Wendelin Exanalytics

2020 Big Data with MariaDB

2014-04-03 – Santa Clara updated 2014-06-16

www.wendelin.io

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Agenda

Our background: ERP5

- **Our future: Wendelin Exanalytics**
- **Our challenge: out-of-core**

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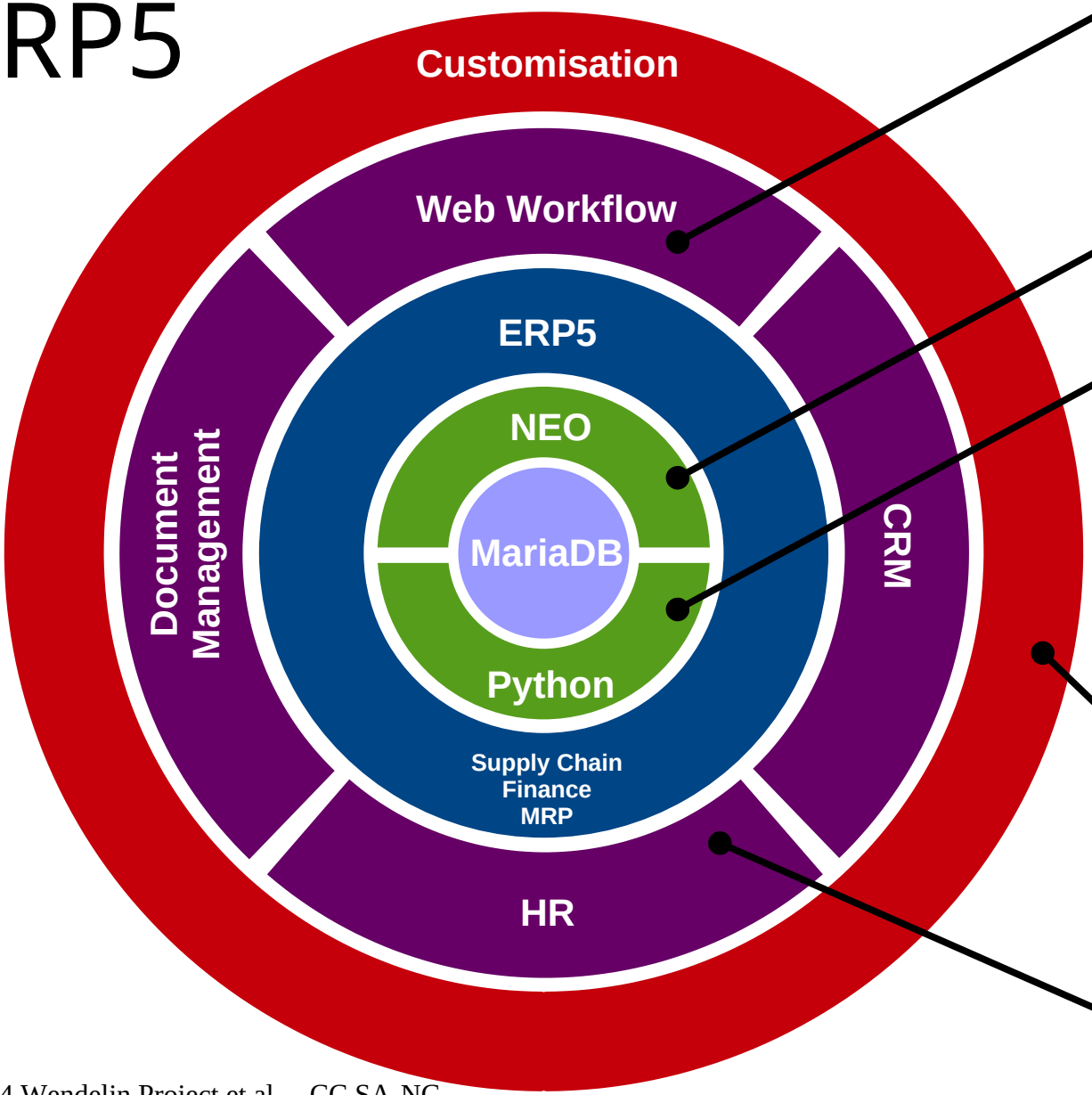
ERP5



Online contribution for 3rd parties
To-do lists
Notifications

Fine Grain Security
Full Traceability
Scalability

Flexibility
Rapid prototyping
Zope TTW on steroids

Banking
Aerospace
Health
Chemical
Government
NGO
Cloud Computing
Consulting
Mechanical

Careers and assignments
Payroll
Projects

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Terra-SAR X Satellite

Management of sales and production of images

Compliant with ESA standard (ECSS)

AIRBUS DEFENCE & SPACE

Accessible to Airbus partners and distributors

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Online sales and customer relation for ETC Tolling

Implemented in 4 months

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120.000 new
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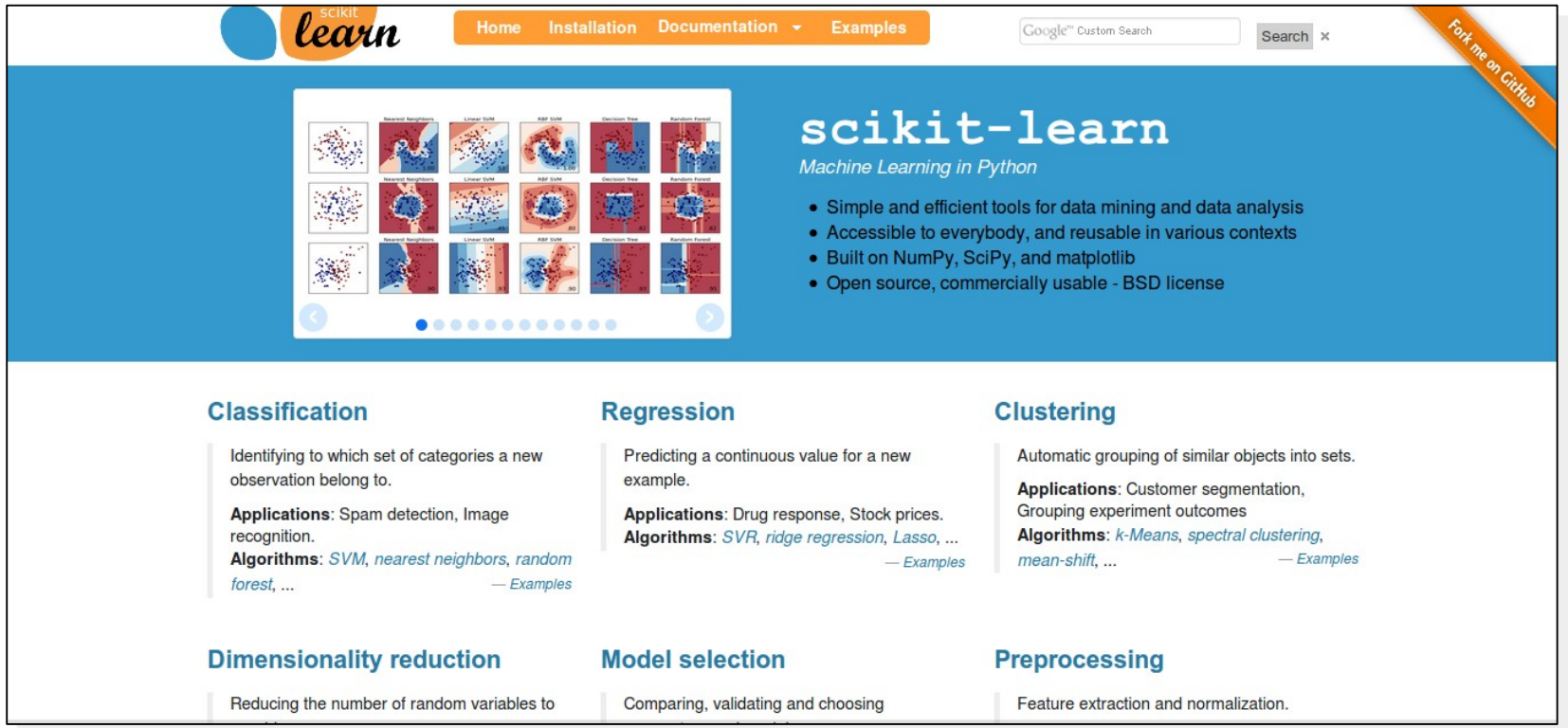
Take the Best Analytics scikit-learn.org



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Made by Great Mathematicians

http://en.wikipedia.org/wiki/Fields_Medal

Number of Fields Medallists by country [edit]

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United Kingdom	6
Japan	3
Belgium	2
West Germany (1) / Germany (0)	1
Australia	1
British Hong Kong	1
Finland	1
Israel	1
Italy	1
Norway	1
New Zealand	1
Sweden	1
Vietnam	1

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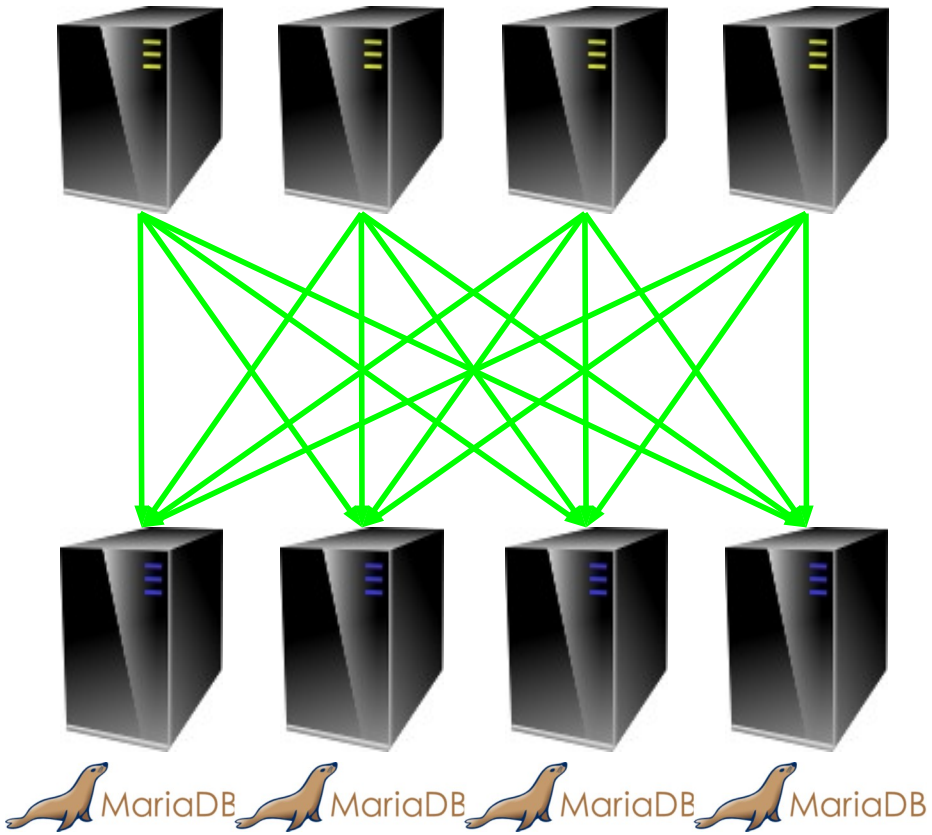
Add Distributed Storage neoppod.org

NEO



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Add Elastic PaaS erp5.com

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ERP5 PaaS

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And Multicloud Deployment slapos.org

MMC Rus

Aide et Action
L'Education change le monde

sanef

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Wendelin Exanalytics Core 100% open source

100% Python

Scikit Learn — Data Analytics

NEO — Distributed Storage

MariaDB

ERP5 — Elastic PaaS

SlapOS — Multicloud Deployment

Multi Data Center

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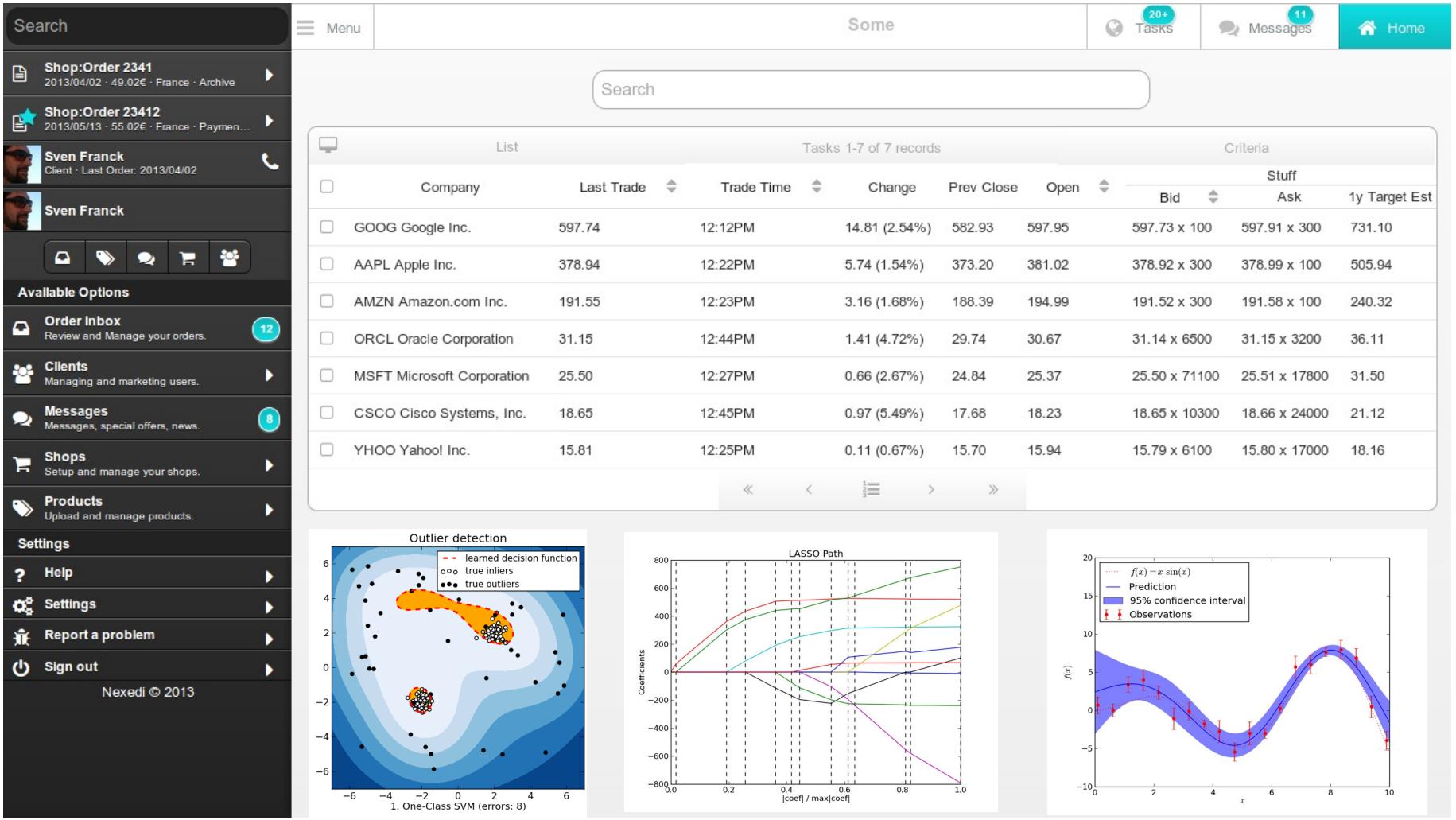
Wendelin User Interface renderjs.org



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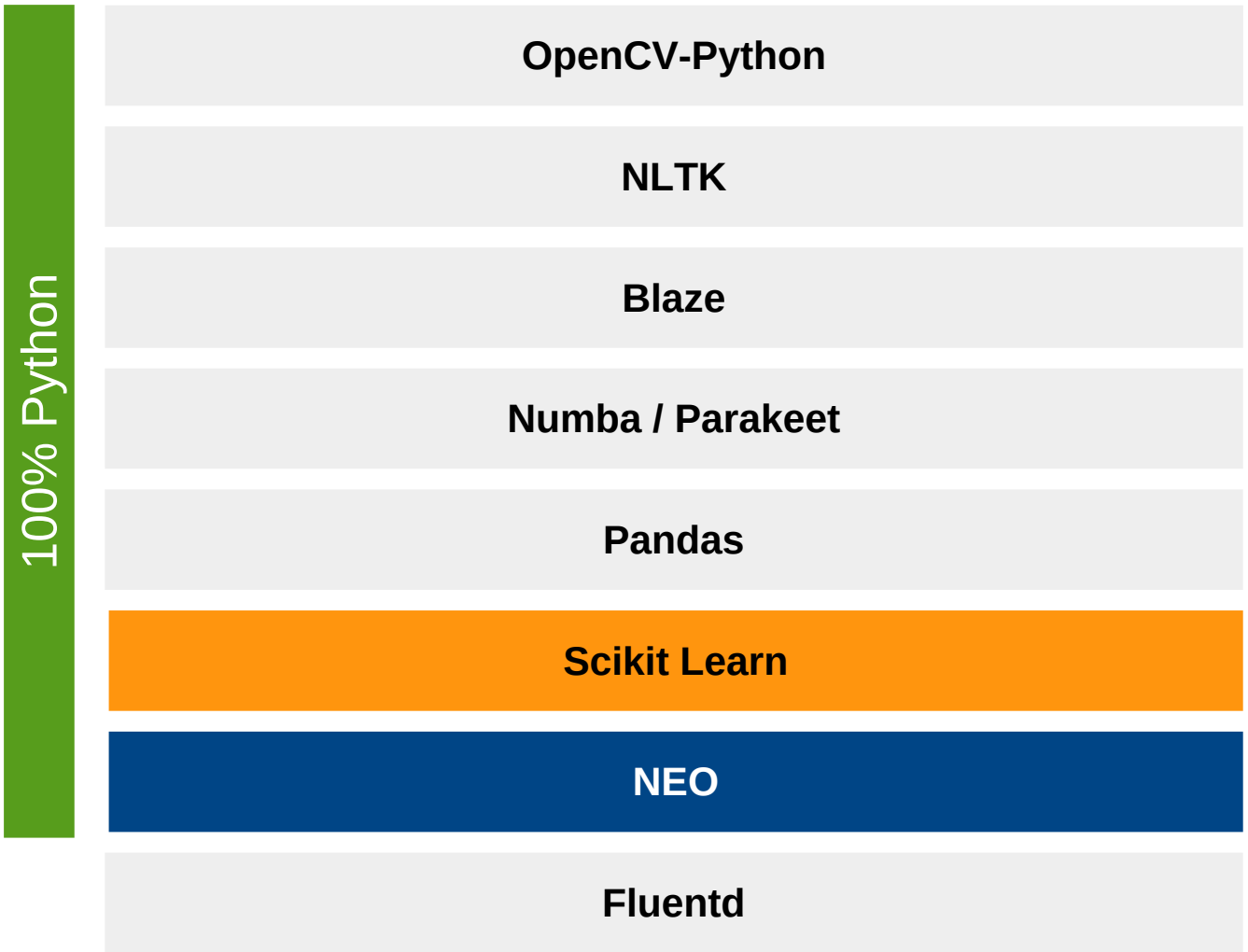

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Full out-of-core arrays
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Wendelin Applications

- **Intrusion detection**
- **Fraud detection**
- **Business and economic prevision**
- **Marketing**
- **Media analysis**
- **Public security**
- **Brain Computer Interface**
- **Internet Of Things**

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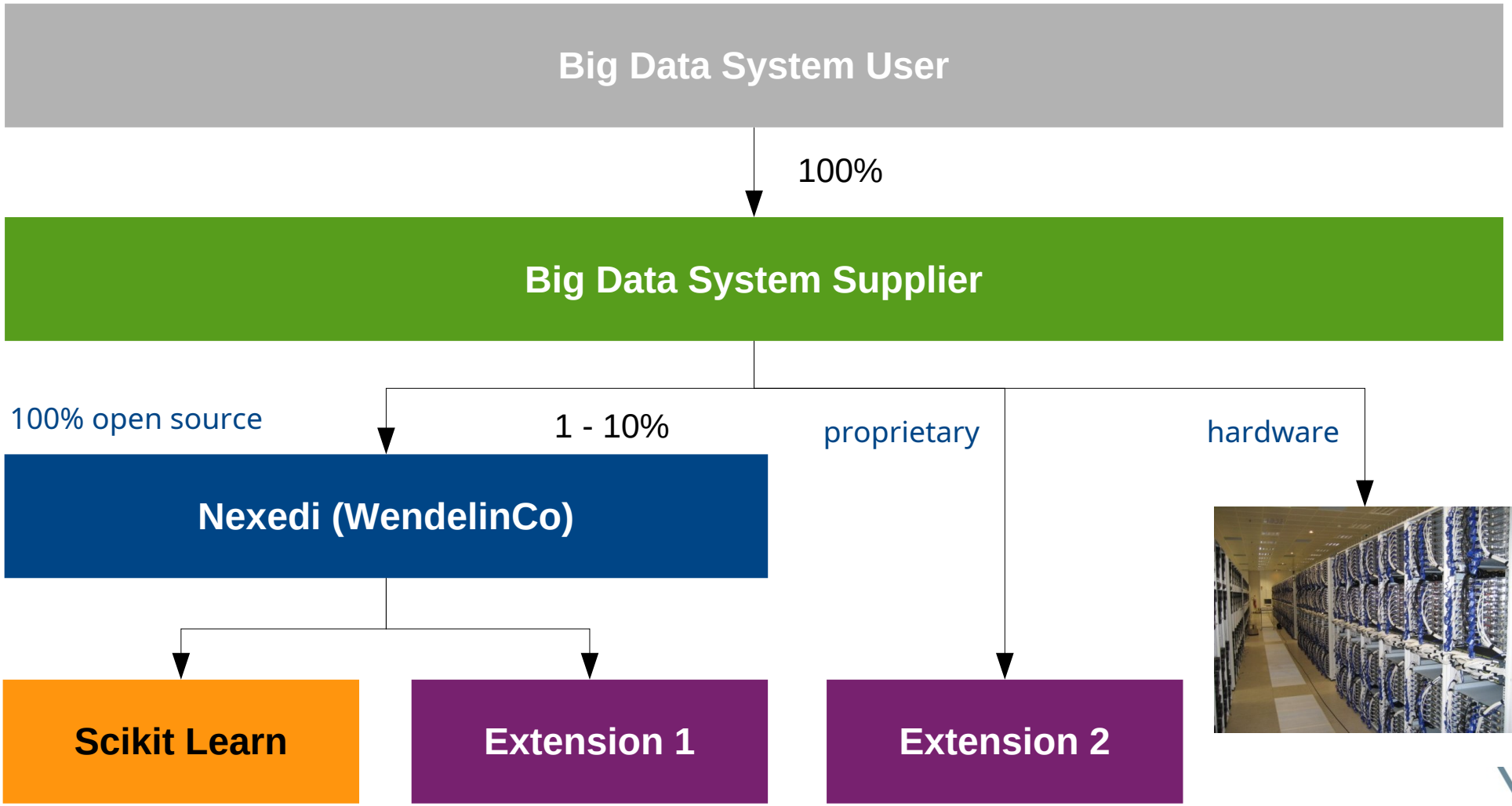
Business Model: German Style No VC



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Agenda

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- **Our future: Wendelin Exanalytics**
- **Our challenge: out-of-core**

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Out-of-core arrays

```
# Numpy
np.ndarray(shape=(2,2), dtype=float, order='F')

# Out-of-core data
np.ndarray(shape=(1e18,2), dtype=float, order='F')        2 Exabyte

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np.ndarray(shape=(1e9,2e9), dtype=float, order='F')       2 Exabyte
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Best out-of-core topology depends on the algorithm and array geometry

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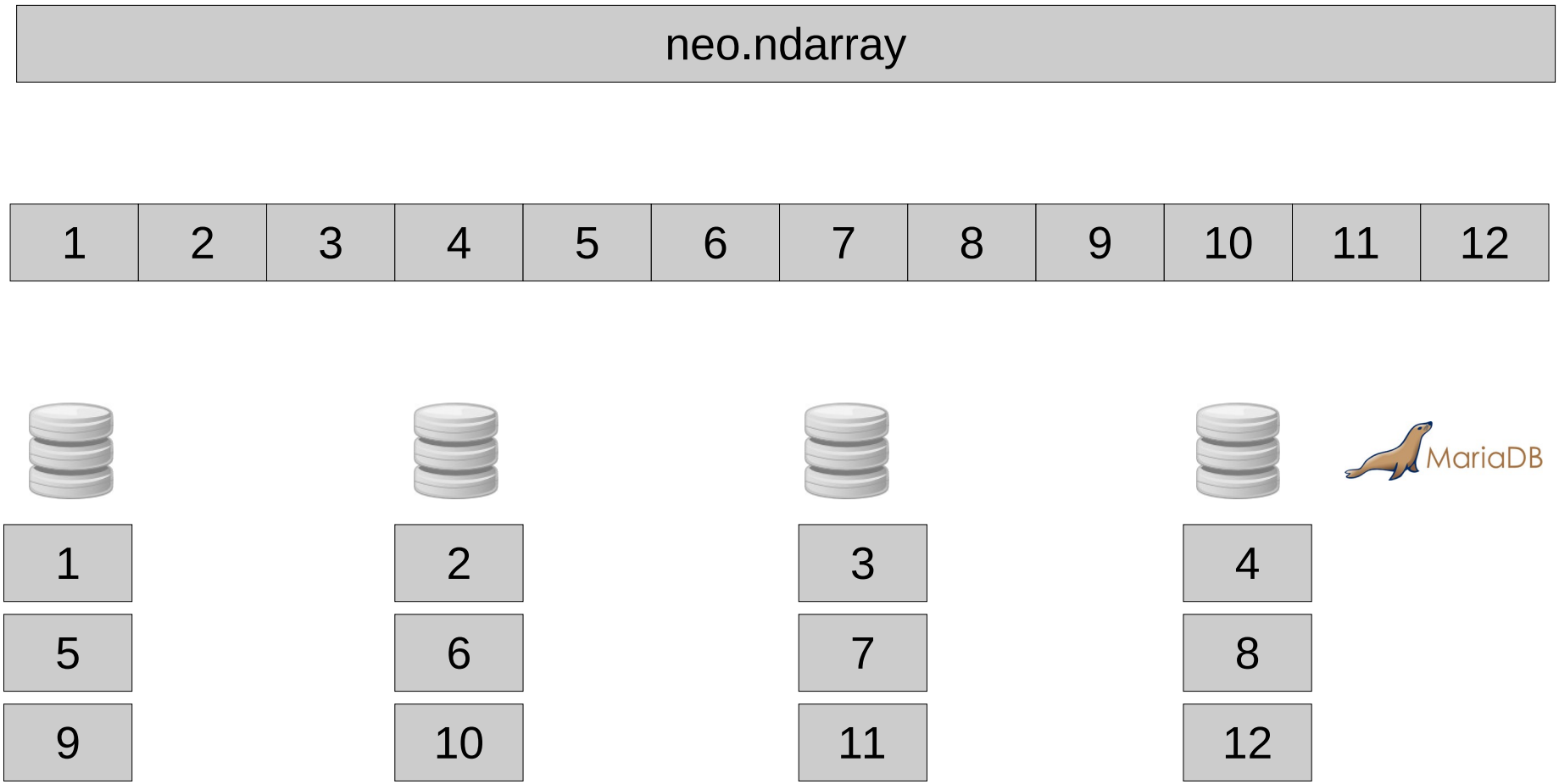
neo.ndarray out-of-core data



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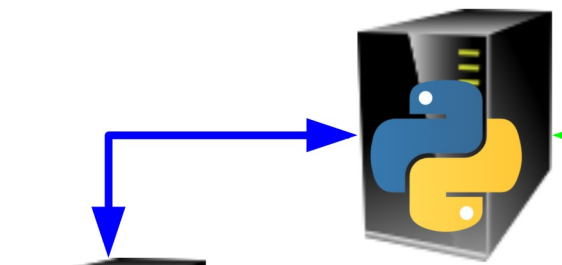
NEO Overview



Application
ZODB
neo.client

Master
OID & TID allocation
Synchronisation
Load balancing

Storage
Object data
Transaction data
Partition table

Admin
State archival
Command proxy

neoctl
Sate access
Command control

Control
Data

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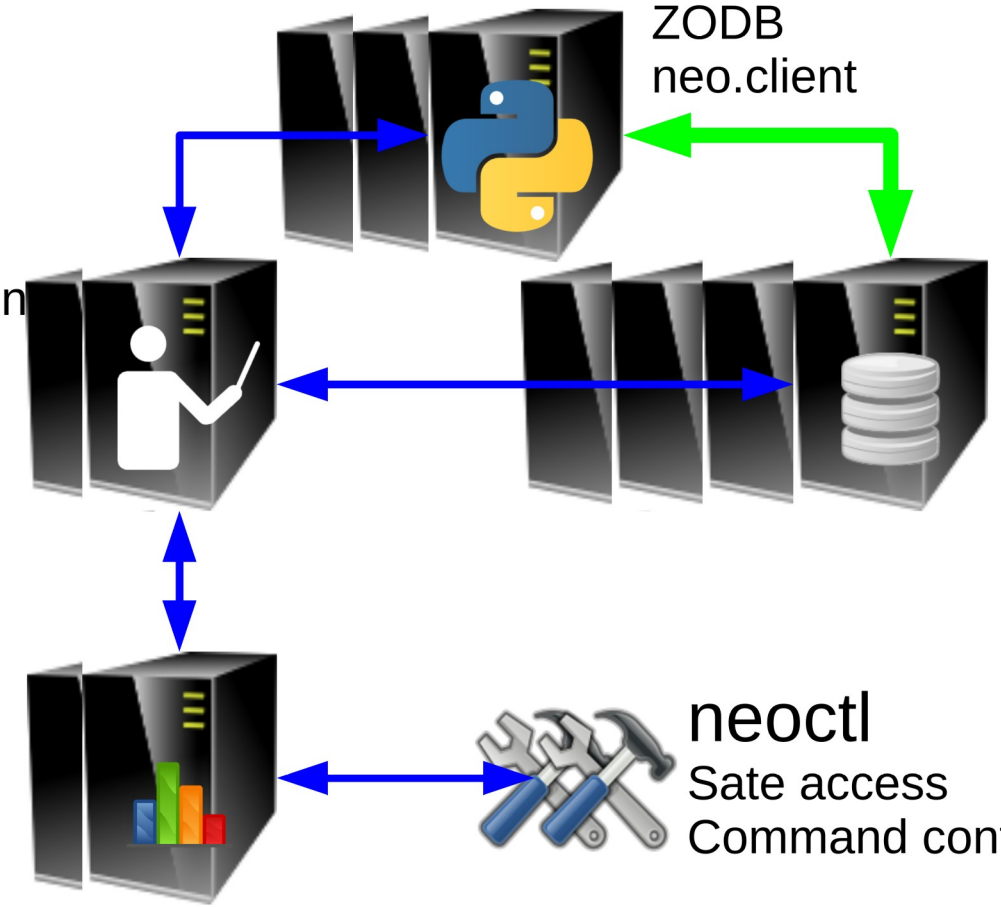

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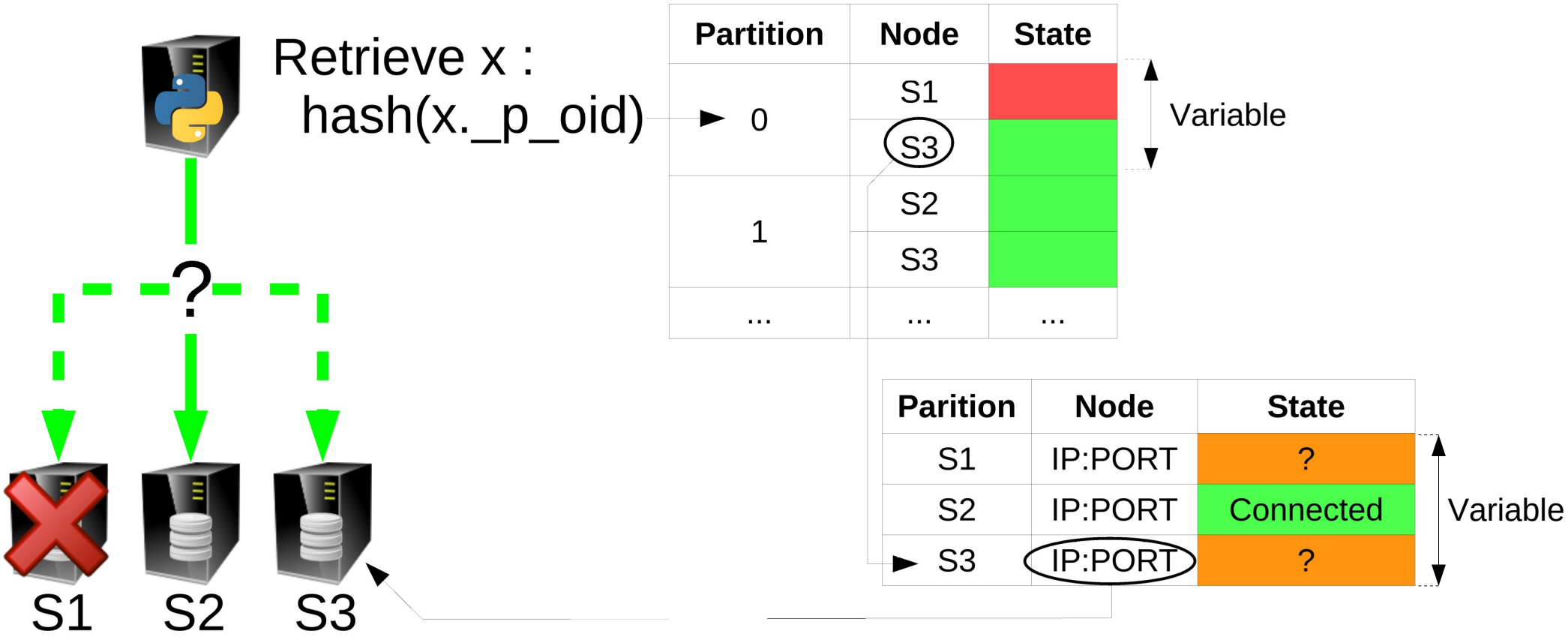
Object retrieval



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Roadmap

- **Q3 2014: neo.ndarray**
- **Q3 2014: developer release of Wendelin**
- **Q4 2014: neo.ndarray with simple optimizations**
- **Q1 2015: mariadb embedded**
- **Q2 2015: coloured caches**
- **Q3 2015: coloured caches with C client cache**
- **Q4 2015: GO storage**

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Challenges

- **Reduce latency → embedded mariadb ?**
- **Reduce SQL overhead → precompile queries ?**
- **Reduce copies → BLOB protocol ?**
- **Accelerate storage → C++ ? GO ?**
- **Optimize cache → colored caching**

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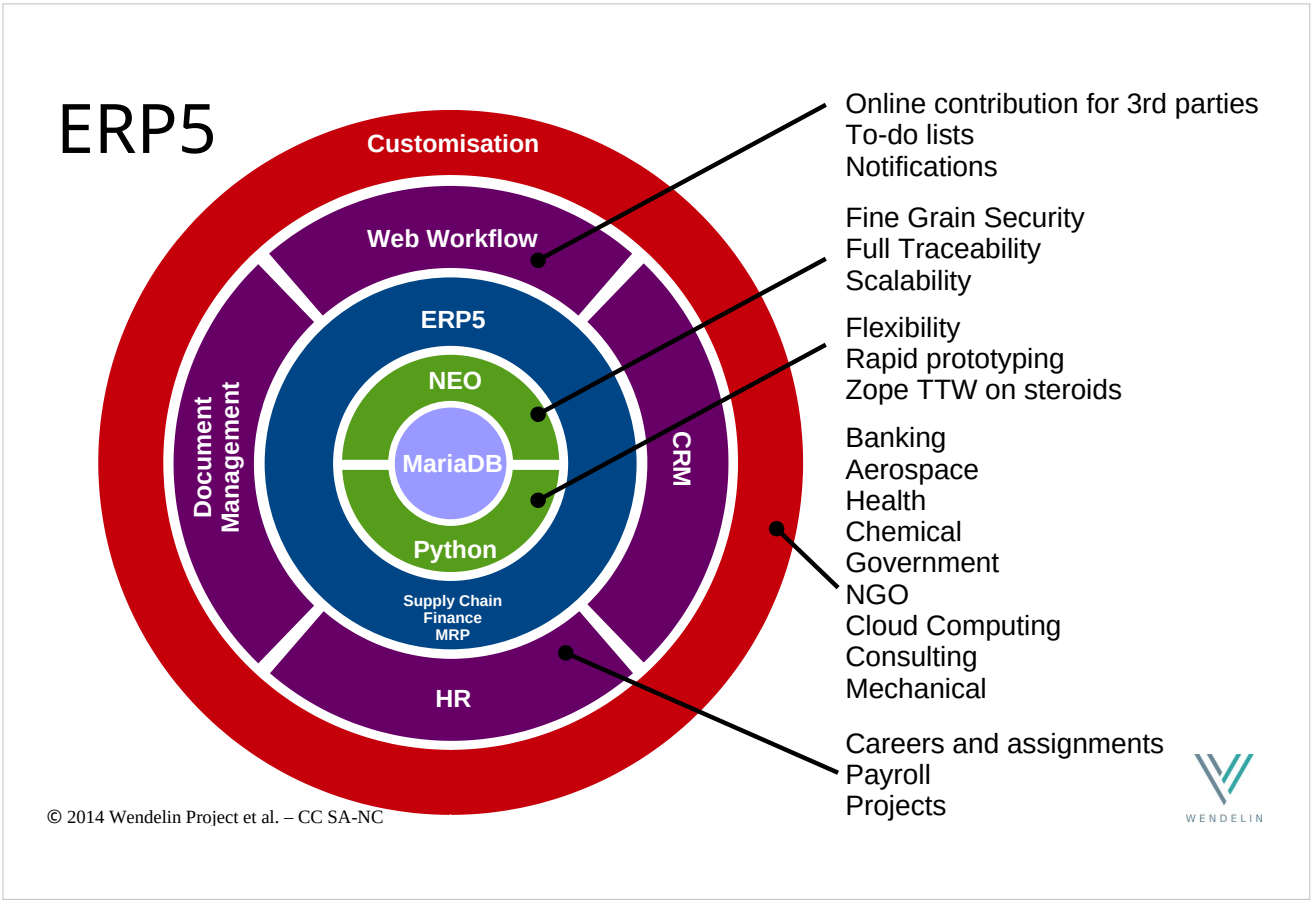

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Terra-SAR X Satellite

MariaDB ERP5

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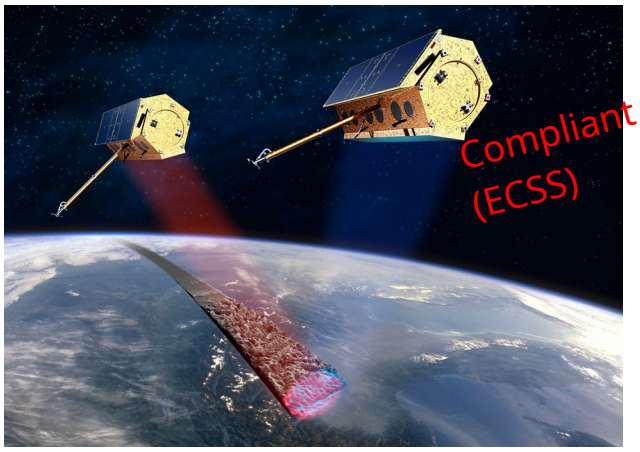

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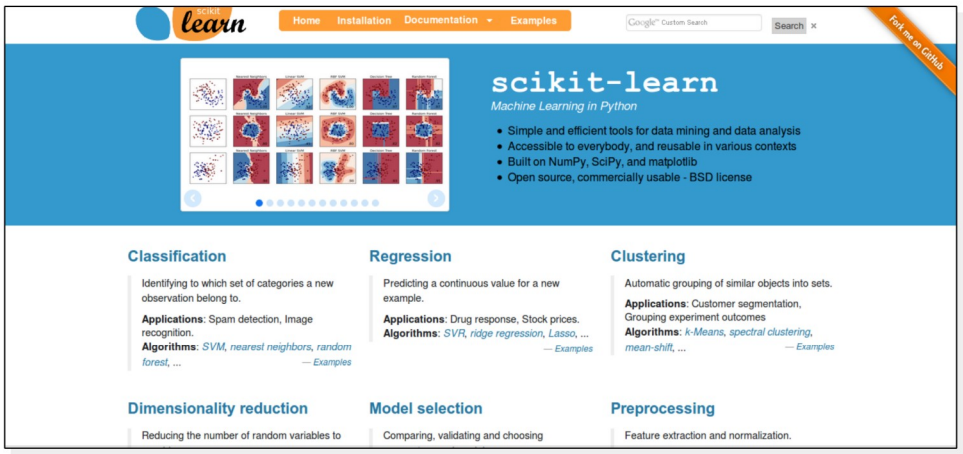

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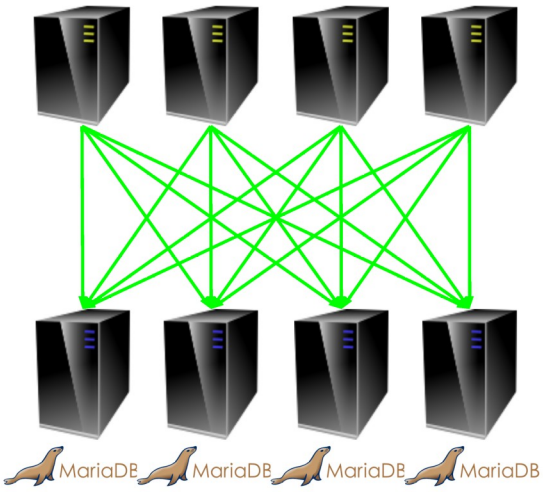

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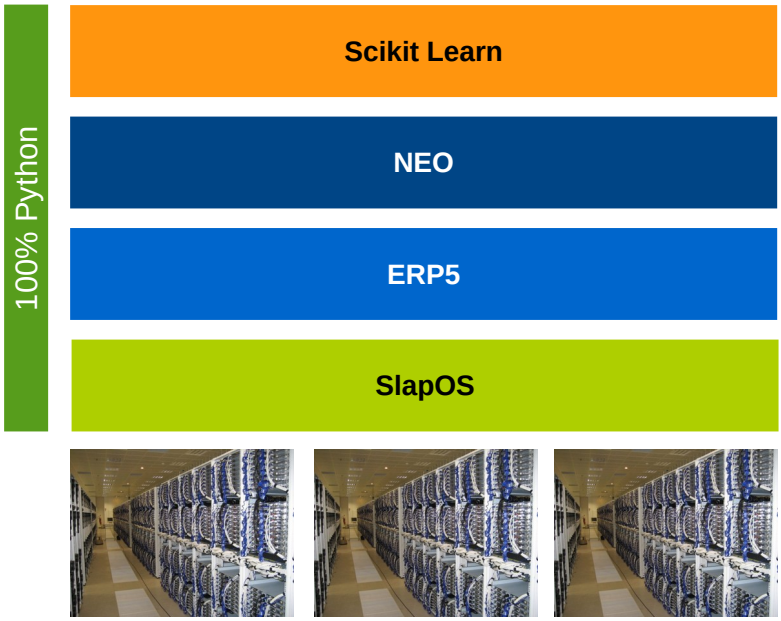

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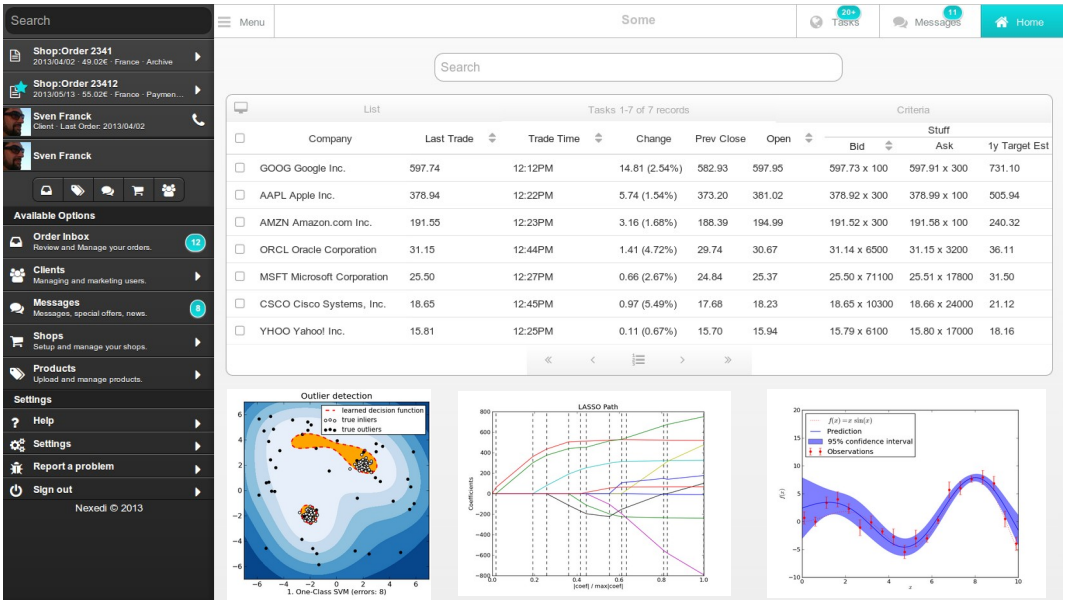

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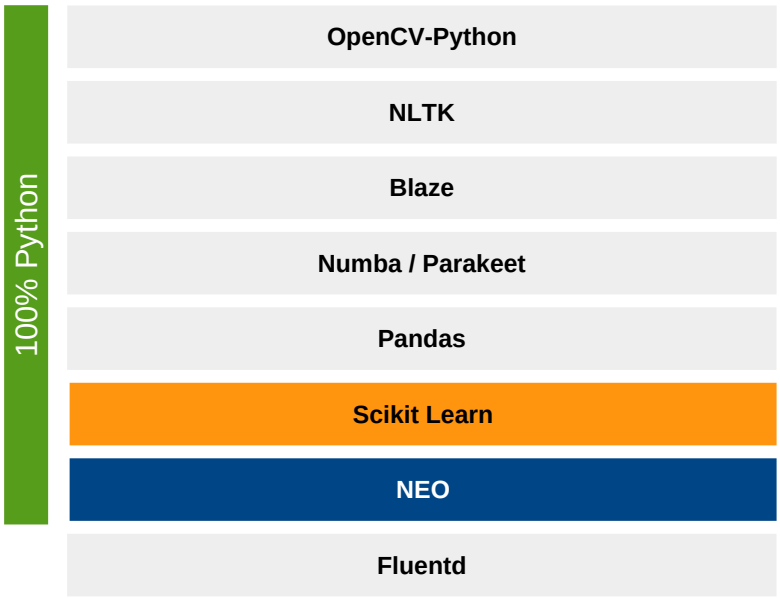

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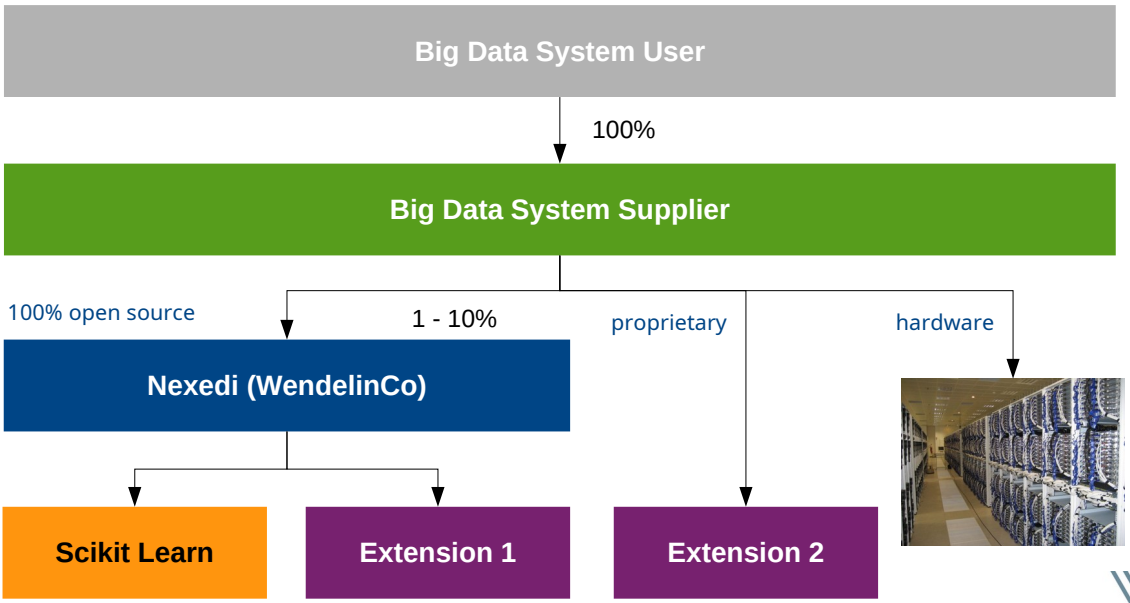

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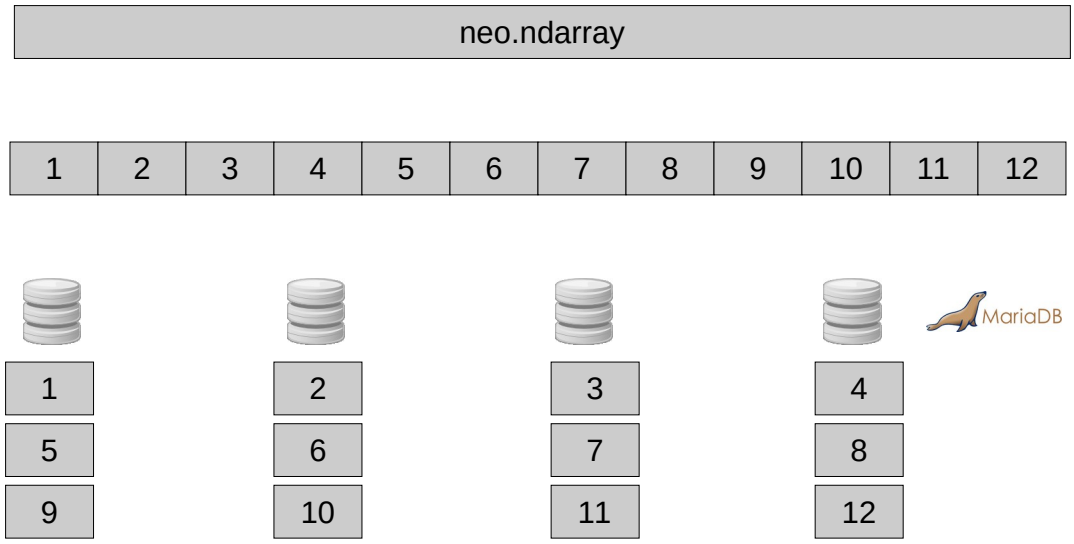

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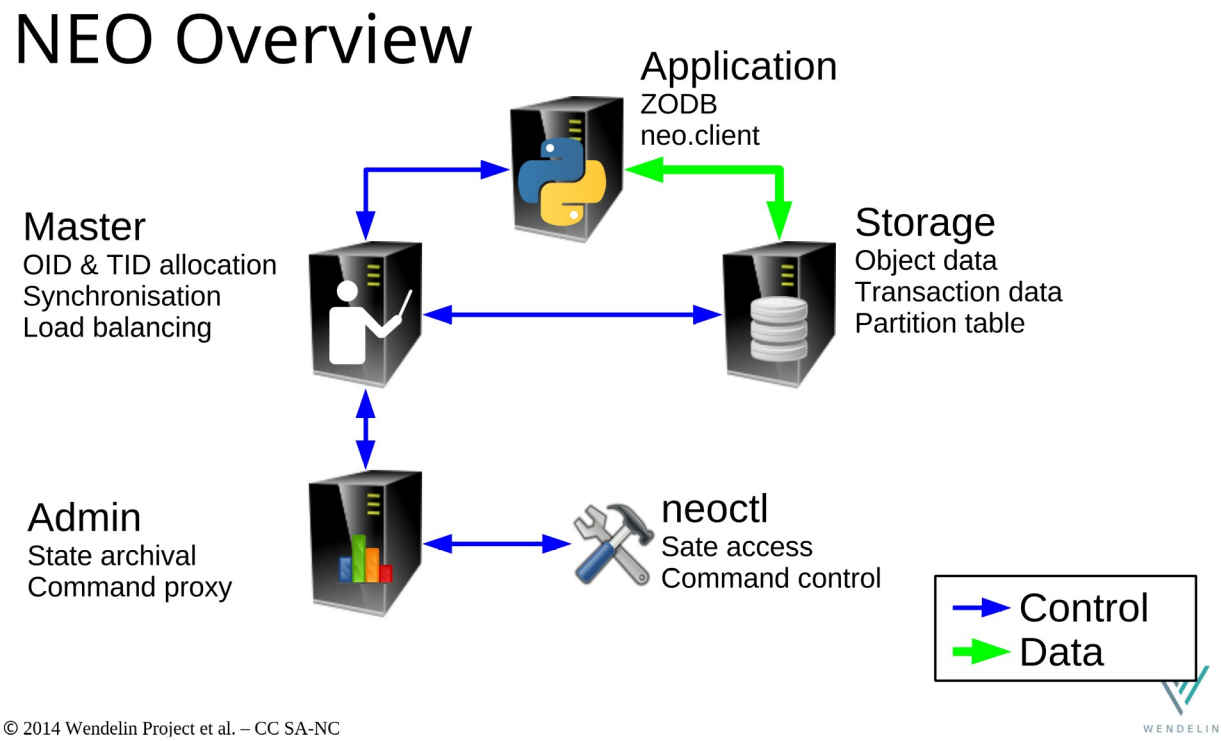

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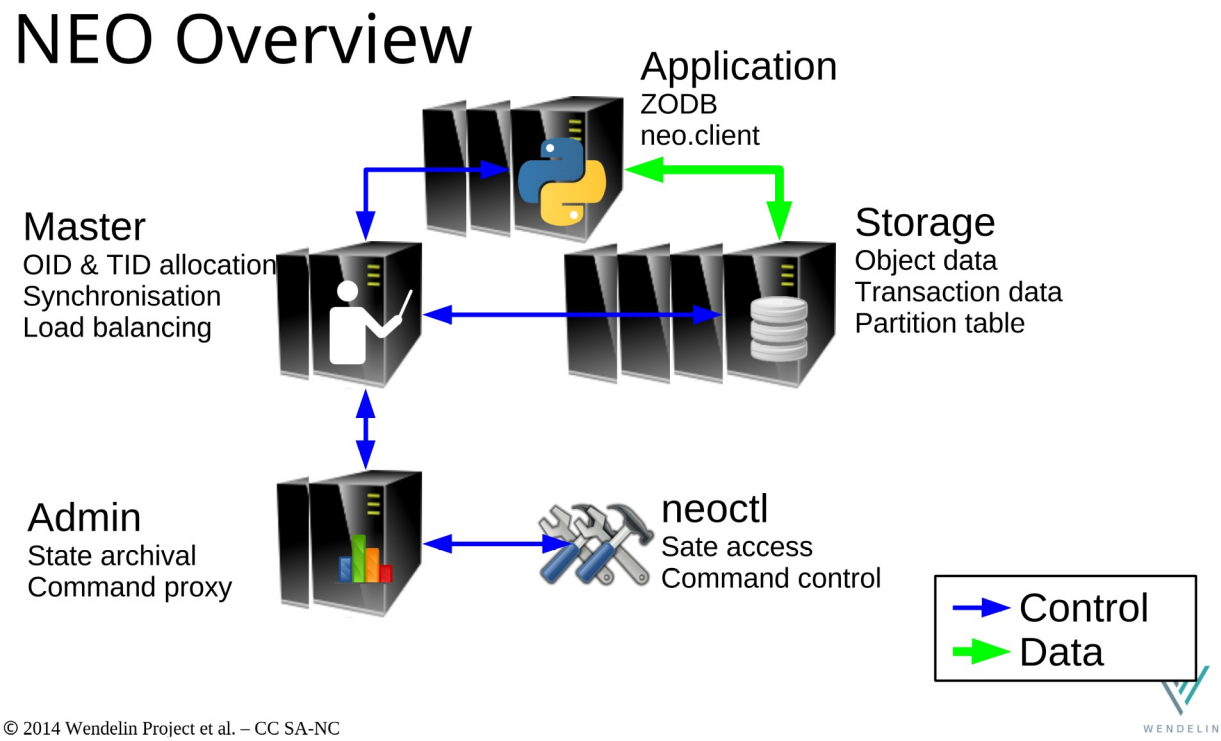

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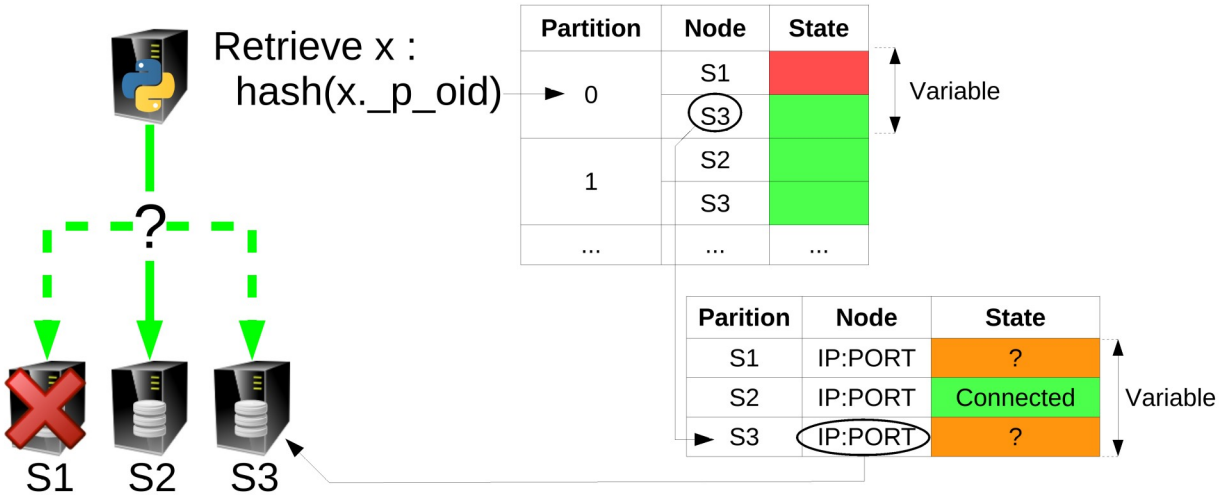

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