Report on theTMT Strategic Development Research Funding

2026/06/18 ABC/NAOJ Takayuki Kotani

TMT Strategic Development Research Funding

- A single-year open-call program, started in 2012, established to support basic research and development conducted by researchers affiliated with Japanese institutions for TMT
- Proposals are encouraged for basic research and development, including software, leading to next-generation TMT instruments, and research plans that contribute to training the next generation of researchers
- The total budget has typically been about 10 million yen per year, with around 5 projects selected annually; however, from FY2025 onward, the total budget was reduced to 5 million yen due to various circumstances.

•FY2026 Call for Proposals Guidelines
https://tmt.nao.ac.jp/researchers/support/
•Past Activity Reports
https://tmt.nao.ac.jp/researchers/support/report.html

Background

- The TMT J-SAC is examining an instrument development strategy that builds upon and continues from developments carried out with the Subaru Telescope and other facilities, in light of the rapid progress in astronomy driven by the success of JWST and similar missions
- As part of this effort, emphasis is placed on fostering early-career researchers engaged in instrumentation, while also examining the future framework of the TMT Strategic Development Research Funding
- Based on the survey results, many respondents expressed the view that the program should allow a broader range of research, including projects that are not immediately connected to TMT but may contribute to TMT in the long term. There was also strong support for widening the scope and making the program more accessible to early-career researchers
- Based on the results of last year's survey on TMT strategic funding, as well as various feedback received from the community, we have re-evaluated the positioning of this funding program
- From this FY, in order to encourage applications from a broader range of fields and research topics, both the "scope of desired proposals" and the "evaluation and selection criteria" have been revised
- Applications from early-career researchers and exploratory proposals are particularly encouraged, and the review process has been updated to actively evaluate such proposals
- Graduate students are also now eligible to apply, provided that they submit proposals jointly with their supervisors.

Expected research plan concept (FY26)

- In this call for proposals, research plans are invited that involve technology development related to scientific observations with TMT and include one or more of the following areas. In particular, new proposals and research plans that contribute to the development of the next generation of researchers are strongly encouraged.

1. Development research expected to acquire element technologies that will serve as core technologies for next-generation TMT instruments
2. Development of element technologies related to enhancing the capabilities of TMT first-light instruments or the telescope itself
3. Development research leading to analysis methods, simulation techniques, or data archiving for observational data obtained with TMT
4. Highly original and exploratory ideas, for which research plans are expected to help determine key parameters necessary for defining scientific goals, instrument specifications, and system configurations (including workshops, proof-of-concept experiments, and environmental measurements)
5. Ideas that contribute to TMT-enabled science, including collaborations with other observing facilities and small-scale workshops, not limited to instrument development in a narrow sense

FY26 Proposals: 5 submitted / 5 accepted (total budget: 5 million yen)

Project Title	PI	Budget (kYen)
Development of high-dispersion, high-efficiency, and wide-band transmission gratings	Noboru Ebizuka (RIKEN)	1,830
Establishing a spectroscopic and photometric monitoring strategy for z ≳ 6 broad absorption line quasars using TMT and the OISTER project	Takashi Horiuchi (University of Toyama)	350
Discussion-based workshop for generating ideas for next-generation telescope instrument development	Rieko Momose (Carnegie Observatory)	670
Practical implementation of high-precision astrometry using a new stellar image modeling method	Ryo Ohsawa (NAOJ)	680
Establishment of black painting techniques for reflective optics using cordierite for next-generation cryogenic infrared instruments	Yuki Sarugaku (Kyoto Sangyo University)	1,381
Characterization of quantum dot cameras for astronomical applications: verification of multiple exciton generation and measurement of near-infrared sensitivity	Jun Takahashi (University of Hyogo)	135

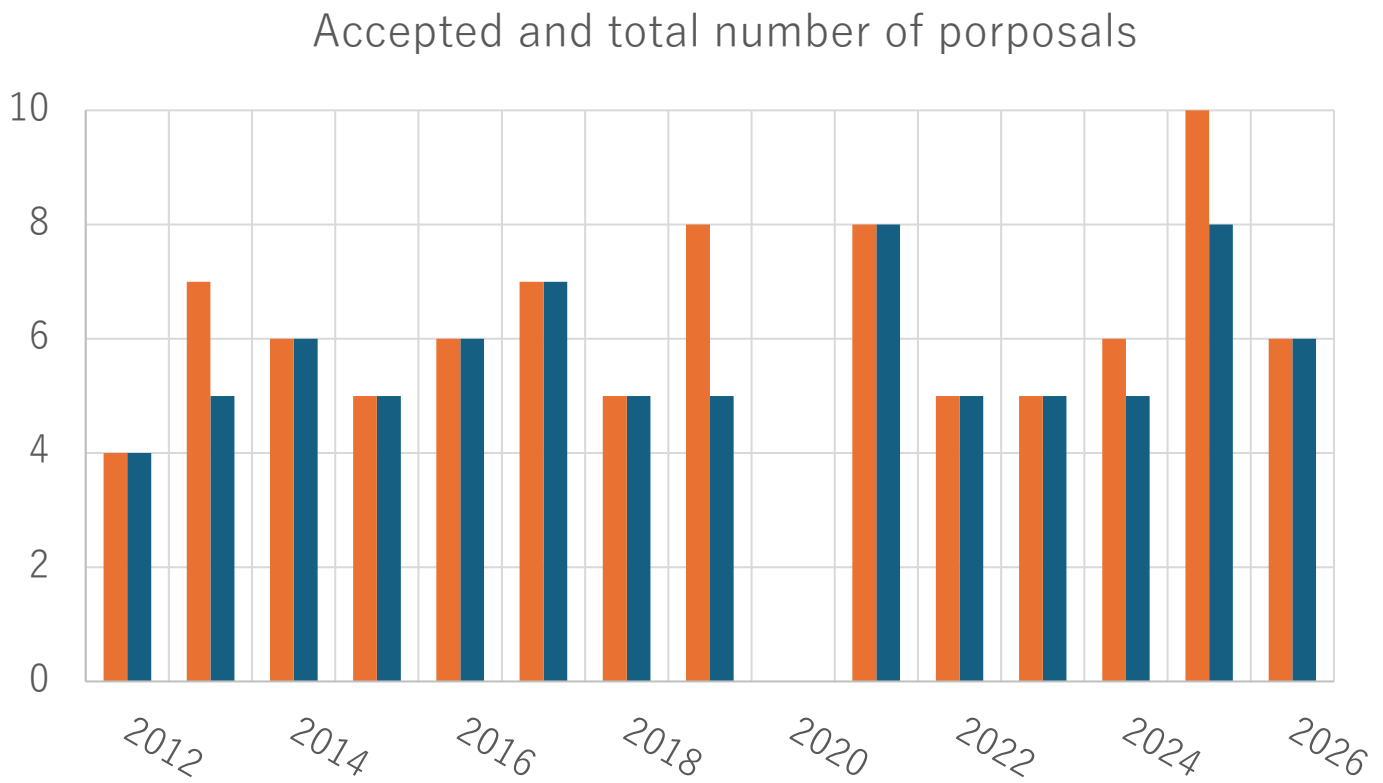
- Despite broadening the scope of the call, the total number of proposals and the number of new proposals decreased compared to the previous year
- On the other hand, there was an exploratory detector development proposal from a group that had not previously been involved in detector development
- Although software development was explicitly included as a target area, there were no new proposals focusing on software development.

FY25 Proposals: 10 submitted / 8 accepted (total budget: 5 million yen)

Project Title	PI	Budget (kYen)	
Development of the mid-infrared instrument ONIcam as a pathfinder for TMT MIR instrumentation	Mitsuhiko Honda (Okayama University of Science)	1,200	
Discussion-based workshop for idea generation toward next-generation telescope instrument development	Haruhisa Tabata (ISAS/JAXA)	600	
Development of a method to search for spectral features of localized emission around bright point sources in integral field spectroscopy data	Toshihiro Kawaguchi (University of Toyama)	200	
Establishment of black coating techniques for reflective optics using cordierite for next-generation cryogenic infrared instruments	Yuki Sarugaku (Kyoto Sangyo University)	500	
Development of high-dispersion, high-efficiency, wide-band transmission gratings	Noboru Ebizuka (RIKEN)	820	
Development of high-precision astrometry using an extended Effective PSF method	Ryo Ohsawa (NAOJ)	500	
Coating tests for optical reflectivity toward development of an IFU for the WFOS first-light instrument	Shinobu Ozaki (NAOJ)	264	
Development of a coronagraph using focal plane phase masks and apodizers	Jun Nishikawa (NAOJ)	1,160	

Number of Proposals and Competition Rate

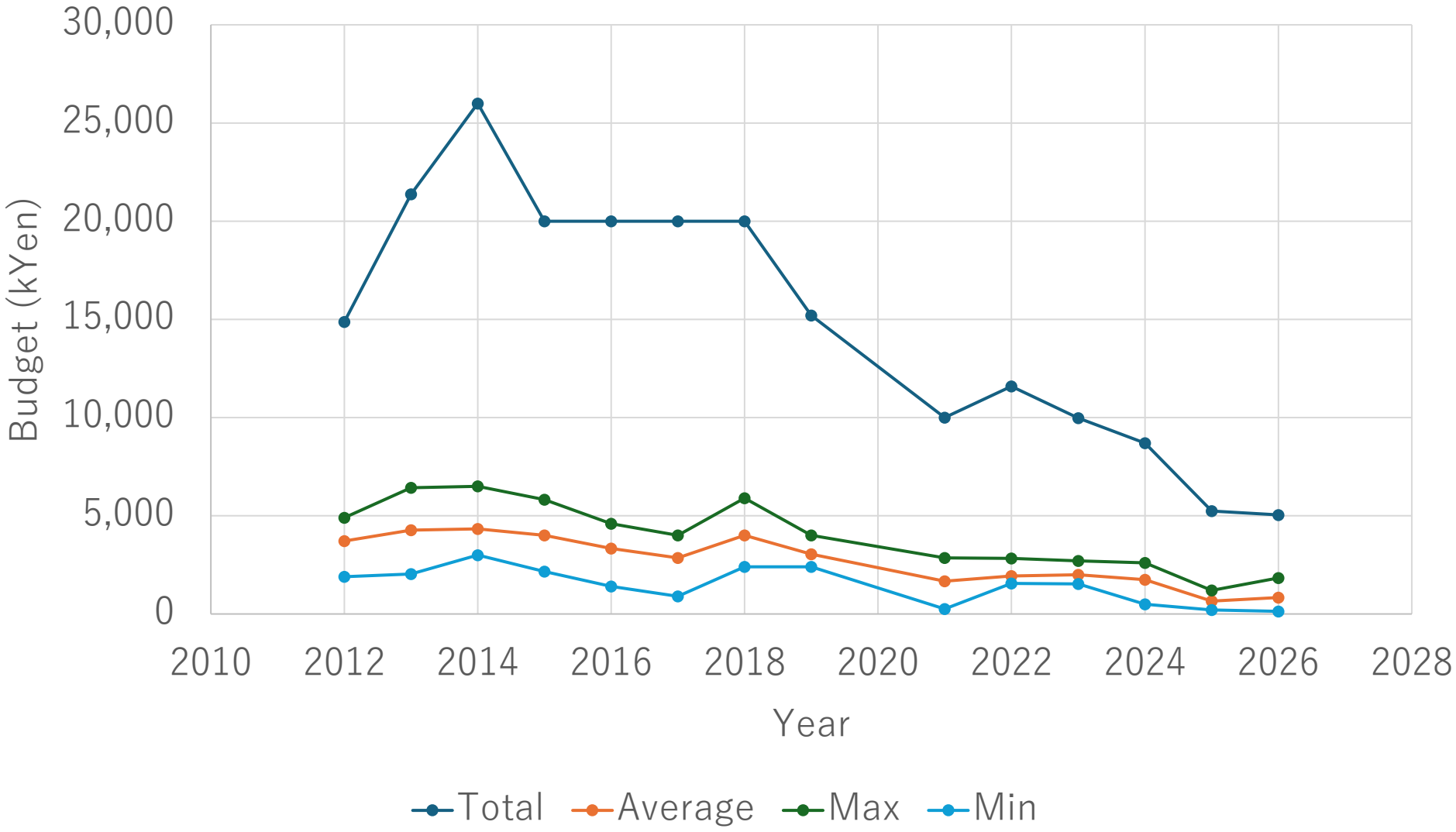
- Typically, 5-10 proposals/year submitted
- No call for proposal in 2020
- Competition rate is low, 1 ~ 1.6



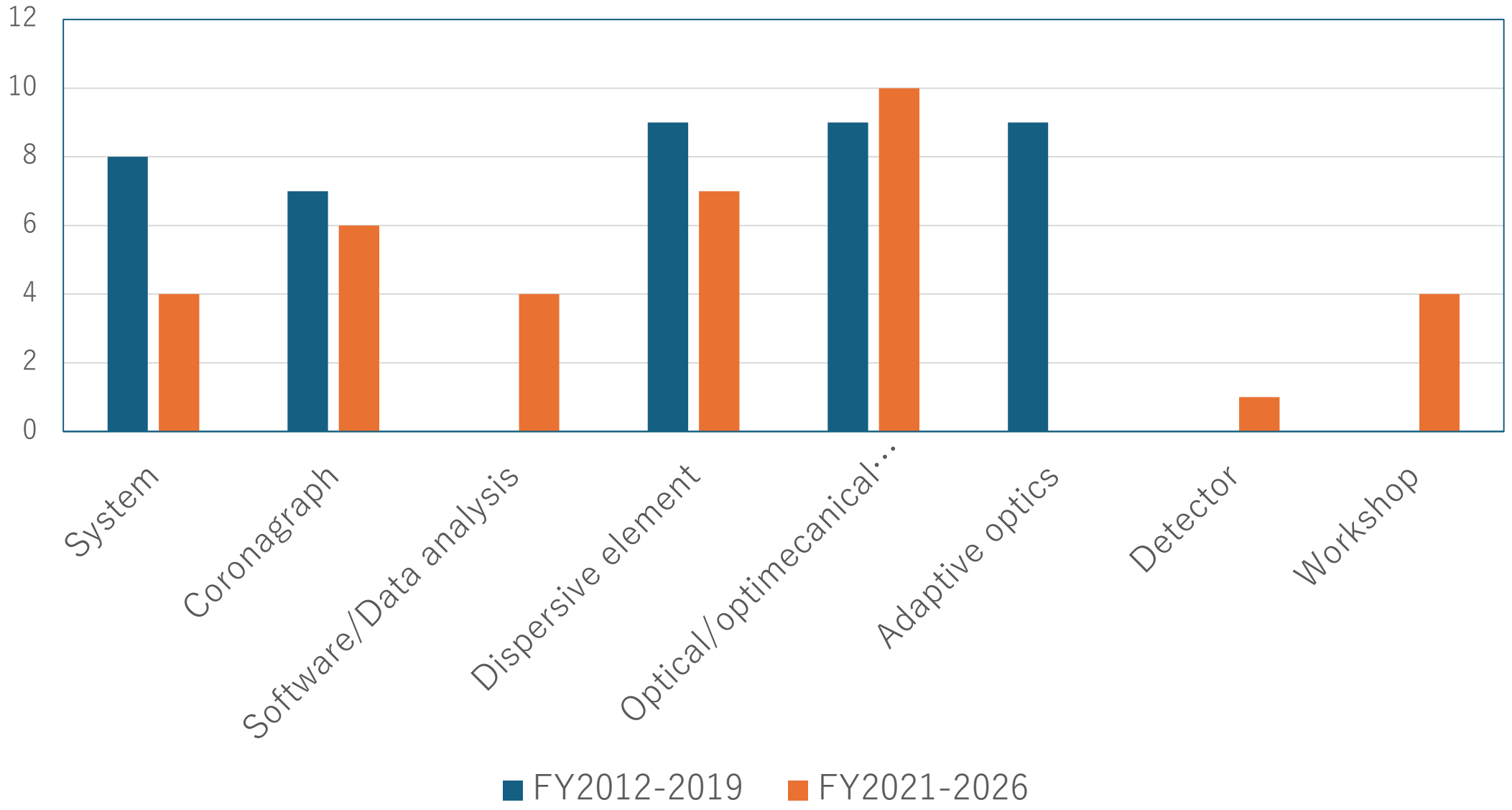
Total >10 million Yen/year

5 million Yen/year

Funding Evolution Over Time



Funding allocation by field



Conclusion

- The concept of the expected research plan has been revised to encourage applications from a broader range of fields and from early-career researchers
- Although the funding amount has decreased due to the difficult financial situation, the SAC recognizes that the current level is not sufficient. Even under such constraints, we believe that basic R&D is particularly important
- We encourage exploratory proposals and applications from early-career researchers and a wide range of fields in the coming fiscal year