

Kerstin Borrás: Statement for Spokesperson Sep 2016 – Sep 2018

With all our strength and competence in our Collaboration, we have built jointly an extraordinary scientific instrument, our marvelous detector, to explore the unknown scientific territories opened up by the LHC machine. The steadily increasing collision energy enabled us to accomplish a crucial milestone for our physics: the discovery of the Higgs boson. With the strong joint effort in analyzing the data, our Collaboration achieved unprecedented precision measurements within the Standard Model and pushed the limits of searches for New Physics far ahead: CMS now has a lead position in Particle Physics. This incredible success could only be accomplished by the dedicated effort of all our Collaboration members, consisting of almost 5000 physicists, students, engineers, technicians and administrative colleagues. It is amazing, and highly acknowledged by researchers in other scientific areas, how these thousands of people come together and make things happen, guided by their common wish to unveil the secrets of our Universe.

After the construction phase, our Collaboration quickly pursued to a fruitful physics data analyses program and then advanced CMS into an experiment being in parallel upgraded and improved during Phase I and while simultaneously working on Phase II upgrades to continue our successful physics program into at least the next two decades. The number of tasks in our different program areas has been growing faster than our Collaboration membership itself. In addition, the next years will see a substantial increase of delivered luminosity, demanding a highly efficient operation for recording excellent data for highest priority physics analyses. Achieving our program is indeed a formidable challenge.

The primary goal of the Spokesperson is to maintain the lead position of CMS in Particle Physics. It takes a lot of wisdom and competence to guide and balance the efforts in the various areas and a clear view on how to strongly and effectively employ synergy effects among them. This can only be achieved in consulting widely and taking decisions in consensus.

Our Program in the coming years (2016-2018):

According to the latest LHC machine planning, we can expect a strong increase of delivered luminosity, up to 150 fb^{-1} until the end of 2018, marking the start of the Long Shutdown 2. Already in summer 2015 at the EPS Conference we demonstrated the outstanding performance of our improved and upgraded detector, emerging more powerful than ever from the Long Shutdown 1. For the Year-End-Jamboree, we approved a total of 33 brand new measurements. This gives us a glimpse of the wealth of novel results that we can achieve in the next three years. We need to be well organized and efficient to continue our success and to accomplish our goals in the four main areas of our program: operation and data taking, physics analysis, Phase I upgrades and Phase II upgrades. The organization of these areas and their interplay need the closest attention of the Spokesperson.

Operation: It is absolutely mandatory to ensure operation and data taking with highest efficiency in the coming years. The data are the fundamental basis of our future success in physics measurements. Lost data cannot be recovered. Therefore, we need to ensure that the maximum of delivered luminosity is recorded with excellent quality. The initial running in 2015 was in general well prepared by the different coordination areas and sub-detectors. However, the aftermath displays potential room for improvement, problems that need to be solved and procedures to be adapted to guarantee the largest amount of best quality data for our physics analyses. In my past scientific career I have acted as Run Coordinator and taken care of different sub-detectors. My experience in very different environments will be beneficial for guidance into an optimal operation mode with maximal transparency.

Physics Analysis: The novel collision energy has opened the door to investigate new territories with unprecedented precision and to search for new phenomena. We will have ample statistics to study the yet unknown Higgs boson in great detail. LHC, in its property as top factory, provides us with the unique opportunity to gauge physics with this most massive elementary particle. Standard model physics in the electro-weak sector, QCD, and B-physics are of high importance to complete our understanding. History tells us that discoveries can come early, so we need to be well prepared to study potential early hints with deep care and alertness. The world is watching us exploring the new territory, and we want to uncover what Nature has in store for us. Dark matter is a very fashionable topic and certainly searches in the sectors of Higgs, SUSY and Exotica will be pursued with vigorously. But it is not only the analysis of pp collisions. CMS, in its fantastic performance, is an incredible scientific instrument to study Heavy-Ion (HI) collisions as well. With a small HI community and the help of the full Collaboration, CMS has demonstrated to be as well suited to accomplish new insights in HI physics as in pp physics. It is the duty of the Spokesperson to make sure that this community receives the attention and support it deserves for an excellent continuation of this physics program.

In the course of the running we might need to adapt our physics topics, and with this the data taking and triggering to what we have learned in the meantime. Here the Spokesperson has to ensure a collaboration-wide broad consensus on the medium- and the long-term strategy.

Phase I Upgrades: During the term of the next Spokesperson important milestones will be accomplished for the Phase I upgrades of the L1 Trigger, the Pixel detector and the Hadron Calorimeter. We need to take advantage of the newly opened possibilities as early as possible. But at the same time, we have to ensure, that the detectors will work right from the start. Therefore, the progress of the Phase I upgrades will be a focal point of the Spokesperson. With my extensive experience in detectors and upgrades, I am firmly convinced I possess the necessary competence to lead these efforts, in continuous communication with the sub-detectors, to successful data collection for the benefit of CMS.

Phase II Upgrades: The approval by the RRB in last October established the Phase II upgrades as an approved project. Important milestones need to be accomplished during the next Spokesperson's term: the TDRs and the preparation of the EDRs. With my detector experience and close contacts to funding agencies, I will focus on critical items like feasibility and cost effectiveness, as well as on negotiations with the funding agencies for funds and manpower in the Memoranda of Understanding.

Teamwork in our Collaboration:

The success of our experiment is entirely in our hands. Commonly defined goals and taking ownership in the accomplishments are the clues to dedication, motivation and enthusiasm, the major pre-requisites to maintain our leadership position.

Democracy, consultation and transparent information are key to deep involvement.

As a strong believer in democracy and diversity, I plan to consult widely within our Collaboration, enabling CMS to benefit most from its broad cultural and scientific plurality and the wisdom and competence opened up in this diversity. By establishing dedicated and close communication lines, for example, with the Advisors, the Collaboration Board, the Regional Representatives, and with efficient meetings of the MB, XEB and WGM, our Collaboration will be deeply involved in defining our priorities in consensus. During my term as deputy spokesperson, I initiated the adaptation of the organization chart of the MB to my vision. With this change the communication lines will be open in daily life, for example with specific regular meetings of the upper management. Reserving time for thinking ahead and, developing sustainable strategies in discussions is crucial for the efficient use of our resources. In addition, my aim is to intensify communications internally and externally. Being transparently informed and participating fairly in all strategic aspects, our Collaboration will be motivated and can take ownership and pride in all our accomplishments.

Utilizing all our diversity in thinking, means realization of our full potential.

To take advantage of our cultural wealth and breadth of ideas, it is mandatory to assign leading roles, responsibilities and reviewer roles as much as possible according to our regional diversity. It is necessary to identify talented colleagues from all regions and, if needed, to prepare them by training. Clearly, not only the leading roles have to be assigned and/or equally shared, but also all duties for operating and evolving our beautiful experiment are crucial for sustained, satisfactory team-work. With the new Experimental Physics Responsibilities (EPR) tool, the basic needs will be covered and at the same time more free moving space for other necessary activities will be opened up. However, CMS needs full commitment from all members. My plan is to initiate a review of our organization of M&O A and M&O B, as it was done for EPR, which will either confirm that the present configuration stemming from the construction phase is still appropriate or whether modifications would serve a more fair distribution of the load.

Being efficiently organized to continue our success.

Our sub-detector projects profit a lot from regular readiness reviews for data taking or upgrade projects. In addition, they regularly receive input and guidance from their institution boards. The same should be true for our coordination areas. Regular reviews of their performance and their preparation of the immediate and the long-term evolution could lead to efficiency improvements. It is necessary that the Collaboration Board, or a dedicated part of it, takes over the role of the institution board, giving regular advice and guidance. Meeting schedules might need to be revised and potentially reduced to the necessary minimum. The meetings need to be efficiently prepared with a clear scope, a focused agenda, a strict time budget and minutes, including further action items with responsibilities and a timeline. As Spokesperson, I will work towards the establishment of these management standards.

Growing our Collaboration has high priority.

In team-working with the international committee as well as with my own initiatives and taking up suggestions from colleagues I intend to attract new institutes to join our Collaboration. This way can be effectively complemented by supporting individual applications for third party funds by colleagues, keeping them informed on the available possibilities.

Fostering our young generation in their scientific career as well as seniors on their promotion path is crucial.

The acknowledgement of technical work must be as natural as the praise of accomplishments in physics analyses. It is necessary to define a transparent rewarding system and opportunities to give visibility to colleagues working in the background and make CMS function. As a start, I initiated as conference committee chair a transparent speaker selection mode and lately organized collaboration-wide presentations in the WGM on technical aspects in hardware as well as in the areas of DPGs, POGs and PAGs. However, further initiatives are needed, for example, opening the organizational charts to the public to be used as reference for CVs, and having reports in CMS Weeks by deserving members instead of the spokesperson, coordinators or project managers.

My personal view:

Fulfilling successfully the role of the Spokesperson for CMS demands a high level of managerial and social skills paired with sound competence in all areas like operation, physics and upgrades.

I am firmly convinced that my experiences in detectors and physics from different collaborations and various communities, like HERA, Tevatron and LHC have prepared me well to keep the necessary overview in all aspects and to balance efforts. They enable me to take thorough strategic decisions in consensus within our Collaboration for the benefit of CMS.

In my long-term responsibility as head of the large DESY group, I guided the group from initial activities to a lead position, by growing it in the six years to an almost three-fold size of more than 100 members while sensibly enlarging in steps its wide physics and detector portfolio. Democracy, openness, collegiality and appreciation paired with strong motivation were the clues for attracting especially senior physicists, who themselves attracted more students and excellently fulfilled their responsibilities to DESY and CMS. I am very confident that we can achieve the same for CMS. As former head of a remote institute group, I am paying special attention to enable participation from remote institutions. With my joint professorship of DESY/RWTH Aachen, I am completely independent from CERN, have no biases or ties from previous experiments at CERN, but have a close connection from past collaborations to the new CERN management.

It is an immense honor for me to be a candidate for Spokesperson. I accepted this candidacy, because I feel that I have the experience, the strength and the enthusiasm to accomplish in close team-work within our Collaboration the envisioned goals of our program and maintain our leadership position. This privileged position is a unique opportunity to shape our collaborative work with transparency, fairness, and collegiality, and to create enthusiasm through strong motivation.

As Spokesperson of CMS I will devote my full time to serve CMS for its best in these very exciting times ahead of us.