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## ICTP OVERVIEW





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# ICTP in a Nutshell

- **ICTP is the first and leading **global** institution for scientific research and development**
- **Founded in 1964 by Abdus Salam (Physics Nobel prize 1979)**
- **Sponsored by tripartite agreement between Italy, IAEA and UNESCO (over 85% of budget from Italy)**
- **It is an institution that is run by scientists for scientists to support the best science possible in all countries**



Symposium on Elementary Particle Interactions,  
Miramare Castle, Trieste 22-26 June 1960



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## Research Sections

- **High Energy, Cosmology and Astroparticle Physics (1964)**
- **Condensed Matter and Statistical Physics (1974)**
- **Mathematics (1986)**
- **Earth System Physics (1998)**

## Other Research Activities

- **Multidisciplinary Laboratory (1985)**
- **Aeronomy and Radiopropagation Laboratory (ARPL) (1990)**
- **Applied Physics (2011)**



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# Postgraduate Education

- **Diploma in each of 4 main research areas (1991, 1992, 2006)**
- **Diploma in basic physics (2007)**
- **STEP (Sandwich PhD) (2002)**
- **PhD and Laurea Magistralis with U. of Trieste (2005)**



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## Fighting the 'Brain Drain'

- **Associates and Federation Schemes (1964)**
- **Programmes at ICTP and developing countries (conferences, workshops, schools) (1964)**
- **TRIL (training and research in Italian laboratories) (1983)**
- **OEA (office of external activities) (1985)**



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- **Schools, Conferences, Workshops around the year** (~ 50 at ICTP, ~15 hosted activities, ~15 in developing countries)
- **Half of them on subjects related to 4 main research areas (core).**
- **The rest on many subjects:** medical physics, optics, soil physics, plasma physics, electronics, high performance computing, biophysics, satellite navigation, science dissemination and e-learning, entrepreneurship, nuclear physics (IAEA), etc.



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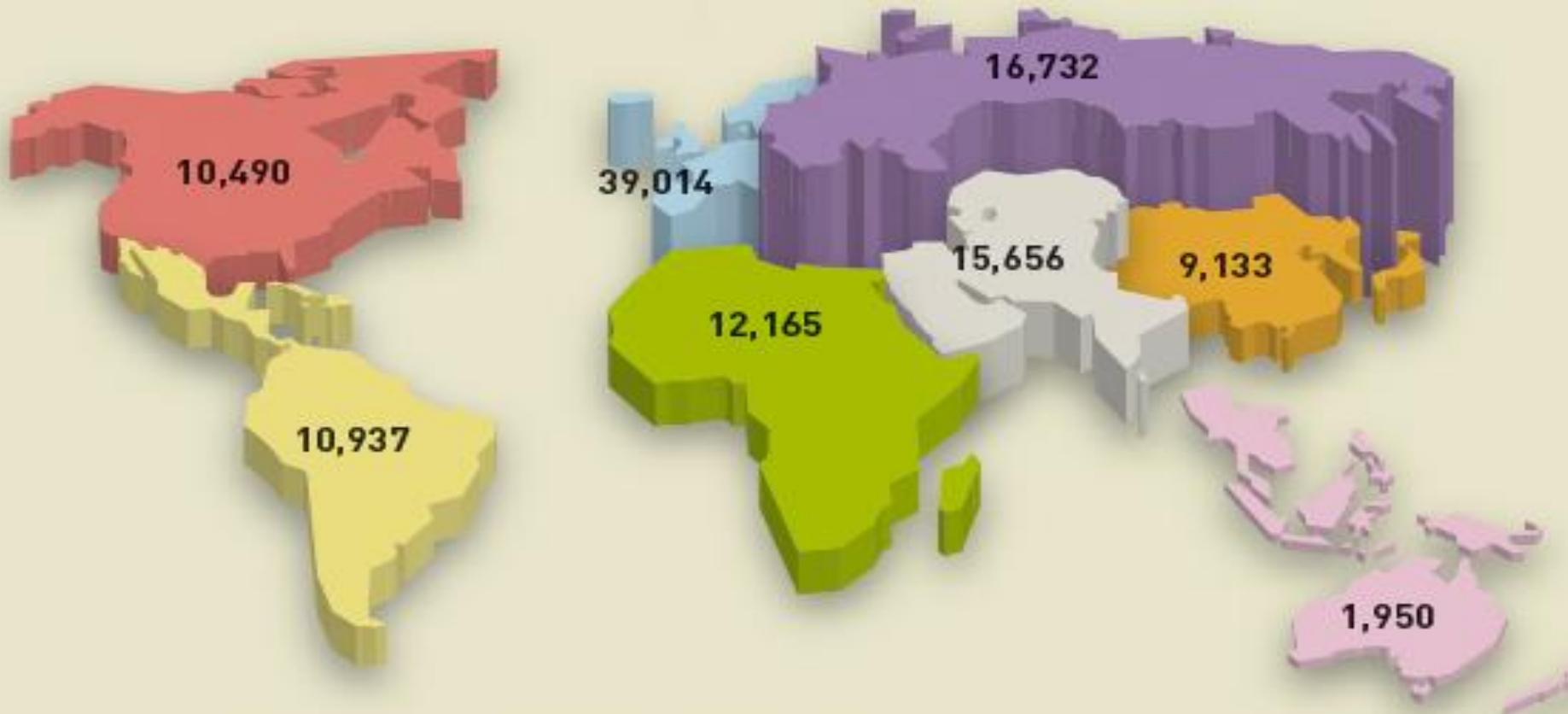
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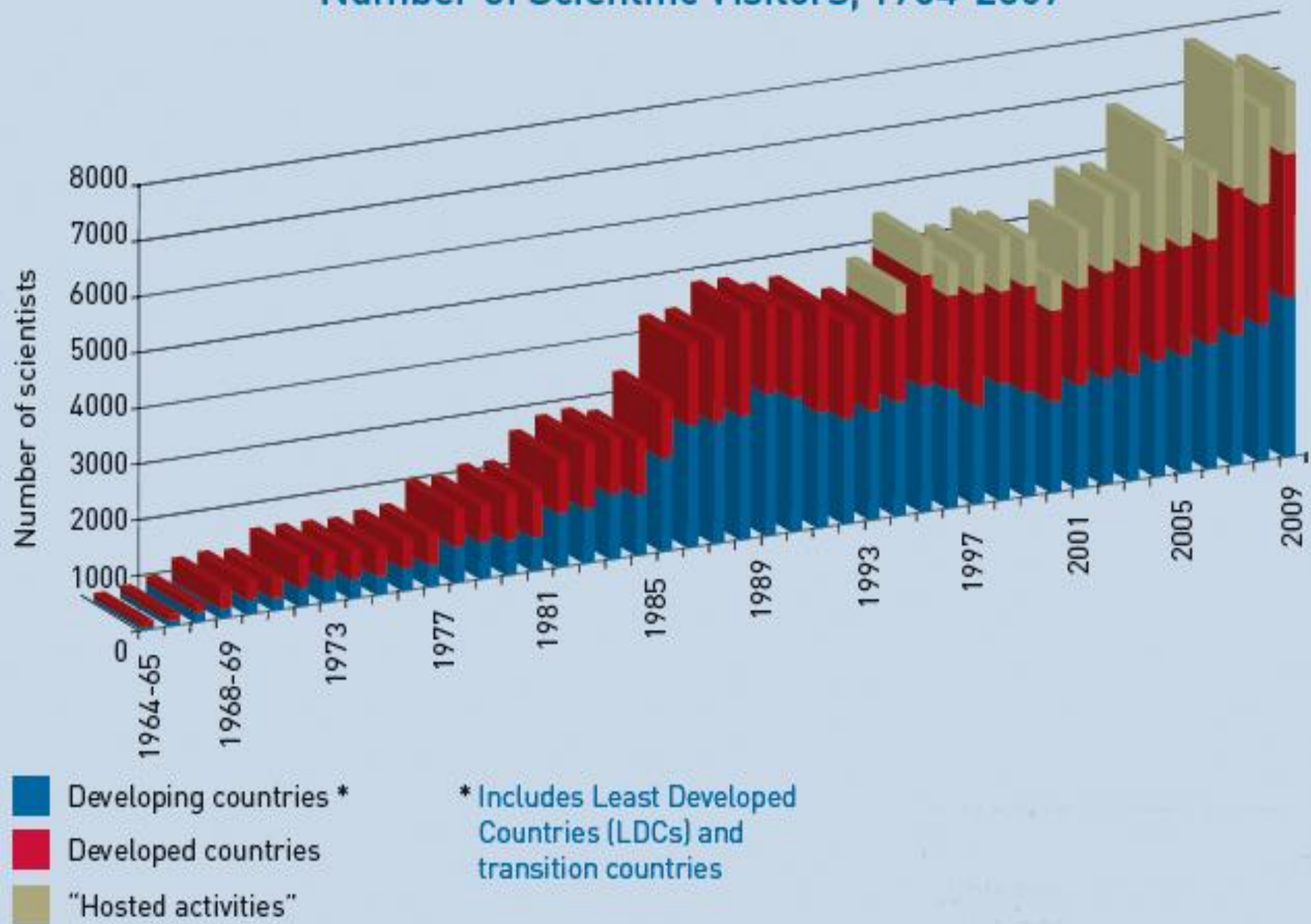
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- **More than 100,000 visits since 1970**
- **184 countries represented**
- **20% of ICTP visiting scientists are women**





# Number of Scientific Visitors, 1964-2009





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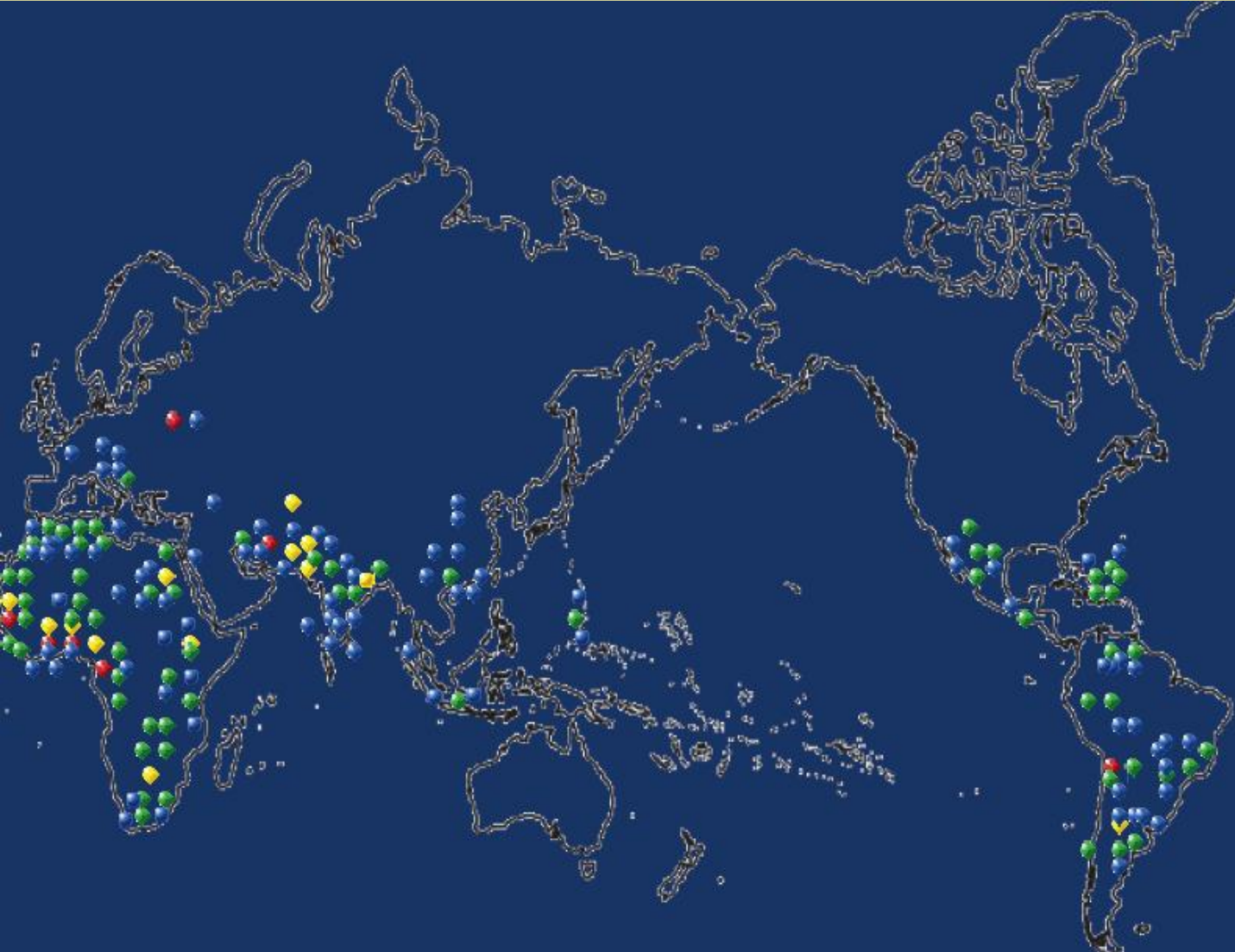
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## Office of External Activities (OEA)

- **Networks (~12)**
- **Projects (~15)**
- **Meetings (~75)**
- **Scholars (~10)**
- **Affiliated Centers (6)**



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## Science Dissemination Unit (SDU) (2004)

ICTP TV  
Broadcasting Physics & Mathematics

eJDS

The African Physical Review

ClustrMaps®  
© 2009



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research and training  
coordination

permanent scientists

30

mostly research

temporary scientific staff:  
post-docs , staff associates,  
long-term visitors

100

do own or collaborative research,  
or receive training through  
participation

short-term visitors:  
associates, guest scientists

400

receive training through  
schools, conferences, and  
exchange of information

participation in  
conferences, school  
and workshops,  
diploma students

4000-6000 per year  
(6900 in 2009)

receive training  
through multimedia  
recordings of ICTP  
scientific events

scientists, students,  
following ICTP  
on-line talks on  
WWW.ICTP.TV

100K-150K visits per year  
(10M hits, 30TB downloaded, 5K hours  
of lectures on-line @Aug 2009)



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## ICTP has triggered the creation of:

- **TWAS** (1983), **TWOWS** (1988)
- **SISSA** (1978)
- **ICGEB** (1983)
- **ICS**(1988)
- **Immaginario Scientifico** (1988)

### Also at Trieste

- **ELETTRA** (1993)
- **Area Science Park** (1988)



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## **ICTP: Success story**

- **Impact much bigger than numbers**
- **Holistic and Sustainable** (several generations)
- **Global** (East-West + North-South)
- **Highest level research and training**
- **Activities in and outside Trieste**



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# ICTP Strategic Plan: 2010-2014

**Warning: Mostly Vision**



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# Education

- **Initiate a PhD programme at ICTP**  
(in collaboration with: **UNU, SISSA, ...**).
- **New diploma programmes (mathematics, high performance computing, medical physics, etc.).**
- **Expand STEP programme including other institutions in the developed world.**
- **Teacher training**  
(with **UNESCO, CERN, AIMS, Cambridge MMP, etc.**)





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# Research

- Reinforce current groups: 5-year prestigious postdocs+ prestigious ‘staff associates’, gender gap.
- Open new research areas:
  - \* Energy and Sustainability,
  - \* Computational Biology,
  - \* Computing Sciences.
- Establish a Scientific Computing or ‘modelling’ centre (in collaboration with SISSA)?



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# Outreach 1.

- **Establish ICTP Branch Institutes (collaboration with China, India, Brazil, Mexico,...)**
- **Implant ICTP's mission to other institutions in the developed world (ICTP-USA,...).**
- **Establish a programme aimed at undergraduate students in LDC.**



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## Outreach 2.

- Establish a: **Experimental techniques for training and development (ExTraD) unit.**
- **Expand TRIL to TREL, ...**
- **Expand and improve ICTP activities on line (m-science, physics.tv,...)**
- **Create and maintain a library of scientific information on-line (with MIT, PI, KITP, etc.).**
- **Create a systematic database of ICTP visitors, associates and pool of lecturers.**



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## **Institution Advancement Office**

- **Collaborations with other scientific institutions to enhance mutual impact (UNESCO, IAEA, CIMPA, AIMS, PI, Torino Politecnico, CERN, etc.)**
- **Collaborations with emerging countries institutions and governments**
- **Establish an endowment for ICTP projects (OEA,...)**
- **Approach funding agencies, for concrete projects and institutional support.**



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Science and Development