Designing a Participatory Space Exploration Program to Achieve Exploration Goals and Support National Educational Objectives C. J. Pestak, Battelle Memorial Institute, 20445 Emerald Parkway Drive SW, Suite 200, Cleveland, OH 44135. pestakc@battelle.org

Introduction: Battelle is the world's largest non-profit independent research and development organization, providing innovative technology solutions to some of the world's most important problems in the areas of health and life sciences, aerospace and defense, and energy technology. As a non-profit charitable trust with an eye toward the future, Battelle also actively supports and promotes science, technology, engineering and mathematics (STEM) education.

With this in mind, Battelle is endeavoring to be a catalyst for sustainable positive change in STEM education on a national scale. Battelle delivers and sustains numerous educational programs that engage K-12, higher education, business and informal science education centers by utilizing its award-winning, staff-driven employee volunteer program; by employing innovative means to collaborate and build networks; and by leveraging connections to the world-class research facilities that Battelle manages for the U.S. Department of Energy and Department of Homeland Security.

Battelle wants to change the way children are educated by immersing them in cross-curricular, project-based learning delivered by teachers trained to do so. Participatory Space Exploration holds great potential for engaging many thousands of students in hands-on space exploration projects that immerse the students in activities that both educate and inspire them. Seeing the tremendous potential for STEM education initiatives within NASA's Participatory Space Exploration framework, Battelle coordinated with NASA to plan and host the inaugural Participatory Space Exploration & Education Workshop April 13- 15, 2010, at Battelle's corporate headquarters in Columbus, Ohio.

Workshop Description: The workshop brought together leaders from NASA, industry, academia, informal science centers, and the K-12 education community (both teachers and administrators). In addition, the workshop directly engaged more than a dozen high school students currently involved in STEM education curriculum. The students provided an important and valuable perspective on what type of involvement students want to have in NASA's space exploration and Earth science initiatives. The workshop recommendations were developed in an open forum where students and educators were on equal footing with NASA and industry personnel.

The basic premise of the workshop is that by actively engaging students in space exploration and earth science projects throughout their educational experience, we can create a generation that is excited about and supportive of space exploration and earth science; understands the challenges and opportunities involved; and is already experienced and "primed" for the missions ahead

The activities of the workshop were centered on the following focus question:

What is the design of an exploration program that meets exploration goals while also supporting the achievement of national education goals?

The objectives of the workshop were to discuss, conceptualize, and recommend concepts that can enable the US and the international community to:

1. Cost effectively explore the Moon, Mars, asteroids and Near Earth Objects (NEO)
2. Lay the groundwork for commercial prospecting on the lunar surface
3. Establish a participatory exploration program in a way that engages large numbers of students and promotes STEM education

Workshop Results: The workshop enabled spirited, yet thoughtful discussions amongst students, educators, NASA, and industry personnel that resulted in numerous unique and useful recommendations. Based on the intensity, sincerity, and personal commitment that the workshop participants exhibited, it is clear that students and educators are truly passionate about NASA's mission and they are seeking to find new and better ways to partner with NASA to improve STEM education.

Participatory Exploration offers NASA, the Nation, and the world community a unique and significantly impactful opportunity to cooperate, on a large-scale, in the exploration, discovery, and possible economic exploitation of the Moon, Mars, and other celestial objects. A successfully implemented Participatory Exploration program has the power to engage, educate, and inspire an entire generation of future scientists, engineers, and entrepreneurs like no other.

This presentation will provide an overview of the 14 recommendations generated by the participants and give an overall summary of the findings of the workshop.