

**e-infrastructures, science and prosperity  
The Eastern Mediterranean region**

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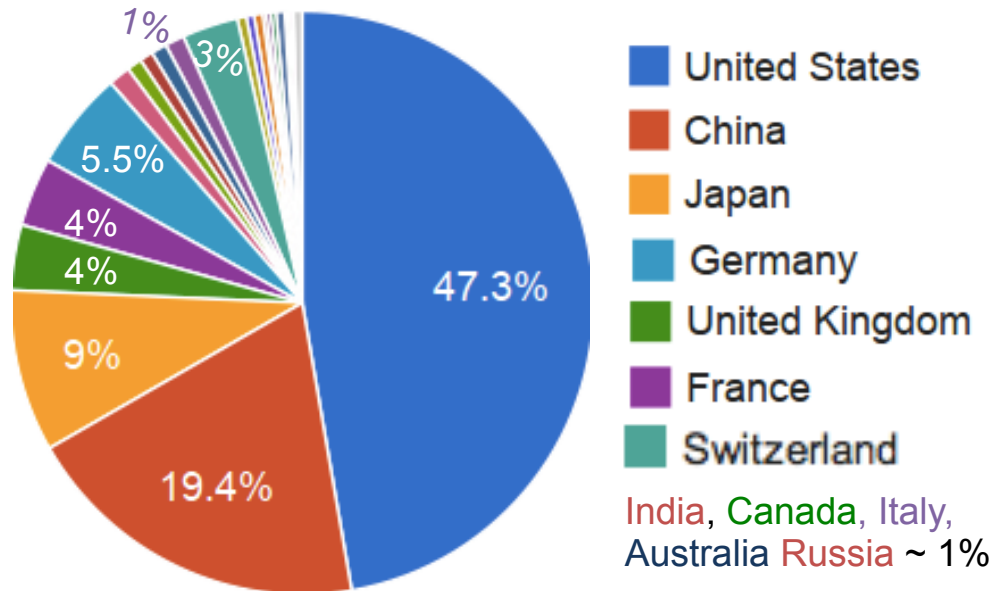
**Computational-based Science and technology Research Center  
(CaSToRC)**

**ICRI 2014\_Parallel Session 4, e-Infrastructures  
New professions and skills for e-infrastructures**

# e-infrastructures, science and prosperity

Nov 2013, [www.top500.org](http://www.top500.org)

Countries performance share



- HPC distribution follows economic growth
- Simulation regarded as the Third Pillar of science → **indicator of scientific advancement**
- Technologically-driven professions the most highly sought and paid

**Eastern Mediterranean:** Saudi Arabia (0.6%)

Eastern Europe none other than Russia

## Regional challenges:

- Promote e-infrastructure across Europe (Tier-2 & Tier-1) to guide scientists to large-scale systems
- build local competence in hosting systems (architecture and application is increasingly linked)

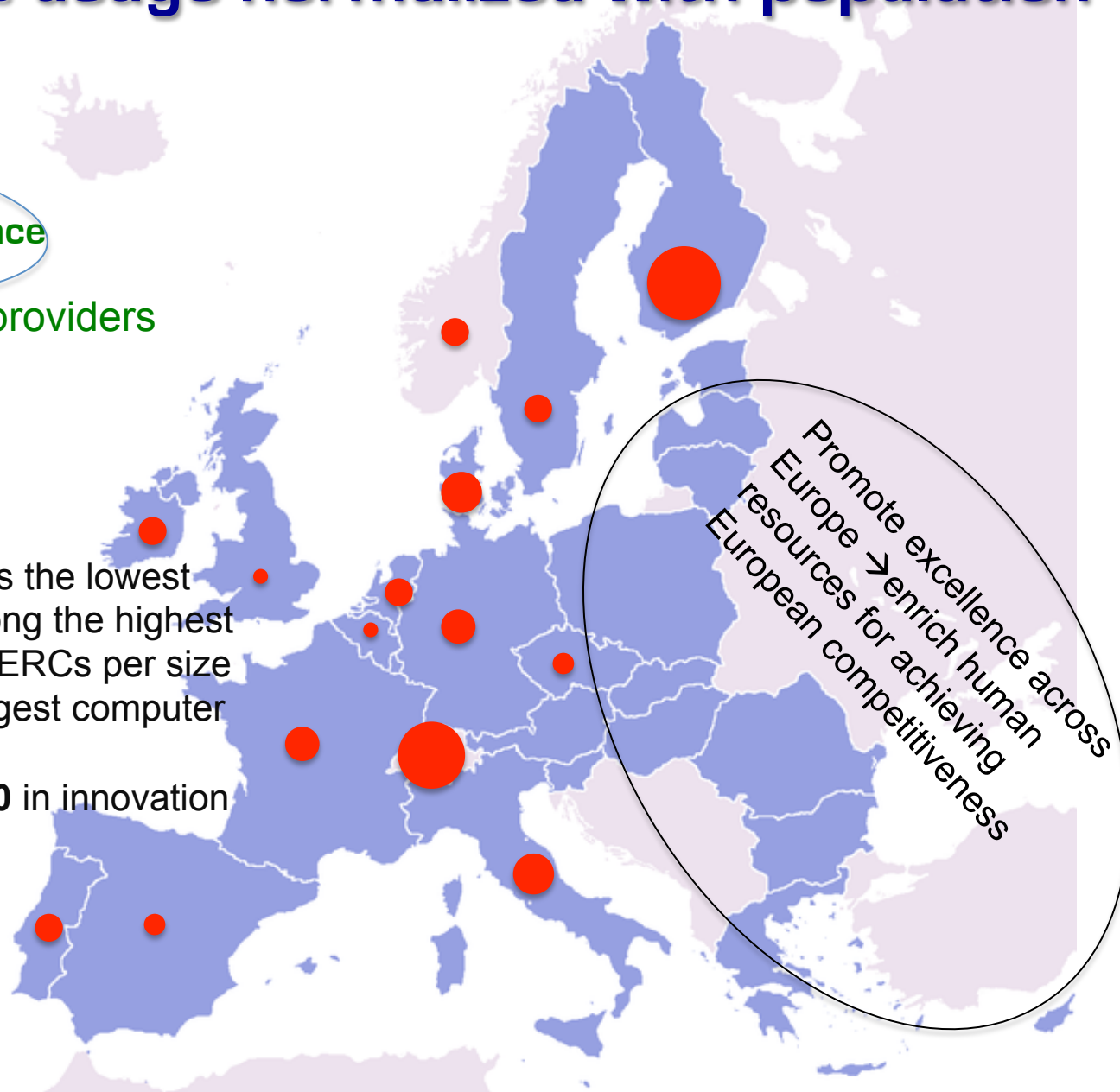
# PRACE % usage normalized with population

1. Finland
2. Switzerland
3. Italy
4. Germany, France

PRACE: Tier-0 providers

e.g. **Switzerland** has the lowest unemployment, among the highest salaries, the highest ERCs per size and currently the biggest computer in Europe

It is among the top 10 in innovation globally



# LinkSCEEM – a regional research e-infrastructure in the Eastern Mediterranean (EM)

- The EU funded 2 projects LinkSCEEM-1 (2008-2009) and LinkSCEEM-2 (2010-2014)
- Covering a region of over 200 million people → potential talent for the region and EU
- LinkSCEEM mandate:
  - Provide access to HPC resources
  - Provide training in HPC (user and operator)
  - Bring international expertise into the region
  - Bridge to Europe



Cy-Tera machine at  
The Cyprus Institute

## Shared machines

- Cy-Tera – hybrid machine 30Tflop/s (Cyl)
- Sun cluster 12 Tflop./s (BA)
- GPU clusters, Euclid & Prometheus (Cyl)

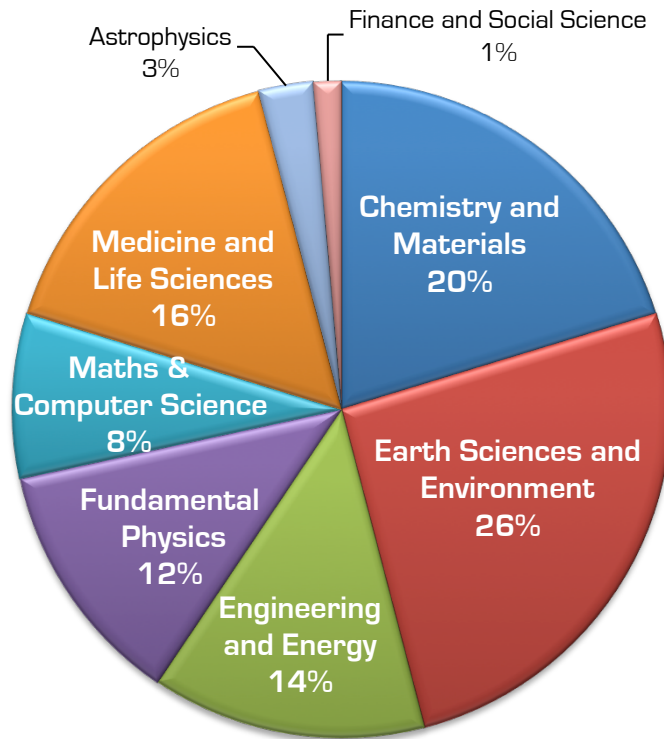
→ Transfer of skills & knowhow for e-infrastructures



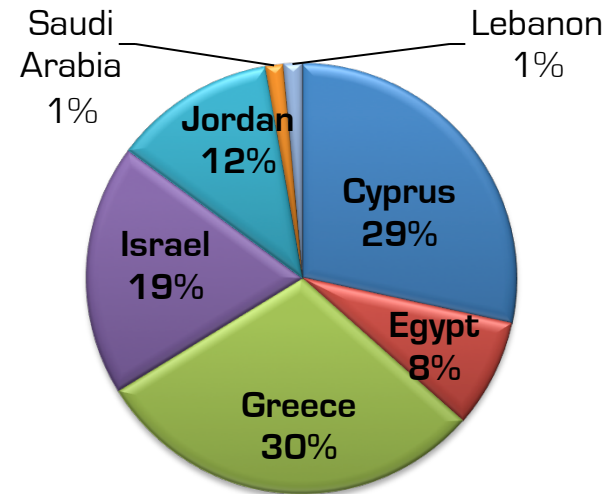
# Regional success

Distribution of resources based solely on scientific quality through a peer-review process similar to that of PRACE

Distribution of computational resources on Cy-Tera



Increase of utilization of cluster at Bibliotheca Alexandrina through the LinkSCEEM project



Utilization of BA System





## Regional Success → European success

1. Prof. B. Hamad, University of Jordan  
Assisted through LinkSCEEM to install the first cluster enabling research in Computational solid state , project access to Cy-Tera

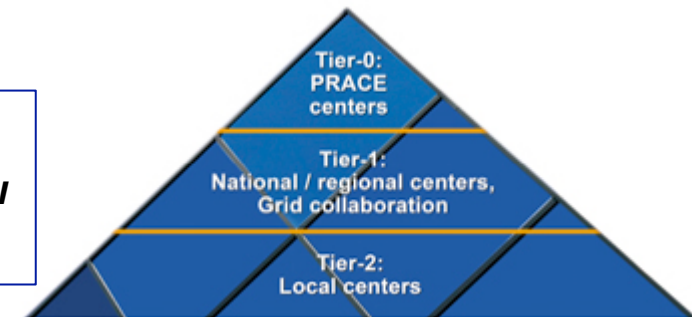
2. Workshops at Cyl for Systems Administrators from the EM region taking home expertise

3. Middle Eastern women in science - a European contribution through the LinkSCEEM project

Fellow Hadeer EL-Habashy : *When I got accepted on the Guest Student Program on Scientific Computing, Jülich Supercomputing Centre (JSC), Germany, I realized that it may be a turning point in my Career*

**Sustainability of successful e-infrastructures from the small to the large : A long-term strategy that includes new funding instruments/mechanisms is needed**

Conference on Scientific Computing  
Cyprus 2013 –LinkSCEEM & PRACE



# Conclusions

- **Pan-european e-infrastructures:** Inclusive policies that promote the development of e-infrastructures across Europe at various levels e.g. from LinkSCEEM to PRACE  
→ create skills and technically trained human capital from everywhere in Europe
- **Pan-european excellence:** pool European competences by connecting HPC communities across Europe  
→ promote science & innovation everywhere in Europe
- **Develop long-term strategies on the European/national level for sustainability of an integrated e-ecosystem → promote inclusive collaborative structures**