



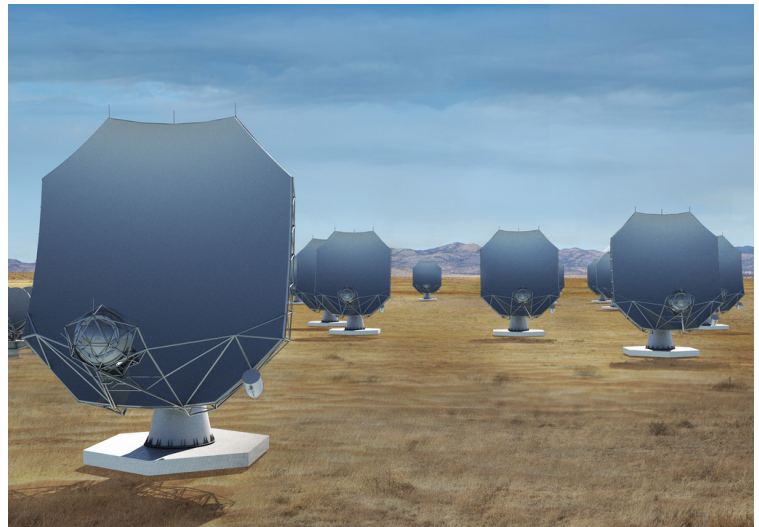
# CAPABILITIES SUMMARY

AUI specializes in the planning, construction and management of Research and Development (R&D) institutions, including Federally Funded Research and Development Centers (FFRDCs). AUI focuses its efforts on three areas: astronomy and space, energy programs, and STEM education and workforce development. AUI is a not-for-profit educational institution founded in 1946.

## Astronomy and Space Sciences

AUI manages the National Radio Astronomy Observatory (NRAO) and the Green Bank Observatory (GBO) under cooperative agreements with the National Science Foundation (NSF). AUI has a long record of excellence in building and operating world-class facilities and applies its experience and partnerships to push the cutting edge of research. AUI is laying the groundwork to upgrade the Karl G. Jansky Very Large Array (VLA) to become the Next Generation Very Large Array (ngVLA). AUI led efforts to create the Atacama Large Millimeter/submillimeter Array (ALMA) in Chile as part of an international consortium. The \$1.5 billion ALMA project was completed under budget and on time in 2013. Efforts are underway for the next generation of upgrades to increase the sensitivity of

ALMA. Expertise developed in support of radio astronomy has uses in microwave electronics; wireless communications; and signal and data processing. New GHz-THz receiver products, active radar, image processing of large, complex, multi-dimensional data sets, and space situational awareness capabilities created through the augmentation of radio telescopes are important developments with uses in the broader industry of radio technology. Green Bank Observatory and NASA have demonstrated the power of this capability by finding the missing Chandrayaan-1 spacecraft in 2016. Together they located the tiny, five-foot lunar probe orbiting the moon 237,000 miles away by pioneering a new application of interplanetary radar.





## Energy Programs

AUI's history of building FFRDCs began with the successful construction and operation of Brookhaven National Laboratory, one of the U.S. Department of Energy's 17 National Labs. Today, AUI's Energy Program focuses on the science and technology related to upstream materials extraction and processing, as well as workforce development and policy issues to enable the clean energy transition. AUI has recently joined with LEAP Manufacturing in support of the UT Dallas Batteries and Energy to Advance Commercialization and National Security (BEACONS) Center, which will develop and commercialize new battery technologies and manufacturing processes, enhance the domestic availability of critical raw materials, and train high-quality workers for jobs in an expanding battery energy storage workforce. BEACONS is funded by a \$30M agreement over three years by the U.S. Department of Defense. AUI's role relates to modelling the critical mineral supply chain. AUI presents unique partnership opportunities as a nonprofit, nonmember, education organization. We convene leaders within the scientific community to prioritize the future of research, drive Nobel Prize-winning research and value the relationship between research and policy.

## STEM Education and Workforce Development

AUI is a global leader in developing and delivering high-quality workforce development, education and training tools and initiatives. AUI's educational initiatives span a broad spectrum of ages, professions and disciplines, and pedagogical approaches. At the core of all these initiatives is a deep fidelity to the goal of building the highly skilled STEM workforce of tomorrow through effective, efficient, and innovative projects. AUI built—in partnership with InfraGard National, an FBI-sponsored organization—

the National Infrastructure and Resilience U (NISRU), an online training platform for the critical infrastructure community. NISRU provides competency-based, peer-reviewed online educational courses in all 16 critical infrastructure sectors to 74,000 InfraGard members, as well as approved businesses, public sector partners, educational institutions and individuals. Learn more by visiting the NISRU website at [www.nisru.org](http://www.nisru.org).



AUI maintains active STEM education and public engagement efforts and programs that seek to inspire people of all ages, and to prepare the next generation STEM workforce. AUI's approach focuses in five areas: (1) astronomy and space sciences, (2) teaching and learning with big data in Earth-space sciences, (3) clean energy and technologies, (4) making STEM accessible for all, and (5) workforce development to support research.