Gigi Rolandi – The role of the CMS Spokesperson in 2012-2013

CMS is one of the world's largest and most sophisticated scientific instruments. The CMS Collaboration is one of the largest and most international scientific collaborations in history. CMS will be producing scientific result for at least a quarter of a century. The highest standards are expected of us. The spokesperson consults and proposes scientific and technical programs and builds the consensus of the Collaboration around them. He/She and his/her team direct the execution of these programs sharing with the Collaboration the responsibility of success. However, the spokesperson is a unique position: setting the overall tone of the collaboration and ultimately responsible if it is not successful. The spokesperson is responsible for organizing and overseeing progress, operation, policies and plans of the Collaboration, and representing the collaboration to CERN, review bodies, funding agencies, and other interested parties outside CMS.

Physics Discoveries in the 2011/2012 run and preparation for the 14 TeV run. In the 2010 run the luminosity rose by five orders of magnitude, just prior to ICHEP the data set doubling time was days, the Collaboration succeeded in understanding the detector and the data and our showing at ICHEP was magnificent. By the end of 2010 we had submitted for publication more papers than the rest of the LHC experiments combined. It was not easy, it was less than smooth, but by working together we succeeded. It was a period without precedent in our field and something we will tell our grandchildren about. To serve you as Physics Coordinator during this period was the single greatest privilege of my career. Our reward is the 2011/2012 run with the *extremely exciting prospect to discover the Higgs Boson* or exclude it in the entire mass range allowed by the Standard Model. This is a mission we have a profound duty to the field to accomplish. We must find the right way to involve the entire Collaboration in this unique opportunity: a journey of discovery that will span two years. *Equally important is discovery physics at 7/8 TeV*. The 2011-2012 data will bring CMS deeper and deeper into uncharted territory. The Collaboration must be ready to move from exclusion to discovery this year. The large data sample will also allow *new studies of top* that may produce surprises. We must prepare well, so that we are first to discover the New Physics. I propose workshops organized around final state topologies that would bring together expertise from all areas of CMS to identify problems and build new synergies. These workshops could be broad from detector performance and triggering to final analysis. They will help colleagues in all areas of CMS feel part of the discovery process. There is a need for further parallelization and streamlining of the review process to improve throughput without sacrificing quality. We can bring many more of the talented and experienced members of the collaboration into the process to improve its efficiency. The heroic levels of effort called for in 2010 are not sustainable for the long haul and there is need for more forward planning so that we approach the steady over the next several years. Finally, we must pay attention to the other areas of physics accessible with CMS data – such as Heavy Ions – so that they thrive despite the priority given to discovery physics at the high-energy frontier. For HI we can do this also by pp and HI collaborating more closely. Based on the knowledge acquired with the study of the 2011/2012 data sample we must prepare CMS for the 14 TeV run which will be a gold mine of discoveries that we must be prepared to excavate well.

Efficient data taking and data reconstruction for good physics production. CMS took high quality data in 2010 with very high efficiency. In 2011 and 2012 we must maintain the same very high standard of data taking, data quality, data validation and data preparation that we had in 2010. The challenge is formidable because we are now hitting limits on resources in bandwidth and HLT computing power. The large pile-up will have a great impact on the computing resources. It is mandatory to use the 2013/2014 shutdown as an opportunity to make large improvements to our software: e.g. deploy multi-threaded reconstruction code where appropriate, explore new I/O layers, new compilers and new ideas for efficient reconstruction algorithms. During the 2013/2014 shutdown we will probably move to a new computing model, closer to a Cloud than to a Tier structure: offline needs to adapt to these changes. This evolution should be discussed widely in the collaboration in 2012 and prepared so it can be implemented and thoroughly tested before the startup of the 14 TeV run.

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Technical consolidation and the future of the CMS detector. We have a beautiful detector that is producing high quality data. For this to continue for the next 25 years we must pay constant close attention to the detector. We still have to increase the rate by a factor 100 and the radiation dose seen by our detector by 10000. Can CMS – especially the trigger - cope with luminosity related effects (spikes…)? Will the tracker survive the radiation dose in spite of the far from exceptional performance of the cooling? Will forward calorimetry function at high luminosity? Attention, careful and extensive planning, consolidation and improvement are the keys to maintain the high quality performance of CMS. It is essential to maintain and support our community of hardware experts. They should propose what is needed to consolidate and improve the detector, optimizing the physics output together with the analysis experts. This should happen in the context of the upgrade program that spans the next decade and is necessary to keep CMS at top performance levels. The next three years will see the approval and funding of this program. In the next three years CMS will have to face an important decision: when is the last moment we can decide on the tracker design? How are we going to decide? The issue of synchronization with ATLAS makes these decisions even more difficult. We have to prepare carefully.

Improvements in the organization of the Collaboration.
*The Business Model***:** recently CMS went through the transition from the construction phase to the exploitation phase. Based on the experience of these first years we have to produce a Business Model that enables CMS to operate smoothly for the next 25 years. There is ongoing discussion in the Collaboration; we have to see how it evolves during 2011. This is still a period of transition. I propose to set a goal to have a consolidated business model in place by the start of the 14 TeV run. Something that I think can work well in this very large Collaboration is a system based on institutional responsibility agreed with formal MOUs for a given period of time. We should start testing this model in selected areas.
How can we recognize the work and the investment of resources of institutions and also of individuals in CMS ? We have a number of CMS awards to recognize individuals and we assign formal positions to individuals, for example convener of a Physics Object Group. In addition we have other official short-lived activities such as: ARC member, reviewer of notes, member of internal technical committees, field coordinator. Evidence of participation in these activities is not easily accessible to a CMS member and impossible for a non-CMS person. To address this I propose that every year CMS produces an Annual Report to be endorsed by the Collaboration Board. This Annual Report will contain the official records and also short reports written by each member of the Executive Board (managers/coordinators). This Annual Report is a non-negligible investment of resources and should be carefully designed in scope. I feel that it can be very useful to the funding agencies and also for the public. It will be a precious reference, and recognition of outstanding contributions by individuals, that will be of particular value to the career development of young colleagues.
Communication and Engagement are very important in our large CMS Collaboration and we should continuously strive to improve them. Support the CMS analysis school (DAS) in all regions in order to involve more people in data analysis. Support aggregations and regional centers in synch with CMS. Schedule short regular EVO meetings of the spokesperson with local communities: say 1 h meeting every 1-2 months. Mainly, but not only, targeted at CMS regions that are far from the center of CMS. Institute daily news summaries of the key news of the day. We must work to make CMS ever more accessible to those spread around the globe through modern collaborative tools - a challenge met daily by global corporations. For example offset the time zone challenge by investing in intelligent recording of meetings where the slides of talks are synched with the words of the speaker so that missing the meeting does not mean missing the key information. Finally, work to make CERN an ever more hospitable place for collaborators.