Minutes for AMiBA Engineering Telecon

Meeting Date: 5-Sept-2002

<u>Participants:</u> <u>Australia:</u> W. Wilson, M. Kesteven <u>USA:</u> D. Kubo, M.T. Chen, B. Martin, J. Peterson <u>Taiwan:</u> C.T. Li, H.M. Jiang, W. Ho, C.C. Han, T. Huang, K.Y. Lin, Y.J. Hwang, C.J Ma

I.New Action Items:

- Prototype Hardware >> Ming-Tang: Call customs broker to find out status of prototype shipment.
- Prototype Mount >> Ferdinand, Ming-Tang: Pickup octagon from Dayton Jackson and re-assemble on ML.
- 3) Prototype Mount >> Ted, Homin, Jeff: The rotary table is broken and needs to be replaced (see Homin's e-mail below). Before replacing, Bob asked to research the possibility of going to a motorized design. If the motorized approach requires only simple modifications then we can proceed in that direction. If it's complicated then we will just replace the damaged table as planned.
- Prototype Mount >> Ted, Ferdinand: Ted to finish/send the counter weight drawing, Ferdinand to have it fabricated at Dayton Jackson in Hilo.
- 5) 60 cm Dish >> Ted, Philippe: Prepare contract to Dr. Ong.
- 6) ML Network >> Derek: Has network dropout issue been solved? Talk to Darryl about this.
- 7) ML Network >> Proty, K.Y. Lin, C.J. Ma: Bob has asked that a material list be generated so that we can easily identify and order the network hardware.
- 8) Correlator >> Derek, C.T.: Jeff Rapadas will be shipping a packaged mixer to us on Sept 13. This mixer will incorporate the ~6 dB pads. Derek will instruct Jeff to send it directly to Taipei to save time. Bob has asked us to prepare a test plan on how to evaluate this mixer.

II. Previous Action Items (still open):

15aug02-1: Platform >> Bob/Philippe: Complete bidding package for the platform. Bob has circulated 1st draft to Philippe, Ted and Paul(?) for comments. This action item will be closed when it is agreed that the bidding package is complete.

Bob has updated the RFP based on feedback and circulated it via e-mail on 5-Sept-2002. He is asking everyone to review it one last time before it is finalized and sent to the suppliers.

15aug02-3: Prototype Schedule >> Bob: Bob has generated and distributed a schedule of activities. Proty asked that network activities be added to this schedule. Ming-Tang also added that names be added to each task.

Bob will provide this by the next meeting.

<u>15aug02-4:</u> Prototype Mount >> Bob, Philippe, Ted, Ferdinand: The modification to the mount is presently in process at Jackson Machine works in Hilo. It is expected to be completed at the end of August. Open items:

- a) Ted/Philippe to update drawings to match modifications. Still open
- b) Ferdinand/Ted/Ming-Tang to investigate and solve "loose worm gear" issue. Still open?
- c) Bob/Ming-Tang to determine where to mount the various components on the mount (should not be a problem). Still open

III.Closed Action Items (as of this meeting):

<u>15aug02-5:</u> 60 cm Dish >> Bob/Mike K./Jeff P: Assignees need to discuss and resolve the following issues first via e-mail, then followed by a face-to-face meeting during URSI conference:

- a) Modify design for focus adjustment
- b) Discuss shield issue, look at report on shield describing worse ground pickup with cylindrical shield

This action item will be closed when items a), b), are completed

Bob, Mike, and Jeff have discussed these issues and are satisfied with their solutions (?). CLOSED.

- <u>15aug02-6:</u> Mauna Loa Network >> C.J./K.Y. Lin: The network connection in the visitors building is up but drops out about 2 times per minute. Darryl of Mauna Loa is aware of this and will fix the problem on his end. The following items still need to be resolved:
 - a) Generate a list of tasks and hardware items to get the prototype computers networked properly.

Proty generated and distributed a list describing the ML network capabilities (see below). CLOSED.

On a related matter, Mike suggested that we load both Windows and Linux on all PCs. Most would default boot to Linux but the optical telescope would boot to Windows.

IV. Summaries of Discussions:

- Mount: Vertex has revised their CDR schedule to be held on Dec 10, 2002 in Taipei. Bob suggested that this might be a good time for others to present their respective design reviews.
- Correlator: Warwick summarized our current sensitivity situation regarding the present correlator design. The overall system sensitivity is being degraded by the correlator by about 4 to 5% which is just about acceptable.
- 3) Correlator: We talked about the 6 dB pad and matching the mixer side with a higher resistance value.
- 4) Correlator: Jeff Peterson brought up the fact that we may want to iterate the correlator design one more time and asked that we put this possibility into the schedule. Derek said that we modify the schedule or we could just accept it as a schedule slip of maybe 4 weeks. It might look better if we plan for this.

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- 5) Correlator: C.T. briefly described his efforts in reconstructing amplitude and phase information as a function of frequency. His algorithm works for an ideal correlator and expects it to work for our next iteration 4-lag correlator. It does not work for our present 16-lag correlator due to large undesired amplitude and phase variations.
- 6) Correlator: Jeff send Derek a mechanical outline for the RF half. He made the length 3.0 (76.2 mm) instead of 3.5 inches (88.9 mm). We initially thought smaller was better for size and weight but didn't want to close off the option of going to 8-lags. Jeff will modify his drawing to match our spec.
- 7) Prototype Test on ML: Ming-Tang mentioned that West Ho(?) put together an adapter plate to hold the translatable noise diode carriage on the prototype mount. This will allow us to repeat the tests conducted in Taipei.
- CSO Lab/Office: Ming-Tang and Ferdinand went over to the CSO yesterday to cleanup and rearrange the lab. Ming-Tang believes the lab space is a little bit too small.
- Receivers: Ming-Tang mentioned that the construction for the 3rd receiver has begun this week. This receiver is very close to the final design. The OMT is presently missing (arrive Oct or Nov).

V.Other Inputs:

From Proty, 9/5/02

AMiBA on-site PC network ===version 2.0 (9/5/02)===

1. IP (the following is what's available currently): around 40~50 (virtual; inside-out access),

one of which can have outside-in access.

This particular IP will be accessed

- a. by "amibadata" to download data for backup everyday,
- b. by off-site machines to monitor/control the hardware onsite.
- 2. Network cable: connected to both the office and the dome.
 - Use T1 to connect to the outside world. Need to set up cable(s) going from the hub inside the dome to the prototype mount, for the correlator reader (PC (b), see below), mount control (PC (c), see below), OT reader (PC (d), see below).
- 3. Hub: (a) 8 ports x 2 (one for the office and one for the dome)(b) 4 ports x 1 (currently available but not used)
- 4. PC's:
 - (a) system monitor: to monitor the operation of the entire system. (already shipped with the prototype)
 - (b) correlator reader: to record the output of the correlator. (already shipped with the prototype)
 - (c) mount control: connected to the mount, to control the pointing. (a PC to be purchased, depending on the motor drive)
 - (d) OT reader: connected to the optical telescope (OT), to monitor the pointing and record the accuracy.
 (a notebook/PC to be purchased; temporarily using Ma's notebook)

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(e) backup PC x 2: prepared for any situations with other PC's.

- (e1) One PC will be assigned with the IP that has the outside-in access. This allows a remote control of the entire network system from off-site. "amibadata" will access it to backup all data on site. Password-protected web access will be also set up. Once this PC is used to replace some PC that is out of order, its original IP will be given to PC (a) for this outside-in access.
 (e2) The other PC will be idle, with a HD that has a backup of the OS of
- (e2) The other PC will be idle, with a HD that has a backup of the OS of all other PC's (Linex). When the OS of any PC has problems, this backup can cure them via the local network.
- 5. Printer x 1: hooked onto the local network, shared by all PC's.

6. USB Camera x 1: mounted on but outside the dome, to monitor the prototype from indoors or from off-site.
 It will take a picture every 20 seconds, and post it onto a password-protected web (PC (e1)).

+----> T1 connection to outside world VPN-......office......dome...... hub(a1) : : hub(a2) -+ : : +-: PC(a) PC(e1) printer : : | | PC(e2) : ····· | | USB camera : | | | : PC(b) PC(c) PC(d) : corr. motor OT :....prototype mount....:

Linex for all PC's except for (d), which may have to run Windows (because (c) has a program (controling OT) that runs only under Windows.)

2. Data backup system:

(a) onsite:

A script will be written on PC(e1), and automatically implemented everyday. It will back up all (new) data on all PC's. (The data here mean everything on the hard disks.)

(b) offsite:

A script will be written on "amibadata", and automatically implemented everyday. It will download the backup file on PC(e1).

3. Remote control:

The network can be accessed from off-site via PC(e1). It allows secure shell only (ssh, sftp, scp). This allows the monitor of the instruments from offsite, and any manual operation.

4. Web access:

A web server (Apache) will be installed on PC(e1). It will be password-

protected (via .htaccess). This allows manual data download, and watching the instruments via the USB camera (see below).

5. USB camera:

It takes picture every 20 seconds (for example), and save it as a picture file on PC(e2). PC(e1) will have an internal link to this picture file, which can then be viewed via the web server above.

6. File system:

All partitions on all PC's will be mounted together. This allows the access to all files on all PC's when logged onto any PC. Technical detail: export each partition to all other PC's (by specifying the IP's in /etc/exports), and then mount all the partitions onto each PC.

7. Users:

All user accounts will be first set up on PC(e1), and then transfered to all other PC's (by copying the system files such as /etc/group, /etc/passwd, /etc/shadow, etc.)

From Homin on 9/3/02

> Gentlemen:

>

>

> Ted and me visited the maker of rotary table we used at MLO this

> morning.He shown us the adjustment procedure(Ted will generate an

> adjustment procedure later on), parts inside the table, and comments on

> his design and application.

>

> So, Ted and me would like to suggest the following mount work as:

- > We order a new,exact the same model,rotary table to replace the current
- > one. I think the current one was damaged. The maker have stocks, can ship
- > it right the way,the cost about 10,000 NTS. Ted will go there to replace
- > it together with counter weight. I suggest that the mount must be
- > balanced and the gears must be fully engaged before any manual
- > rotation.It is must be very carefull when roatate,had better 2 people at

> both side to hold the octagon. That model isn't designed for heavy duty

> application, the gears is single point contact, and the spur gear is made

> of cast iron, no any heat treatment.

> After the mount can move properly by hand, it should leave to

> engineering team to do the tests they planned. All the engineers here

> are waiting the test results at MLO before we enter 7 elements

> production stage.

>

> About the motorized mount, My personal opinion is that is not straight

> forward. That model isn't designed for motor, nowhere to put the motor

> directly. Somebody must grow up a bracket to fix the motor somewhere on

> the mount ,and investigate the allowed torque of rotary table and the

- > thin shaft.
- >

> Regards

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