Current Status of Astronomy Data Center (ADC) & Comments on SRM resource demands

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December 4, 2025

Inquiry from the Sympo.LOC/SRM Committee

- センターの設置目的　（ADC Subject）
- センターの体制および現在実施している事業　（Organization and Services）
- センターのポートフォリオ（各事業に対するキャパシティの状況）　（Resource/Capacity Profiles）
- 将来のリソース見通し　（Prospects of resources）

ADC Center Subjects　目的・目標

From FY2025 Project/Center Purposes-Objectives Sheet

In collaboration with NAOJ internal/external projects, ADC

- Develops and operates computing infrastructure and software for generating・storing・releasing astronomical data
- Provides research platforms and educational opportunities for effective data utilization to the scientific community
- Promotes multi-wavelength data science

Key principles of action are to support and promote:

- **preservation, publication, and utilization** of observing data from Japanese astronomical community.
- **research based on observational data**

→ Build and operate the systems and services that make these possible.

センターの体制および現在実施している事業（Current Organization and Services）

- ADC Users Meeting 2025 was held 2 weeks ago (11/18)
- Some materials for team activities are available at https://www.adc.nao.ac.jp/conference/adcum2025/adc_um_2025.html

ADC General Open-use Key Activities

Core activities for Open-use

② Data Archives

SMOKA | STARS | Radio

- Long-term Storing & Releasing raw data
- Curation for Reliability & Improving Value / Usability

① Data Analysis Systems

MDAS | LSC

- Supporting Scientific Research by the community
- Computing Resource Management

Enhancing activities for challenging future development

③ Data Utilization Platform

JVO | Radio | HSC/PFS/Subaru2 Rubin SP

- Promote current/strategic sciences with
- Data Products over Science Platform
- Promote Data Sciences

What're happening in recent years in ADC

System procurement/contract update work in FY2022-FY2025;
Systems largely transitioned to inhouse construction and maintenance

- 2023.3 Extend previous rental contract with reduced components
- 2023.8 Next rental system contractor decided
  - Rental part largely shrunk
  - Begin system shrinking & transition to new (+purchased) system
- 2024.3 Begin new lease contract for MDAS data analysis system (-2029.2)
  Begin cold backup'ing some data to AWS
- 2024.7 New rental computers in operational (-2029.6)
  New MDAS data analysis system in operational (-2029.2)

  Large fraction of computers for ADC services (MDAS, SMOKA, etc) moved to inhouse purchased systems
- 2024.7-2025.12 Working to establish and stabilize operation of services

ADC system operating status since 2025.2

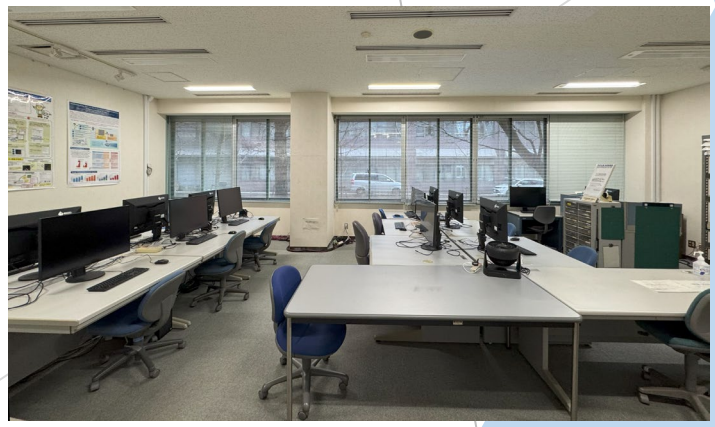
Significant events / updates in ADC openuse systems after 2025.2 Users Meeting

- Conducting regular preventive maintenances and troubleshooting, establishing, stabilizing, and improving individual open-use services

- Unexpected troubles, issues
- 2025/5/20 Network failure for internet due to broken fiber ~0.7 day
- 2025/7/16 System down due to power outage for lightning – 1-2hrs
- 2025/8/18 System down due to power outage for lightning – 0.5 day
- 2025/11/8 Campus wide annual power maintenance – 2.5-3 day

ADC Open-use Data Analysis Systems

- Multi-wavelength Data Analysis Sytem（MDAS） :for small-mid interactive work
  - 500core, 4 PB storage, wide range of astronomical software, IDL, Mathematica etc
  - Interactive, Small-Mid scale tasks -> supporting ALMA/radio and optical-NIR users etc.
  - Small portion with rental (operation include) + the most part with lease components with inhouse construction and maintenance
- Large-scale Observing Data Analysis System （LSC） :for large intensive processing
  - 2300core, 5PB storage plus HSC+PFS pipelines etc
  - Batch-job/large-scale task (HSC・PFS） -> Founded and cooperating w/ Subaru Telescope
  - Expanding to general use
  - Entire system with inhouse build and maintenance
- Open-use shared room w/ terminal PCs
  - South-building 2F
  - Subaru building 1F
  - ALMA building 1F

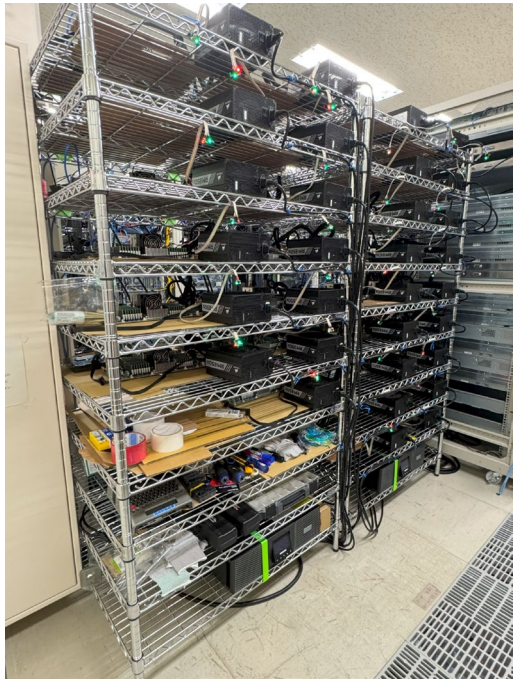


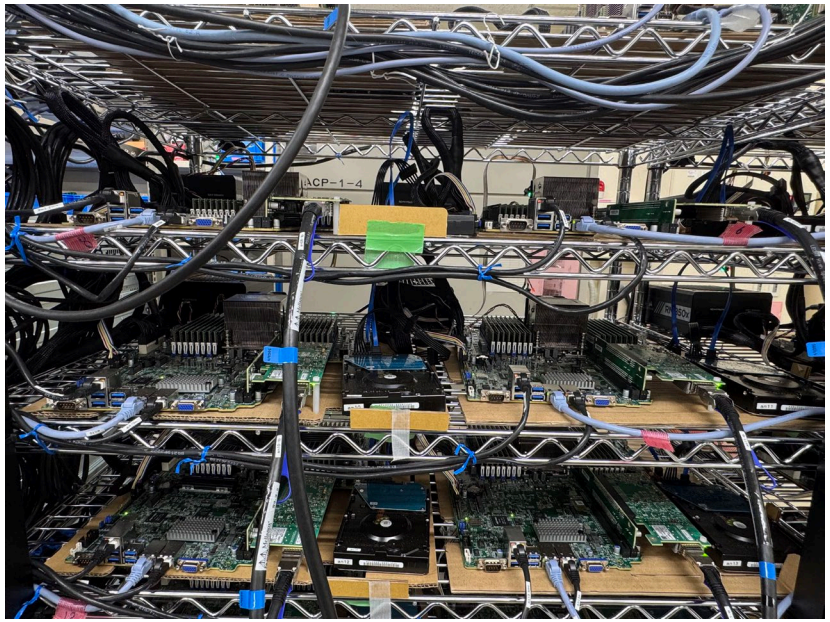
Openuse room at Subaru building

Data Analysis Computing Systems （MDAS・LSC）

After the 2024 computer replacement, MDAS largely moved to inhouse construction and maintenance

- FY2025：Improving system performance by introducing better MDAS process control, LSC storage quota, adjusting queue parameters
- Assisting general users (ALMA/Radio, Subaru, Solar, etc) for research & educational processing

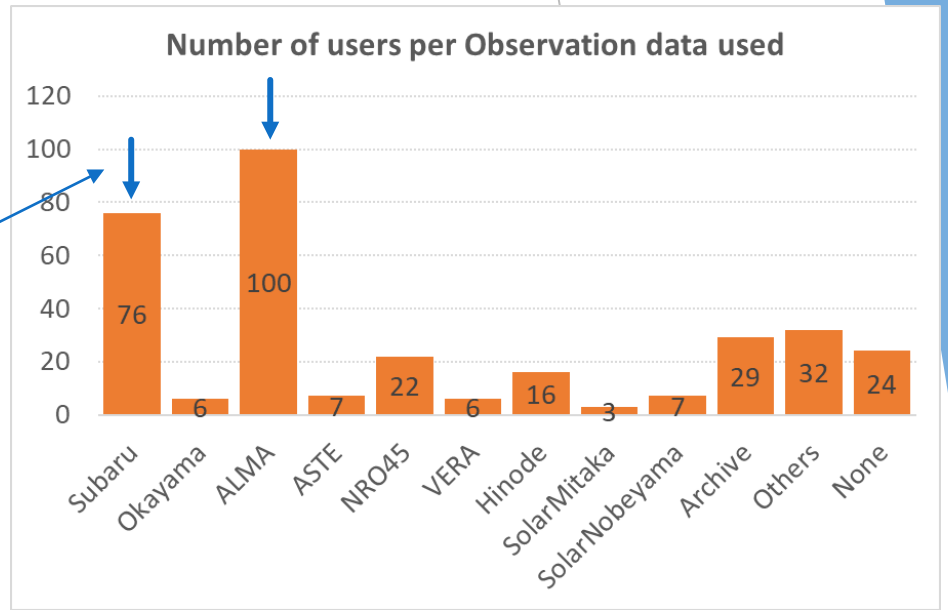


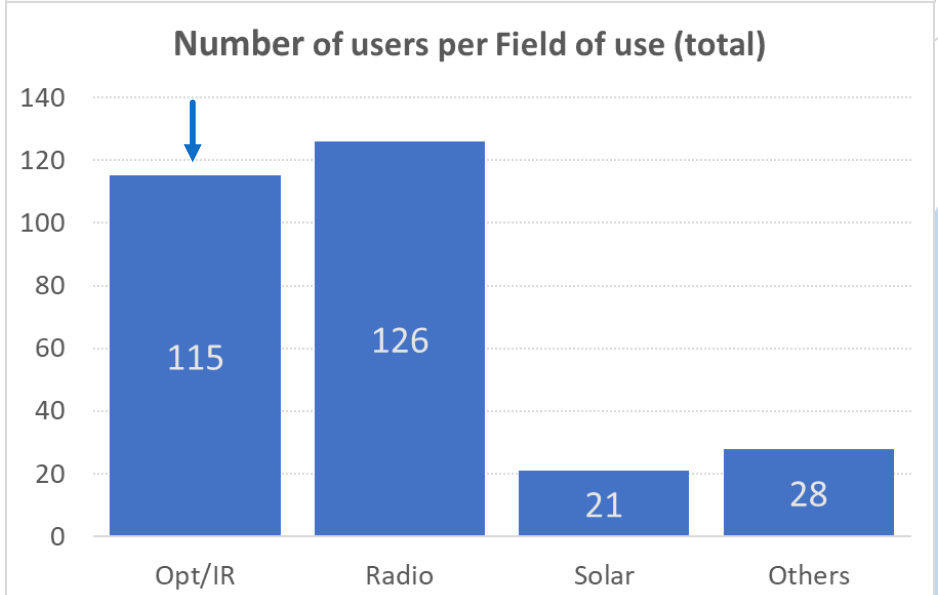


https://www.adc.nao.ac.jp/MDAS/mdas_e.html

MDAS - The Multi-wavelength Data Analysis System

- Status and Usage
  - **Number of active users: 338**
    (as of the end of FY2024)
  - **Subaru and ALMA users** make up the **majority** of the active users.
  - After system migration to an in-house management system for the major components, system downtime due to maintenance and troubleshooting has increased, but **overall stable operation has been maintained.**





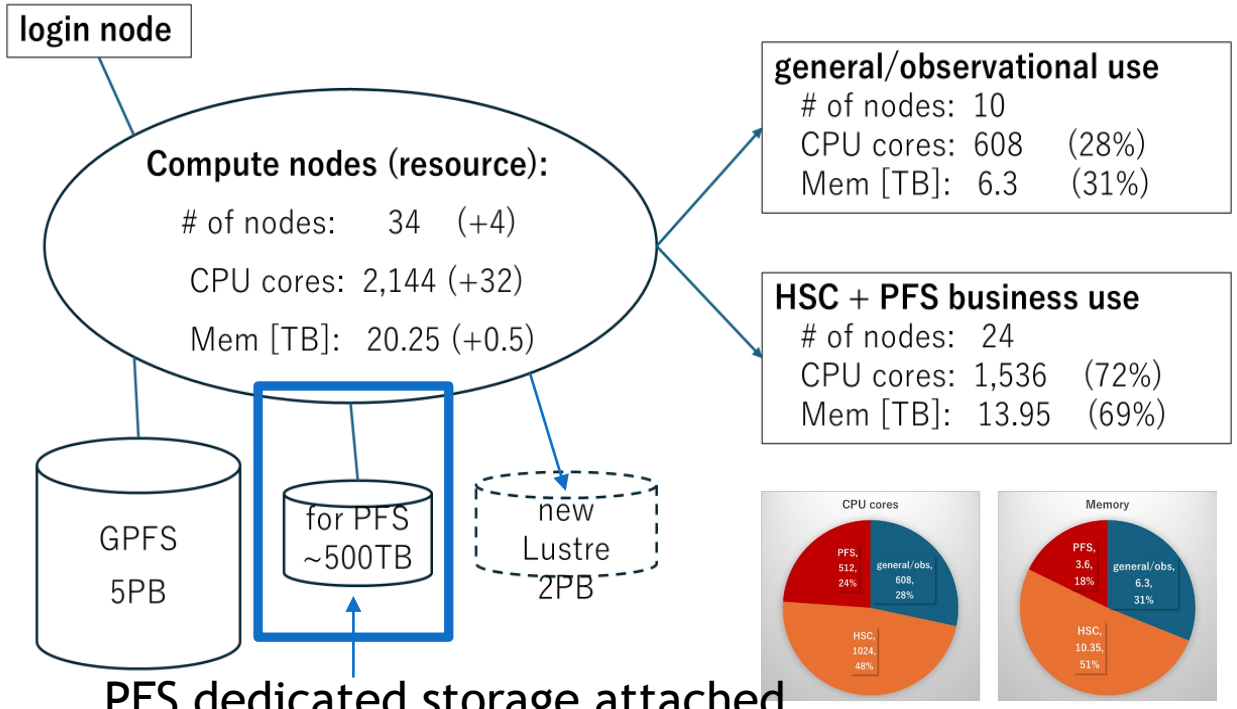
https://www.adc.nao.ac.jp/LSC/lsc_e.html

LSC - Large-scale data analysis system

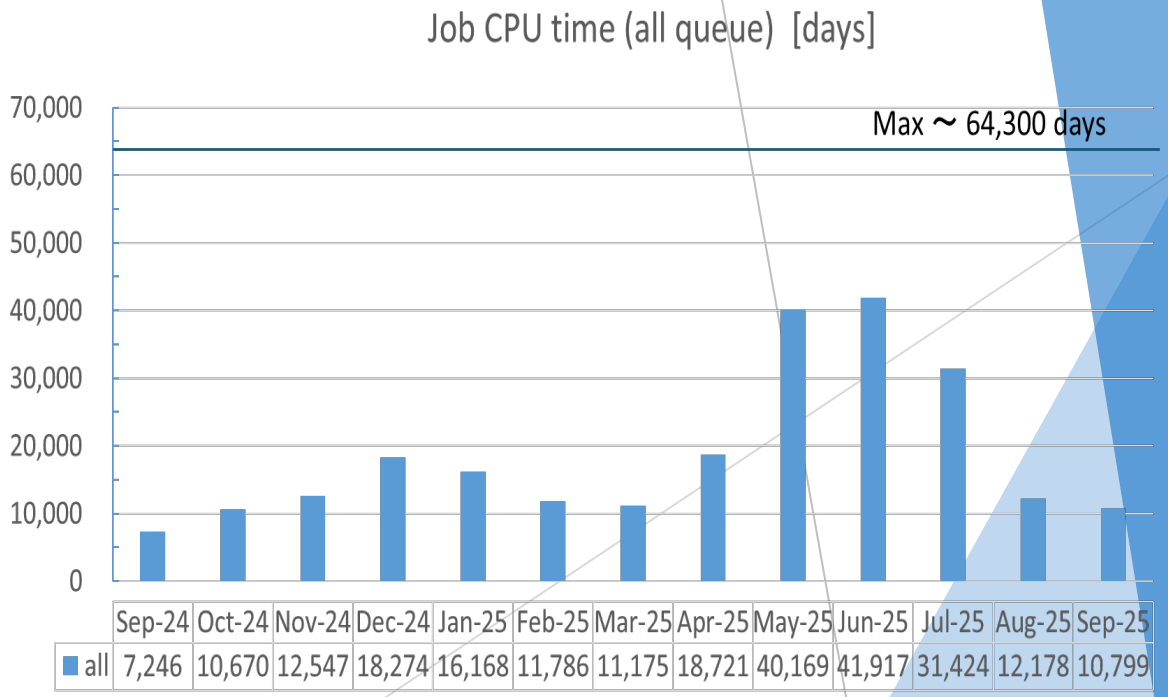
☆ Data analysis system optimized for large-scale data (HSC, PFS, ...)

☆ Compute resources managed by job management system (PBS)

system configuration and resources



PFS dedicated storage attached
Share the CPU resources



	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25
all	7,246	10,670	12,547	18,274	16,168	11,786	11,175	18,721	40,169	41,917	31,424	12,178	10,799

Cohosting Lectures and Workshops

- ALMA Data analysis lecture workshop (for primers)
  - 2025/5/26-28 @ NAOJ Mitaka ALMA-building
  - Issuing 16 new accounts
- NAOJ-SOKENDAI summer student program
  - 2025/8/1-9/1
  - Issuing 11 new accounts
- East Asia ALMA Data Analysis Workshop
  - 2025/9/25,26 @ Kagoshima University
  - Issuing 6 new accounts
- Long-wavelength radio data analysis workshop 2026
  - 2026/3/11-13 planned

In and Before 2021,

- ALMA data analysis（Cohost・Cooperation）
- Subaru school・HSC data analysis（共催・協力）
- Database（ADC-led）
- IDL （ADC-led）
- PyRAF （ADC-led）
- Python data analysis (ADC-led)
- etc

ADC consider to resume the ADC-led lectures or workshops to assist the community utilizing our data services

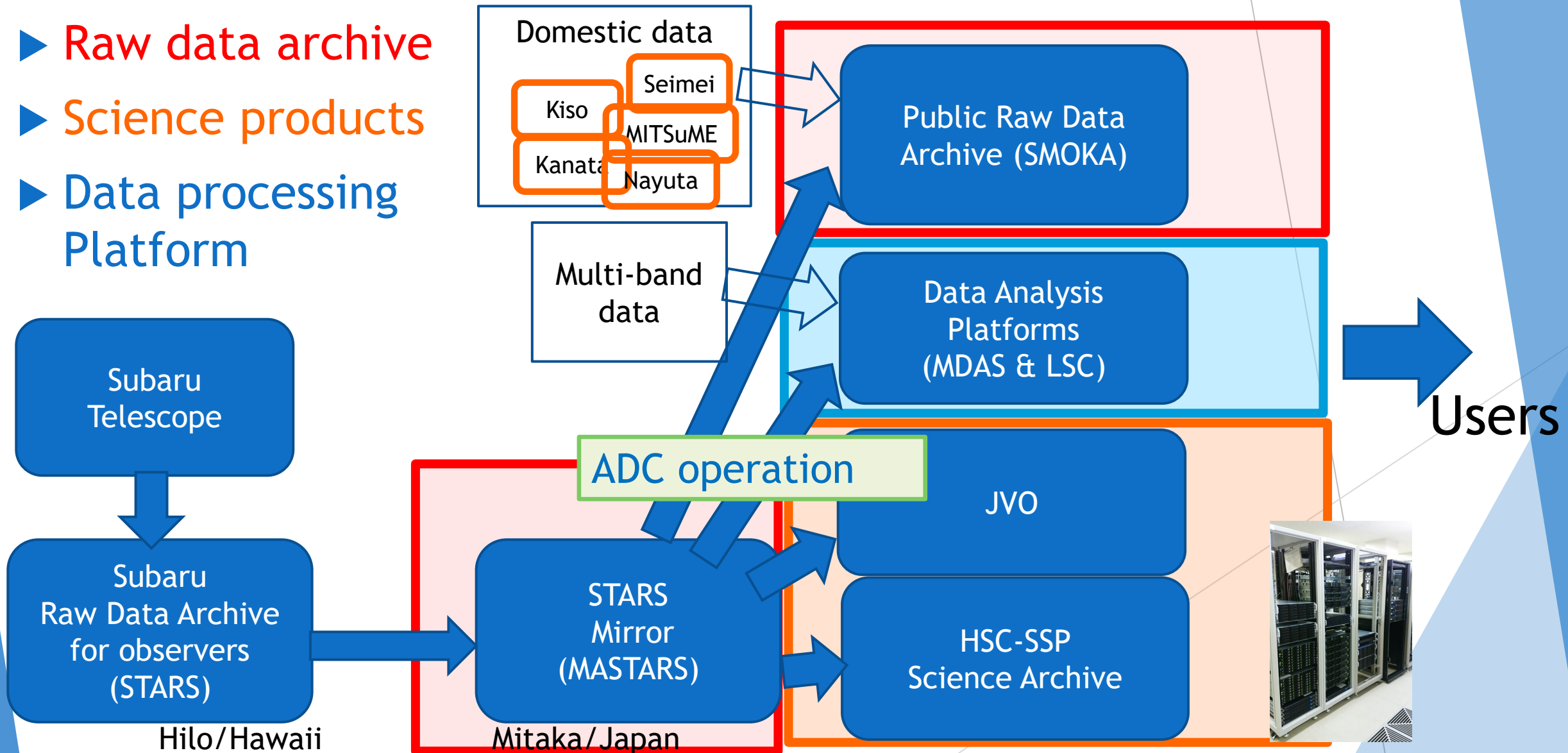
Open-use Data Archives operated by ADC

- Raw data archive （Activity②）
  - SMOKA （Opt-IR data from domestic observing facilities）
  - MASTARS （cooperated by ADC+Subaru; ADC primarily manage Mitaka part）
  - Radio Science Archive (Nobeyama-ASTE)
- Processed Products Archives （Activity③）
  - SMOKA – small part of datasets
  - HSC (ADC will operate long-term public archives around/after next PDR4)
  - JVO （Japanese portal in the VO alliance）
  - Radio Science Archive (part of Nobeyama-ASTE)

ADC : Data Flow for Subaru Data

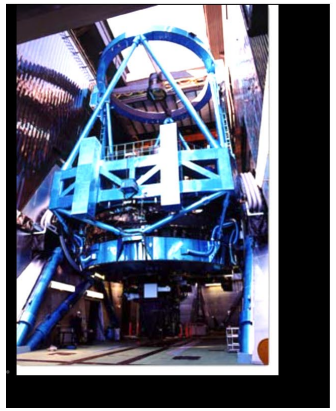
This is a coworking model continued from the foundation of the Subaru data management

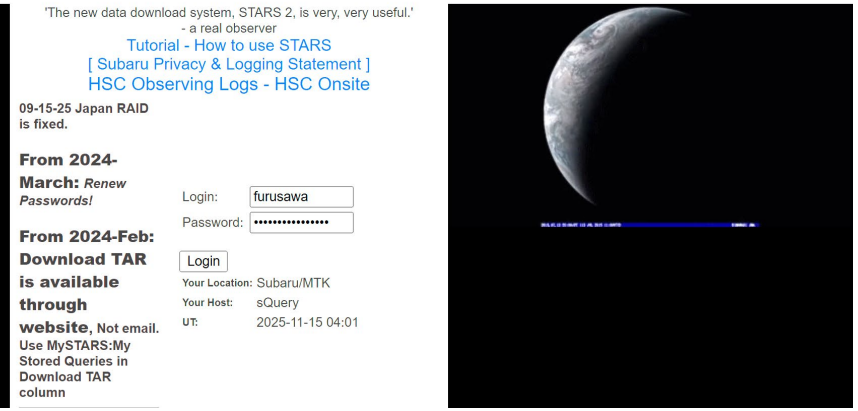
- Raw data archive
- Science products
- Data processing Platform



Opt-IR Data Archives

- MASTARS (Mitaka Components of STARS) https://stars.naoj.hawaii.edu/
  - Hosting all mirrored raw data (550TB+) from Subaru Telescope, cooperating with Subaru under a single workflow sharing roles
  - System enhancement, lossless compression
  - Discussing next-gen data archive (STARS3) for Conceptual and Detailed design



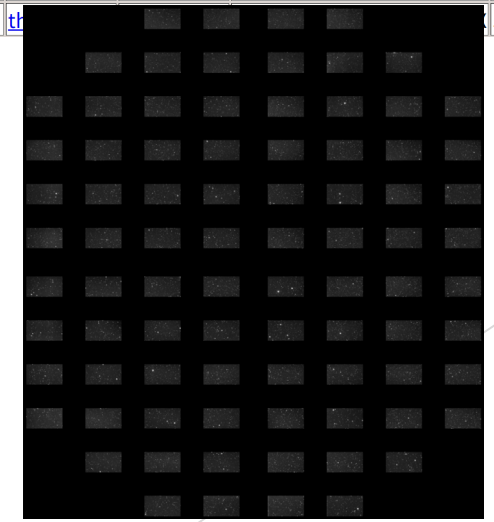


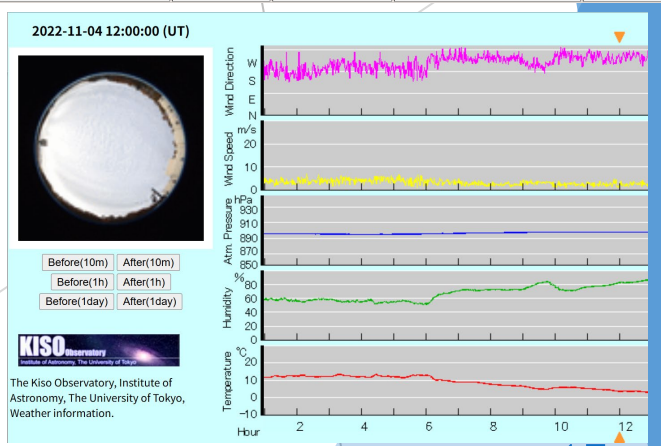
- SMOKA https://smoka.nao.ac.jp/
  - Hosting public Opt-IR raw data (1.1PB) from Subaru & domestic telescopes
  - Ingesting new observing data (GAOES-RV、Tomo-e Raw data, Okayama PPlate)
  - Curation or QA work for Skyimages etc

Raw data is provided in Zstandard compressed format.

Mark all | Unmark all | Datarequest (for 1-250)

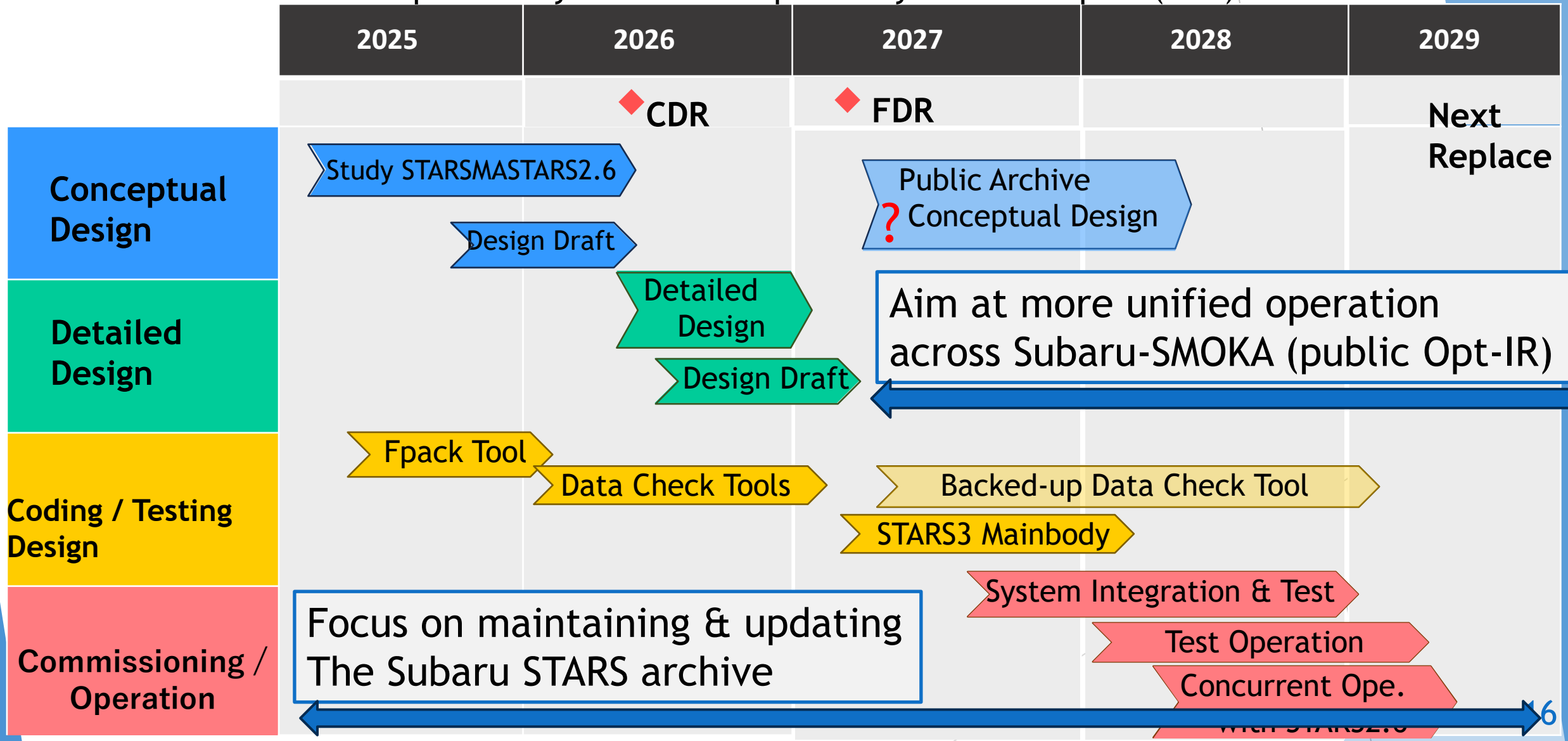
No.	Thumbnail	Check to Retrieve	SHOT	OBJECT	RA_SHOT	DEC_SHOT	DATE_OBS	TIME_OBS
1		☐	TMQX20221104008096 27XX	DARK	19:19:00.1	+116:11:27.0	2022-11-04 weather	07:17:07.8
2		☐	TMQX20221104008096 31XX	FLAT	19:56:26.2	+116:10:19.0	2022-11-04 weather	07:54:23.6
3	thumbnail	☐	TMQX20221104008096 32XX	J2120+0725_dith1	21:20:12.4	+07:25:38.0	2022-11-04 weather	09:01:55.1
4	thumbnail	☐	TMQX20221104008096 33XX	J2120+0725_dith2	21:20:12.2	+07:49:37.0	2022-11-04 weather	09:02:15.5
5	thumbnail	☐	TMQX20221104008096 34XX	J2120+0725_dith3	21:17:58.9	+07:49:36.0	2022-11-04 weather	09:02:36.1
6	thumbnail	☐	TMQX20221104008096 35XX	J2120+0725_dith4	21:17:59.0	+07:25:34.0	2022-11-04 weather	09:02:56.7
7	th			J2109+0000_dith1	21:09:21.3	-00:00:00.0	2022-11-04 weather	09:03:25.7





Tentative schedule of Next-gen Opt-IR archive (STARS3)

- Joint development with Subaru Telescope
- ADC will take more responsibility of data flow primarily in Mitaka part (TBC)

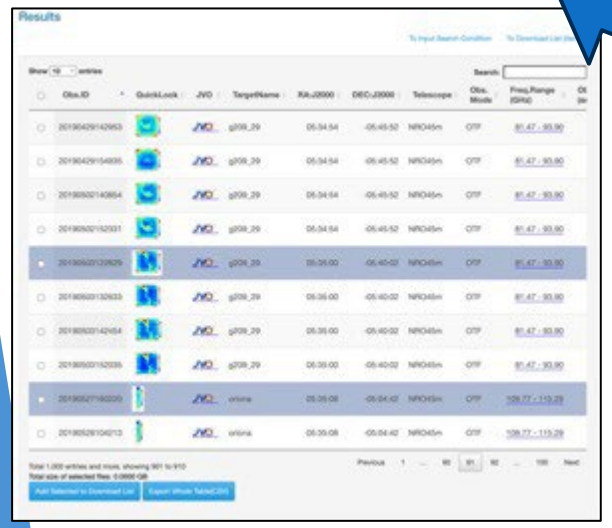


Radio Science Data Archives

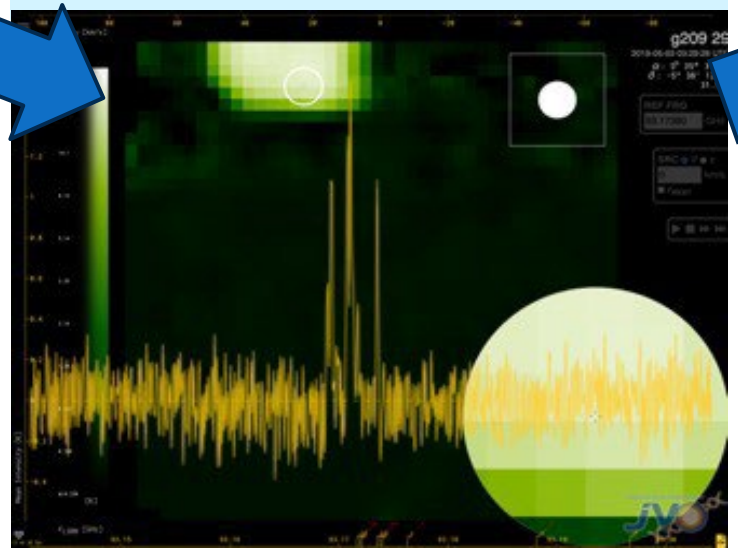
https://arch2016.mtk.nao.ac.jp/

Nobeyama-45m-ASTE Science Data Archive

NRO legacy products
FUGIN, COMING, StarFormation
Wide range of raw data

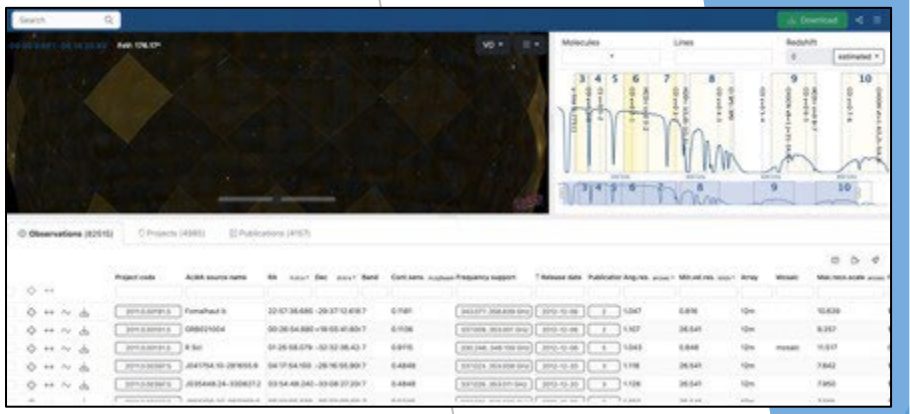


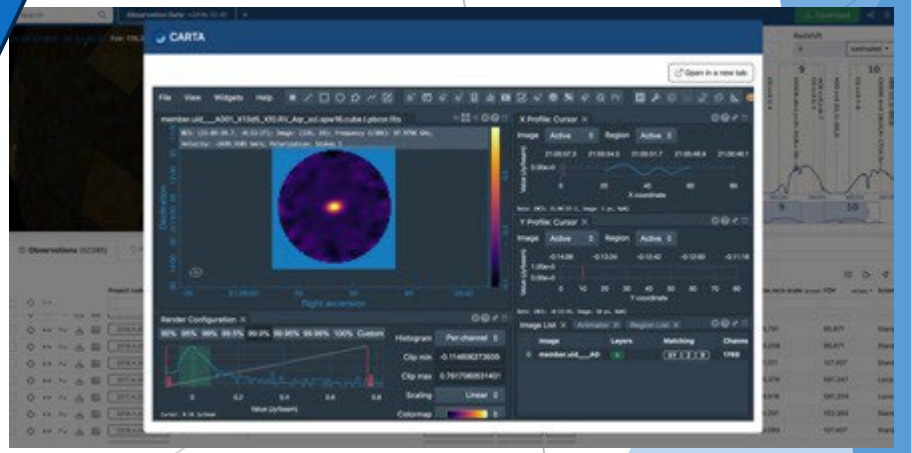
JVO



Query, QL

ALMA Science Archive

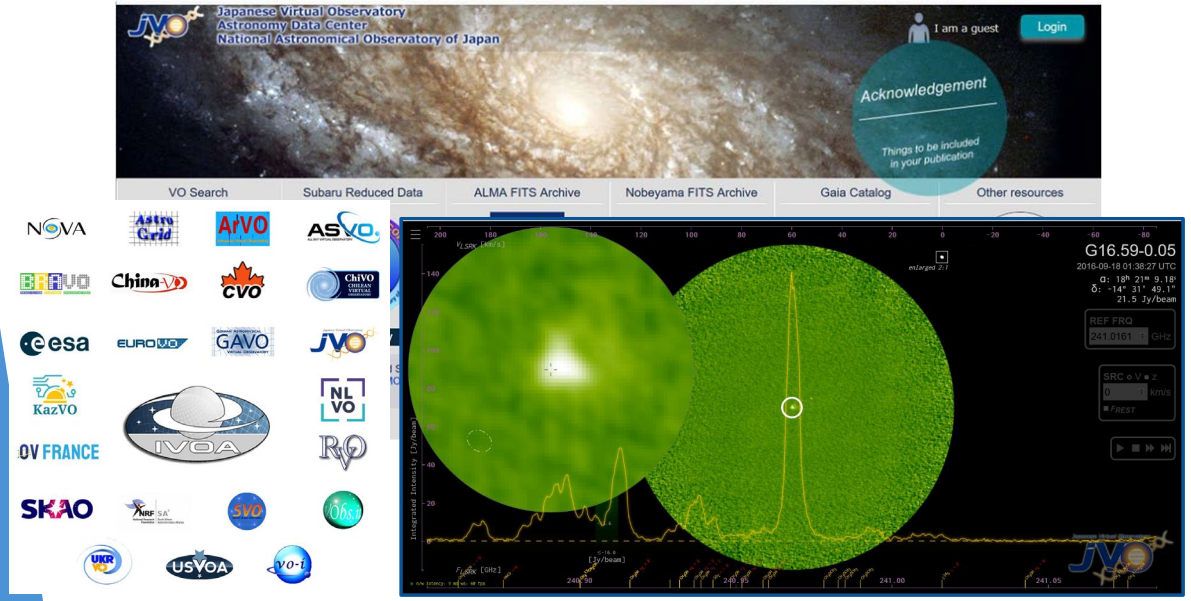




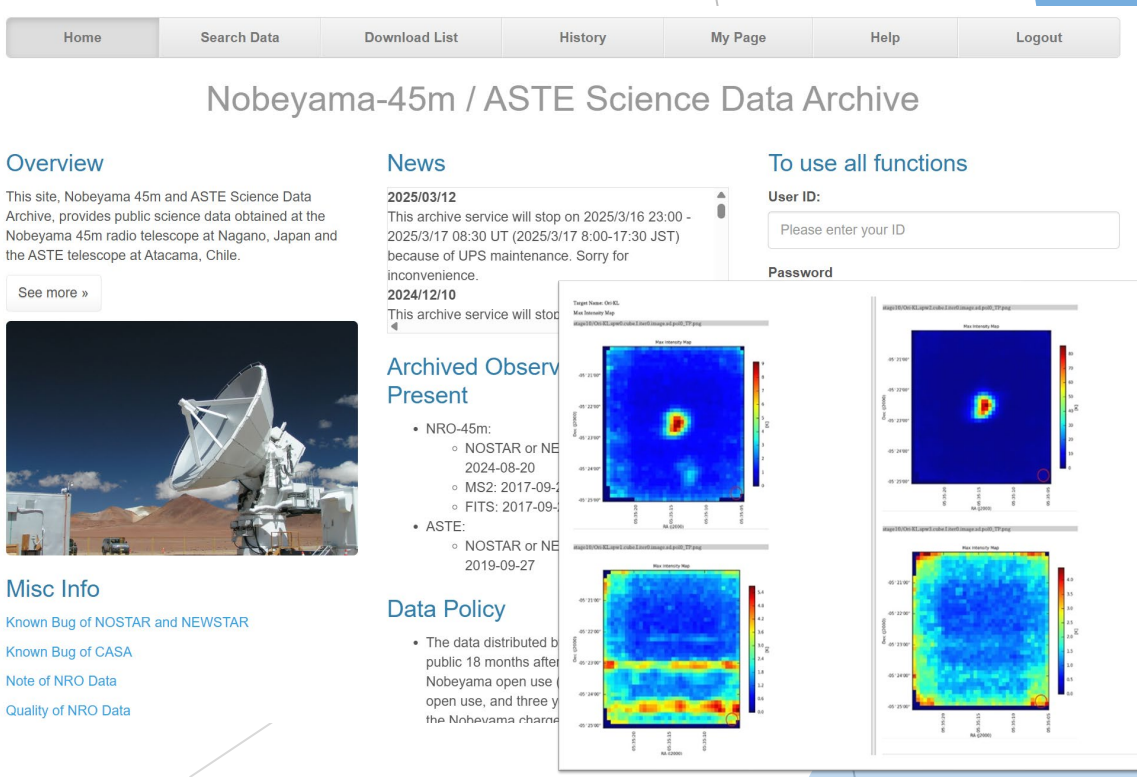
ALMA official raw processed data

JVO・Radio science data archive

- JVO https://jvo.nao.ac.jp/index-e.html
  - Japanese VO portal in the IVOA
  - Expanding datasets and browsing func. (FTS WebQL) with ALMA polarimetry, XRISM as well as existing services: HSC, HDS, Gaia (other space data)
  - Enhancing VO crawler DB



- Radio (Nobeyama-ASTE)
  - Publishing new data from NR45m
  - Accepting ASTE new data mode, format
  - How to integrate the team activity within the ADC framework

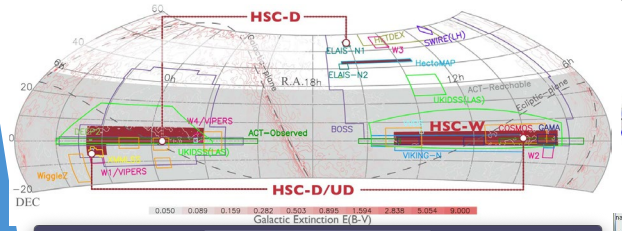


HSC/PFS Data Archive, Science Platform, New Database devel.

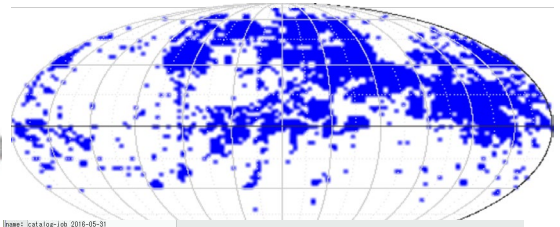
- HSC-SSP https://hsc-release.mtk.nao.ac.jp/
  - Establishing & Stabilizing S23B internal release
    -> preparing for Public DR4
    -> ADC long-term operation
- HSC-Legacy Archive https://hscla.mtk.nao.ac.jp/
  - Maintaining public data archive component

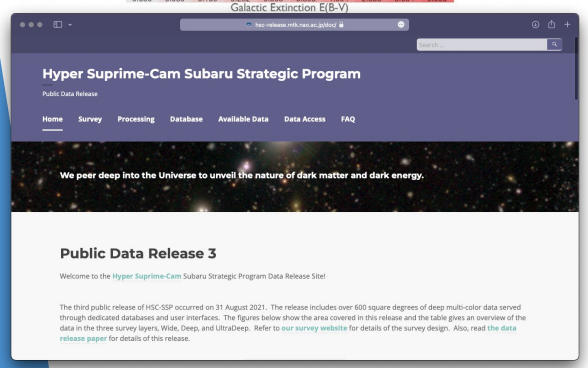
- Developing SP Preview with HSC-PDR
  - SP will establish a pivot basis for extended multi-wavelength data archive (involving killer contents from wide-field survey)
  - Development of DB technology (e.g., Tsurugi) is a key to achieve data intensive analysis.
  - Integration of VO protocol/APIs is another key

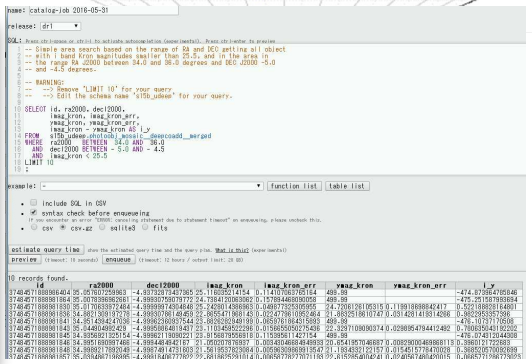
HSC-SSP

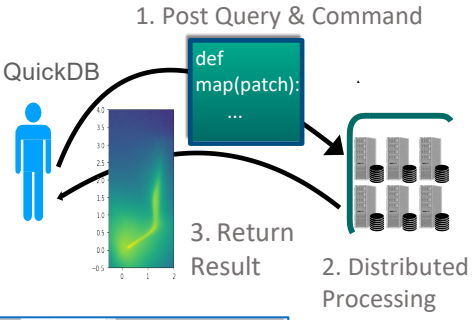


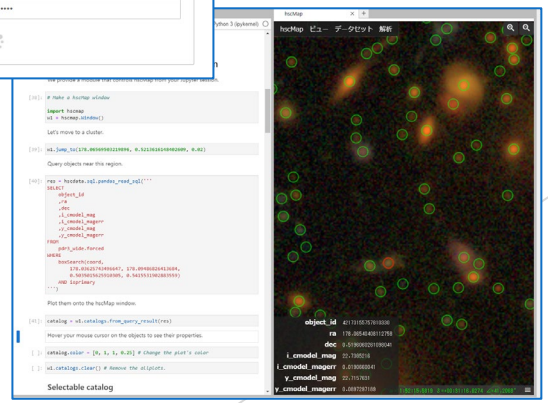
LA2020: 7315 sq.deg (18%sky)

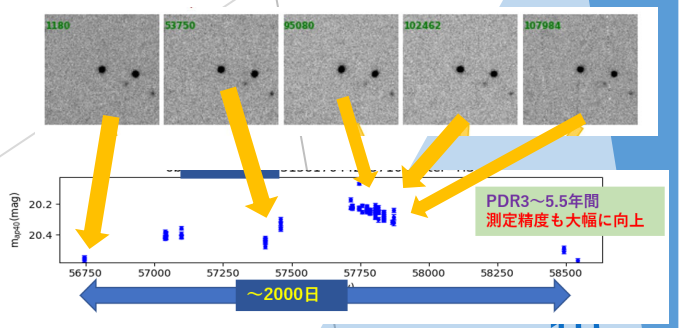






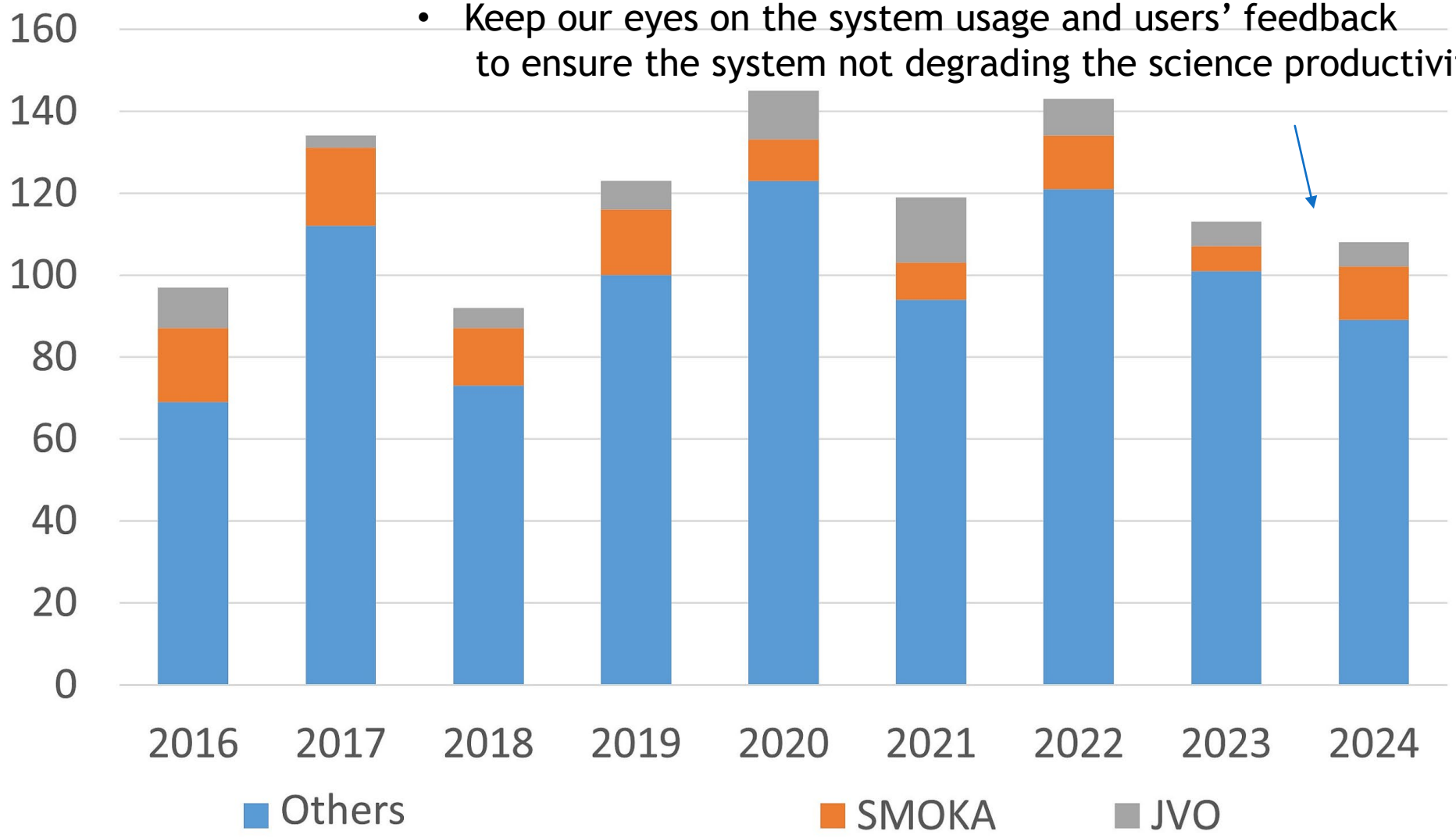






Publications from ADC Open-use Services

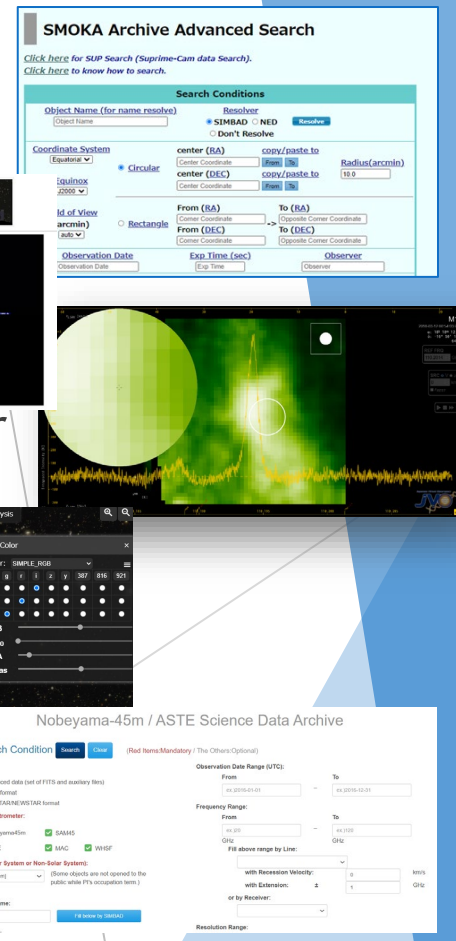
- Counted papers with ADC explicitly mentioned in acknowledgement
- Keep our eyes on the system usage and users' feedback
  to ensure the system not degrading the science productivity



（MDAS/LSCほか）

Usage status & publications from ADC data archives & Data analysis platforms

- SMOKA
  - 210 uses, Published data 1.1PB, Download 50TB/yr, Publication 6-13papers/yr
- MASTARS
  - Published data ~550TB, Download ~60TB/yr
- JVO
  - 256 users, Published data 700TB, Download ~10TByr, Publication 5-15 papers /yr
- HSC-SSP
  - 2800 user, Published data 1PB, Publication ~40-50 SSP papers/yr
- Radio Archive
  - Published data 64TB, Download 1-2TB/yr
- Data Analysis System（MDAS, LSC）
  - 300-350 users (LSC~40 user), Publication 80-90 papers/yr

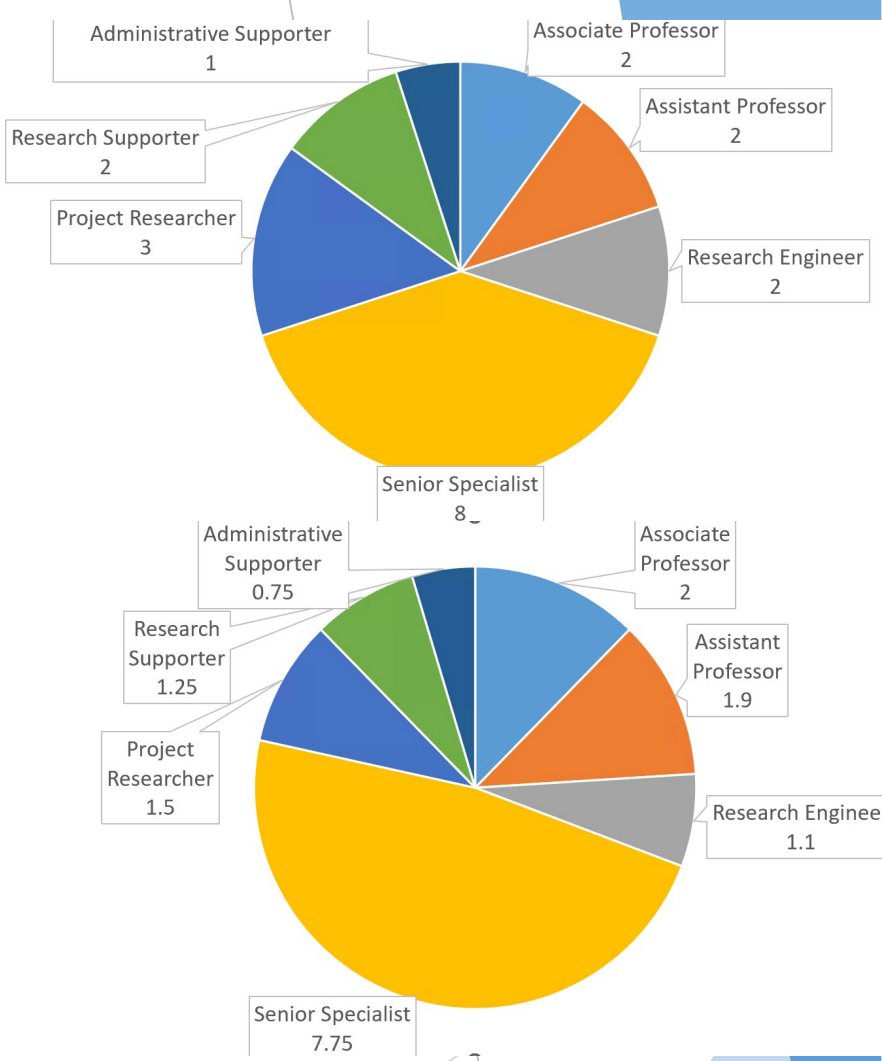


ADC Current Staffing Profile

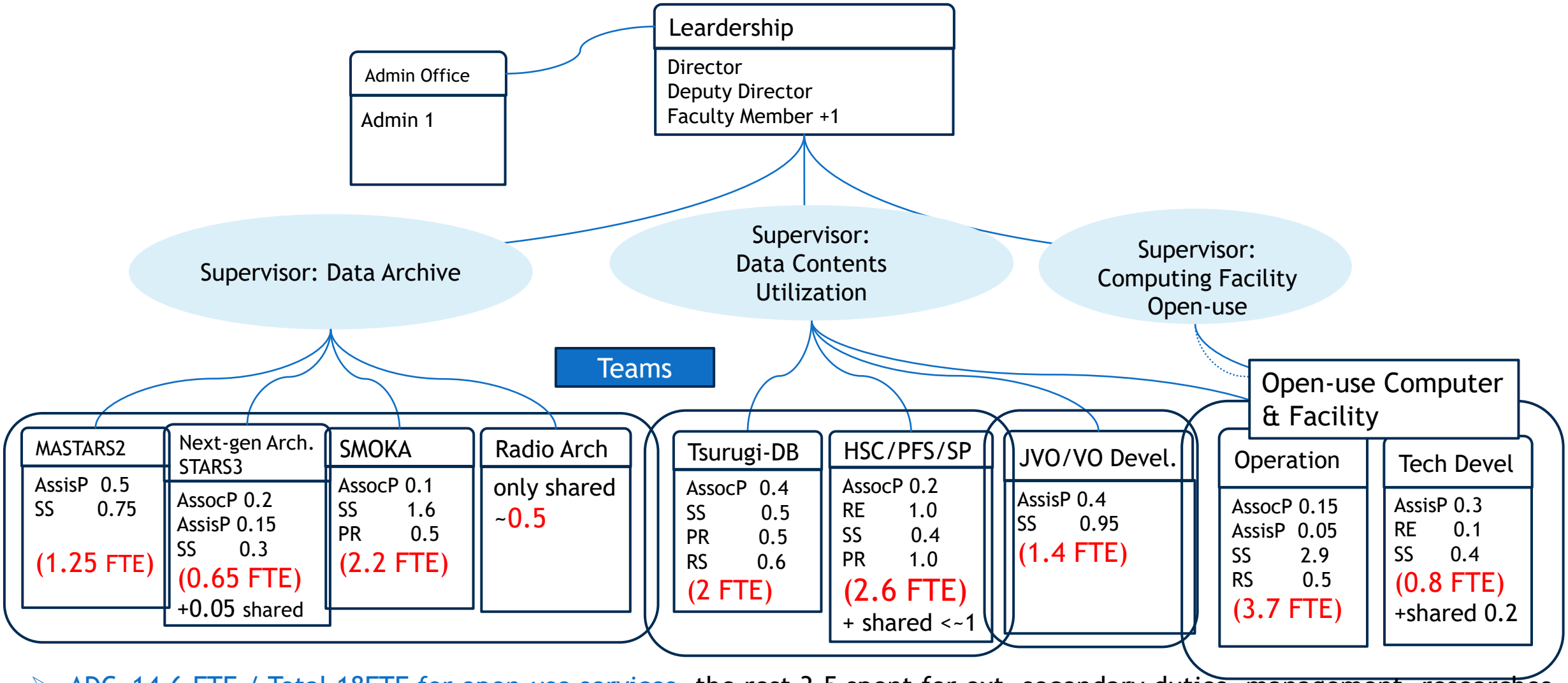
- Associate Professor（准教授） 2
- Assistant Professor （助教） 2
- Research Engineer（研究技師） 2
- Senior Specialist（特任専門員） 8
- Project Researcher（特任研究員） 4->3
  （3 of 4 by ext. grant）
- Research Supporter（研究支援員） 2
  (1 of 2 by ext. grant)
- Administrative Supporter（事務支援員） 1

Total 21 people ~18FTE

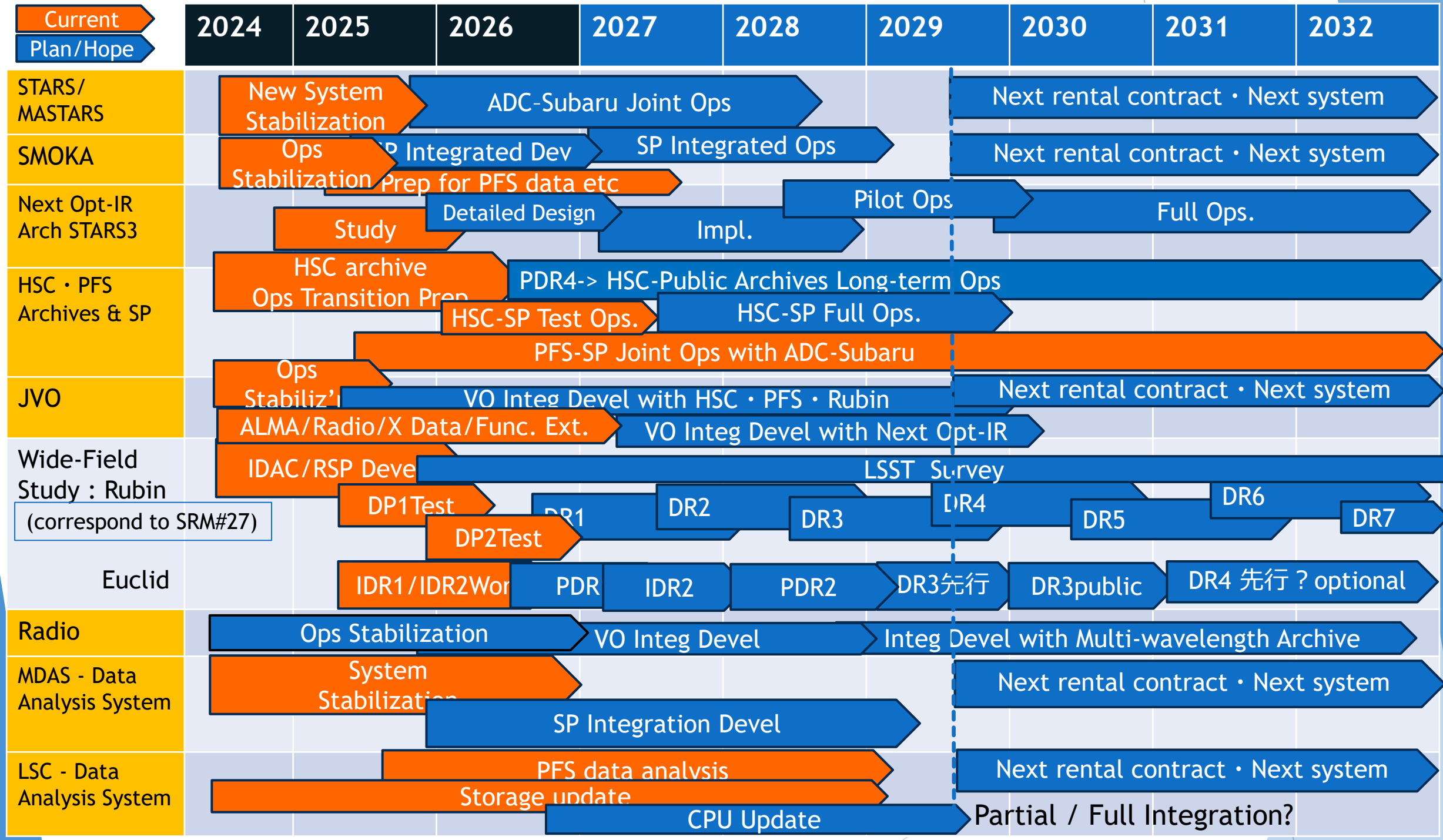
+ Concurrent/affiliated staff with small duties 10 people

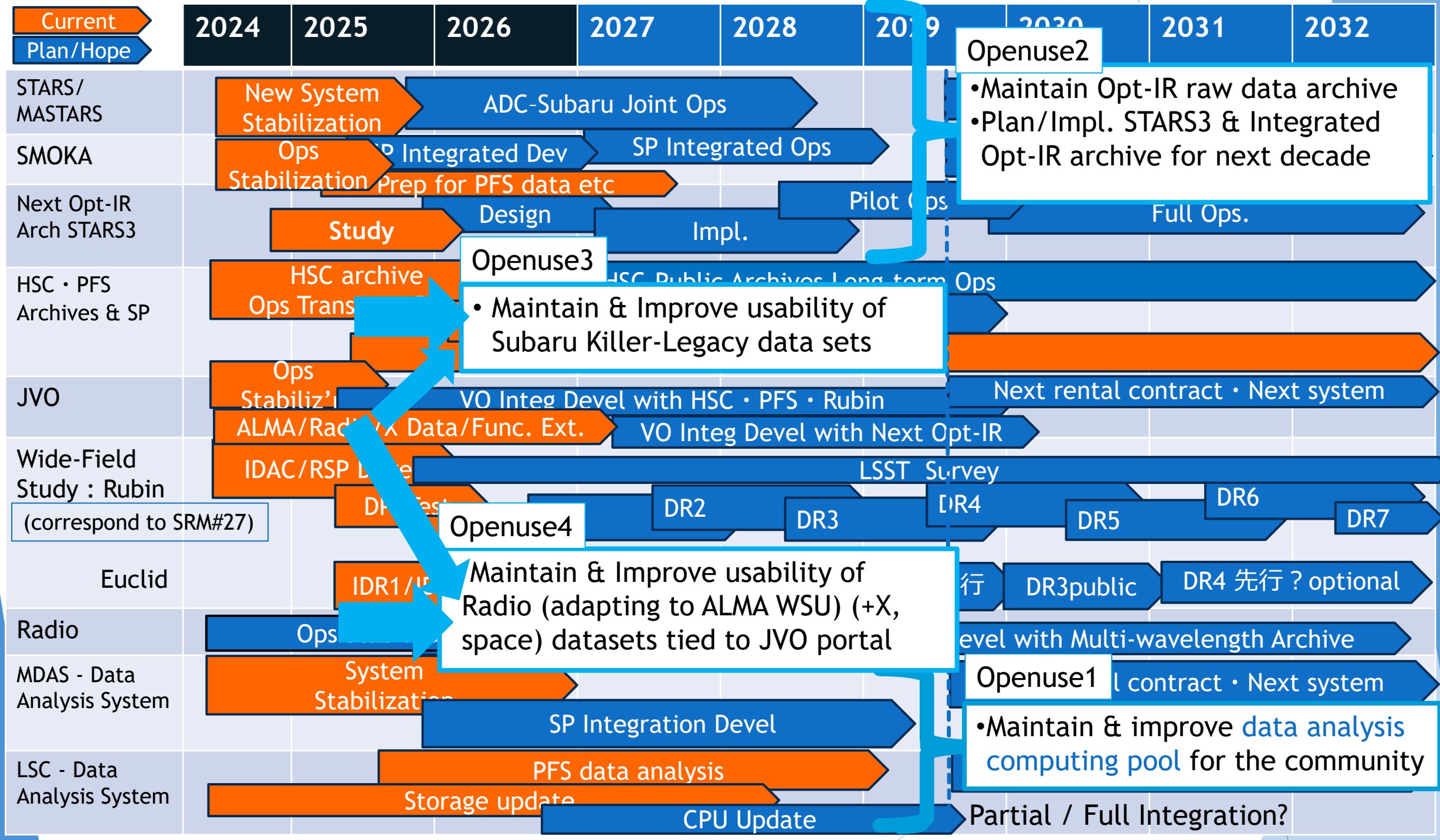


ADC Organization and Operation Teams



- ADC~14.6 FTE / Total 18FTE for open-use services, the rest 3.5 spent for ext. secondary duties, management, researches
- Each archival service or development is maintained by 1.25-2.5 FTEs / Service
- Shared FTEs ~1.5 FTEs from concurrent appointment staff with the other projects


Current
Plan/Hope
2024
2025
2026
2027
2028
2029
2030
2031
2032
STARS/ MASTARS
New System Stabilization
ADC-Subaru Joint Ops
Next rental contract・Next system
SMOKA
Ops Stabilization
Integrated Dev
SP Integrated Ops
Next rental contract・Next system
Prep for PFS data etc
Next Opt-IR Arch STARS3
Study
Detailed Design
Impl.
Pilot Ops
Full Ops.
HSC・PFS Archives & SP
HSC archive Ops Transition Prep
PDR4-> HSC-Public Archives Long-term Ops
HSC-SP Test Ops.
HSC-SP Full Ops.
PFS-SP Joint Ops with ADC-Subaru
JVO
Ops Stabiliz'n
VO Integ Devel with HSC・PFS・Rubin
Next rental contract・Next system
ALMA/Radio/X Data/Func. Ext.
VO Integ Devel with Next Opt-IR
Wide-Field Study : Rubin
(correspond to SRM#27)
IDAC/RSP Deve
LSST Survey
DP1Test
DR1
DR2
DR3
DR4
DR5
DR6
DR7
DP2Test
Euclid
IDR1/IDR2Wor
PDR
IDR2
PDR2
DR3先行
DR3public
DR4 先行？optional
Radio
Ops Stabilization
VO Integ Devel
Integ Devel with Multi-wavelength Archive
MDAS - Data Analysis System
System Stabilization
Next rental contract・Next system
SP Integration Devel
LSC - Data Analysis System
PFS data analysis
Next rental contract・Next system
Storage update
CPU Update
Partial / Full Integration?


Current
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STARS/ MASTARS
SMOKA
Next Opt-IR Arch STARS3
HSC・PFS Archives & SP
JVO
Wide-Field Study : Rubin
(correspond to SRM#27)
Euclid
Radio
MDAS - Data Analysis System
LSC - Data Analysis System
New System Stabilization
ADC-Subaru Joint Ops
Ops Stabilization
SP Integrated Dev
SP Integrated Ops
Prep for PFS data etc
Study
Design
Impl.
Pilot Ops
Full Ops.
HSC archive Ops Trans
Ops Stabiliz'
VO Integ Devel with HSC・PFS・Rubin
Next rental contract・Next system
ALMA/Rad X Data/Func. Ext.
VO Integ Devel with Next Opt-IR
IDAC/RSP
LSST Survey
DR2
DR3
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DR5
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DR3public
DR4 先行？optional
Ops
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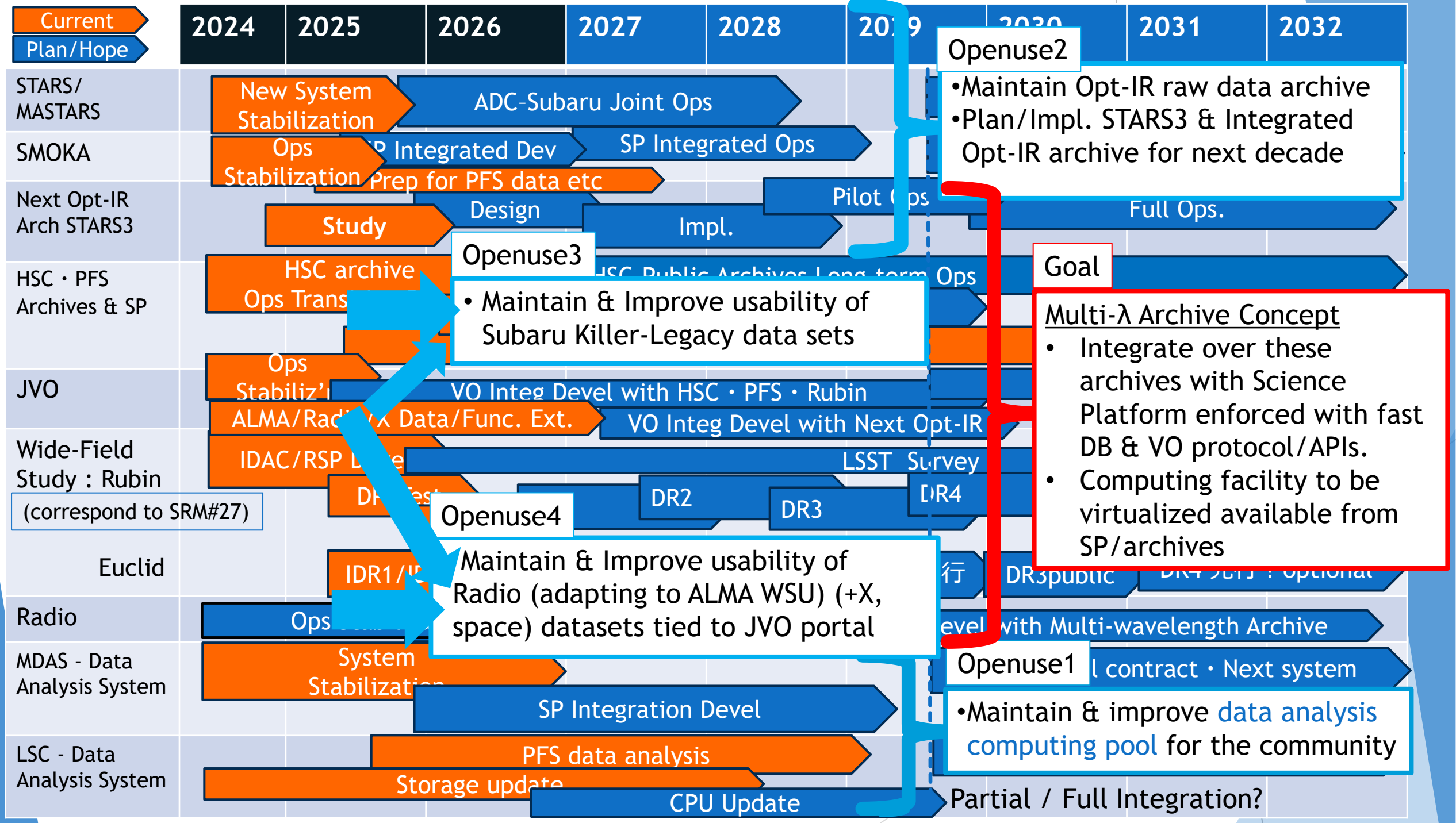
CPU Update
Partial / Full Integration?
Openuse2
•Maintain Opt-IR raw data archive
•Plan/Impl. STARS3 & Integrated Opt-IR archive for next decade
Openuse3
• Maintain & Improve usability of Subaru Killer-Legacy data sets
Openuse4
Maintain & Improve usability of Radio (adapting to ALMA WSU) (+X, space) datasets tied to JVO portal
Openuse1
•Maintain & improve data analysis computing pool for the community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Maintain & Improve usability of Radio (adapting to ALMA WSU) (+X, space) datasets tied to JVO portal
Goal
Multi-λ Archive Concept
• Integrate over these archives with Science Platform enforced with fast DB & VO protocol/APIs.
• Computing facility to be virtualized available from SP/archives
Openuse1
•Maintain & improve data analysis computing pool for the community

NAOJ Projects supported by ADC Open-use Systems (computing systems, shared procurement)

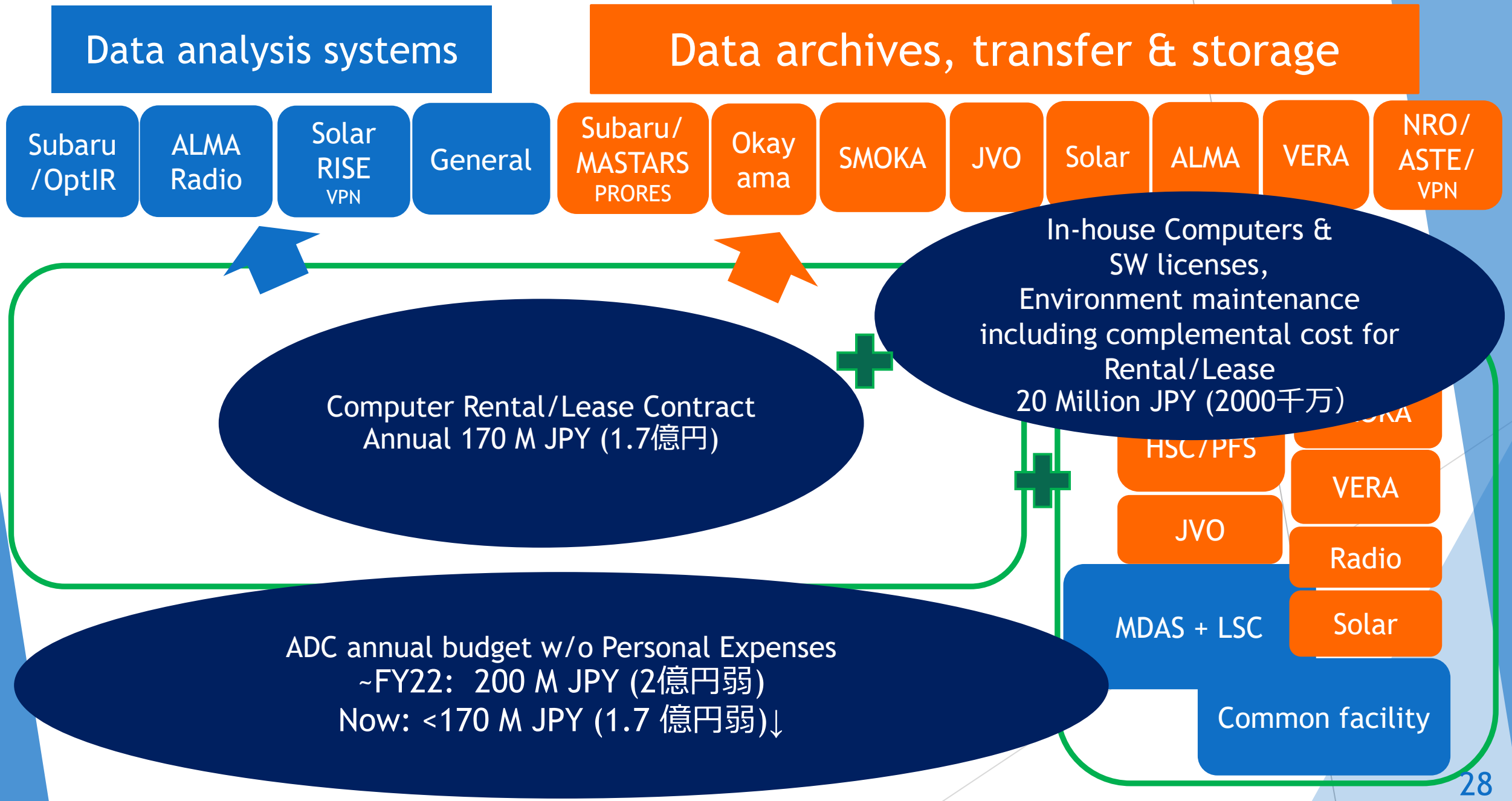
Openuse services from NAOJ projects supported by ADC computing systems

Primarily include:

- General research with observing data （DA・DP）
- ALMA （DP・DA）
- VERA （DA）
- RISE （DP）
- NRO （DP・DA・Observers VPN）
- Solar Data （DP・DA）
- Subaru Telescope + Okayama Branch （DP・DA）

DA : Data Archive
DP : Data Analysis Platform

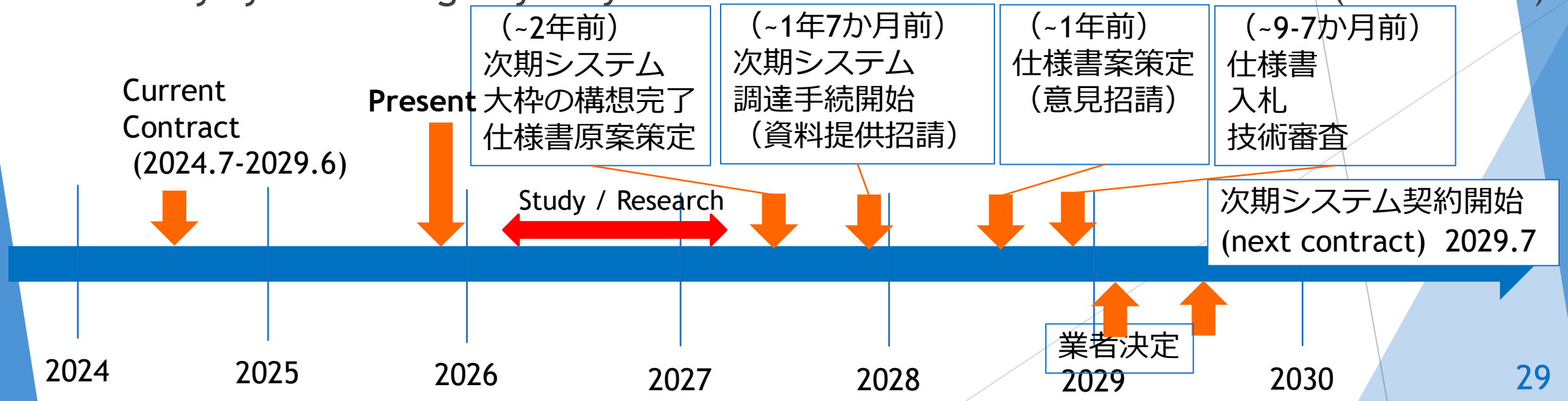
ADC Computing Components Supporting NAOJ Open-use Tasks



Updating cycle of ADC computer system

Computer system contract renewal every 5 years, needing conceptual study by ~mid 2027

- ADC has taken a role to consolidate big computer procurement for open-use services with observing data (archives & analysis) for multiple NAOJ projects
- Consists of Rental-Lease contract and supplemental Inhouse-Purchased System
- Requires contract renewal (or big system update) every 5 (or 6) years (Replacement) ← The last update was in 2024.7
- Identify system design by ~2 years before the next contract renewal (~mid 2027)



ADC Annual Budget Trends for 10 years

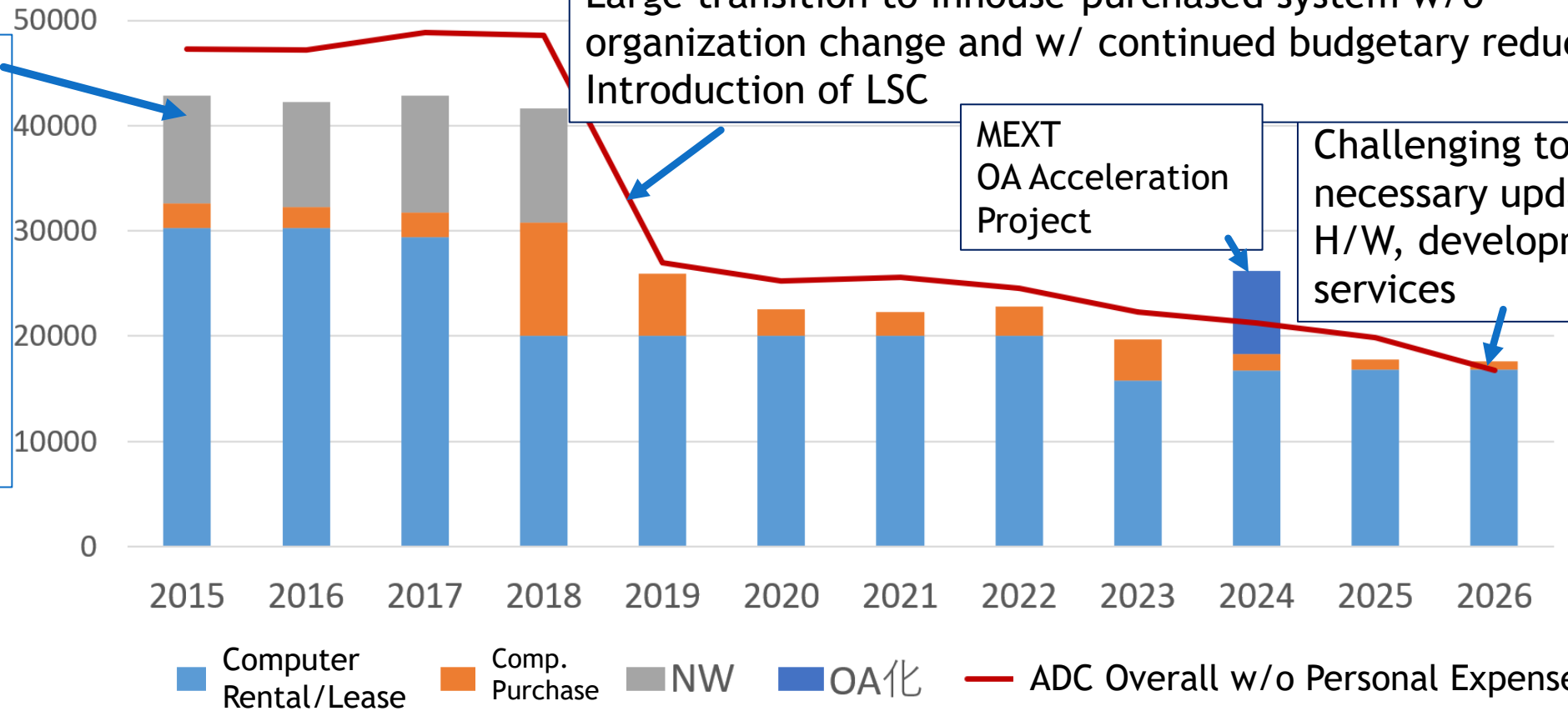
- ADC budget (運営費 Management Expenses Grant) is dominated by annual running cost for the open-use computing facilities required for both ADC and NAOJ projects
- In addition to Rental-Lease contract fees, the running costs include: (1) Maintenance for infrastructure (A/C, electricity, SW) ~ 20M JPY (~2000万) (plus >100M JPY or >1億 for replacing old A/C & UPS') (2) Refreshing old computers (SMOKA・HSC etc) (3) Team working costs incl. equipment & travel expenses etc

- ADC used to contain the NW section (=current ITSO)
- Fair amount of budget for rental+purchased system secured, too

Large transition to Inhouse-purchased system w/o organization change and w/ continued budgetary reduction
Introduction of LSC

MEXT
OA Acceleration
Project

Challenging to make necessary update of H/W, development of services



・センターのポートフォリオ（各事業に対するキャパシティの状況）
ADC portfolio (capacity status for each project)

- Provided ADC Status in the previous slides,

  Review demands from SRMs and place some immediate comments from ADC perspectives

Demands from 26 SRM Proposals to ADC (As of mid Nov 2025)

1. 光赤外天文研究教育ネット　短期実習（アーカイブ・解析？）　【DA】【DP】
2. KAGRA　Grid構築運用の技術系職員【CT】
3. ngVLA サーバー保守【CT】
4. LAPYURA　打ち上げ前業務（解析ツール整備・検索DB構築）【DA】【DP】part of Mission?
5. TMT　すばる・TMTデータ管理統括【DA】
6. 恒星系深広視野銀河化学動力学 PFS SP改修 【DA】【DP】
7. 電波・赤外・理論・星惑系進化　ALMAWSU,ngVLAのデータアーカイブ 【DA】
8. ASTE広帯域観測　NRO/ASTEアーカイブ　【DA】
9. ALMA2 現レンタルの後継システム　【DA】【CT】【DP】
10. すばる2->3 SMOKA/MASTARS-STARS3/HSC/PFS/ULTIMATE等アーカイブ、解析環境維持【DA】【DP】
11. MMA拠点　即時データ解析環境・時系列アーカイブ/SP【DA】【DP】
12. シミュレーション　技術職員共有【CT】
13. 遠赤外THz干渉計　解析・データアーカイブ【DA】【DP】
14. JASMINE　解析・公開支援【DA】【DP】
15. 大規模広視野　データ解析/QA/Calib・データアーカイブ/SP【DA】【DP】
16. 超精密分光 データアーカイブ（SMOKA）【DA】
17. LST/AtLASTサブミリサーベイ　データアーカイブ【DA】
18. SCExAO&TMT-PSI データアーカイブ【DA】
19. 岡山TDA 188cmデータアーカイブ（SMOKA）【DA】
20. 野辺山45m NRO/ASTEデータアーカイブ（電波）【DA】
21. GREX-PLUS　データアーカイブ/SP　【DA】【DP】
22. 南極30mTHz　データアーカイブ【DA】
23. 太陽フレアX線　データアーカイブ・データ解析環境（既存太陽）【DA】【DP】
24. Solar-C データ解析環境（ＳＷ追加）、データアーカイブ　【DA】【DP】
25. 太陽継続観測（ひので・三鷹＋）　データ解析環境、ウェブ　【DP】【CT】
26. MMX＋はやぶさ2拡張　計算機システムの立ち上げ運用支援　【CT】part of Mission?

DA : Data Archive
DP : Data Analysis and/or Platform
CT: Computer Technology and/or Operation

●
- Likely aligned with the ongoing ADC tasks or existing expertise
- 既存事業の範囲に含むもの、またはそう見込まれるもの

▲
- Possibly aligned with the ongoing ADC tasks or accommodated by extending the existing expertise
- Note: Additional staffing and budget are necessary
- 既存本務スタッフの活動・スキルの延長で対応の余地があるもの
- 人員・予算の追加が必要なことには注意。

No Symbol:
- Will require additional significant staffing with new expertise, and/or budget Note: Additional staffing and budget are necessary
- 新しいスキル・経験を持つスタッフ・予算の有意な投入が必要と思われるもの

Close View (1) Demands from 26 SRMs

1. 光赤外天文研究教育ネット　短期実習（アーカイブ・解析？）【DA】【DP】
2. KAGRA Grid構築運用の技術系職員【CT】
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   part of Mission?
5. TMT すばる・TMTデータ管理統括【DA】
6. 恒星系深広視野銀河化学動力学 PFS SP改修【DA】【DP】
7. 電波・赤外・理論・星惑系進化　ALMAWSU,ngVLAのデータアーカイブ【DA】
8. ASTE広帯域観測　NRO/ASTEアーカイブ【DA】
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11. MMA拠点　即時データ解析環境・時系列アーカイブ/SP【DA】【DP】
12. 次世代シミュレーション　技術職員共有【CT】
13. 遠赤外THz干渉計　解析・データアーカイブ【DA】【DP】

Close View (2) Demands from 26 SRMs

14. JASMINE　解析・公開支援【DA】【DP】
15. ▲大規模広視野（WFSI）　データ解析/QA/Calib・データアーカイブ/SP【DA】【DP】
16. ●超精密分光 データアーカイブ（SMOKA）【DA】
17. LST/AtLASTサブミリサーベイ　データアーカイブ【DA】
18. SCExAO&TMT-PSI データアーカイブ【DA】
19. ●岡山TDA 188cmデータアーカイブ（SMOKA）【DA】
20. ▲野辺山45m NRO/ASTEデータアーカイブ（電波）【DA】
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24. Solar-C データ解析環境（ＳW追加）、データアーカイブ　【DA】【DP】
25. 太陽継続観測（ひので・三鷹＋）　データ解析環境、ウェブ　【DP】【CT】
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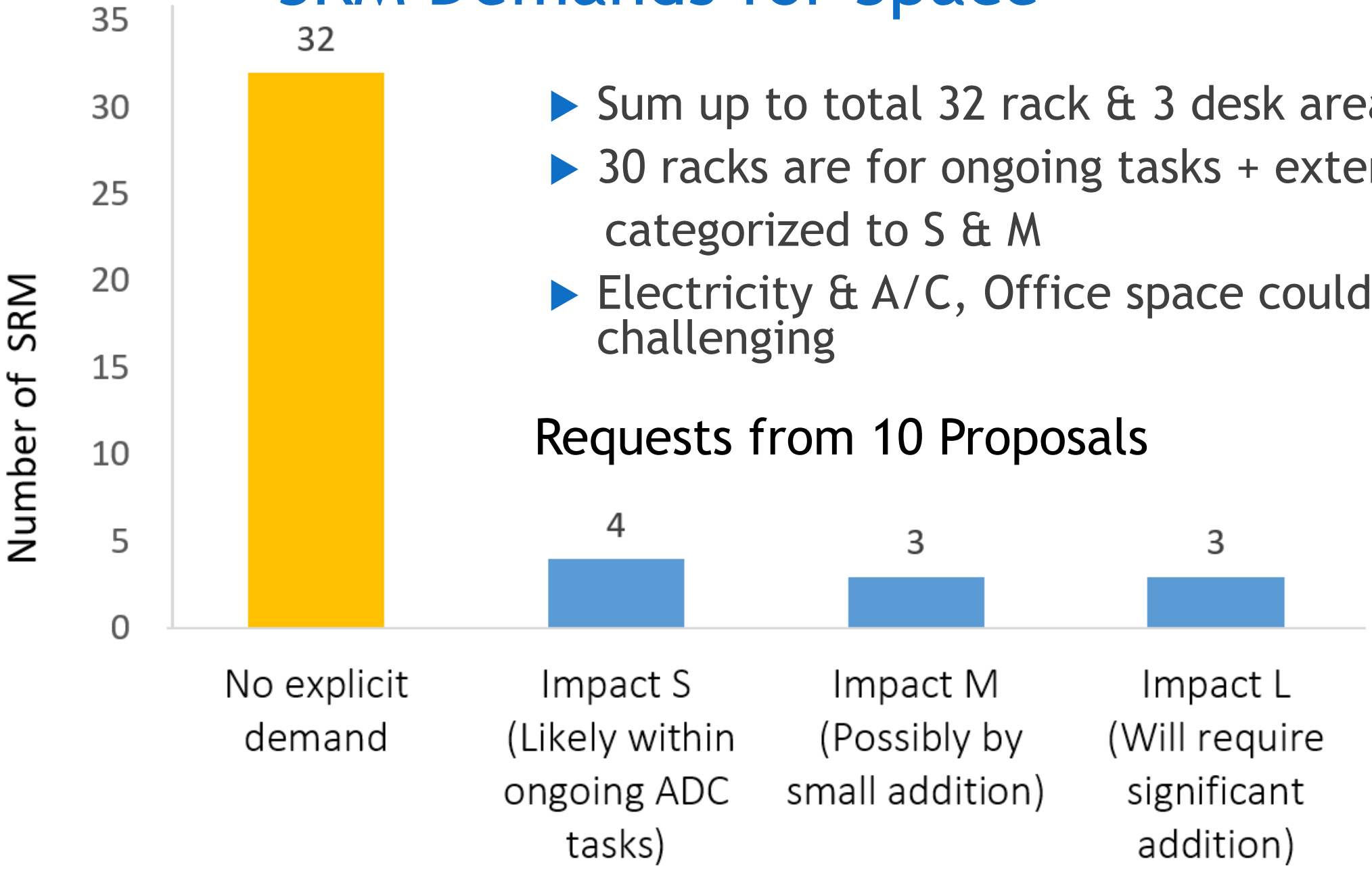
SRM Demands for Space



- Sum up to total 32 rack & 3 desk areas, but
- 30 racks are for ongoing tasks + extension categorized to S & M
- Electricity & A/C, Office space could be challenging

Requests from 10 Proposals

Space for computer room

- ADC runs 3 computer rooms + 1 small shared space
  - South bldg. 1F & 3F
  - Subaru bldg. 1F
  - Shared server room
  - In terms of Space, the above rooms could likely allow to accommodate ~10 racks as well as the ongoing systems

    To allow working place for next replacement, capacity is not that large
- No immediate spare room for development team and additional staff

Electricity and A/C Capacity Need More Careful Check!

- Capacities still seem to allow some additional computers but
- UPS do not cover all circuits. Shortage of power circuits and outlets are always an issue
- Electricity (capacity+sockets+cost), A/C efficiency, and weight etc should be carefully discussed

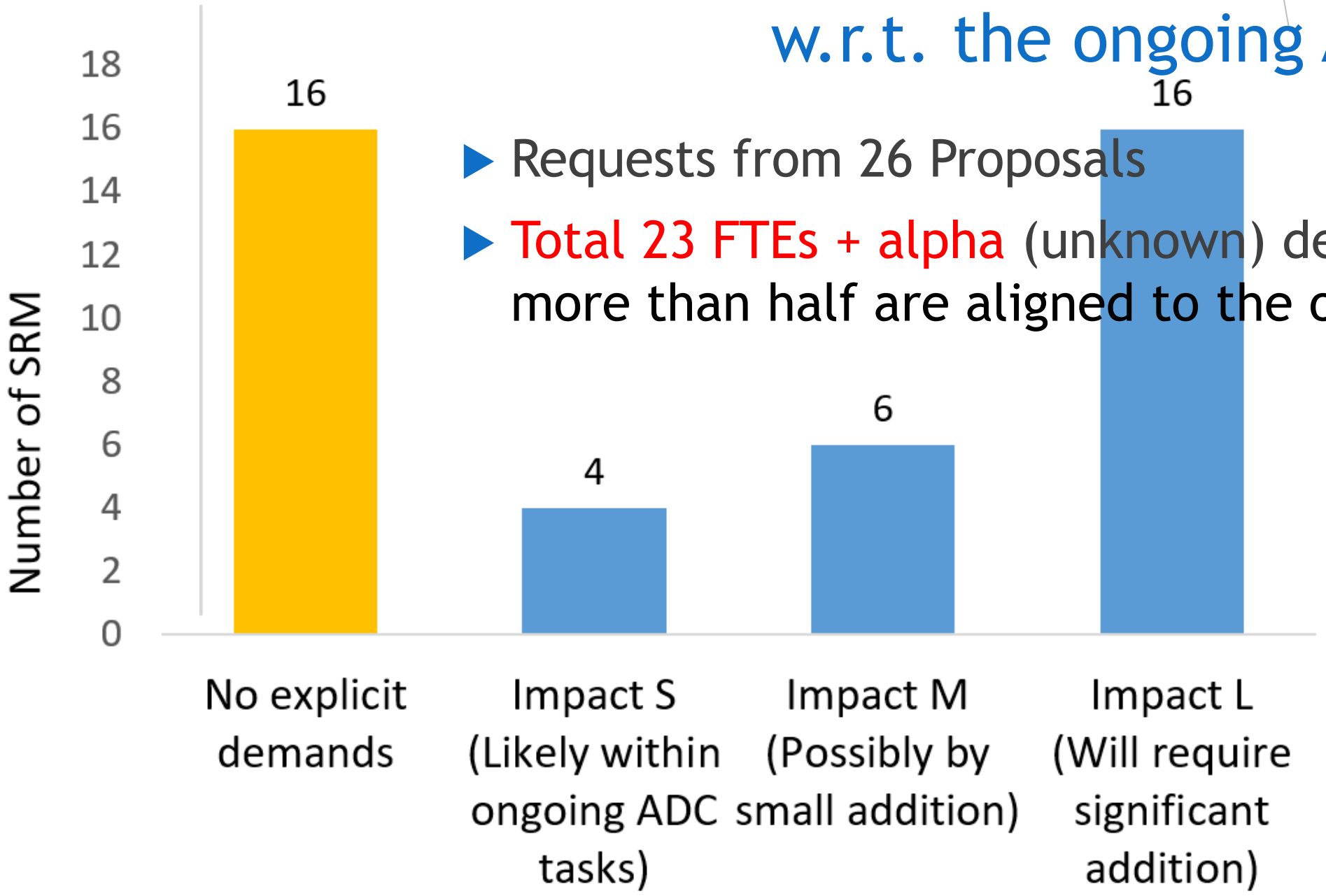
South Building （南棟）1F	Used	Total Capacity	Rest (<80%)	Load
Electricity	20 kVA	140 kVA	90 kVA	15%
A/C	30-40 kW?	140 kW	70 kW	30%

South Building（南棟） 3F	Used	Total Capacity	Rest (<80%)	Load
Electricity	15 kVA	120 kVA	80 kVA	15%
A/C	15 kW?	64 (or 110) kW	35 kW	25%

Subaru Building（すばる棟）1F	Used	Total Capacity	Rest (<80%)	Load
Electricity	110-130 kVA	390 kVA	180-200 kVA	30%
A/C	130-140 kW?	230 kW	45 kW	60% Tight

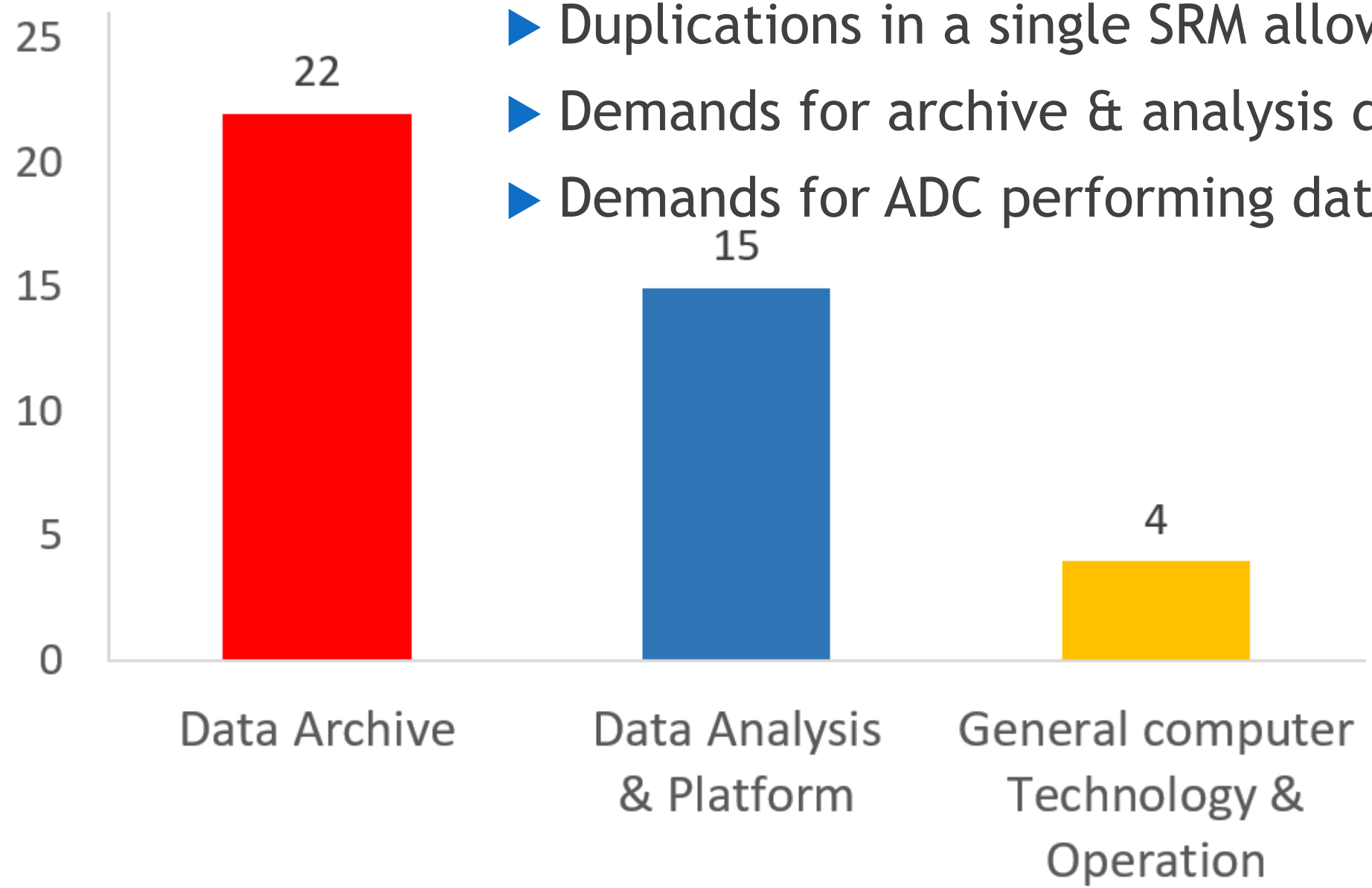
Shared Server Room（共通サーバ室）	Used	Total Capacity	Rest (<80%)	Load
Electricity	90 kVA?	120 kVA	6 kVA	**75%** Very Tight
A/C	30 kW?	86 kW	40 kW	35%

SRM Demands for HR (FTEs) Impact-wise w.r.t. the ongoing ADC tasks



- Requests from 26 Proposals
- Total 23 FTEs + alpha (unknown) demanded, but more than half are aligned to the ongoing tasks

Services & Tasks Demanded



- Duplications in a single SRM allowed
- Demands for archive & analysis dominate
- Demands for ADC performing data analysis ~ 5

Immediate thoughts to the demands (1)

Overall

- Detailed assessment with further quantitative inputs will be necessary, but in short:
- ~Four(4) SRMs seem to fall within the scope of the current ADC operations and could be handled with appropriate staffing/budgetary support
  - E.g., services that could run in current open-use archives or data analysis systems onwards
- A few more (~5-6) SRMs could be considered to co-work with the project team by expanding ADC's current expertise and capabilities, with adequate additional staffing and budget are allocated
  - E.g., expansion of database contents or processing functions from the current archives
- Others (~16) seem to be challenging/too demanding only based on the current ADC resources (staff, computers, operations and knowledge basis)
  - E.g., data utilization in new wavelengths, mission-oriented time-critical development etc

Immediate thoughts to the demands (2)

目標の立ち上げと長期・継続化の見通し

- For implementation of archive functions and operations, FTEs (0.01 ~ 0.1?) may be underestimated in some SRMs. 必要人員が過小評価されている場合がある。一方、大きいFTEの提案は業務位置づけの議論は必要。
- The current ADC is not large enough to simply accept newly assigned tasks (especially that require new expertise) within the current resource, even at 0.5FTE leve. 現在のADCの体力では新規事業（特に既存スキルにない活動）の単純な受け入れは難しい
- It would be practical to collaborate with ADC by providing personnel and resources from the project. プロジェクトからも人と予算を出していただいて協働していただくのが現実的
- At least during development and early operational phase, might be good to form a joint ADC+proposal project (with additional staff & budget) to address the target demands. そのようにして立ち上げ時のADCとしてのチームを作る可能性
- Establishing the long-term operations with proper organizational structure and budget is a challenge (common to any project). 長期運用の見通しはいつも課題。

ADCのSRMの中での役割

- ADC aims to contribute to the release and utilization of multi-wavelength astronomical data (e.g., データポリシー・データ受入ポリシー）, but given our limited resources (expertise), we could only respond to the demands by pivoting around the current tasks to maintain.
- We will continue to discuss the ADC's roles in SRM, and appreciate the community's and NAOJ leadership's endorsement to address what to be accommodated in priority ADCがSRMの枠組みで何に対応すべきかはコミュニティ・NAOJ執行部の支持を受けながら役割を議論していく
- How to proceed with next system procurement / conntract is also an issue to discuss. 次期システムをADCのレンタル契約等で集約しない可能性も議論が必要

Additional information necessary for further assessment

A bit more inputs such as following would be helpful for feasibility assessment:

- Data Sizing & Computer Sizing
  - Data production rate & Entire data volume, Data processing cost

  => Sizing/Performance of Computers, Storage, Network
- Target Operations
  - Data backup plans
  - How/who and where to process and archive data
  - What to do with “computer construction” and “computer operation”
- Target functions of “data archive”, “database”, and “data analysis”
  - How to achieve those functions

  => Roles of center(s) and projects, Staffing

Some comment on “Prospects for Resources”

- HR & Budget – no good idea in short-mid term & desire strong endorsement
  - Each of ongoing services is maintained by 1.5-2.5 FTEs, w/ HR being stretched to the very limit.　既存サービスの人員はぎりぎりで恒常的に不足
  - Even personnel requests to compensate for these staffing shortages are difficult by ADC initiative only　追加人事による増員もADC単体の努力では難しい
  - More assessment is necessary for demands for computers and manpower
- Space – maybe acceptable, but require assessment of demands for computing resources and operation
  - Office space is packed
- Electricity and A/C – possible consideration
  - Updating old equipments is suspended – risks to increase mission-critical H/Ws.
  - Electric charge has been a problem
  - UPS and number of circuits are often short

Thank you very much.