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Subra Suresh
President

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The Honorable President
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear President Obama:

Thank you for your leadership in convening the first National Maker Faire this month. This is a timely and exciting initiative that has already sparked enthusiasm and new thinking on our campus and around the nation.

Carnegie Mellon's roots as a technical trade school founded for the sons and daughters of steelworkers instills in us a deep appreciation of the power of "making things," an approach to learning that has driven CMU's educational experience for more than a century. Making at Carnegie Mellon has motivated decades of cross-disciplinary collaboration that brings together engineering, science, design, the arts, computer science, policy, and business.

We also share your vision that Making provides an opportunity to build bridges across communities. Carnegie Mellon students, union tradesmen and craftsmen, and Pittsburgh high school students have come together by tapping their inner "Maker" to discover new ways to work together. We have also witnessed the power of the Maker revolution to create new avenues for Carnegie Mellon spin-outs to secure the manufacturing of their products here in Pittsburgh.

Carnegie Mellon has historically been engaged in major initiatives in the Maker movement:

- The very cornerstone of the Maker movement was laid at Carnegie Mellon. Work by Dr. Lee Weiss of CMU'S Robotics Institute in the 1990's was among the first steps in the development of 3D printing technology.
- Carnegie Mellon was also one of the first universities to offer the option of including a Maker portfolio in its admissions process. This action was taken to recognize and tap the creativity of applicants, reinforce the value of emerging high school Maker programs, and strengthen the Maker culture across our campus community.

- In 2003, CMU launched a Master of Integrated Innovation for Products and Services, a degree program that prepares students to work on cross-disciplinary “maker” teams, uniting engineering, design, and business.
- In 2012, Carnegie Mellon led the formation of the academic team that successfully competed for the national innovation institute for additive manufacturing, America Makes. In collaboration with our America Makes partners, we are committed to closing those critical gaps that still impede the development of these new technologies while also creating a beacon for engaging high school and college students in Maker activities. With pride, we helped establish the hub of America Makes in Youngstown, Ohio, as a statement of faith in the power this technology to shape the future of this region united by a rich industrial legacy.
- Faculty and students regularly reach beyond our campus to bring Maker experiences to many neighborhoods and communities. CMU’s Entertainment Technology Center (ETC) developed the first Maker space for a children’s museum in Pittsburgh in 2010. The ETC has also helped create digital media Maker spaces at the Harold Washington Library in Chicago and at the Carnegie Library in Pittsburgh.
- In 2012, we also joined with the Pennsylvania AFL-CIO and the regional workforce investment board in collaboration with Tech Shop to launch the “New App for Making it in America” project, with support from the U.S. Department of Labor. As noted above, this project is forging new cross-community collaborations and supporting CMU manufacturing spinouts with a well-trained work force right here in Pittsburgh. This project will also result in the creation of the first recognized national Maker credential. We believe that this credential will act as a powerful catalyst for linking Maker and Making activities to new business creation and manufacturing across the United States.

Your call to action has inspired us to celebrate the first ever National Maker Faire with new commitments. These commitments include expanding the role of Making in Carnegie Mellon’s own educational offerings, creating a strong infrastructure for Maker activities at CMU, and building new connections to encourage new Maker activities across the city, region, and nation:

We Will Expand and Develop New Maker Educational Opportunities

- In fall 2014, Carnegie Mellon will launch eight cross-CMU interdisciplinary minors designed to offer to all our undergraduates the opportunity for learning through collaborative Maker experiences that span creativity, technology, culture, and entrepreneurship. Based on 30 new interdisciplinary studio-format courses, this curriculum aims to connect the disciplinary expertise of each student to diverse Maker

contexts and spur creativity and innovation. These minors are being created through the ***Integrative Design Arts and Technology*** (IDEATE) initiative.

- In the fall of 2015, Carnegie Mellon will launch the Integrative Media Program (IMP) in New York City. The IMP program is the only of the four applied science initiatives that the City has launched to bridge technology, arts, and business expertise to advance Maker opportunities in emerging media and foster participatory culture. The IMP@NYC is a Master's level program focused on offering collaborative Maker learning and retraining opportunities to a diverse set of professionals, and it creates direct links that engage and foster synergy with Maker capabilities in both New York and Pittsburgh.

We Will Build New Maker Infrastructure

The introduction of the IDEATE curriculum will be accompanied by an investment of more than \$5 million in new Maker spaces on CMU's Pittsburgh, New York City, and Silicon Valley locations.

- In the fall of 2014, Carnegie Mellon will open the IDEATE@Hunt Collaborative Making Facility. The facility will occupy the first two floors of our central library, thus signaling the evolution of the library into a mediated learning commons. It will include 24/7 digital fabrication shops, a physical computing lab, an interactive media black box, a virtual computing cluster, and collaborative design studios open to all library users.
- In summer 2014, Carnegie Mellon will open the ***Integrated Innovation Institute*** as a setting for educating students on market-centered innovations. This Maker environment facilitates cross-training in engineering, design, and business.
- In the fall of 2015, Carnegie Mellon will open 12,600 square feet of bio- and nano-fabrication lab capabilities for next-generation nano-additive and bio-additive Making.
- Throughout 2014 and into 2015, Carnegie Mellon is developing a new Advanced Manufacturing Facility for research and development highlighted by several high-end metal and polymer additive manufacturing machines. This facility will be home to new additive manufacturing projects, particularly in conjunction with America Makes.

In addition to serving CMU students, these new facilities will create an additional focal point for our collaboration with the Pennsylvania AFL-CIO to provide organized labor with a window on innovation and make them full partners in the innovation process.

We Will Connect CMU Maker Capabilities to Help Meet Needs of the Region and Nation

- As one aspect of Carnegie Mellon's new Simon Initiative in technology-enhanced learning, the university will open a ***Learning Media Design Center*** in fall 2014 that will focus on K-12 education through new media and Maker experiences. The center will be

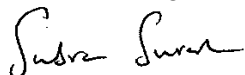
the bridge linking CMU's initiatives in Making to the region and in particular for collaboration with the Remake Learning Council in Pittsburgh. This center will focus on integrating neighborhood, school, library, Tech Shop, and museum initiatives to CMU's research and educational initiatives.

- Carnegie Mellon will partner with the Intel Corporation to advance best practices in Maker education for K-16 and lifelong learning and related Maker tool-kits. This project seeks to combine new Intel Maker-oriented processors with software applications and Maker curricula drawn from Carnegie Mellon and partner universities from across the nation. This collaboration is part of the Intel Design Network, a network of technology and arts schools brought together by Intel for advancing Maker-based learning and Physical Computing. Our collaboration with Intel will be combined with the Intel® Software Academic Program, the Stay With It program for improving the retention rate of science and engineering students at HBCUs and other underrepresented-population educational institutions supported by the Intel® Software Academic Program. This program is preparing a broader population of future educators to engage more young people in STEM and enhance the STEM pipeline. The embrace of diverse learning styles and approaches in STEM curricula in Maker-based learning can attract more people from underrepresented groups (women and minorities) to STEM education and careers.
- Finally, recognizing that your leadership in establishing the first National Maker Faire has launched a rich exchange of ideas across the higher education community, Carnegie Mellon would like to help sustain this conversation. We propose to adapt the NSF-funded, multi-university collaborative creative exchange site, XSEAD, www.xsead.cmu.edu, to support a permanent forum for ongoing dialogue across the higher education community on Maker initiatives. This readily available, multi-institutional site will support the ongoing sharing of best practices and Maker projects that this Faire has sparked.

Making is the essence of creativity and invention in both the arts and technology, which still form the heart of Carnegie Mellon's curricula. While 100 years ago, CMU students were developing stainless steel and other materials, designing roads and bridges, and writing plays, today they are also making robots, apps, games, fluorescent neurons, biosensors, and computer simulated-images of the origin of the universe. Making remains the vibrant essence of discovery and economic growth in our world.

We at Carnegie Mellon are grateful for the new energy that your vision for the National Maker Faire has sparked across the nation, and we look forward to contributing to the achievement of the important goals you have set forth.

With warm regards,



Subra Suresh