

An Astronomical Telescope for All New York

NEW YORK STATE OBSERVATORY



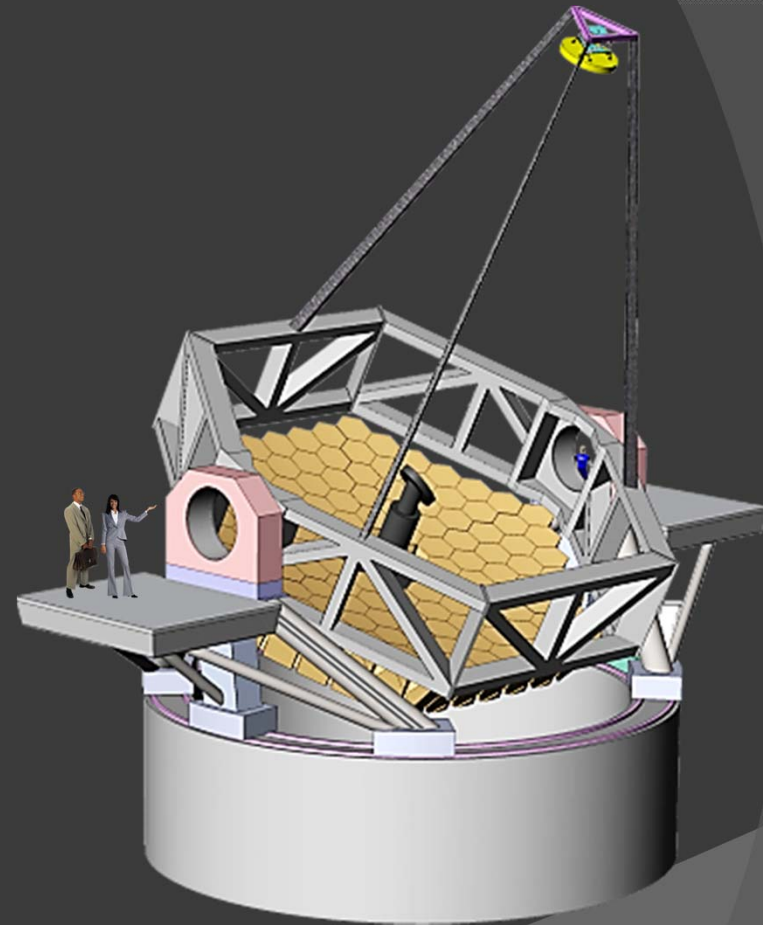
An Observatory for All New York

- The New York Astronomical Corporation (NYAC)
 - Formed to Build a Telescope for NY Universities
 - 23 NY University Members Including SUNY and CUNY
 - Operates the Astronomical Society of NY which holds twice yearly science meetings and awards travel funds and student prizes.
 - The Only Pan-NY Astronomical Entity
 - 501C3 Business Entity
 - Intends to Develop a Large Telescope for All NY Institutions



Largest Telescope in the World

- 12 meter aperture optical/Infrared Telescope
 - 1.75 X Larger than the largest telescopes in existence
- An astronomical observatory which will put NY universities at the forefront of astronomy
- Enable NY Universities to obtain the best faculty, students, and increased grant funding
- Connect NY's undergraduate serving and R1 Universities.

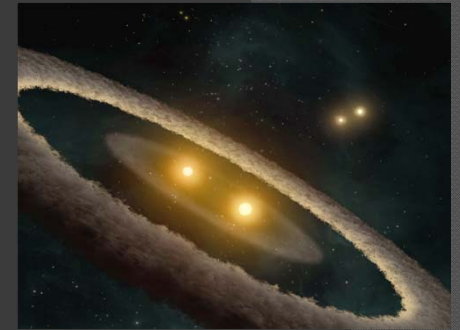


While Larger Telescopes are Under Development, NYSO Could be the Largest for > 5 years



Pushing the Frontiers of Science

- ▣ **Exoplanets and Life Beyond Earth**
 - Characterization of planetary systems, their atmospheres, their “suns”.
- ▣ **Star Birth, Evolution and Death:**
 - Circumstellar disks in newly forming stars
 - Stellar eruptions & binary interactions
- ▣ **Stellar Archaeology**
 - Physics & chemistry of the first stars to form in the Milky Way
- ▣ **Co-evolution of Galaxies and Supermassive Black Holes**
 - Physics of fueling and feedback
- ▣ **Dark Matter and Dark Energy**
 - Galaxy Kinematic, Supernova followup



Benefits All NY



- An opportunity to advance NY astronomy education and research
 - Would give NY institutions resources unmatched in other states
- A major economic and jobs driver
 - >570 Man/years of high tech jobs in NY
 - More than \$50 M in capital funding in NY
 - Increase ability for NY institutions to draw federal grants for research and infrastructure





Gaining a Competitive Edge

- ◎ NY currently at a disadvantage to other states which have state supported telescope access
 - Public universities in California, Wisconsin, Ohio, Michigan, Texas, Arizona, New Jersey and others all have access to large state funded telescopes
- ◎ Will enhance New Yorks' ability to compete for the best faculty and students and for research funding from NSF and NASA
 - ◎ Plans would include remote observing facilities on-site at all NY universities



Build at World Class Site, HQ in NY

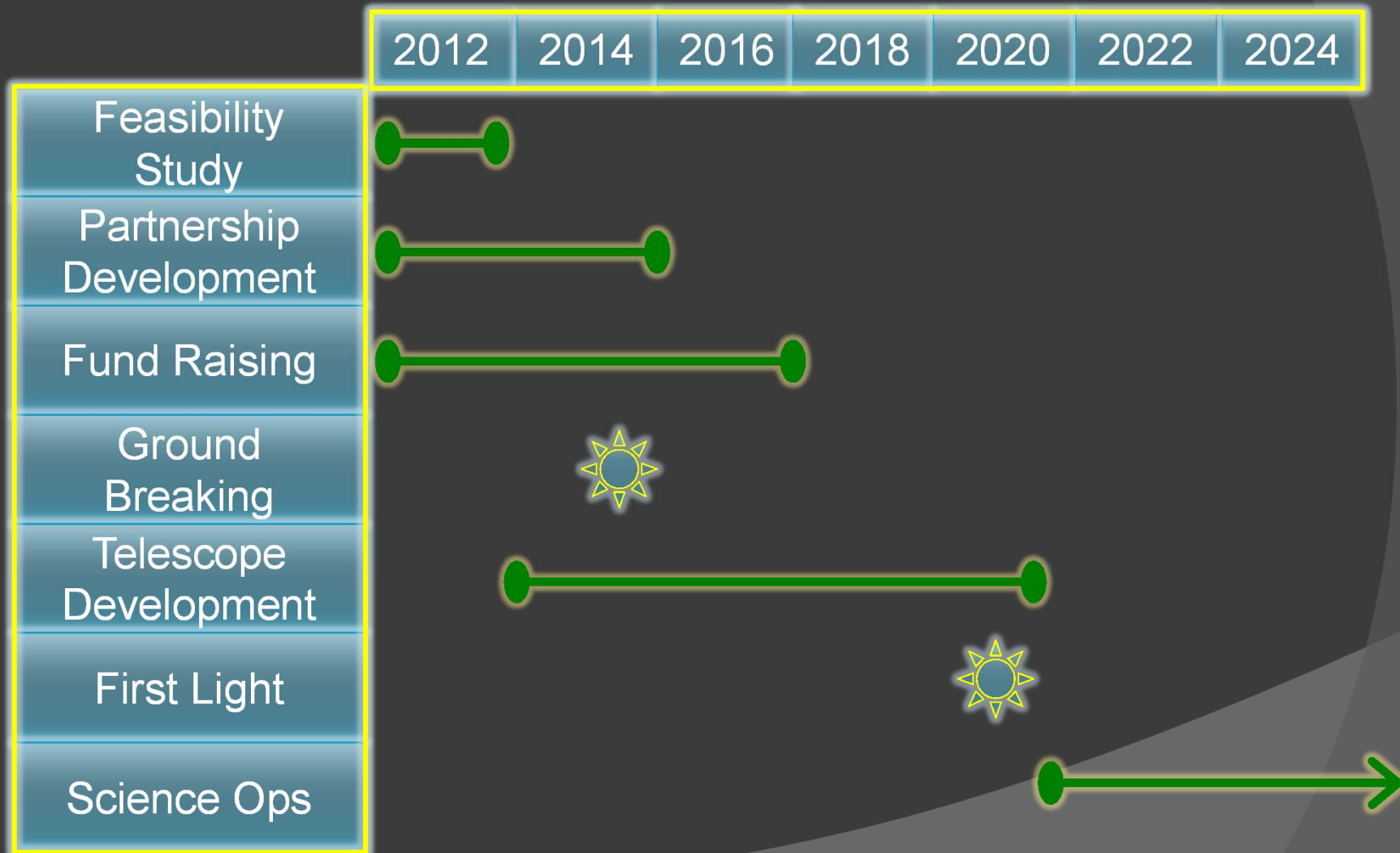
- World class telescope sites under consideration
 - Chile: US National Observatories
 - Hawaii: Canada France Hawaii Observatory
 - Other sites possible
- Project Office and Headquarters in NY
 - Project Team for ~8 years
 - Observatory headquarters for >20 years
 - Instrumentation development by NY Universities



US National Observatories in Chile: Potential Site for ATNY



NYSO Timeline



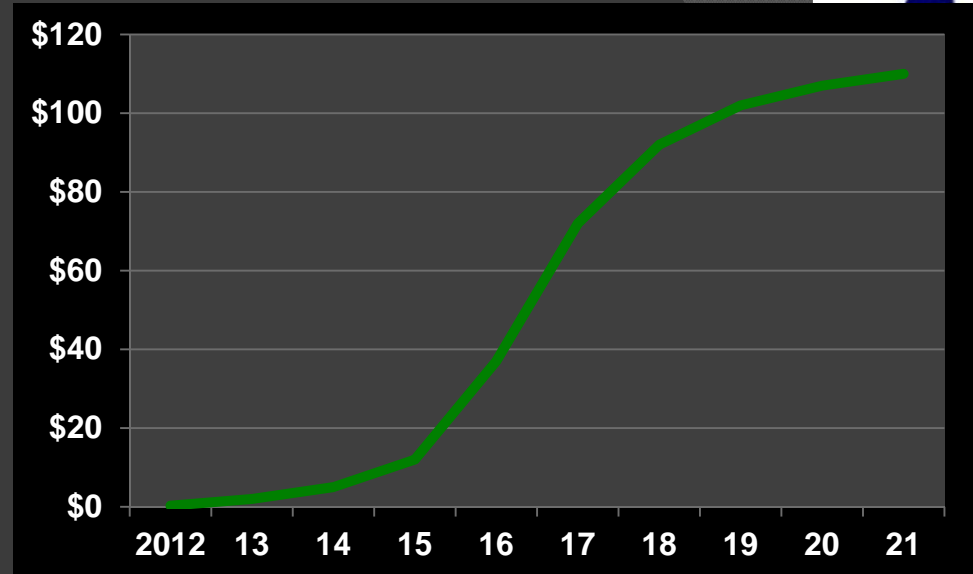


Building a Partnership

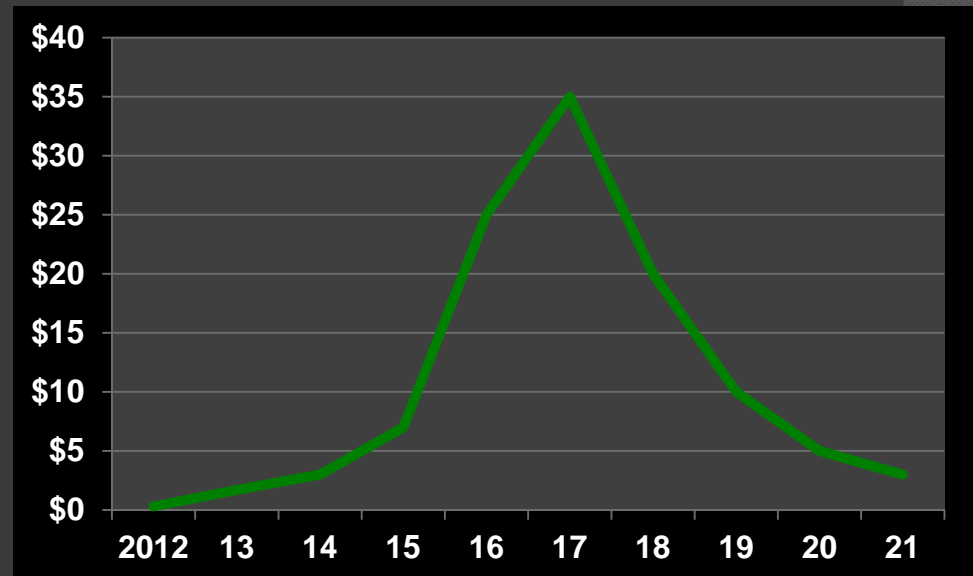
- ◎ Funding from multiple sources
 - New York State
 - University and research org. partners
 - Private donors and foundations
- ◎ Potential Additional Partnerships
- ◎ National and international observatories
 - Initial discussions with US and Canadian National Observatories to gain access to established sites
 - May help reduce overall development and operations costs

Funding

- Initial estimates: \$110M
 - Includes 1st two scientific instruments
 - Funding divided over 7 successive years
 - More than 50% to be spent in NY
- Operations Funding
 - Could be provided by a major partner such as a National Observatory in exchange for observing time share
 - Operations likely to cost ~\$5-7M/year



Cumulative Spending by Year in \$M



Yearly Spending by Year in \$M



Near Term Plans

- Build partnership and advocacy in NY
- Obtain initial funding for studies and development
- Scientific papers for presentation to world community
- Develop advocacy and recognition in the astronomy community
- Provide comprehensive study and plan by end 2014 and begin detailed design



NY Industrial Partners To Date

- ◎ **Excelis** (ITT), Rochester
 - Optical systems, optics, controls
- ◎ **Corning**: Canton
 - Optical blanks, manufacturing
- ◎ **Triodetic**: Syracuse
 - Space frame structures (dome)
- ◎ **EMF**: Ithaca
 - Optical coating plant and manufacturing
- ◎ **Toptica**: Victor
 - Adaptive Optics Laser Guide System

Additional NY Industrial Partners Assured



Estimated Jobs for NY

- ◎ Over Initial 20 years
 - Project Team
 - Construction & Manufacturing
 - Operations
 - Faculty/Research
- ◎ 579 Man-Years of NY Jobs Estimated

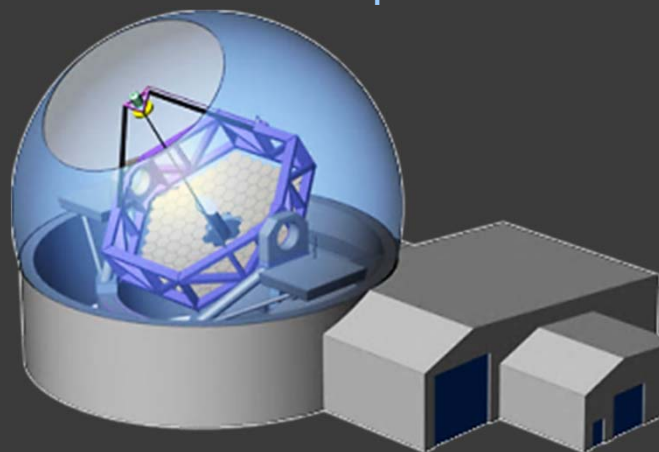
JOB TYPE	Man Years
Project Team	82
ATNY Observatory	204
University Growth	188
Industrial	
Manufacturing	105
Total Man/Years	579

Jobs are Mostly High Technology, Science, Engineering, Education, and Well Keyed to Future Economic Growth



The New York State Observatory

An Astronomical Telescope for All New York



- ◎ Discovery
- ◎ Education
- ◎ Jobs