Panel Discussion “RSE Jobs”

15 October 2024

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Scientific IT Services of ETH

Agenda

- 16:00 – 16:10 General Introduction
- 16:10 – 16:20 Panelists introduction
- 16:20 – 17:30 Panel discussion + Q&A

- 17:30 – open ended: Optional networking at Alumni Lounge

What / Who is an RSE?

- There is no unique definition.
- Examples:
  - Do you like coding as much as research, or even a bit more?
  - Do you write code to advance science?
  - Do you apply software engineering expertise in science?

Researcher w/o Coding

RSE

Software Engineer w/o Research

About RSEs

- RSEs often work
  - in research, e.g. as PhD or Post Doc,
  - in service groups,
  - but also in industry.

- Why use “RSE” as a title:
  - Searchable term in job adds.
  - Give people an identity.
  - Emphasize importance of software in modern science.

- Local communities

- Yearly international conferences in the UK, US, Germany, …

Is this your first contact with the RSE community?

- We have a website https://rse.ethz.ch.
- We have chat rooms via matrix, **including a Jobs channel**.
- We have a mailing list.
- All details at the website.

- Please subscribe to the mailing list and join the chat for future events and updates.

PSI Center for Scientific Computing, Theory and Data

Who Am I ...

... and where do I come from ?

Simon Gregor Ebner
15 October 2024

Linus Gasser

'95

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

'06

'93

BERN

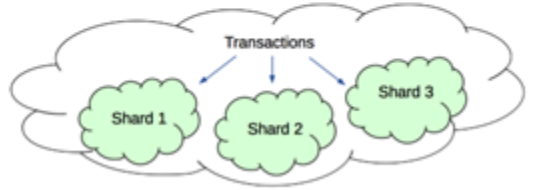
'15

EPFL Center for Digital Trust

'18

DEDIS

Decentralized Distributed Systems Laboratory

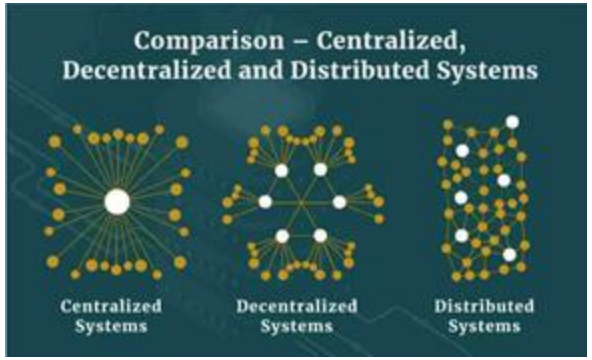


Overview of Omniledger

Linus Gasser

- (A)symmetric Cryptography
- Zero Knowledge Proofs
- Homomorphic Encryption
- Quantum-Resistant Cryptography

- Blockchains
- Mastodon
- Fledger



- Chad: Basic IT and maintenance
- EPFL: Student Projects
- GymInf: Security and Privacy
- HEIG/VD: C++, Network Security

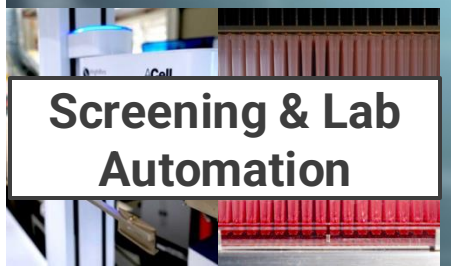
ETH zürich

nexus
Personalized Health Technologies

Clinical Bioinformatics

Biostatistics

Software Engineering



Screening & Lab Automation

David Meyer
Head of Software Engineering

nexus
Personalized Health Technologies

Universität Zürich[UZH]

Central IT
Science IT

Applying for RSE jobs: Panel discussion

Andrei Plamada

15 October 2024

Science IT – Driven by Research

Center of expertise for scientific computing and IT services for research:

— Enables computationally state-of-the-art research

— Focuses on support and services for all UZH researchers

A team of system engineers and consultants (~RSEs).

Organizational Structure:

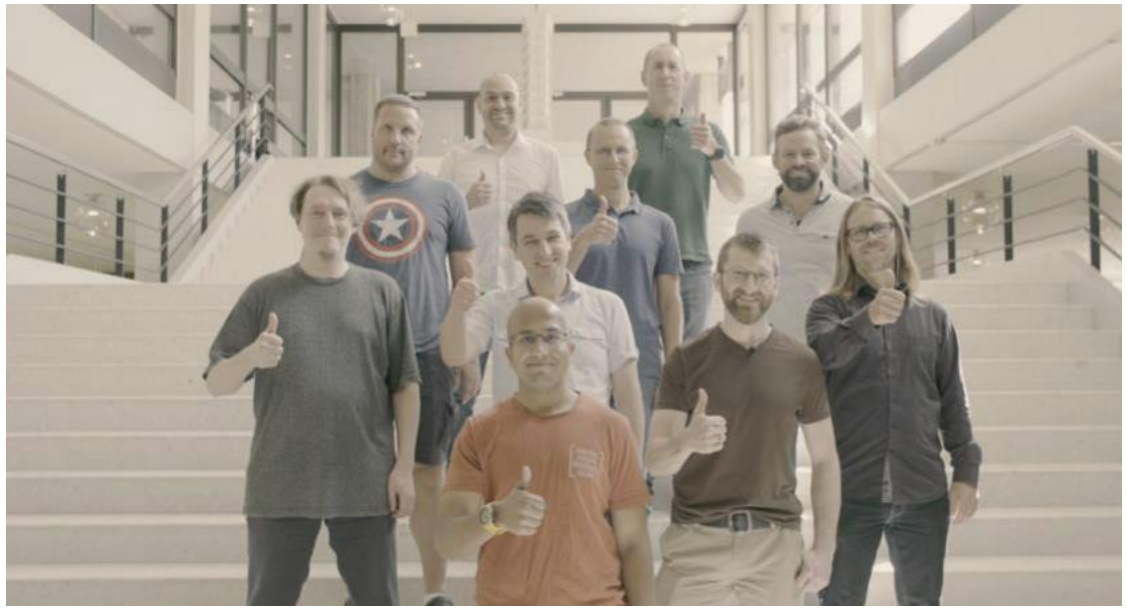
— Part of Central IT

— Organized in 3 groups (IT Systems, E-Research, Applications)

— Science IT Board (supports the steering of Science IT)

The Science IT unit is also referred to as S3IT. This acronym was derived from the unit's former name Service and Support for Science IT (SSSIT → S^3IT).

https://www.s3it.uzh.ch/
https://www.zi.uzh.ch/en/teaching-and-research/science-it/about/team.html



Science IT – 10 Years Anniversary

Memorable moments in Science IT's history include:

— Access to Piz Daint Supercomputer in early 2015

— Initial ScienceCloud offering started in late 2015

— Science IT Board initiated in 2016

— Access to initial GPU computing provided in 2017

— Access to HPC nodes on ScienceCloud available in 2018

— ScienceCluster service starting in 2019

— More than 100 research groups using Science IT Computing in 2019

— ScienceApps interface to ScienceCluster in 2020

— More than 200 research groups using Science IT Computing in 2020

— Access to Alps/Eiger Supercomputer in 2021

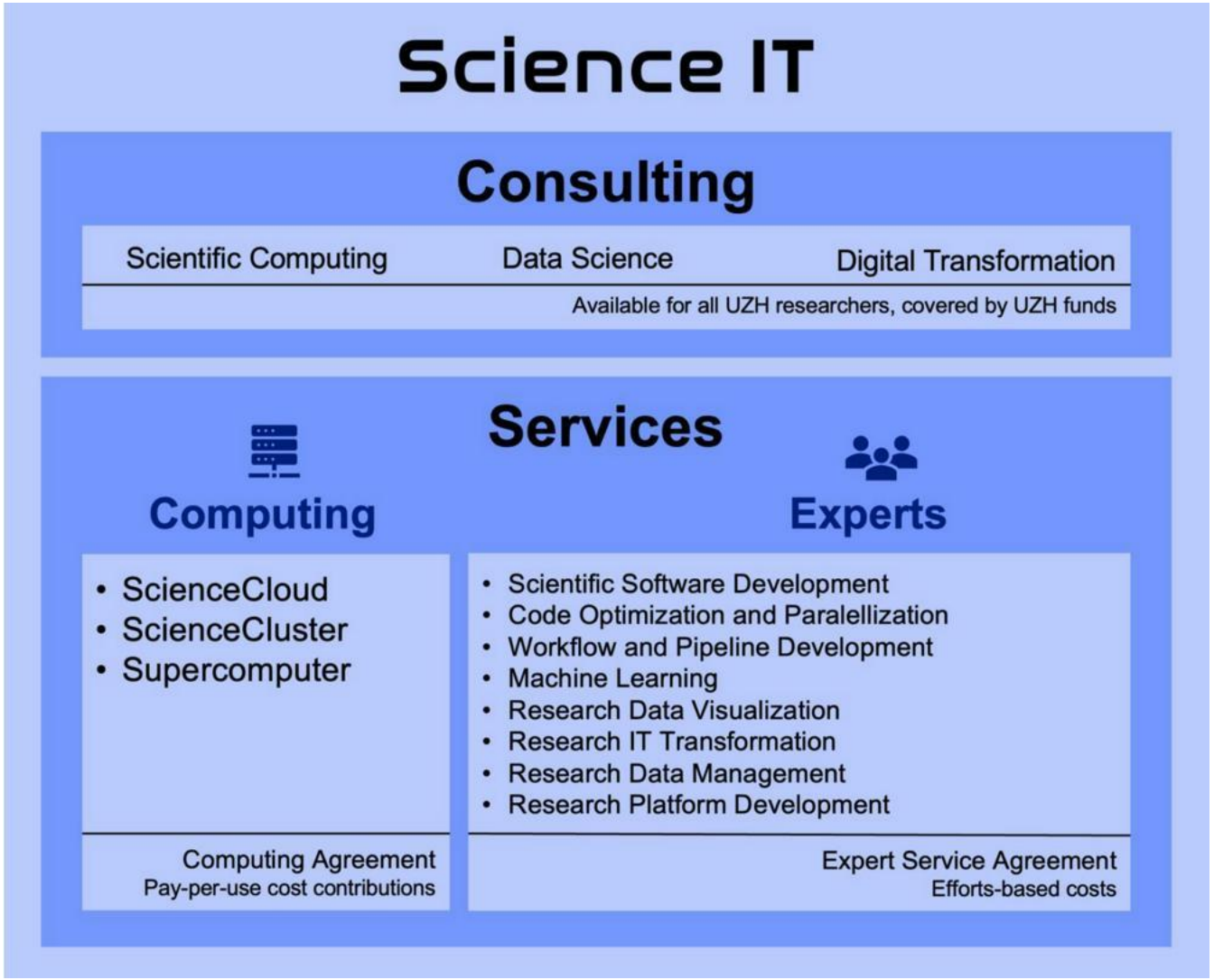
— Major ScienceCluster upgrade in 2023

— Upgraded to a total capacity of 14PB of storage in 2024

— …and not to forget, numerous research project collaborations since 2014

https://www.uzh.ch/blog/zi/2024/03/27/science-it-s3it-10-years-anniversary/

Science IT – Services



https://www.zi.uzh.ch/en/teaching-and-research/science-it

ETH Center for Climate Systems Modeling C2SM

Enabling weather and climate modelling & science at Zurich

Collaborative platform for innovation

EXCLAIM

CH2025

SPEED2ZERO

Scientific & technical support

Technical model development

Technical development of weather & climate models

High Performance Computing

Swiss Climate Change Scenarios

Climate Impacts

git

Technical training

Further education

Public outreach

Scientific programmers & software engineers @ C2SM

ICON weather & climate model

domain expertise needed

domain expertise not needed

C2SM Executive Office

5 scientific programmers

- Techn. model development
- Development of tools for C&W modelling
- Software maintenance, debugging
- CI / CD
- Numerical simulations
- User support in C&W modelling

C2SM / MeteoSwiss staff Numerical prediction

6 software engineers / scientific programmers

- Techn. model development
- Physical model development
- Data assimilation
- Data processing
- Machine learning

XCLAIM open ETH project

5 software engineers

- Refactoring weather&climate model
- Introduce python based DSL components into Fortran – based ICON
- Componentisation / Modularisation
- Optimisation
- Develop ICON in python driven code
- CI/CD
- Numerical simulations (use cases)

Scientific programming → Software engineering

Range of RSE

IBM **Research**

Dr. Peter W.J. Staar

https://research.ibm.com/labs/zurich

Scientific IT Services (SIS): Team and mission

- Section of ETH ITS and a pool of experts (~50 members)
- Scientific computing experts & data scientists from various scientific backgrounds (chemistry, physics, engineering, bioinformatics, neuroscience, etc.) with PhD and prior research experience
- Scientifc software developers with computer science background and industry experience
- System administrators & DevOps for the HPC infrastructure and research IT platforms

"We work closely with ETH researchers to enable research and improve efficiency by providing first *class scientific computing services."*

About myself (Thomas Wüst) and our group

- Background in Physics, specialization in computational statistical physics
- Research experience, postdoc in the US
- 5 years of “one man show” scientific IT services experience at WSL (Swiss Federal Institute for Forest, Snow and Landscape Research)
- 10 years at SIS heading the group “Computational & Data Science Support”
  - provide support to the ETH research community at the interface of data science / analysis, research software engineering and DevOps
  - 9 members with diverse scientific backgrounds (biology / bioinformatics, mathematics, engineering, physics, etc.)

Submit and vote questions at

https://slido.com

Code:

3422192

Please visit

https://rse.ethz.ch

and join our communication channels!

Contributing authors:

- Uwe Schmitt
- Linus Gasser
- Christiane Schnadt Poberaj
- Thomas Wüst
- Andrei Plamada
- Simon Gregor Ebner
- David Meyer

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