
FIRS Mission Architecture Assessment Process

FIRS STDT Meeting
Tom Greene (NASA Ames)
May 12, 2016

What is this about?

- FIRS STDT needs to define and assess mission architectures in time for the detailed study plan due August 26
 - Will be a preliminary assessment, maybe not a final decision
- I propose a rational process with clear rules and participation from all STDT members
 - Kepner-Tregoe decision analysis from “The New Rational Manager”
 - Has been used to select the exoplanet coronagraph architecture for the WFIRST mission and by the ExoPAG to set requirement weights for an exoplanet imaging mission (SAG5)
 - As presented to the STDT by Gary Blackwood (JPL)
- Schedule requires establishing quantitative requirements and defining architecture choices before August meeting
- Initial architecture assessment will be done at August meeting
- T. Greene will facilitate the process

Architecture Assessment Process

- 1) Define science, performance, and program requirements, separate into Musts and Wants
 - Requirements defined before August meeting
 - Apply weights to the Wants (start before Aug meeting)
- 2) Develop basic mission concepts with some performance estimates before August meeting
- 3) Evaluate how well each mission architecture concept meets the requirements
 - Quantitative scoring based upon Musts and Wants
 - Assess risks and opportunities of each architecture
- 4) Make a rational decision based on scores. Goal is consensus but dissents will be allowed and noted. Process will be documented as part of FIRS study