Client Meeting Friday 13th of October
AITC Meeting Room
Chair: Steve
Secretary: Chris

Summary:

Updated on project status for last two weeks as Celine was ill

Actionable Items:

- Add costing of components to appropriate SS reports
- Add contacts to handover document
- Prepare for final presentation next week 10am
- Set up cloned repo for Drew
- Brian update diagram

Attendance:

Celine d'Orgeville (CD), Steve (S), Chris Leow (CL), Alex (A), Wenjie (W), Paul (P)

Apologies:

Brian – meeting with supervisor

Agenda:

Item	Discussion	Actions + Responsibilities
Meeting Open	2:202pm	
Update	A: Project finishes next week. Completing CoDR, SS report and handover document. CD: How was the poster session A: It was good, we talked to people around it. Most of the interest were with people who had already done projects up here. There was more interest in the GSL than the interface.	
Audit/update/presentation	P: Presentation for the audit S: Audit was thought to be this week, but it was last week, so we were prepared. [showing client ppt for audit] A: Finalised concept design and the CAD is complete. Did some FEA back of the hand, which should be able to hold the upper most limit. CD: It's all made of carbon fibre? A: All main stuff is CF, but there are steel inserts inside the frame to prevent crushing of the frame. CD: Why did you choose CF? A: Suggested by Mark, less of logistics issue and CTE low for thermal expansion	Brian update diagram, Paul clone repo for Drew, all add contacts to handover doc

	S: Exceed weight limit on the telescope if it was steel? Upper limit of 50MPa would have exceeded A: That was when you couldn't put anymore holes into the plate. But I didn't get more time to look into it. CD: Confirm that Drue will be here next week to discuss his progress after your project is done. He is somewhat opinionated. Please point it out that it was suggested by mark to make it out of CF. P: Brain and I went to the dome to measure accelerometer, and simulate the worse one. It wasn't that much different in comparison to a stationary telescope, but haven't tested the laser and compare to stationary telescope and moving one. CD: Measurements were taken at the expected BTO location? Provide data and plots in the documentation package. S: How large was the data file? P: We will keep it offline cause it's too big on the repo. CD: Measurements will be made on the laser bench? S: It has been improved since then, but it's not finalised so can't test just yet. Compare tolerances CD: Measurements you expect to be taken by someone else? P: Sound frequency generator will be back by James so can't be measured CD: Where to find the hardware in the handover document and the measurements they need to take S: Environmental – limitations with Greg, needs active heating. Heating elements on the air intake and the power requirements for it, there has to be insulation of 75mm, but it should only need some small heater. Otherwise anything less, it will need a bigger heater.	

	CD: What is the temperature range that it will maintain it at? S: 5-20 degrees. To keep it below zero. Need more info on the low, but historically calculated at the site and did calculations for that. 3 SS design reports and they are all there CD: HEPA filter for air cleanliness? S: Air quality should be easy to maintain and is to filter dust and moisture. Worried fan will have vibration issues? Will have to isolate it somehow? CD: Have the air be pushed in from somewhere else. S: It could be done that way or put underneath near the EC of the ANU laser CD: Do you have an estimation of the turbulence calculation in the dome. 24kW? Where does the energy come from? S: No insulation causes all the heat to be lost instantly to the surroundings. If we include the insulation there is a table on the expected values. Assumption was 5 degrees inside and 0 degrees outside. CD: That seems reasonable. S: Components might be putting in heat themselves. CD: that is right that that means heater needs to be controlled. S: Temperature sensor and PID so if it goes below 0 than it will turn on, or if it's sufficient with the components than it won't turn on CD: where is the duct going? S: Closed loop design. There is also a cooling element in there. CD: oh there is? S: Top of the laser will be 30 and ambient air is 32 than it will need cooling to take out of the heat and will be cooled with a water chiller, should be a simple heat exchange. CD: used to systems that have positive pressure and isn't closed, why did you do this?	

	S: Used this to prevent the need to constantly filter new air and easier to control the temperature, reducing heat loss. CD: Assumes that we aren't opening the box frequently S: Assuming James says once a month. Could be something saying that the shutter shouldn't be open on a smoky date and the enclosure open. W: Talked to Yue and Jak and use BV chillers and directly connect them to the coolers. Liquid to air. Install 3 and there are possibilities for three temperature differences. Entry level to prevent turbulence up to the top floor from air turbulence. Jak said use a large chiller on the entry level with a heat exchanger to pump to the top floor CD: based on what? W: Better based on loops CD: Uses existing hardware? W: Current system they have more than three chillers there. CD: If you could use the ones they are currently using that's the optimum? W: There are many chillers and solutions. CD: Can they work together, or separately? Sufficient cooling requirements? W: If one requires different temperatures than it can change CD: This is all in the SS report? W: Yes it's all in a table in the SS. CD: How to route distance? W: Can't go through the cable wrap, so it can be fed up the side as it rotates the same as the observation deck. Don't need a thin wire. S: [shows diagram of cable distance] 40cm cable offset rather than the drop. W: All flow rates are ok and can go up to 8.8L/min, higher than necessary for ANU and EOS don't	

	have flow rate requirement only a cooling capacity requirement. CD: Do you have an indication of price? W: It's hard cause I was looking at second hand. CD: Thought they would be $2-3k, or $8000. I thought it would be higher. CD: Could you put it into the report? W: Yeah I will have to call the vendor since it's an estimate. CD: We need two chillers at most worst case and it would be unlikely I have that in my budget. It would be good for me to know in case I need to relocate the laser in the future. S: Would it be helpful to have cost value of other components? Insulation and other things? CD: Someone is going to buy them whether that is me or them, than a budget associated with the design would be great. S: Most things so far are reasonably cheap. Electrical and communications P: Shows lasers go from cable wrap ethernet to CAN gateways will have to be purchased. Everything else will run through wire trays. CD: Why are there cables not direct? P: Prefer to use existing cables cause cheaper. CD: I am confused? CAN is just a protocol not a hardware? S: CAN protocol but running over ethernet. You can run the CAN protocol over ethernet. CD: Control ANU laser from the Control room rather than a computer in the dome S: So you can make a CAN to ethernet converter P: Once control protocol finalised in ANU laser than should be easy. Slide on power draw? Don't have	

	information on the components already in the dome, but will have to measure the converter. Both lasers max cooling and heating is 25% of the power supply. CD: Measurement something you can do? P: Would need to average over a period of time. Cause it would need cooling, or heating. We were told there was climate control. CD: I think it would be good to confirm that. If that's something that they can do in the project than it would be good for that. S: Heat exchangers aren't currently available and greater chance of failure since there is more components. CD: Just make sure you are consistent in the report. S: This diagram may have been updated CD: Can drew get the documentation on the project a week in advance. P: Yes, but will need to do it out of the ANU server CD: Would be good to give all EOS people access. S: EC will be underneath the laser CD: Why isn't it underneath. It was good approach, but whether it was accurate is a different assumption S: Majority will be craned in. Limitation isn't the hatch in the middle and observation deck. It's the door to the middle floor. Enclosure, EC, and everything has to be chained in. P: Entry level door is very large able to get things onto the bottom floor S: Reason why we didn't put anything onto the middle floor CD: If it's not with the laser head already doesn't make much of a difference between 1-2 floors.	

Client Meeting
AITC Meeting Room
Chair: Steve
Secretary: Chris

Friday 13th of October

	S: Continuing work explained CD: Can explain what students can do over the summer S: CoDR is summarises most likely options, handover document to have the next group or anyone. Trying to present in the way that they do things if these things are still the same. A: Audit is next week, but presentation is tomorrow and your input is until next week Friday. CD: I would want it next to the project poster from last time. S: We could request it from Chris or someone. I think this is one of his favourite. CD: What have you done? C: I did calculations with Steve and documentation clean up. Requirements doc updated for next group. S: He's been doing a bit of everything so it reflects what we are doing.	
Meeting Close	3:00pm	