Questions for Chris

1. How many ethernet ports are available at the telescope dome?
   * 4 spare, full connection, Jack Gray (network traffic)
   * Optical network, general purpose network
2. What are the communication protocols that need to be used by ethernet cable?
   * Standard, separate switch
3. Do you integrate third party control software or allow it to run separately?
   * Alex Pollard, libraries/dlls, realtime control system, special server
   * Sockets, waste of time to make it look like a CAN device
   * If operations can be done manually, automation vs manual operation, physical vs remotely. Prefer remote automation - GUI remote desktop manually. Observatory control system: Guide Star Laser Server, open a TCP socket with laser, interface control document, buy best tech for the right price, software is an afterthought, have to deal with flaky controls, knock on effects of bad design
   * Version of server framework (control system library C++), ideally get as close to hardware as possible, ASCOM is horriffic
   * Engineering layer, GUI
4. Are there any CAN ports/hubs currently in the dome, or being planned?
   * Can, small data amounts
   * Put a separate bus in, through an ethernet interface
   * James will be CAN, connected to an ethernet interface
   * BeagleBone -> CAN bus
   * Can is written in C
5. What are the CAN ports being used for?
   * DML, James Webb will develop it, it will appear in that list as a device
6. What collaboration is there between ANU/EOS/Telescope? What are the plans?
   * Ask Jack
7. Is there any weather data available?
   * Possibly, ask Alex Pollard/Patrick, weather station with data generally available
   * Average, current temp, humidity, dew point calculation - in Dome
   * Telescope truss, the metal temperature, mirror temp, air temp, not as accurate, not calibrated
   * Outside: MET station
   * OCS server in the device browser, can get this data live
   * Too hot? Want the telescope column of air to be the same as the atmosphere
8. What space is available for routing internal cables between floors, and depositing electronics cabinets?
   * James, Jack
   * Tray on each column
   * Cable wrap for things outside the building to get it onto the rotating platform
   * Most of the cables are being damaged from use, like a garden hose, pigtails
   * Originally CAT5 from front racks in square tube through ceiling, inside wall, up pier, through wrap
   * Installed later: fibre cables, used for high speed cameras
   * Not many ports, can we add a switch? Probably the wired ones, but not fibre as it is tricky with virtual LANs
9. What are the requirements to interface with the observatory control systems?
   * Preferences: easiest, pov of installing new HW, CAN is clearly defined, tools exist to describe to call pieces of data (laser status), translate into state messages, end with a list of new commands and data available to entire system
   * Tried ethernet before, have to define API, always different, HW+SW of buggering around with protocols. They have to write software to match supplied drivers.
   * Use GigaVision protocol for cameras, CameraLink interface, have developed an interface
   * Place the electronics cabinet on the middle or ground floor on the rotating section
   * Can can do a lot, measure/output analog digital voltages
10. Is there scope to add a three laser interface to into the control system?
    * Ask Jack.
11. How many electrical sockets are there?
    * Downstairs (6 spare)
    * Middle (3 spare)
    * Top (6 spare)
    * Single phase outlets in dome
    * 40A through the wrap max, or possibly >80A, supply is at the back shed for EOS, SLR runs off the main office, telescope uses little power
12. What is the power quality capable of being delivered? (Single phase, three phase, max amperage, power factor)
    * Australian Standard <https://en.wikipedia.org/wiki/AS/NZS_3112>
    * Some 20A outlets, cable wrap (tricky but possible to add cables), ask Jack
    * Three phase, GPOs single phase
    * Cable wrap (fancy one)
13. What is the plan regarding backup power? UPS?
    * The dome has backup power for the shutter mechanism
    * Possible to add a 15 minute UPS for the Toptica/other lasers
    * If dome loses contact
    * Heartbeating, maintaining contact, positive control
    * UPS server, if goes onto battery, TRUE flag, might lose contact to that server in power outage, last data received time: if number does not meet