CERN’s Enlargement Policy

Nations United through Global Science

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Promoting Particle Physics Worldwide
7 October 2016
The Mission of CERN

- **Push back** the frontiers of knowledge
  
  E.g. the secrets of the Big Bang ... what was the matter like within the first moments of the Universe’s existence?

- **Develop** new technologies for accelerators and detectors
  
  Information technology - the Web and the GRID
  Medicine - diagnosis and therapy

- **Train** scientists and engineers of tomorrow

- **Unite** people from different countries and cultures
CERN: founded in 1954: 12 European States
“Science for Peace”
Today: 22 Member States

~ 2300 staff
~ 1400 other paid personnel
~ 12500 scientific users
Budget (2016) ~1000 MCHF

Member States: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Israel, Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Spain, Sweden, Switzerland and United Kingdom

Associate Member States: Pakistan, Turkey, Ukraine

States in accession to Membership: Cyprus, Serbia

Applications for Membership or Associate Membership: Brazil, Croatia, India, Lithuania, Russia, Slovenia

Observers to Council: India, Japan, Russia, United States of America; European Union, JINR and UNESCO
Science is getting more and more global
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Distribution of All CERN Users by Nationality on 19 September 2016

MEMBER STATES
- Austria: 108
- Belgium: 133
- Bulgaria: 94
- Czech Republic: 223
- Denmark: 63
- Finland: 105
- France: 877
- Germany: 1280
- Greece: 218
- Hungary: 82
- Israel: 65
- Italy: 2002
- Netherlands: 169
- Norway: 60
- Poland: 326
- Portugal: 120
- Romania: 130
- Slovakia: 122
- Spain: 424
- Sweden: 85
- Switzerland: 220
- United Kingdom: 727

ASSOCIATE MEMBERS
- Pakistan: 67
- Turkey: 173

OBSERVERS
- India: 319
- Japan: 306
- Russia: 1113
- USA: 1173

STATES IN ACCESSION TO MEMBERSHIP
- Cyprus: 23
- Serbia: 46

OTHERS
- Bosnia & Herzegovina: 1
- Brazil: 124
- El Salvador: 1
- Egypt: 29
- Kenya: 3
- Korea Rep.: 161
- Montenegro: 2
- Morocco: 17
- Nepal: 8
- New Zealand: 6
- Oman: 1
- Pakistan: 67
- Peru: 7
- Philippines: 3
- Thailand: 20
- Tunisia: 4
- Ukraine: 91
- Uruguay: 1
- Uzbekistan: 5
- Venezuela: 11
- Viet Nam: 10
- Zambia: 1
- Syria: 1
- Zimbabwe: 5

Total users: 6941
Participation of NMS

- CERN continues to attract an increasing/record number of Users (visiting scientists) – 12 500 (September 2016)
  - Participation of NMS Users on LHC is about 40% and on non-LHC about 20%
  - NMS Users dominated by North America; increase mostly driven by Asia-Pacific and Latin America.
- Number of States involved/interested in accelerator R&D is growing beyond restricted circle of NMS that contributed to the LHC accelerator construction (which were mostly Observer States with the addition of Canada).
Age Distribution of Scientists - and where they go afterwards

They do not all stay: where do they go?

Today: >3000 PhD students in LHC experiments

In which type of organization do you work at the moment?

- Industry: 45%
- University: 29%
- Research Institute: 7%
- Government / International Organisation: 15%
- Other: 2%

Which domain do you work in?

- Computing: 35%
- Consulting: 19%
- Physics: 5%
- Engineering: 20%
- Finance: 19%
- Communications: 5%
- Others: 2%
Key Changes Introduced with 2010 Enlargement Policy

**Membership** open to all States, *irrespective of geographical location*

**Associate Membership** open to all States, *irrespective of geographical location*
- Regular Associate Membership
- Associate Membership as the pre-stage to full Membership
- Full Membership only to be granted to States once they have completed at least two years of Associate Membership
- No limitation on duration of Associate Membership; review every five years

**Observer Status** arrangements concluded with States to be phased out over time, with Observer Status to remain as an option for international organizations

“New modes of participation in CERN’s activities are needed that on the one hand recognize the increasingly global nature of the scientific community using its facilities, while on the other hand placing the Organization, the LHC and future projects on a basis that is mutually beneficial to, and sustainable for, CERN’s core of European Member States and its global partners.”
Overview of Developments since Adoption of Policy in 2010

2 new Member States

**Israel**, previously Observer Status, expression of interest in 2008; full membership since January 2014

**Romania**, candidate for Accession since 2010; full membership since July 2016

2 States in pre-stage of Membership

**Serbia**, application in 2009; Membership in the pre-stage since 2012

**Cyprus**, application in 2009; Membership in the pre-stage since 2016

3 Associate Member States

**Turkey**, application in 2012; Associate Member in 2015

**Pakistan**, application in 2013; Associate Member in 2015

**Ukraine**, application in 2011; Associate Member in 2016
Overview of Developments since Adoption of Policy in 2010

7 applications at different stages of progress

- **Brazil**: authorization to negotiate Association Agreement 2013
- **Croatia**: application file received May 2014; setting-up Task Force
- **India**: concluding Association Agreement
- **Lithuania**: application March 2016, Council authorized DG to sign Agreement Sept. 2016
- **Slovenia**: in process of concluding Association Agreement

1 expression of interest **Ireland**

1 application ‘postponed’ **Azerbaijan**

12 International Co-operation Agreements: **Australia, Estonia, Colombia, Costa Rica, Tunisia, Albania, Mongolia, Bangladesh, US, Lebanon, Palestine, Qatar**

Observer Status with **JINR (Dubna)** on a reciprocal basis
Taking stock...

- Some headway made with 2009 unofficial wish-list.
  - Brazil (applicant), Canada (under discussion), China, India (concluding Associate Membership Agreement), Japan (Protocol), Korea (under discussion), Russian Federation (applicant), US (Protocol)
  - Continuing work needed

- Main interest from European countries & European broader neighbourhood

- Particular interest among smaller to medium-sized countries
CERN’s geographical enlargement policy introduced in 2010 offers opportunities but does not establish a strategy.

Strategy discussion to a large extent already taken place in March 2016 Council session.
Criteria for Associate Membership

43. For the purposes of its assessment of all Associate Membership applications, the Council shall verify fulfilment of the following criteria:

a. existence within the applicant State of a solid basis in elementary particle physics, both theoretical and experimental, adequately funded both for the support of the research within the country and also for payment of travel and living expenses to enable the scientists of that country to participate in CERN activities;

b. existence of a sufficiently developed industry within the applicant State to enable it to tender for contracts with CERN with a reasonable chance of success;

c. the will of the national authorities of the applicant State to support basic research and their awareness of the implications of participation in a common endeavour in the field of particle physics.

• Criteria for Associate Membership as set out in CERN/2918/Rev remain relevant and valid

• It is essential that the Associate Membership is beneficial to the particle physics community in the country, and Governments continue to invest in the growth of the national community → overarching objective

• Enlargement should also not hinder the operational efficiency of the Organization
The key objective is to ensure that geographical enlargement supports and reinforces the long-term scientific aspirations of the Organization by consolidating the institutional base. **Enlargement is not an aim in and of itself.**

The focus should therefore be on reinforcing relations with countries that can bring scientific and technological expertise to the work of the Organization and can, in turn, benefit from a closer engagement, while helping to build capacity in countries with developing communities.
Future Directions – input for further thinking and discussion

Going forward, more targeted and tailored engagement could be directed to the following categories of countries, with different types of instruments

- **Countries with current applications in progress**: Engage to move forward current dossiers towards completion.

- **Countries with tradition and potential for participation in CERN efforts**: Countries that have well-developed particle physics communities and have particular potential for contribution to the work of the Organization

- **Maintaining the European core of the Organization**: In line with para. 28 of CERN/2918/Rev particular attention will be paid to EU/EFTA Member States

- **Countries with developing communities**: Complete International Cooperation Agreements, Protocols and Addenda
Thank You!

Accelerating Science and Innovation