Standards Definition and Evaluation Team Overview

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Exoplanets Standards and Evaluation Team: Specific to Exoplanet Science for HabEx and LUVOIR

ExoPlanet Exploration Program

Aka "Standards Team"

Why:

- Need transparent, common exoplanet science yield estimates to APD for Decadal large missions (HabEx, LUVOIR) and any exoplanet probes. Same yardstick, honest broker.
- Need consistency in inputs definitions for analysis of yield.

What:

- Provide periodic apples-to-apples comparisons to APD for common exoplanet science metrics
- Uses common state-of-the-art analysis tool(s)
  - ExEP is currently funding one analysis tool (module additions to Dmitry Savransky's open-source tool developed under WFIRST Participating Science funding)
  - The Standards Team will include other tools from members (e.g. AYO) to complement and validate the yield of the Program tool
- Standard and consistent definitions of planet and star properties, star lists, instrument properties, detection thresholds.
- Physics-based instrument models to accommodate specific internal and external mask designs .

How:

- Chartered by AP. Coordinated by ExEP for APD.
- Small team of experts drawn from STDTs and general science community.
  - Defined membership (fractions of ~6 people)
  - STDTs will plan for and perform their own yield modeling to perform their study-specific work and specific science metrics
- Active during the period of the design team. Nominally April 2016 to February 2019.

ExoPlanet Exploration Program

Membership

- Rhonda Morgan JPL — Lead. now funded by ExEP to build HabEx and LUVOIR and starshade modules to augment to Savransky's WFIRST code
- Dmitry Savransky, Cornell — developer of open source code for WFIRST yield
- Chris Stark STSCI — existing parametric tool
- Rus Belikov ARC — from exopag, current SAG-13 standards WG
- John Krist, JPL — physics based models used in ACWG
- Avi Mandell, GSFC — post-processing contrast improvements
- Bruce MacIntosh Stanford — community expert, served on ACWG
- TBD LUVOIR STDT Member
- TBD HabX STDT Member

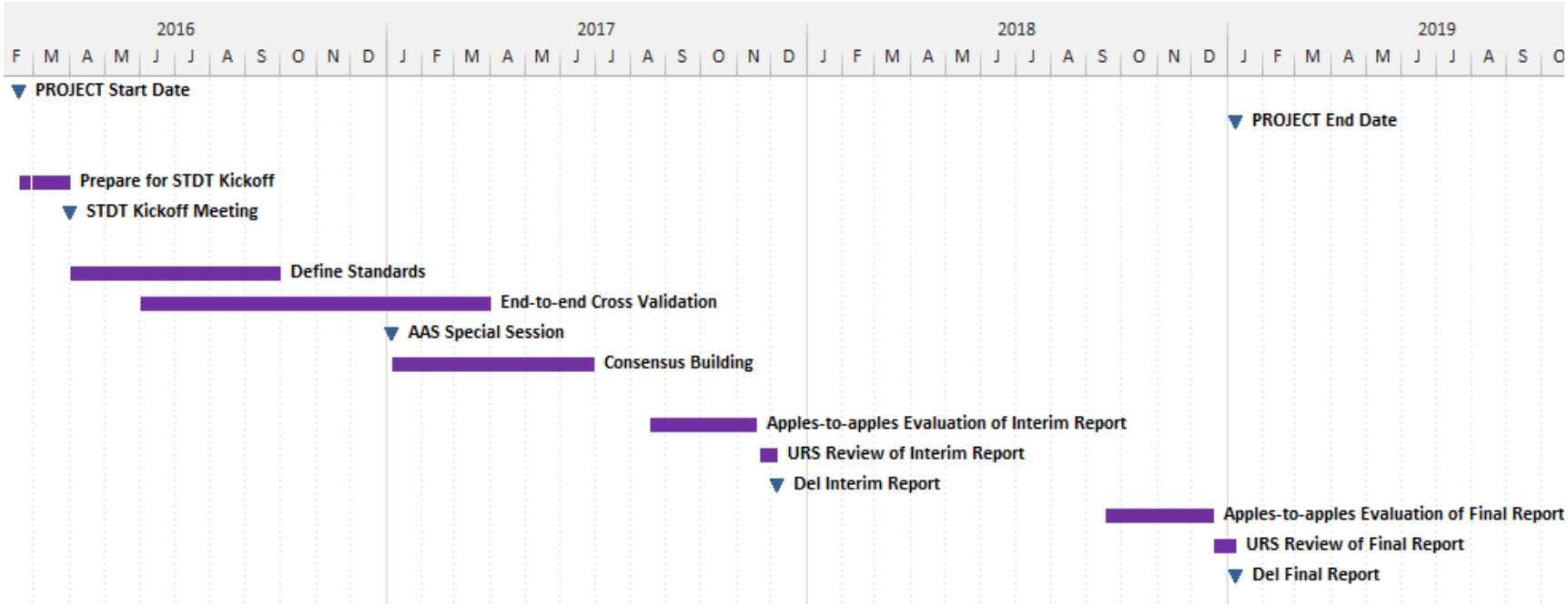
- Stake Holders:
  - Bertrand Mennesson, HabX CSS
  - Aki Roberge, LUVOIR CSS
  - Shawn Domigal-Goldman, LUVOIR Deputy CSS
  - Karl Stapelfeldt, ExEP Program Scientist

Deliverables

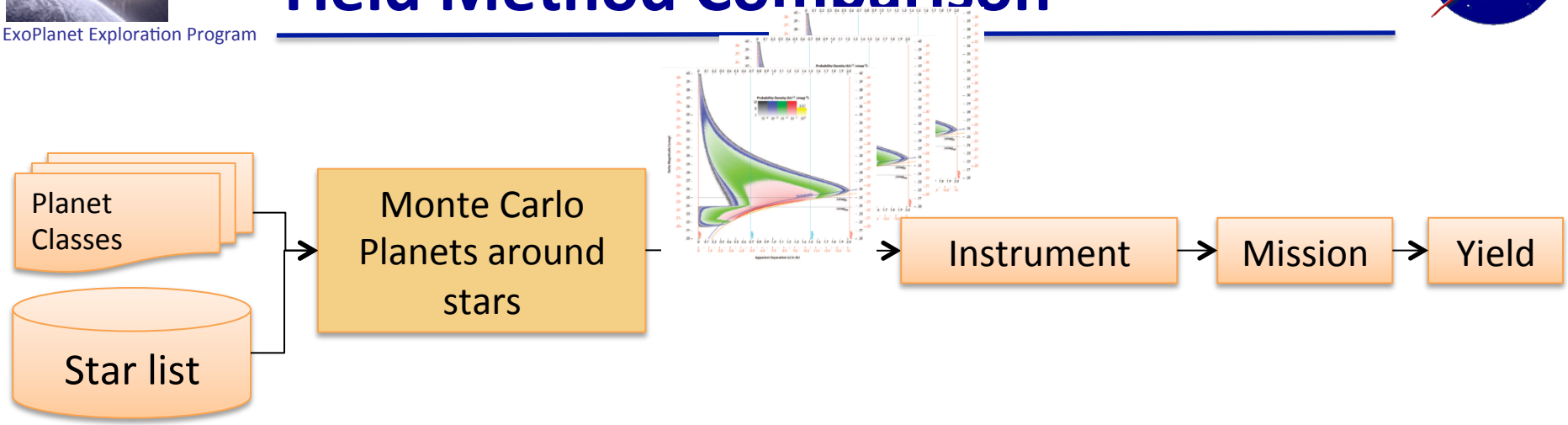
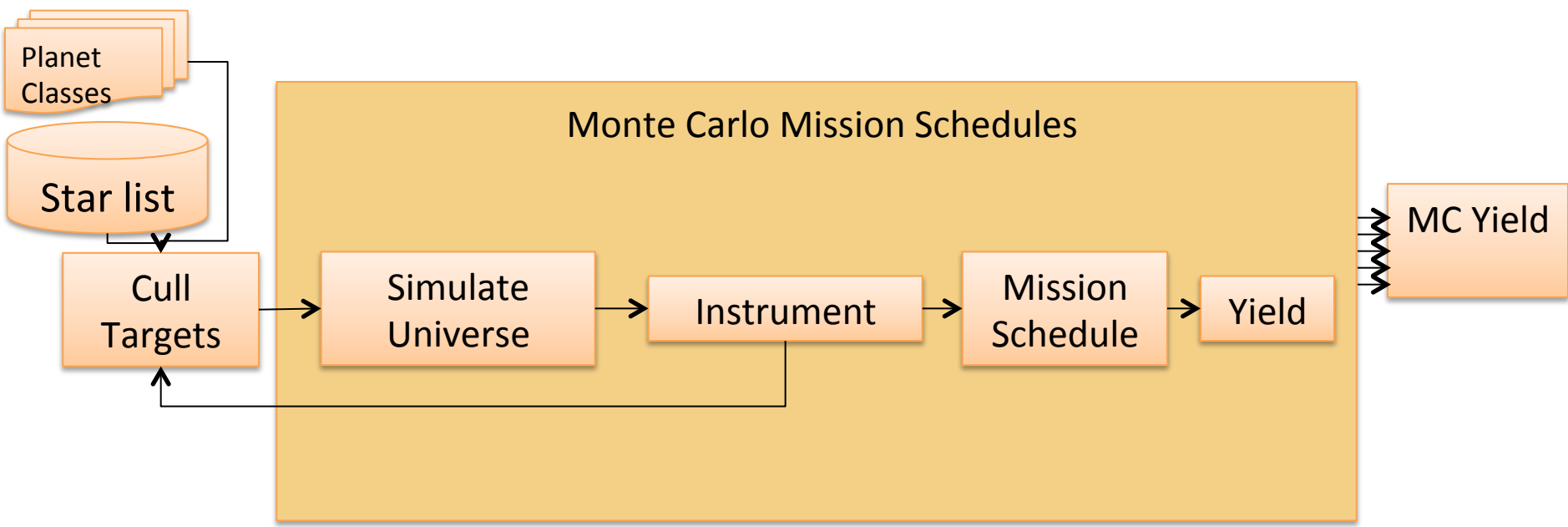
- **Main deliverables**
  - Midterm Report apples-to-apples comparison
  - Final Report apples-to-apples comparison
- **Enabling deliverables**
  - Definition and Concurrence on
    - Inputs
    - Assumptions
    - Outputs
  - Cross Validation of EXOSIMS with AYO

ExoPlanet Exploration Program

Schedule



Schedule synced to Decadal_Studies_Management_Plan_2015_12_28_final.pdf

ExoPlanet Exploration Program

Yield Method Comparison