



## Message from the President of the Council

The highlight of 2015 for CERN was the restart of the LHC at 13 TeV: the highest energy ever achieved in an accelerator. The CERN Council followed this development with great interest and with much appreciation of the smooth, systematic and professional way in which the machine and the experiments were brought back into operation after a long period of maintenance and upgrades. At the traditional LHC Physics Colloquium at the Council's Open Session in December, eight bright young physicists presented the fascinating achievements of the LHC collider and the experiments during the first year of LHC Run 2.

The year 2015 was also the last of Rolf Heuer's seven years in office as CERN Director-General, with the Director-General Designate, Fabiola Gianotti, preparing for her term of office. In March, Dr Gianotti presented her proposed management structure for 2016–2020 to the Council. In September, the Council approved the appointments of Dr Gianotti's directors and heads of department. Among the new features of the incoming Management is the position of Director for International Relations. This reflects the growing importance of relations with the Member States and of the process of geographical enlargement of CERN.

In 2015, the enlargement process proceeded apace. In June, the Council adopted a resolution for the admission of Romania as a Member State. Turkey became an Associate Member of CERN in May, with Pakistan becoming an Associate Member in July. And over the course of the year the Council approved International Collaboration Agreements with Lebanon and Palestine. It is my sincere wish that these will have an impact beyond the immediate benefit that they bring to the research communities they touch.

In order to mitigate the impact of the Swiss franc's appreciation in January 2015 on the contributions of the Member States, the CERN Management proposed a plan of measures, which was discussed by the Council in March and June and approved in September. Consequently, more time was needed to prepare the Medium-Term Plan for the period 2016–2020 and the Budget of the Organization for the year 2016. The 2016–2020 MTP includes the start of construction of the High-Luminosity LHC project (HL-LHC), a flagship for CERN for the period 2025 to around 2035.

A five-yearly review of the financial and social conditions of members of the CERN personnel was on the agenda of the Tripartite Employment Conditions Forum (TREF) during the years 2014 and 2015. In December, on the recommendation of the Finance Committee, the Council approved the Management's proposals in the framework of this review.

The year 2015 was my third and last year as President of the Council. In September, the Council elected my successor, and I passed the baton to Professor Sijbrand de Jong in December. Professor de Jong has a long association with CERN, both as a scientific user and as a representative to the Council. I have greatly enjoyed working with him and wish him all the very best in his new role.

I am proud to have had the opportunity to work for this magnificent research organisation as President of the Council during a period that has seen great progress with the LHC, the completion of the update of the European Strategy for Particle Physics, the celebration of 60 years of science for peace and the admission of Israel as CERN's 21st Member State. I wish to thank the Council members, the members of its advisory bodies, Professor Rolf Heuer, the whole CERN Management, the administrative services supporting the Council and many other members of the CERN personnel for their invaluable help and most enjoyable cooperation throughout my period of office. I wish the Organization continuing success, and look forward to seeing what new knowledge CERN will bring us in the years to come.

Agnieszka Zalewska

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## Message from the Director-General

Much can happen in seven years, and much has happened during my mandate as CERN Director-General. While an annual report by its nature reflects on the year gone by, I would like to use the occasion of my last report to reflect briefly on how much has changed since 2009.

Towards the end of that year, we saw the first high-energy beams in the LHC, and in 2010 the research programme got under way. Two years later, LHC experiments were announcing their first major discovery, the Higgs boson, messenger of the Brout-Englert-Higgs mechanism. This led to a Nobel Prize for François Englert and Peter Higgs the following year. 2010 was also the beginning of CERN's process of geographical enlargement, which has seen our membership grow, and a new category of Associate Member become firmly established.

Moving on to 2015, the highlight of the year was the restart of the LHC after its first long shutdown, LS1. Much work was carried out during LS1, not only at the LHC, but across the whole CERN accelerator chain, and at the experiments. The restart was more than just a simple switch-on; it was more akin to starting a new facility for the first time. It was done with great care, and it ran very smoothly, with all CERN's experimental facilities, not only those at the LHC, benefitting and performing well. The smooth nature of the restart augurs well for the continuation of Run 2 in 2016.

2015 was a year for building experience of the LHC in its new configuration, and for the experiments and computing teams to become accustomed to the new higher-energy running conditions. They all proved themselves to be more than adequately prepared, and by the end of 2015 the experiments were producing important new physics results. Elsewhere at CERN, a new tool at our versatile ISOLDE facility came on stream. HIE-ISOLDE will increase the reach of ISOLDE in a range of areas from nuclear structure to astrophysics. At the Antiproton Decelerator (AD), great progress was made at ELENA, a facility that will increase the efficiency of the AD tremendously.

You can read all about the science highlights in this report, so I will allow myself to focus on just one. Just as the Brout-Englert-Higgs mechanism was developed in the 1960s, so was the quark model that underpins our understanding of particles such as the protons and neutrons that make up atomic nuclei. The quark

model is very well experimentally established, but there remained one little gap: its protagonists had predicted configurations of quarks and antiquarks consisting of five particles, but until 2015, no experiment had ever reliably detected the existence of these so-called pentaquarks. In 2015, thanks to the performance of the LHC, the precision of the LHCb detector and the ingenuity of its researchers, that changed, and one more 50-year-old prediction had been confirmed.

As well as being a world-leading laboratory, CERN is also a very complex organisation, with all the attendant challenges that brings. In 2015, one of the largest was the removal of the cap from the Swiss franc/euro exchange rate, which led to a difficult situation for many of our Member States. The Management and the Council worked together proactively to minimise the impact both on the CERN programme and on our Member States. This is typical of the relationship between the CERN Management and Council – one of the great strengths of this Organization.

I cannot end without a mention of the enlargement process. Among my final duties as Director-General was to sign two new agreements during the December meetings of the Council. One, signed with the United States under the umbrella agreement concluded in March, heralds a new era of transatlantic collaboration in particle physics. It outlines US participation in the continuing exploitation of the LHC and CERN participation in exciting neutrino projects getting under way at Fermilab. The second underlines the spirit of inclusion that is a hallmark of CERN. It is an International Collaboration Agreement with Palestine, opening up the way for Palestinian universities and scientists to intensify their links with CERN. It was approved by the unanimous vote of the Council.

Last but not least, I would like to thank everyone I have had the pleasure to work with over the last seven years: the Council, the Management and all the CERN personnel, whether staff, fellows, associates, users or contractors. It has been a privilege. I wish the new Management and the Council a mandate full of success and many great discoveries.

Rolf Heuer