Instrument Plan Discussion in Subaru UM 2013

I. Iwata (Subaru Telescope, NAOJ)

- PFS Plan and FMOS Decommission
- Facility Instruments Plan
- PI-type Instruments Plan
- Future of Subaru Telescope Operations

PFS Plan and FMOS Decommission

PFS Plan

- Strong support from Japanese community to PFS project (Subaru UM FY2010)
- Shortage of budget (more than 10M USD)
- It is PFS Project Office's responsibility to build the PFS instrument.
- It is Subaru Telescope / NAOJ's responsibility to accept PFS and to execute telescope and enclosure modifications to Subaru Telescope so that the telescope accommodates the needs of PFS.
- NAOJ will try to support PFS, but due to the limited financial situation, the expected support from NAOJ (in addition to the telescope modifications; support to build the instrument itself) will be limited.
- PFS Project Office is seeking additional partners.

SAC recommendation to PFS (Jan. 2011)

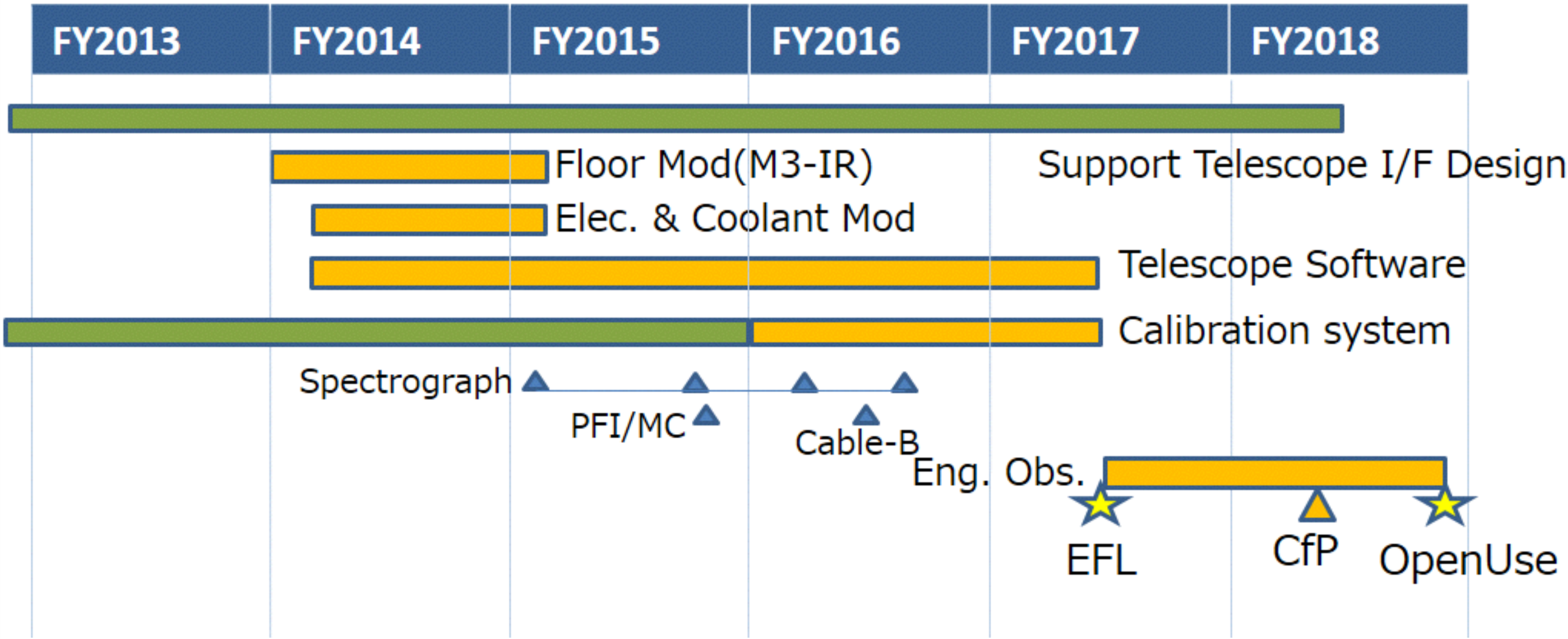
Collateral conditions

- PFS must satisfy instrument specifications agreed by the Japanese community.
- A firm management structure should be built in Japan to develop PFS, including the assignment of a Japanese project manager.
- SAC representative(s) should participate in important decision-making stages about international collaboration.
- There must be a framework for young Japanese students/researchers to get involved in the PFS instrumentation.

Premises

- The survey program by the PFS collaboration will be carried out after reviewing processes, under the Subaru Strategic Program framework. The PFS collaboration will include both the Japanese community and international partners.
- PFS will become a Subaru common-use instrument, available to the entire Japanese community, once the instrument is completed.

PFS timeline
(current estimate by PFS project office)



- Current plan assumes installation of PFS spectrographs on M3-IR floor and keep FMOS (on TUE-IR floor) until the beginning of open-use of PFS.

- Subaru Telescope proposes early decommission of FMOS and use TUE-IR floor for PFS spectrographs.

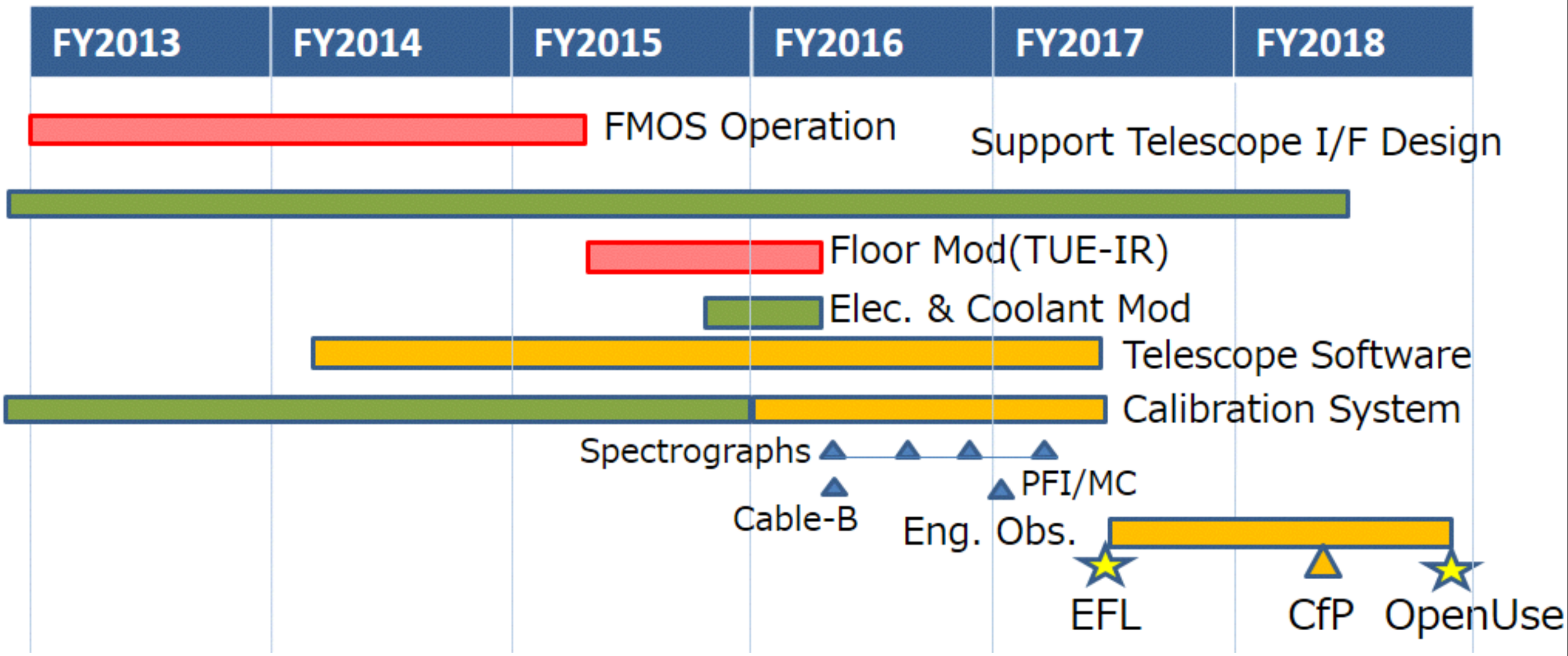
- **Reasons:**

    - Cost reduction by using TUE-IR instead of making new M3-IR floor is expected to be 1M$.

    - Subaru Telescope has a future strategy to put more emphasis on survey-type observations using HSC and PFS. Resources (such as human resources, electricity, and coolant) are not enough to realize the operations of these large instrument while keeping the operations of existing instruments.

    - Flooring of M3-IR floor will affect the operations of NsIR where many instruments are now using. We should avoid more complication on the operations of NsIR.

PFS timeline
(early decommission of FMOS)



Early Decommission of FMOS

- Use TUE-IR floor for PFS.
- Start modifications once PFS Project Office finds firm prospect of the completion of PFS and commissioning plan.
- When will FMOS decommission happen?
    - It depends on financial situation and plan of PFS. There's a possibility of successful fundraising in FY2014.
    - There's a possibility of the end of FMOS open-use by the end of S15A (July 2015).
- Subaru Telescope should try to minimize a risk of long absence of 'Prime Focus MOS' capability.
    - Expected minimum duration between decommission of FMOS and beginning of open-use of PFS is 3.5 yrs.

Facility Instruments Plan

Subaru Telescope's Strategy for 2020s

- More emphasis on survey-type instruments
- Complimentary role in the TMT era
  - Feeding target objects to TMT.
- HSC and PFS for dark nights.
- ULTIMATE-SUBARU for bright nights.

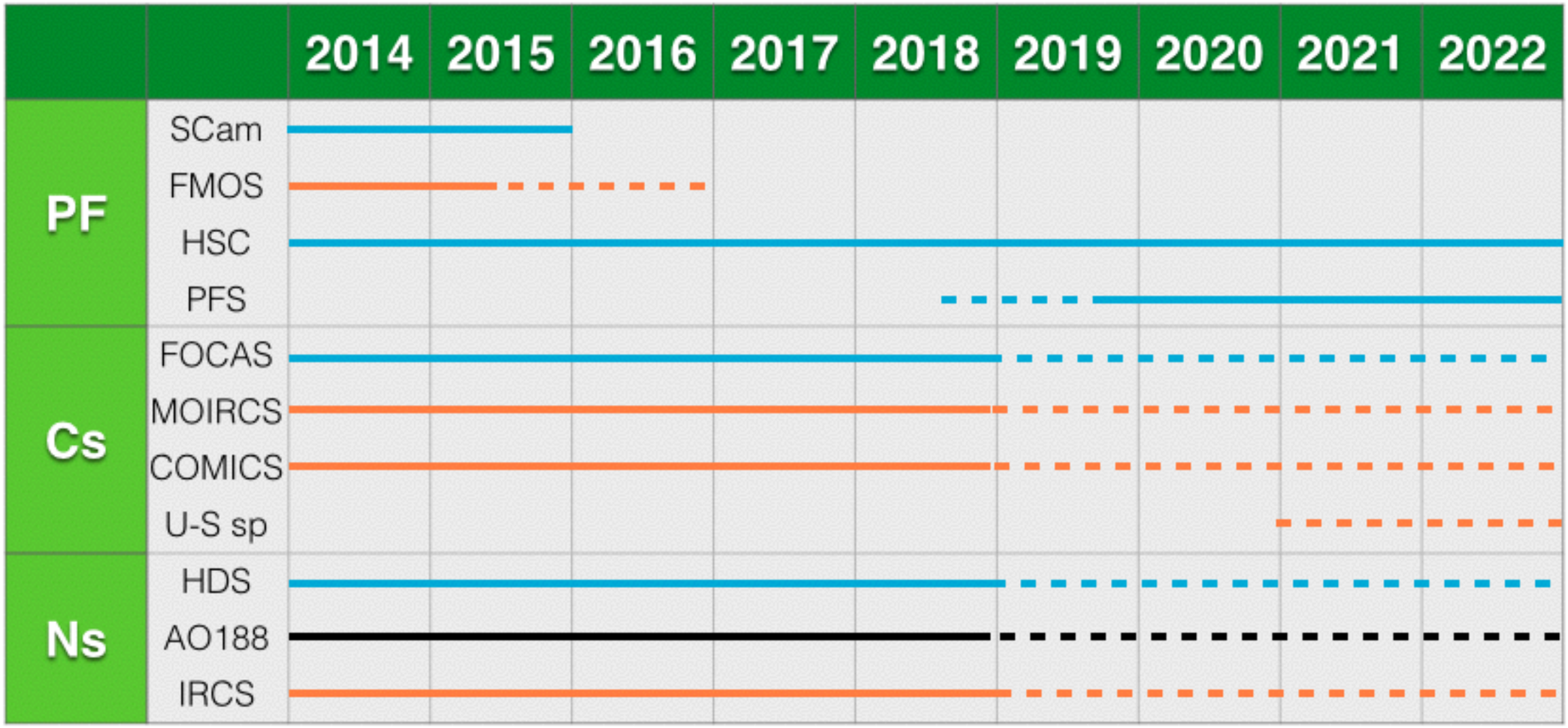
HSC

PFS ULTIMATE-SUBARU

Facility Instruments Timeline

- Suprime-Cam: Decommission after stabilization of HSC open-use (in approx. two years)
- FMOS: Early decommission for PFS spectrographs
- Decommission of other existing instruments in late 2010s
  - Decommission or transport to other telescope
  - Required due to limitations in budgetary, infrastructural, and human resources

Timeline of Facility Instruments

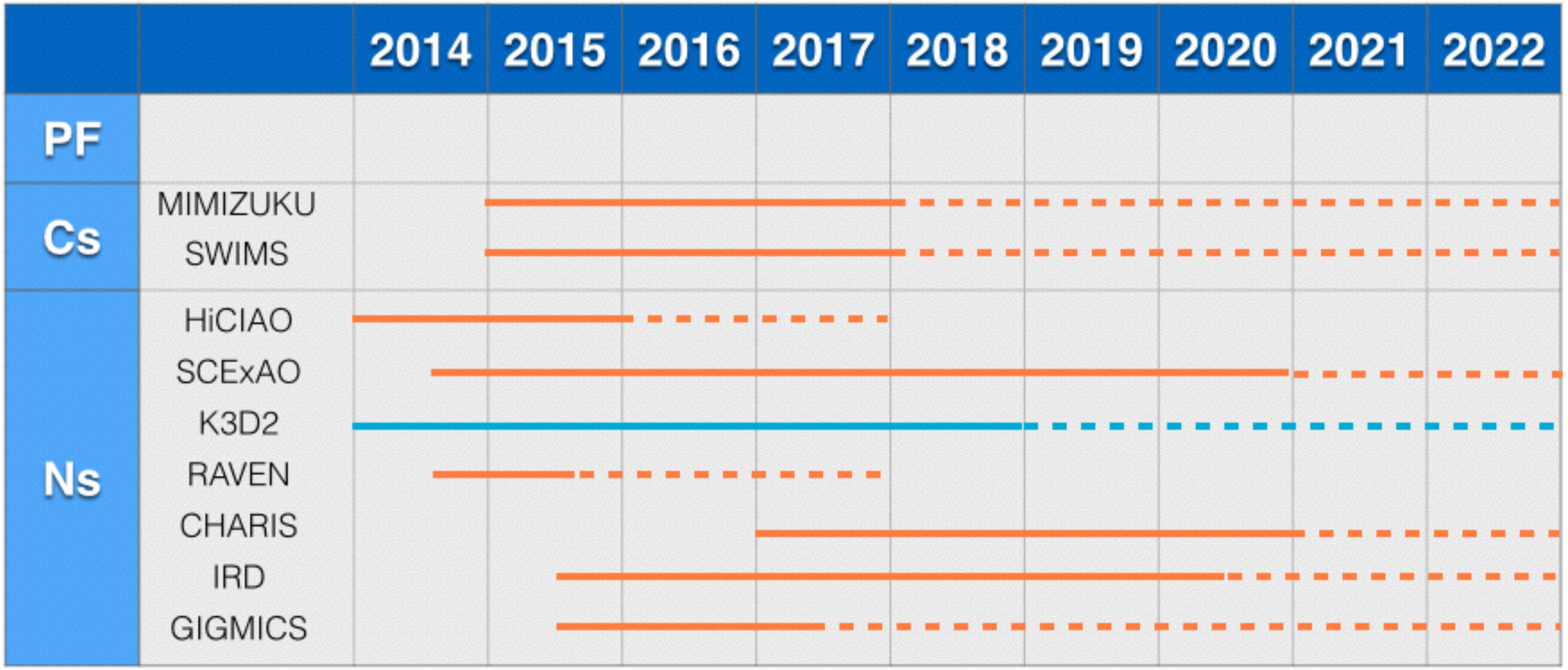


Decommission of Facility Instruments

- Which instruments should we keep?
  - Scientific demands - SAC should take initiative
  - Workloads to keep them operational
- Time Exchange Programs
  - If there are instruments in our partner observatories which can provide similar (or superior) capabilities, we may decommission the instrument
    - Limited number of nights in Time Exchange Programs
    - Possible decommission of the instruments in partner observatories (more coordinated instrument plans for MK observatories required)

PI-type Instruments

Timeline of PI-type Instruments



PI-type Instruments

- Promote instrument development activity in (Japanese) community

- Sharp science objectives with latest technologies, complimentary to survey-oriented observations and science cases with TMT (limited number of instruments)

- PI-type instruments could have higher scientific importance for our community (cf. reduction / aging of facility instruments)

PI-type Instruments

- Too many proposals, especially for NsIR
- Open-use observations have higher priority than PI-type instruments.
- Regulations for acceptance of PI-type instruments would be necessary.
- Promote open-use observations with PI-type instruments?

Summary & Future of Subaru Telescope Operations

Changes are coming

- Decommission / aging of facility instruments
- Time Exchange Programs
- Queue observations (for HSC and PFS)
- Large surveys (HSC, IRD, PFS)
- International operations?

Current Types of Open Use

- Normal Programs: up to 5 nights
- Service Programs: up to 4 hours
- Intensive Programs: Up to 20 nights over 2 years.
  10 nights max. for a semester
- Strategic Programs: Up to 25% of open-use nights.
  Up to ~300 nights over 5 years.

- Do we need to change current categories of open-use?
  - Larger fraction of Strategic Programs?
  - Larger Intensive Programs?
- How should we support PI-type instruments?
- How can we promote graduate students' research?