ICT in *Horizon 2020*

Opportunities and Challenges for Cyprus

Introduction and Opening Remarks

Marios D. Dikaiakos

University of Cyprus
Department of Computer Science

Horizon 2020: Why is it important?

Digital Economy:

- Expected to double between 2010 and 2016, in G20, reaching $4.2 trillion [*Boston Consulting Group, World Economic Forum, Davos, Jan.2012*]

- Growing seven times faster than the rest of the economy. *"If not for the digital economy EU would be in recession."* [*N. Kroes*, V.P. European Commission, Dec. 2012]

- Innovation at the center; "*To innovate is a survival instinct compulsory to staying relevant.*" [*Osman Sultan*, CEO du, UAE, Global Innovation Index, 2013]

ICT Workforce

- 2000-2010: annual growth by 4.3% in E.U. [E.C. March 2013]

- 2008-2018: 785,000 new jobs expected in the U.S.; twice the rate than other sectors [U.S. Bureau of Labor Statistics, Dec. 2010]

- By 2015: shortfall of up to 900,000 ICT jobs in the EU; gap represents significant risk to E.U. economic prospects [European Commission, 2013]
  - E.U. Grand Coalition for Digital Jobs [March 2013]

A Skills Gap

- Growing numbers of students are sent to college and graduate… but, for a large proportion of them the gains in:
    - **critical thinking**
    - **complex reasoning**
    - **written communication**

    are either small or empirically nonexistent

- Academic credentials not enough; skills and achievements determine occupational success

    Arun & Roksa, "Academically Adrift. Limited Learning on College Campuses." Chicago Univ. Press, 2010.

The Knowledge Avalanche

- Never before in human history did we have:

    - So easy an access to such a massive body of archived information and collected knowledge

    - Such a fast pace in new knowledge production

- Research skills becoming increasingly important

- "Tacit knowledge" is the cornerstone of innovation-driven economies [R. Hausmann, Harvard U., Center for Intl' Development, 11/2013]

    - Acquired through learning by doing

    - Latent: resides in the brains of teams of people

The Purpose of Universities

"To create new knowledge through research and discovery and to pass on knowledge and scientific methodology to the next generation."

To instill students with a passion for and a culture of active learning.

- Research Universities: can support learning:
  - through active engagement
  - by doing cutting-edge scientific work
  - through exposure to team work and international collaboration

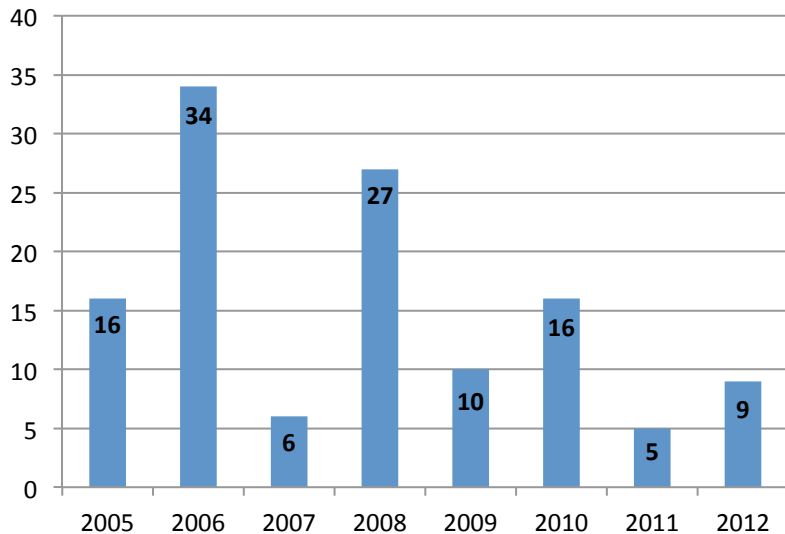in an environment of high expectations.

Horizon 2020 and us

- Like previous EU Framework Programmes, provides an opportunity to:

  - fund University research – namely for a University to become and remain research-oriented in ICT, Engineering, etc.

  - collaborate actively with centers of excellence abroad

  - promote in and participate to "brain circulation"

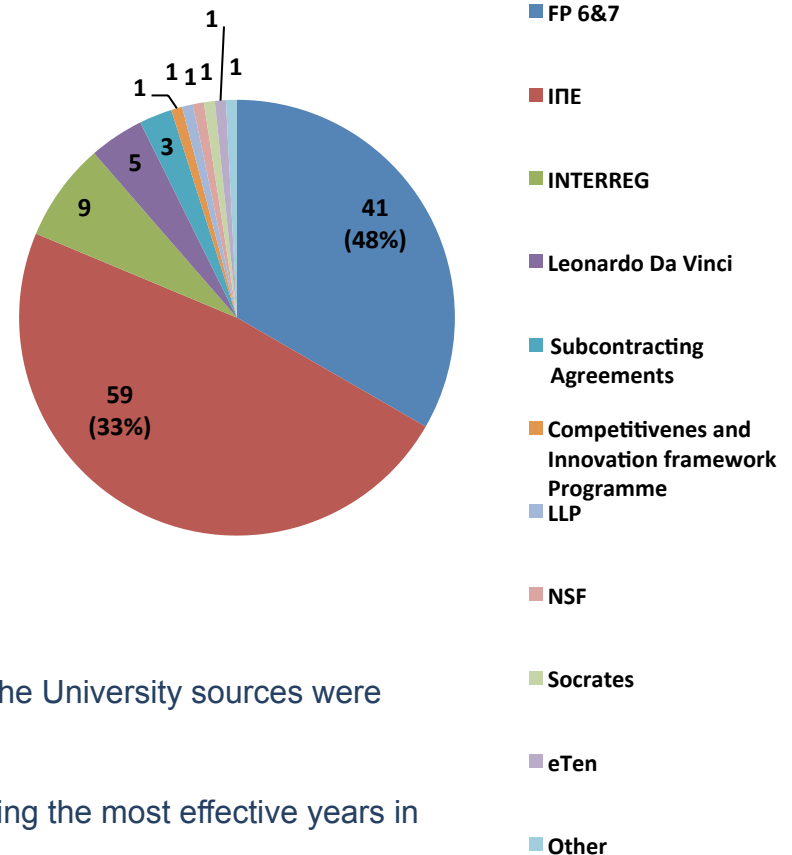 - build synergies and establish networks of knowledge-sharing

Past experiences with ICT in FP6, FP7

Funded Research: 2005-2012 [CS Dept]

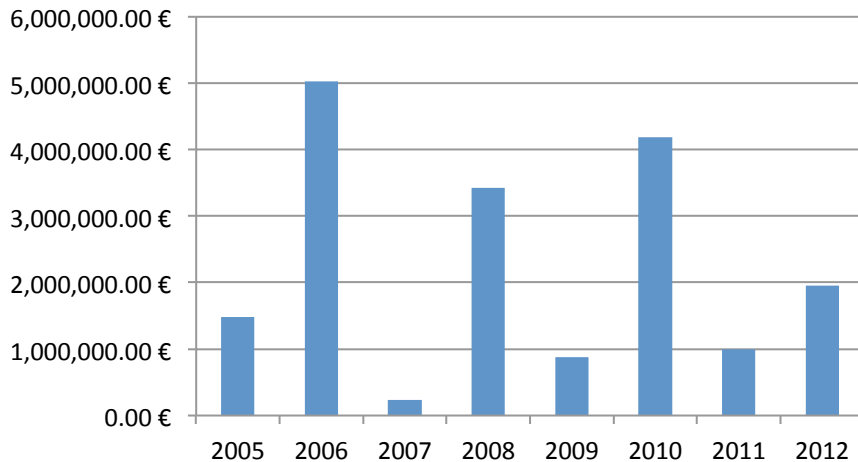**Number of acquired projects per year (2005-12)**

Year	Projects
2005	16
2006	34
2007	6
2008	27
2009	10
2010	16
2011	5
2012	9

Project categories for years 2005-2012

- FP 6&7 — 41 (48%)
- IΠE — 59 (33%)
- INTERREG — 9
- Leonardo Da Vinci — 5
- Subcontracting Agreements — 3
- Competitivenes and Innovation framework Programme — 1
- LLP — 1
- NSF — 1
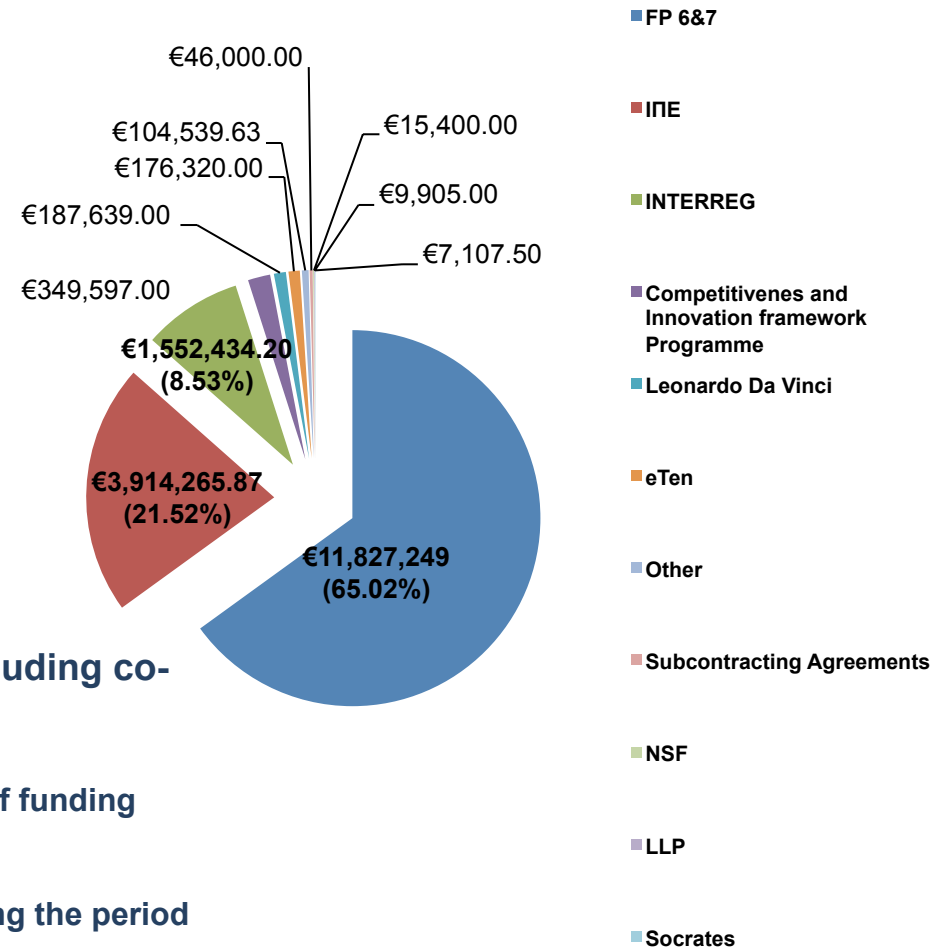- Socrates — 1
- eTen — 1
- Other — 1

- A total of **123 projects** from both internal and external to the University sources were acquired since **2005**
- Average of circa **15 new projects per year** with 2006 and 2008 being the most effective years in terms of number of projects assigned
- Prime external sponsors: **European Commission** and **Research Promotion Agency**
- **1/3 of the total number of projects are FP6 and FP7**

Attracted Funds: 2005-2012 [CS]

Budget (including Co-funding) of new projects per year (2005-2012)
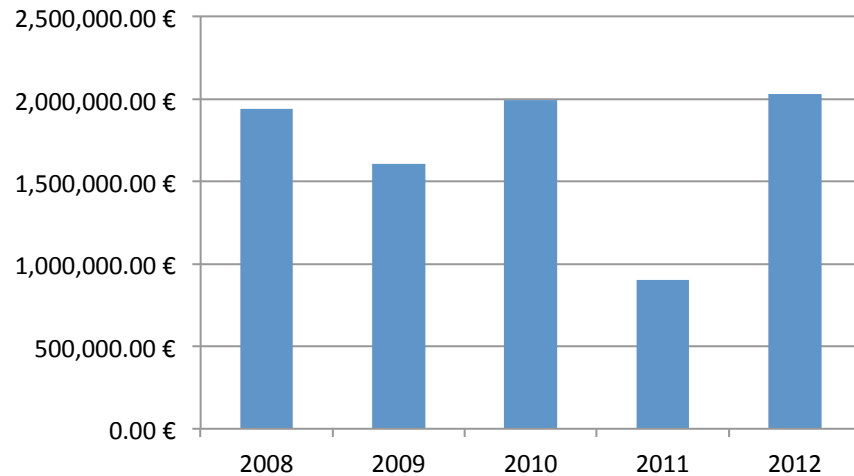
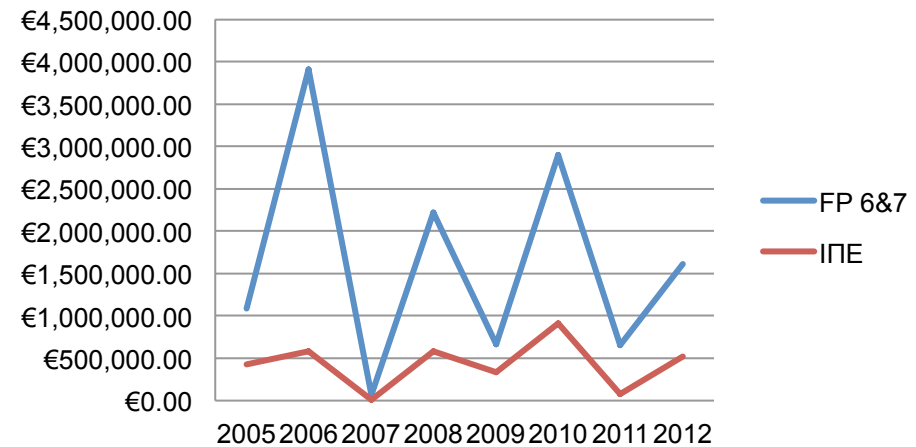**Budget by type of project (2005-2012)**

- **€18M total accumulated budget** including co-funding from the University
- 2006 and 2010 the most effective years in terms of level of funding awarded with circa €5m and €4M respectively
- €910K the maximum budget of all projects assigned during the period 2005-2012
- EC the prime sponsor with a total of **€11.8M** of funding (65%) followed by ΙΠΕ with €3.9m (21.5%)

Research Income per year

Income per annum (2008-12)

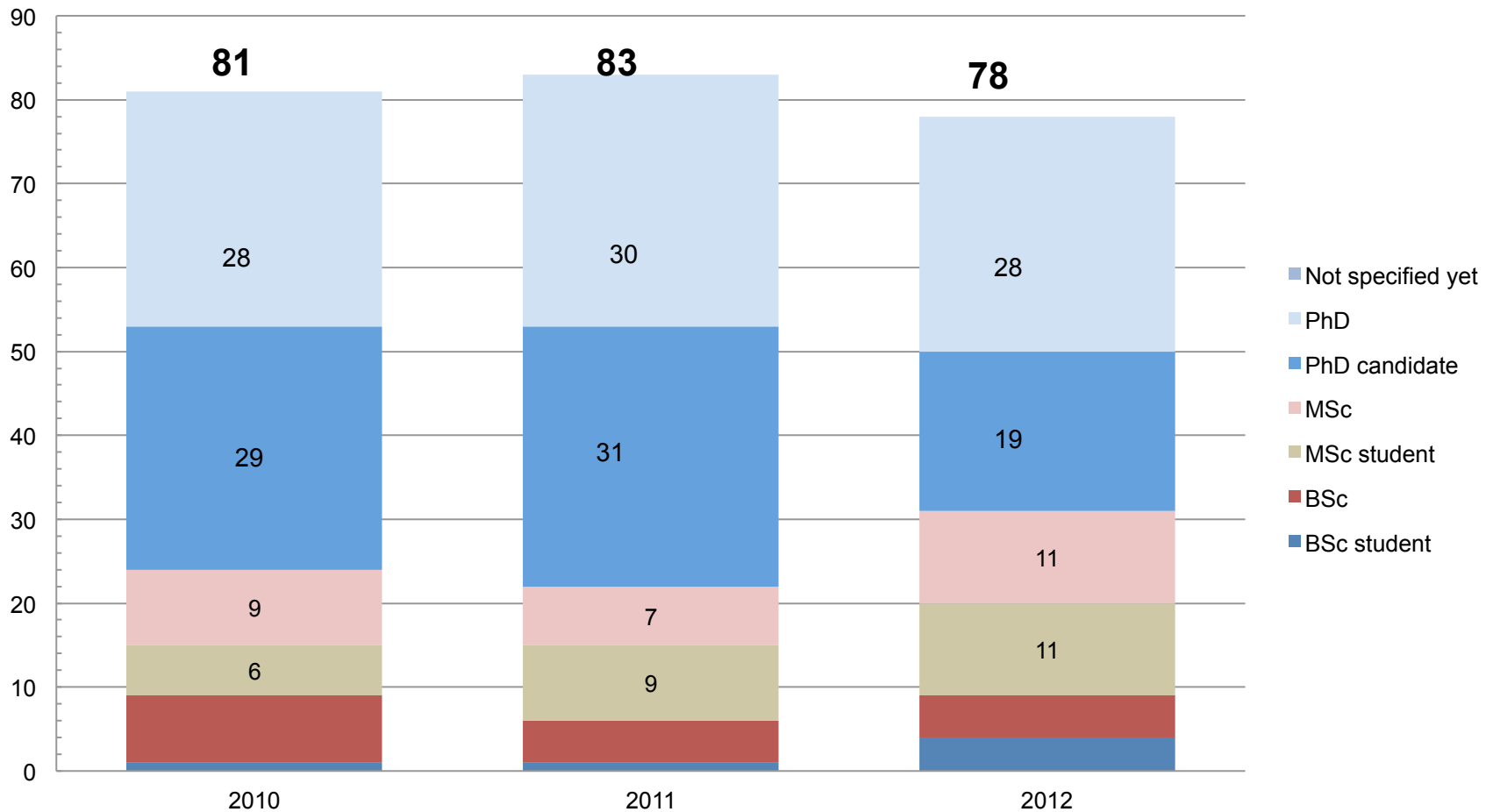**Historical trends of awards from type of project (2005-2012)**

- **€1.7M net income on average each year (2008-2012)**
  - **2008, 2010, 2012 the years with the highest income - circa €2M**
  - **2006 the most profitable year with €4,5M of awards assigned followed by 2010 with €3.8M**

Tangible Output

- Numerous Scientific Publications in reputable venues

- Software and Hardware Delivered or Released

- Services and Research Infrastructures

- Technology Transfers to National and International Collaborators

- Consulting to National and International Bodies

- A rigorous PhD program [a PhD in science and engineering costs 200,000-500,000 $]

Employment of Young Researchers

Level of education of the research scientists employed at the Department

Research Infrastructure

- Data Center with Grid and Cloud infrastructures:
    - > 400 CPU cores
    - > 1TB RAM
    - > 70 TB HD storage
- Smart-phone Cloud
- Various sensors & sensor networks
- Augmented Reality facilities
- Embedded Systems

In conclusion

With National and University budgets for education, research and innovation shrinking

Horizon 2020 is the principal source of research funding necessary to continue our education and research activities

Also, H2020 emphasis on *Innovation* will provide opportunities for a better linkage between our research and the national ICT sector

Thank you!

Speakers

- **Dr. Aniyan Varghese**. DG CONNECT, European Commission. "Information and Communication Technologies in H2020: Opportunities"

- **Mr. Ioannis Malekos**. Head of Unit, DG CONNECT, European Commission. "Participation and Funding in H2020 Actions"

- **Ms. Litsa Kountouridou.** National Contact Point for ICT, Research Promotion Foundation of Cyprus. "Supporting Cypriot Participation in H2020."