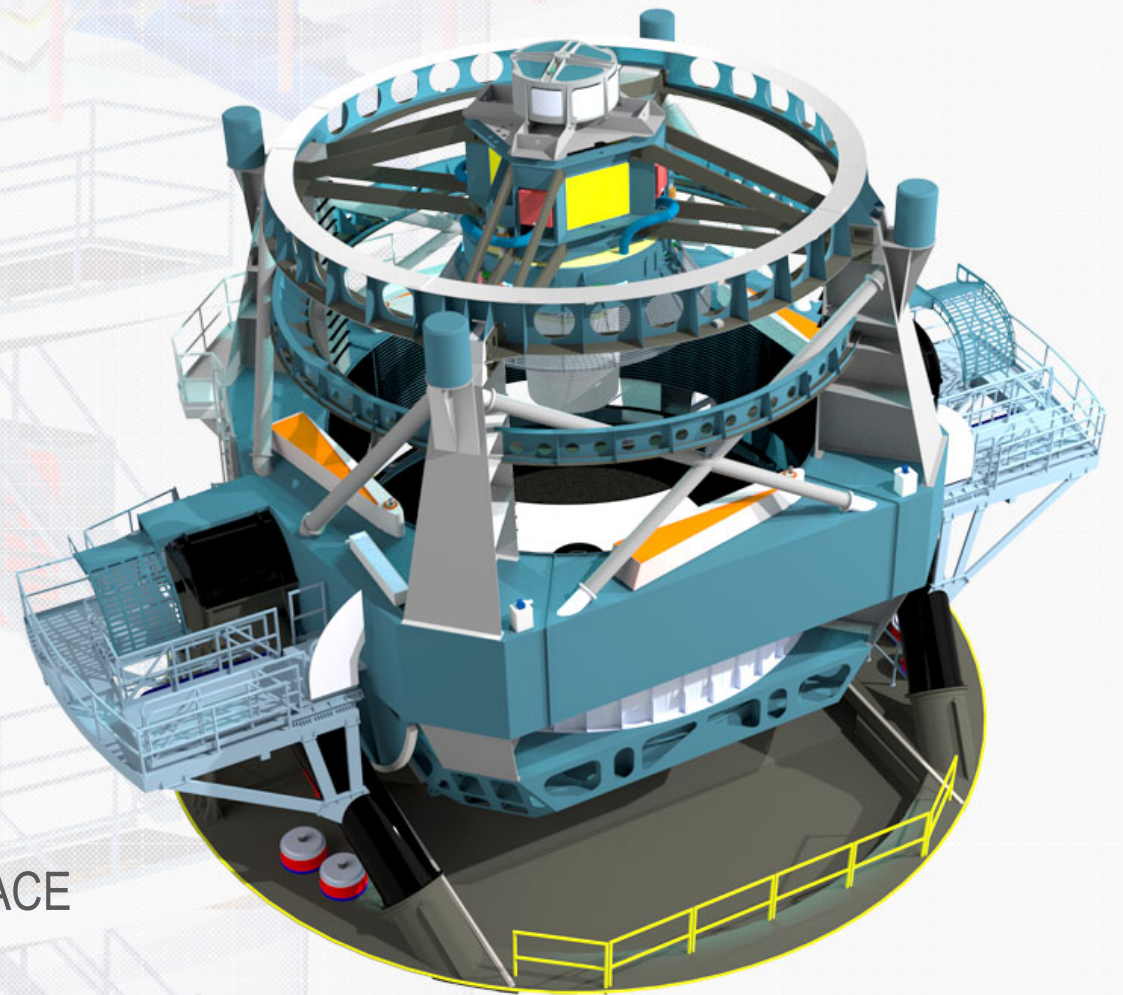


The Role of the LSST Science Advisory Committee

Steven M. Kahn
LSST Director



LSST SAC FACE-2-FACE
April 7, 2014



The LSST Science Advisory Committee

- The SAC is meant to form the principal *formal* vehicle for community interactions with the LSST Project.
- It advises the LSST Director, but its deliberations should be largely public, and its Chair will make regular reports to the Boards that oversee the Project.
- The SAC should serve as a two-way forum for communication with the Project: We will raise issues to the SAC, where we are explicitly seeking community input, and we expect the SAC to collect comments and questions from the community that should be addressed by the Project.
- In this short presentation, I will give an overview of the Project organization and how the SAC should fit into that structure.



LSST is a Public/Private, Interagency Project

- The National Science Foundation:
 - Support for the telescope and site facility construction, the data management system, and the education and public outreach components.
 - Funded under the Major Research Equipment and Facility Construction (MREFC) line. Total projected cost is \$488M.
 - Prime contractor for this effort is the Associated Universities for Research in Astronomy (AURA), which also manages the National Optical Astronomy Observatory (NOAO), the Space Telescope Science Institute (STScI), and other facilities.

- The Department of Energy:
 - Support for the camera fabrication.
 - Funded as a Major Item of Equipment (MIE), through the Office of High Energy Physics in the Office of Science. Total projected cost is \$165M.
 - SLAC National Accelerator Laboratory is the lead DOE lab for the LSSTcam project.

- Private Support:
 - Key donors include the Lisa and Charles Simonyi Fund for Arts and Sciences, Bill Gates, Richard Caris, the W.M. Keck Foundation, Research Corporation for Science Advancement, Wayne Rosing and Dorothy Largay, Eric and Wendy Schmidt, and Edgar Smith.
 - Total Support is ~ \$40M.
 - Funded development of the primary/tertiary mirror, the secondary mirror blank, preliminary site preparation, as well as early sensor studies and some data management activities.
 - Responsible organization is the Large Synoptic Survey Telescope Corporation.



The “Boards” that Govern LSST

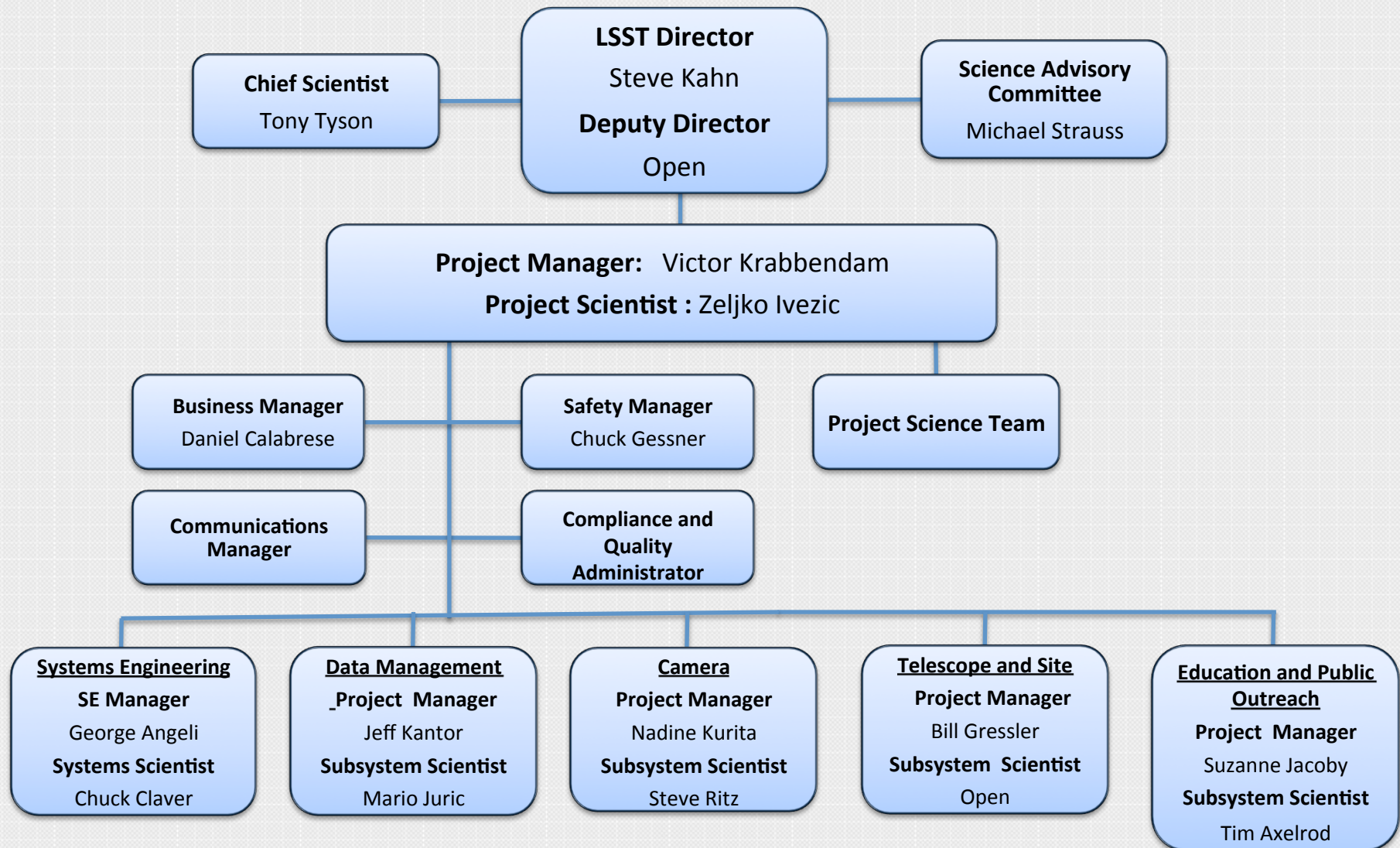
- AURA has a President and is governed by an AURA Board of Directors.
 - The Director reports to the AURA President, and his/her appointment/reappointment is approved by the AURA Board. The current AURA President is Bill Smith.
 - AURA exercises its oversight through an AURA Management Council for LSST (AMCL). The AMCL meets twice per year. The current Chair is Fred Gilman of Carnegie Mellon University.

- LSSTC is governed by an LSSTC Board, consisting of member representatives from each of its institutions, and an Executive Board that formally votes on policy issues.
 - Given its historical role in the Project, LSSTC maintains an active oversight role. The LSSTC Board holds monthly hour-long telecons, and twice annual face-to-face meetings.
 - The LSSTC Board advises the AMCL on the Director appointment/reappointment, and on key procurement decisions.
 - With the transfer of the construction contract to AURA, LSSTC is focussing on “fostering science with LSST”, but this is still a work in progress.
 - The current Chair of the LSSTC Board is David MacFarlane of SLAC.

- At SLAC, the LSST Camera Project is part of the Particle Physics and Astrophysics Directorate.
 - The LSST Director reports to the Associate Laboratory Director for PPA (currently David MacFarlane).
 - There is a PPA Advisory Committee and an overall SLAC Policy Committee that do some oversight of the Project.



The LSST Organization Chart





Two Key Scientific Bodies

- Project Science Team:
 - Serves as an operational unit, within the Project, that carries out specific scientific performance investigations as directed by the Project Manager and the Project Scientist.
 - Membership includes the Project Scientist, the Chief Scientist, the Systems Scientist, and all Subsystem Scientists, as well as others on the project who provide specific necessary expertise.
 - The Project Science Team provides required scientific input on critical technical decisions as the project construction proceeds.

- Science Advisory Committee:
 - Is composed of external scientists with a vested interest in LSST, but who are otherwise not formally engaged in the project development and construction.
 - Advises the LSST Director on behalf of the community at large.
 - The SAC is chaired by a scientist nominated by the Director with the approval of the AMCL and the LSSTC Board.
 - Meets monthly by teleconference to assess progress on the project and to air community issues and concerns.



Three Kinds of Issues We Will Take to the SAC

- Issues of Project Design, where the key decisions have been made or are being made by the Project Team:
 - Here, the primary goal is to keep the SAC well-informed of the details of the subsystem designs and the rationale behind them.
 - We are interested in your reactions to design issues, but we are not really seeking advice on these design decisions.
 - We are prepared to provide as much detailed information as you would like. This is up to the Committee.

- Issues of Project Design, where there are still trades to be made, and we are interested in Community input in making those trades:
 - In most cases, the PST will have carried out the initial investigations, so this will be a structured discussion, but with substantial room for interactive dialogue.
 - We will inform you of the schedule for making decisions. In some cases (mainly for hardware decisions), the schedule will be tight. For DM and algorithmic decisions, there is more room for iteration.
 - We are especially interested in the broad range of scientific expertise represented on the SAC in soliciting your input on these trade decisions.

- Issues of Science Policy.
 - Here the Project will present a plan, but we would like to see that plan properly vetted by the Scientific Community.
 - The SAC provides the vehicle for that vetting.
 - In general, there will be ample room for discussion and iteration in finalizing these policy decisions.



Preparing the Community for Science with LSST

- LSST will be the culmination of a transition in astronomy from individual single-object types of investigations to large-scale survey science.
- This represents a major cultural shift in the field, and it will take some time for the broad community to come to grips with that change. There are new skills required, new techniques, new forms of scientific interaction and collaboration.
- In many respects, LSST is more like an *experiment* than an observatory.
- Even within the field of survey astronomy, LSST will bring significant changes: In most cases, we will increase the sample size of various object classes by two to three orders of magnitude. Bigger is not only better, it is different. Figuring out what we should be doing with such large samples is a challenge.
- The SAC can play a very important role in helping us work with the community to help ensure that we will get the best science out of this facility. There is a lot of work to do well in advance of data taking. We seek your help in acting as ambassadors for the Project, but also helping us to understand what the Community needs to better enable their engagement.



Tools and Practical Details

- We will establish a dedicated website for the SAC. This can contain both public and private domains. We would like the public domain to be very visible, so that the Community knows what the SAC is doing and how to interact with its members.
- In general, we would like to hold monthly hour-long telecons, which will primarily allow you to stay engaged with the Project and updated on its progress. This will also be the forum to alert us to issues that you are concerned about or that arise from the Community interactions you will be having.
- We will hold twice annual face-to-face meetings that will be the main forums for in-depth presentations and discussions.
- In general, we are thinking that SAC Members will serve three-year terms. However, to provide continuity, it will make sense to stagger these terms, so we may ask a subset of you to serve longer as we ramp up to the steady-state.
- We expect that the SAC will continue in its present role well into the operational phase of the LSST Project. We are currently working on a plan for operations that captures the current partnership between AURA, SLAC, and LSSTC. We will keep you advised as that progresses.