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Towards a Centre of Excellence for Global Systems Science

Bastian Koller, Michael Gienger

High Performance Computing Center Stuttgart

European HPC Summit week: EXDCI Workshop

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- This is not a classical, and for decades implemented field of HPC applications, BUT

- The needs and requirements can be covered with HPC and HPDA technologies (and some glue bits)

- This activity will build up a completely new HPC-affine community, benefitting from the European HPC ecosystem

Impact of CoeGSS

HPC

HPC-based synthetic populations

Competetiveness through HPC literacy

Immersive analytics environments

HPDA storage performance with HPC processor density

Deepening of HPC reliability

GSS

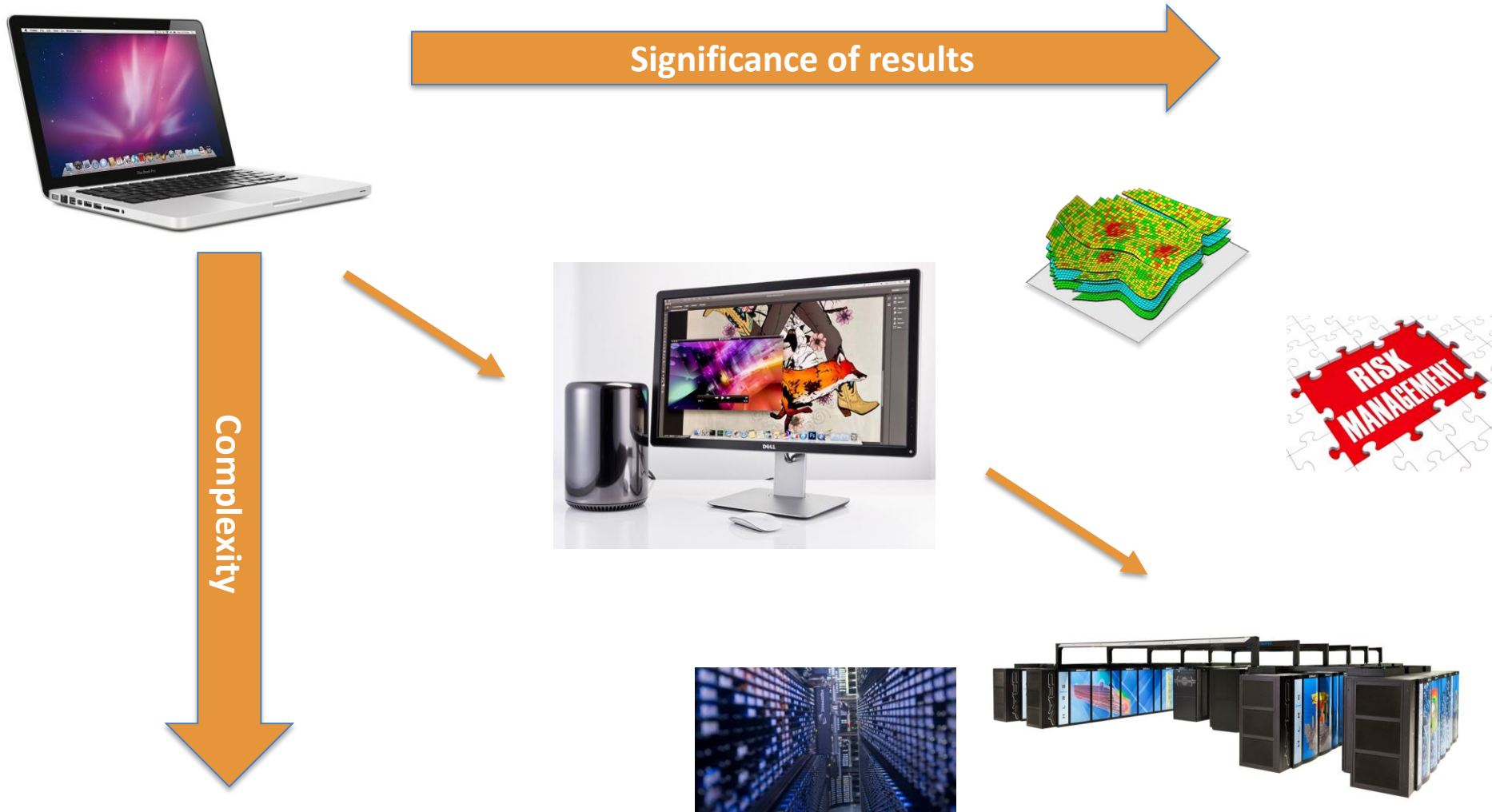Better understanding of risks and chances

Increased granularity and validity of models

Increased precision of forecasts

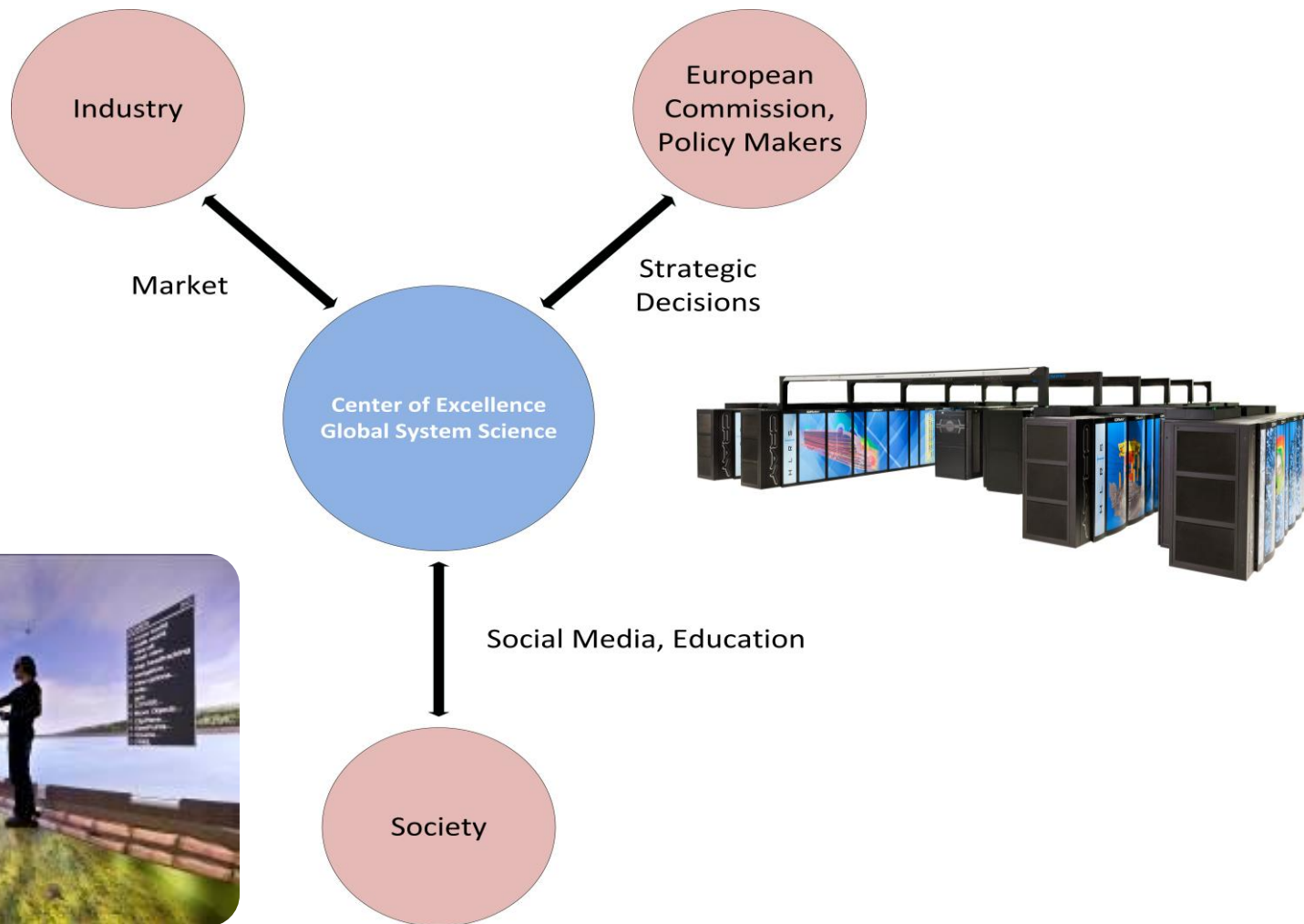Improved impact by high quality visualisation

GSS Transformation

Significance of results

Complexity

The CoeGSS Project

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High Level Ambition

- Benefit from the synergies between HPC / HPDA and GSS
- Connect & train the different communities
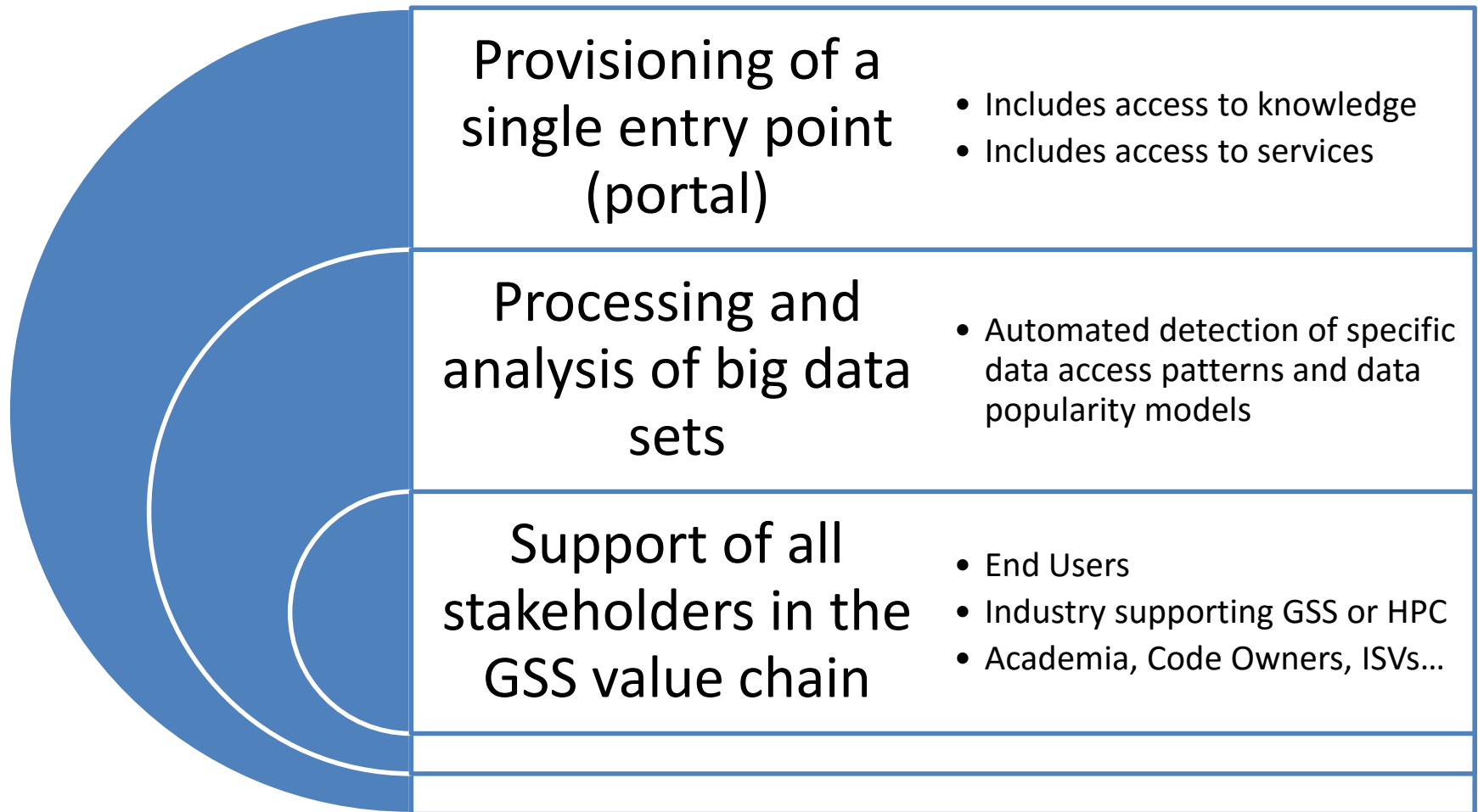- Provide a single entry point for decision makers, technical experts & other relevant entities in the GSS ecosystem

Project Targets

- Build up a broad simulation service portfolio on synthetic populations
- Focus high accurate models & significantly improved simulation results
- Create demonstrators to simulate and analyse
  - Urbanization
  - Social Habits
  - Green Growth
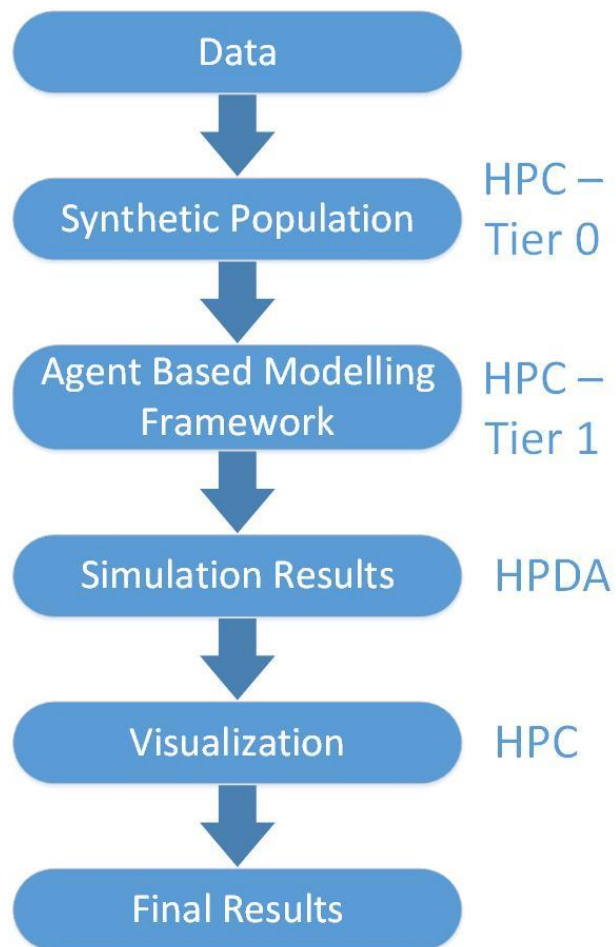- Create and advertise a multi-domain portal for the GSS community

CoeGSS Stakeholder

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Main Objectives

Provisioning of a single entry point (portal)

- Includes access to knowledge
- Includes access to services

Processing and analysis of big data sets

- Automated detection of specific data access patterns and data popularity models

Support of all stakeholders in the GSS value chain

- End Users
- Industry supporting GSS or HPC
- Academia, Code Owners, ISVs…

Where do we use the different technology flavours?

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The Challenge

- CoeGSS is per-se a multidisciplinary activity, needing
    - HPC Systems expertise
    - simulation and optimisation expertise
    - expert know how in the area of domain-specific languages, data management, data analytics and agent based modeling systems
- Application codes existing are twofold
    - Some HPC-ready, but IP issues need to be carefully handled
    - Some are in the processes of being currently ported to the HPC infrastructures

Current Status

- **First set of services identified and detailed**
    - „Living list", regular re-visited based on feedback of pilots, potential other end-users and business modelling activities

- **First design of the portal is ready**
    - Will implement a first subset of services
    - Will support the establishment of the CoeGSS brand

- **First contacts to interested external parties**
    - Application area: Mobility, Financial services, Pandemic simulations

A glance on the services

CoE Services	Portal Features
Expertise Consulting	Stakeholders Yellow pages, Community Building, Training
Solution Consulting	Code and Data Repositories, Software and Data Solutions, Ticketing Service, HPC Resources
Training for several communities	Training, Community Building
User Support	Community Building, Ticketing Service, Training
Knowledge Building	Dissemination Means, Community Building, Training
Co-Design	Code Repository, Community Building, HPC Resources
Repositories	Data and Software Repositories
Community Services	Community Building, Software and Data Solutions, HPC Resources

Interaction with other initiatives

- ## PRACE:
  - Allocated budget in the project supports first test runs but not more → PRACE (infra) ressources needed in Y2/Y3
  - Close interaction already with PRACE Training activities
- ## ETP4HPC
  - Requirements from CoeGSS may influence the SRA updates
  - Participation in the cPPP meetings
- ## EXDCI
  - For now used as collaboration link to other activities (CoEs, FETHPC projects)

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THANK YOU !

QUESTIONS ?

Bastian Koller
High Performance Computing Center Stuttgart
Email: koller@hlrs.de
http://www.coegss-project.eu