



U.S. EXTREMELY **LARGE**  
**TELESCOPE** PROGRAM

# Building a Unique Capability for the US Community

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**Patrick McCarthy**

Director, NOIRLab



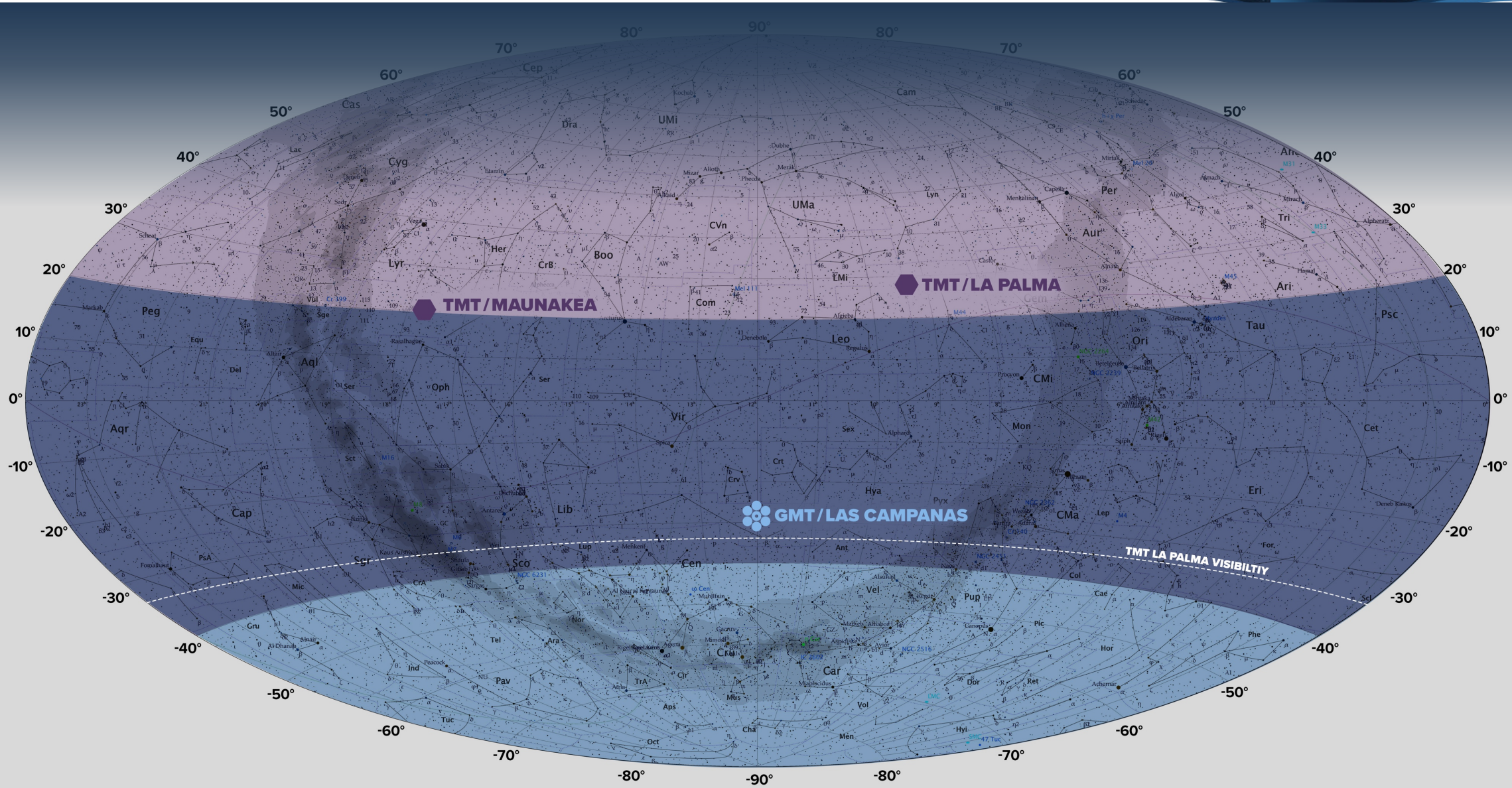
# Today's Program



- Introducing the US ELT Program McCarthy
- User Support and Interface Development Dickinson
- Inclusion through Data Access Norman
- GMT Project Status Update Fanson
- TMT Project Status Update Liu
- Q&A All



# The US ELT Program



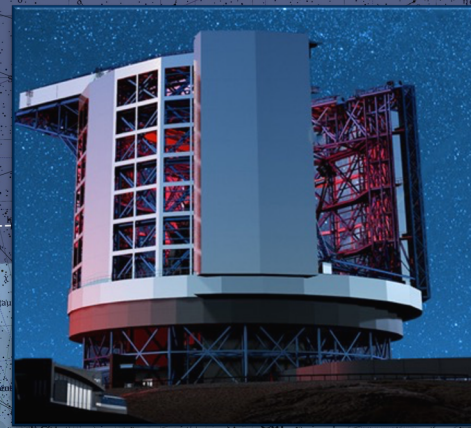
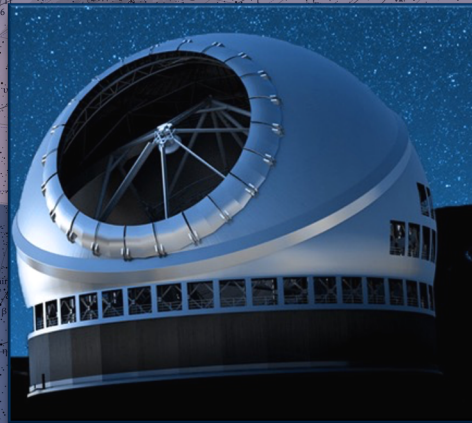


# The US ELT Program



## A System of ELTs

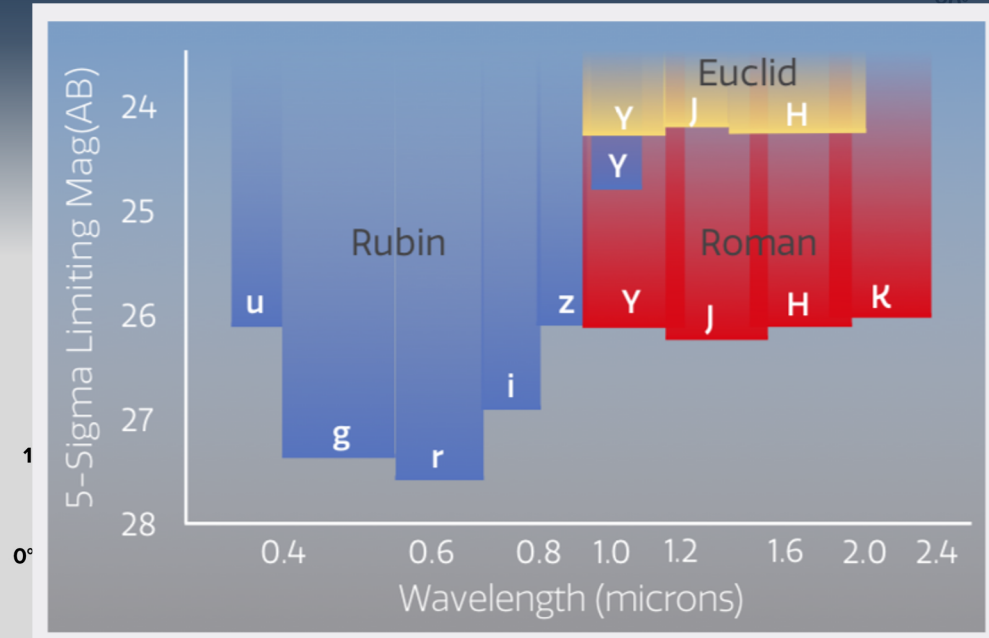
- Full Sky Coverage
- Powerful Instrument Suite
- Optimization
- More Nights on the Sky





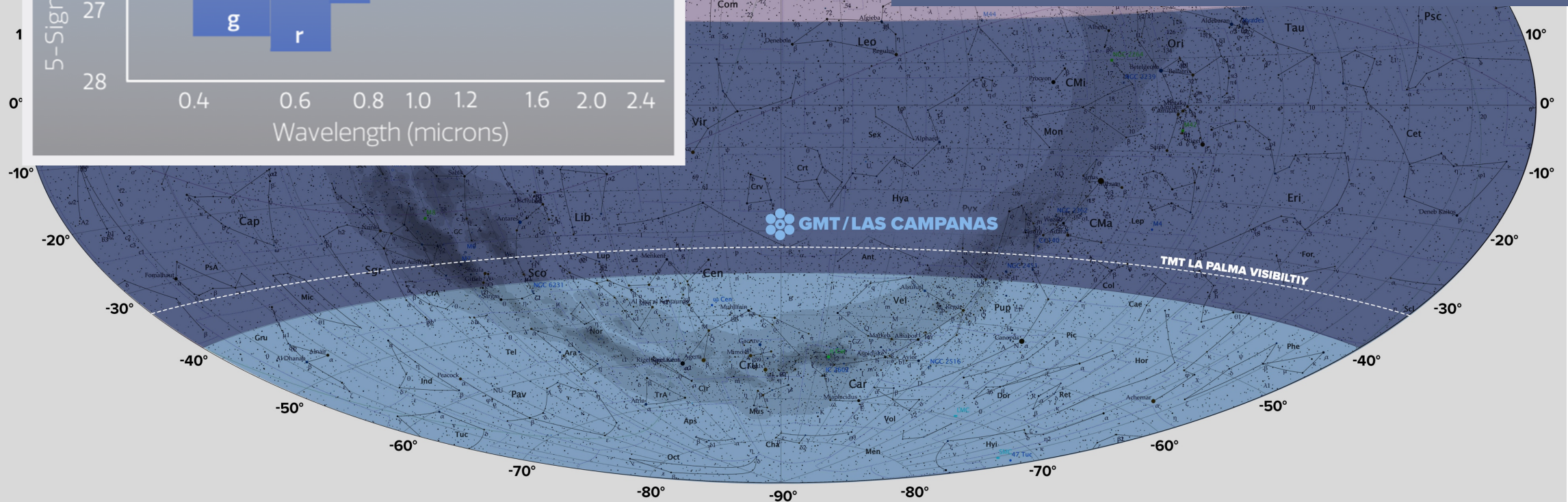


# The Scientific Opportunity



## Possibilities

- Spectra of *any object* in the Rubin/LSST and Roman imaging surveys

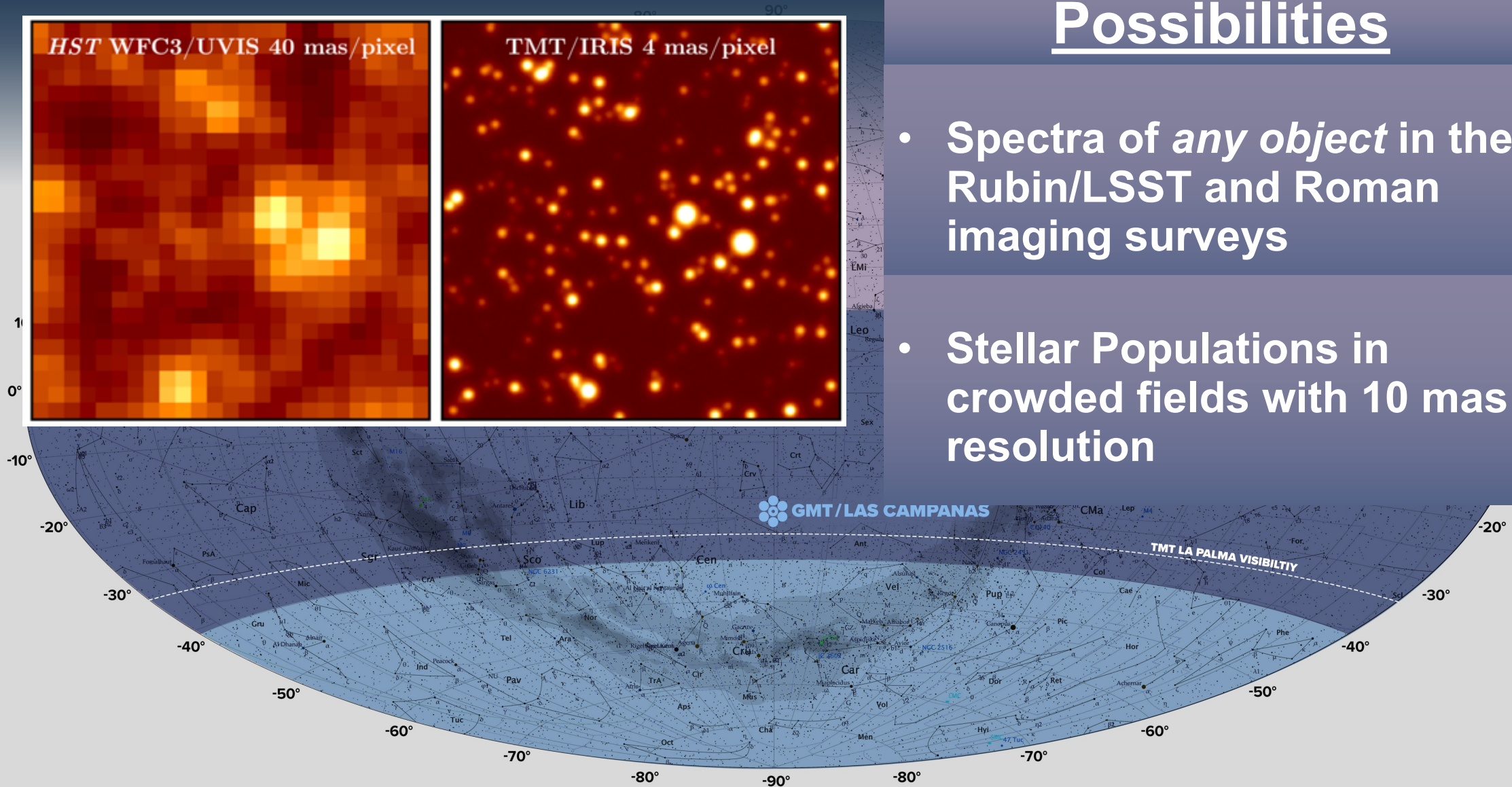




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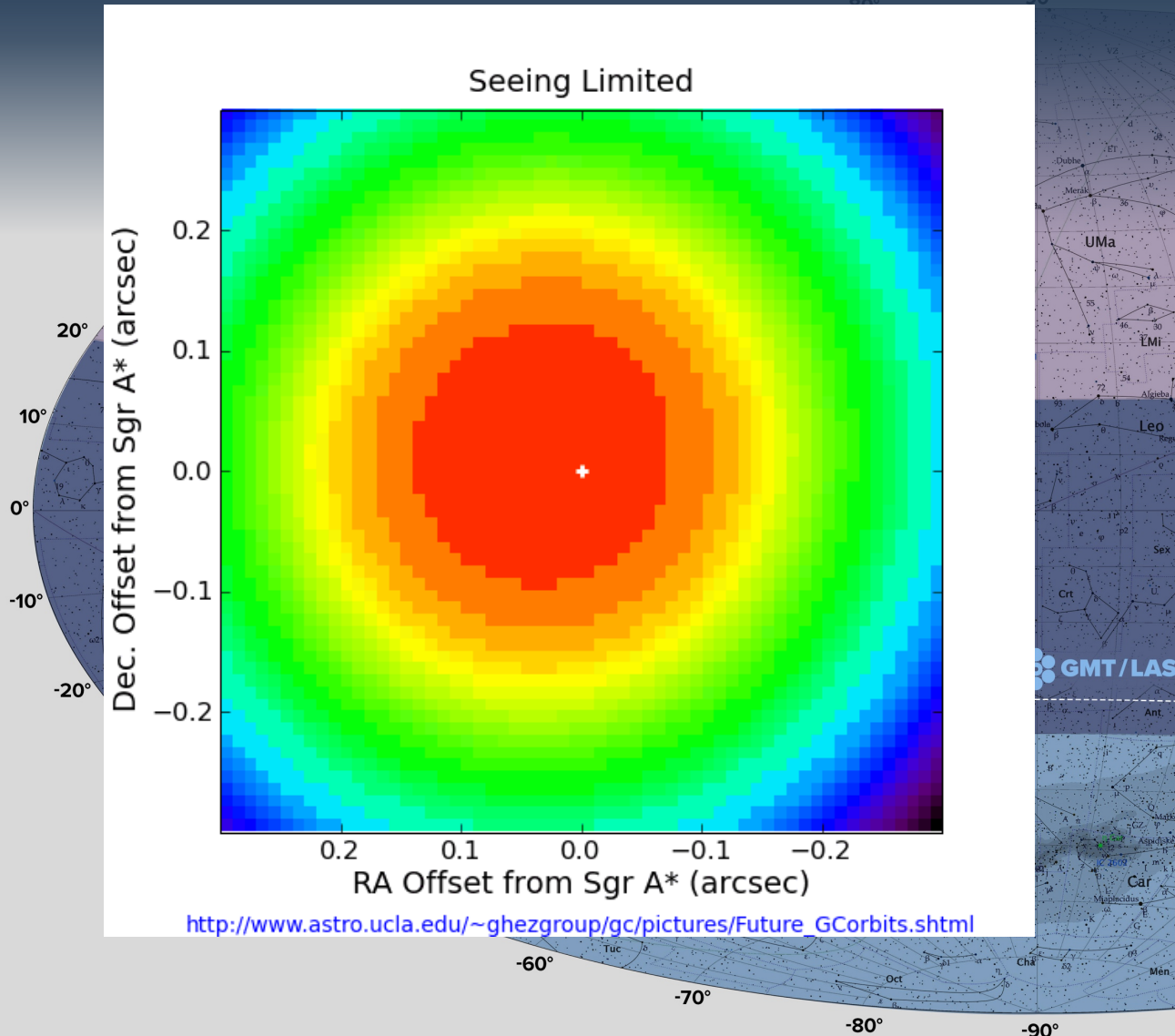
## Possibilities

- Spectra of *any object* in the Rubin/LSST and Roman imaging surveys
- Stellar Populations in crowded fields with 10 mas resolution





# The Scientific Opportunity

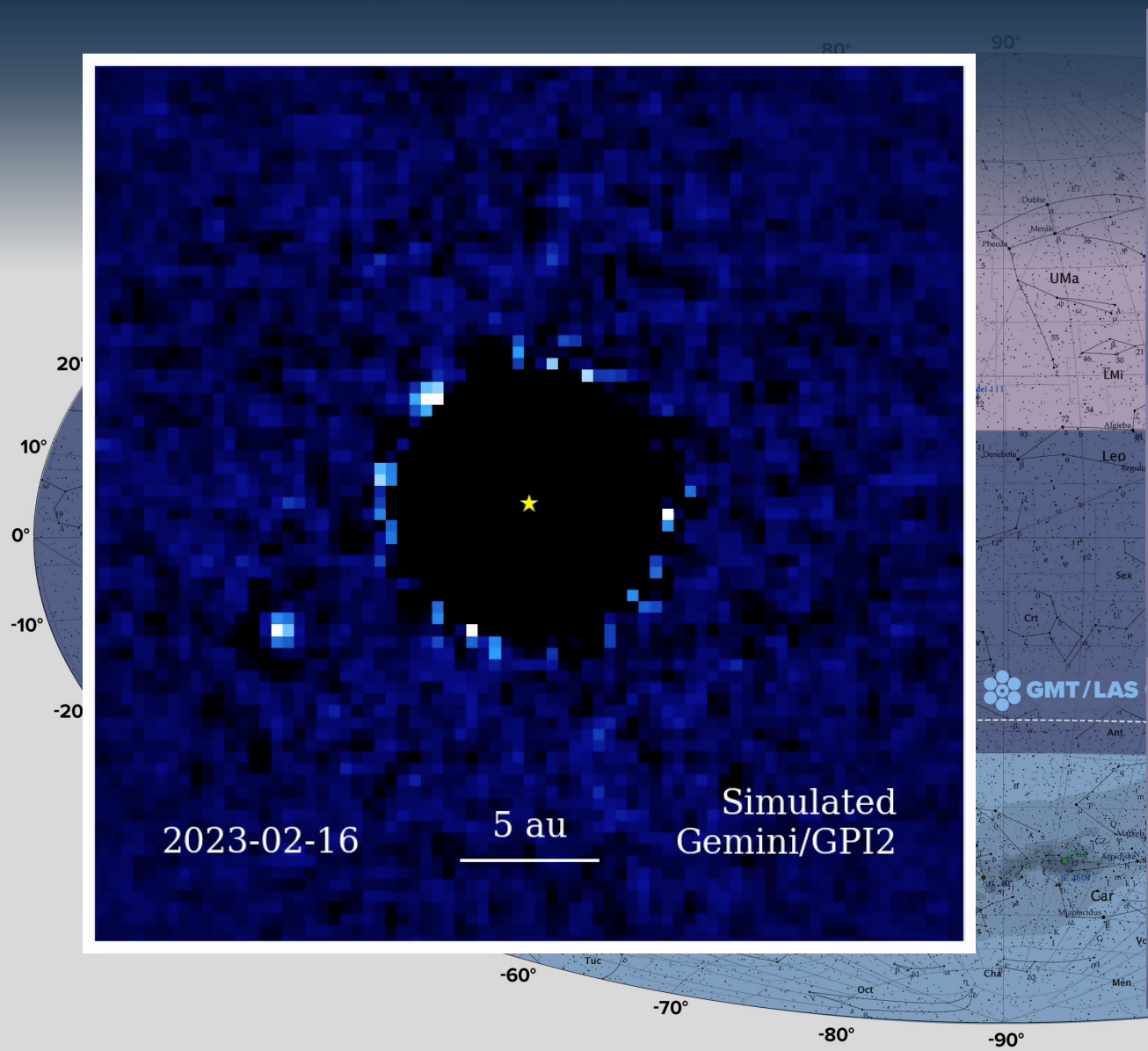


## Possibilities

- Spectra of *any object* in the Rubin/LSST and Roman imaging surveys
- Stellar Populations in crowded fields with 10 mas resolution
- Black Hole masses & GR



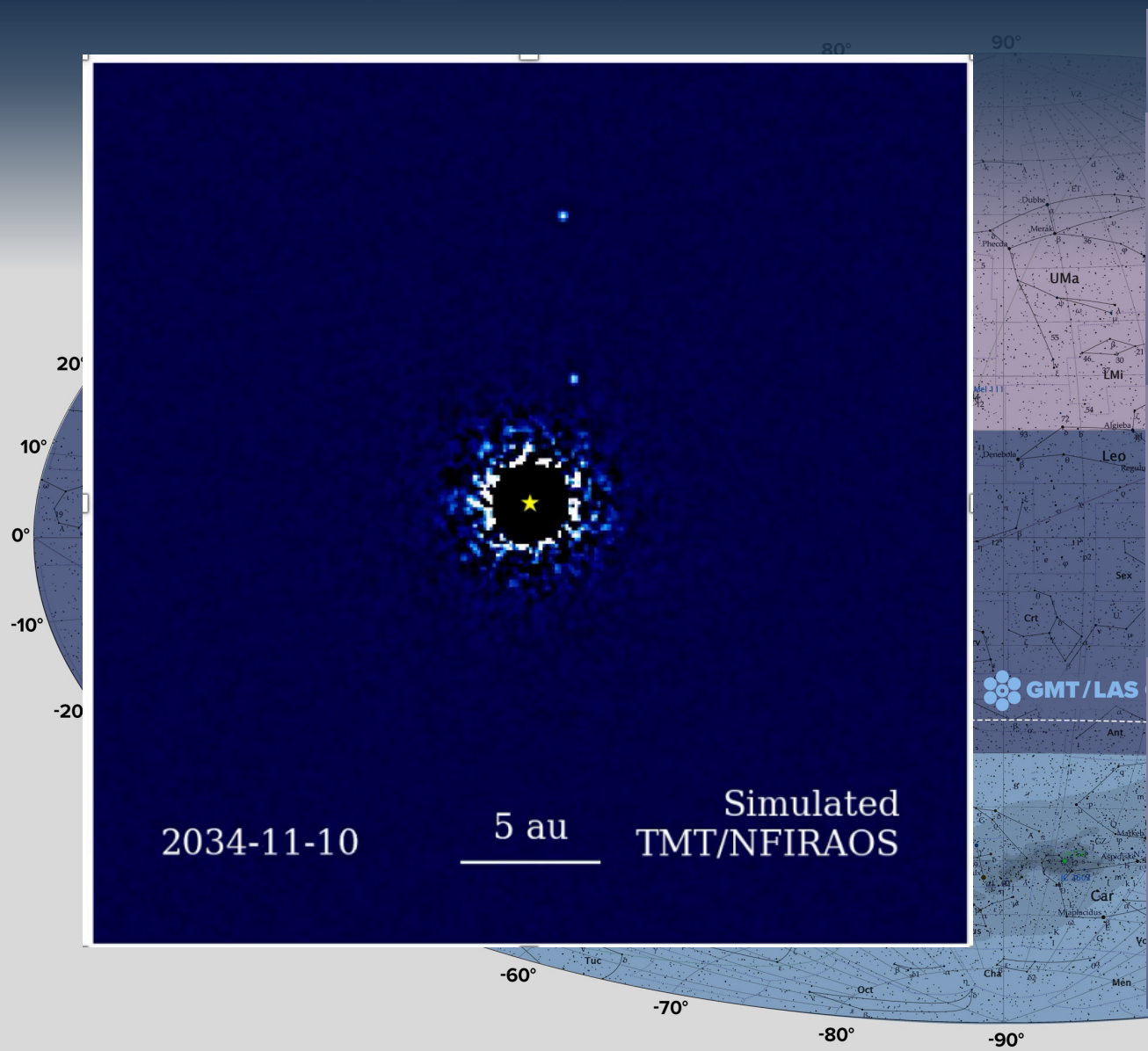
# The Scientific Opportunity



## Possibilities

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- Exoplanet Images and Spectra

# The Scientific Opportunity



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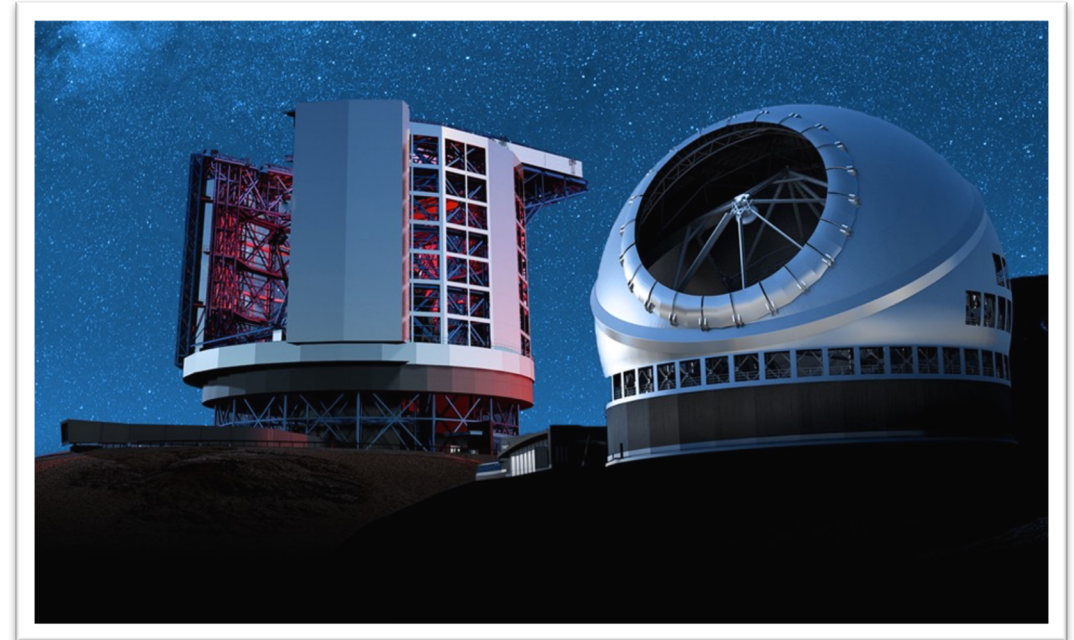


# The Opportunity for the US Community

## A Possible Federal Investment in GMT & TMT

### What would a federal investment buy?

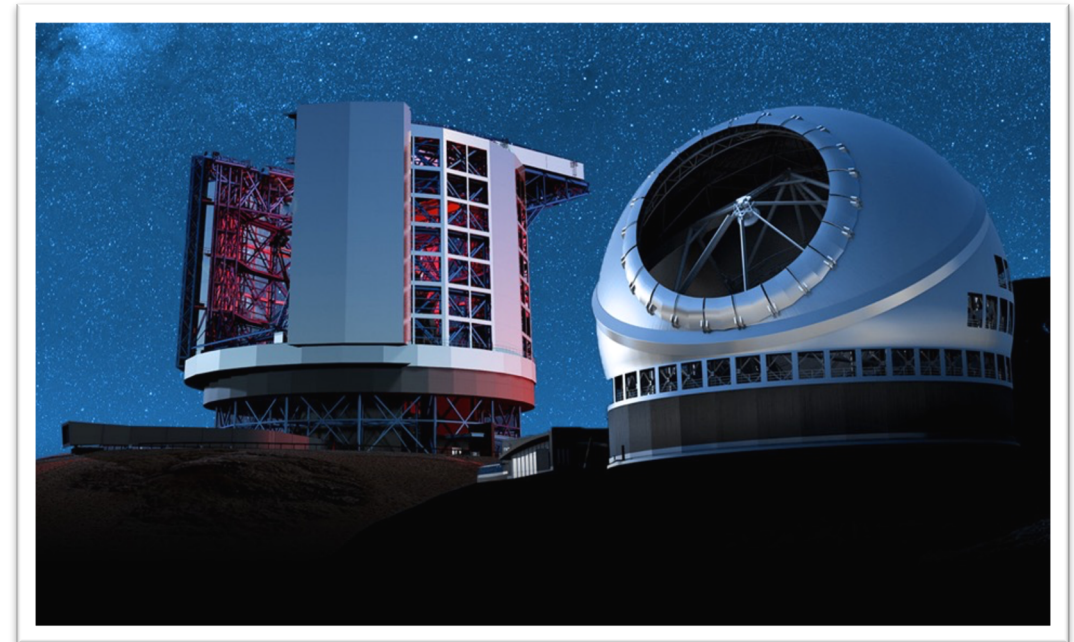
- Share of the observing time (25% to 50%?)
- Role in governance
  - Seat(s) on Boards of Directors
  - Science Advisory Committees
- Science Instruments and AO
  - Voice in selection
  - Opportunity to build
- *Proper seat at the table with the largest telescopes in the US – a first!*



# NOIRLab's Supporting Role

## NOIRLab will Create:

- Easy to use Phase I & II proposal tools
- Common interface to both telescopes
  - Tied into US “system”
    - Gemini, DES, Rubin, DESI
- High quality data pipelines
  - Science ready data
- Fully searchable science archive
  - Access to *ALL* TMT & GMT data



**Support for every step from  
*Idea to Publication***

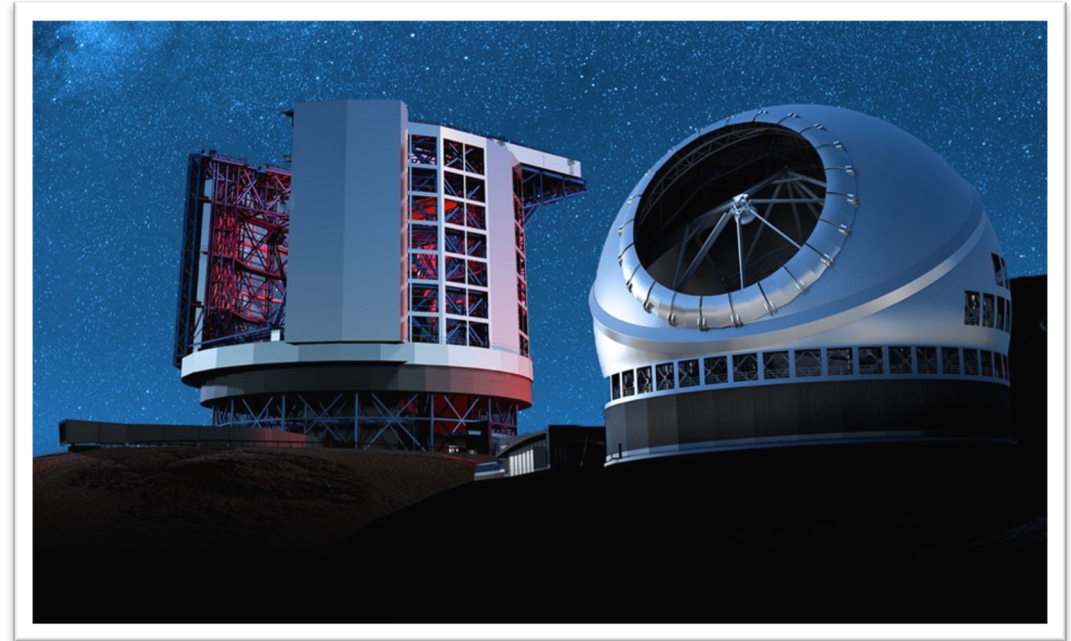


# The Potential

## Federal Investment in GMT & TMT

### What would a federal investment buy?

- *Level playing field across the US*
  - *Open collaborations for Key Project*
  - *Ensure that the US has the only bi-hemispheric ELT System*
- 
- Any one can conduct large telescope science
    - Same size programs as those at private institutions
    - Same high-quality data and support services
  - Moves US OIR Astronomy towards a more inclusive culture



# The Possibilities that US Investment Would Create

**Observing Systems**

**Instruments & Technology**

**Data Systems**

**Research & Innovation**

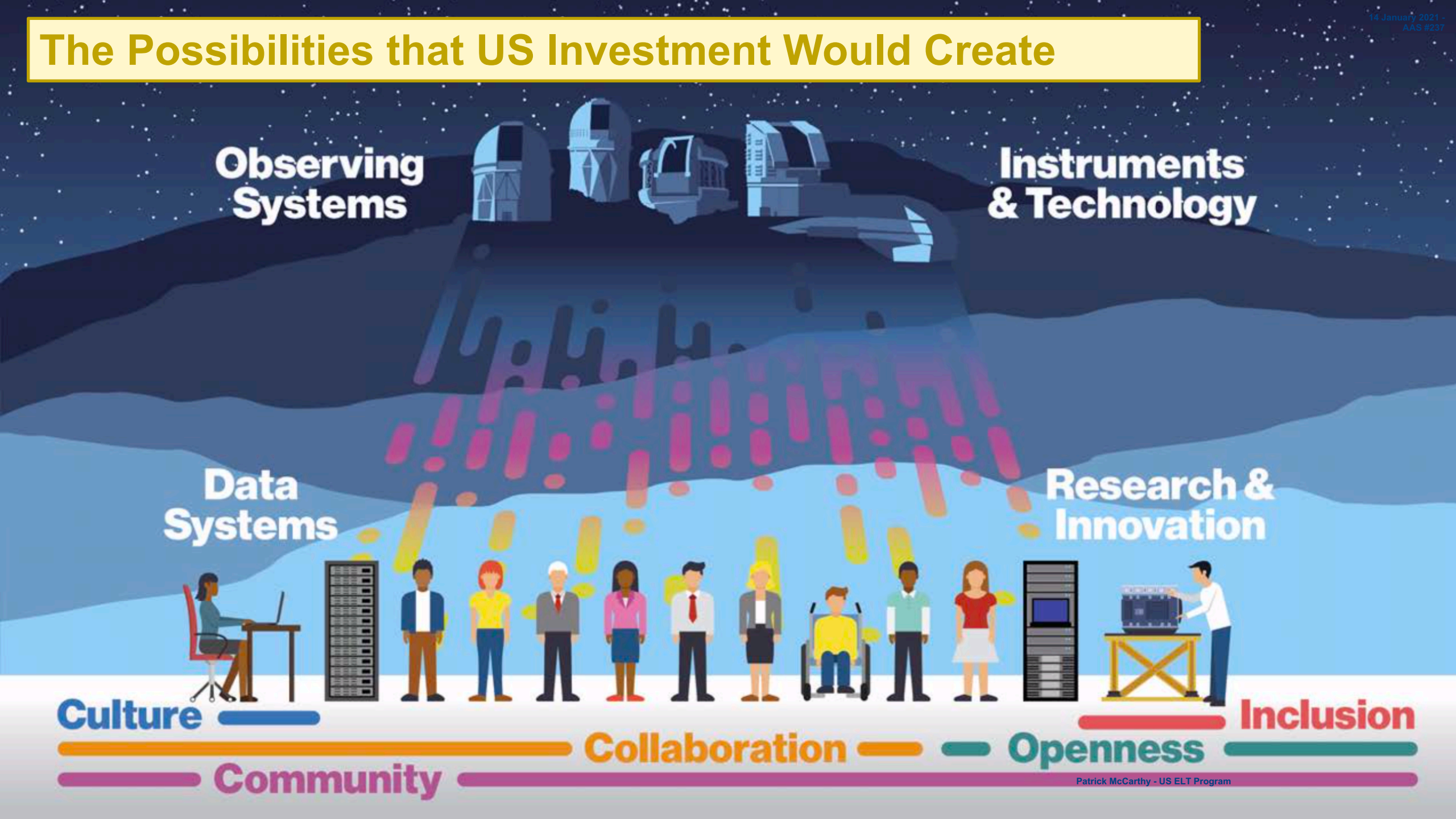
**Culture**

**Inclusion**

**Collaboration**

**Openness**

**Community**





# The Possibilities that US Investment Would Create

## Observing Systems



## Instruments & Technology

Open Access to ELTs in  
North & South  
15<sup>hrs</sup> time coverage

Data Archives and Tools

Proposal to Publication  
Support System

Instruments & Adaptive  
Optics

New Discovery Space

Synergies with Webb,  
Rubin, & Roman







<https://noirlab.edu/public/projects/useltp/>

