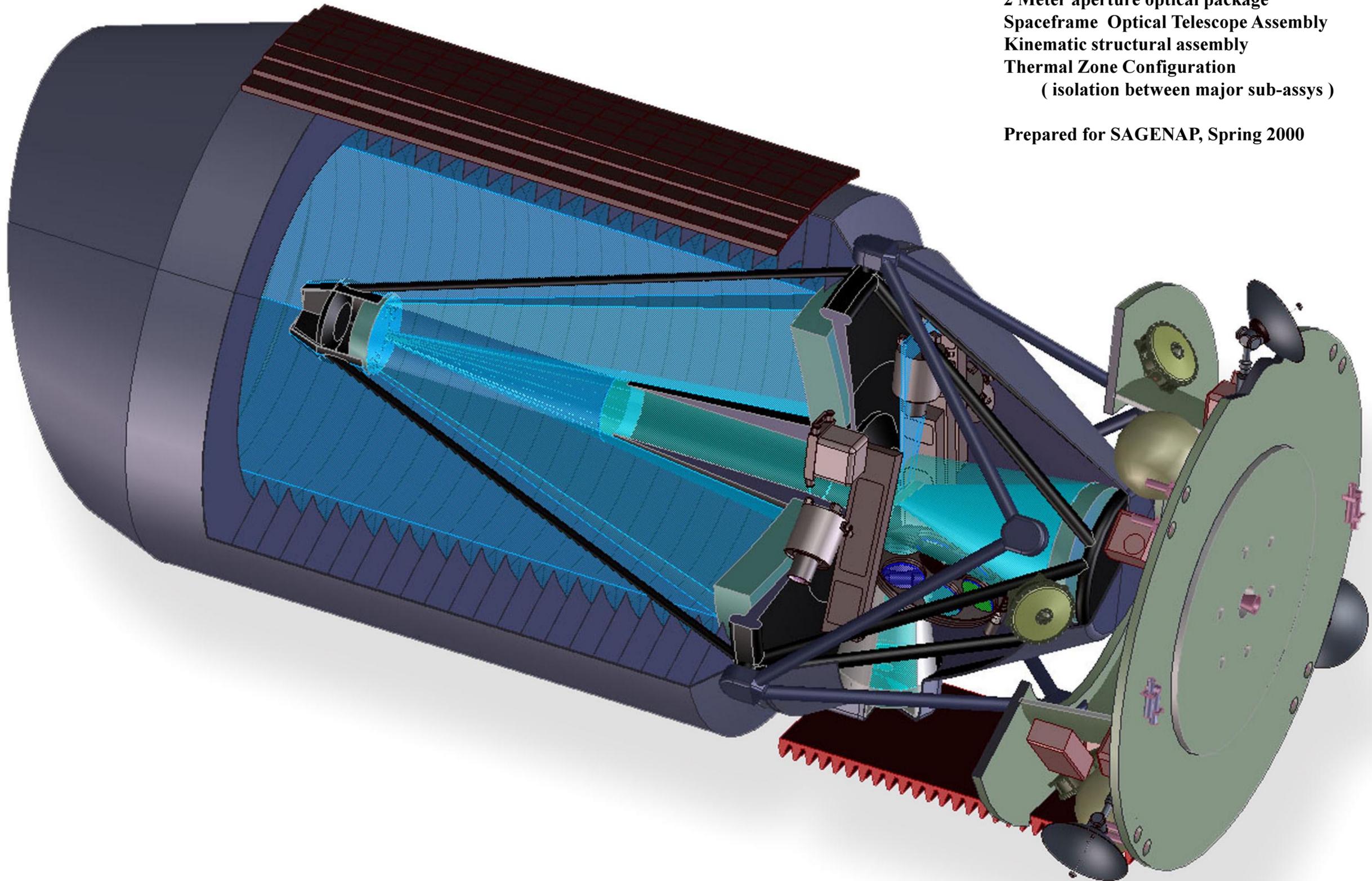


SNAP Conceptual design Model TMA-43

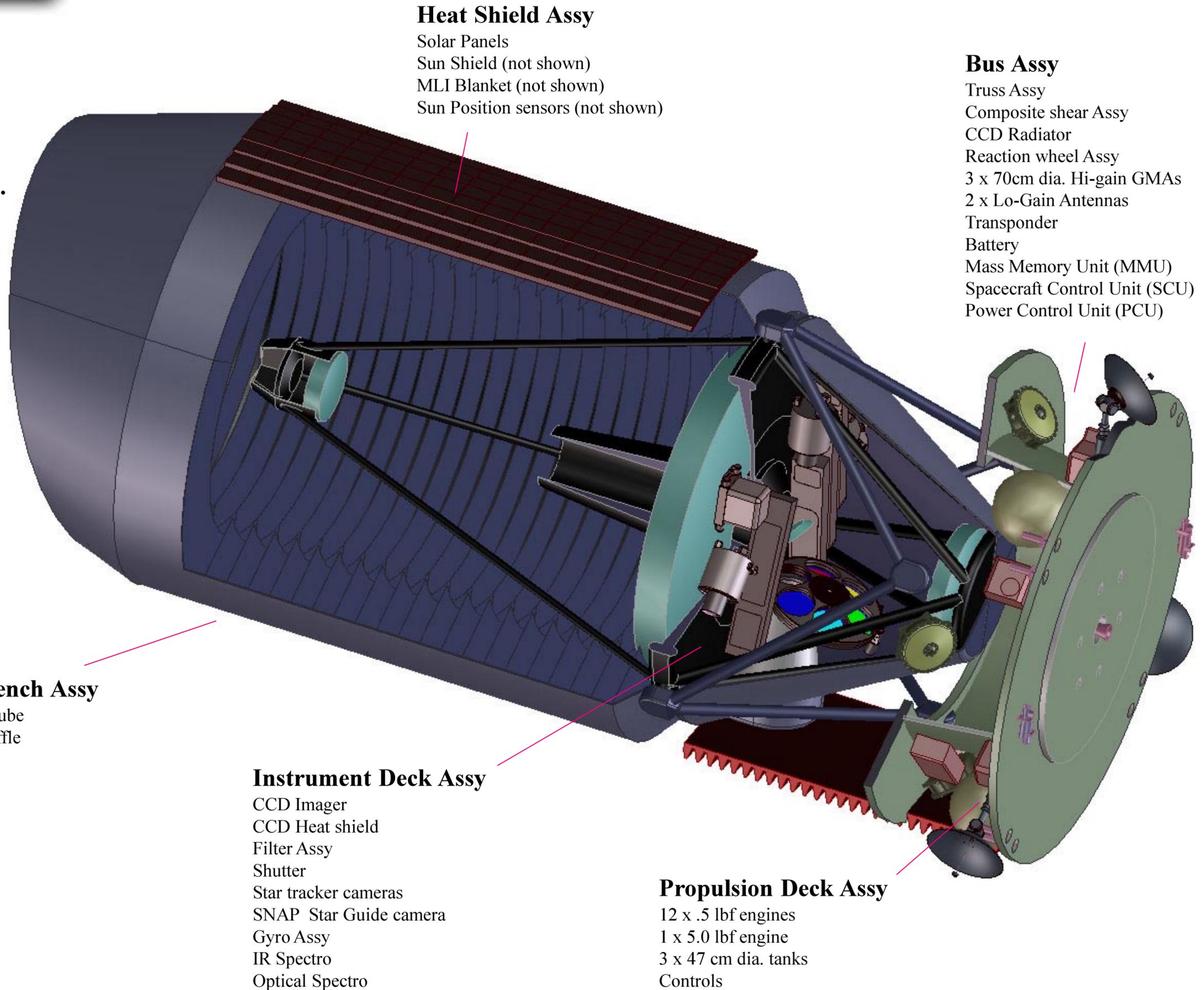
2 Meter aperture optical package
Spaceframe Optical Telescope Assembly
Kinematic structural assembly
Thermal Zone Configuration
(isolation between major sub-assys)

Prepared for SAGENAP, Spring 2000



TMA-43
is shown here in one
of several configurations.

TMA-51 and
TMA-55 can also be
accomodated.
Both, however, have
improved options and
new requirements that
are leading to the NEXT
conceptual design.



Heat Shield Assy

- Solar Panels
- Sun Shield (not shown)
- MLI Blanket (not shown)
- Sun Position sensors (not shown)

Bus Assy

- Truss Assy
- Composite shear Assy
- CCD Radiator
- Reaction wheel Assy
- 3 x 70cm dia. Hi-gain GMAs
- 2 x Lo-Gain Antennas
- Transponder
- Battery
- Mass Memory Unit (MMU)
- Spacecraft Control Unit (SCU)
- Power Control Unit (PCU)

Optical Bench Assy

- Main Baffle Tube
- Secondary Baffle
- Inner Baffle
- Space Frame
- Light Shields

Instrument Deck Assy

- CCD Imager
- CCD Heat shield
- Filter Assy
- Shutter
- Star tracker cameras
- SNAP Star Guide camera
- Gyro Assy
- IR Spectro
- Optical Spectro

Propulsion Deck Assy

- 12 x .5 lbf engines
- 1 x 5.0 lbf engine
- 3 x 47 cm dia. tanks
- Controls



Trade Space Overview

Launch vehicle vs Optical package

Launch Vehicles

Candidates have been arranged approximately in descending order with respect to:
 Cost,
 Launch capacity, and
 Fairing volume

Optical Packages

The candidates below have been worked up in enough detail to suggest plausible Payload

			TMA-0x Off-Axis	TMA3x- Off-Axis	TMA-0x	TMA-3x	TMA-40	TMA-43	TMA-51	TMA-55
Space Transportation System	24,000 Kg	\$ 500 M	○	○	○	○	○	○	○	○
Titan IVB/Centaur/SRMU	8600 Kg	\$ 250 M	○	○	○	○	○	○	○	○
Ariane 5	6800 Kg	\$ 120 M	○	○	○	○	○	○	○	○
EELV-Heavy	6120 Kg		○	○	○	○	○	○	○	○
H2-A	6000 Kg		○	○	○	○	○	○	○	○
Proton	4800 Kg	\$ 50-70 M	○	○	○	○	○	○	○	○
H2	4000 Kg	\$ 150 M	●	●	●	●	●	●	●	●
Sea Launch I/Zenit 3	3300 Kg	\$ 50-70 M	●	●	●	●	●	●	●	●
Delta IV	2800 Kg		●	●	●	●	●	●	●	●
Atlas II ARS	3100 Kg		●	●	●	●	●	●	●	●
Delta III (2 Stage)	2700 Kg		●	●	●	●	●	●	●	●
Atlas II AR	2970 Kg	\$ 95 M	●	●	●	●	●	●	●	●
Delta III (3 Stage)	2,799 Kg		●	●	●	●	●	●	●	●
EELV-Small	1840 Kg		●	●	●	●	●	●	●	●
Delta II 7925	1260 Kg	\$ 45 M	●	●	●	●	●	●	●	●

We are HERE

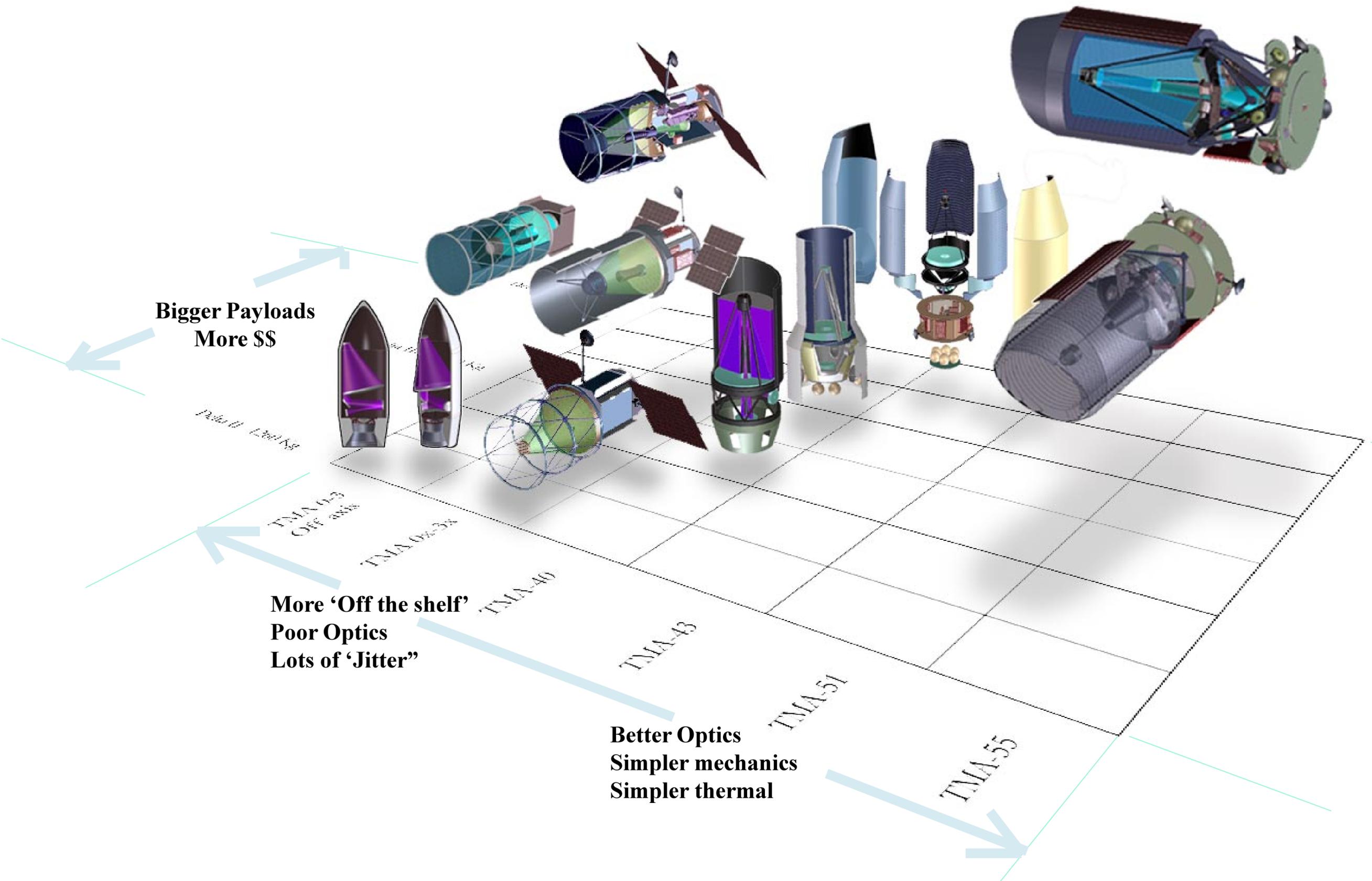
- Anything is possible
- Will certainly work, and we can expand the mission
- Works, and we have data points to show how
- Will probably work but we haven't tried it.
- Might Work but will take a Heroic effort
- Won't work

Trade Space Overview

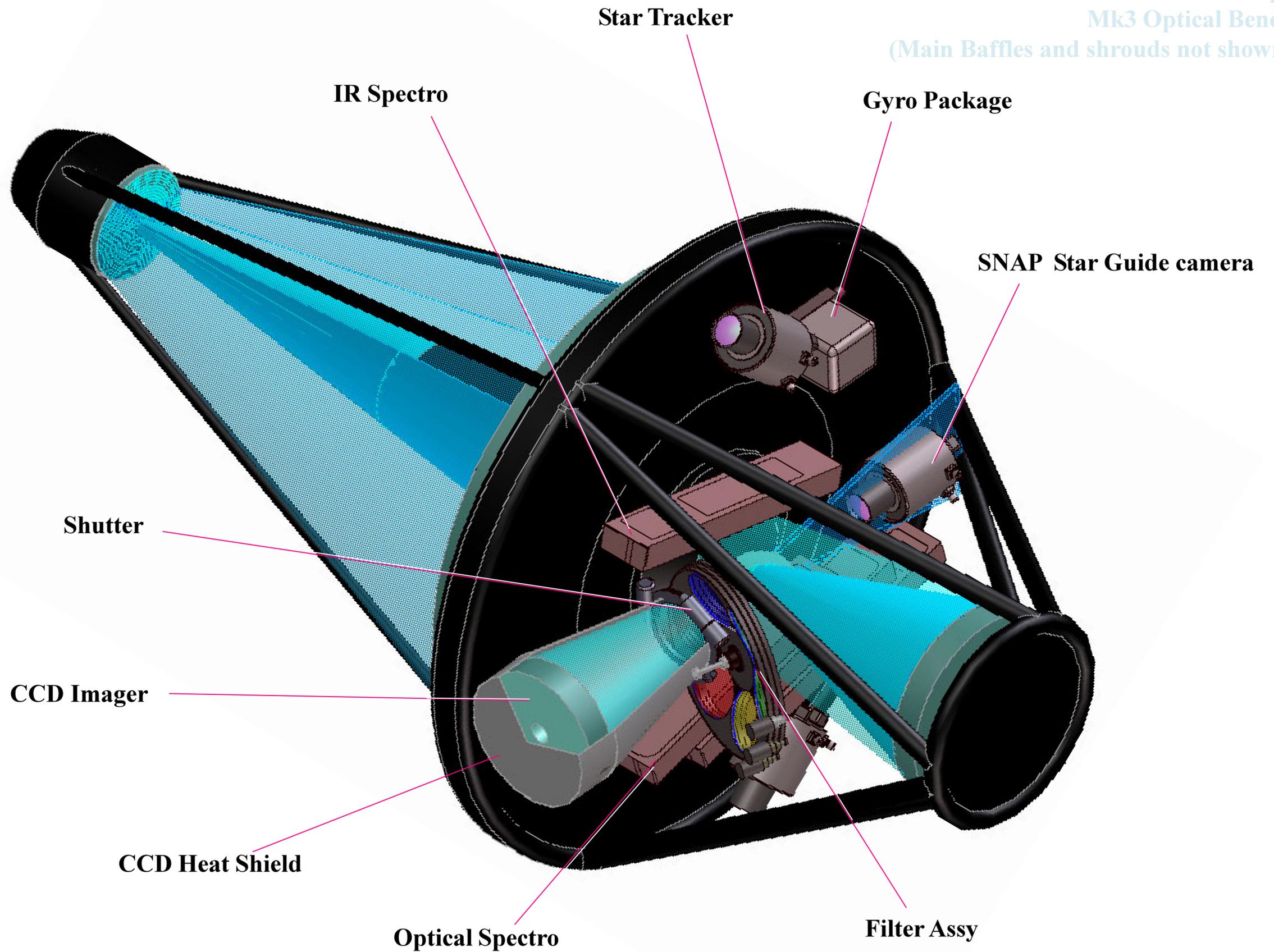
**Bigger Payloads
More \$\$**

**More 'Off the shelf'
Poor Optics
Lots of 'Jitter'**

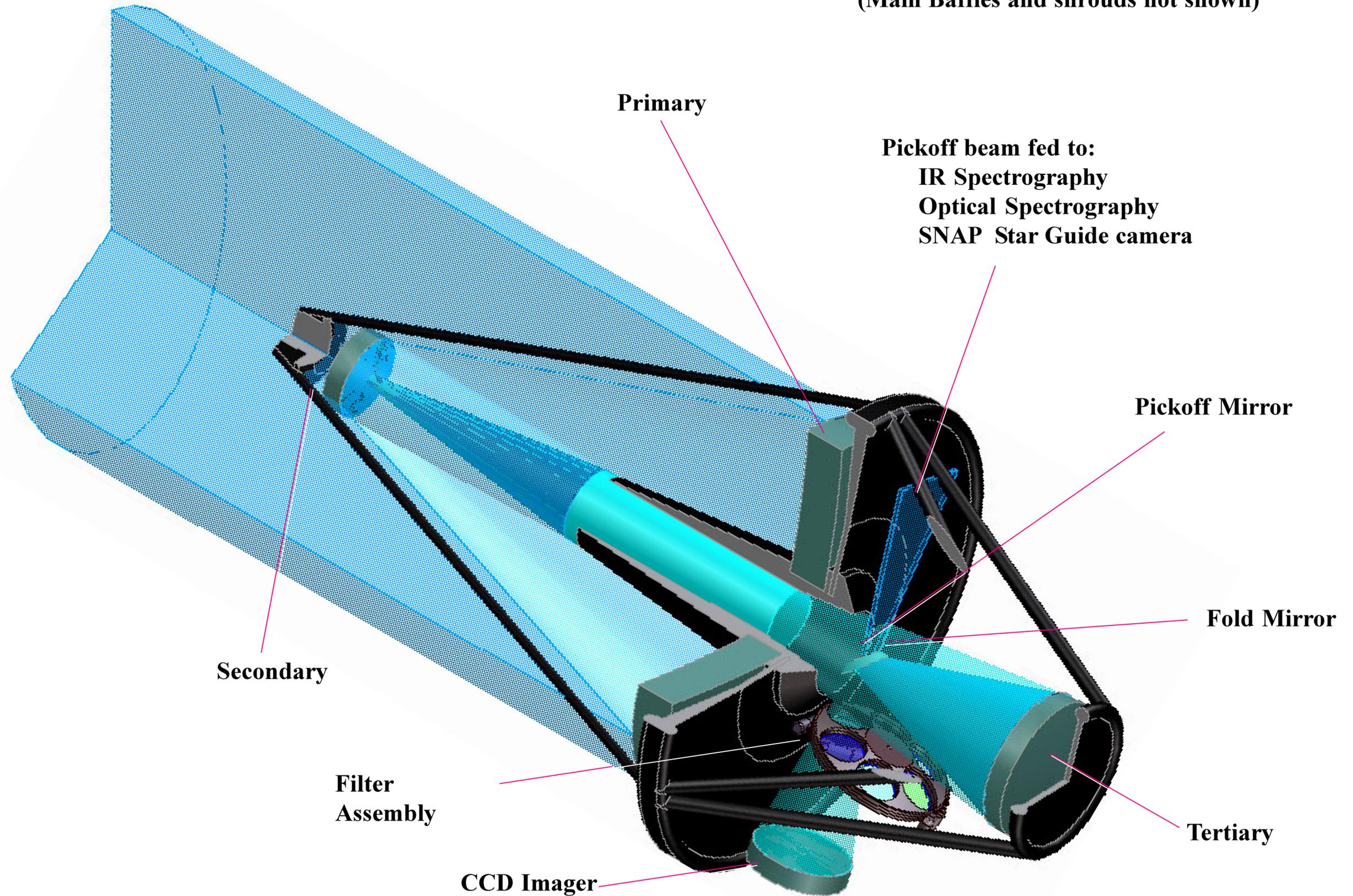
**Better Optics
Simpler mechanics
Simpler thermal**

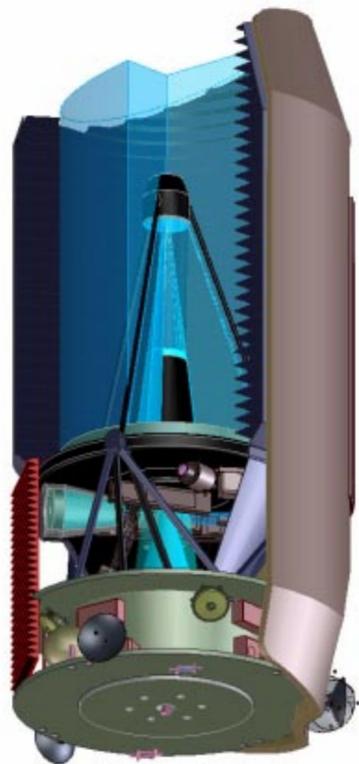


Instrument Deck
TMA-43 Beam Envelope
Mk3 Optical Bench
(Main Baffles and shrouds not shown)



**TMA-43 Beam Envelope
Mk3 Optical Bench
(Main Baffles and shrouds not shown)**





TMA-43 / Delta IV Launch Configuration

