

Internal Meeting for Subaru Future Instrumentation Plan

2013/11/15

I. Iwata

Goals of Today's Meeting

- Future Instrumentation:
 - Share status and plans for PFS and ULTIMATE-Subaru
 - How Subaru should state our attitude for project presentation on 11/26
- Decommission plan:
 - FMOS decommission: Subaru's plan, to be reported in SAC next week and Subaru users' meeting in Jan.
 - How we can determine how many and which instruments should be decommissioned until 2020?

Meeting on Oct. 8

- General scope of decommission plan and timeline
- Priority
 - Uniqueness
 - Scientific potential
 - Workload for maintenance
- Future instrumentation
 - Community needs
 - PI-type instruments / Subaru as a test-bed for new techs
 - Balance between Optical and IR instruments
 - Observing capabilities through time exchange
- FMOS decommission

Timeline (in HST)

- 2013/9/18 - DCM
- 2013/10/8 - Internal Meeting
- 2013/10/21 - Subaru Advisory Committee (SAC)
- 2013/Nov. - Internal Meeting #2
- 2013/11/18 - SAC
- 2013/11/26 - Project Week
- 2014/1/20-22 - Subaru Users Meeting
- 2014/End of Jan. - Decision on FMOS Decommission
- 2014/Early Feb. - Call for Proposals in S14B

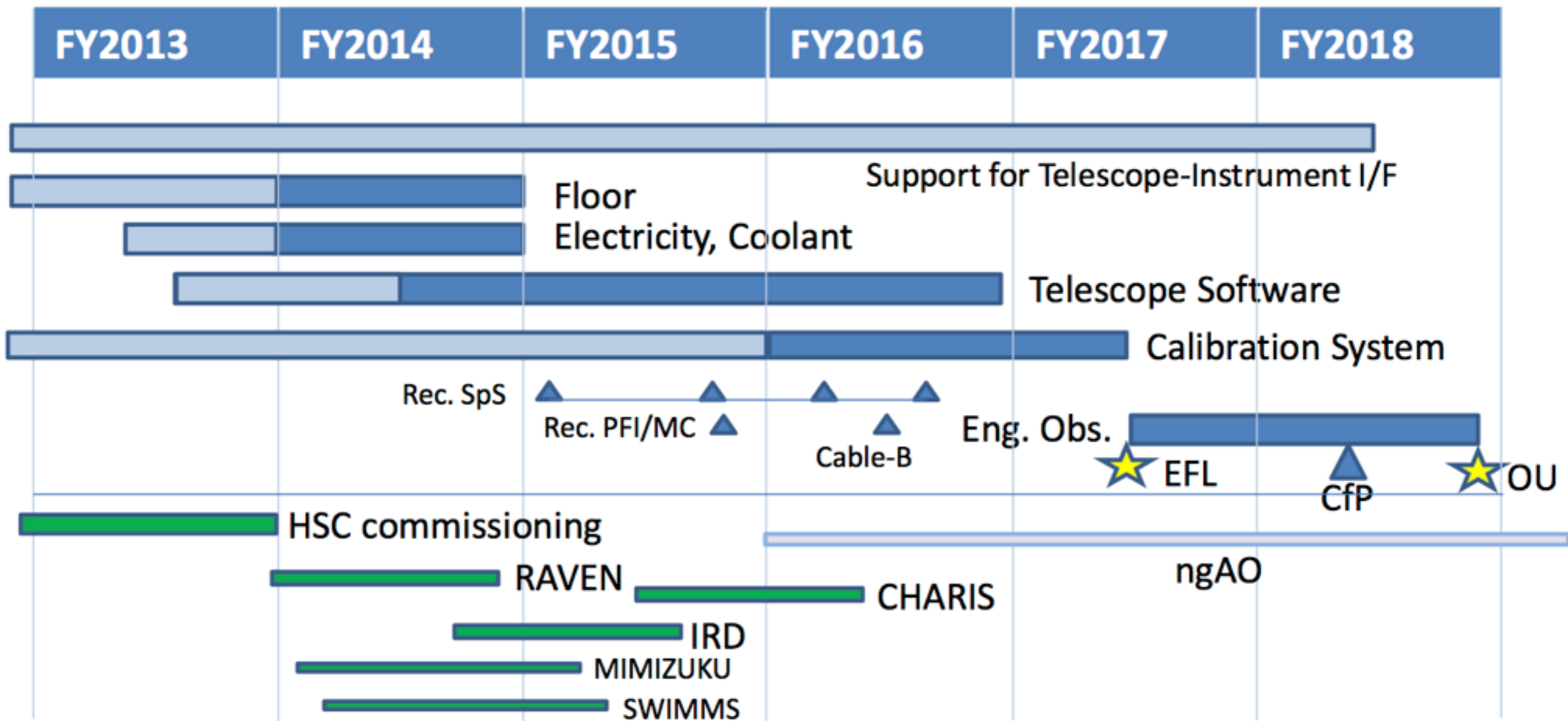
Budget Plans for PFS and ULTIMATE-Subaru

PFS: Subaru Acceptance Plan by Takato-san

*Assuming IR-M3 Floor

Budget Summary (excludes Human Resources)

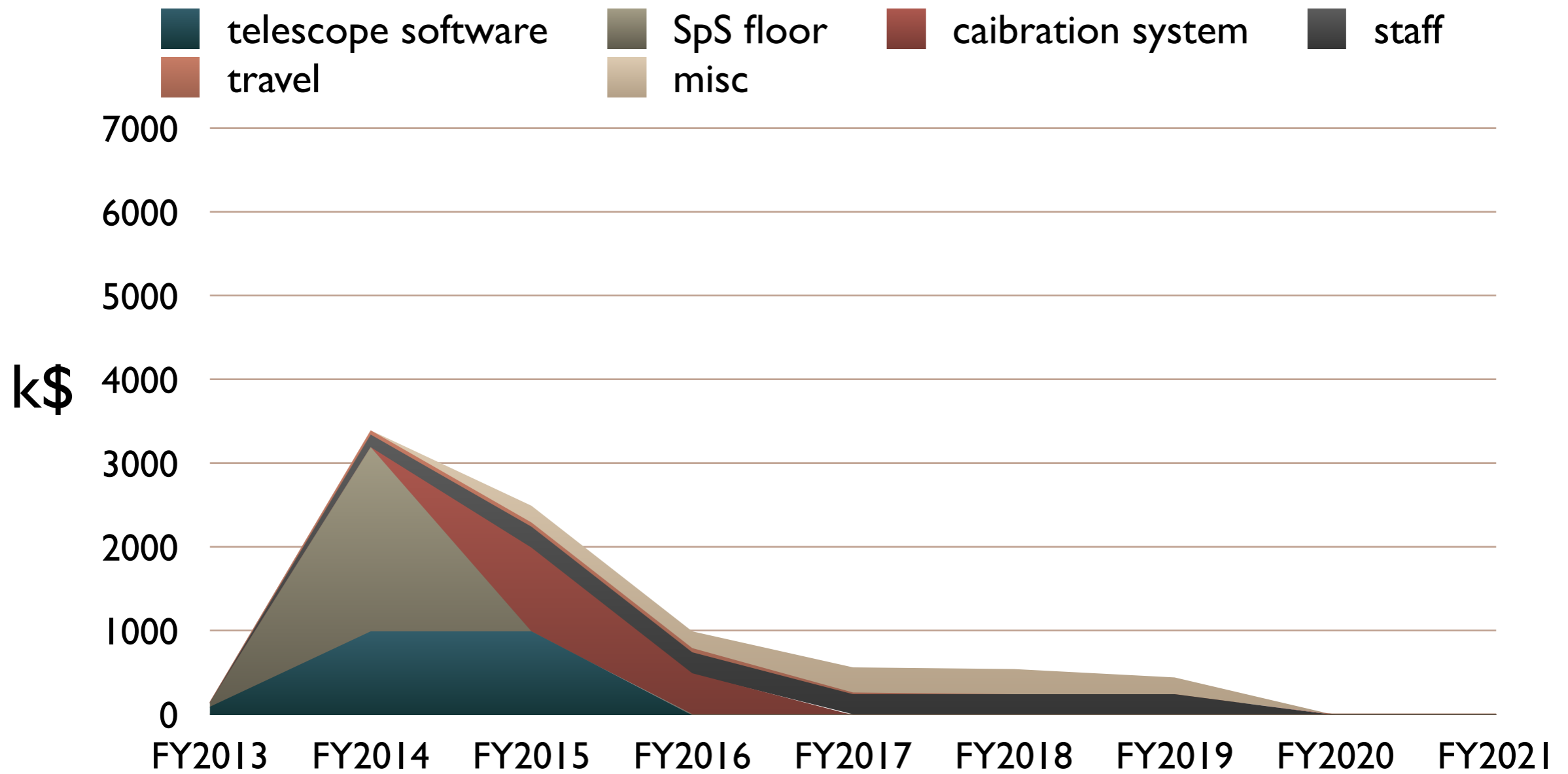
Spectrograph : 2M\$ (Floor, Electricity, Coolant)
 Telescope Software: 1M\$
 Calibration System : 1-2M\$
 Misc. : 2M\$ (50% contingency)
 Total : 4-5M\$ + 2M\$(Contingency)



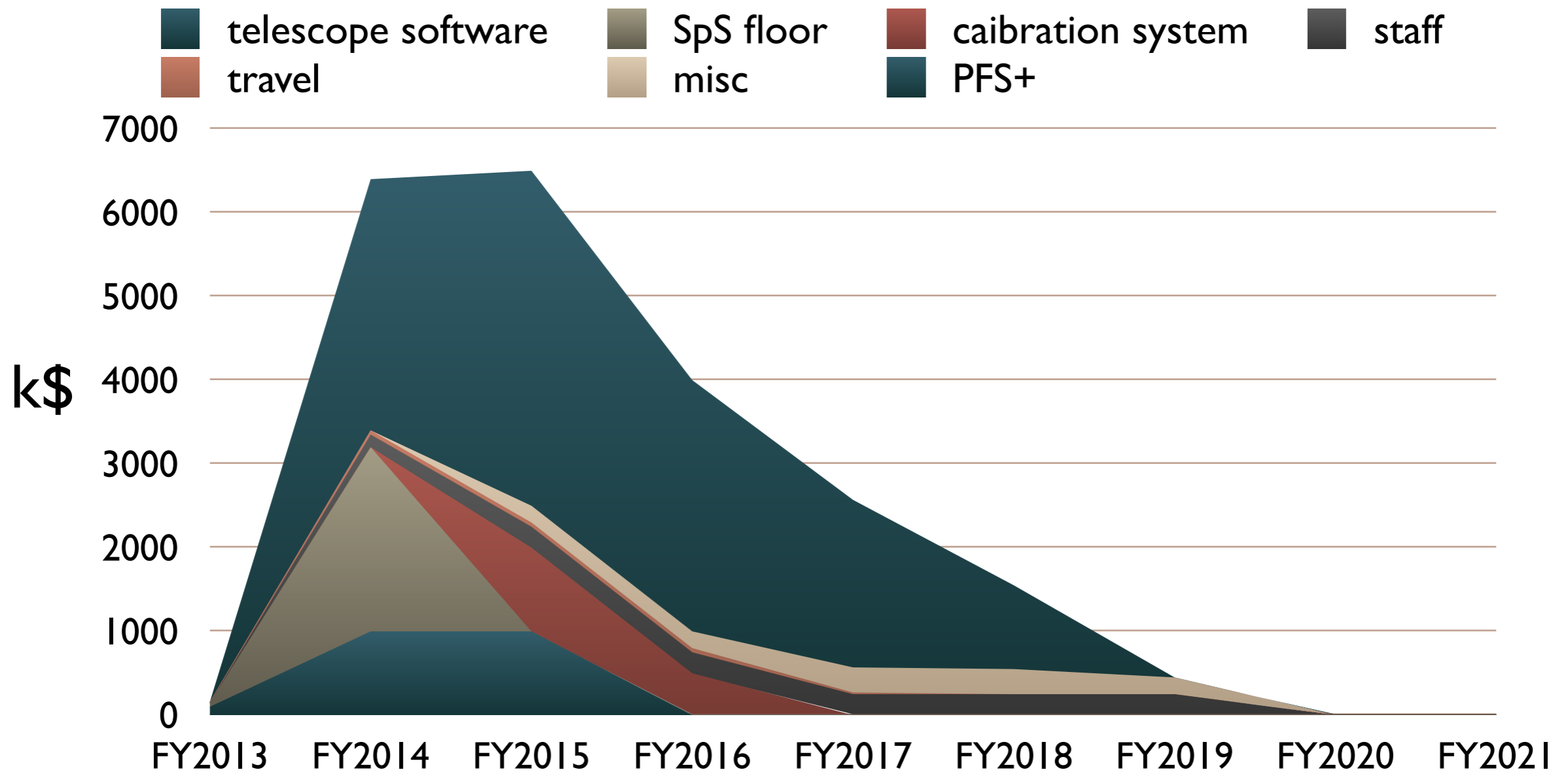
PFS Budget Plan by Takato-san

- Acceptance of PFS
 - Telescope Software: 2.1M\$
 - Spectrograph Floor: 2.25M\$
 - Calibration System: 1.5M\$
 - Staff: 1.4M\$
 - Misc: 1.38M\$
- Expenses for the PFS instrument (i.e., NAOJ's involvement to the development, currently under discussion)
 - Amount is TBD, but here I assume 13M\$ in total

Budget Required for PFS (for Acceptance)



Budget Required for PFS (including expenses for the instrument)



ULTIMATE-Subaru Budget Plan by Hayano-san

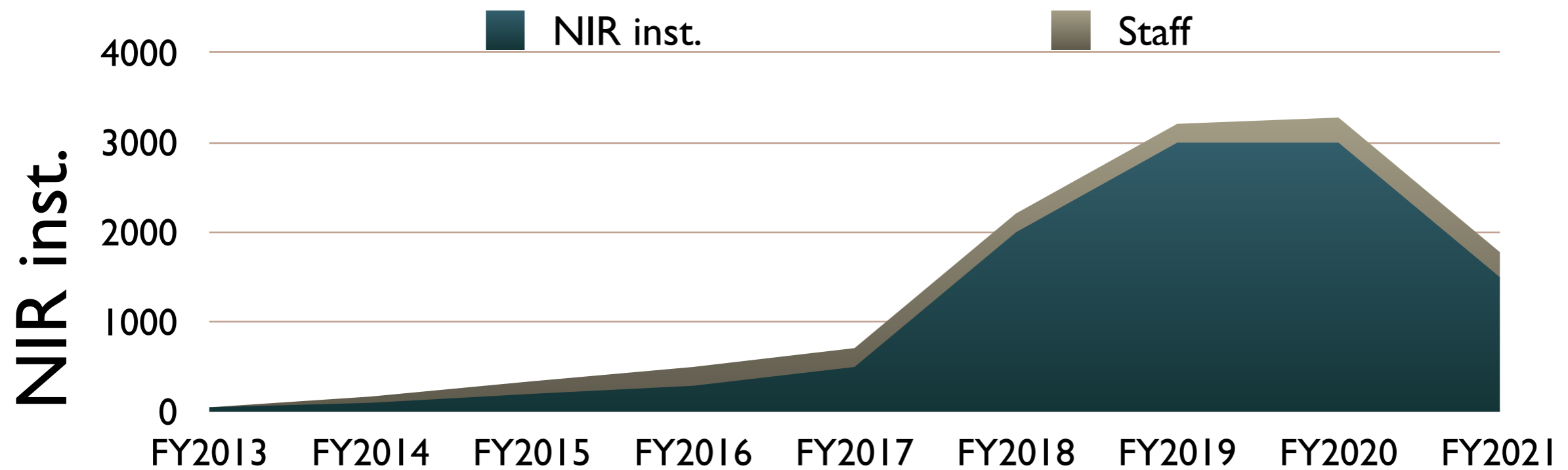
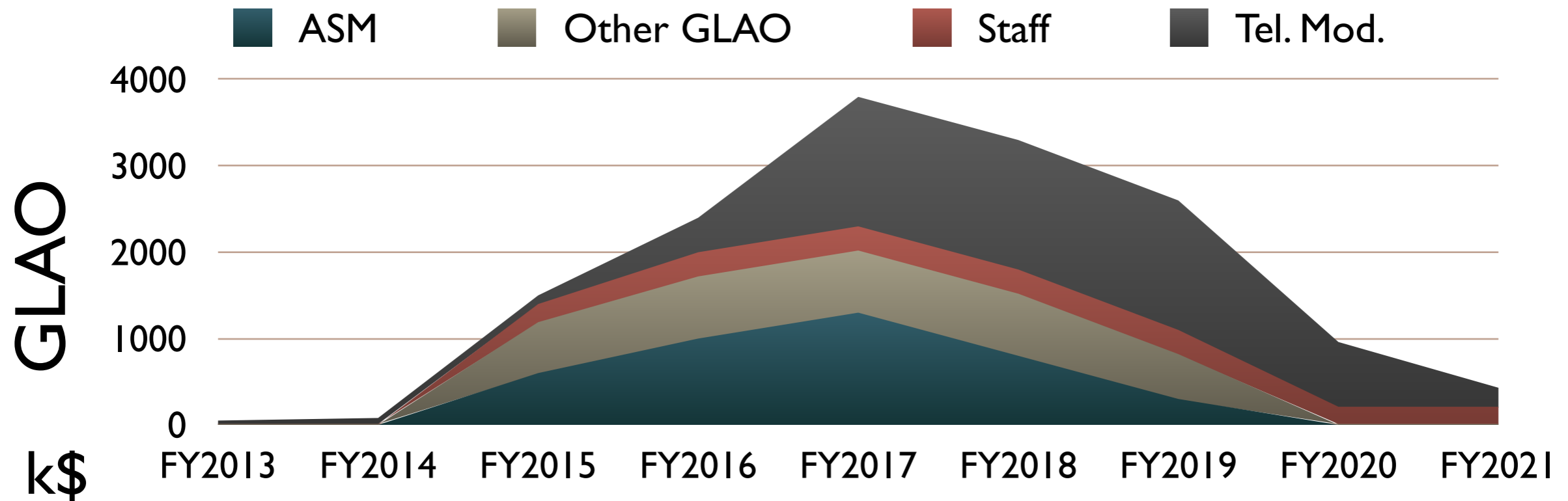
- External Income: Grant-in-Aid (from 2015 in the earliest case)
 - Special Promotion (特別推進): 5M\$ for 5 years
 - New Frontier (新學術領域): 3.6M\$ for 5 years
 - Foundation (基盤研究)(S): 2M\$ for 5 years, from 2020?
- International Partnership is TBD (not being accounted here)

ULTIMATE-Subaru Budget Plan by Hayano-san (with modifications)

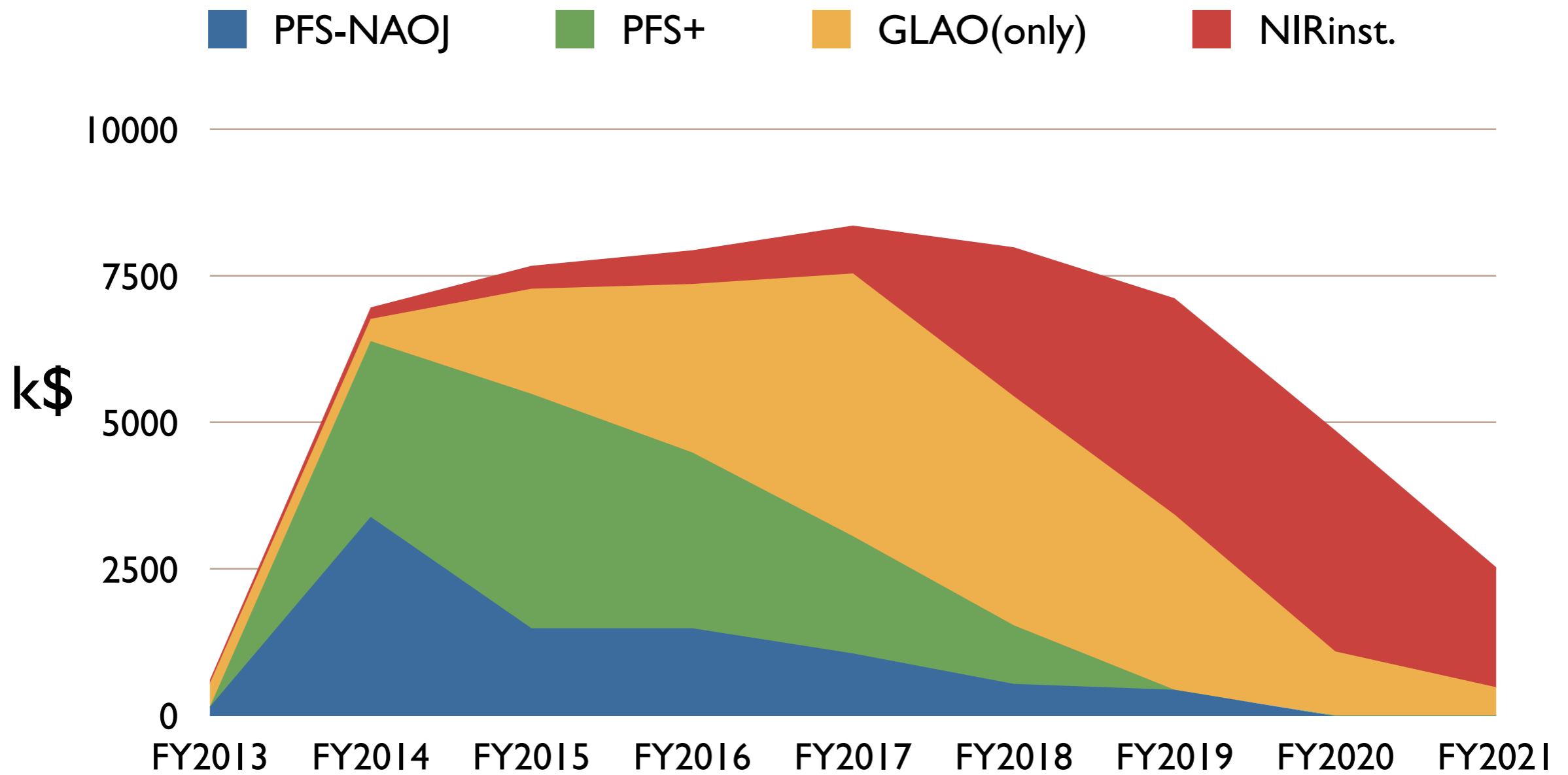
- Ground-Layer AO: 16M\$
 - Adaptive Secondary Mirror: 4M\$
 - Other GLAO components: ~5M\$
 - Staff: 1.8M\$
 - Telescope Modifications: ~6M\$
- Wide-field Near-IR Instrument: 12M\$
 - Instrument Development: 10.5M\$
 - Staff: 1.5M\$
- Very preliminary estimates.
- These numbers do not include contingency. I added 15% contingency below.

Budget Required for ULTIMATE-Subaru

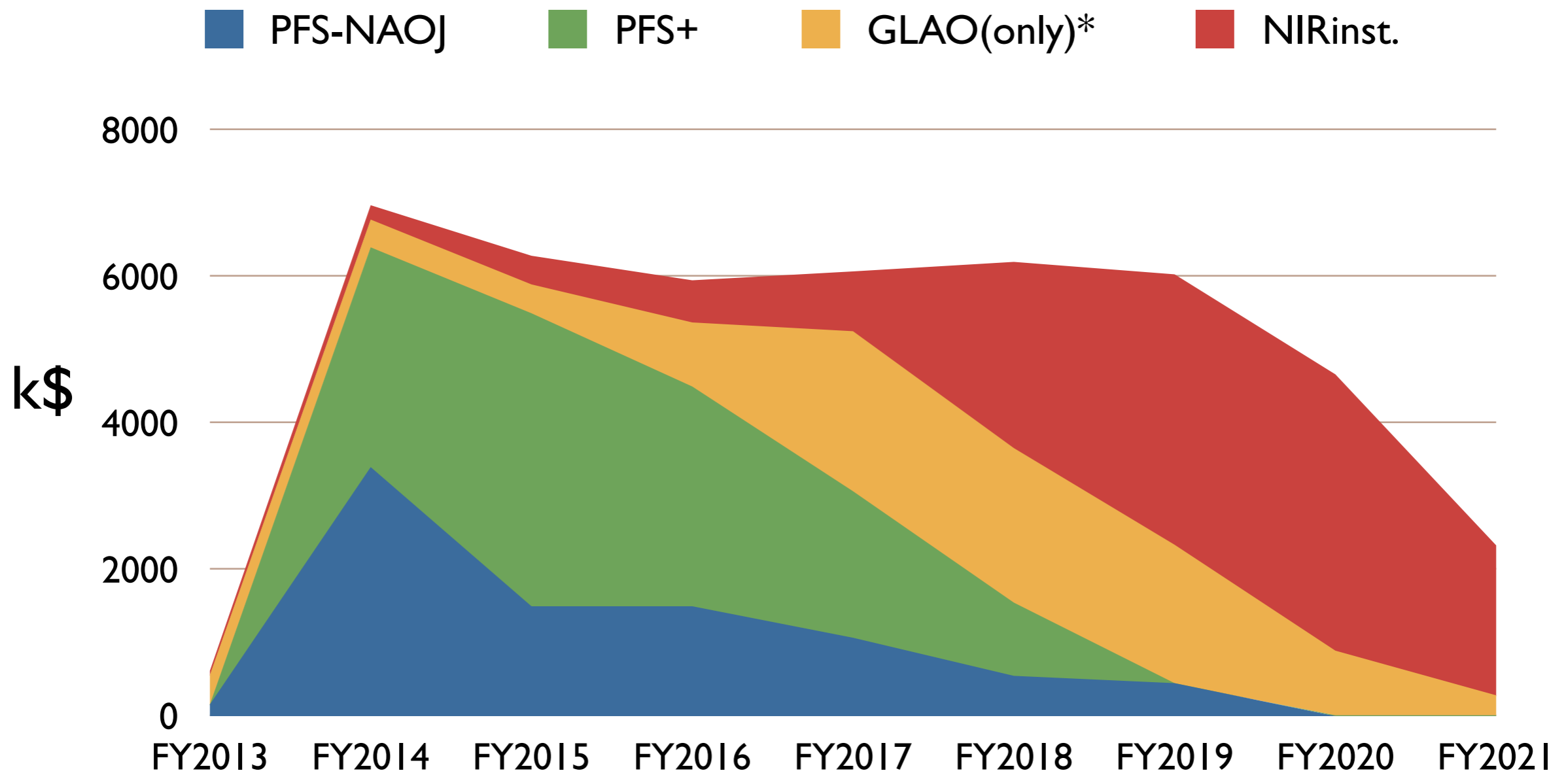
* includes 15% contingency



Budget Plan for PFS + ULTIMATE-Subaru (includes GiA)

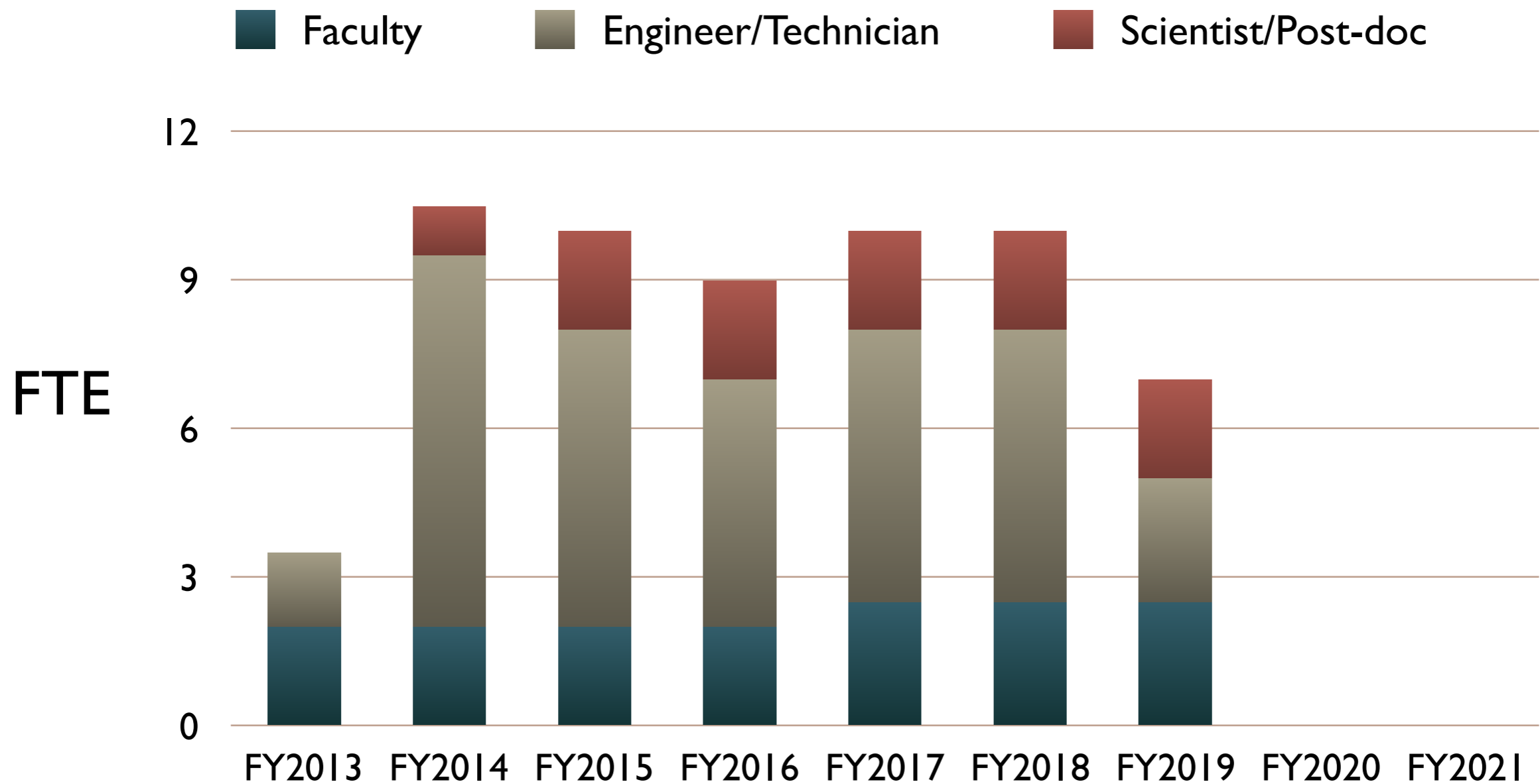


Budget Plan for PFS + ULTIMATE-Subaru (excludes GiA)

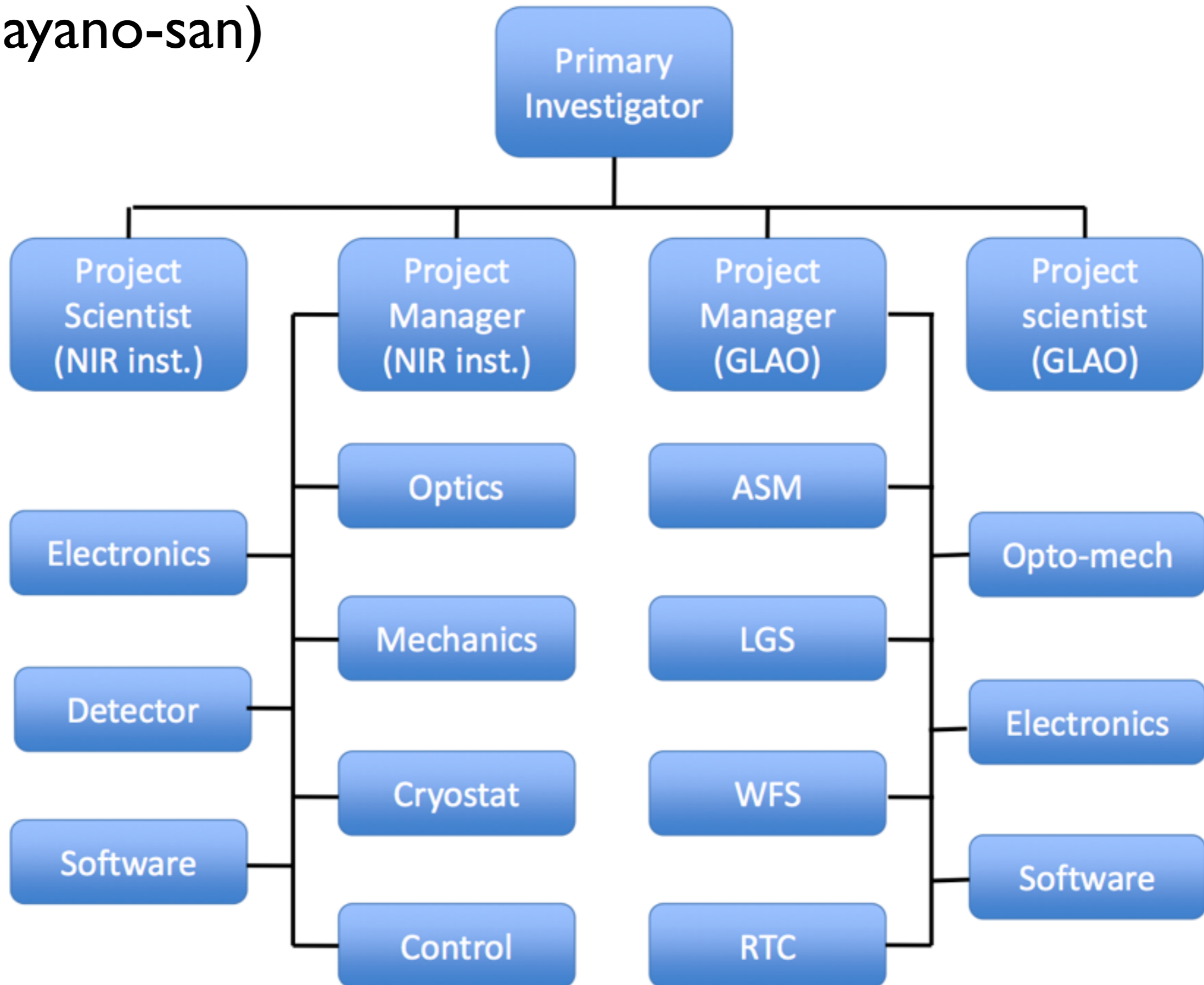


Human Resource Plans for PFS and ULTIMATE-Subaru

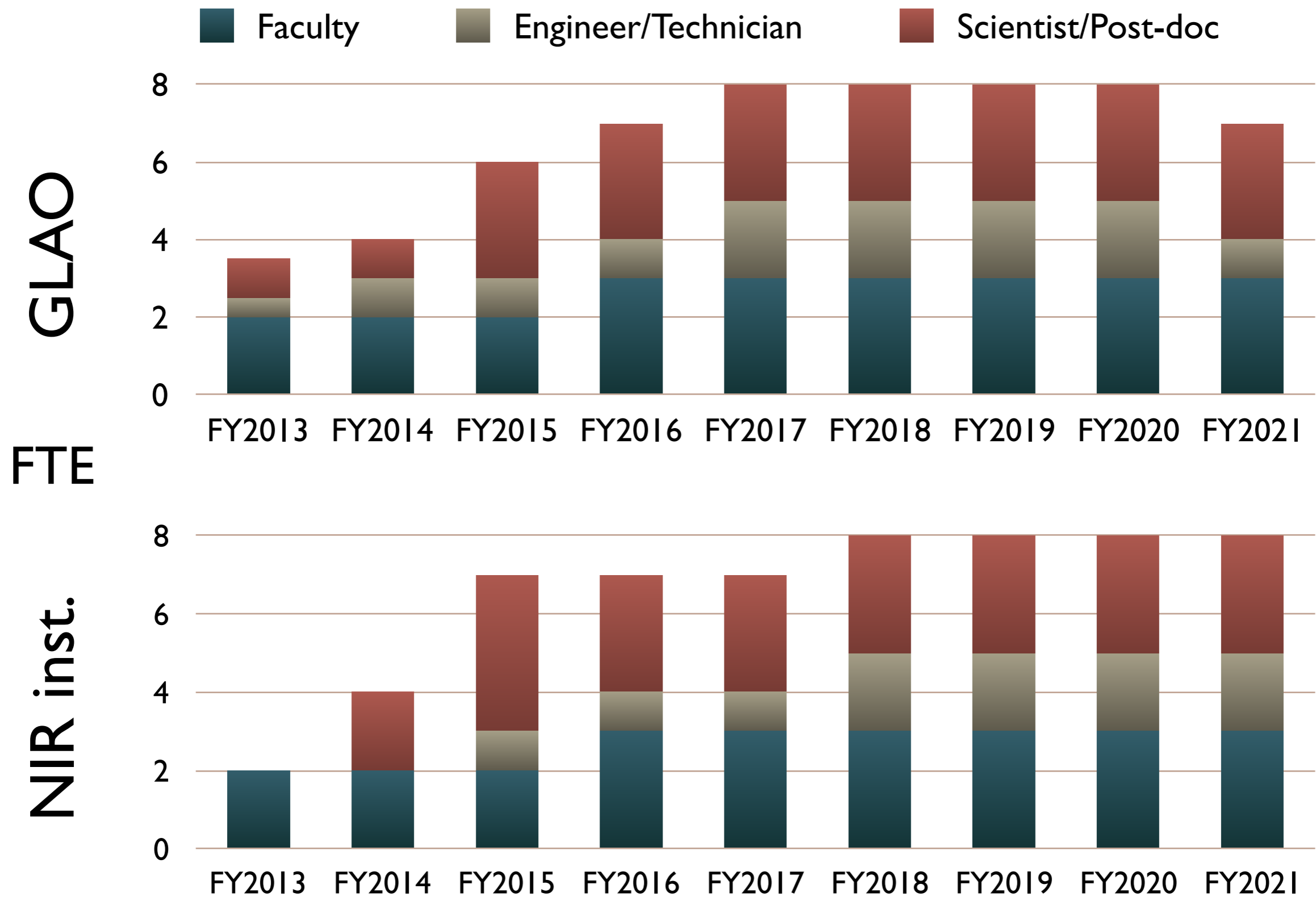
Human Resources Required for PFS (Subaru-side)



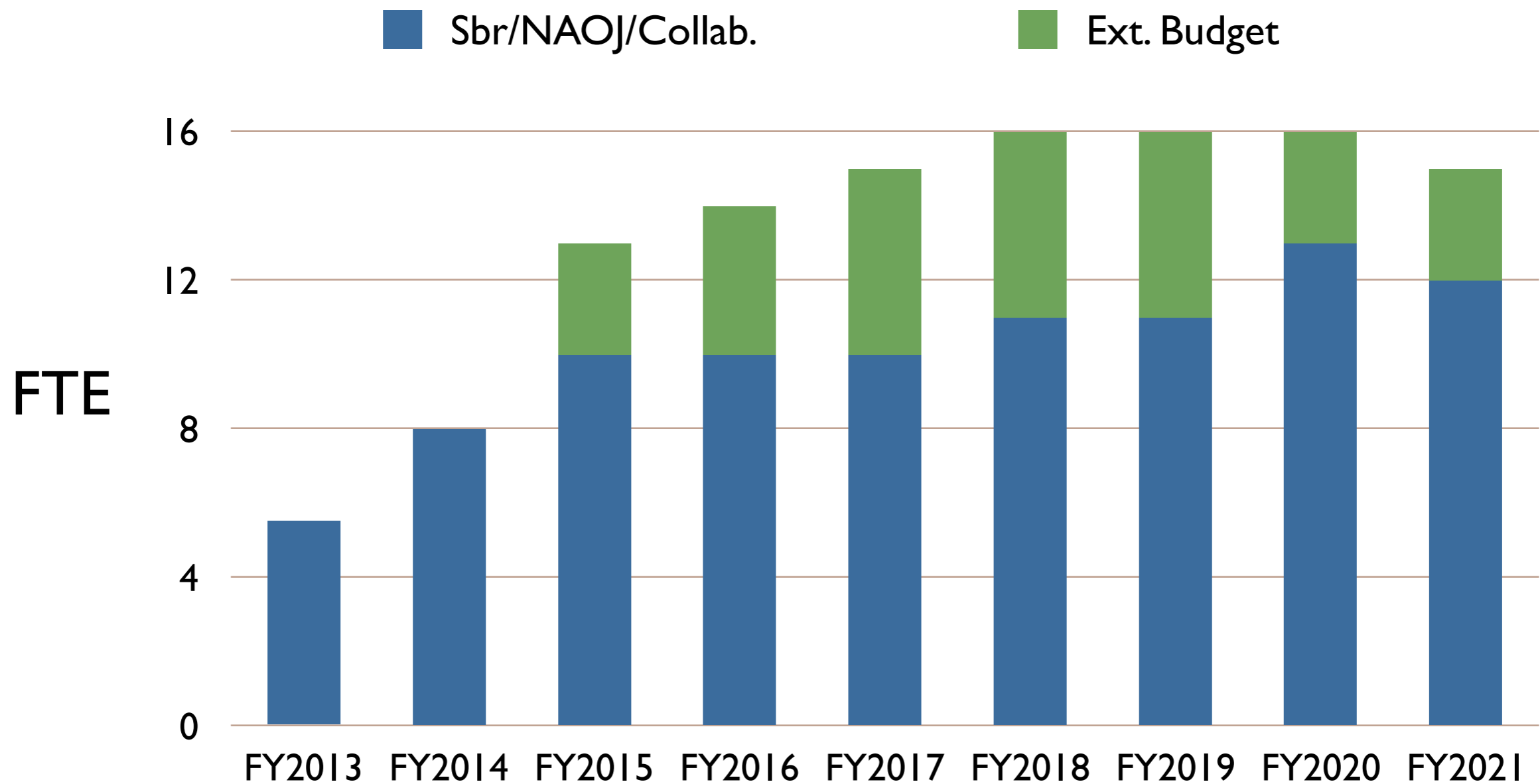
Organization for ULTIMATE-Subaru Project (Hayano-san)



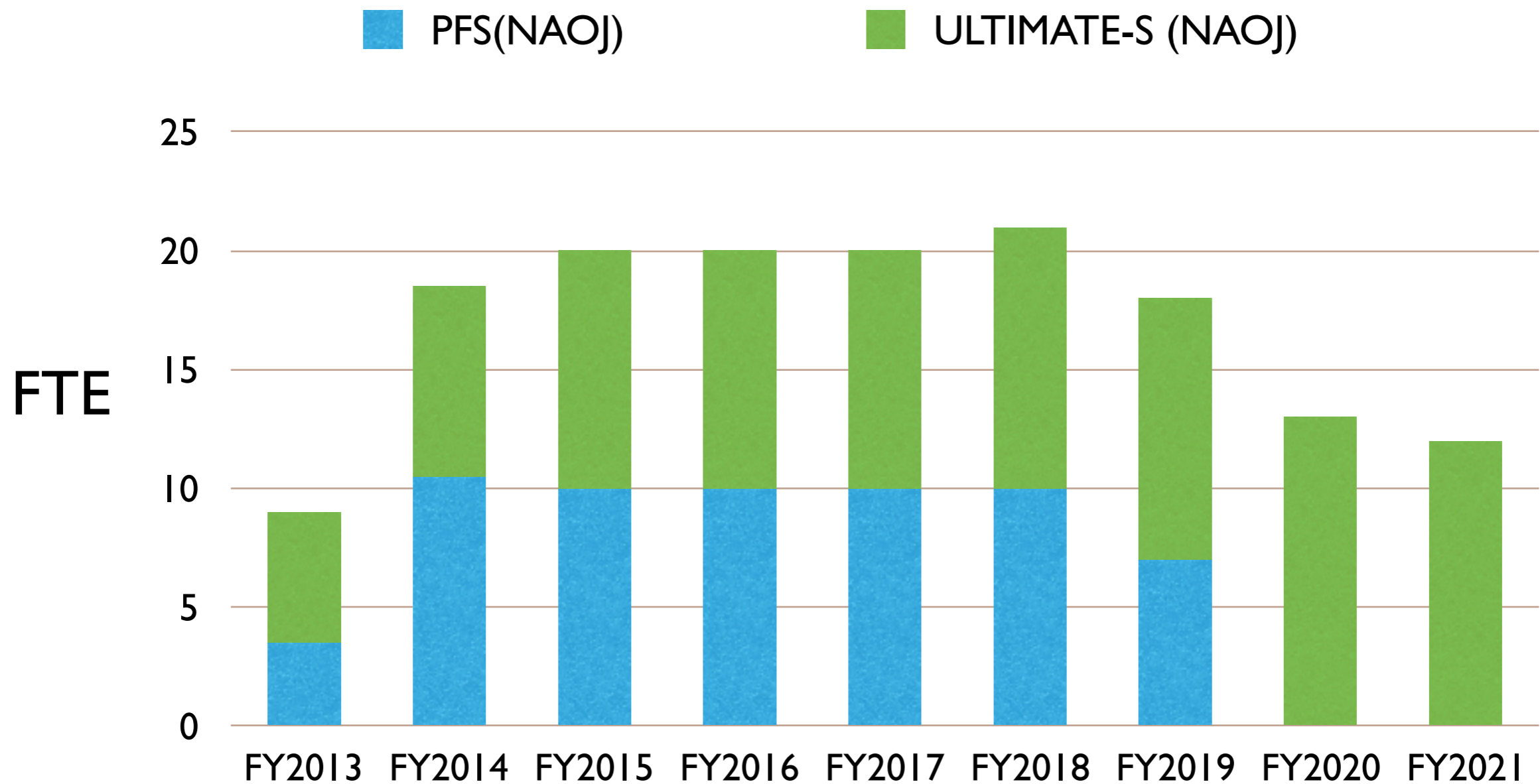
Human Resources Required for ULTIMATE-Subaru



Human Resources Required for ULTIMATE-Subaru



Human Resources for PFS + ULTIMATE-S (excluding External Budget)



Preliminary Analysis of Human Resources and Budget for PFS and ULTIMATE-Subaru: Summary

- Budget: Almost constantly 8M\$ are required annually for the rest of 2010s (it becomes about 6M\$ if we exclude budget from Grant-in-Aid for U-S).
 - We would need significant cost reduction, but if we consider the entire budget of NAOJ, 6M\$ may not be unrealistic.
 - But we do not include cost of maintenance/refurbishment/upgrade for the Telescope and Enclosure.
- HR: About 20 FTEs are required for the execution of PFS acceptance and ULTIMATE-Subaru for the rest of 2010s (even if we exclude manpower funded by Grant-in-Aid for U-S).
 - Human resource issue (i.e., who's gonna make these?) is more serious than the budget, since we would have severe resource conflicts with TMT.
 - How can the decommission of facility instruments help?
 - Contribution from the international partners?

Discussions

- ‘Project week’ Presentation on 11/26(HST) by Arimoto-san
- PFS: Waiting for Response from IPMU to inquiries of budget plan from NAOJ review committee
 - Possible descope of instrument specifications
 - Subaru’s attitude on NAOJ’s involvement?
- ULTIMATE-Subaru:
 - Human Resource Issue
 - How we can convince NAOJ HQ this project is feasible?

FMOS decommission

Discussions on Oct. 8

- Two reasons for early FMOS decommission
 - Location for PFS Spectrographs instead of IR-M3
 - Reduce work load (FMOS has been having difficulty in stable operations)
- Concerns
 - Feasibility of PFS plan: if we stop FMOS and PFS delays, we will miss prime-focus MOS for periods longer than expected (expectation: S15B to S18B, 3.5 years)
 - Some potential loss of good science cases (HSC follow-up, star-forming regions)
- Possibility of locating two spectrographs on IR-M3 and the other two on TUE-IR?

Proposal for FMOS early decommission

- Reduce maintenance load of facility instruments
 - Keep operation of FMOS until (the end of) S15A
 - Discussions with SAC and Subaru users' meeting
 - Decision by the end of January 2014.
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- Need to remove FMOS immediately after stop operation.

Goals of Today's Meeting

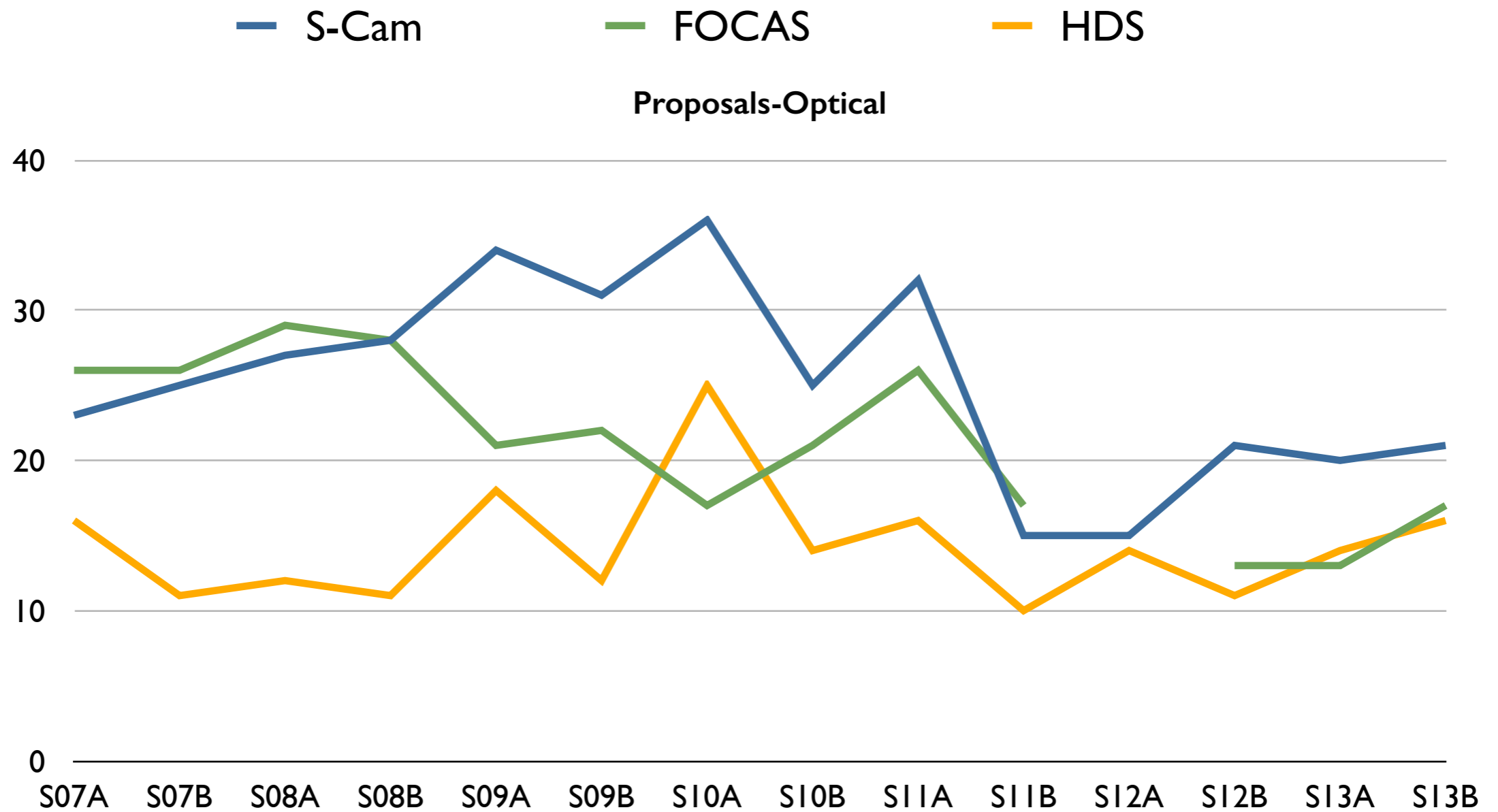
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- **Suprime-Cam**: will be decommissioned after HSC is operated stably (in two years?)
- **FOCAS**: Basic observing capability (optical low/med-resolution spectroscopy), Polarimetry
 - Time exchange: DEIMOS, LRIS, GMOS
- **HDS**: Stable. Continuing science demands. $> 100,000$ resolution is unique.
 - Possible transfer to Gemini? TMT?
 - Time exchange: HIRES
- **COMICS**: unique MIR instrument.
- **IRCS**: High science demands. AO I 88/RAVEN requires IRCS.
 - Time exchange: NIRSPEC, OSIRIS, NIFS
- **MOIRCS**: upgrades. possible first-light instrument for GLAO
 - Time exchange: MOSFIRE, F2
- **FMOS**: Unique capability. H-band not covered by PFS.

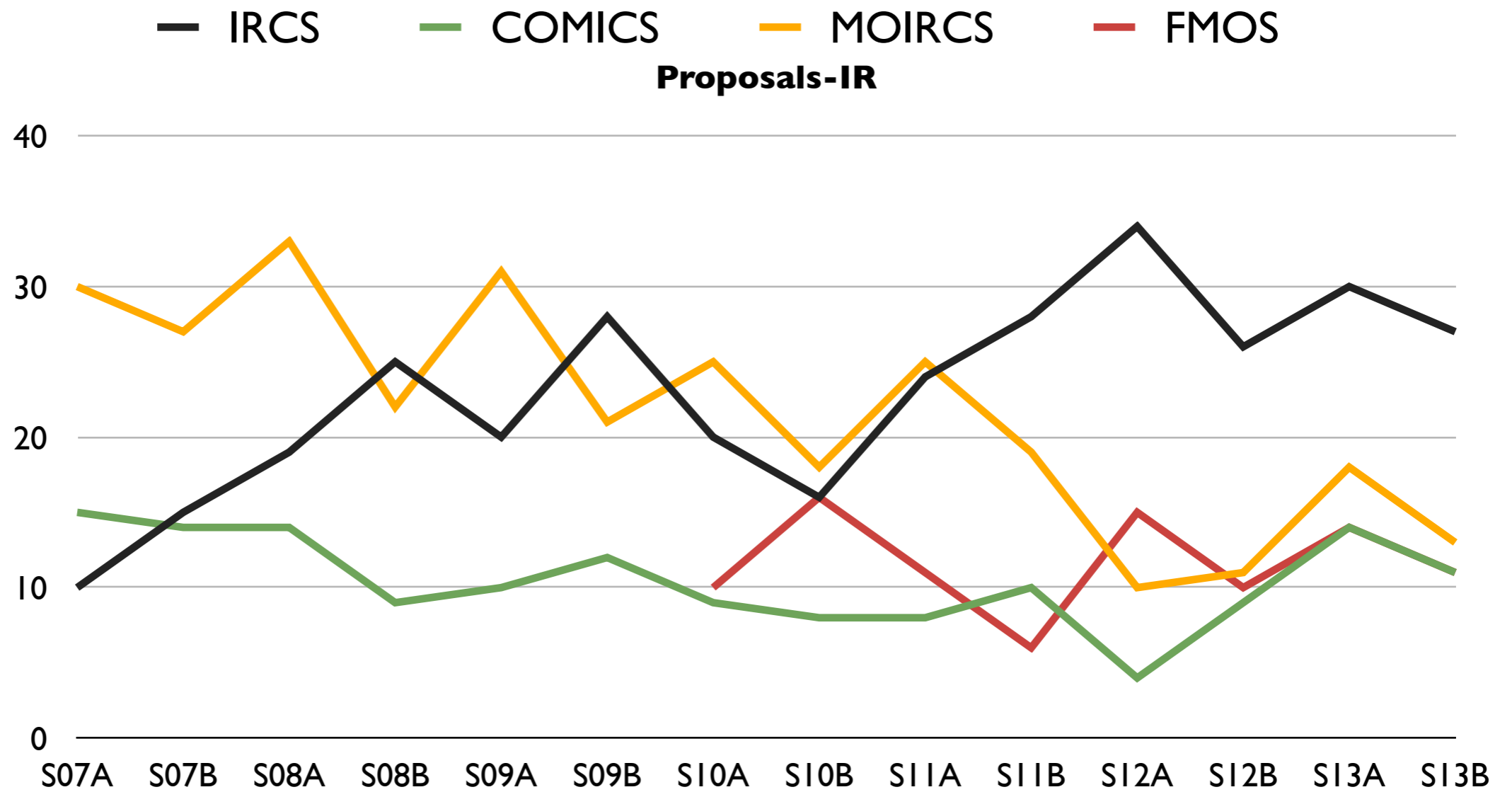
Scientific Demands

- thanks to Chie Yoshida-san at Mitaka. data as of Sept 4, 2013

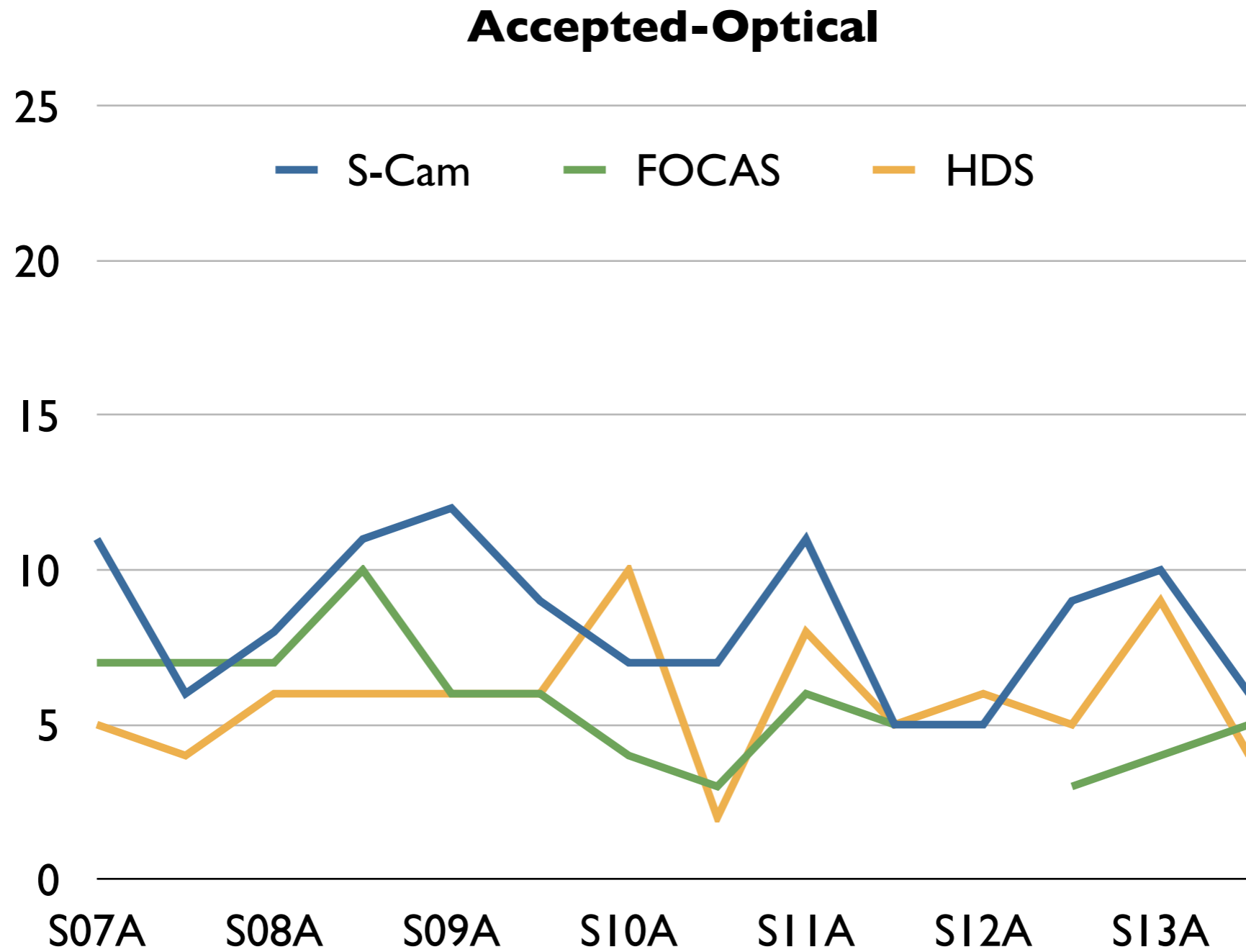
Number of Proposals Submitted



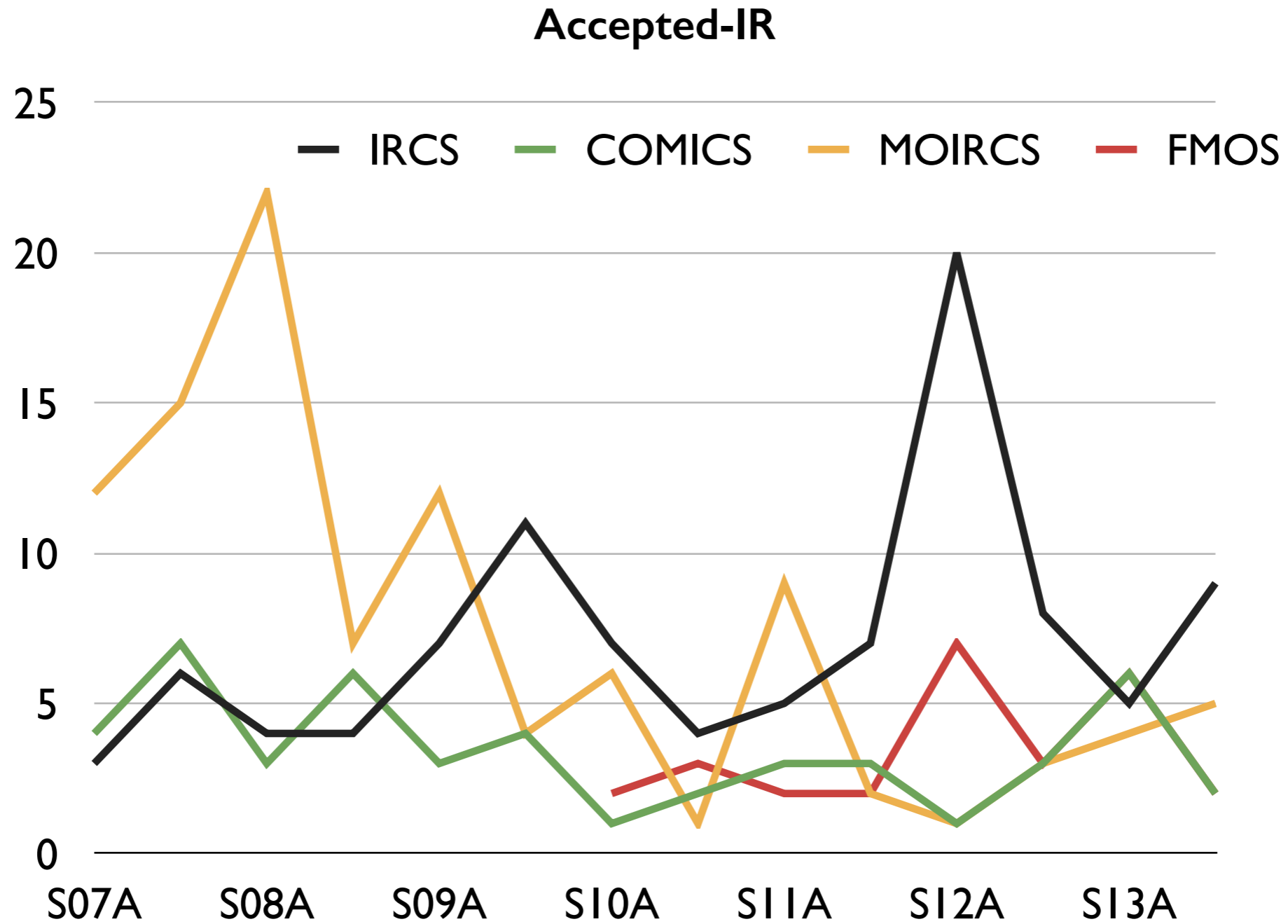
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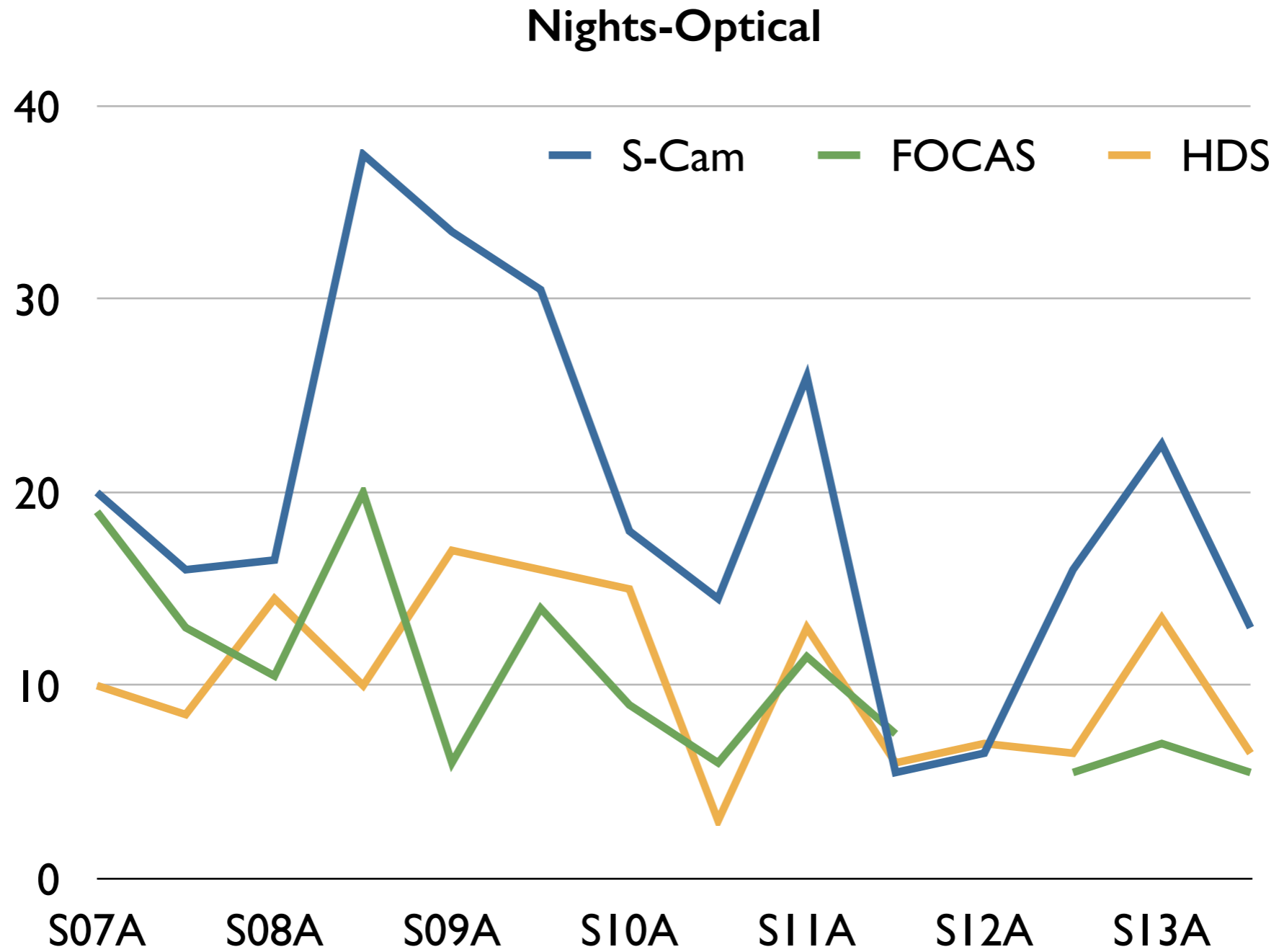
Number of Approved Programs



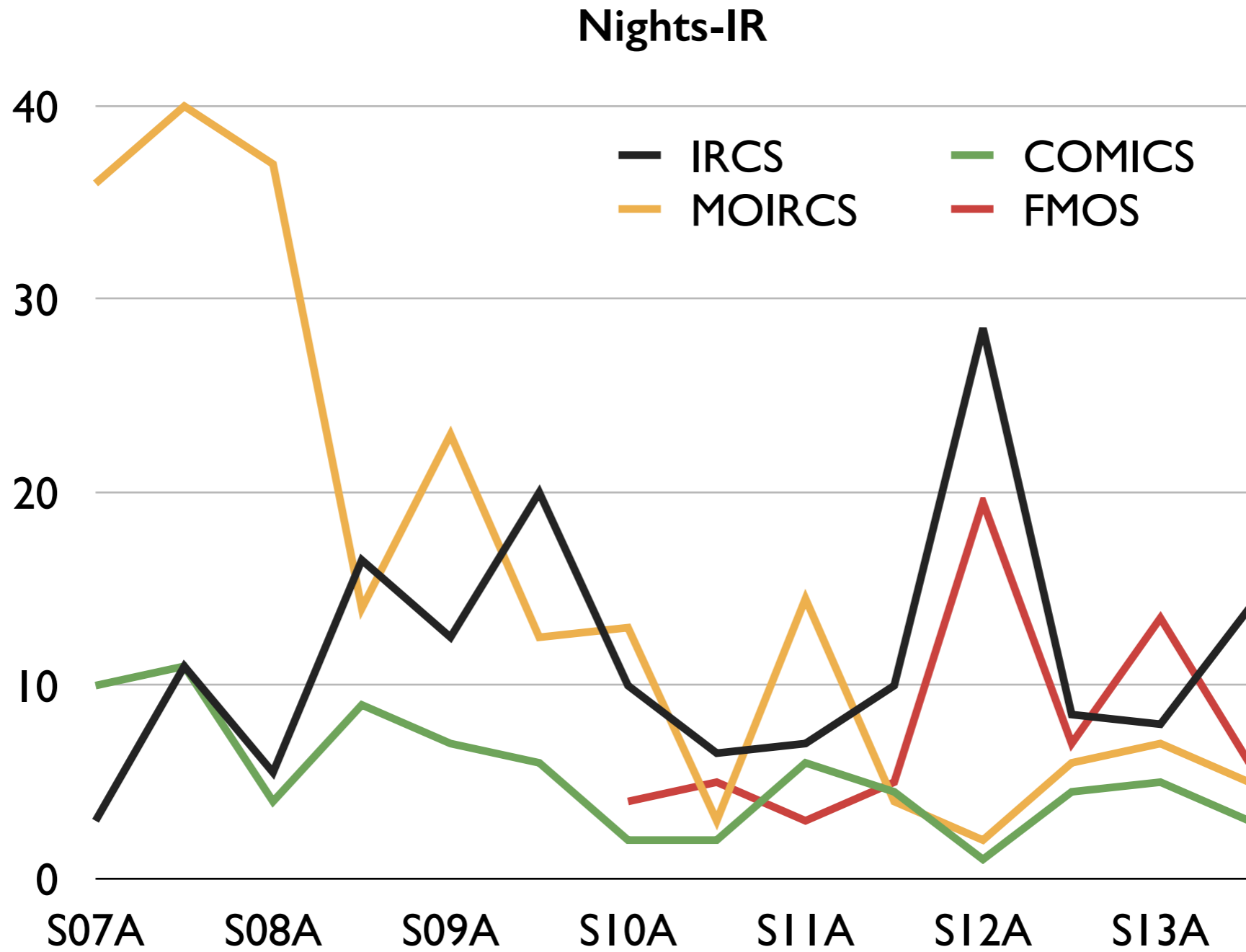
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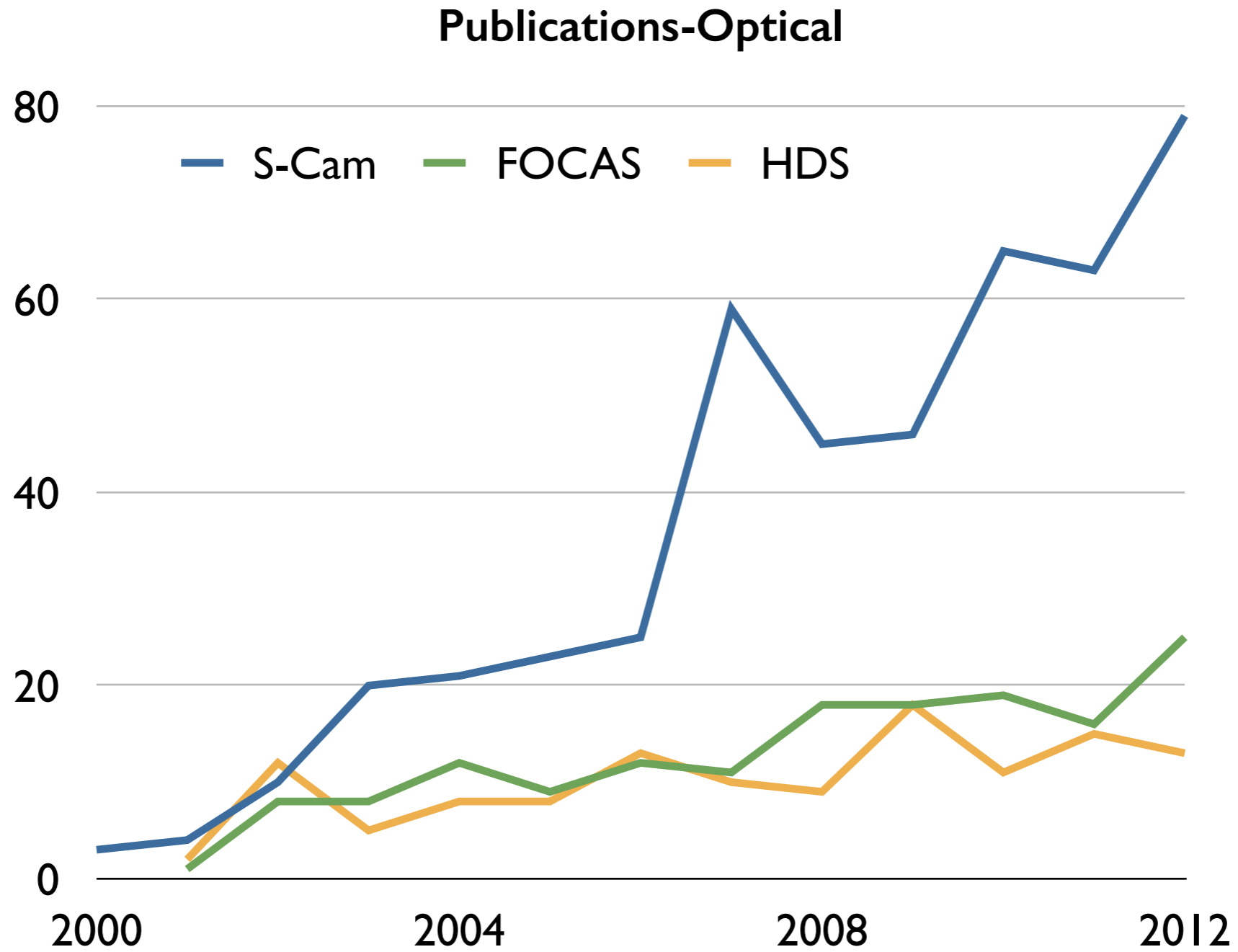
Number of Nights



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Annual Publications



Annual Publications

