Summary of External Review
and
Current Status of Actions to Report

LCGT International Collaboration Meeting
May 10, 2011
Seiji Kawamura (ICRR, NAOJ)

External Review

- One of the three types of reviews:
  - Internal review, External review, Program advisory board
- Charge and scope:
  - Mainly check final design of iLCGT and preliminary design of bLCGT
  - Produce a report
- Held:
  - Feb. 28 – Mar. 4, 2011
  - @ ICRR

Reviewers

Name	Affiliation	Remarks
Masaki Ando	LCGT/ Kyoto University	Deputy chief of secretariat
Stefan Ballmer	LSC/ Syracuse University	
Alessandro Bertolini	LSC/ Albert-Einstein-Institut Hannover	
Raffaele Flaminio	Virgo/ Laboratoire des Matériaux Avancés	
Andreas Freise	GEO/ University of Birmingham	
Warren Johnson	LSC/ Louisiana State University	
Seiji Kawamura	LCGT/ ICRR, NAOJ	Chief of secretariat
David Ottaway	ACIGA/ University of Adelaide	
Benno Willke	GEO/ Leibniz Universität Hannover	
Michael E. Zucker	LIGO-Lab/ Massachusetts Institute of Technology	Chair

Program

2/28 (Mon)	**9:50-10:05 Opening Talk (T. Kajita)**
	10:05-10:10 Introduction of External Review (S. Kawamura)
	10:10-12:00 Detector Configuration & Roadmap 1 (K. Somiya, M. Ando)
	13:30-15:30 Detector Configuration & Roadmap 2 (K. Somiya, M. Ando)
	16:00-18:00 Data Analysis (N. Kanda)
3/1 (Tue)	**10:00-12:00 Main Interferometer 1 (Y. Aso)**
	13:30-14:30 Main Interferometer 2 (Y. Aso)
	15:00-17:00 Input/Output Optics (S. Telada)
3/2 (Wed)	**10:00-12:00 Vibration Isolation 1 (R. Takahashi)**
	13:30-15:00 Vibration Isolation 2 (R. Takahashi)
	15:00-16:00 Cryogenics (T. Suzuki)
	16:30-17:00 Vacuum (Y. Saito)
	17:00-17:30 Tunnel (T. Uchiyama)
	17:30-18:00 Geophysics Interferometer (A. Araya)
3/3 (Thu)	**10:00-12:00 Laser (N. Mo)**
	13:30-15:30 Mirror (N. Mio)
3/4 (Fri)	**10:00-11:00 Analog Electronics (S. Moriwaki)**
	11:00-12:00 Digital System (O. Miyakawa)
	13:30-15:30 Discussion among reviewers

Report

- Sent to Kajita-san and Nakatani-san on March 10
- 12 pages
- Consists of:
  - Executive summary
  - Recommendations to management
  - Recommendations to each subsystem

Actions to the report

- Two important issues were picked up and working groups have been convened to investigate the issues.
- The recommendations that accompany the management judgment were discussed by the management group.
- Investigations for each recommendation were allocated to appropriate subsystem groups.
- Still waiting for answers from some subsystem groups.
- System Engineering office will judge if the actions suggested by subsystem groups are appropriate.

Executive Summary

1. focusing interferometer noise optimization (and corresponding astrophysics goals) to capitalize on the unique advantages of the underground site and cryogenic operation;
2. establishing a strong Systems group to insure subsystem interfaces and design goals are properly distributed, and sufficient, but not excessive;
3. bringing additional staff into the Project to improve breadth of available skills and to relieve key personnel of multiple commitments;
4. wherever feasible, employing (or at least starting with) established, tested component designs requiring minimal modification;
5. proceeding rapidly toward integrated system testing (e.g., through enhanced scope for the iLCGT phase) to minimize the risk of late surprises; and
6. strongly favoring design choices, especially for fixed facilities (like vacuum chambers and tunnels), which reserve the maximum possible future flexibility, in recognition that at the cutting edge, design evolution is both inevitable and healthy.

1

focusing interferometer noise optimization (and corresponding astrophysics goals) to capitalize on the unique advantages of the underground site and cryogenic operation

Bandwidth working group (led by K. Somiya) was convened to discuss this.

-> Somiya's talk

2

establishing a strong Systems group to insure subsystem interfaces and design goals are properly distributed, and sufficient, but not excessive

SE office has been created.

-> Nakatani’s talk

3

bringing additional staff into the Project to improve breadth of available skills and to relieve key personnel of multiple commitments

We will continue the on-going efforts to enhance staffing.

4 & 5

wherever feasible, employing (or at least starting with) established, tested component designs requiring minimal modification;

proceeding rapidly toward integrated system testing (e.g., through enhanced scope for the iLCGT phase) to minimize the risk of late surprises

Roadmap working group (led by M. Ando) was convened to discuss this.

-> Ando's talk

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strongly favoring design choices, especially for fixed facilities (like vacuum chambers and tunnels), which reserve the maximum possible future flexibility, in recognition that at the cutting edge, design evolution is both inevitable and healthy.

We will take this policy within the limit of budget and constraint of schedule. (Management's judgment)

Summary

- **It was amazingly productive and useful review not only in the design matter but also the management strategy.**
- **We really appreciate the reviewer's helpful and thoughtful efforts/activities by spending the whole week for LCGT.**