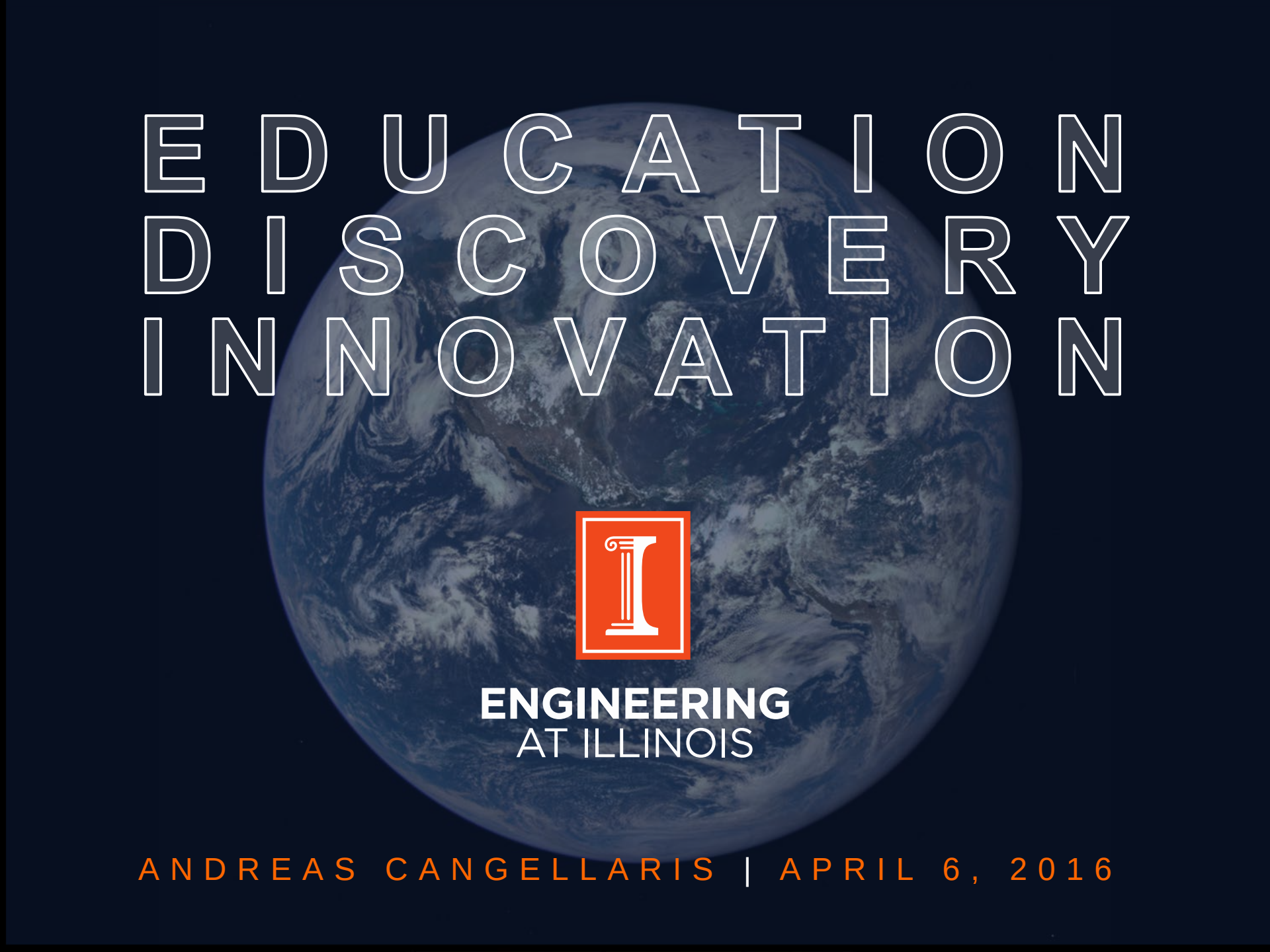
EDUCATION
DISCOVERY
INNOVATION
ENGINEERING
AT ILLINOIS
ANDREAS CANGELLARIS | APRIL 6, 2016

World Economic Forum Annual Meeting

20-23 January 2016, Davos-Klosters, Switzerland

“The Fourth Industrial Revolution”

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- Building upon the digital (third industrial) revolution;
- thanks to today's exponential pace of breakthroughs;
- leveraging global, wireless connectedness; unprecedented processing power; and ubiquitous access to information;
- riding on emerging advances in nanotechnology, materials science, energy storage, 3-D printing, robotics, AI, the Internet of Things, and biology;

the **Fourth Industrial Revolution** will disrupt every industry, and has the potential to improve quality of life at global scale.

Energizing the potential of a cyber-physical world.

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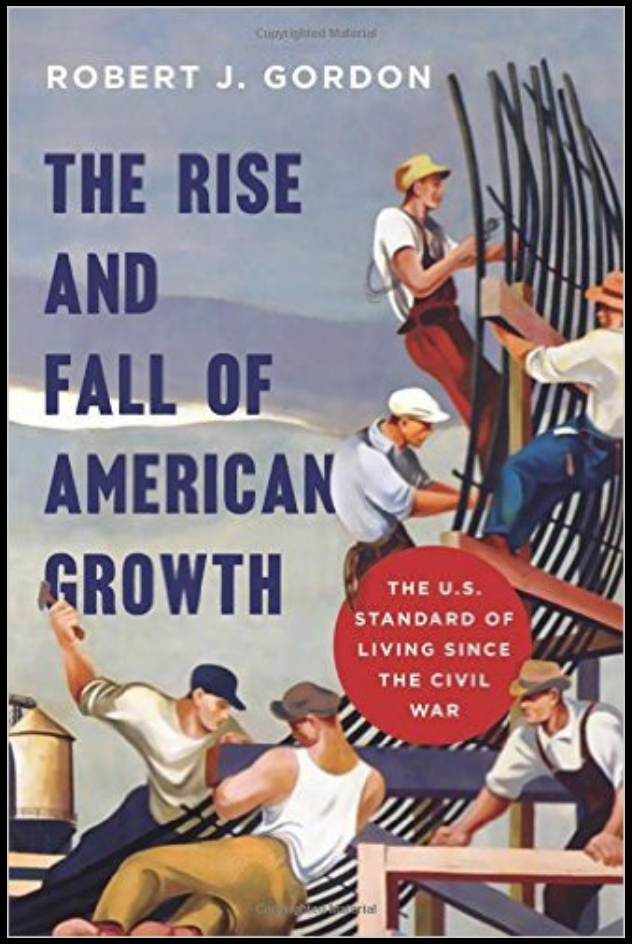
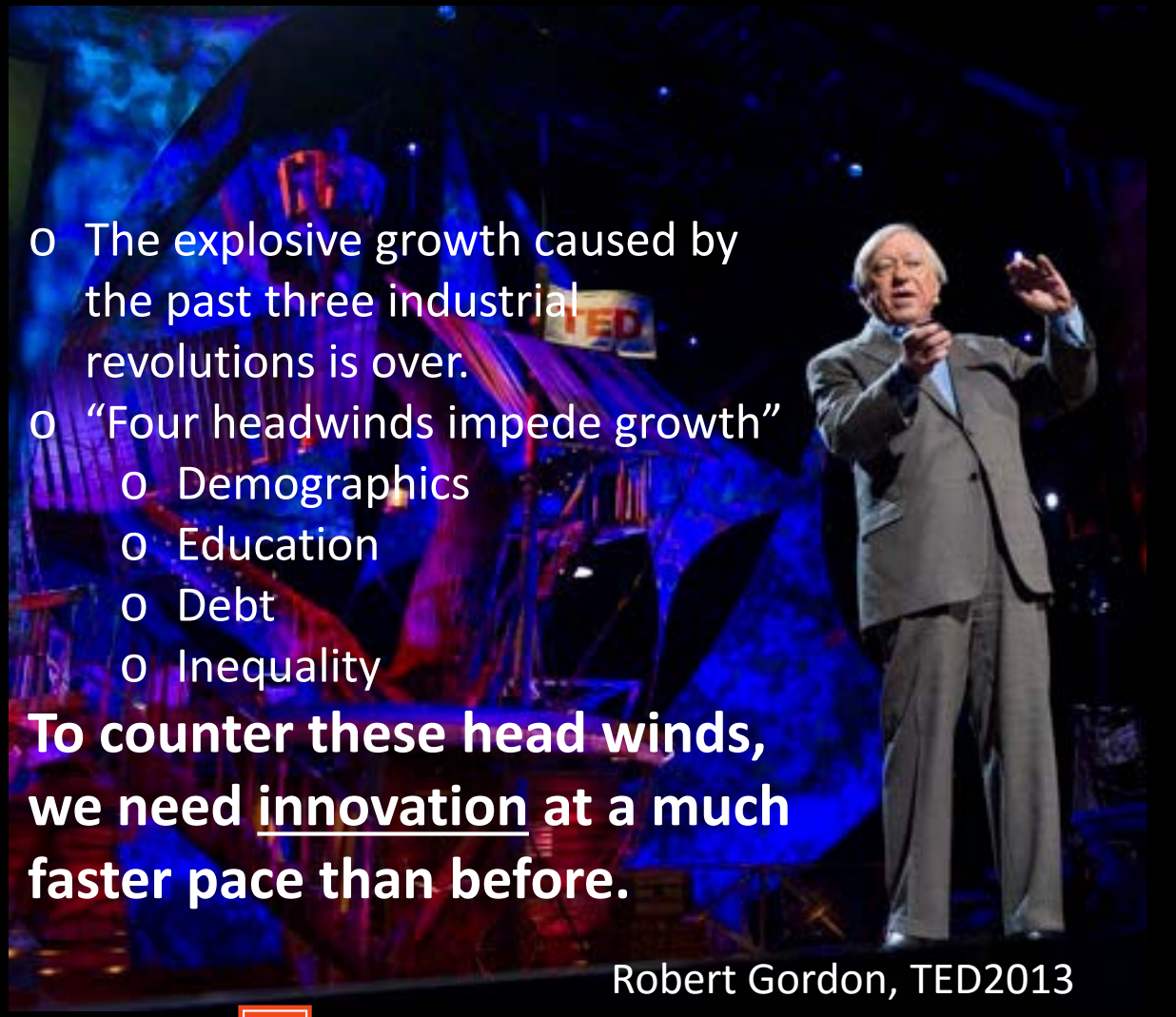


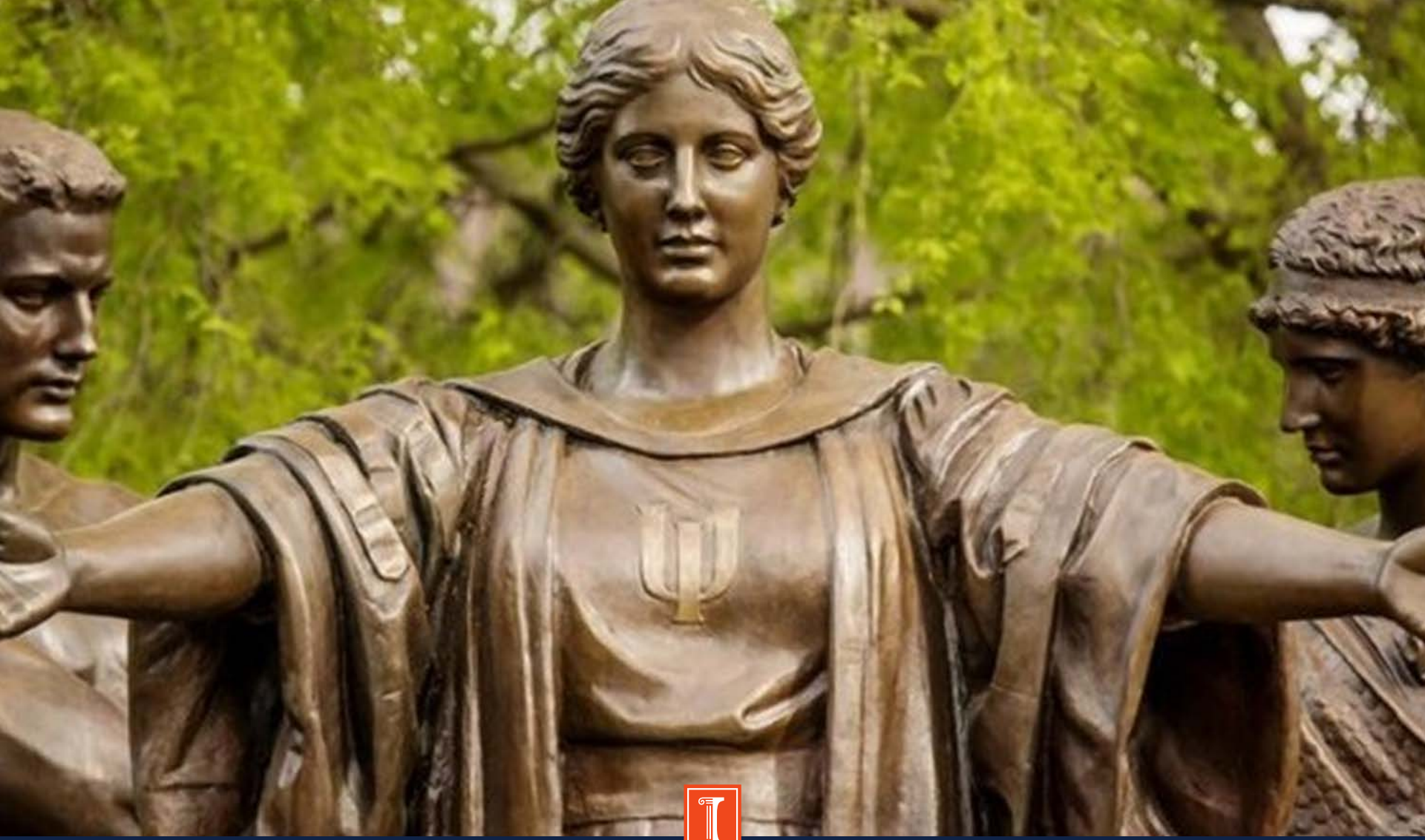


- The explosive growth caused by the past three industrial revolutions is over.
- "Four headwinds impede growth"
  - Demographics
  - Education
  - Debt
  - Inequality

To counter these head winds, we need innovation at a much faster pace than before.

Robert Gordon, TED2013

"The death of innovation, the end of growth"



We prosper through discovery and innovation; and through education we put prosperity to good use.

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NAE GRAND CHALLENGES FOR ENGINEERING

NATIONAL ACADEMY OF ENGINEERING

NAE's grand challenges are everyone's challenges.

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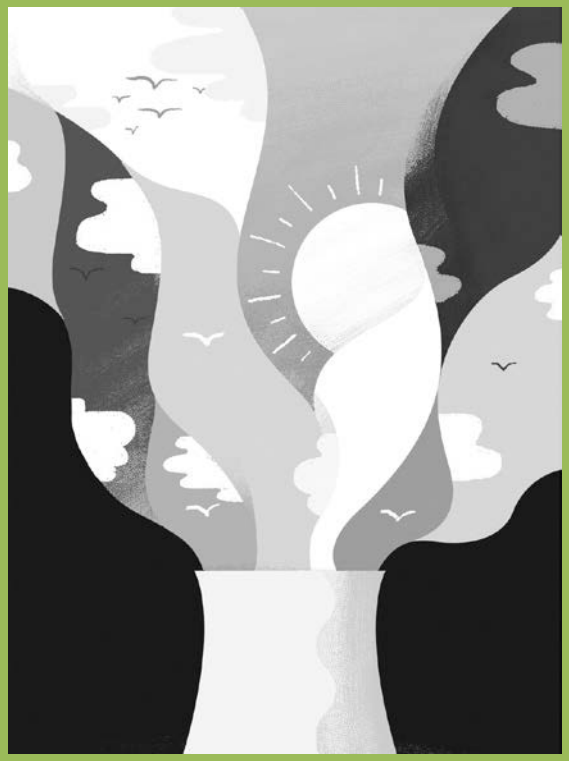


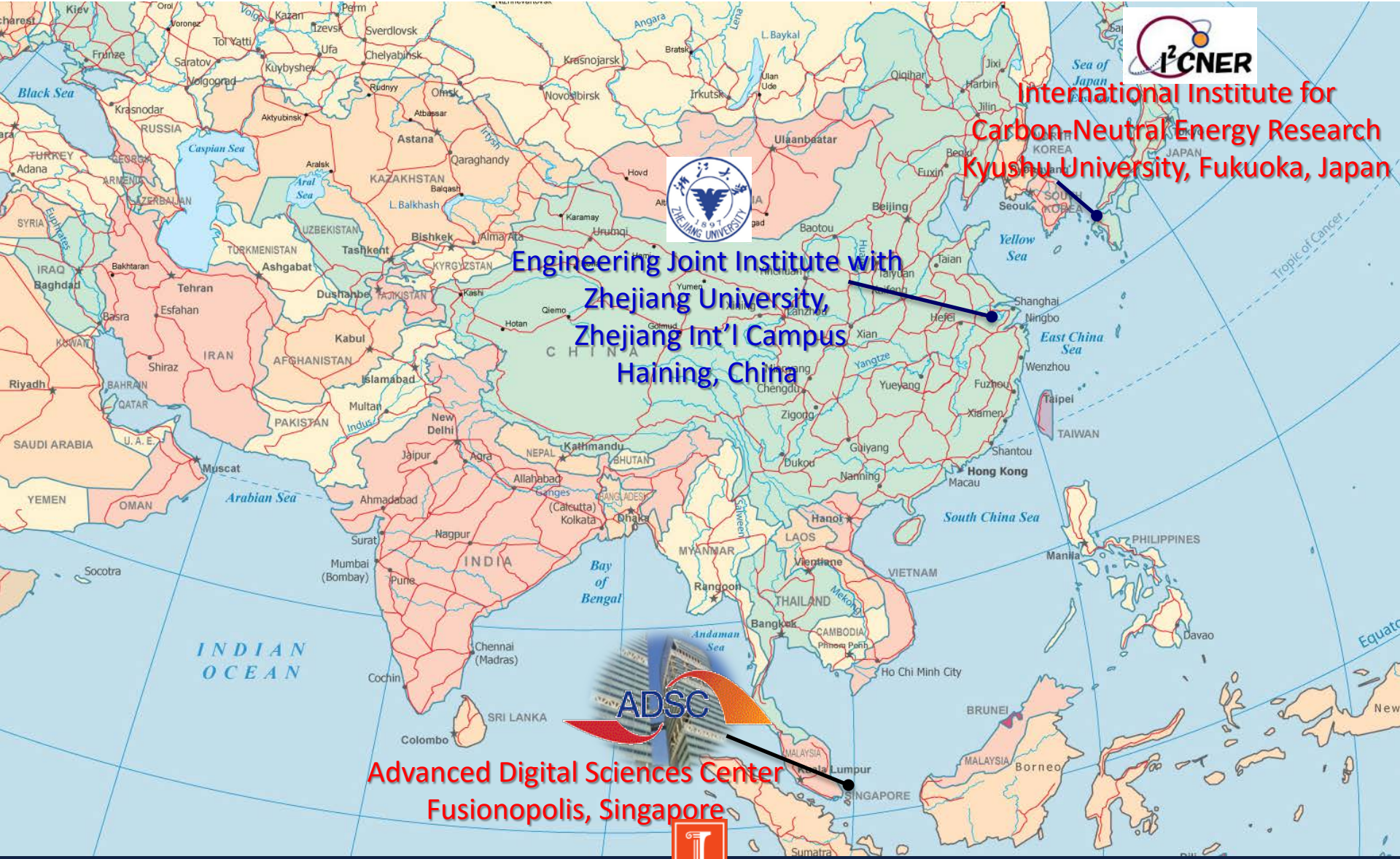
THE NEW ATOMIC AGE WE NEED

By PETER THIEL: Nov. 27, 2015

"If we are serious about replacing fossil fuels, we are going to need nuclear power, so the choice is stark: We can keep on merely talking about a carbon-free world, or we can go ahead and create one."

The New York Times – Opinion Pages

And the hard problems behind these grand challenges change people's minds.



Grand challenges are global challenges.

William L. Everitt

"**Education** is the broader development of the mind and personality – a guided enlargement of creativity and understanding."

"**Training** is the inculcation of methods of procedure, the development of adequate vocabularies and skills through the general procedure of explanation and demonstration."

The Google™ effect

Ubiquitous access to information prompts us to store information about where a particular piece of knowledge is likely to be found rather than the knowledge itself.

e.g., Sparrow et al, Science, 333(6043), 776-778, 2011.

“Instant” access to knowledge everywhere.

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Fusion of research, education & training.

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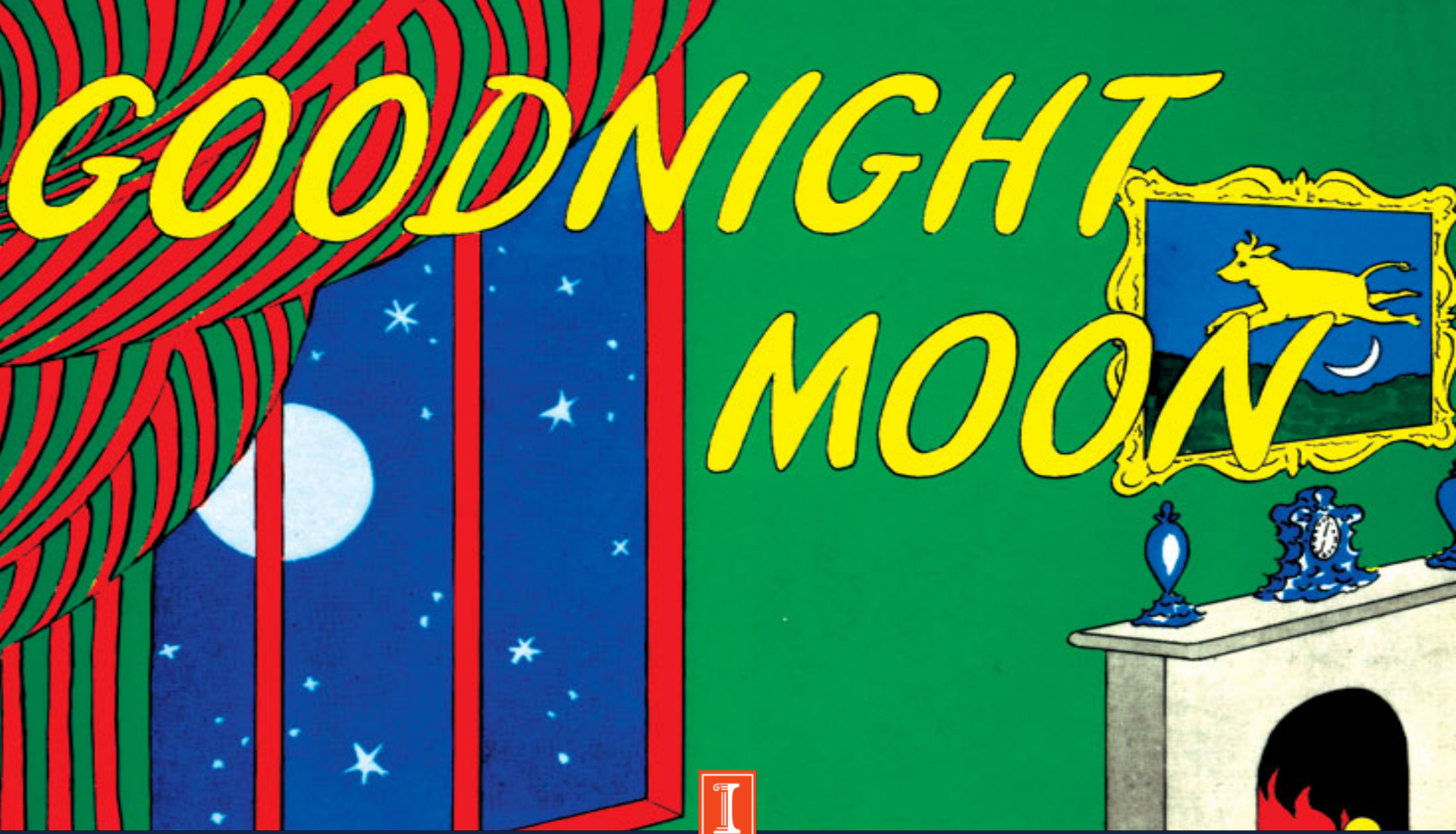

"Grown-ups stick with the tried and true; 4-year olds have the luxury of looking for the weird and wonderful."

- *Alisson Gopnik*

Genevieve Bell

Vice President, Intel Labs
Director, User Experience Research
Intel Fellow

"You have to understand people to build the next generation of technology."

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Illinois Cancer Scholars

Inspiration • Opportunity • Impact

The **CANCER SCHOLARS PROGRAM** is a new undergraduate program created to provide a unique and interdisciplinary student learning experience. Whereas traditional undergraduate education has focused on classroom instruction independent of career aspirations or broader causes, this new model for undergraduate education is motivated by societal challenges and incorporates real-world experiences. Aligned with students' passions, this approach is designed to inspire better learning, provide opportunity for undergraduate students to work in a meaningful manner in an important area for society, and ultimately impact society with smart and innovative Illinois graduates providing solutions against cancer.

PROGRAM GOALS:

- Motivate learning by showing the relevance of education to the real-world need for making progress against cancer
- Emphasize research early to encourage critical thinking and build skills and knowledge from the very outset
- Provide clinical, patient-oriented, and entrepreneurial opportunities alongside comprehensive disciplinary training
- Advance the detection and treatment of cancer through engineering solutions

PROGRAM DETAILS:

- Program launched in Fall 2014
- Inaugural class of 12 students (5 women, 4 first-generation college students, 1 underrepresented minority) of highly qualified freshmen (average ACT score = 34.8) was admitted
- A new course, BIOE 199FCR (Frontiers in Cancer Research), was launched
- A group of five faculty members lead the development and deployment of the program

FOR MORE INFORMATION:

Contact Prof. Rohit Bhargava (email: rxb@illinois.edu, phone: 217-265-6596) or visit cancer.illinois.edu/scholars.

ILLINOIS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Department of Bioengineering

BECKMAN INSTITUTE
FOR ADVANCED SCIENCE AND TECHNOLOGY

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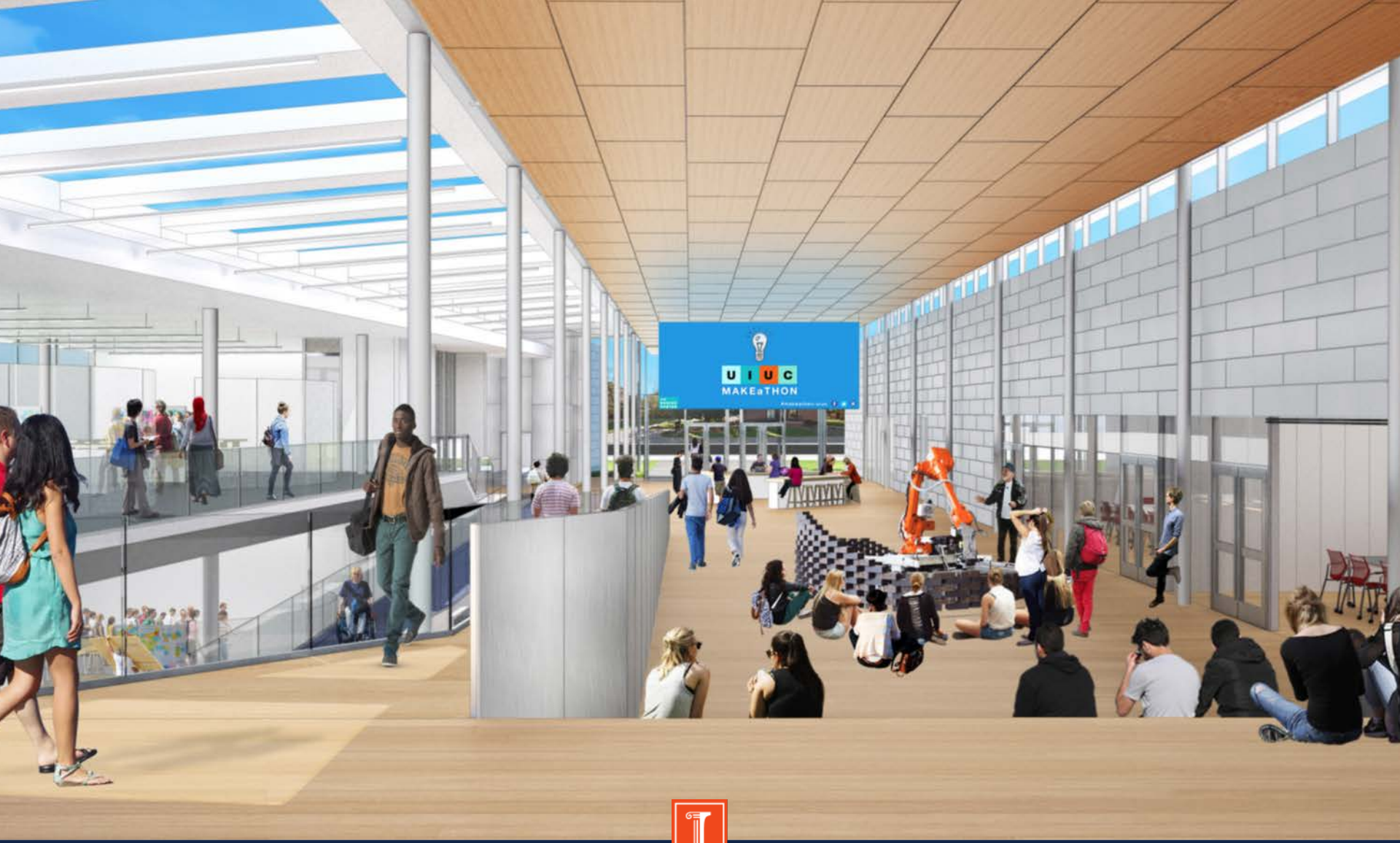
INTERDISCIPLINARY
HEALTH SCIENCES Initiative



UIUC's Design School:
Preparing innovators across the disciplines.

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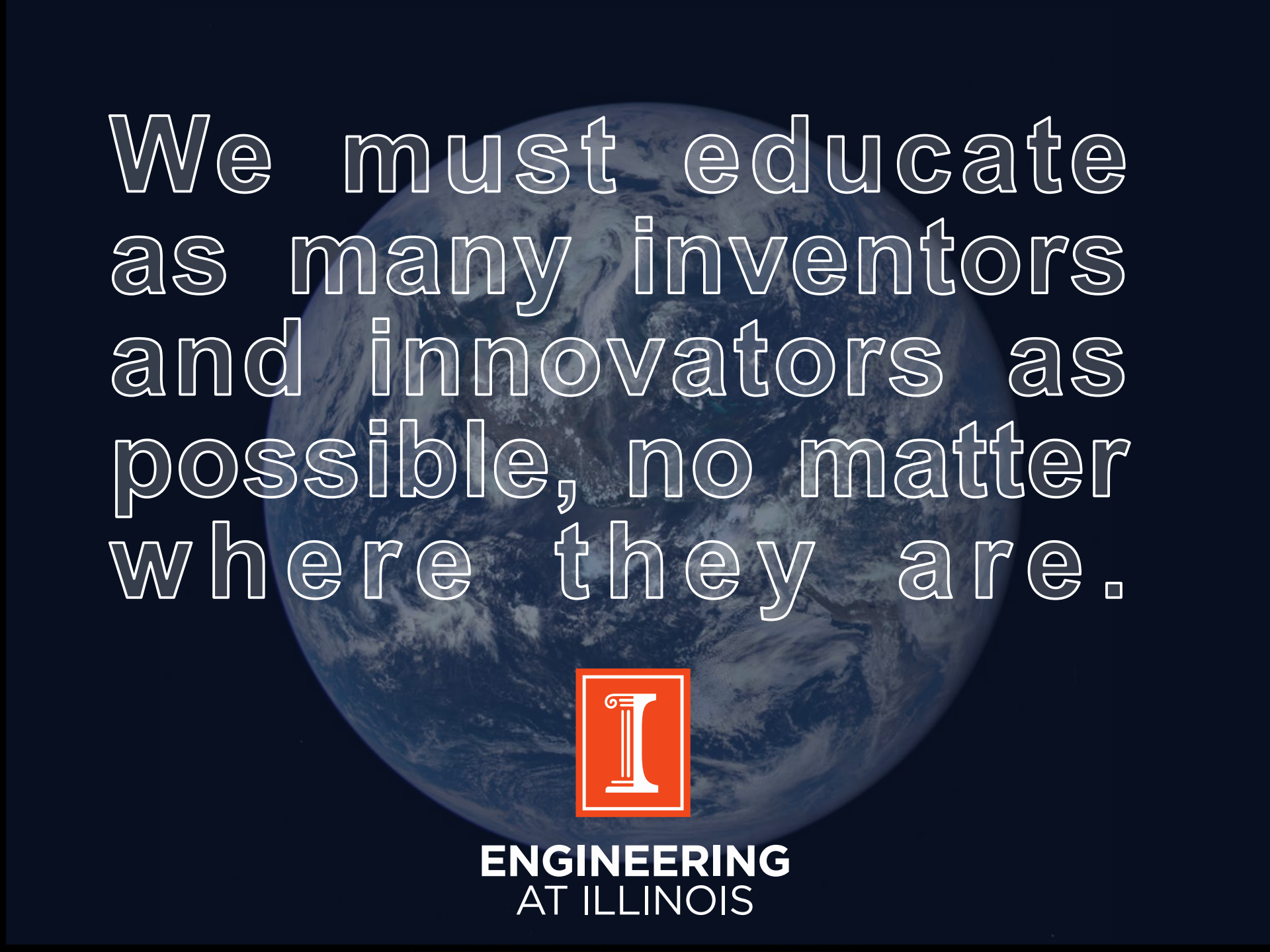
We must educate as many inventors and innovators as possible, no matter where they are.
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AT ILLINOIS