



XRISM: MISSION STATUS

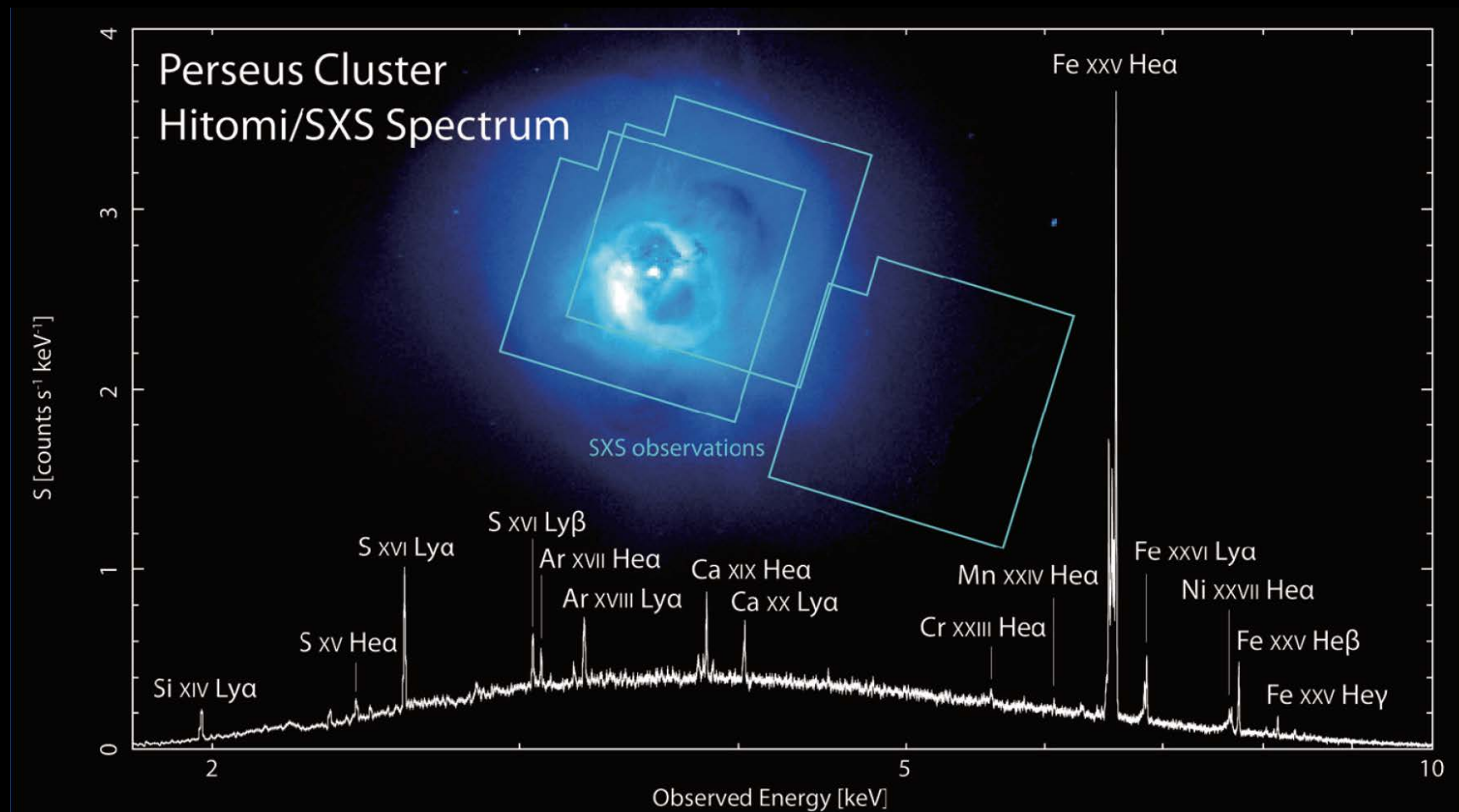
Makoto S. Tashiro (ISAS/JAXA, Saitama University)
on behalf of XRISM team



A NEW WORLD OF X-RAY SPECTROSCOPY SHOWED BY HITOMI

- Perseus Cluster
- N132D
- IGR J16318-4848
- RX J1856.5-3754
- G21.5-0.9
- Crab

• ... to be continued by XRISM





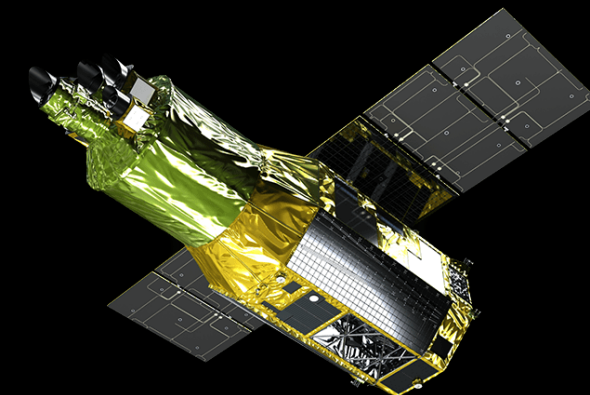
SCIENCE OF XRISM

- How does the large structure formed?
 - What forms and sustain the clusters of galaxies structure against gravity ?
 - Gas pressure, **turbulence**, and their spatial distribution
- How was the elements and energy produced and distributed in the universe ?
 - **Metallicity** of SNs and their remanants
 - Dissipation of the material
 - **Velocity** of elements of SNR metals
and **Accretion** and **outflow (winds)** of AGNs, galaxies
- New astrophysics with X-ray micro-calorimeter



MISSION CONCEPT OF *RECOVERY*

- Recovery of X-ray fine spectroscopy
 - Recover the X-ray micro-calorimeter science, ASAP
 - Conservative combination with conventional CCD covering same energy band

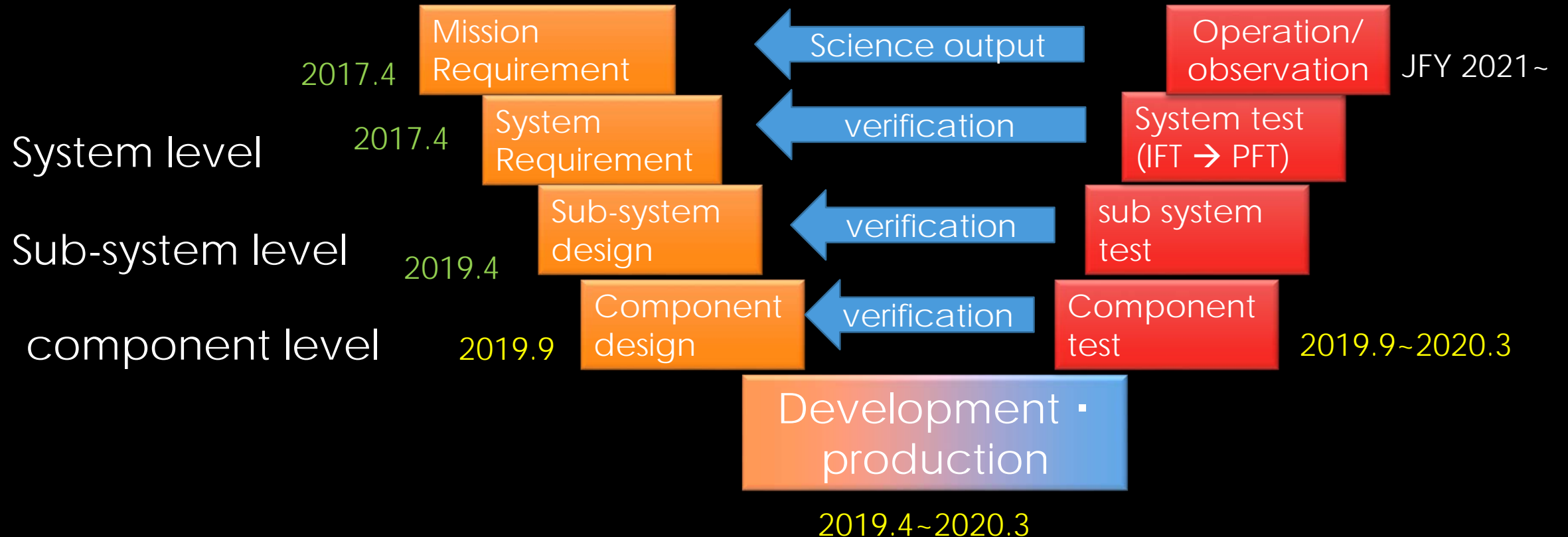


Instrument	FOV/pix	ΔE (FWHM @6 keV)	Energy band
Resolve (XMA + X-ray microcalorimeter)	2.9' \square / 6 x 6 pix	7 eV (goal 5 eV)	0.3 – 12 keV
Xtend (XMA + X-ray CCD)	38' \square / 1280 x 1280 pix	< 250 eV at EOL (< 200 eV at BOL)	0.4 – 13 keV

Mass	2.3 t
Dimension	7.9 m x 9.2 m x 3.1 m
Design life	3 years + cryogen free operation
Orbit	Altitude 575 +/- 15 km, Inclination 31 degree



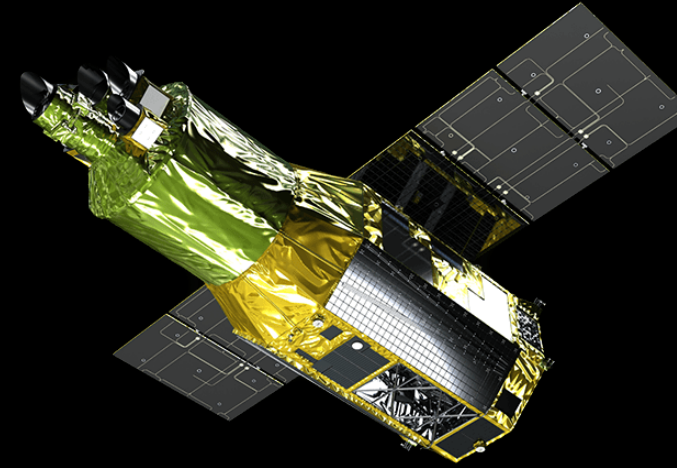
DEVELOPMENT STATUS





STATUS: SPACECRAFT

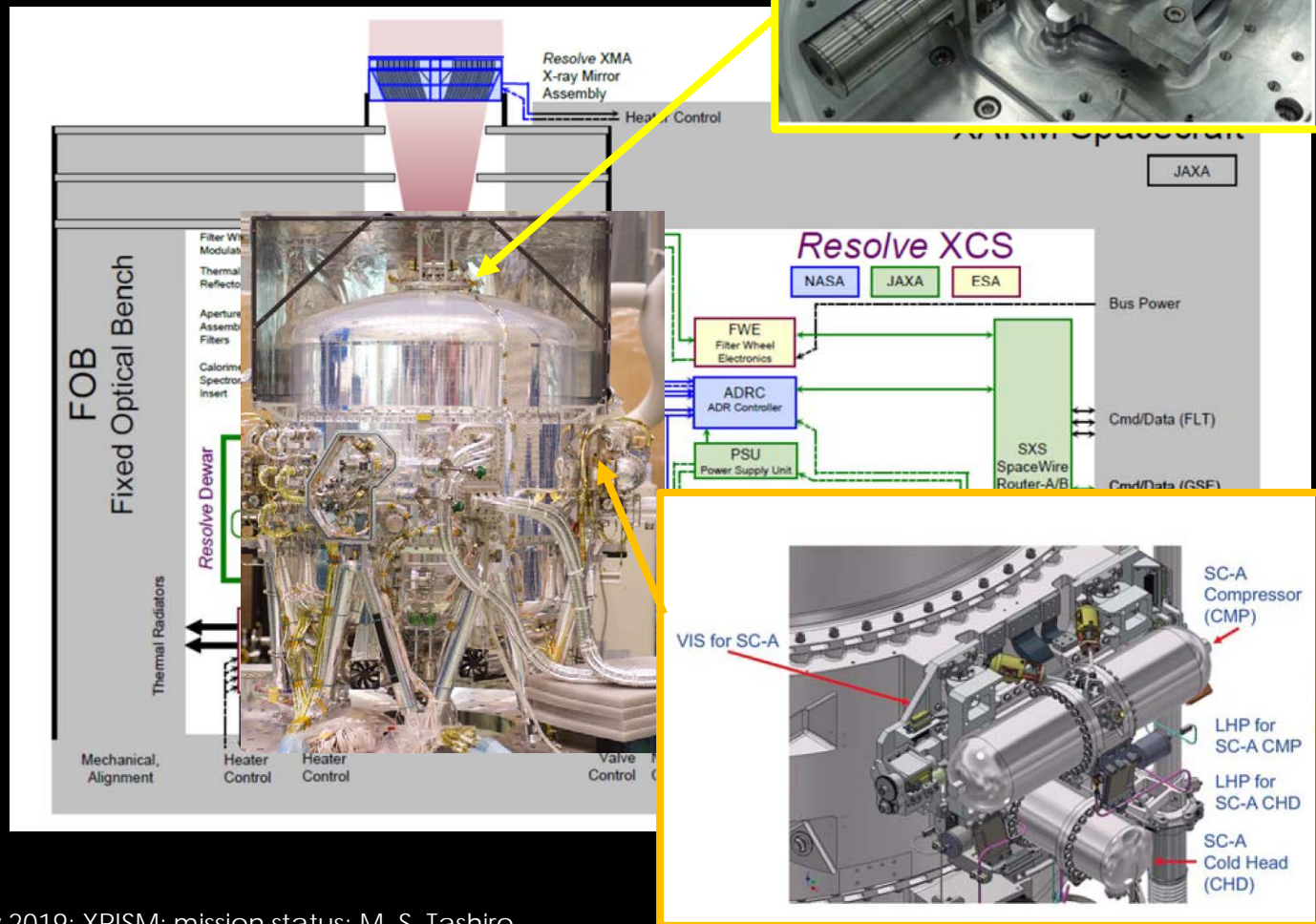
- Major changes from Hitomi;
 - Attitude Control System
 - Sensors
 - STT → conventional and reliable model, → user 2 out of 3 sets
 - DSS → wider FOV, (cold) redundant system
 - Processor (software)
 - Fault Detection Isolation Reconfiguration → reviewed and revised; will test as we fly





STATUS: RESOLVE

- Dewar
 - **DWR Gate Valve** open; XRISM introduces *Eddy Current Dumper* to reduce shock to thermal/optical filters
 - **Mechanical Cooler micro-vibration isolator**; XRISM introduces launch lock system to have tolerance to the new mechanical environment due to the dual launch.





STATUS: RESOLVE

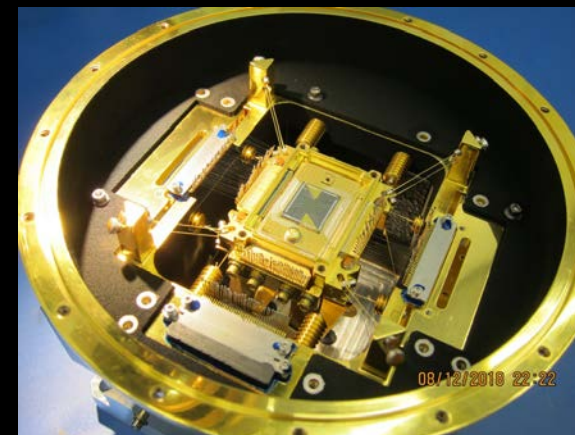
Resolve sensor
@ NASA/GSFC

Status

- FM Detector performance is as expected.
- FM *Calorimeter Sensor Insert* (CSI) has been fabricated → now on-ground calibration

Plan

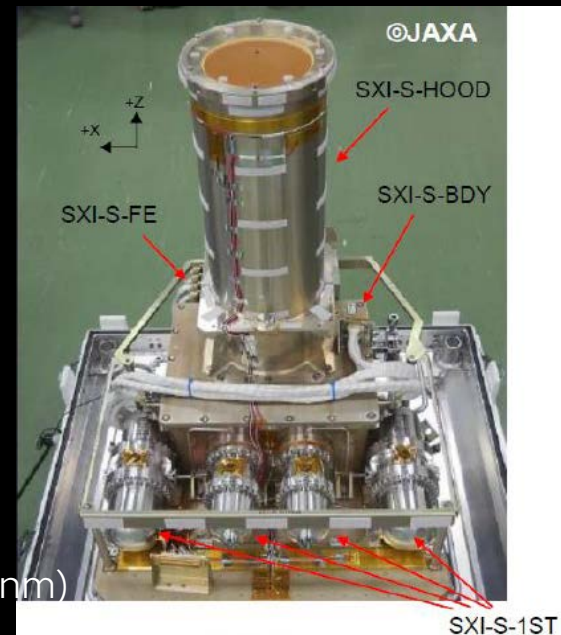
- Pre-Shipment Review is held in the next week
- CSI will be shipped to Japan, after calibration
- CSI installation is planned in November in SHI.



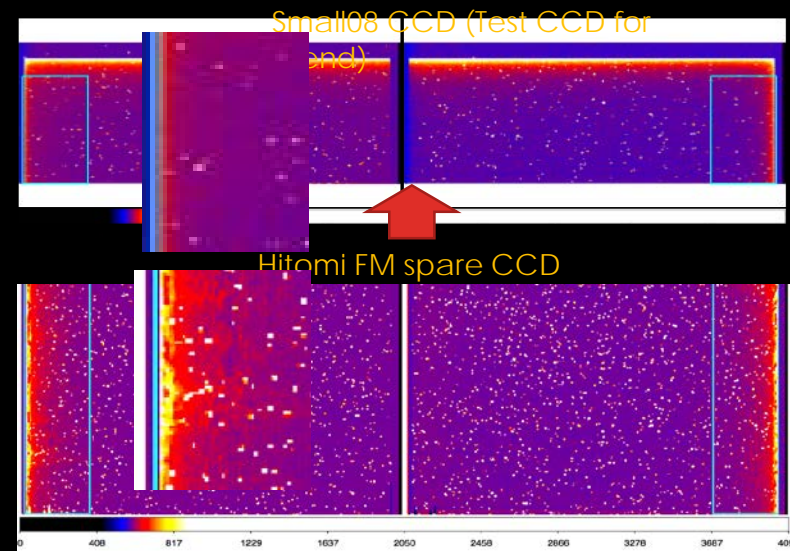


STATUS: XTEND

- *Hitomi-SXT/SXI* worked well but light leakage through the HXT light path was observed
 - XRISM Xtend
 - requires “darkness” in the Spacecraft
 - Improve process to reduce light leak through “pin holes” on the Optical Blocking Filter
- Status:
 - CCD chips; selected FM 4 chips out of 12
 - now under calibration
 - Camera system; industrial CDR was finished
 - Under production



Optical Light (peak 568nm) Irradiation



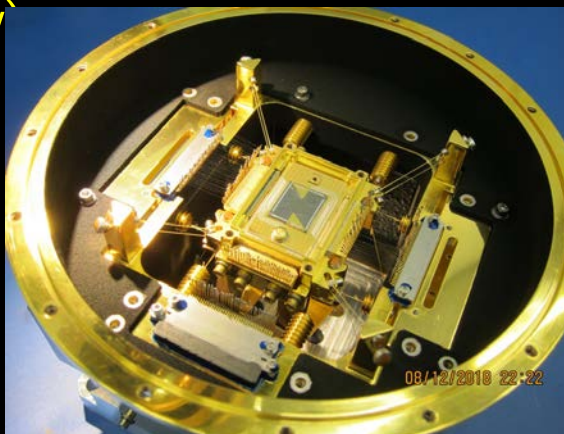


SUMMARY OF MISSION INSTRUMENT PRODUCTION

- Resolve

- XMA (fabrication→assembly)
- CSI
 - Detector Array (completed→ cal)
 - ADR (completed)
- ApA (completed)
- ADRC (assembly)
- DWR, cooler, CD (assembly)
- Xbox (nearly completed)
- PSP (fabrication)

Resolve sensor
@ NASA/GSFC



- Xtend

- XMA (fabrication→ assembly)
- CCD (screening → calibration)
- SXI-S (procurement)
- Electronics (procurement/ assembly)



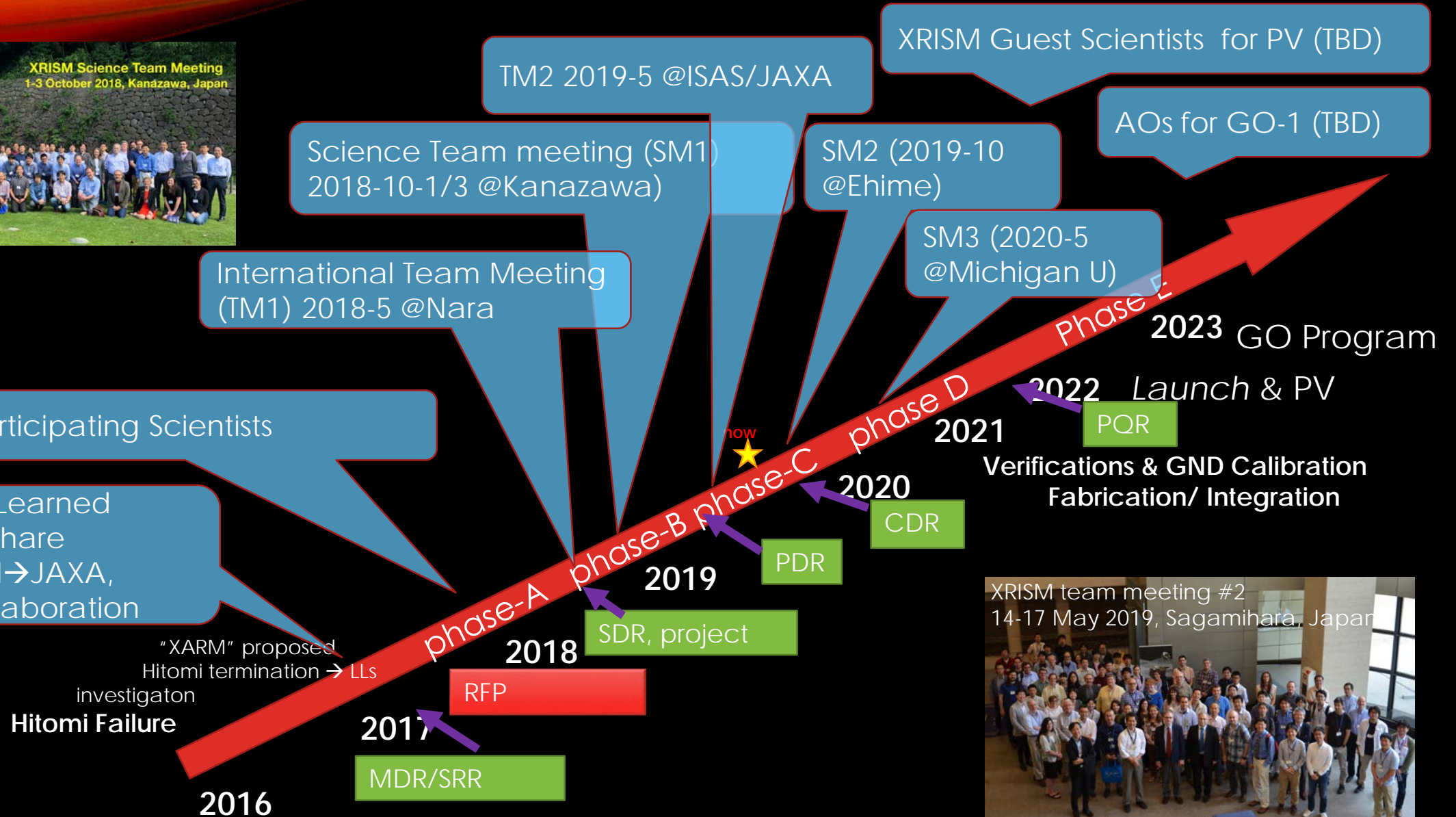
Mile stones...

2019-12 system integration 1
2020-04/05 mission I/F test
2020-07 system integration 2, 3, 4
2021-01 proto-flight test

2022-01 launch



FOR SCIENCE PRODUCTION



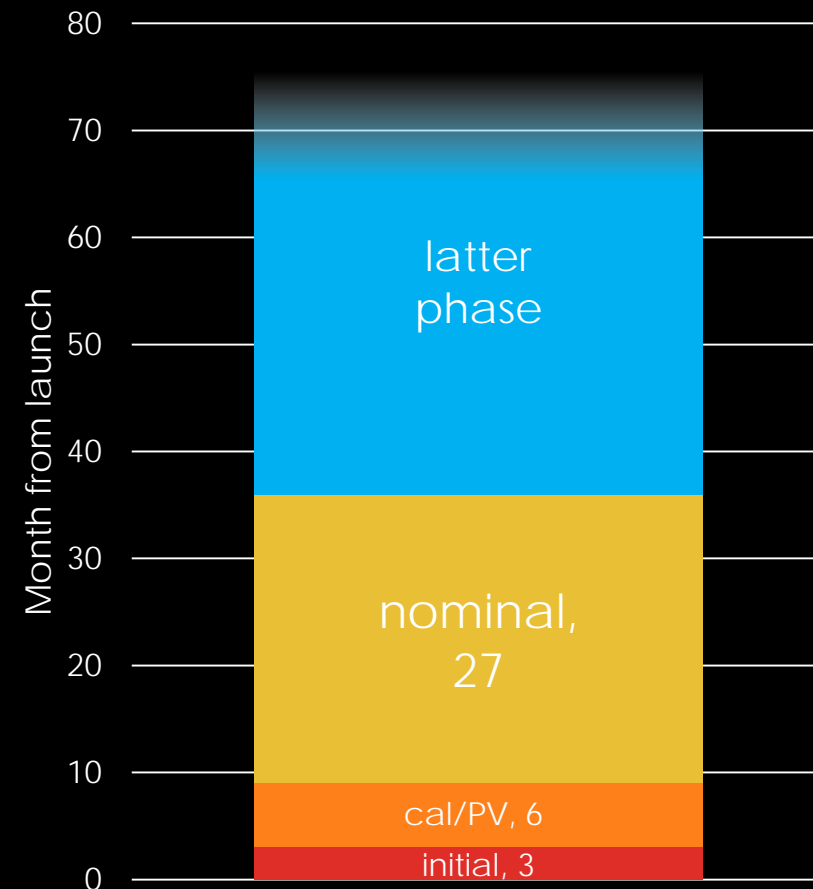


OPERATION PHASES AND GUEST OBSERVER PROGRAM

- Initial phase (launch to 3 months)
 - Critical operation (~ 1 week (TBD))
 - Commissioning (~ 12 weeks (TBD))
- Nominal phase(until 3 years after launch)
 - Initial calibration & performance verification (~ 6 months)
 - Nominal observation (GO phases)

(mission completion/extension review)

- Latter phase





XRISM FOR YOUR SCIENCE

