THE CYPRUS INSTITUTE

CaSToRC in the world of Competing Funding

e-IRG workshop 15th May 2018

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Computation-based Science and Technology Research Center
The Cyprus Institute

The Cyprus Institute

- **Research Institute**
  - Established in 2005
  - Started Operation in 2007
  - 3 Research Centers

EEWRC

- Energy, Environment and Water Research Center

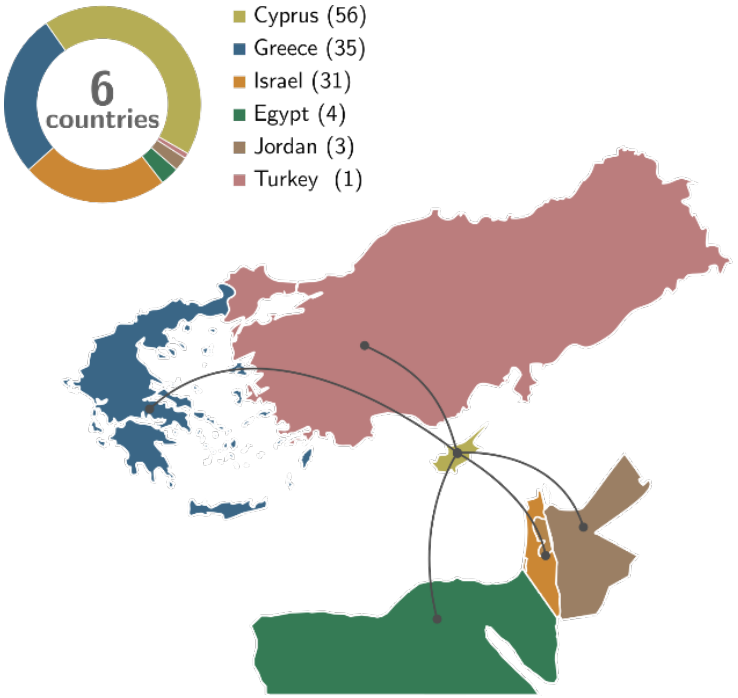
STARC

- Science and Technology in Archaeology Research Center

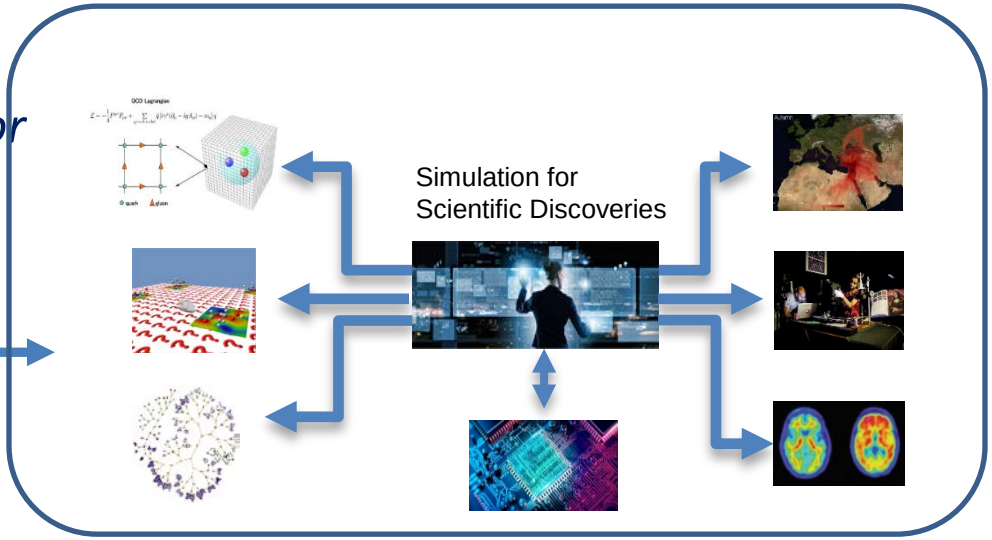
CaSToRC

- Computation-based Science and Technology Research Center

CaSToRC



- **CaSToRC:**
  - *Founded in 2009*
  - *25 researchers*
  - *Secured more than €8 million in external funding*
  - *Key regional player*
    - *Providing computational infrastructure and knowhow for*
      - *Cyprus*
      - *Eastern Mediterranean*
  - *Scientific Agenda*



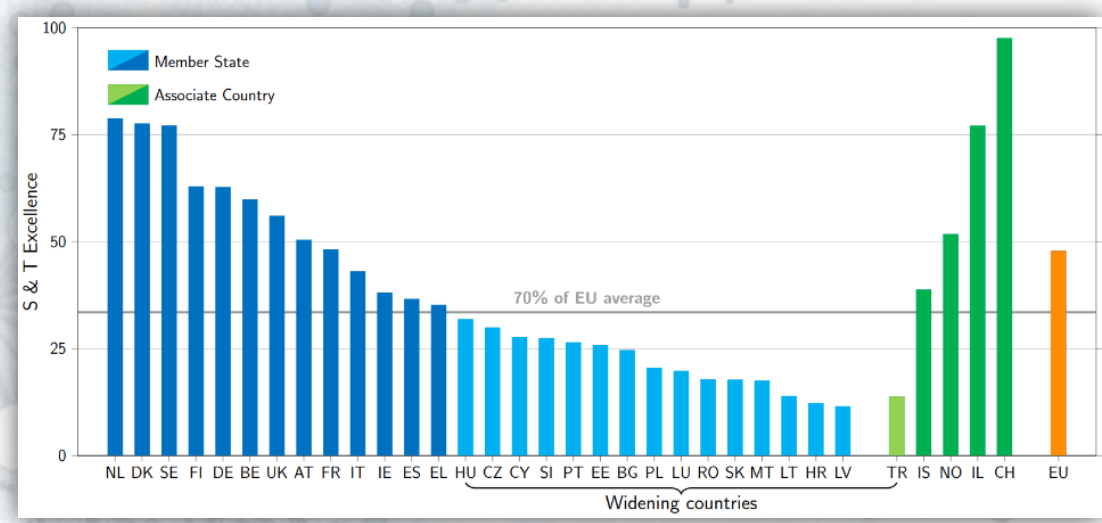
SIMDAS Project

Simulation & Data Science
Center of Excellence

Building a Centre of Excellence in Simulation & Data Science

- **SIMDAS: A Widening Call**
  - *15 Million Euros from EU*
  - *+ 15 Million Euros from CY*
- **SIMDAS Teaming**

A Unique Opportunity for Growth!



Creation of a Centre of Excellence in Simulation and **Data Science** to pursue research and support innovation and businesses

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Forschungszentrum Jülich
Europe's leading Supercomputing Center

PHASE-1 Approved (Sept. 2017 – Sept. 2018)
PHASE-2 : in preparation → Implementation (15 years)

SIMDAS

Simulation & Data Science Center of Excellence

The Project Consortium:

The Cyprus Institute
RESEARCH•TECHNOLOGY•INNOVATION

Coordinator: Computation-based Science and Technology Research Center

JÜLICH FORSCHUNGSZENTRUM

Advanced Teaming Partner
Europe's leading Supercomputing Center

hyperion group

Consulting & Advisory services, Systems Engineering Solutions to Process Manufacturers

SignalGeneriX
ADVANCED SIGNAL SOLUTIONS

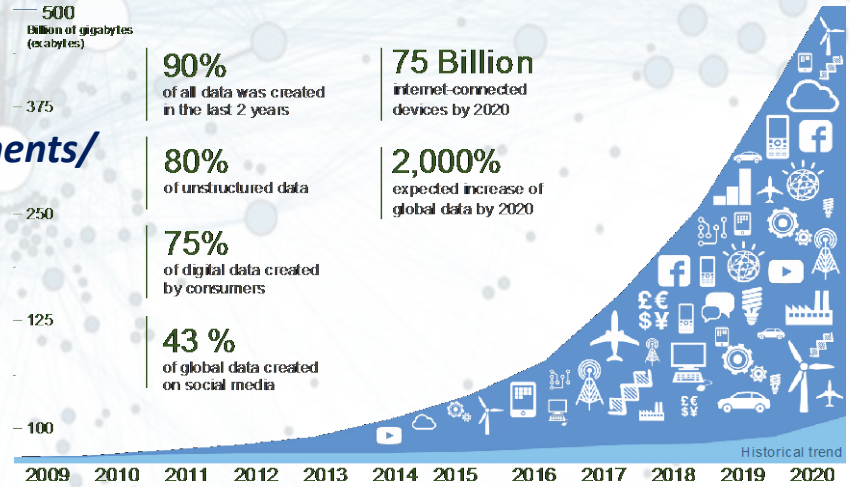
R&D in High-Tech Products based on Digital Signal Processing and Communications

DEPARTMENT OF ANTIQUITIES CYPRUS

DEPARTMENT OF INTENSIVE CARE
NICOSIA GENERAL HOSPITAL

CYPRUS DEPARTMENT OF METEOROLOGY

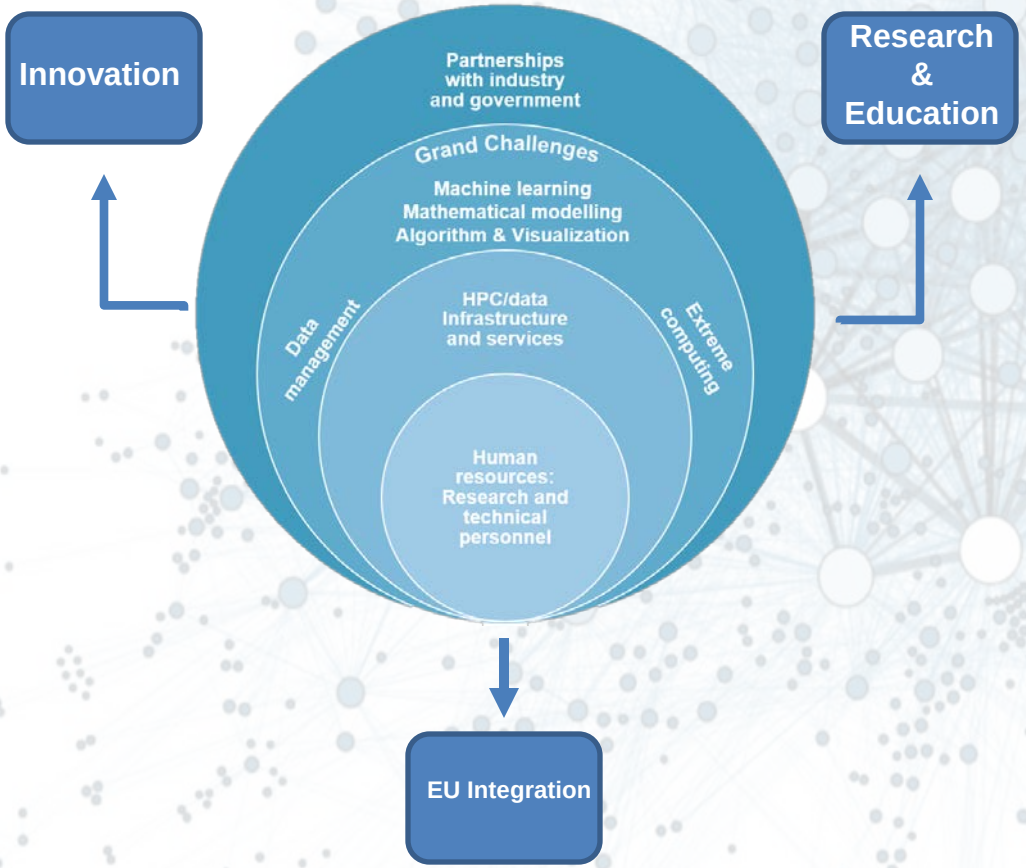
- **Why SIMDAS?** ***Explosion of data: From instruments/ experiments to sensors and social media***
  - ***Need HPC and new tools to extract actionable insights from data***
  - ***Impact on research, innovation and businesses***



SIMDAS

Simulation & Data Science Center of Excellence

What the Center will offer:



Current Status:

- *Development of the business plan is underway*
- *Structure of the CoE is being designed*
- *Models of interaction with academic institutions are being explored*
- *Raise awareness of the value of Big Data and advanced computing*
- *First CoE use cases are being assembled*

PRACE

- ***PRACE is the European HPC infrastructure***
- ***Makes available 7 Tier-0 Systems for Project Access***

CURIE: Bull Bullx
GENCI/CEA – Bruyères-le-Châtel, France

HAZEL HEN: Cray
GAUSS/HLRS – Stuttgart, Germany

JUQUEEN: IBM BlueGene/Q
GAUSS/FZJ – Jülich, Germany

SUPERMUC: IBM
GAUSS/LRZ – Garching, Germany

MARCONI: Lenovo
CINECA - Bologna, Italy

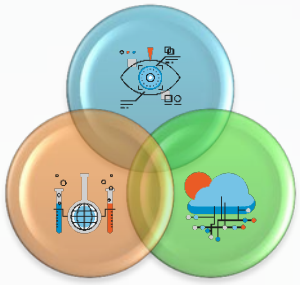
MARE NOSTRUM: IBM
BSC - Barcelona, Spain

PIZ DAINT: Cray XC40 / XC50
CSCS - Lugano, Switzerland

- ***CaSToRC has been part of PRACE since PRACE-1P (2010)***
  - *Has been an integral part of most its work packages throughout the years*
- ***Now in PRACE-5IP***
  - *CaSToRC has 51PMs*
  - *This is due to rise in the next PRACE-6IP Project*
- ***In PRACE-5IP CaSToRC is participating in Major Activities at:***
  - *WP2: Sustainability and development of the RI*
  - *WP3: Communication, Dissemination, Outreach and Events*
  - *WP7: Applications Enabling and Support*
- ***CaSToRC has in the past hosted PRACE Training events and summer interns***

VI-SEEM

- ***3-year H2020 e-Infrastructure Project***
- ***VI-SEEM ≡ VRE for regional Interdisciplinary communities in Southeast Europe and the Eastern Mediterranean***
- ***VI-SEEM is a consortium of 16 partners from Southeast Europe (SEE) and the Eastern Mediterranean (EM)***
- ***Provides Virtual Research Environment for the the scientific communities of***



  - » *Digital Cultural Heritage*
  - » *Life Science*
  - » *Climatology*

  & *Enables Interdisciplinary research*

- ***Total Funded Effort: 715 PMs***
- ***With Budget of €3.3 Million***
- ***The project started on October 2015***
- ***Continuation of LinkSCEEM***

LINKSCEEM → Vi-SEEM

VI-SEEM

- ***CaSToRC Responsibilities:***
  - ***Leads WP5 (services and support)***
  - ***Takes part in WP1-WP4 & WP6***
- ***Role as a hub for Eastern Mediterranean (EM)***
- ***The Cyprus Institute Computational Infrastructure Contributes:***
  - *1 Million CPU hours*
  - *17 Million GPU hours*
  - *16 Million Xeon Phi hours*
  - *18 Virtual Machines*
  - *100 TB of Disc Storage*

HPC-LEAP

HPC-LEAP
EUROPEAN JOINT DOCTORATES

- *European Joint Doctorate Program – Coordinated by CaSToRC*
- *High Performance Computing in Life Sciences, Engineering and Physics (HPC-LEAP)*
- *Dual Ph.D. degree from two academic institutions*
- *15 Marie Sklodowska-Curie Ph.D. fellowships in:*
  - *Lattice QCD*
  - *Turbulent and Complex Flows*
  - *Computational Biology*
  - *Modelling and Algorithms*
  - *HPC Architectures and Technologies*

- *Started September 2015 – Finishing: August 2018*
- *For further information visit: https://hpc-leap.eu/*
- *Overall Funding €3.7 Million*

STIMULATE

STIMULATE
European Joint Doctorates

- *European Joint Doctorate Program – Coordinated by CaSToRC*
- *Simulation in multiscale physical and biological systems (STIMULATE)*
- *A single joint Ph.D. degree from three academic institutions*
- *15 Marie Sklodowska-Curie*

Ph.D. fellowships in:

  - *Lattice QCD*
  - *Computational Biology*
  - *Computational Fluid Dynamics*
  - *Mathematical Modelling and Algorithms*

- *Expected starting date: September 2018*
- *For further information on admissions, requirements and eligibility criteria please visit the STIMULATE website: www.stimulate-ejd.eu*
- *Overall Funding effort €3.8 Million*

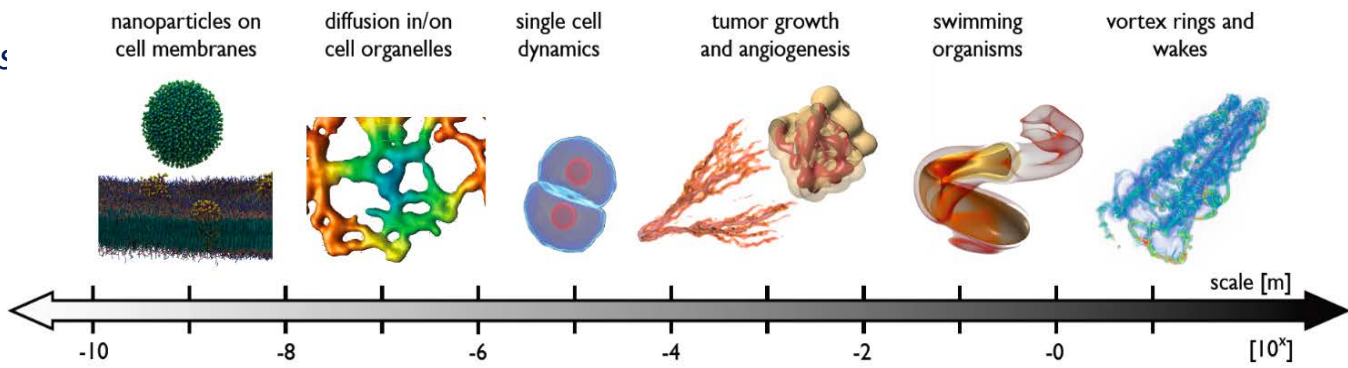
Widening Call: SimEA ERA Chair – €2.5 Million

Objectives

- *Establish activities in computational engineering*
- *Better integration with smart specialization strategy of Cyprus*
- *Enhanced innovation capacity and collaborations with industry*
- *Contribute to the training of versatile computational scientists*
- *Raise awareness of the importance of advanced computing across engineering domains*
- *Enhanced national and regional role for CaSToRC*

Indicative Application areas

- *Computational Fluid Dynamics*
- *Inverse problems*
- *Energy applications*
- *Health analytics*



Conclusions

- *National funding is not adequate*
  - *More than 50% of CaSToRC budget from EU funding*

→ EU Funding essential

- *EU initiatives are crucial for raising awareness of government for research and innovation & integration*

PRACE, EuroHPC, EOSC, etc

- EU targeted actions central for Eastern Mediterranean – South Europe

Widening action, Vi-SEEM, etc

- Research infrastructure and collaboration among countries in east-south Europe

Thank you

The Cyprus Institute

CaSToRC