Open SonATA future Functionality Wish List

General:

- Fully Documented System as Implemented

Control System - SSE

- Scheduler:
  - better algorithm for reobserving "fully observed" targets
  - add rule: select second etc. beam targets that have approximately the same unobserved freqs as the first target
  - add rule: if first selected target has no nearby targets for additional beams, then try another first target
  - HPBW grid followup on candidate
  - review/rework target merit factors
    - review/implement suggestions from Habcat paper
    - are new merit factors needed?
    - are different merit factor weightings needed?
  - add changes to support ecliptic search program
  - add check to verify all targets are in the primary FOV
  - adjust target visibility check to handle moving targets
  - add satellite RFI "avoidance zones"
  - fall back to single beam mode if that is all that's available
- Rework sse-pkg to use modern CppUnit
- Add wide null beams
- Verify use of nulls (and that null-depth factor is appropriate)
- implement commensal observing (Sonata as secondary observer, partially done)
- Determine if there are any scaling issues handling hundreds of DXs
- Determine if there are any scaling issues handling > 42 ants
- Publicly viewable near-real-time observing info on targets etc. (partially implemented)
- periodic automatic system tests (test signal, spacecraft)
- archive all candidates in followups
- email/texting/autodialing notice of potential ET candidates
- improve quality of frequency calibrations
- automatic recalibration after N hours without obs restart
- more efficient use of beams and DXs for followups (only use as many as needed)
- automatically convert ATA observing schedule into automated system startup & shutdown (use alternative to cron?)
- log all errors in the database

- log ants used in the database
- add watchdog to automatically restart SSE if it fails
- continue development of Web UI prototype to make it fully functional, or develop other new remote interface
- Add mechanism for Sonata to be easily enabled/disabled by staff at HC (mainly to control rogue actions)
- add circular pol beam calibration control code - review and refine daily obs reports
- add mechanism to mark observations as invalid in the database
- rework how "bad ant pols" are specified - make a user parameter?
- document how to build & verify the sse-pkg using stlport
- consider sharing target catalogs among observing databases to reduce space
- consider changing dark sky array pointing for bf autoatten from az/el 330,30 to dark[0,6,12,18] hours RA
- use common prefix for all SSE env var names
- tscope minDishSuccessPercent (# dishs allowed to fail) should be configurable
- create a utility program to convert equatorial/galactic coords
- add option to disable birdie masks in activities (e.g., for observing spacecraft)
- change the calibration strategies so that the permanent RFI mask is taken into account when selecting frequencies
- automatically verify calibration quality
- make order of followup sequences configurable at runtime instead of being compiled into the seeker.

Configuration

- determine appropriate thresholds & other configuration values for all cw & pulse related observing parameters
- determine appropriate calibration integration times for entire 1 - 11 Ghz band
- validate minimum beam separation

Signal Processing

- New types of signals for packetgen
- New algorithms for new signals
- Sum of polarizations for CW detection
- Wide band CW signals
- Full bandwidth Coherent Detector