Proposed OpSim Development for Survey Strategy Studies

To continue a discussion from Bremerton that I had with Kem, here is the list

of potential improvements to opsim that accumulated during pre-Bremerton analysis:

1) expTime

this problem may have been fixed by now (it should be easy I think); if so,
could this fix be confirmed?

 This fix has been done and was released with v 3.3.2. (Kem)

2) m5   (and we need MAF to be able to see zero points)

we need to update the fiducial m5 depths; Lynne and Peter can provide
python code to replace the existing module; we need somehow to
enable MAF to see what zero point values were used (e.g. it would be
good to add them to MAF output page where various input parameters
for proposals are listed. Caveat: it will take us a a week or two to completely

finalize the latest and greatest m5, but the process could be exercised

using values from the overview paper even before then.

*** important: we need to take readout noise into account (see eq. 7 in

the overview paper). ***

3) radians vs. deg

MAF shouldn't expose the user to radians. Right now, MAF reads values from opsim db that are in radians. We can either fix this in opsim, or in MAF, but we need to make a decision soon. This should be easy, too.

Once these three hopefully minor modifications are in, we need to rerun all simulations that are mentioned in the analysis report for cadence white paper (which became chapter 2 in WP and will be edited there). Meanwhile, Peter and Lynne will consolidate all the new metrics from MAF that were developed over last few weeks and bundle them in a suite of plots/tables designed to emphasize quantities of relevance to science programs (as opposed to quantities interesting from engineering point of view).

4) no extra visits (if pair, no 3, 4 etc per night)

Kem reported that up to a week of Francisco's time should be sufficient to fix this. It would be good for this to happen sooner rather than later as this plays a role in how efficient a survey is for NEOs, and we have a major report to complete, which will require additional opsim runs.

A list of modifications of enigma_1189 aimed at boosting the NEO completeness will be provided in 1-2 weeks (we need to complete additional NEO-centric analysis of enigma_1189 first).

If "no extra visits" problem can be fixed within a few weeks, then we should wait with the rerun of all WP simulations.

5) western bias

We agreed that we should understand better what exactly is happening (e.g. do we start in west and can't move away, or do end up there after scanning around and then get stuck, is alt-az distribution same for all parts of the sky, same as the survey progresses, etc). Lynne, Peter and I will do this analysis, but only after a number of more pressing tasks are completed.

It is likely that addressing this problem will be left for v4 (unless we discover that the cause is trivial).

6) sky brightness

Implementing Peter's new sky brightness model would allow us to explore Stubbs's suggestion to utilize more twilight time. Twilight time would also have a major impact on NEO performance because we could get more so-called "sweet spot" observing. However, given all constraints, we all agree that the new sky model should be implemented in v4 and not in v3.

To summarize, everyone understands that tampering with v3 should be kept at a minimum. At the same time, we have two big projects that cannot wait for v4: NEO completeness analysis and cadence white paper. Both should be completed by the end of this year (which implies that opsim/MAF outputs should be available and re-analyzed by the end of October - at the latest!).

Just a footnote: the NEO stuff has come to a head and most of the runs/analyses will likely be done by mid-September (Kem).