



“Making It Real”

A Cooperative Agreement between the Association of Science-Technology Centers and the Technology Councils of North America

The Association of Science-Technology Centers (ASTC) is the leading global organization of science centers, museums, and related institutions – all working to advance science, technology, engineering and mathematics (STEM) literacy and assisting the Nation’s youth to become the innovative and creative thinkers needed for the 21st century workforce.

ASTC members work closely with representatives from the public and private sectors who share these important STEM goals. ASTC member institutions are located in all 50 states of the United States and in more than 50 countries worldwide. Our members welcome more than 95 million visitors each year and organize widely diverse programs in collaboration with government, academia, corporations, for the general public.

ASTC proposes a cooperative arrangement with the Technology Councils of North America (TECNA), to be formally announced at the time of the upcoming White House Maker Faire event in June, 2014. The ASTC/TECNA *“Making it Real!” Initiative* (suggested title) will be designed to facilitate more hands-on experiences at science centers and museums and to draw young students closer to the individuals and organizations that are the targets of their growing interests in science.

Background

In September 2010, President Obama announced the launch of ASTC’s national *Youth Inspired Challenge* aimed at expanding opportunities for STEM engagement in underrepresented groups, including minorities, women, and youth with disabilities. Through engagement with activities at science centers, the initiative aims to move America’s students from the middle to the front of the pack in STEM achievement over the next decade. The *Youth Inspired Challenge* far exceeded its three-year goal by engaging more than 135,000 youth in over 3.5 million program hours to date.

Today, the Administration is placing particular emphasis on hands-on STEM education, inspiring interests and experience in applying science and fostering creative entrepreneurship. Administration priorities, include: (1) encouraging more students to excel in STEM subjects; (2) encouraging citizen science; and (3) fostering entrepreneurship in the manufacturing sector by democratizing access to the tools needed to design, build and test just about anything. Efforts are already well underway:

- Hundreds of thousands of families participating in “Maker Faires” – which celebrate science projects, engineering, arts, crafts, and the “Do It Yourself” mindset;
- An increasing number of *MakerSpaces* and *FabLabs* opening up in communities around the country;
- Museums creating hands-on activities focused on Making;
- The development of software that is allowing citizens to make meaningful scientific contributions to hard scientific problems such as protein folding and RNA engineering;
- Start-ups that are commercializing low-cost equipment and kits such as open source hardware, 3-D printers, and open source equipment for polymerase chain reaction;
- Entrepreneurs that are using the equipment in TechShops (including 3-D scanners, CNC machine tools, laser and water cutters, lathes, injection molding machines, vacuum forming systems, etc.) to launch their own businesses; and
- Online communities that are building increasingly sophisticated projects such as “DIY Drones.”

Science centers and museums consider this educational emphasis to be at the very heart of our collective mission, and are deeply engaged in these activities. ASTC applauds the Administration’s desire to heighten awareness and commitment to this course, exemplified by the Administration’s intention to convene a White House Maker Faire in June 2014.

ASTC has noted (and the Administration agrees) that the considerable effort devoted to promoting hands-on science learning and its potential to spark creative innovation and entrepreneurship (the educational *push*) may not be sufficiently matched by an equivalent engagement of the many “lean start-up” entrepreneurial companies that exemplify the productive results of this focused learning (the educational *pull*). The experiences of these companies and the individuals who have turned scientific ideas into realities are highly inspirational and critical to the message of hands-on science for productivity and workforce development.

The Initiative

“Making it Real” can involve several important dimensions, including:

- 1) *“Minds at Work”*: Local technology councils help identify individuals who join local science centers in Maker workshops and DIY events to inspire creative thoughts about Maker projects, interspersed with examples of where Maker ideas may potentially lead. Science centers promote and recognize these contributions.
- 2) *“Tour the Floor”*: Local technology councils help organize visits of young Maker event participants (carefully selected by science centers) to visit local companies for “walk-arounds” and/or meet-ups with science-focused employees. Science centers also promote and recognize these events.
- 3) *“Meet the Innovator”*: Science centers and museums work with local technology councils to identify innovators who will present the science behind their work in museum events open to the public.
- 4) *“Educator/Innovator” Showcases*: science centers and local technology councils convene workshops jointly with local university representatives with case studies of the pathways from education and research to entrepreneurship and application.
- 5) *“Convene to Inspire”*: Science centers and local technology councils identify opportunities for companies (or the tech councils themselves) to convene retreats, board sessions, or other professional meetings at science center and museum locations, reinforcing the “science” of these enterprises.
- 6) *“Joint Programs”*: ASTC and TECNA work closely to ensure that science centers and local companies collaborate in responding to solicitations from programs such as the Small Business Innovative Research Program (SBIR), Small Business Technology Transfer Program (STTR), the Small Business Investment Company (SBIC) program and its Early Stage Investing and Impact Investing initiatives, DOD recurring solicitations, etc, where emphasis is placed on fostering hands-on STEM education.
- 7) *“Joint Advocacy”*: ASTC and TECNA join in advocating for greater and more appropriate resources to advance innovative enterprise, incorporating opportunities and resources wherever possible for accompanying hands-on STEM education.
- 8) *“Joint Promotion”*: ASTC and TECNA use the occasions of respective annual conferences and local events to highlight the successes of this cooperative venture and new opportunities on the horizon.

ASTC believes that the goals of the Administration and of the Association’s many members alike to promote hand-on science learning and to inspire creativity and innovation will be dramatically enhanced with clearer demonstrations of the productive results that can be achieved. Collaboration with TECNA and its member councils and companies would be extremely valuable in illustrating this very point. ASTC looks forward to exploring with TECNA wide-ranging ideas for making this joint initiative a strong and mutually beneficial reality.

