Flask Application](#)

Natural Evolution

From Python for Finance to Open Source for Data Analytics



Our Product & Service Platform

From the Quant Platform to a whole ecosystem = TPQ.io



- I. Our Market and The Problem
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- III. Concrete Use Cases**

Concrete Use Cases

From advanced analytics to large scale deployments

Derivatives Analytics

Doing financial analytics with DX Analytics



[Documentation](#)

[Link to the Github repo](#)

Quant Platform

Developing and deploying in the browser



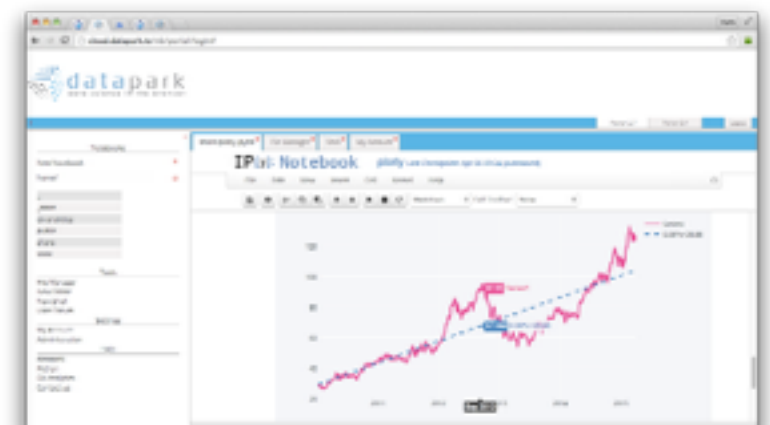
The application uses Python, pandas, plotly and Flask to retrieve historical stock price data (from Yahoo! Finance) and to visualize the data as an interactive D3.js plot.

[Link to application](#)

[Github repository](#)

Plotly on datapark.io

Using pandas, Plotly & datapark for D3.js viz



[datapark Trial](#)

[HTML version](#)

Quant Platform Takeaways

Being better and faster
in financial analytics and engineering.

Interactively prototype, collaborate on and share
Python, R, Julia, ...-based analytics workflows and
applications across your organization.

Benefit from books, consulting, support and training
from the Python for Quant Finance experts.

Be part of the global
Python for Quant Finance Community.

The Python Quants GmbH

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