Scheduler workshop agenda

Scheduler Agenda

- Wednesday Morning 18 Mar 2015
  - Overview of LSST ajc
    - need to explain the difference between what we schedule and what other telescopes schedule
  - Presentation on science requirements (what is in the SRD; what challenges are we facing) (Zeljko)
  - Overview of metrics (Lynne)
  - What is the Scheduler currently doing? What are our plans (Francisco)
  - Introduction to Opsim and results (Kem)
- 2nd day 19 Mar 2015 : discussions on the following four questions based on external people's past experiences
  - We will turn the questions into a slide per question
    - Discussion about scheduling algorithms
      - Describe the greedy algorithm in one slide
        - What other optimization approaches are available (does this include 'weather-modified/look-ahead-modified marching army'?)
        - Are greedy approaches sub optimal (when should we be looking beyond greedy)
        - How much human tweaking is used (are their automated schedulers)
      - Describe our thoughts for lookahead in one slide
        - What other approaches are possible and how do we make it deterministic
        - How far in advance can we predict the LSST position
      - Experiences in short term (tactical) and long term (strategic) scheduling
        - One scheduler model or a hierarchy
        - Update strategic model in the day (do we care on timescales less than a lunation)
      - How do we define which heuristics are good (are these heuristics=metrics for tracking progress?)
        - trial and error, best practices
      - How do we preserve temporal uniformity
        - What do we mean by this (one slide) and why we care
      - How do we represent spatially varying sky (e.g. twilight, cloud etc) and not just search for sucker holes
      - Why are filter changes important (slide on number of changes per hour, one change in 20 mins and its impact)
        - how can we minimize the filter changes
    - Grammar (do we need a better grammar to describe proposals?)
      - Explain the difference between what we schedule and what other telescopes schedule
      - What are the types of time constraints we have in the science proposals (or engineering) - one slide
        - are we missing any particular science case(s) and how rich is our grammar
      - How should we describe the time dependent events or proposals - one slide
        - Can we change the action if we fail to meet one of the objectives with an observation
    - Input telemetry
      - Slide on what telemetry info we have (including the cloud camera and observatory model). Slide from the overview of opsim
        - What are we missing - do we need DM feedback or can we
        - Have people successfully employed predictive models (e.g. predict the weather 3 hrs from now)
      - Slide on what models we plan to have in place (e.g. sky and twilight model)
        - Do other observatories use this real time information?
        - How do they represent the data
      - How might we visualize the outputs and determine if something is going wrong
  - Development of metrics
    - *We need to take care that we focus less on the sociology and more on the mathematics of optimization and metrics*
    - What are our current metrics designed to address (types of science cases) - one slide
      - What are we missing?
    - How do we turn a metric into a benefit function to trade-off with the cost function?
    - How do we fold a metric back into a schedule and then into a proposal
    - We have multiple groups working with many different metrics
      - How do we manage different groups (are metrics for other systems all in-house)
      - Are there mechanisms to combine metrics to reduce the number of distinct metrics or is this all ad hoc
    - Probably naive to think we will have a single cost function but many cost functions that we will optimize
      - Optimization of a single cost function: Is that realistic or not?
    - how do we account for data that is good for some proposals and bad for others
- Room under Iain - power strips
- Record the talks and discussions