





# this conference's impact

- 14th ASU Pavements/Materials Conference
- 400+ participants
- Matt Witczak Faculty Endowment now is over \$44k; funds will enable our faculty in this area discretionary funds to support pavement program and students
- equipment fair yesterday and ongoing training throughout the year
- knowledge shared will allow all of us to do a better job

### Thank you!!

# about asu



# #1 in the U.S. for innovation

#1 ASU #2 Stanford #3 MIT - U.S. News and World Report, 2016, 2017, 2018



#### **ASU Charter**

ASU is a comprehensive public research university, measured not by whom it excludes, but by whom it includes and how they succeed; advancing research and discovery of public value; and assuming fundamental responsibility for the economic, social, cultural and overall health of the communities it serves.









School of ARTS, MEDIA AND ENGINEERING

Herberger Institute for Design and the

School of EARTH AND SPACE **EXPLORATION** College of Liberal Arts and Sciences

School of SUSTAINABILITY The BIODESIGN INSTITUTE Julie Ann Wrigley GLOBAL INSTITUTE OF SUSTAINABILITY GLOBAL SECURITY INITIATIVE

We are transcending the traditional.

School for the FUTURE OF INNOVATION IN SOCIETY

School of Biological and Health Systems Engineering

School of Computing, Informatics. and Decision Systems <u>Engineering</u> Sandeep Gupta, Interim Director

School of Electrical, Computer and Energy **Engineering**  School for Engineering of Matter. Transport and Energy 3

Lenore Dai, Director

School of Sustainable **Engineering** and the Built Environment

The **Polytechnic** School

Marco Santello, Director

5.675 students 4,341 undergraduate 1.331 graduate

3.002 students

Steve Phillips, Director

4.026 students 3,335 undergraduate 691 graduate

Edd Gibson, Director 1.702 students

1,285 undergraduate

Ann McKenna, Director 4.556 students

4.268 undergraduate

843 undergraduate 166 graduate Biomedical Engineering

Biological Design

1.009 students

Computer Engineering Computer Science Computer Systems Engineering **Engineering Management** Industrial Engineering

2.118 undergraduate 884 graduate

**Electrical Engineering** 

Computer Engineering

Aerospace Engineering Chemical Engineering Materials Science and Engineering

417 graduate Civil, Environmental and Sustainable Engineering Construction Engineering

Engineering Environmental and Resource Management Graphic Information

Fall 2016 Enrollment (21st day)

Informatics Software Engineering Mechanical Engineering Solar Energy Engineering and Commercialization

Construction Management Sustainable Engineering

Aviation

288 graduate

Technology Human Systems Engineering Information Technology Manufacturing Engineering Technological Entrepreneurship and Management

6 interdisciplinary schools • 23 undergraduate programs • 39 graduate programs • 2 campuses+online





**Graduate Degree Programs** 

Undergraduate Degree Programs

196 National Merit Scholars 144 National Hispanic Scholars



447 Total Faculty

NSF CAREER Awards
in 2016-2017

349 Tenure/Tenure-Track Faculty

\$103<sub>M</sub> Research Expenditures

Lead institution on two and partner on two NSF Engineering Research Centers









# How we stack up

Largest engineering school in the United States

Top Additive Manufacturing facility in the Southwest

Responsible for 96 patents and 17 startups in the last three years

Most graduate engineering students<sup>1</sup>

Most undergraduate

#5

**30%** 

of Barrett, the Honors College students are in the Fulton Schools

engineering students1

Most women as Tenure/ Tenure-Track Faculty<sup>1</sup> **#7** 

1 American Society for Engineering Education; U.S.-based schools

2 University Statistics; Business Insider and HiringSolved Survey; 2017

Most technology graduates hired by Top 25 technology companies<sup>2</sup>

**#10** 



school of sustainable engineering and the built environment

del e. webb school of construction

civil engineering

construction engineering

environmental engineering



# data snapshot

enrollment	
<b>1723</b>	total enrollment
1304	undergraduate students
419	graduate students
	281 M.S./138 Ph.D.
faculty	
47	tenured and tenure-track faculty
47	
47	tenure-track faculty
47	<ul><li>tenure-track faculty</li><li>6 lecturers</li></ul>
47	<ul><li>tenure-track faculty</li><li>6 lecturers</li><li>8 research faculty</li></ul>
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#### student profile

25/1157 ACT/SAT

**11%** Barrett Honors students

21% female

**22%** international

**31%** underrepresented minority

**69** Accelerated Bachelor's plus Master's Program students (4+1)

Eisenhower

Scholars: Udall, Fulbright,

22% of FTF first generation

**Global Engagement** 

Engineers Without Borders, Bridges to Prosperity, US/Mexico Border Water Training Program

### Where we have come from, 2009-2017

#### Research:

- Expenditures, \$7.18 million (2009) → \$17.15 million (2017)
- Thirteen >\$1 million awards in past three years (as many as previous six years)

#### Students

- Total students, 1145 (2009) → ~1723 (2017)
- Faculty
  - Headcount, 34 T/TT, L, PoP (2009) → 57 T/TT, L, PoP (2017)
- Fundraising/philanthropy since 2009, >\$17 million
- Since 2009, initiated three programs: On-line MSE Sustainable Engineering, Environmental Engineering, Construction Engineering





# transportation at asu



# 2013 university transportation center (UTC) competition (cross-Schools)

- first USDOT UTC project at ASU
- subcontracted to Univ. of Maryland, UTC title: "National Center for Strategic Transportation Policies, Investments, and Decisions"
- dates of performance: 1/1/14 to 6/30/17
- expenditure total (ASU): \$825K
- faculty involved:
  - Kamil Kaloush (lead PI)
  - Xuesong Zhou
  - Pitu Mirchandani
  - Mounir El Asmar
  - Shane Underwood
  - Mike Chester
  - Yingyan Lou
  - Ram M. Pendyala

http://transportationstudies.asu.edu

# 2016 university transportation center (UTC) competition

- USDOT received more than 200 proposals in response to 2016 solicitation and made a total of 32 awards
- ASU SEBE faculty members involved in nearly 20 proposals
- ASU awarded first ever USDOT UTC led by an institution of higher education in Arizona
- Center for Teaching Old Models New Tricks (TOMNET) is a Tier 1 UTC dedicated to improving mobility for all
- Consortium led by ASU includes Georgia Tech, University of Washington, and University of South Florida

# center for teaching old models new tricks (TOMNET)

- Multi-disciplinary center directed by SEBE faculty member, Ram Pendyala
- \$10 million in total funding over a 5-year period
- Center aims to:
  - Develop new methods to analyze impacts of transformational technologies and mobility services on transportation infrastructure
  - Design sustainable future transportation systems and mobility options that will benefit all segments of society
  - Forecast and shape the future of mobility in an era of connected and autonomous vehicles, IoT, drones, and Hyperloop
- MAG has joined TOMNET as an agency partner, committing to support one graduate student per year for the life of the center
  - Seeking additional partners

# NSF Engineering Research Center Projects Awarded (SSEBE)

- ➤ Ed Kavazanjian and his team, leading a project entitled: "NSF Engineering Research Center for Bio-Mediated and Bio-Inspired Geotechnics"
  - > \$18.5 million over five years
  - Partners: ASU, UC-Davis, NMSU, Ga Tech
  - https://engineering.asu.edu/cbbg/
- Paul Westerhoff and his team, subcontracting with a Rice-led initiative entitled: "NSF Engineering Research Center for Off-Grid Nanotechnology Enabled Water Treatment (NEWT)"
  - > ~\$3.2 million over five years
  - > Partners: Rice, ASU, Yale, UTEP
  - http://www.newtcenter.org

# transportation materials and systems expertise at asu

#### transportation systems:

Ram Pendyala, Professor Yingyan Lou, Assistant Professor Xuesong Zhou, Associate Professor Mikhail Chester, Associate Professor

### construction, project planning and delivery:

G. Edward Gibson, Jr., Professor Sam Ariaratnam, Professor Mounir El Asmar, Assistant Professor Pingbo Tang, Assistant Professor David Grau, Assistant Professor Tony Lamanna, Associate Professor Wylie Bearup, Professor of Practice

#### Pavements, structures, and materials:

Kamil Kaloush, Professor
Ed Kavazanjian, Professor
Mike Mamlouk, Professor
Barzin Mobasher, Professor
Narayanan Neithelath, Professor
Claudia Zapata, Associate Professor
Sandra Houston, Professor
Matt Witczak, Professor Emeritus
Christian Hoover, Assistant Professor

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# transportation materials and systems expertise at asu (cont'd)

#### logistics and simulation:

Pitu Mirchandani, Professor J. Rene Villalobos, Associate Professor Ron Askin, Professor Arnold Maltz, Associate Professor

#### water and air quality:

James Anderson, Research Professor Zhihua Wang, Assistant Professor Matt Fraser, Professor Enrique Vivoni, Professor

#### Planning and society:

Michael Kuby, Professor
Deborah Salon, Assistant Professor
David King, Assistant Professor
Patricia Mariella, Director
David Hondula, Assistant Professor
Thad Miller, Assistant Professor

Current search ongoing for a faculty member in pavement materials

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# The future (?) of transportation

AZLoop finished in the top eight out of 35 teams in August competition hosted by SpaceX

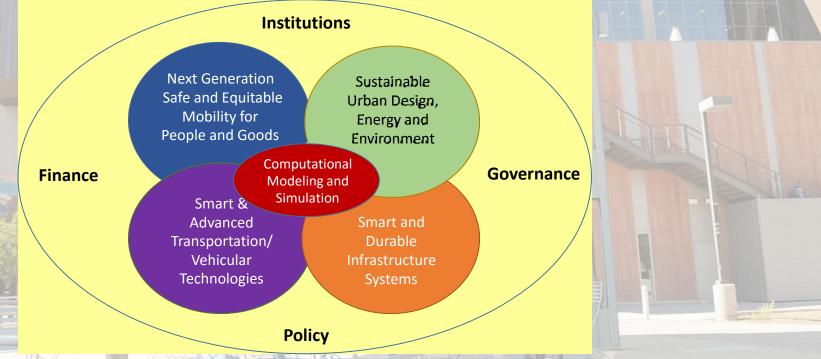


### Other future transportation trends-Gibson

- Resiliency in the face of global warming
- Driverless vehicles
- Safety/security
- Move away from hydrocarbons
- Urban growth
- Workforce shortages
- New ways to finance and contract

### **ASU launches transportation campaign**

Greatly expand and enhance transportation research and education activities



http://transportationstudies.asu.edu

# musing on leadership



### Leadership lessons in the Crow era

- Transformation of ASU
- My background
- My tenure here since 2009
- What is unique about ASU and what it has been doing

### Leadership lessons in the Crow era (2)

- Stay with your vision, but adapt
- Embrace change
- Focus on your strengths
- Don't micromanage, build a strong team
- Align your hires with vision, then mentor....

## Leadership lessons in the Crow era (3)

- Be careful what you promise, then over produce
- Pay attention to the details
- Think geometrically
- Outwork everyone else; don't ask anyone to do something you would not...
- Know when to hold'em, know when to fold'em

## academic leadership closing thought

"What we need to do is always lean into the future; when the world changes around you and when it changes against you - what used to be a tailwind is now a head wind you have to lean into that and figure out what to do because complaining isn't a strategy." - Jeff Bezos





