Exposure Time Calculator

GFA:

- Stars in GFA fields, mags, positions in telescope coordinate system (per exposure)
- Calibrated guider exposures (~ 1Hz cadence)
- …

data

- Process images to measure:
  - Atmospheric transparency, seeing, sky noise (if possible)
  - Guiding errors, fraction of photons falling on fibers
  - Current dSig/dt, dNoise/dt
- Estimate:
  - Integrated signal, integrated noise in "ETC units"

telemetry

Posted to DOS cloud:

- projected times to completion and its errors (can query arbitrary completion fraction)
- Telemetry and QA data (e.g. how many photons are we loosing to imperfect tracking)

signal, noise and its derivatives, time elapsed

DOS:

- Magnitudes, types of objects on fibers
- Desired SNR, current level of completion from previous observations
- Latest available sky noise estimate
- ….

data

- For each observed object, use ETC signal, ETC noise and time elapsed to estimate binary completed/not completed
- Calculate current completion fraction
- Use current dSig/dt, dNoise/dt to project completion(time)
- Use variance in dSig/dt, dNoise/dt estimates to estimate uncertainty on completion projections

Result Obj