Agenda -- continued

Detector		
• CDS -- Software configuration control		Rolf Bork
• Possible detector design trades for the future		Robbie Vogt
LUNCH	1245 - 1315	
LIGO Modeling Environment	1315 - 1400	
• Programming environment survey report & recommendations		Hiro Yamamoto
• Demonstration		Hiro Yamamoto
• Software tools organization - status		Andy Kuhnert
Specifications, Requirements, and Interfaces	1400 - 1500	
• Preliminary interface definitions: VE/BT/Facilities		Gerry Stapfer
• Science Requirements Document		Rai Weiss
• Operations		Fred Raab
• System Specification Status		Albert Lazzarini
Conclusion and Actions	1500- 1530	
• General Discussion		All

Software tools organizatio

Andy
Just MAy
Presentation

Goal: compile and document existing software within the LIGO project, i.e.

1. supply full documentation w/ version control, including "manual pages" for existing, frequently used (and future) software, e.g.
   - modeling software (sw)
   - data acquisition sw
   - data plotting sw
   - parameter calculation etc.
   - lab databases

(Establish software development and test procedures (standard) for:

- multi-user application sw)

STATUS

many existing programs written for personal and group wide use

- shot noise calculation (UNIX, PC)
- mode matching calc. (UNIX, PC)
- cavity parameters
- cavity ringdown measurement
- data plotting scripts
- data acquisition and analysis

⋮

etc.

> 50% undocumented

guide, and specifications (e.g. resolution of reflectivity measurement), as well as standard documentation of software complete enough to allow an outsider to understand the code.

A. EXISTING SOFTWARE THAT NEEDS WORK

1. **Transmission mapper.**
   Labview -- written by lost undergrad students and Steve E.
   Status: Works intermittently, undocumented.

   To be done:
   a. Write requirements and specs for system.
   b. Complete the software
   c. Test and document.

2. **Reflectivity measurement**
   Labview -- TL, AK
   Not mapper, spot measurements of ringdown only. Does not use servo, relies on random motions to build up resonance (unlike 40 m mode cleaner ringdown.)
   Status: Works reliably, undocumented.

   To be done:
   a. Test and document system
   b. Extend to mapper (?)
   c. Merge with 1. (?)

3. Scatter measurements:
   Status: Not yet assembled.
   Have mechanical components and photodiodes.
   Not mapper, measures scatter at few angles (?)

   To be done:
   a. Requirements and specs
   b. Implement hardware and software
   c. Test and document
   d. Make it a mapper, merge with 1,2 (?)

4. **40 m data run tape writing software**
   Status: Completely "black box": unspecified and undocumented. Considered impossible to modify, targeted for recreating from scratch.

5. 40 m vacuum system control
   Status: Labview software running on Sparcstation, communicating with gauges, and -- via a PC running specialized control software for Metrabus sensors and relays -- sense switches and valves. "User's guide" consists of detailed steps for venting and pumping procedures. Documentation of design is fairly complete, but too terse for the uninitiated troubleshooter.

   To be done: Improve documentation. Possibly implement improvements that have been considered, including some degree of automation of processes. Possibly reimplement without the PC. Consider modifying system to be more like system planned for LIGO control, i.e. EPICS software.

6. 40 m vacuum system data log analysis
   Status: Mostly complete, by Andy.

7. Other
   There's a medium-sized body of code that is used by several people in R&D, including mode matching software and modeling of various noise sources specific to the 40 m interferometer

- Status of recent software improved
- Effort of documenting all useful codes ongoing
  || establish guidelines for developers ||
- CDS software development plan / configuration control starting point ?!
- Effort needs manpower.