

## The Voyage Program—Rallying Support in Your Community

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Revised: February 23, 2009

### *Stakeholders Across a Community*

The *Voyage* program provides a community a replica of the National Mall exhibition for permanent installation, and a diverse array of programs and educational materials that address learning opportunities across the community. The exhibition itself is a blend of sculpture and science education. There are therefore a great number of likely stakeholders within a community.



Given the capabilities and intent of the *Voyage* program, and the wide array of appropriate sites for installation, possible community stakeholders include: a school district; museum; science center; university; community college; county office of parks and recreation; national and state park agencies; county office of urban planning; community-based organizations interested in sculptural elements within the community; non-profits, businesses, and civic organizations interested in science, math, and technology education; the office of the mayor; the city council; and the school board.

There may also be multiple stakeholders *within* an organization, *e.g.*:

see attached: *Stakeholders within a University or College*

### *Voyage Needs a Champion*

Typically a single individual in a community is the first to learn about the *Voyage* program. It might be a professor in a university astronomy department, a teacher, a university dean, a school district curriculum supervisor, a museum director, or an employee of a community's parks and recreation office. Regardless of that first individual contact, the person may or not be a good champion for the program. But given the wide range of stakeholders, and the \$250,000 cost, the program needs a champion in the community for it to succeed. This is the person that can take on the responsibility of building community-wide awareness across potential stakeholder organizations, and can coordinate an approach to planning and fund-raising for the program.

### *Making the Case for Voyage in Your Community*

To build sustainable interest across the community, each stakeholder organization needs to understand how the *Voyage* program can serve their strategic needs. A formal statement of *Voyage's* ability to meet the needs of individual organizations, and to meet the needs of the broader community, is called a *case statement*—it makes the case for why the program should be funded, and is what can be presented to potential funders. The champion in the community needs to help organizations see the benefits of *Voyage*, and help these organizations frame a case statement. Building a core team of representatives

from the key organizations is a good starting point. It should also be expected that each organization will define unique ways in which *Voyage* addresses their needs, *e.g.*:

see attached: [\*The Case for Siting Voyage on a University or College Campus\*](#)

see attached: [\*The Case for Siting Voyage Near a Museum of Science Center\*](#)

### *You Can Count on Us*

The *Voyage* program staff at the National Center for Earth and Space Science Education (NCESS) is available to assist in any way we can, which includes providing program information, and participating in teleconferences, video conferences, and brainstorming sessions. We can also present at, and participate in, meetings on-site on a travel reimbursement basis. Finally, we can conduct a program for the public and families, a professional development workshop for educators, or programs for students, to provide a window on the power of *Voyage* programming, and help rally support community-wide. Descriptions of programs are available on request.

### *Our Efforts to Minimize Cost*

The cost of the exhibition and initial programming is \$250,000. We believe we have done everything possible to minimize the cost:

- We value-engineered the National Mall exhibition for efficiency of fabrication, and decided on anodized aluminum rather than stainless steel for the 13 Units. The Anodized aluminum is as durable as stainless, and far cheaper in terms of procurement and machining. This alone cut the fabrication cost to us in half.

Remember that this is a permanent outdoor exhibition that must be made of durable and vandal resistant materials, yet provide the sculptural aesthetic worthy of the National Mall. These materials are reflected in the anodized aluminum Units with extensive machining requirements, full color high-resolution porcelain enamel storyboards, and the 3-D worlds in large crystal block with a tempered glass plate fused to the front. The cost reflects a commitment to detail, aesthetics, and durability.

- We are making the exhibition available on a full cost recovery basis, which means there is no net to the National Center for Earth and Space Science Education.



The *Voyage* program requires an extensive staff, including: a program director; a marketing and sales agent; a program coordinator to work with the communities on customization and siting; a program coordinator to work with the fabrication houses; and researchers, educators, designers, and IT specialists to provide: ongoing development and delivery of the educational materials, web site, and *Teachable Moments in the News*; delivery of professional development for educators in the community, and community programming for the public; and support for both content and pedagogy questions from the community's educators.

We must recover salary, benefits, and facilities & administration overhead for the staff, together with costs for non-salary consumables and required travel (for delivery of the educator workshop and public program.) This full cost recovery makes up the balance of the exhibition total cost.

Our vision is building and supporting a network of 100 *Voyage Communities* worldwide over the next five years. To this end, we have made *Voyage* available at as minimal a cost as possible.

In terms of contract deliverables, 1/2 of total cost is required up front to underwrite time for staff to begin working with the community, and to initiate fabrication; 1/4 is due mid-way through fabrication; and 1/4 is due on final inspection.

### *Fundraising*

*Voyage* will likely require a significant fund-raising effort in the community. It starts with community-wide awareness of a science education program designed to impact the *entire* community, and in a sustainable way. If this leads to a strong desire to become a *Voyage Community*, then the next step is to turn to those local area professionals that have experience in raising funds.



Organizations like universities, museums, science centers, school districts, and other non-profits have ‘development offices’ whose job it is to raise funds for programs of interest to the organization. The development officers:

- know the local and regional businesses, corporations, foundations, and individuals that have an interest in contributing funds for educational programs.
- likely know of state and federal grant opportunities.
- know how to search existing databases of potential donor and funders.
- know how to pitch the program to potential funders.

If *Voyage* is a community-wide effort, then there may be ways for fundraising to be shared, with different organizations provided specific fund-raising targets.

There are also a number of other funding opportunities that could be explored:

- There may be urban renewal or park and urban planning projects that are either ongoing or about to begin. Given the magnitude of cost for such programs, *Voyage* might be rolled into the budget as a beautification or sculptural element.
- The city council might add a *Voyage* line item to the budget as part of budget planning for the next fiscal year.
- The school board might be able to allocate some funds in support of district-wide participation in programming.
- A presentation to the Chamber of Commerce or a Business Roundtable is a good way to get word out to the local business community, and assess funding interest.
- A social event for fund-raising might be held. The NCESSSE Center Director could be available to participate, to do a *Voyage* presentation to VIPs, and to conduct a corresponding program for the public. Put us to work.

## Image Captions:

**Image 1:** A teacher and students at Uranus on *Voyage* Opening Day, October 17, 2001. Class tours can be self-guided, or facilitated by a museum docent or museum educator. The key to success is connection back to the classroom through the teacher.

Professional development for teachers many weeks in advance of a class tour can facilitate a multi-week unit on Solar System science using the *Voyage* lessons. Before a tour, the teacher can use specific lessons in the classroom to assess pre-knowledge and misconceptions, and develop a broad conceptual understanding of the Solar System. Lessons after a tour build on the exhibition experience, *e.g.*, allowing students to measure the distance to the real Sun and Moon, explore orbits in the Solar System, search for abodes of life, and explore the physics of cratering.

Credit: ©Smithsonian Institution, Jeff Tinsley

**Image 2:** *Voyage's* 8.5-foot tall Saturn Unit made of anodized aluminum. The nearly 3-foot wide storyboard is made of porcelain enamel, which provides long-term durability in outdoor spaces, and high-resolution full color imagery and text. The model Saturn and four of its moons are laser-sculpted in three dimensions inside solid crystal.

Credit: ©Smithsonian Institution, Eric Long

**Image 3:** *Voyage* Program Director and astrophysicist Dr. Jeff Goldstein leads a tour for a Washington, DC class on *Voyage* Opening Day, October 17, 2001. A museum or science center can enlist the help of local area researchers and amateur astronomers to serve as tour guides for special occasions. These folks may have unique personal experiences conducting planetary research or observing the planets—which provide an exciting perspective to their tours. Dr. Goldstein, for instance, used a technique called infrared heterodyne spectroscopy to measure the high altitude global winds of Venus using a NASA telescope on Mauna Kea, Hawaii. Wind speeds of 2 mph could be detected on Venus, some tens of millions of miles away.

Credit: ©Smithsonian Institution, Jeff Tinsley

### **National Center for Earth and Space Science Education**

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*We believe that to continue the legacy of scientific exploration, every generation must be inspired to learn what we know about our world and the Universe, and how we have come to know it.*

*We also believe that it takes a community to educate a child ...*

*and that it takes a network of communities to reach a generation.*

## Attachment 1: Stakeholders within a University or College

For siting on a university or college campus, *Voyage* offers opportunities for community outreach, and a sustainable bridge across schools and departments. Stakeholders within a university or college include the departments of physics, astronomy, and geology, and the colleges of education and engineering. The campus office dedicated to community outreach is also a very important stakeholder.



Likely the most powerful bridge that *Voyage* can build on campus is between the content departments (physics, astronomy, *etc.*) and the school of education, which teaches the next generation of grade K-12 teachers the pedagogical approaches to science education. Good science education is a seamless integration of content and pedagogy, and the *Voyage* program is an exceptional vehicle to that end.

Given the inter-school, inter-departmental, and community outreach opportunities, *Voyage* may be a program that resonates with the university's or college's central offices, *e.g.*, the offices of the President, Provost, and the Deans of the colleges.

*Voyage* provides schools and departments the opportunity to work together on a broad array of programs that touch the student body and the greater community.

## Attachment 2: *The Case for Siting Voyage on a University or College Campus*

If *Voyage* is sited on campus, there are many approaches for putting it to work. Here are a few:

- *Voyage* offers an opportunity for community outreach, and a sustainable collaboration on programs across relevant schools and departments, *e.g.*, the departments of physics, astronomy, and geology, the school of engineering and the school of education.
- Instructors can provide tours of *Voyage* to non-science major classes in astronomy, geology, and general science; and to majors in the physical sciences and engineering. Tours provide a wonderful context for content covered in particularly the non-science major courses.
- Instructors can use *Voyage* lessons as part of non-science major courses in astronomy, and in support of pre- and post-tour activities.
- An entire non-science major course can be built around the *Voyage* exhibition and the *Voyage* lessons. The curriculum could be shared with other colleges and universities with an exhibition on their campus.
- An ‘explainers program’ can be created where majors in the physical sciences and engineering departments, and in the school of education, are trained to give tours on campus for local area elementary, middle, and high school classes. It’s a great introduction to campus for prospective students, and the tour guides serve as exceptional role models. Becoming a tour guide might also fulfill a community outreach requirement for an undergraduate student.
- Training for tour guides can be done jointly by a member of the school of education and member of one of the content departments. The training can be based on the tour and activity brochures, the grade K-13 lessons, and the professional development workshops that have already been developed for *Voyage*.
- University educators and researchers can provide regular professional development for the community’s grade K-12 teachers on a suite of *Voyage* lessons that can be used before and after an on-site tour of the exhibition, and are comprehensive enough to be used by the school district as some or all of the space science curriculum.
- Tours can be conducted on weekends for the public, together with a presentation by a researcher on relevant research conducted at the university.
- Public and or family evenings can be held regularly, with a tour of the exhibition, family science activities, a talk on Solar System exploration by a researcher, and night viewing of the sky. This could be advertised to the public, or done as a family field trip for area schools.
- A high school explainers program can be created where area high school students are recruited and trained to provide public tours throughout the summer.

### Attachment 3: *The Case for Siting Voyage Near a Museum or Science Center*

Content on the Solar System is firmly embedded in the National Science Education Standards and in Benchmarks for Science Literacy, which typically serve as cornerstones for the Earth and space science curriculum in school districts nationally. Solar System content is introduced in grade K-2 through explorations of what's up in the sky; addressed in grades 3-4 through patterns and cycles in the sky; a comprehensive study of the Solar System is conducted in grades 5-8; and the Solar System is placed in the context of the greater universe at the high school level.

A significant percentage of the visitorship to museums and science centers are school groups. Additionally, professional development for teachers of science, delivered by museum educators, is often a substantial museum activity. A museum or science center must therefore be responsive to the school district's curricular needs in science education, and Solar System content is a core element. The museum or science center has the means of extending the classroom experience with its unique assets, and in the case of Solar System content, these assets likely include: galleries and artifacts, tours, planetarium programs, IMAX films, outreach programming to local area schools, public and family events, and professional development for educators.

The *Voyage* exhibition and the related educational materials and programs provide an extensive suite of Solar System content to support free-choice learners, school groups, and professional development of educators, as well as provide a bridge across other Solar System learning assets. Some examples:

- *Voyage* provides the visitor a true sense of the Solar System, which cannot be achieved within the confines of a gallery. It is the ultimate Solar System learning experience. The exhibition provides a wonderful context for an understanding of what we have learned about the Solar System and how we have learned it.
- In a museum or science center gallery you might see a replica of a spacecraft sent to Mars, or a set of large spheres identifying the relative sizes of the planets. *Voyage* extends that experience by providing context, *i.e.*, a good sense of how far the spacecraft actually traveled, and the reality of small planets in a vast space. *Voyage* also provides a context for current events, *e.g.*, the New Horizons spacecraft headed for Pluto, and Cassini in orbit around Saturn. *Voyage* allows the visitor to boldly see what it means for the human race to send a vehicle to another world, particularly one in the outer Solar System.
- Tours of the exhibition can be conducted by museum educators and docents that provide connections to relevant galleries and artifacts.
- *Voyage* extends the learning experience to outdoor spaces and provides something for visitors to do before the museum opens for the day, and after closing. It also can provide both a pathway to the gate, and to other sites in the vicinity of the museum or science center.
- *Voyage* was designed as a Solar System laboratory, allowing inquiry-based exploration through a suite of activities for the visitor. The activities facilitate observation and interpretation from different locations in the Solar System. These include, *e.g.*, variation in the angular size of the Sun; exploration of which planets can and cannot be seen in the midnight sky if you lived on a planet of your choosing; and the travel time to a planet for a spacecraft, as well as for light—which enables radio communication with a spacecraft.

- Museum educators can provide regular professional development to grade K-12 educators on a suite of *Voyage* lessons that can be used before and after an on-site tour of the exhibition, and are comprehensive enough to be used by the school district as some or all of the space science curriculum.
- A high school and undergraduate ‘explainers’ program can be created where area students are recruited and trained to provide public tours throughout the summer, and tours for elementary, middle, and high school classes throughout the academic year. The tour guides serve as exceptional role models. Becoming a tour guide might also fulfill a community outreach requirement for the student.
- Training for tour guides can be done by museum educators, and if requested, by *Voyage* program staff. The training can be based on the tour and activity brochures, the grade K-13 lessons, and the professional development workshops that have already been developed for *Voyage*.
- *Voyage* program staff can provide training for museum educators, docents, and lead science educators from area school systems.
- Public and or family evenings can be held regularly, with a tour of the exhibition, tours of relevant galleries, family science activities already developed for *Voyage*, a talk on Solar System exploration by a researcher, and night viewing of the sky. This could be advertised to the public, or done as a family field trip for area schools. The *Voyage* program team has overseen a program similar to this for 14 years at the Smithsonian’s National Air and Space Museum.