

# Update on HLRS

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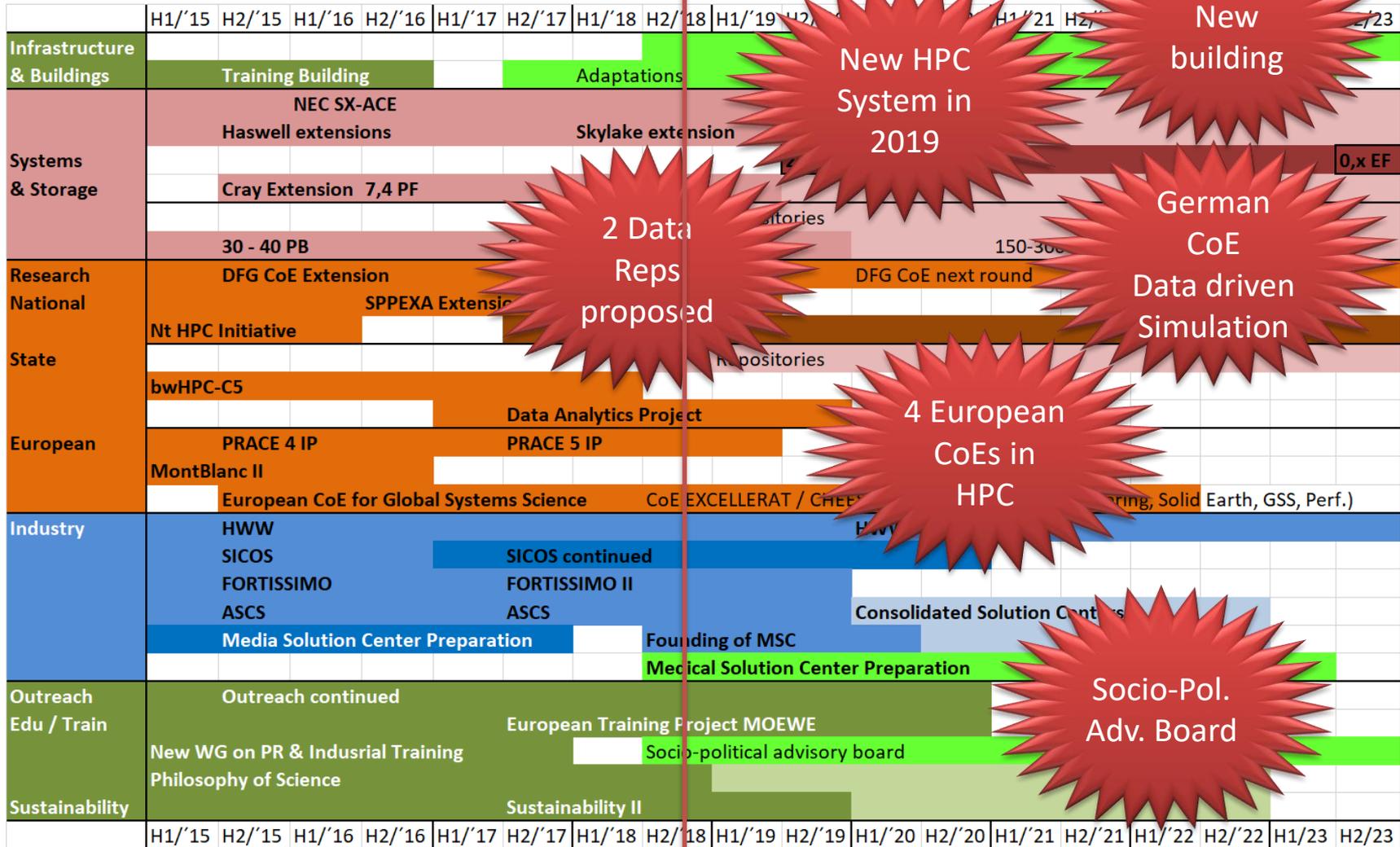


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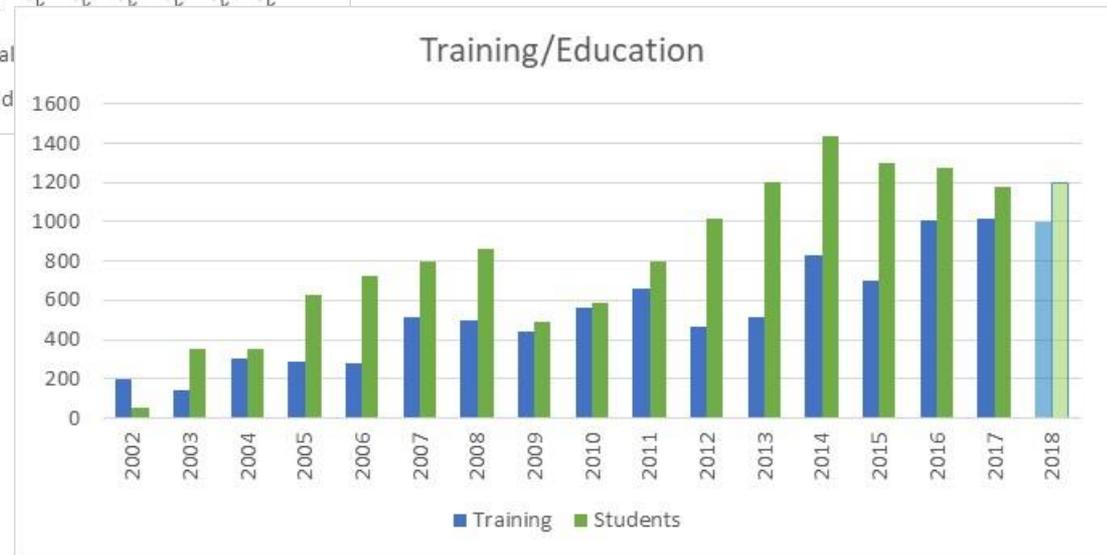
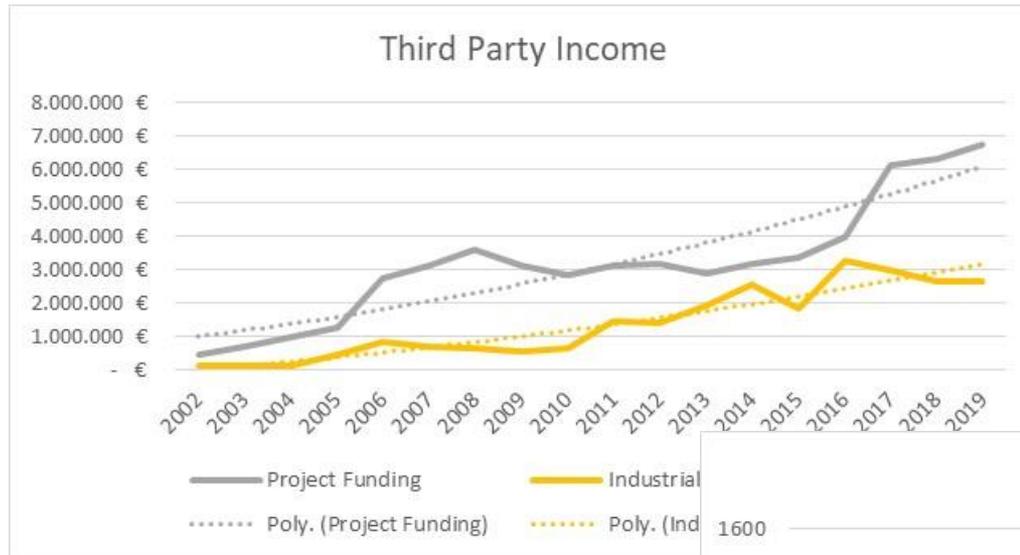
- Situation of HLRS
- European & German Strategy
- Beyond HPC
- Summary

# SITUATION AT HLRS

# HLRS Roadmap



# Key Performance Indicators



# Industrial Customers 2018

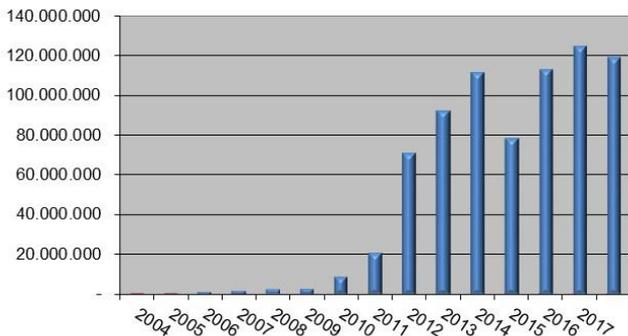


Fraundorfer Aeronautik GmbH & Co. KG



- 113 Mio C-hours (2016)
- 124 Mio C-hours (2017)
- ~120 Mio C-hours (2018)

CPU/Core Hours sold to industrial customers



# Sociopolitical-Advisory Board established



Chairman:  
Prof. Dr.  
Ortwin Renn  
IASS Potsdam

<http://www.hlrs.de/about-us/responsibility-for-environment-and-society/sociopolitical-advisory-board/>

# GERMANY & EUROPE

## German Activities

- Continued work on German smart scale strategy (Exascale)
  - Position paper for Federal Government in progress
  - Preparation for new building
- HLRS part of a German Cluster of Excellence in „Data driven Simulation“ (SimTech)
- Working towards a strategy to play a key role in data management in Germany
  - Two projects for state-wide data repositories submitted
    - Simulation data repository
    - Data repository for digital literature

## European Activities (I)

- Founding of Joint Undertaking EuroHPC
- Pushing European Commission to learn from Japanese national Supercomputing project and also fund software and applications
- GCS decision to nominate JSC as a candidate for a European Exaflop system
  - Support for a GCS Exaflop system
  - HLRS taking the role of European leader in engineering simulation

## European Activities (II)

- HLRS participating in four new Centres of Excellence
  - EXCELLERAT – Engineering (Project Lead)
  - CheeSE – Solid Earth
  - POP2 – Performance Optimization
  - HIDALGO – Global Challenges and Data Analytics
- Furthermore participation in Focus-CoE – CSA (Coordination & Support Action) to support the nine funded CoEs

# MOVING INTO DATA

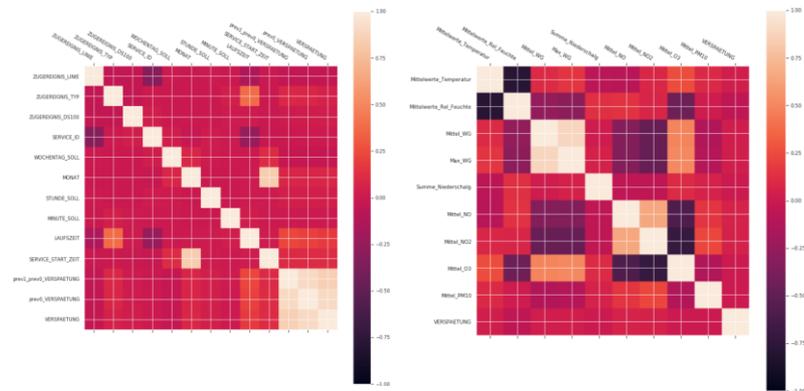
## CATALYST: Big Data Analytics for HPC

- **Backbone** of the project: Performance and high data throughput of two Urika-GXs coupled with HPC
- Driving the **convergence between Big Data and HPC**
  - **highly-secure** data transfer and processing environment
  - using **proven and well-known** open source analytics frameworks such as Apache Spark
  - **natural and instantaneously** way to do analytics with GUI support for Iuntyer and Tableau



# Catalyst Success Stories

- Analytics on log files (e.g. runtime variations)
- Analytics on train schedules
- Analytics on source code repositories
- More in the loop



# FUTURE STRATEGY

**WHATEVER THE HPC PROCESSOR<sup>R</sup> IS **  
**OF THE FUTURE WILL LOOK LIKE IT**  
**WILL BE CALLED „NATIONAL“**

**„THERE ARE NINE MILLION BICYCLES  
IN BEIJING“**



**OR**

**FORGET MOORE  
TAKE MORE**

# HOW MUCH POWER DOES IT TAKE TO SAVE THE WORLD?



**THE ANNUAL POWER  
CONSUMPTION OF GAMBIA /  
SIERRA LEONE / TSCHAD IS LESS  
THAN THE POWER COMSUMPTION  
EXPECTED FOR AN EXAFLOP  
SYSTEM**

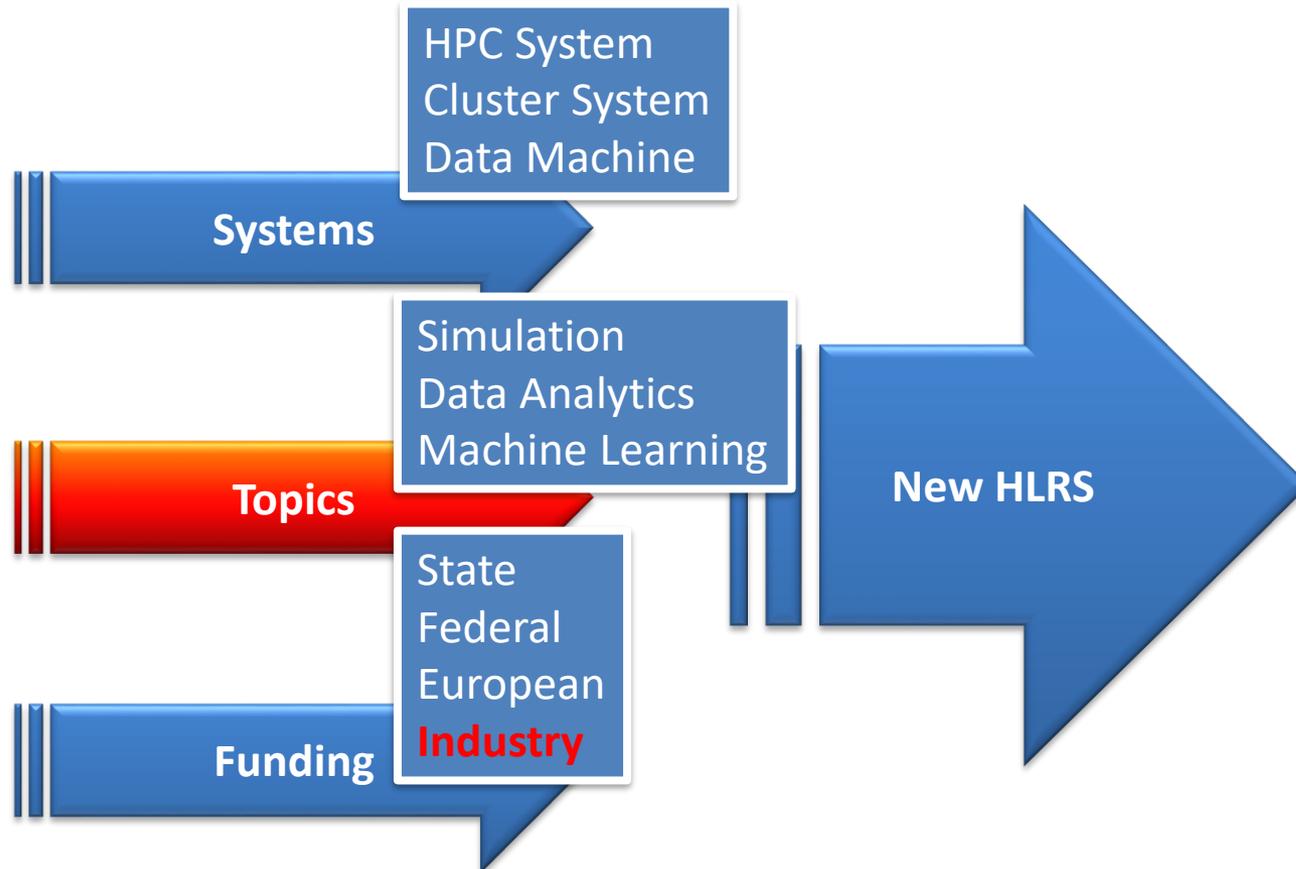


# HPC AND AI WILL MERGE



THE EPIC FALL OF THE „HPC EMPIRE“  
CAUSED BY „EPIC ROME“?

# HLRS Future Strategy



## Summary

- HLRS is headed towards a becoming a center for expertise in simulation technologies
- HLRS is well positioned in the German and European context
- HLRS has a number of interesting years to come

# Thank you - Questions

