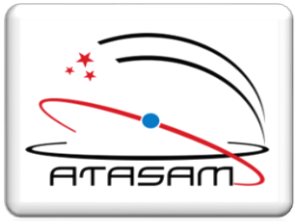
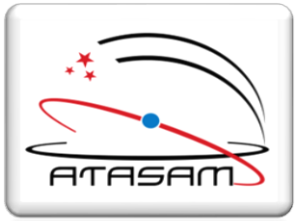


The DAG Project

Lorenzo Zago

DAG Project Office

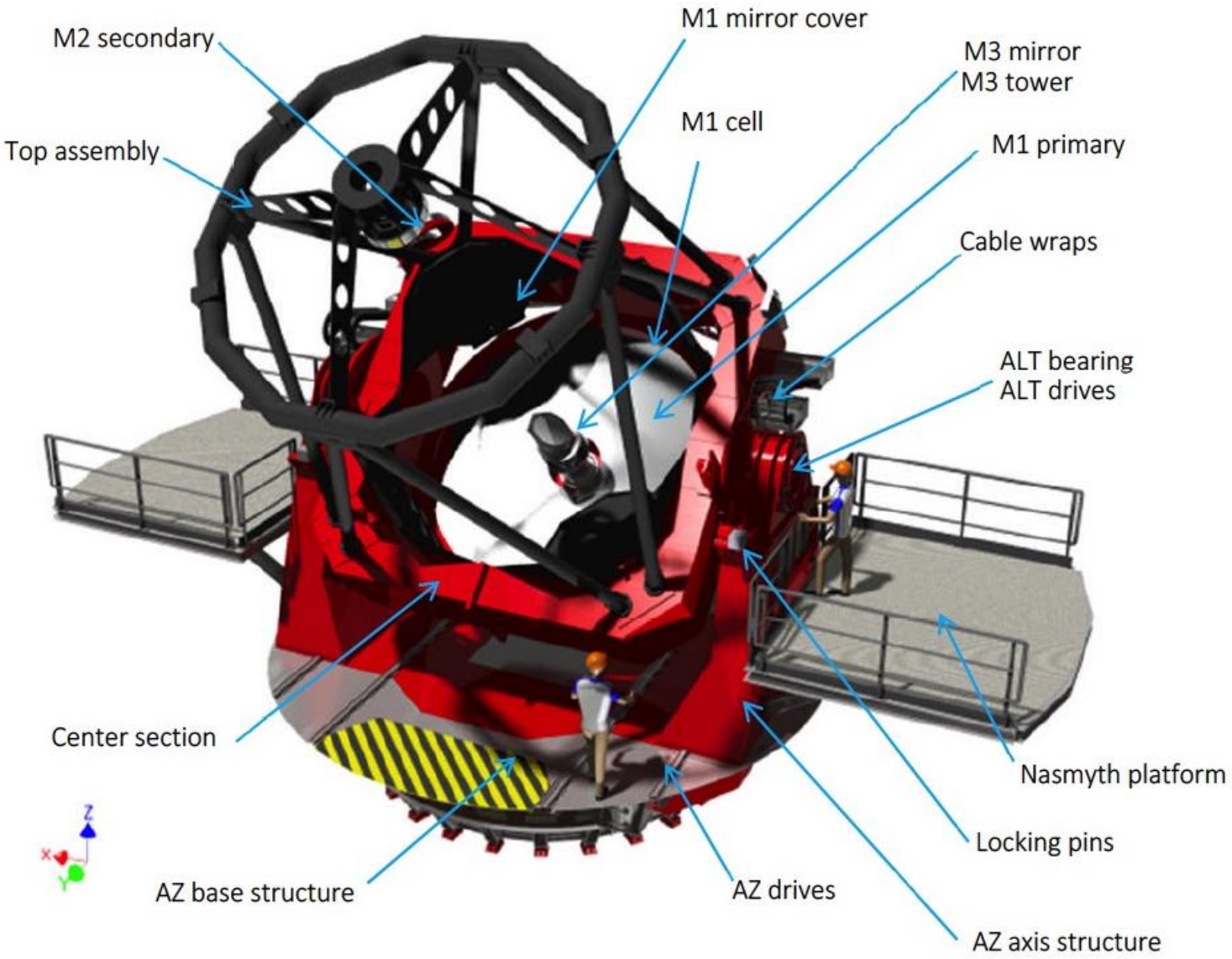
- Let me introduce myself …
- The DAG telescope
- Enclosure
- Instrumentation
- Planning and programmatic



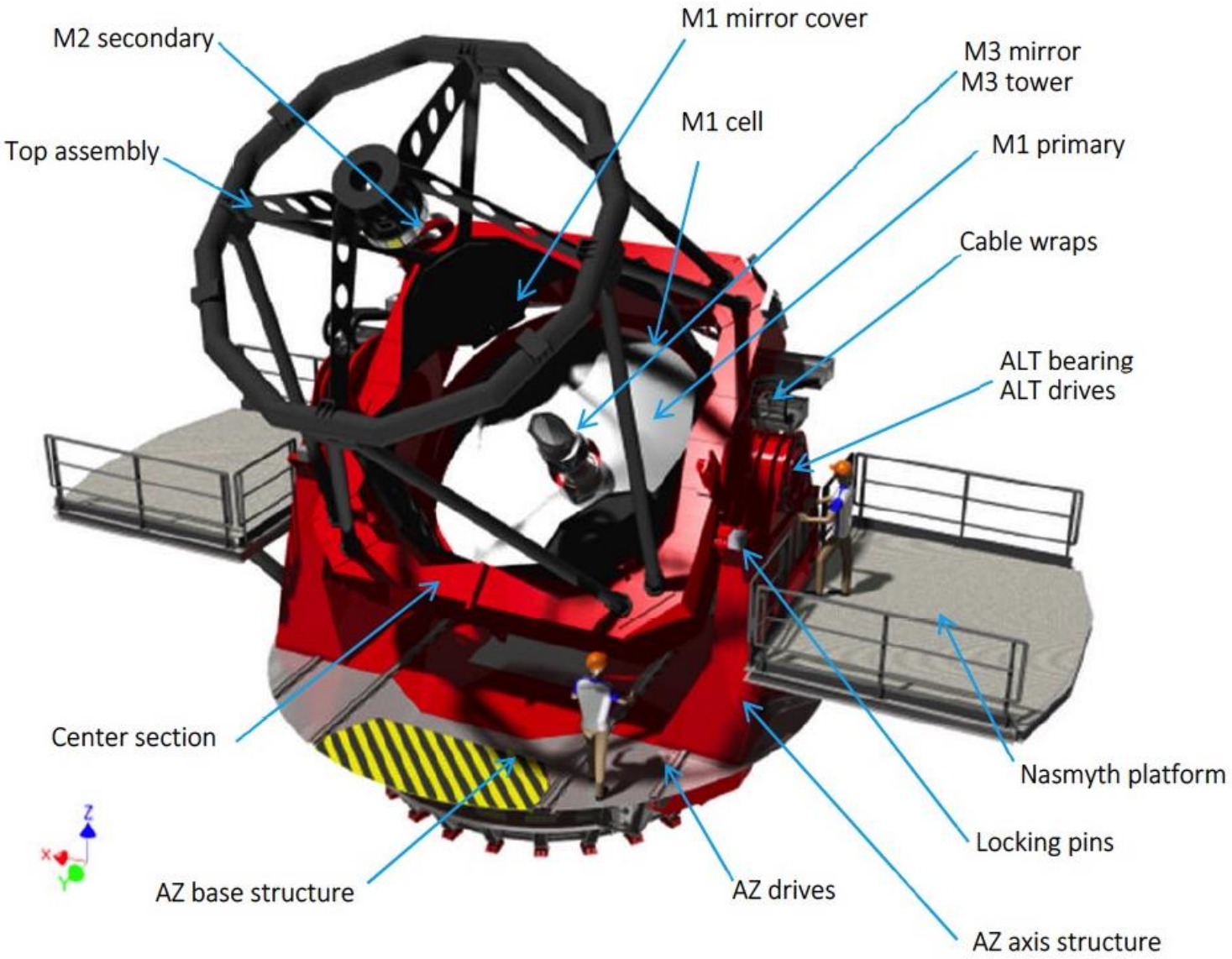
Let me introduce myself …

Lorenzo Zago

The DAG telescope



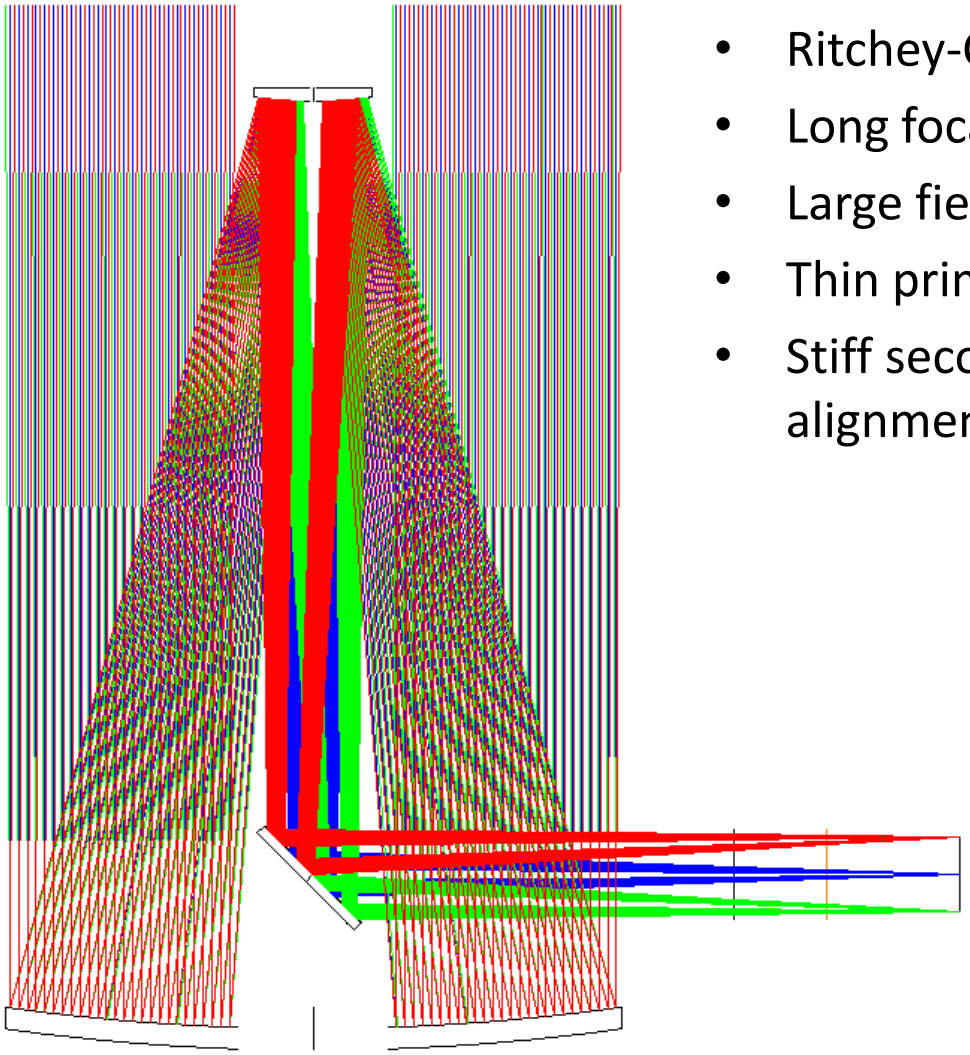
The DAG telescope



Main specifications

Optical	
Configuration	Ritchey-Chretien
Primary mirror diameter	4 m
Primary F#	1.8
Effective focal length	56 m
Operational waveband	350 to 3000 nm
Unvignetted FoV (diameter)	30 arcmin
Nominal science FoV	10 arcmin
Telescope is diffraction-limited	when operating in adaptive optics correction mode

Telescope optics



- Ritchey-Chretien
- Long focal length -> high resolution
- Large field of view up to 30 arcmin
- Thin primary mirror with active optics
- Stiff secondary and tertiary with active alignment mechanisms

Main specifications

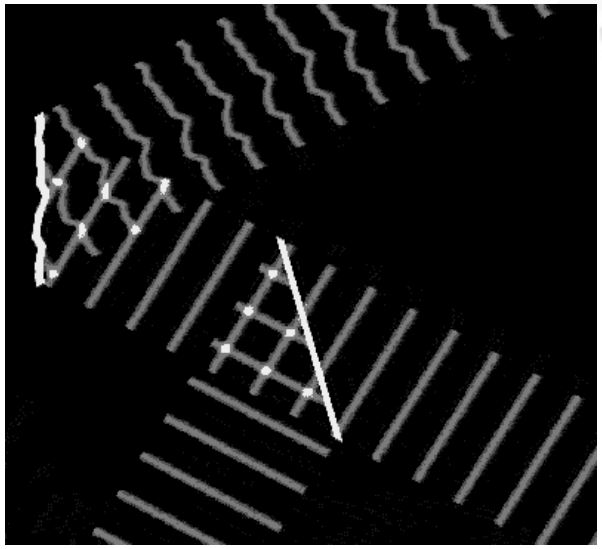
Mechanical - Control	
Mounting	Altitude-Azimuth
Pointing accuracy, absolute	< 2 arcsec
Tracking accuracy, closed loop	*rms* < 0.1 arcsec
Active optics of primary	66 axial active supports 24 lateral astatic levers 6 fixed points (3 axial and 3 tangential)
Active secondary	5 degrees of freedom for alignment
Active tertiary	Tip-tilt + Nasmyth axis alignment

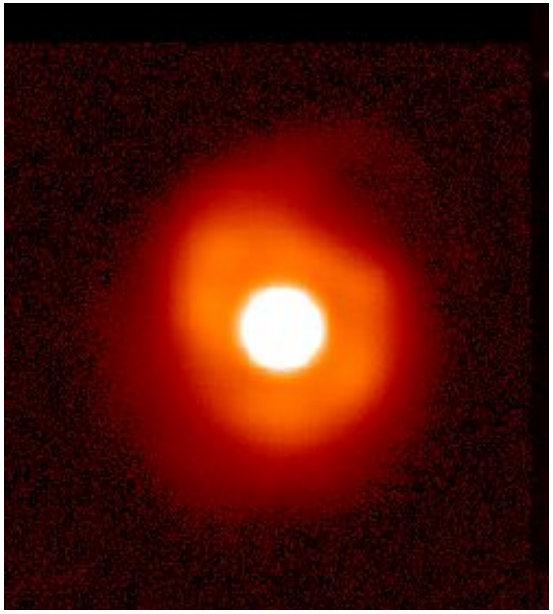
Other requirememements

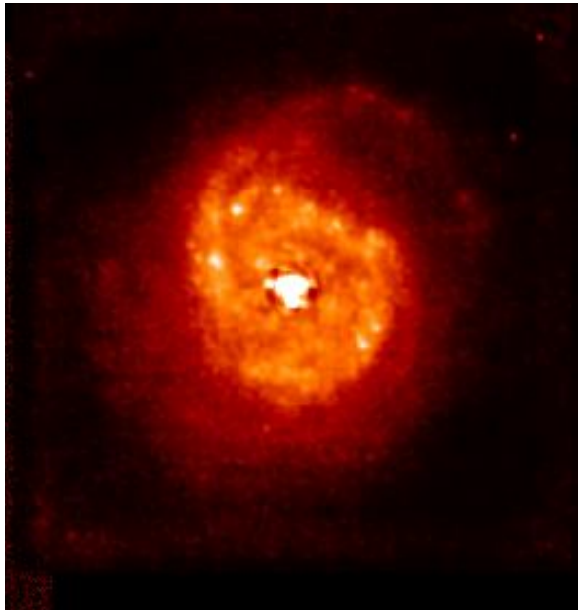
- Seismic
- Wind
- Thermal
- …

Adaptive optics

A main driver in the DAG telescope design



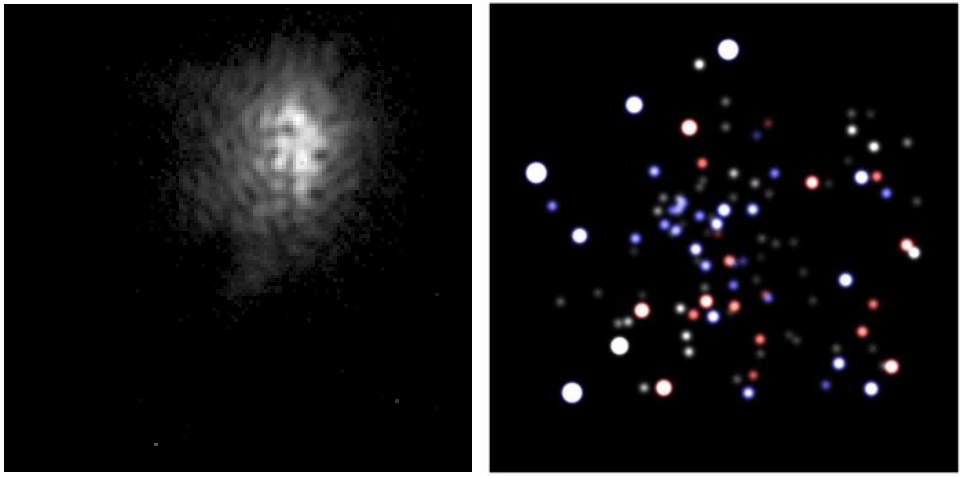




Adaptive optics

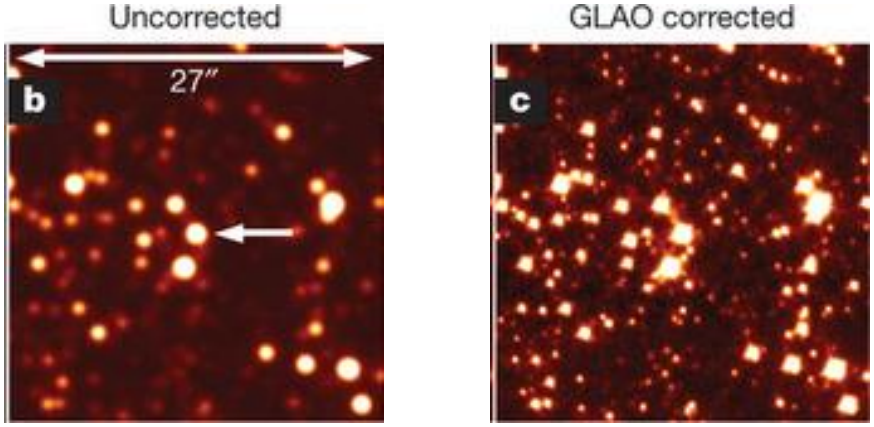
Two instances are planned for the 1st AO generation:

1. Narrow field (“classical”) AO



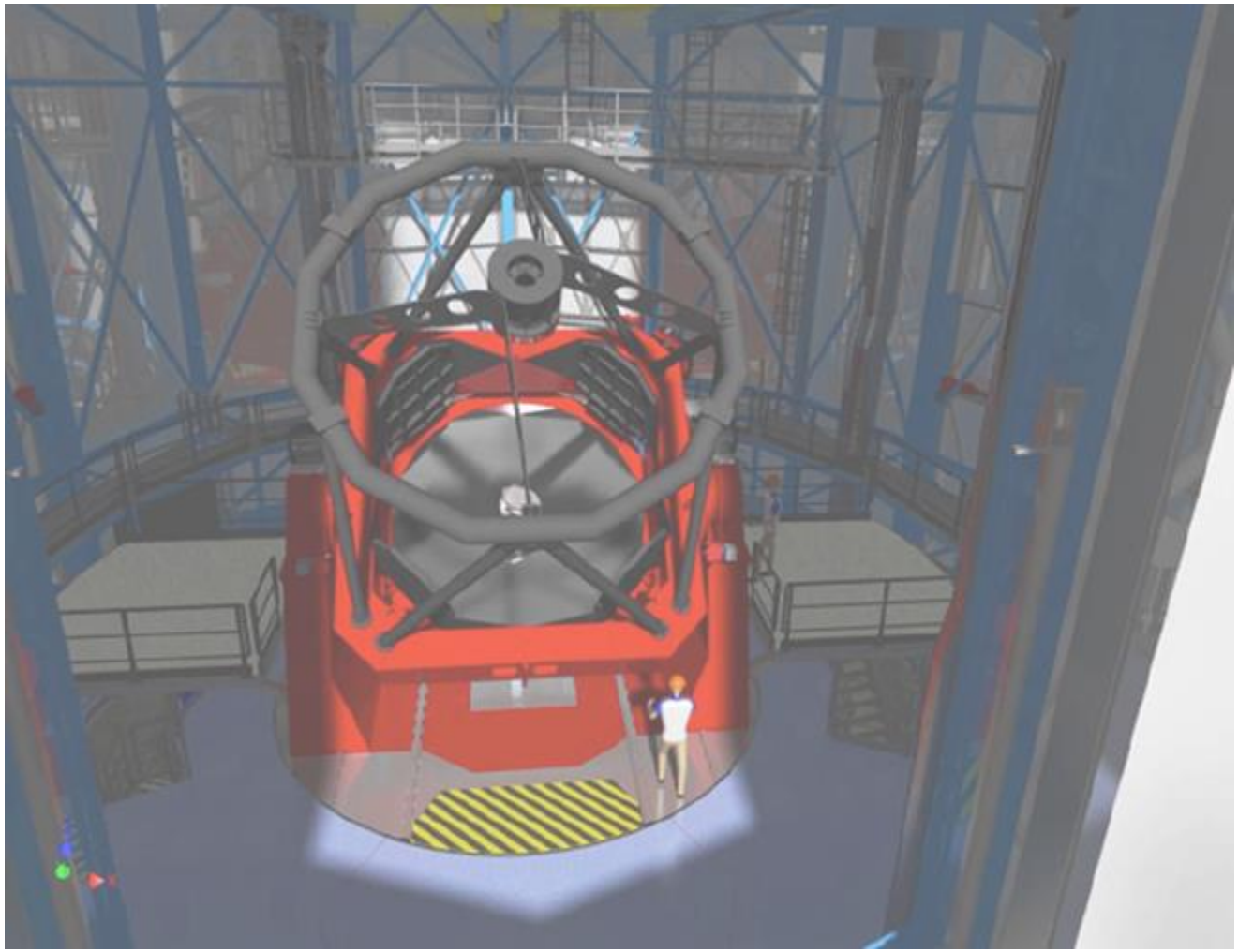
3 arcsec field of viewc

2. Ground layer AO, allowing FoV up to 5 arcmin

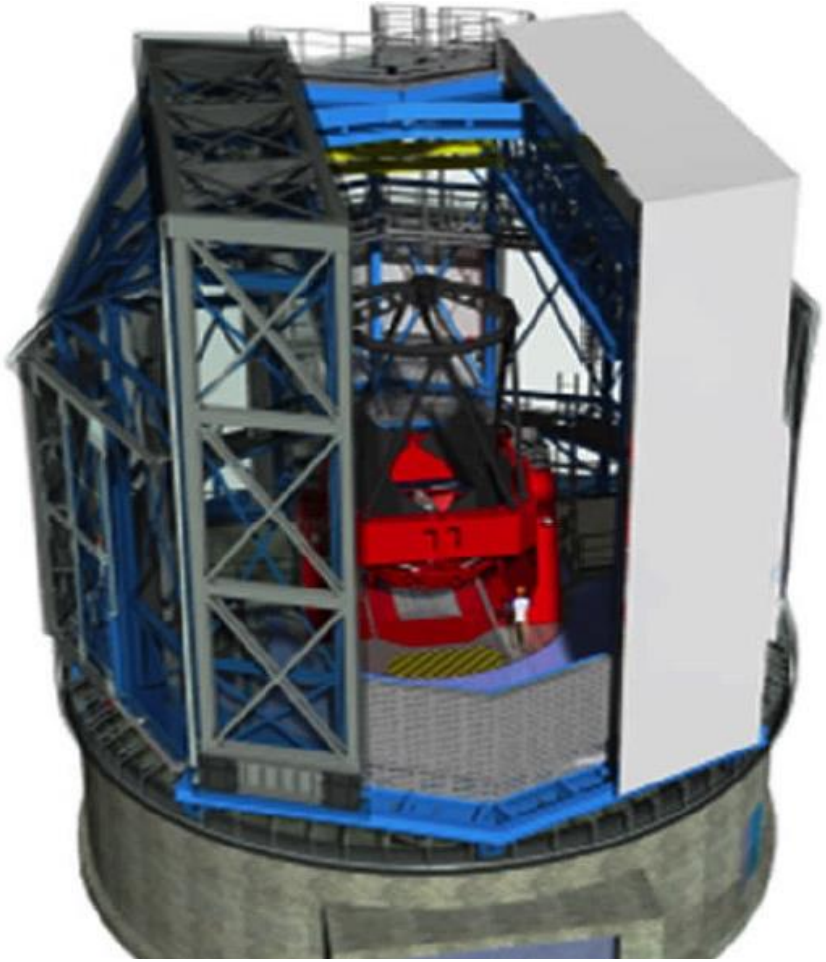


30 arcsec field of view

Telescope inside a rotating enclosure



The enclosure



State-of-the-art rotating enclosure

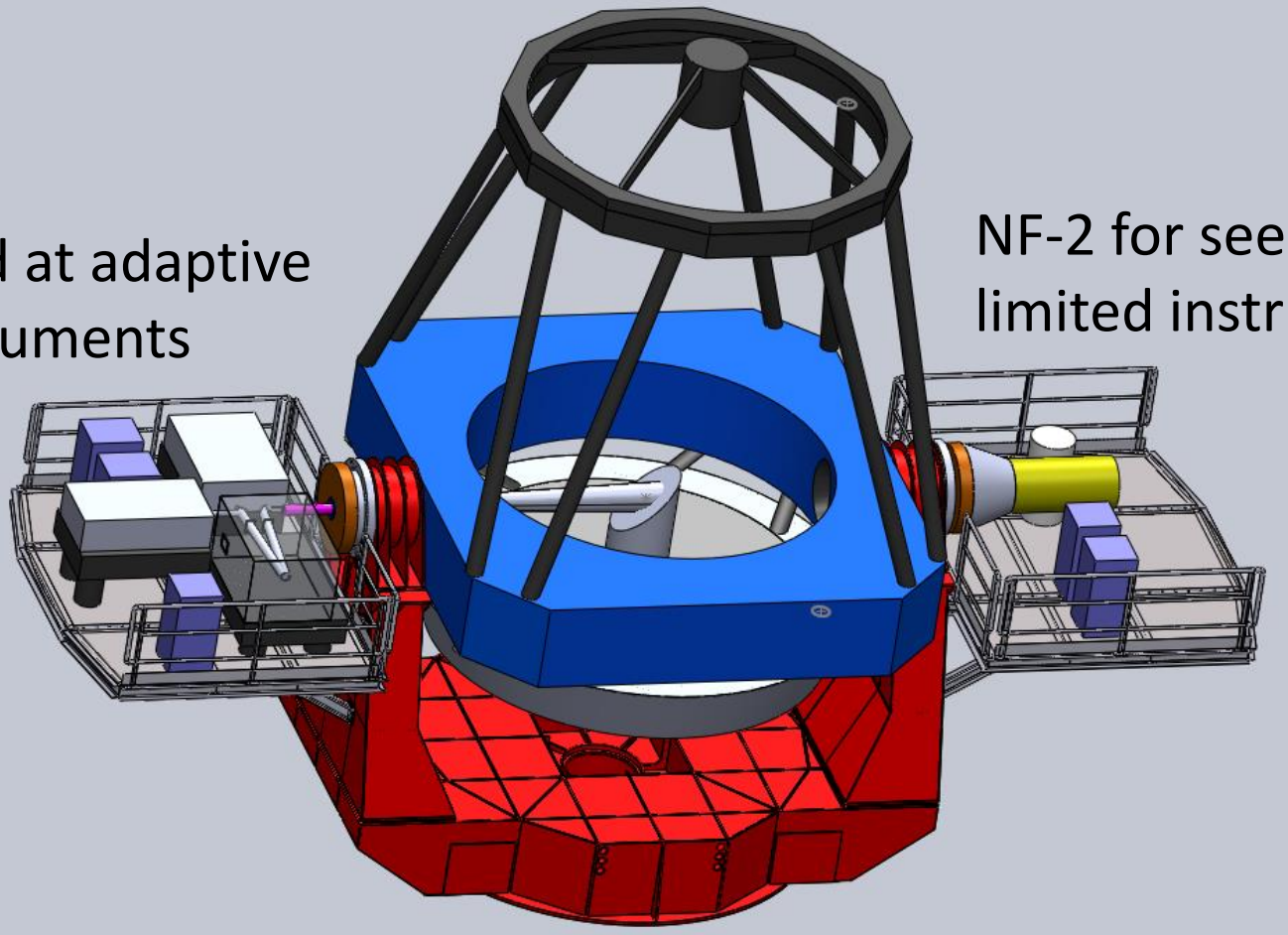
- Large slit door
- Active environment control, (when closed)
- Louvers and wind screen for optimal ventilation (during observations)
- Bridge crane for telescope maintenance operations

Intrumentation

Two Nasmyth foci

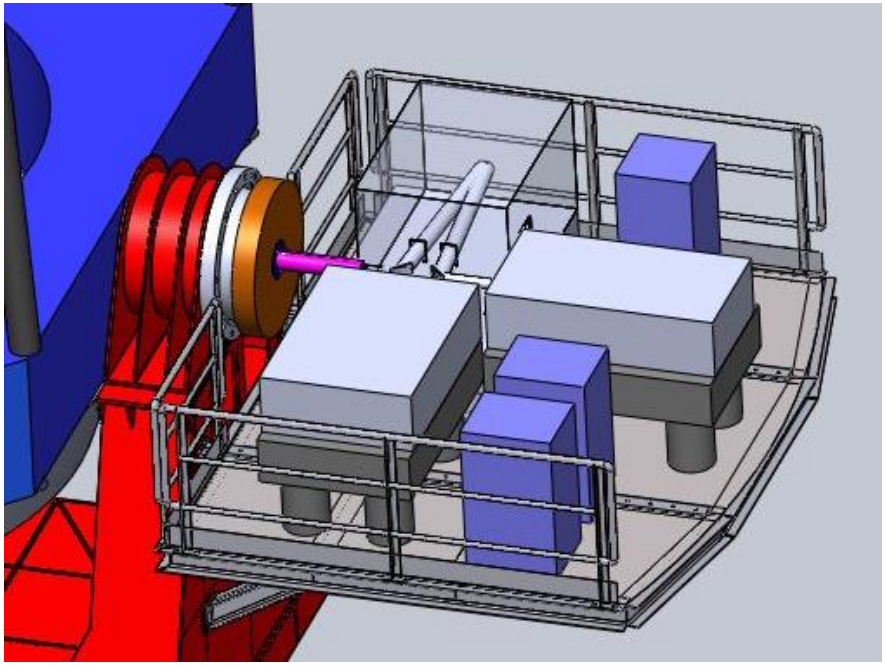
NF-1 aimed at adaptive optics instruments

NF-2 for seeing limited instruments



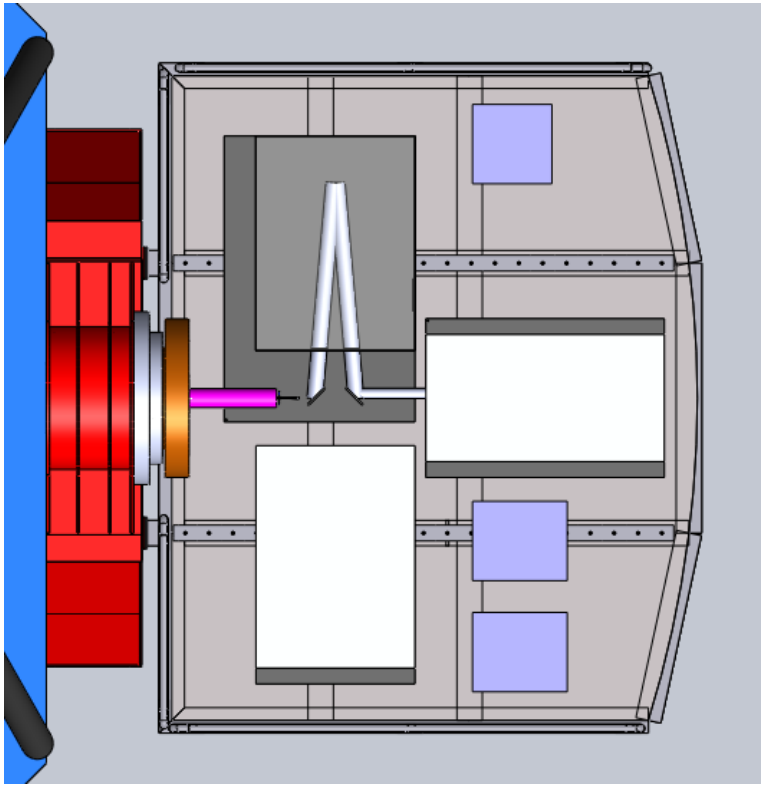
Proposal for the 1st instruments generation

Nasmyth focus 1

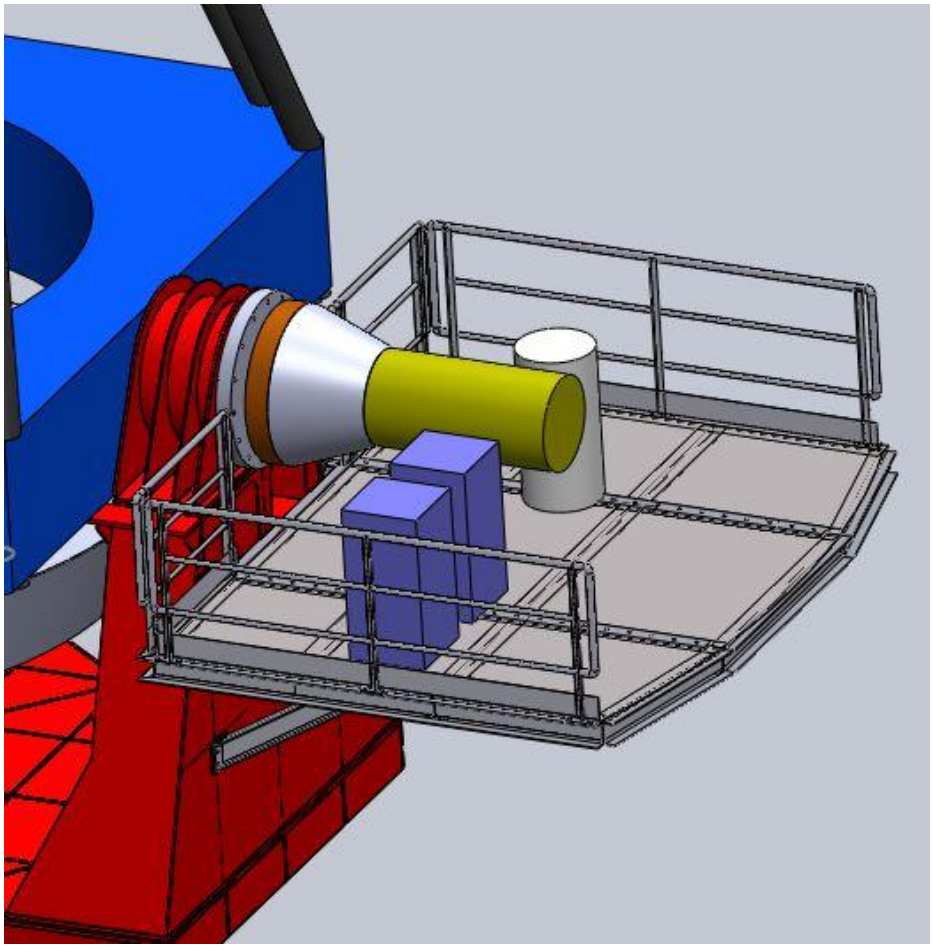


- Derotator
- Field corrector with FoV up to 5 arcmin
- Place for at least two different instruments fed by the AO system

NF-1 aimed at adaptive optics instruments



Nasmyth focus 2



NF-2 for seeing limited instruments

- Adapter-rotator installed on the telescope flange
- Field of view up to 30 arcmin
- One rotating instrument
- Possibility to add more instruments (providing their own derotator)

Observing with DAG

A precious resource

to be managed accordingly

- Visitor mode
- Flexible scheduling
- Service observing

Programmatics

International calls for tender and procurements

- Telescope, assigned
- Enclosure
- Coating plant

National procurements

- Architecture and civil engineering
- Civil works and buildings
- All handling equipment
- All services

Coordinated with and by public authorities

- Road accesses

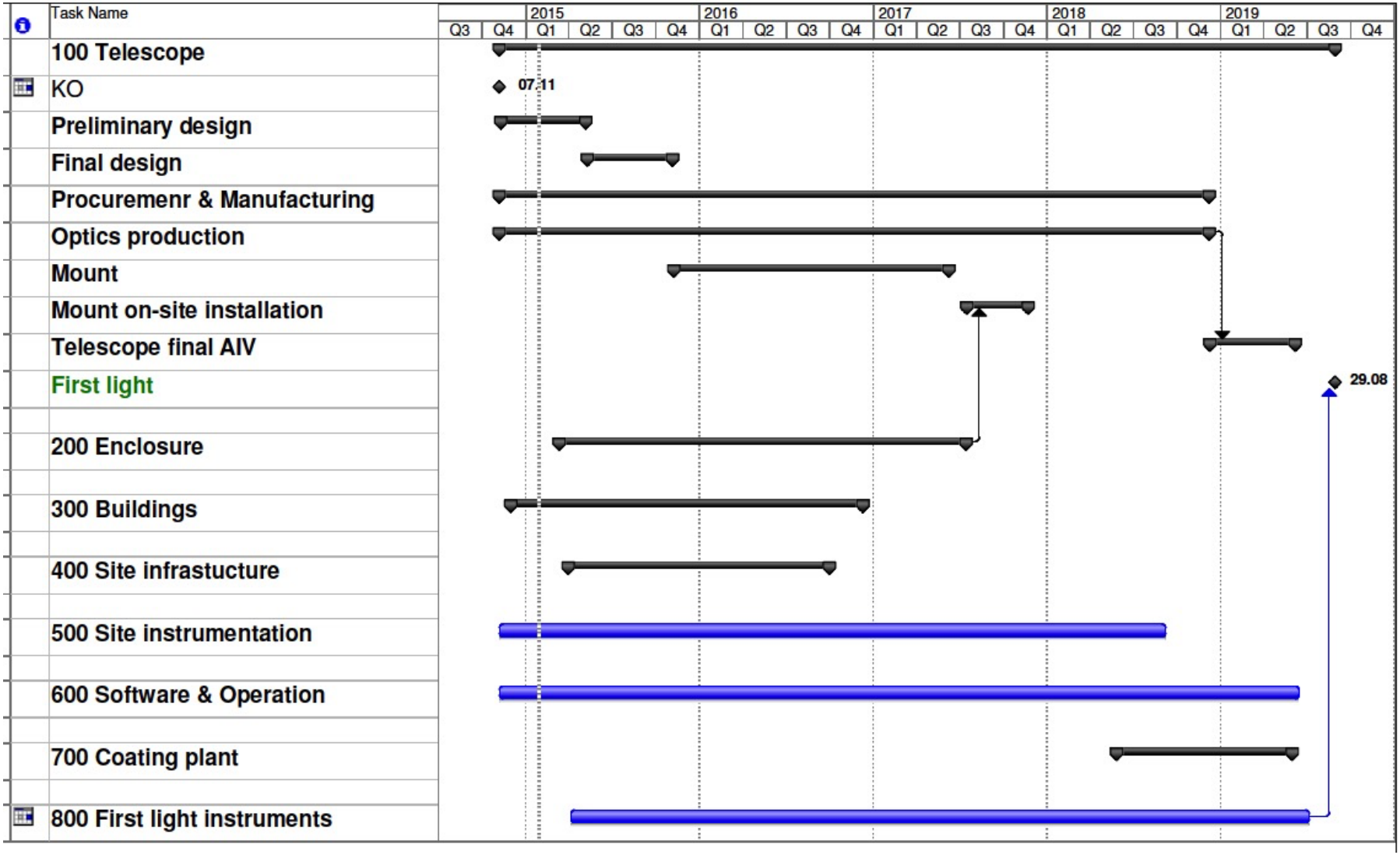
ATASAM and collaborating institutes

- Software and operation

Institutes collaborations

- AO and instruments

Planning


Task Name
2015
2016
2017
2018
2019
Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
100 Telescope
KO
07.11
Preliminary design
Final design
Procuremenr & Manufacturing
Optics production
Mount
Mount on-site installation
Telescope final AIV
First light
29.08
200 Enclosure
300 Buildings
400 Site infrastucture
500 Site instrumentation
600 Software & Operation
700 Coating plant
800 First light instruments

DAG: a complex project

A new state-of-the-art observatory is much more than the sum of its physical components.

- It is first of all the making of a **complex collaborative** know-how.
- Developing this know-how will be one of the major challenges of the DAG project.

DAG: open to collaborations

- The DAG project welcomes collaborations.
- By its very nature, particularly in the fields of
  - control
  - software
  - instrumentation

  DAG will be an open ended project …

- Whatever is your specialty, related to astronomy or engineering, DAG may very likely take advantage of it.

There is so much to do … do not hesitate to participate !

A common objective: first light in 2019 !

May you build a ladder to the stars and climb on every rung …

Bob Dylan – Forever young