



Engineering is the empowering discipline of our times. It is at the core of practically every innovation, and spawns at a dramatic pace an amazing spectrum of technologies. Such technologies translate advanced research from the laboratory to the marketplace (for example, in bioengineering or nanotechnology); leverage the information technology revolution to create new tools to understand and enrich our world; and can themselves be combined with other technologies to develop new, yet powerful technological offspring.

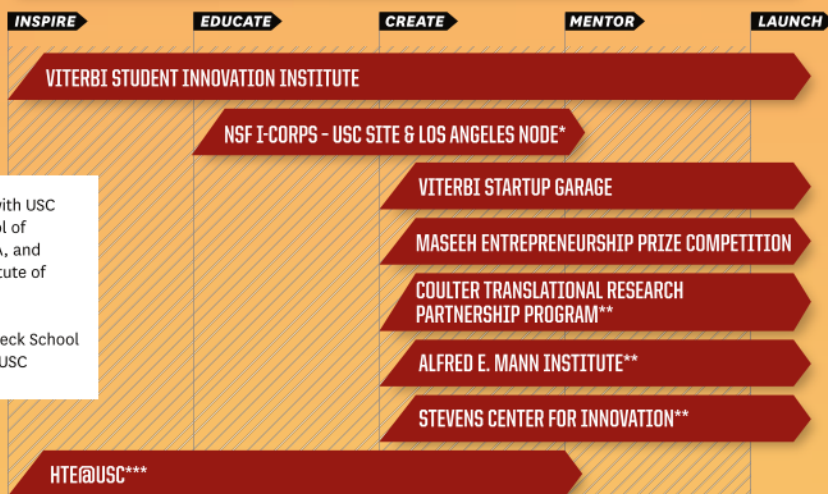
Engineering schools are the epicenter of this abundance in creation. At USC Viterbi, the nurturing and growth of an ecosystem of innovation and entrepreneurship is one of the four pillars of our vision. We aim to inspire, educate, create, mentor and launch new innovation through a multitude of initiatives including: The Viterbi Student Innovation Institute (VSI<sup>2</sup>) for our undergraduate students; the Viterbi Startup Garage (VSG), for the launching of new USC Viterbi startups; the Maseeh Entrepreneurship Prize Competition (MEPC) that helps inspire

startups, including from faculty research; the HTE@USC, our unique partnership with the Keck School of Medicine of USC, which encourages innovation at the intersection of engineering and medicine. University-wide, these efforts are supported by the Alfred Mann Institute (AMI), the Coulter Translational Research Partnership Program and the Stevens Institute for Innovation, which provide resources and mentoring for the commercialization of technologies.

More recently, and in a partnership with UCLA and Caltech, we led the initiative that established in Southern California an NSF I-Corps National Node, managed by USC. This national node will help spur the translation of scientific research from the lab to the marketplace and lead to new startups. Southern California is the geographic region in the nation with the largest number of engineering and computer science graduates. This robust outflow of technological talent is a great ingredient for the development of a truly fertile ecosystem of technological innovation in Southern California, with the potential to rival any other region. It is with this ambition and enthusiasm that we are embarking on these transformative initiatives.

**Yannis C. Yortsos**  
Dean, USC Viterbi  
School of Engineering

#### INNOVATION AT THE USC VITERBI SCHOOL OF ENGINEERING



## USC Viterbi at a Glance

USC Engineering began in 1905

### Student Population

Approximately 2,400 undergraduate students and 4,200 graduate students

### Faculty

174 tenure-track faculty, with 62 endowed chairs and professorships, 60 NSF Career Awardees, 19 full-time, tenure-track NAE members (33 total affiliated) and 10 junior faculty listed on the MIT TR35 list since 2009

### Academic Departments

Eight

### Alumni

More than 60,000

### Annual Research Expenditures

More than \$181 million, with more than 45 research centers and institutes

### Research Centers and Institutes

#### Home to:

- » Information Sciences Institute (ISI)
- » The Ming Hsieh Institute
- » The Daniel J. Epstein Institute
- » Two (now graduated) National Science Foundation (NSF) Engineering Research Centers (ERC)
  - › Integrated Media Systems Center (IMSC)
  - › Biomimetic MicroElectronic Systems Center (BMESC)
- » University Center of Excellence of the U.S. Department of Homeland Security - Center for Risk and Economic Analysis of Terrorism Events (CREATE)
- » Center for Energy Nanoscience at USC
- » Biomedical Informatics Research Network (BIRN)
- » HTE@USC (Health, Technology and Engineering@USC)
- » LADWP/DOE Smart Grid Demonstration Project
- » USC-Lockheed Martin Quantum Computation Center
- » Center for Interactive Smart Oilfield Technologies (CiSoft)
- » Pratt & Whitney Institute for Collaborative Engineering (PWICE)
- » Airbus Institute for Engineering Research (AIER)
- » Infosys Center for Advanced Software Technologies (CAST)
- » NIH Center on Genomics and Phenomics of Autism
- » Viterbi Student Innovation Institute (VSI<sup>2</sup>)
- » USC Energy Institute

#### Affiliated with:

- » Alfred E. Mann Institute for Biomedical Engineering (AMI)
- » USC Institute for Creative Technologies (ICT)
- » USC Stevens Center for Innovation

### Education Centers

- » Division of Engineering Education
- » KIUEL (Klein Institute for Undergraduate Engineering Life)
- » VAST: Viterbi Adopt-a-School, Adopt-a-Teacher

# USC Viterbi

## School of Engineering

# BUILDING AN ECOSYSTEM OF INNOVATION IN

# SOUTHERN CALIFORNIA

# START HERE

## DEAN'S REPORT 2014



## THE VITERBI STUDENT INNOVATION INSTITUTE (VSI<sup>2</sup>) & THE VITERBI STARTUP GARAGE



The **Viterbi Student Innovation Institute** serves as a crucible for innovation for USC Viterbi students. It is intended to inspire, educate, create, mentor and launch innovation and entrepreneurial activities that can be ultimately turned into successful business ventures. A flagship initiative is the **Viterbi Startup Garage**, Southern California's only technology incubator focused on supporting companies that are led or co-led by engineers. It offers financial support, mentoring, legal advice, office space and other strategic resources to a select group of USC Viterbi students, alumni and other budding entrepreneurs.

- The ultimate vision is to help create the **biggest technology company in LA**, which will create a ripple effect and build a thriving entrepreneurial ecosystem.
- Venture capital giant **Kleiner Perkins Caufield Byers** is among the program's partners.
- These programs were founded and are directed by **Ashish Soni of USC Viterbi**.
- Startups in last year's inaugural VSG class raised to date a total of over **\$6 million** in follow-on investment capital.
- Startup Garage alumnus **AIO Robotics**, produces **Zeus**, the world's first all-in-one 3-D printer, copier, scanner and fax machine. Said Forbes.com: "**Zeus may be a game changer in getting [3-D] printers into the consumer market.**"
- In 2014, **115 teams competed for eight spots** in the VSG. Each of the eight teams received **\$50,000** in seed capital.
- The **VSI<sup>2</sup> Hacker House** is a shared community and space that brings together innovators from all disciplines. The newly created **Digital Imagination Studio** partners with Fortune 500 companies and late-stage startups to imagine, design and prototype brilliant products and concepts for the future.

## MASEEH ENTREPRENEURSHIP PRIZE COMPETITION (MEPC)

An engineering business plan competition that offers **\$110,000** in cash and services, the **Maseeh Entrepreneurship Prize Competition (MEPC)** plays an important role in helping USC Viterbi students, faculty and others take their innovative ideas from the university into the marketplace.

- Through the process of writing a business plan and collaborating with marketing, finance and industry experts along the way, team members learn the fundamentals of entrepreneurship and what it takes to succeed.
- MEPC, which namesake **Fariborz Maseeh** founded with a **\$1 million endowment**, helps participants "become founders of the next generation-set of companies that will help move our economy forward and solve some of the challenges our nation faces," said **USC Viterbi Professor Peter Beerel**, who oversees MEPC.
- 2013 MEPC winner **Second Spectrum** analyzes Big Data for insights into sport performance, including what constitutes good defense and offense in basketball. Clients include the Los Angeles Clippers.
- 2014 winner **ComfortCorrect** offers a superior option for orthodontic treatment with its programmable memory wire technology. The fledgling company includes professors and students from **USC Viterbi** and the **USC Ostrow School of Dentistry** and has won several innovation prizes.



## TECHNOLOGY, INNOVATION & ENTREPRENEURSHIP @

### USC Viterbi

#### The Four Pillars

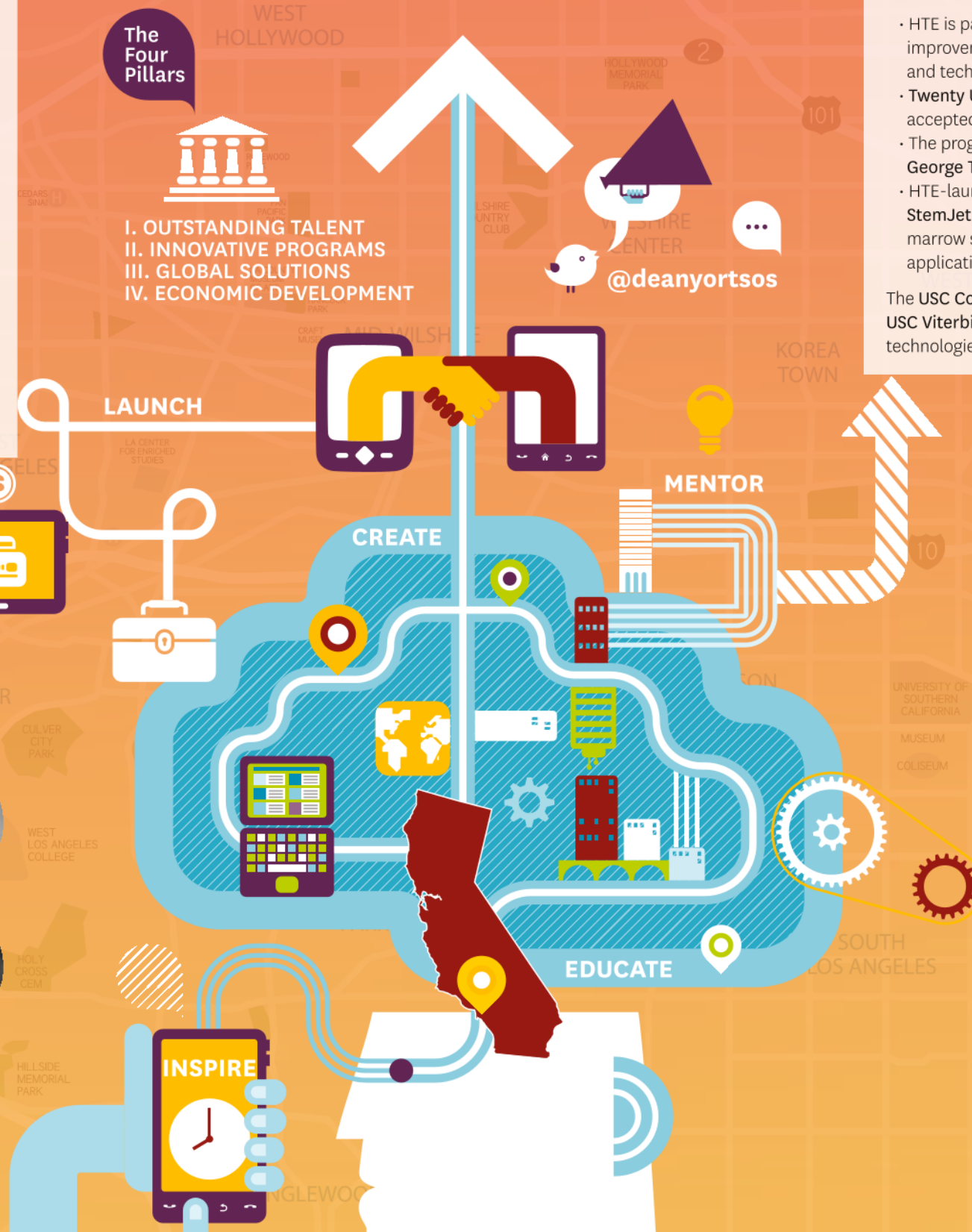
- OUTSTANDING TALENT
- INNOVATIVE PROGRAMS
- GLOBAL SOLUTIONS
- ECONOMIC DEVELOPMENT

#### LAUNCH

#### CREATE

#### MENTOR

#### EDUCATE



## HTE@USC & USC COULTER



Health, Technology and Engineering (HTE@USC) and the USC Coulter Translational Research Partnership Program both aim to translate research into real medical technologies.

HTE is a one-of-a-kind, interdisciplinary program that brings together doctoral students from the **USC Viterbi School of Engineering** and medical students from the **Keck School of Medicine of USC** for up to four years with the goal of bringing to market a medical device or other products to improve healthcare.

- HTE is part of a larger university entrepreneurial effort to promote rapid improvements in healthcare by combining advanced engineering, medicine and technology.
- **Twenty USC Viterbi** and **25 Keck School** graduate students have been accepted into the program since its inception.
- The program is directed by **Professor Terry Sanger** (academic program director) and **George Tolomiczenko** (administrative director).
- HTE-launched startup, **StemSurgical**, is building a minimally invasive device, **StemJet**, that allows for faster, less painful and more efficient harvesting of bone marrow stem cells needed for cancer treatment and regenerative medicine applications.

The **USC Coulter Program** supports faculty-led interdisciplinary project teams from **USC Viterbi** and the **Keck School of Medicine of USC** that seek to apply developed technologies to solve an unmet or underserved clinical need.

## NSF I-CORPS NODE



USC is the nominal home of the sixth **National Science Foundation (NSF) I-Corps Node**, established in August 2014. This node is a partnership between **USC**, **UCLA** and the **California Institute of Technology**, managed at USC, and will support the translation of scientific and engineering research beyond the laboratory in Southern California.

- The **\$3.5 million**, three-year NSF grant will leverage emerging technologies from the laboratory to fuel technology startups in Southern California.
- A larger goal of the node is to support and help flourish technology, entrepreneurial, and innovation in Southern California, which is ripe for such a transformation.
- The USC team is a collaboration between **USC Viterbi** and the **USC Marshall School of Business**.
- The Principal Investigator of the node is **USC Viterbi Dean Yannis Yortsos** and the node director is **Andrea Belz** of **USC Marshall** and **USC Viterbi**. Co-PIs from **UCLA** and **Caltech** complete the team.
- The Node is coupled with a USC I-Corps Site that provides NSF I-Corps Mini Grants to USC faculty and students to fund prototypes and explore the customer discovery process. Professor **Peter Beerel** is the PI of the USC I-Corps Site.

