

**An Implementation Plan for the *Voyage* Mark II Scale Model Solar System at
Arkansas State University in Jonesboro, Arkansas**

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The Community

The Arkansas Delta remains one of the poorest and most underserved regions in the United States. Arkansas ranks near the bottom (48) on the 2020 Milken Institute Technology and Science Index. This index provides a benchmark for evaluating each of the 50 states' capacity for prosperity. Anchored within the Delta, Jonesboro sits astride Crowley's Ridge, a geologically uplifted ground that rises above the low-lying Delta and surrounding region. Jonesboro is the regional hub of Northeast Arkansas for healthcare, entertainment, business, and industry. It is the 5th largest city in Arkansas, with an estimated population of over 78,000 (2019) and a Metropolitan Statistical Area (MSA) over 123,000. In addition, it is home to the state's second-largest university, Arkansas State (A-State). A Carnegie Research 2 university, A-State hosts the first osteopathic medical school in Arkansas, the New York Institute of Technology's College of Osteopathic Medicine, and opened the first U.S.-style residential campus in Mexico in the fall of 2017.

With its new #Discover2025 Strategic Plan as its guide, A-State is engaged in creating new collaboration opportunities, including the Center for No Boundaries Thinking, and is exploring a public-private partnership to bring the first College of Veterinary Medicine to the state. From its founding, A-State has valued its role both in the community and in providing much needed educational and cultural experiences within the Delta. The Voyage experience will enhance those connections through its placement on campus in collaboration with two vital on-campus partners, Arkansas State University Museum and Arkansas Biosciences Institute (ABI). Dedicated to teaching, research and service, the university provides students with the broad educational foundations that help them develop critical thinking, decision-making, analytical, and communication skills. The Voyage Mark II exhibit will serve as a unique tool to strengthen these foundational experiences in science, technology, engineering and mathematics (STEM) by promoting exploration in these fields.

The Arkansas Biosciences Institute and ASU Museum share critical mission objectives: educational outreach and STEM programming. In recent years the two units have made calculated efforts to capture synergies toward these objectives. Representatives of ABI are included as members of the Museum's Advisory Council, volunteers from both units work together to deliver signature museum events that draw over a thousand visitors, the two units are co-leaders of large regional events such as the Arkansas Science Festival, and the educators of ABI and ASU Museum both benefit by coordinating visitation between the two units. A unified effort on the Voyage Mark II Scale Model Solar System at Arkansas State University is just the latest example of the collaborations between Arkansas Biosciences Institute and ASU Museum.

Your Strategic Objectives In STEM

At its core, Arkansas State's mission is to educate leaders, enhance intellectual growth, and enrich lives. Moreover, the #Discover2025 Strategic Plan highlighted the need to invest in research areas to strengthen and leverage regional opportunities to better serve our students while also creating more opportunities for the university to engage Pk-12 students. Installed along the ABI "greenway," a high profile, stately walking path that bisects the campus, the Voyage Mark II exhibit will support efforts to reach both university goals.

1) Enhance experimental learning opportunities within the university for undergraduate (UG) students.

Civil Engineering UGs will work directly with installation crews to survey the site, installation of the stanchions, and gain meaningful experience until project completion. Afterwards, the Voyage exhibit will serve not only as a space science showcase for STEM, but as a permanent surveying site for future civil engineering classes.

2) A powerful engagement tool faculty, staff, and students to engage with Pk-12 in an informal learning space. Our goal is to use Voyage not only as a teacher-student engagement experience, but also as a peer-to-peer experience. With the creation of the Voyage Mark II exhibit training module for our campus's student ambassadors, UGs in the Colleges of Science and Mathematics, Engineering and Computer Sciences, and ABI will guide interested Pk-12 students and visitors through the exhibit, thereby enhancing visibility of these subjects among prospective students, alumni, and current students.

Arkansas Biosciences Institute's Outreach Program objectives are to promote and offer STEM content and experiences to Pk-12 students within Arkansas, especially to underserved regions such as the Arkansas Delta; develop a solid knowledge base of STEM skills to help Pk-20 students be competitive and successful in the future; and, support opportunities to hone these skills through transformative research experiences. The Voyage exhibit will provide exciting opportunities to develop new and/or improve scientific content and curricula available to Pk-12 STEM education and specifically aligns with Arkansas Next Generation Science Standards (NGSS). To accomplish this, ABI will leverage partnerships with formal science educators in local school districts (e.g. Nettleton STEAM Intermediate School, The Academies of Jonesboro) and with professional development providers such as regional educational service cooperatives (e.g. Crowley's Ridge Education Service Co-op). ABI will leverage established space science partners such as the Arkansas Space Consortium and the A-State NASA Student Payload with Citizen Science (SPOCS) experiments.

ABI is committed to providing valuable, experiential learning experiences in many STEM fields, especially agriculture, medical, and space sciences. The Voyage exhibit provide a unique, hands-on experience to historically diverse and underserved populations of the Arkansas Delta region schools.

Arkansas State University Museum provides quality programming that connects the people of Northeast Arkansas and the Mississippi River Delta with their history, engages minds in progressive thinking, and enhances the sense of community among all audiences. The Museum's core public work consists of providing tours and hands-on experiences that especially draw children Pk-8 into STEAM subjects. The Museum's STEAM programs are uniquely contextualized within the history and culture of Arkansas. The goal is to introduce and align children to promising fields of the future by demonstrating regional relevance to STEAM. This strategy is designed to instill pride of place, make learning fun, and foster education as a family value. The Voyage Mark II exhibit will provide an additional STEAM-supporting activity on campus that school children can engage in with peers and that families with children can participate in together.

Proposed Community Engagement

The Voyage Mark II exhibit located at Arkansas State University will provide many opportunities for local, regional, and state-wide engagement. Its main contribution lies in its potential to help fulfill A-State's #Discover2025 Strategic Plan goal of increasing community participation on campus by 10%. Concurrently, this will support the university's efforts to gain endorsement by the Carnegie Foundation as a Community Engaged Institution.

Arkansas State University was founded as a small, agricultural school in the heart of the fertile Mississippi River Delta. Since then it has transformed into a R2 research university, producing quality graduates in numerous employment fields and bolstering impactful research. We seek to capitalize upon the momentum research increasingly attains here at A-State. Becoming a member of the Voyage National Program, will increase our visibility within professional networks and the alumni community. As a recruitment tool, the Voyage exhibit's proposed location will serve as the campus's centerpiece for students visiting not only the ABI, but the Laboratory Sciences, Engineering, Mathematics, and Humanities buildings. Its unique outdoor space science content will showcase our commitment as an institution to strengthen space science and engineering, thus improving our recruitment of high performing, local high school students into our experiential learning programs (e.g. Young Exceptional Scholar (YES) Fellowship) and underserved, underrepresented students who are interested in a STEM major or career.

A-State's #Discover2025 plan outlines the need to designate and invest resources in areas necessary to oversee and champion the university's overall role in the community. Previously, we have highlighted our role in STEM education, however, AState offers much more. For instance, investment in our Pedestrian And Cyclist (PAC) paths across campus has led to the designation of A-State as a "bike friendly university" by the American League of Bicyclists annually since 2016. Our PAC paths join into other major pedestrian/cyclist paths throughout the city of Jonesboro and Northeast Arkansas. The expansion of PACS throughout Jonesboro will allow the Voyage exhibit to be highlighted within this city/campus network.

A major community partner on our "mission" to become a Voyage Mark II exhibition site is ASU Museum. The Voyage Mark II exhibit has specific relevance to a good number of programs offered by ASU Museum. As a member of the National Informal STEM Education Network (NISE Net), ASU Museum often presents NISE Net and NASA-supported learning experiences, e. g., *The Moon Adventure Game* (escape room), as well as hands-on tinkering activities that include *Build a Spaceship*, *Exploring Craters*, *Observe the Sun*, and more. ASU Museum will use the Voyage exhibit in conjunction with these other space-themed activities.

Due to the Museum's small staff and the distance (a five-minute walk) between the ABI "greenway" and the Museum, the Museum will frequently take advantage of the exhibit's usefulness as a passive experience. The Museum will refer groups embarking on their Voyage experience to an app that the ABI outreach coordinator is developing to enhance engagement for those who visit the exhibit without a guide.

Arkansas State University (ASU) Museum often hosts large tours of children and adults. To facilitate the fun of learning for all, these groups are divided into several smaller groups which are rotated around to various Museum STEAM activity stations. When a large school group (200–250 children) comes to the Museum, the organizers are generally planning a two-hour stay. In these cases, the Museum will utilize the Voyage Mark II exhibit as one of the activity stations on its large-group rotation.

ASU Museum is frequently the first stop for field trips on the A-State campus. The Museum will direct groups who want an extension of their campus experience to ABI and the Voyage Mark II exhibit. ABI and ASU Museum have a long association collaborating on and coordinating tour groups.

Although the Voyage Mark II exhibit will have a natural starting point at ABI, where it will significantly enhance and extend ABI's existing STEM curriculum, ABI's outreach coordinator will be able to direct groups to ASU Museum if they have time to extend their campus experience. Thus, the Museum will also get "down-river" benefits of the exhibit even when groups arrive at ABI first.

In summary, bringing the Voyage Mark II exhibit to Arkansas State University aligns with many aspects of the University's #Discover 2025 Strategic Plan. It will support our efforts to unite A-State's campus, alumni, community, and regional constituencies to collectively fulfill our educational mission. It will build community, strengthen our identity, and increase our impact as an economic, cultural, and educational engine for Northeast Arkansas, the Delta, and the Mid-South.