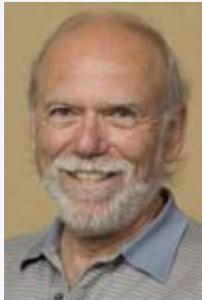


Director's Corner

10 September 2009



Barry Barish

A new ILC baseline and global consensus

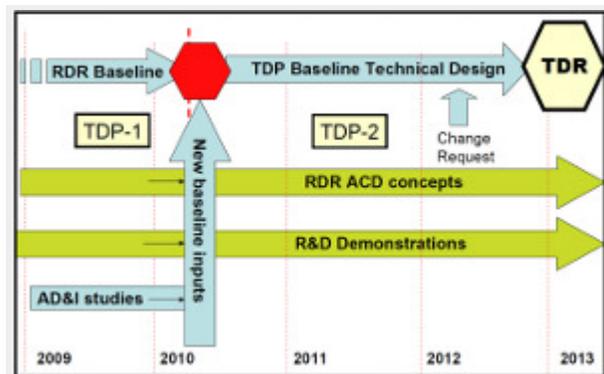
One of our proudest accomplishments in the Global Design Effort has been the global process by which we created the ILC reference design. This was a fundamental success resulting from how we organised ourselves and the process we used in making decisions. As a result, our *Reference Design Report* (RDR) was universally accepted as a detailed concept for technical and cost evaluation. Now, we are undergoing a process we refer to as Accelerator Design and Integration (AD&I), from which we expect to make a number of important changes to the baseline for the ILC. I want to state unequivocally that we are as committed as ever to using a global process in evaluating and deciding about these proposed changes.

Let me begin by reviewing the process that got us to the present ILC reference design documented in the *Reference Design Report* (August 2007). Following the International Technology Recommendation Panel (ITRP) recommendation and the International *Committee* for Future Accelerators (ICFA) decision in August 2004 that the design of a 500-GeV ILC with an upgrade path to 1 TeV should be based on superconducting RF technology, a 'ground-up' process began to develop such a design. A workshop of accelerator physicists from around the world was held at KEK and that resulted in the formation of several working groups that became the core initial design effort for the ILC.

The GDE itself was created in spring of 2005, with an official mandate from ICFA and its subcommittee, the International Linear Collider Steering Committee (ILCSC). The GDE held its first official meeting at the Snowmass workshop in August 2005, expanded the already functioning set of working groups and began a process of creating a global consensus on an initial baseline. That was accomplished through recommendations from the working groups at Snowmass, follow-up studies, posting of potential baseline choices on our newly formed web pages, etc.

This resulted in a near consensus on most configuration choices and parameters, but several difficult decisions finally had to be made by the GDE Executive Committee. These were made to create a single baseline, but with defined options that could potentially replace initial choices at a later time. We then held a major collaboration meeting at Frascati in December 2005 where we went through the baseline choices in detail and drew a consensus on the initial baseline. That was only possible, however, because we also created a very well-defined process for evolving the baseline through a Change Control Board.

The initial baseline was documented and became the starting point in a year-long process of creating the reference design. It is very important to point out that there are many very significant differences (even the placement of the damping rings at the centre, instead of at either end) between the configuration in the reference design and the initial baseline. The process of making those changes was a global process and therefore we were able to maintain the global consensus on the design we presented in the RDR.



The GDE schedule for creating a new baseline for the technical design phase. As indicated, baseline changes will also be possible during that phase.

The process we are now using for developing a new baseline for the technical design effort over the next three years is only different in that the bottom-up process used at the beginning of the RDR phase has been replaced by a more top-down process. Our project managers lead this process with the explicit goal of evolving the RDR baseline configuration to one more optimised for cost to risk to performance. Due to our limited resources, we are being very selective and have only chosen seven significant changes to consider.

Open discussions of these proposed changes were held at a special meeting at DESY this past May, and a great deal of homework and studies have followed. The proposed new baseline will be fully discussed at ALCPG in Albuquerque in September, followed by another dedicated meeting at DESY in early December. After that, the proposed new baseline will be documented for review, both internally and externally. It will have been externally reviewed by both the ILCSC PAC committee and our internal AAP committee before it finally comes to the collaboration for approval in Beijing in March 2010. During the period leading up to the Beijing meeting different points of view will be considered and it is our full intent that we will form a consensus on the new baseline next spring.

Some of the items being proposed are complicated and will require difficult decisions, therefore doing our homework carefully is crucial. For example, we are considering going from a two-tunnel to a one-tunnel configuration, but only if we develop enough confidence that both safety concerns and machine availability can be handled. We are also considering a low-power solution, but this will have impacts on the final focus and possibly the detectors, which we must consider. The other proposed changes also have issues that must be worked through in detail.

I am confident that we will end up with an improved baseline next spring, one where we will be able to contain cost growth and hopefully reduce costs and develop a coherent technical design for 2012 and after. As we did during the RDR phase, we will again institute a change control system by which we can evolve the baseline. I fully hope that some of the attractive improvements being pursued in our R&D programme will mature to the level that we can incorporate them into the technical design. I believe the process I have described will enable us to come forward with a technically forward-looking yet realistic design when we are ready to propose the ILC to our governments.

-- *Barry Barish*