

# A Role For International Bodies and Organisations

# Bodies?

Translated into “People”

## A Role for People and International Organisations



### Science:

### A Global Enterprise

# Science: A Global Enterprise

1. Brief View into History
2. Role Today of:
  - People (*Science Communities*) and
  - Organisations (*Governments & Politics or Funding Agencies*)in the Science Enterprise
3. International Collaborations
  - Political Dimension
  - Present Status
4. Is there a need for more?

# Three elements are i.a. essential for the functioning of the Global Science Enterprise:

1. Wide and unhindered dissemination of scientific knowledge
2. Broad and trustful collaborations among scientists
3. Sufficient funding

**How was that in the past  
and  
what is the situation today?**

# Historic View

## 1. Scientific knowledge could never be constrained by borders:

- Knowledge of ancient Greek- and later Arabic-, Persian- and Indian scholars contributed to the roots of European sciences in the middle ages
- European knowledge crossed later to the Americas and other parts of the world
- New knowledge came back from the Americas
- Today scientific knowledge is spread without borders
- Even the iron curtain was not iron

*Canon of Medicine*

=> **Essential for 12th century fulfilment**



# Historic View

2. From the outgoing middle ages and the renaissance we had European collaboration among scientists. This emerged meanwhile to a network of collaborations on a global scale.

=> **Essential element 2 fulfilled**

3. Funding of sciences as a public issue, however, was established rather late.

=> **Essential element 3 fulfilled (?)**

=> **1. Résumé**

- **Internationality of the Science Enterprise is not new but has a very long tradition measured in centuries.**
- **In the past it did function quite well.**

# How Is the Situation Today ?

## Focus on

- Activities of science communities, i.e. the **People**
- Relation between science communities and Governments, funding agencies or politics, i.e. the **International Organisations**
- Not on relation between science and industry

# 1. The People

## Activities of science communities:

- Implementation of a multitude of international/global conferences, meetings, committees, etc.
- Well organized international publication systems with peer reviews
- Foundation of international organisations, associations, societies, councils, committees, etc (e.g.):
  - **Physics & Astro.:** EAS, EPS, IAU, IUPAP, ICFA or NuPECC
  - AAAS
  - CIOMS (Council for Intern. Organizations of Medical Sciences)
  - European University Association
  - ESF (European Science Foundation)
  - ICSU (International Council of Science) or
  - IPSA (International Political Science Association)
- These kinds of structures were formed over decades in a sort of self-organizing process
- **Free (almost) of Governmental/political influences**



# Role of People

## - 2. Résumé -

### Some observations

- *Trustful collaboration among scientists has created a widely diversified spectrum of activities covering practically all fields of sciences and research in the Global Science Enterprise.*  
**Essential element 1 fulfilled**
- *Scientific knowledge is unhinderedly wide spread.*  
**Essential element 2 fulfilled**
- *The people are the basis and the invaluable capital of this Enterprise. Nothing is going without their knowledge, motivation and activities.*
- *Talent and enthusiasm of young scientists are essential parts of the driving engine, therefore their support and sponsoring are mandatory for the future of the Enterprise.*
- ***For the later discussion:*** *Are there obstacles to free movement of scientists? Is the human resource base strong enough for full exploitation of all the large facilities existing and in the pipeline? Has more to be done in the dialog between science and the public to broaden the interest citizens for sciences?*

## 2. The International Organisations

### Relation between science communities and Governments, politics or funding agencies

- **This relation is rather old (e.g.):**
  - Astronomy  $\Leftrightarrow$  religions/calendar/navigation
  - Science  $\Leftrightarrow$  war-/defence-technologies
  - Science  $\Leftrightarrow$  civil engineering/technical infrastructures
  - Science  $\Leftrightarrow$  industry, economic development
  - Science  $\Leftrightarrow$  public health
- **Characteristics for this relation:**
  - Sponsoring by kings, popes or noblemen, later by states, industry, wealthy private persons or charities
  - Dependence on funding resulted in strong interactions between Governments, political interests and sciences
  - Was mostly constrained to national interests

## **This situation changed after World War II:**

*Interactions between science and Governments or politics emerged more and more to an international issue with a multitude of new forms of co-operations, as e.g.:*

- a) Joint research centres**
- b) Joint large facilities, experiments and projects**
- c) Joint research institutions and organisations**
- d) Joint research programs/activities and collaborations**

**Examples =>**

## a) Joint research centres:

- CERN, EMBL, ECT-Trento, ESRF, EU Joint Research Centre, GBIF, IAEA/Abdus Salam Centre Trieste, ILL, INCF, ITER, JET, JINR-Dubna
- *In progress:* FAIR, XFEL, further projects ESFRI-list

## b) Joint large facilities, experiments and projects *in physics:*

From  
Mid  
50'ies

- **Hadron- & Nuclear Physics:** ALICE, BaBar, Belle, COMPASS, HADES, HERA-B, HERMES, PANDA, REX-ISOLDE, LHCb
- **Fusion:** ASDEX upgrade, TEXTOR, Tore Supra
- **High Energy Physics:** ALEPH, ATLAS, CDF, CMS, DELPHI, D0, H1, JADE, L3, MARKJ, NA48, PLUTO, OPAL, TASSO or ZEUS
- **Astro-, Astroparticle-Physics:** ALMA, AMANDA, ANTARES, Baikal-NT200, CAST, CRESST, EDELWEISS, HEGRA, H.E.S.S., ICECUBE, KASCADE-Grande & LOPES, KM<sub>3</sub>NET, MAGIC, OPERA, Pierre-Auger or SALT, LOFAR(???)
- **Gravitational Waves:** Geo600, VIRGO, LISA (?)
- **Neutrino-Physics:** BOREXINO, Double Chooz, GALLEX/GNO, GERDA, KamLAND, KATRIN, SNO, Super-Kamiokande
- **Space Research:** ISS, Satellites

## c) Joint research institutions and organisations:

- ESA, ESO, European Research Council
- IAEA/Vienna, IEA/Paris, UNESCO/Paris

## d) Joint research programs/activities and collaborations:

- EU-FP's, ERA-NETs
- IEA implementing agreements for energy R&D
- HFSP (Human Frontier Science Program)
- IPCC (Intergovernmental Panel on Climate Change)
- ApPEC (Astroparticle European Co-ordination)
- WLCG (Worldwide LHC Computing Grid)
- E-IRG (e-Infrastructure Reflection Group)
- EGEE II (Enabling Grids for E-Science)
- GÉANT2 (pan-European research and education network)
- GDE-ILC, HERA@DESY, TESLA@DESY
- CERN: SPS- or bubble-chamber collaborations
- EIROforum
- ERF (European Association of national Research Facility laboratories)



International Energy Agency  
 Agence Internationale de l'Énergie

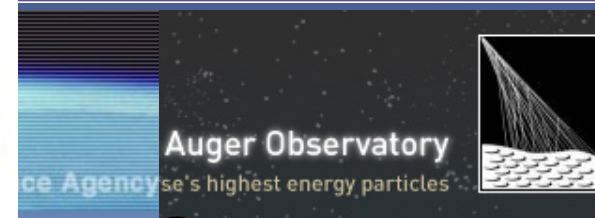
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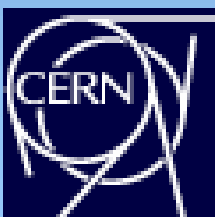
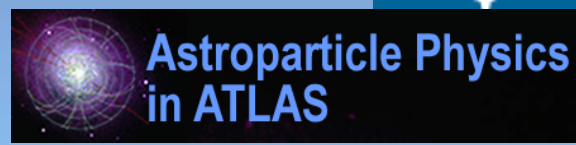
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INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



A colorful picture



The European X-Ray Laser Project XFEL

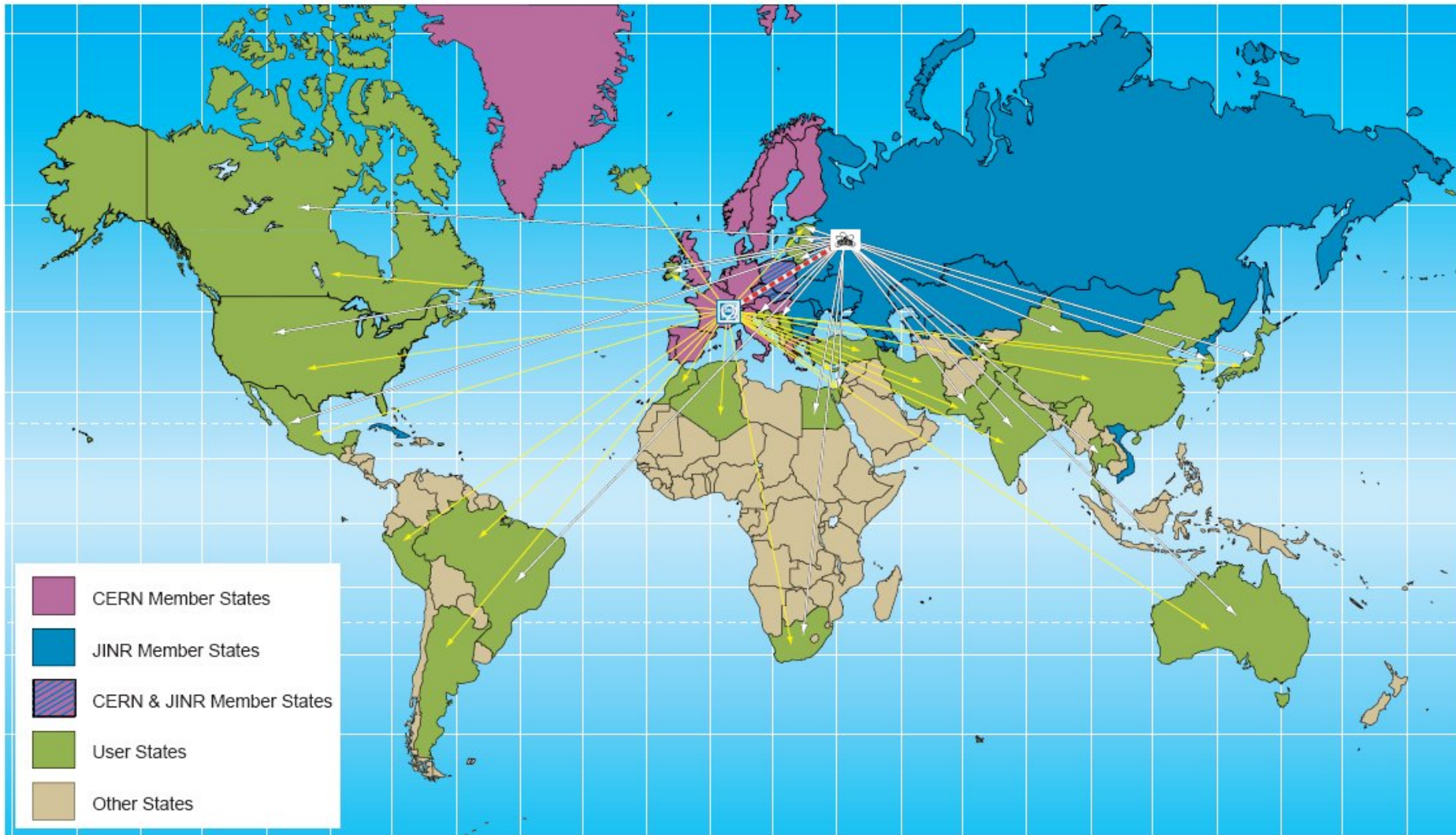


# Role of International Organisations

## - 3. Résumé -

### Some observations:

- *Governments and funding agencies are the providers for a sufficient financial-, solid legal- and well functioning administrative basis for the International Science Enterprise*  
**Essential element 3 fulfilled (?)**
- *Governments and funding agencies are reliable supporters of the science enterprise in the endeavour to strengthen and enlarge all kinds of intern. collaborations*  
**Essential element 1 & 2 fulfilled**
- *Politics via Governments and funding agencies have a significant influence on the general directions and goals of the Global Science Enterprise*
- ***For the later discussion:*** *What about vice versa? Are International Organisations as they are today able to make decisions on ever larger projects in an appropriate timescale?*



Science Bringing Nations Together

Science Bringing Nations Together

# A Role for People and International Organisations

## - Preliminary Conclusion -

- We have a very broad and diversified basis for successful international/global co-operation.
- All this is provided, operated, maintained, funded, etc. by science communities, Governments and funding agencies.

⇒ So far People and International Organisations are fulfilling their tasks very well.

- *For the later discussion:* Is this enough, in particular for other fields than natural sciences? Is there a limit for the costs of large experiments or infrastructures? Are tax-payers prepared to bear the ever increasing costs for science and research? Do we need new legal or administrative structures for projects and joint collaborations on the global scale?

# A Role for People and International Organisations

## - *Preliminary Conclusion* -

- Although there is this multitude of activities, the Global Scientific Enterprise is not yet really global. We are only going the first steps on the general road to globalisation also in science.
- Many large nations like Brazil, China, India or Russia as well as new developing economies are not sufficiently involved. Developing countries stay mostly aside.
- This gap has to be overcome. It will dramatically increase the human resources needed to fully exploit all the possibilities of existing and new research infrastructures.
- Global co-operation, therefore, does not necessarily mean only the sharing of infrastructures.
- **However, in general:**  
**At the moment there seem to be no major other deficits in the Global Science Enterprise.**

**But:**

**YES!** Why?

Because:

**Is there, nevertheless,  
“All Governments are  
something more  
obscure and invisible”**

***Sir Francis Bacon 1561-1626***



- This view is shared by many scientists even today
- **And there is frequently another complaint from scientists:**
  - Governments and politics have too much influence on science and research
  - Politics is not listening to the science community, therefore wasting money for the wrong things

**=> 4. Résumé:**

**International/global Venues** are needed for open dialog between sciences and policy makers:

- To discuss future directions, possibilities and chances for co-operations (e.g.) for:
  - new large facilities
  - new joint R&D programs
- To discuss key generic problems, such as:
  - Scientific misconduct or scientific ethics
  - Treatment of patents or commercialization of know how
  - Access and participation to joint large research facilities, including issues such as structure, funding, management or evaluation principles
- To discuss ???

**What is existing?**

# Existing Venues for Dialog

## 1. Europe

- EU-FP's?
  - ❖ In principle yes, **but** there is a problem: Large sums of money are involved => open dialog really possible ???
- ESFRI (EU Member States)
  - ❖ A first very important and innovative step in the right direction
  - ❖ **But:** It is restricted to Europe and ***will it be implemented sufficiently?*** Hopefully yes because **it is vital for the credibility of this process** and others potentially following

## 2. Global scale?

- ICSU (International Council of Science)
- Global Science Forum of OECD (GSF)

**What is OECD?**

**What is the  
Global Science Forum?**



- Organisation for **E**conomic **C**o-Operation and **D**evelopment
- Intergovernmental Organisation, Site of residence: Paris
- Members: 30 Nations;  
Observers: 4 Nations
- Relationship with 70 other Nations
- Founded 1960
- Budget for 2007: 340 Mio. €

# Global Science Forum

- Committee of senior science policy officials of OECD- and observer countries like e.g. China, South Africa or Russia
- Provides a unique venue for consultations among scientists and policymakers
- No own money involved
- Activities are funded by the participating member countries
- Meetings twice a year in Paris

# Global Science Forum activities are proposed by member delegations.

*All Global Science Forum activities result in a **publicly-available policy-level report** containing findings and action recommendations for Governments, inter-governmental organisations, or the international scientific community.*

**Reports go directly to the policy level of the Governments**

Reports available at  
[www.oecd.org/sti/gsf](http://www.oecd.org/sti/gsf)



# Reports of GSF 1995 – 2006

1. Neutron Sources
2. High-Energy Neutrinos
3. Radio Astronomy
4. Proton Accelerators
5. Nuclear Physics I
6. Condensed Matter Facilities
7. High-Intensity Lasers
8. Astronomy and Astrophysics
9. High-Energy Physics
10. Structural Genomics
11. Bioinformatics
12. Neuroinformatics
13. Management Practices for Large International Facilities
14. Grid Computing
15. Earthquake Sciences and its Contribution to Society
16. Scientific Challenges for Energy Research
17. Science and Technology for a Safer Society
18. Developing our Understanding of Public Investments in Science
19. Evolution of Student Interest in Science and Technology Studies

# Science Institutions Initiated by GSF

- GBIF



Location: Copenhagen <http://www.gbif.org/>

- INCF



Location: Stockholm <http://www.incf.org/>

# Reports of GSF in Progress

- 20. *Roadmap for Hadron- and Nuclear Physics*
- 21. *Best Practices for Ensuring Scientific Integrity and Preventing Misconduct*
- 22. *Scientific Collections*
- 23. *Polar Research*
- 24. *Mathematics in Industry*

**The Global Science Forum is offering to all science communities, funding agencies and policy makers a venue for open international/global dialog and discussion of**

- **Future directions,**
- **Possibilities,**
- **Problems and**
- **Chances**

**for co-operation in many fields of science and research**

# Expected G8-Declaration for June 7

## Chapter “Innovation for Sustainable Growth”

- ❖ “Because we strive to provide scientific and technical leadership we also recognize our responsibility for **a long-term oriented research initiative** that will focus on concentration of scientific research and improved technological capacity in order to be able to react most effectively to future global challenges....
- ❖ ... “In this respect we support the engagement of the OECD to work on proposals for topical international collaborative efforts. **Based on the work of the Global Science Forum, we recognize the value that the GSF will bring as a moderator of this process.**” ....

**Why not taking G8 as a good example  
and  
use GSF to enlarge ESFRI  
for dialog  
between science and science-policy  
on future  
Global Research Infrastructures ?**

**First steps in GSF are underway**

A dark blue world map with glowing yellow and white city lights, representing global connectivity and science.

**Many Thanks For Your Attention**

**[www.oecd.org/sti/gsf](http://www.oecd.org/sti/gsf)**