



Southern Astrophysical Research Telescope  
Brazil – NOAO – UNC – MSU - Chile



# SOAR Observatory Strategic Planning

Strategic Plan

August 18<sup>th</sup>, 2017



UNC  
COLLEGE OF  
ARTS & SCIENCES

# SWOT analysis – SOAR ( Summary)

## Strengths

- Remote operations routine and effective (3D, SS, EX, TD)
- Rapid Switch between multiple “ready” instruments (3D, HR, SS, TD)
- Blue/UV optimized (3D, HR, WD)
- Good (Southern) Access (HR, EX, WD)
- Good native IQ (EX, TD, WD)
- Broad Science Capabilities (3D, TD)
- Unique Capabilities (EX-speckle, HS-time resolved modes, high speed imaging)
- Strong Staff (SS)
- Intuitive Interfaces (SS)
- Flexible Tracking (SS)
- Visitor Instrument Support (SS)

## Weaknesses

- High Operational/Observing Overheads (3D, EX, TD)
- Inflexible Scheduling/no Queue mode (HR, TD, EX)
- Limited Software tools (TD-Scripting, Proposer tools, reduction pipeline, WD, HS-Spartan high-speed modes)
- Understaffed for LSST /future (TD, WD)
- Stability/ Wind shake (3D, WD)
- Small FOV (3D)
- Missing Specific Capability (High Res, pointing limit override, known non-sidereal tracking limit, Uniform GPS timestamp, HS-short readout in Goodman)
- Aging instruments (HS-SOI for high speed)

# SWOT analysis – SOAR ( Sample Draft)

## Opportunities

- LSST followup --- planned and disruptive (3D, SS, TD, WD)
- TESS, Gaia, K2, other survey follow-up (EX, SS,WD)
- Expand high Angular Resolution capabilities (3d SIFS+SAM, TESS targets)
- Ultra high RV with SORCERESS (HR, EX)
- Unique niche for high speed astronomy in optical and infrared(HS)
- Specific Science (3D survey, abundances w/ UV, solar system)

## Threats

- Funding (3D, SS, TD, TR, WD, HS)
- Competition from Gemini/NTT/Surveys
- Loss of Staff

# SOAR – Proposed **Mission**



**Fazemos Ciência  
Hacemos Ciencia  
We Do Science**

# SOAR – Proposed **Vision**

“Together, we pursue SOAR science objectives in an era of large surveys.”

Diverse science programs and objectives remain central to our vision, but follow-up of LSST and other large survey discoveries expands our science horizons. We prioritize the development of students and the future scientific workforce; we encourage the development of partner infrastructure and technology in service of science goals; and the SOAR observing system provides observer support from proposal to publication stage.



# SOAR – Proposed Values

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We pursue scientific *excellence*.

Our systems are *safe, efficient, and reliable* .

We offer *end-to-end* support for a diverse community of observers

Inclusive student and scientific workforce development is *integral* to our mission

# SOAR – Suggested **PRIORITIES** (and objectives)

- I. Improve observer efficiency
  1. Macros/scripting with TCS/pointing
  2. Automated target acquisition
  3. Implement WFSG and M1 actuator upgrades
  
- II. Enhance our Capabilities
  1. Enable LSST and large survey follow-up
    - A. Implement flexible, dynamic queue capability for some modes
    - B. Coordinate with Gemini, LSST, and event brokers
    - C. Broaden operator functions
  2. Improve end-to-end support system
    - A. Expand proposal and data reduction tools/pipeline
    - B. Maintain, protect, and reward staff.
    - C. Enhance documentation and training
  3. Strategically Tailor our Instrument Suite
  
- III. Ensure continued robust operations
  1. Preventive maintenance throughout the facility
  2. Targeted renewal of obsolescent sub-systems
  3. Secure funding stream
  
- IV. Promote Student and Workforce Development
  1. Provide staff development and training opportunities
  2. Support student training in observation and instrumentation