CaSToRC
in the world of Competing Funding
e-IRG workshop 15th May 2018

Constantia Alexandrou
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

- 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

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

Forschungszentrum Jülich
Europe’s leading Supercomputing Center

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

The Project Consortium:

- **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

Coordinator: Computation-based Science and Technology Research Center

Advanced Teaming Partner

Europe’s leading Supercomputing Center

Consulting & Advisory services, Systems Engineering Solutions to Process Manufacturers

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

- **Coordinator:** Computation-based Science and Technology Research Center
- **Advanced Teaming Partner:** Europe’s leading Supercomputing Center
- **Consulting & Advisory services:** Systems Engineering Solutions to Process Manufacturers
- **R&D in High-Tech Products:** based on Digital Signal Processing and Communications

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Historical trend:

- 500 Billion of gigabytes (exabytes)
- 2009-2020
- 90% of data was created in the last 2 years
- 80% of unstructured data
- 75% of digital data created by consumers
- 43% of global data created on social media
- 75 Billion internet connected devices by 2020
- 2,000% expected increase of global data by 2020
What the Center will offer:

- Innovation
- Research & Education
- EU Integration

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**

**CaSToRC**

- **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 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
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

- 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

- 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