



No Respect:

Manufacturing In America

Mark Jones

Executive External Strategy and Communications Fellow
The Dow Chemical Company

10 September 2015



REFP



1991 Top 50 U.S. Chemical Companies



1991 Top 50 U.S. Chemical Companies Today



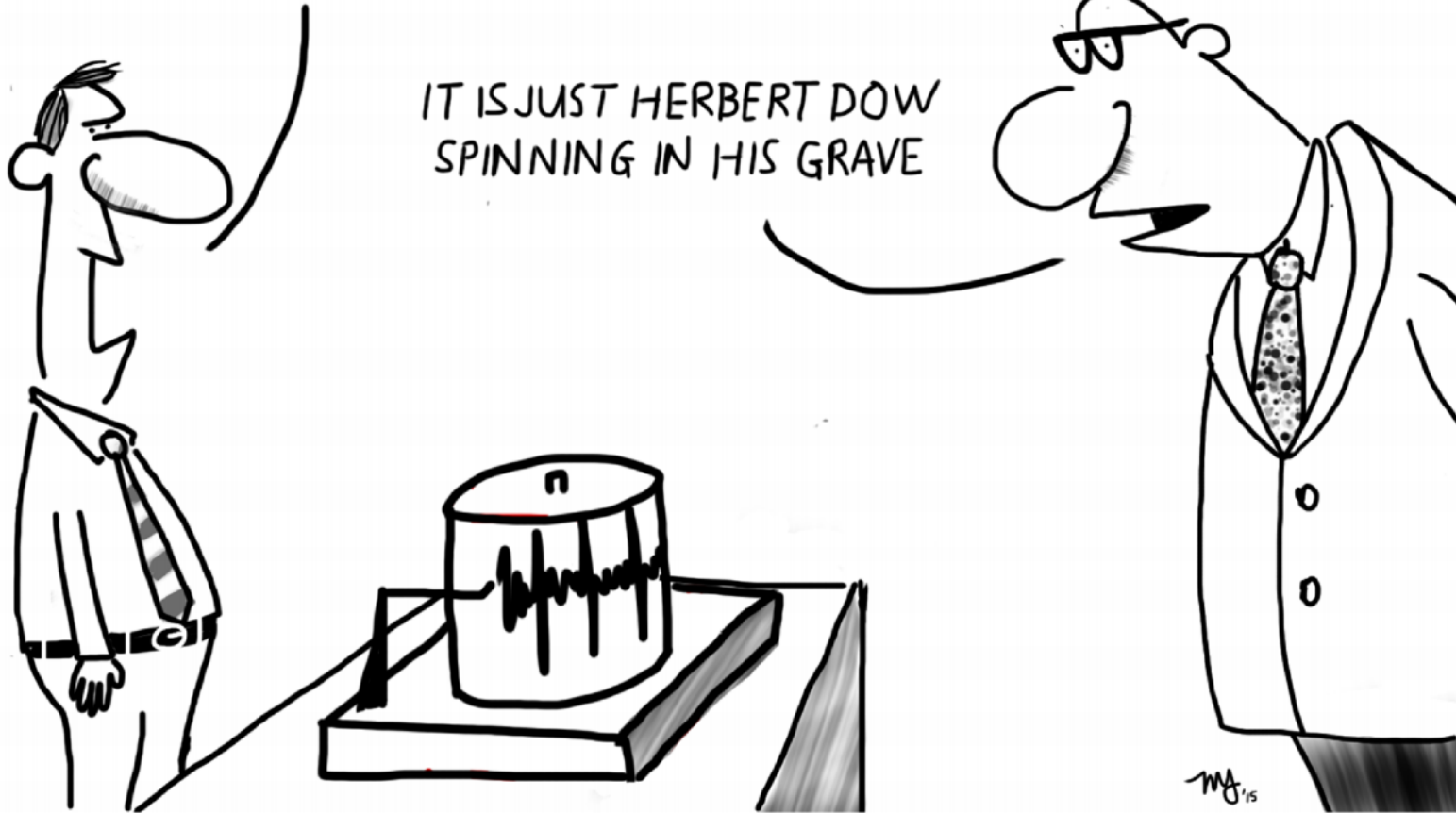
updated from version shown in on 10 Sept 2015

■ Dow Sells Chlorine Envelope

IS MIDLAND HAVING
AN EARTHQUAKE?

USGS

IT IS JUST HERBERT DOW
SPINNING IN HIS GRAVE



MORE THAN
96%
OF ALL
MANUFACTURED
GOODS ARE
DIRECTLY TOUCHED BY
THE BUSINESS
OF CHEMISTRY



THE BUSINESS
OF CHEMISTRY
SUPPORTS NEARLY
= 25% =
OF THE U.S. GDP





THE BUSINESS
OF CHEMISTRY IS AN
\$801
BILLION ENTERPRISE



CHEMICAL COMPANIES INVESTED
\$59 BILLION
IN RESEARCH AND
DEVELOPMENT IN 2014





A LEADER IN
PRODUCTION, THE
U.S. CHEMICAL INDUSTRY
PROVIDES OVER

15%

OF THE WORLD'S
CHEMICALS

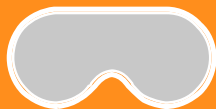
**THE BUSINESS OF
CHEMISTRY ACCOUNTS FOR
14% OF U.S. EXPORTS,
\$191 BILLION IN 2014, AND IS THE
LARGEST EXPORTER IN THE U.S.**



THE BUSINESS OF
CHEMISTRY PROVIDES

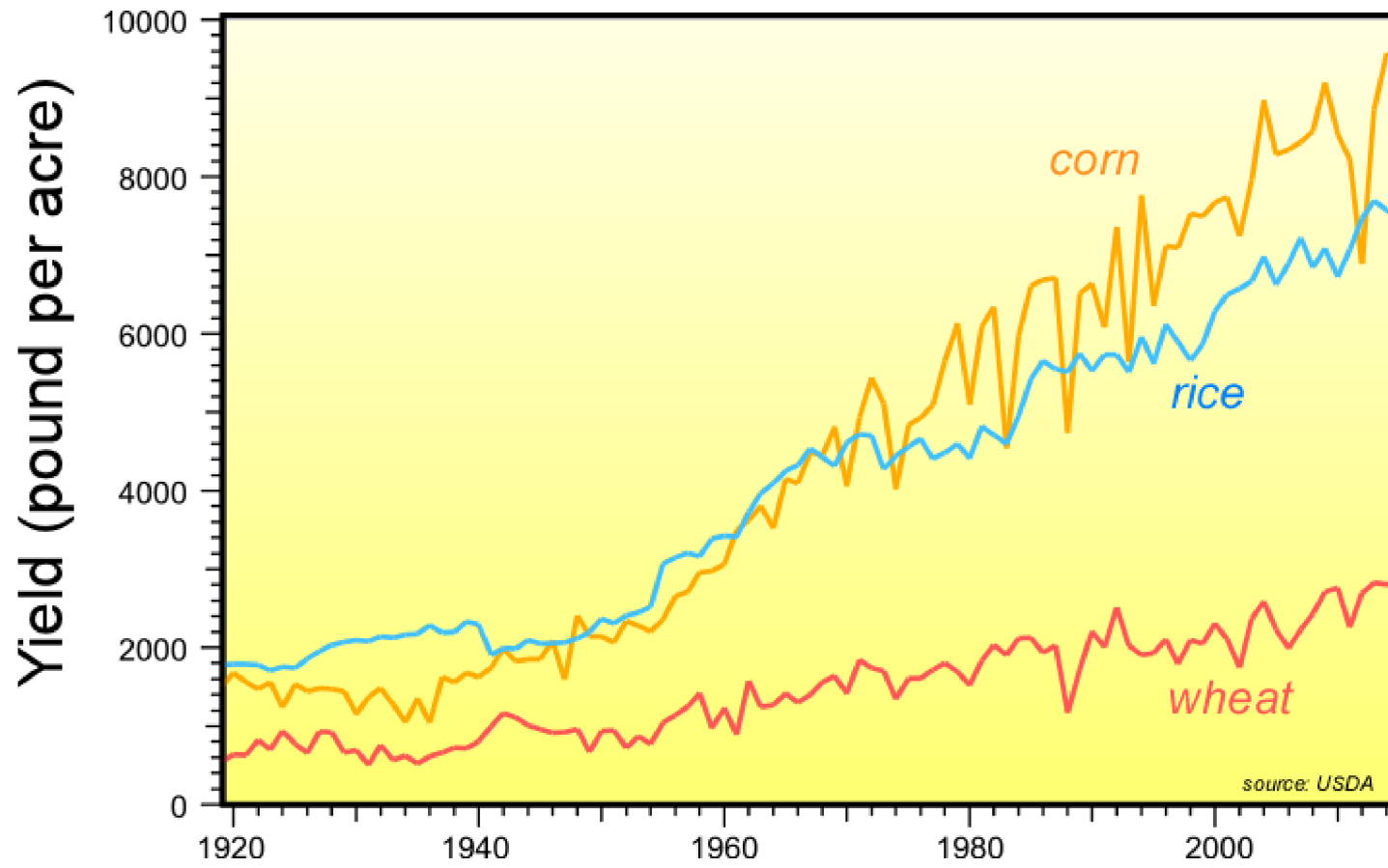
804,000

SKILLED, GOOD-PAYING
AMERICAN JOBS



FOR EVERY JOB CREATED BY THE
BUSINESS OF CHEMISTRY, 6.3 ARE
GENERATED ELSEWHERE IN THE
ECONOMY, TOTALING NEARLY
6 MILLION JOBS

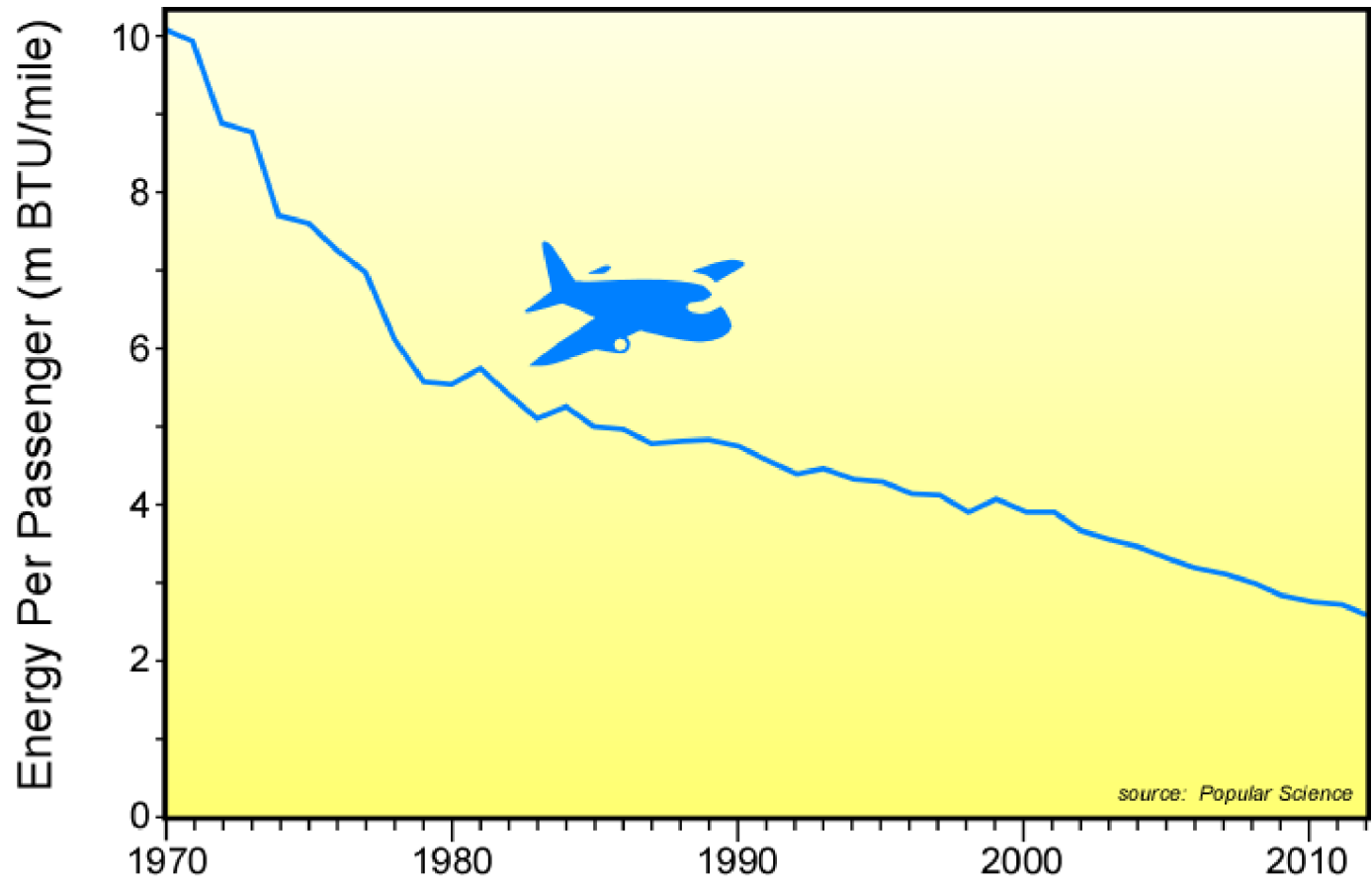


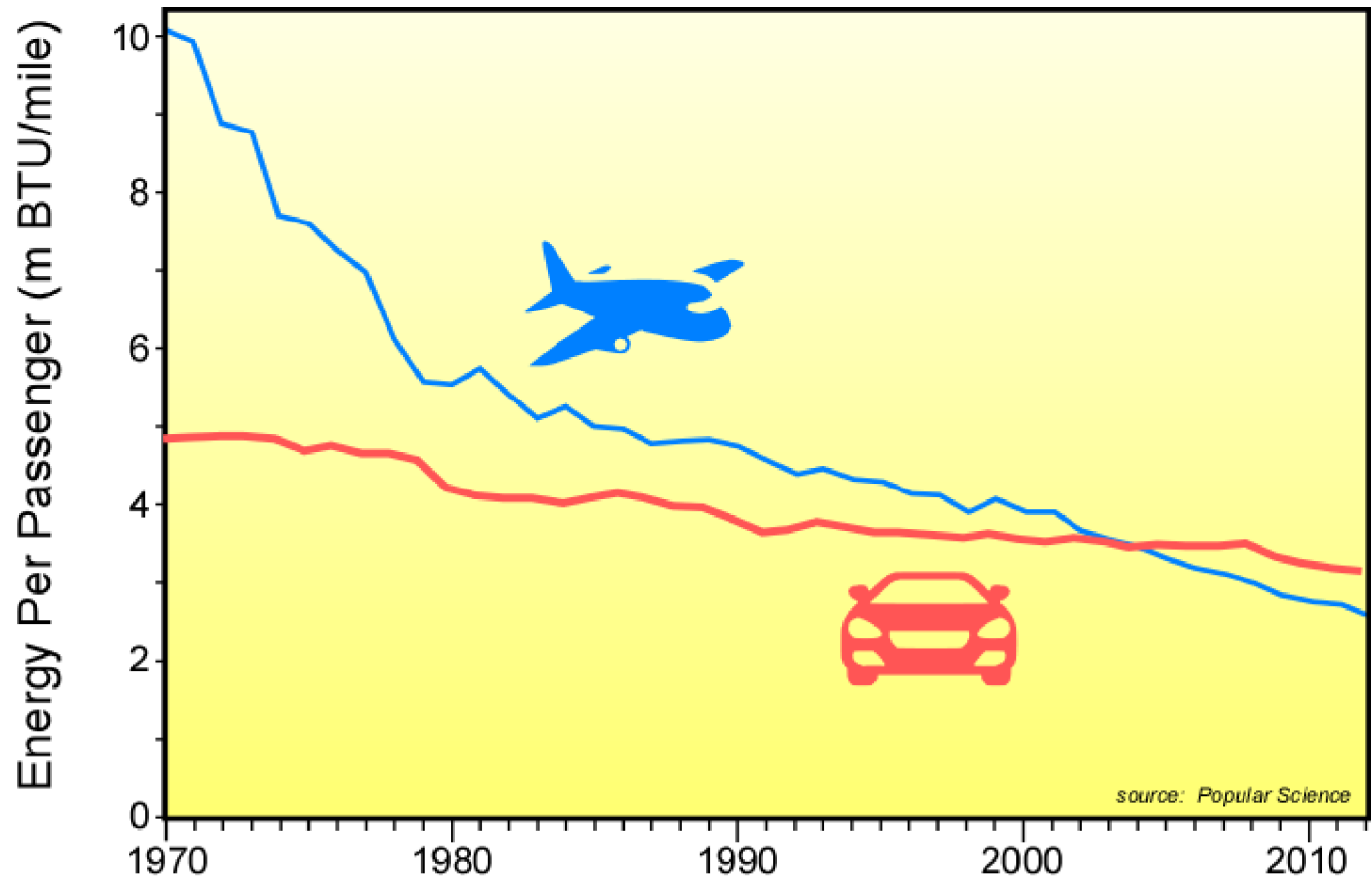




If you ate today...
**THANK A
FARMER**

If you're a farmer . . .
**THANK A
SCIENTIST**



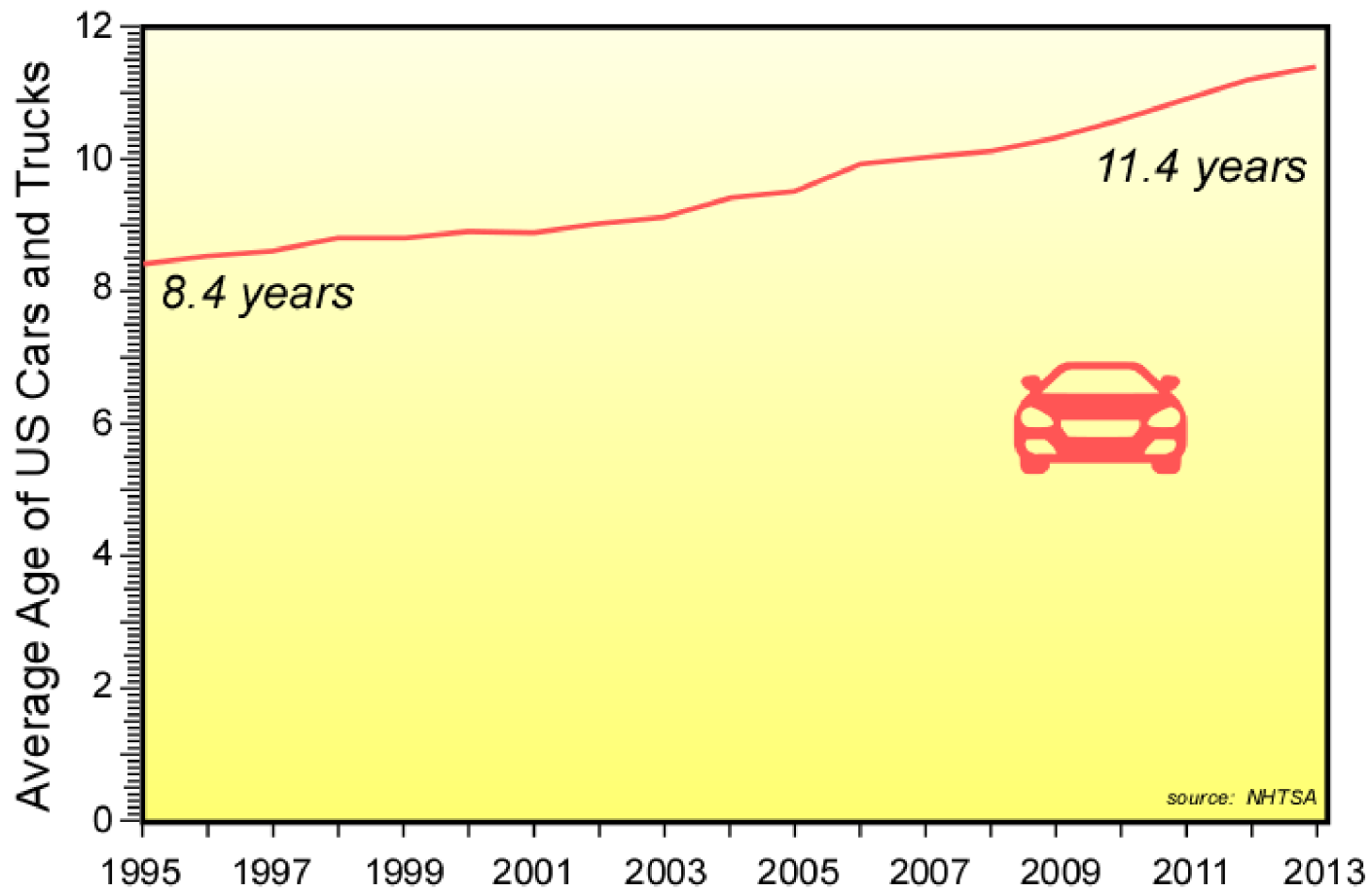


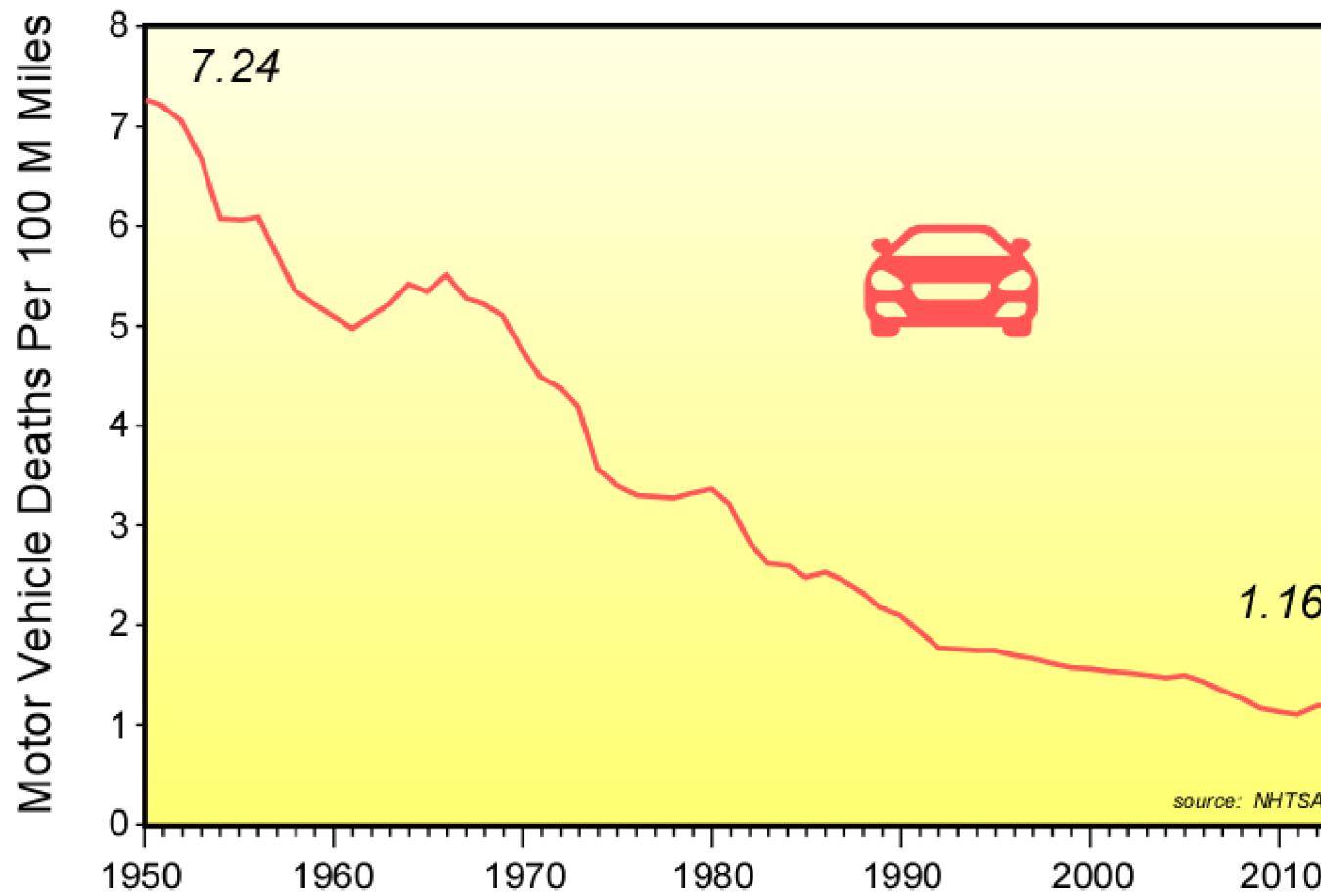
source: Popular Science

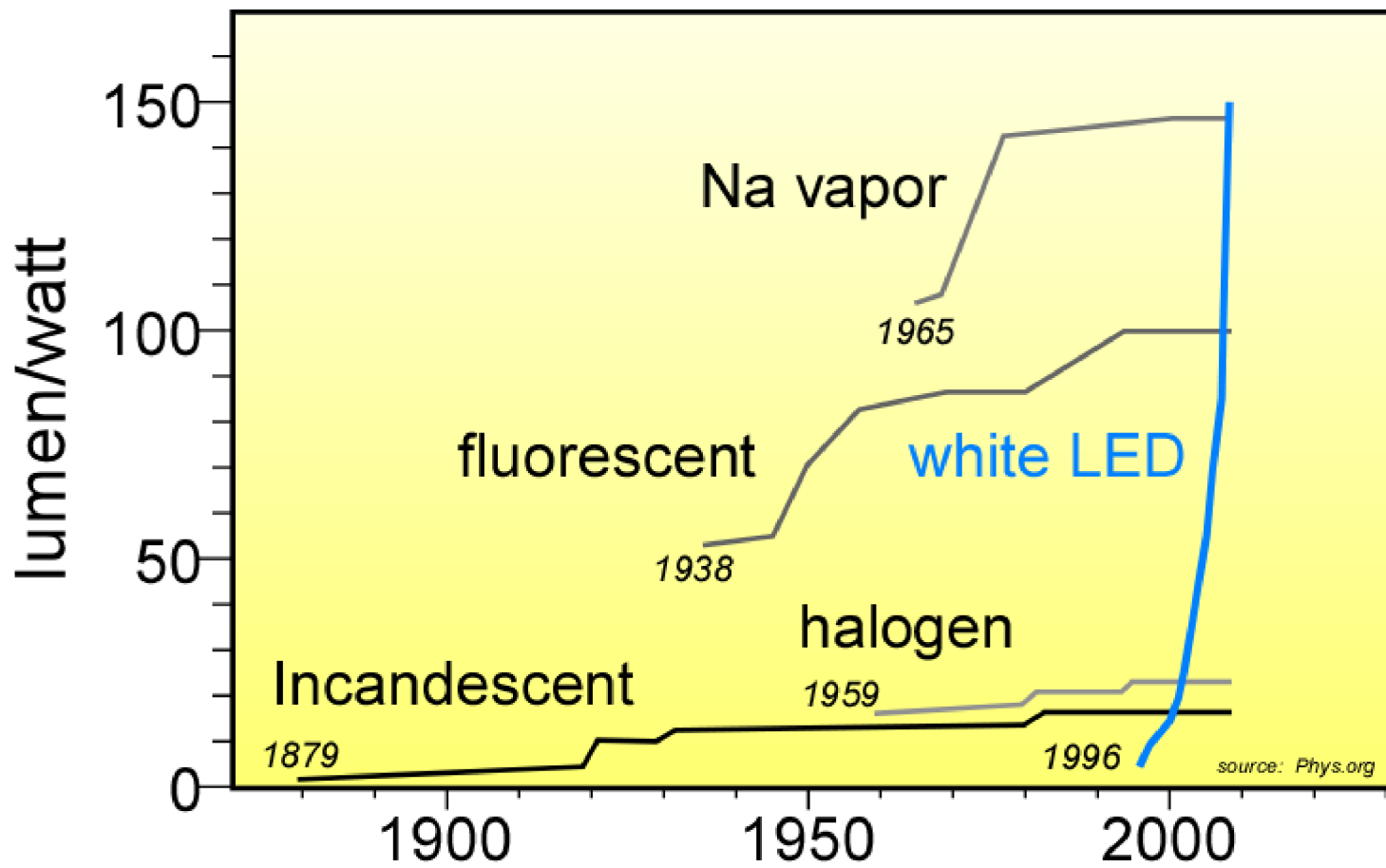


54.5 mpg



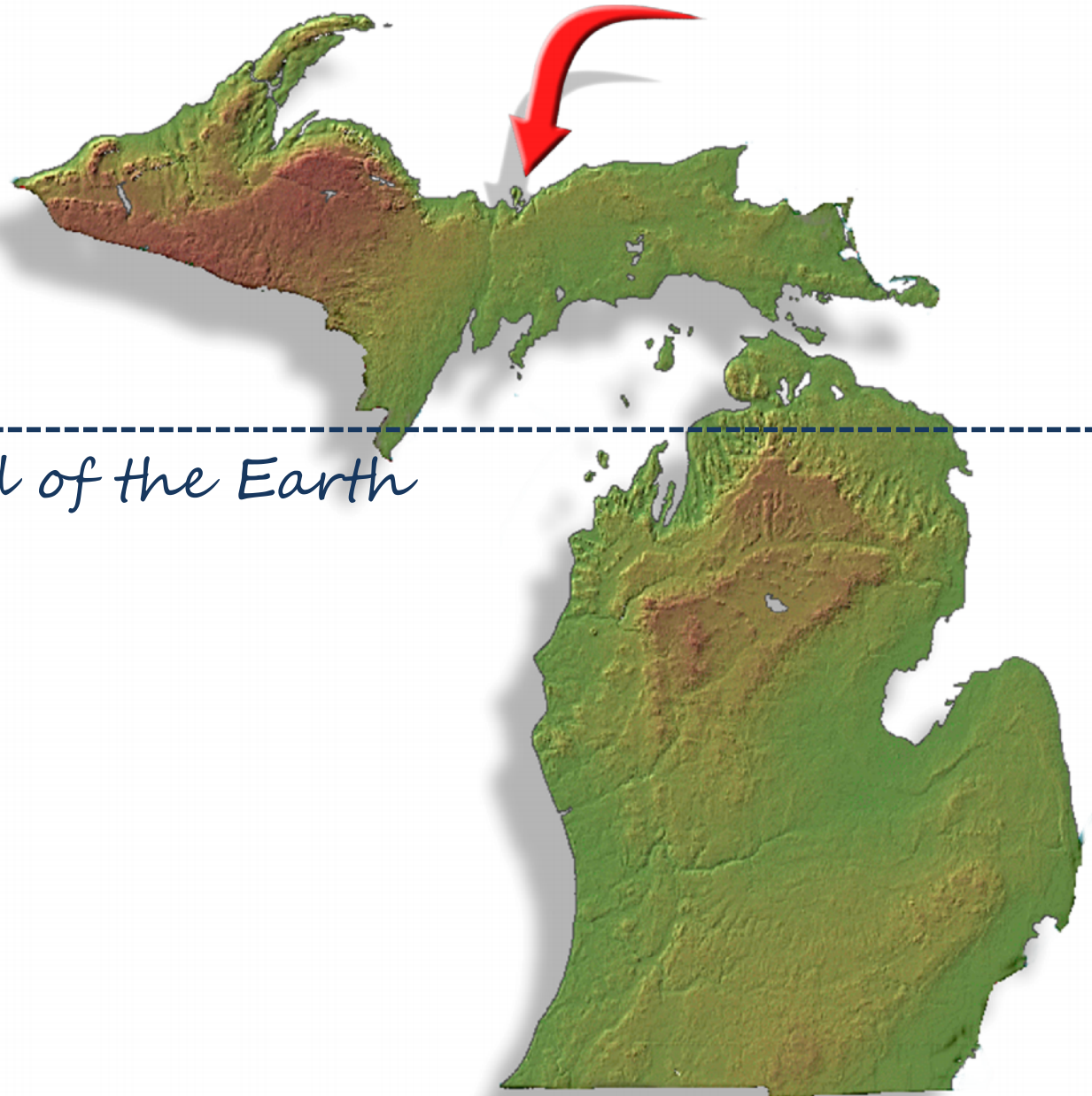






source: Phys.org

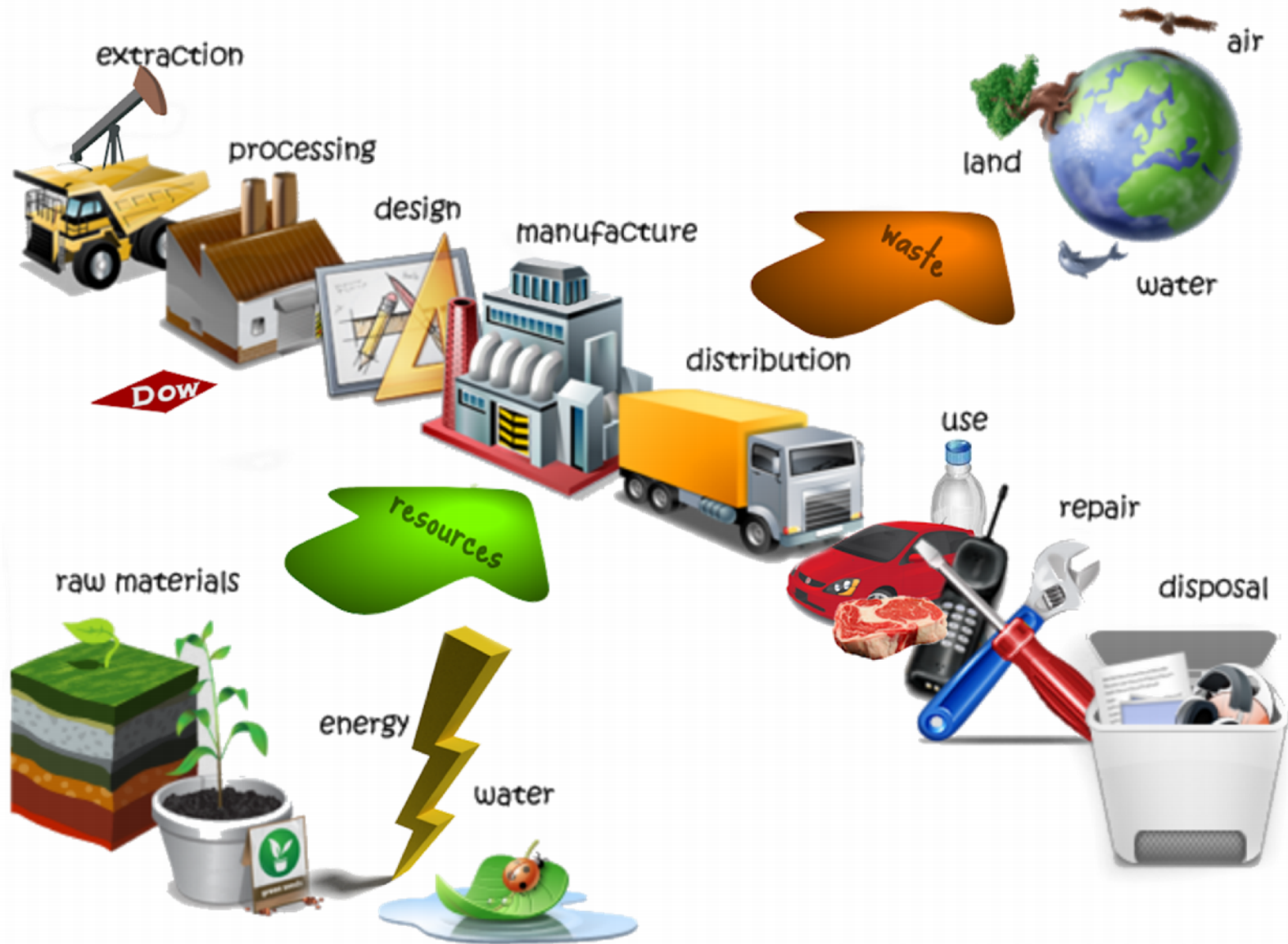




End of the Earth



Life Cycle Assessment



adapted from sustainable-graphic-design.blogspot.com



■ Which is more sustainable?

plastic



paper



■ Which is more sustainable?

8 hours



1 mile

■ Which is more sustainable?



A vegan in a Hummer



glass is nature's safest container

Glass is open, honest, **transparent**.
It lets you see exactly what your baby is eating.

Glass is the ultimate in **sustainability**.
And it's endlessly recyclable.

Made from **pure**, natural minerals,
glass doesn't interact with your food at all.
So you know you're feeding your baby
only real fruits and vegetables.



Try Beech-Nut® real food for babies.
glassislife.com | #chooseglass

“Glass is nature’s
safest container”

“Glass is the
ultimate in
sustainability”



Flexible Packaging Is More Sustainable Packaging

Re-Closable Cap

- Precision pouring
- Maximum filling content utilization

Flexible Design

- Four Print Surfaces
- Superior drop resistance
- Reduce excess head space
- Improved dispensing
- Collapses easily

Top and Bottom Handles

- Easy handling

Cubic Shape

- Shelf Stable & Maximizes Shipping Efficiency

Space Saving

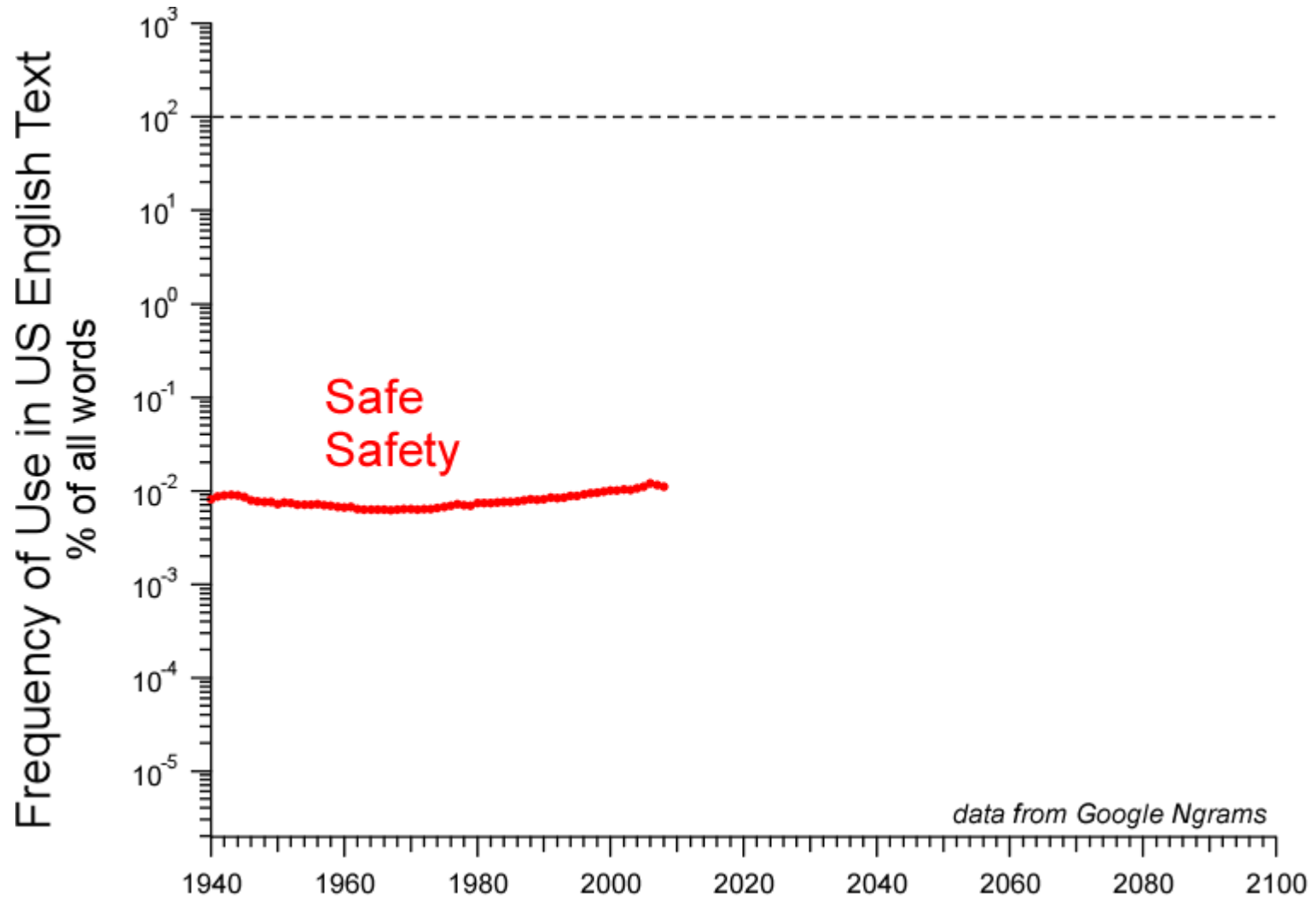
- Ships and Stores Flat when Unfilled



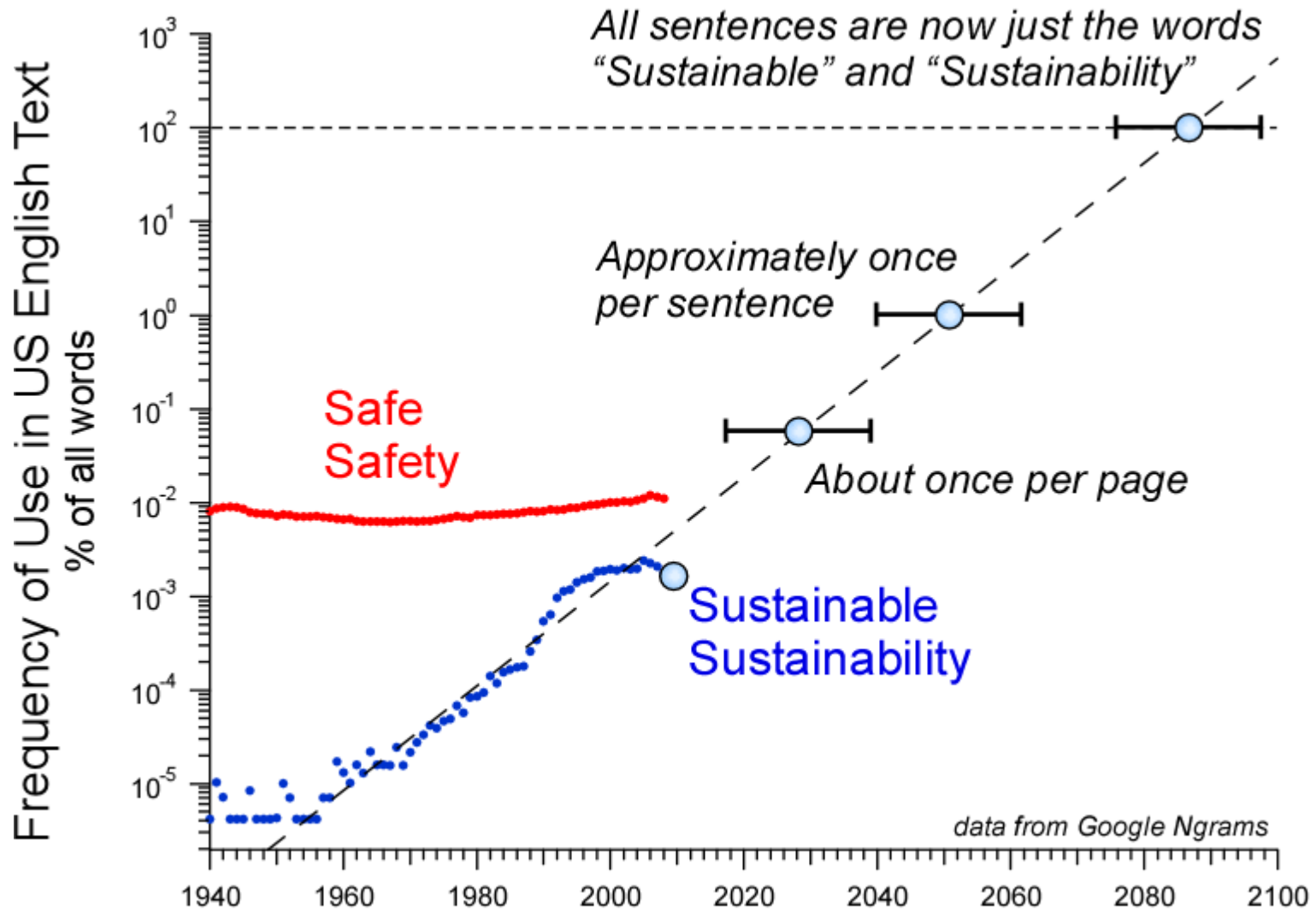
■ Chicken and Broken Glass



■ Prevalence of “safe” and “safety”



Overuse of Sustainability?



<https://imgs.xkcd.com/comics/sustainability.png>



Syrian Refugees: Flight Into the Unknown

MARCH 2015

NATIONAL GEOGRAPHIC

CLIMATE CHANGE DOES NOT EXIST

EVOLUTION NEVER HAPPENED

THE MOON LANDING WAS FAKE

VACCINATIONS CAN LEAD TO AUTISM

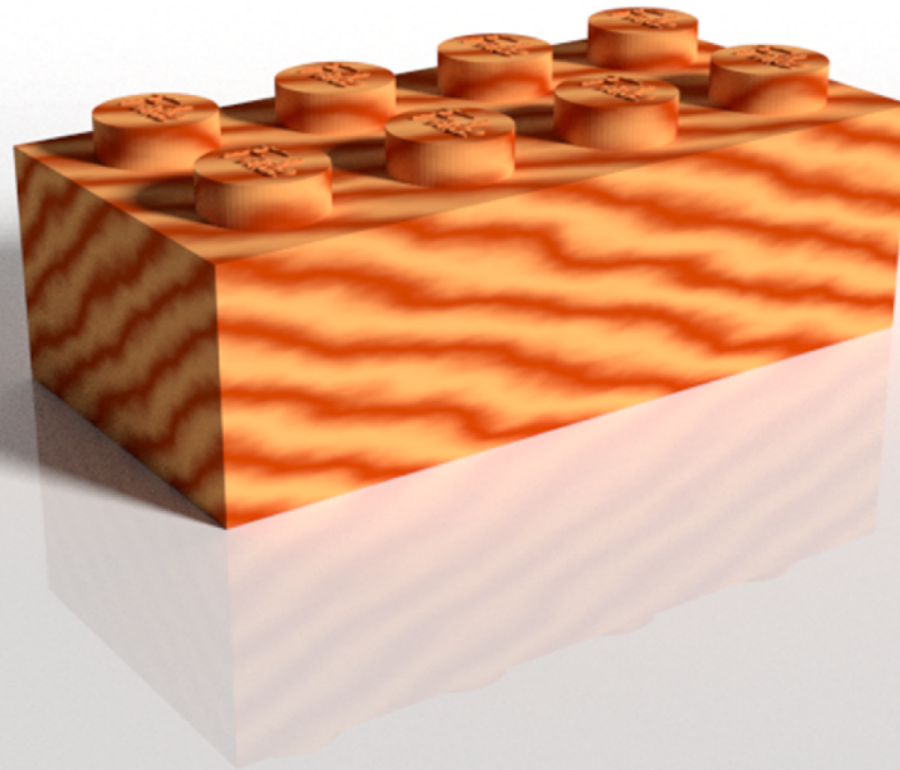
GENETICALLY MODIFIED FOOD IS EVIL

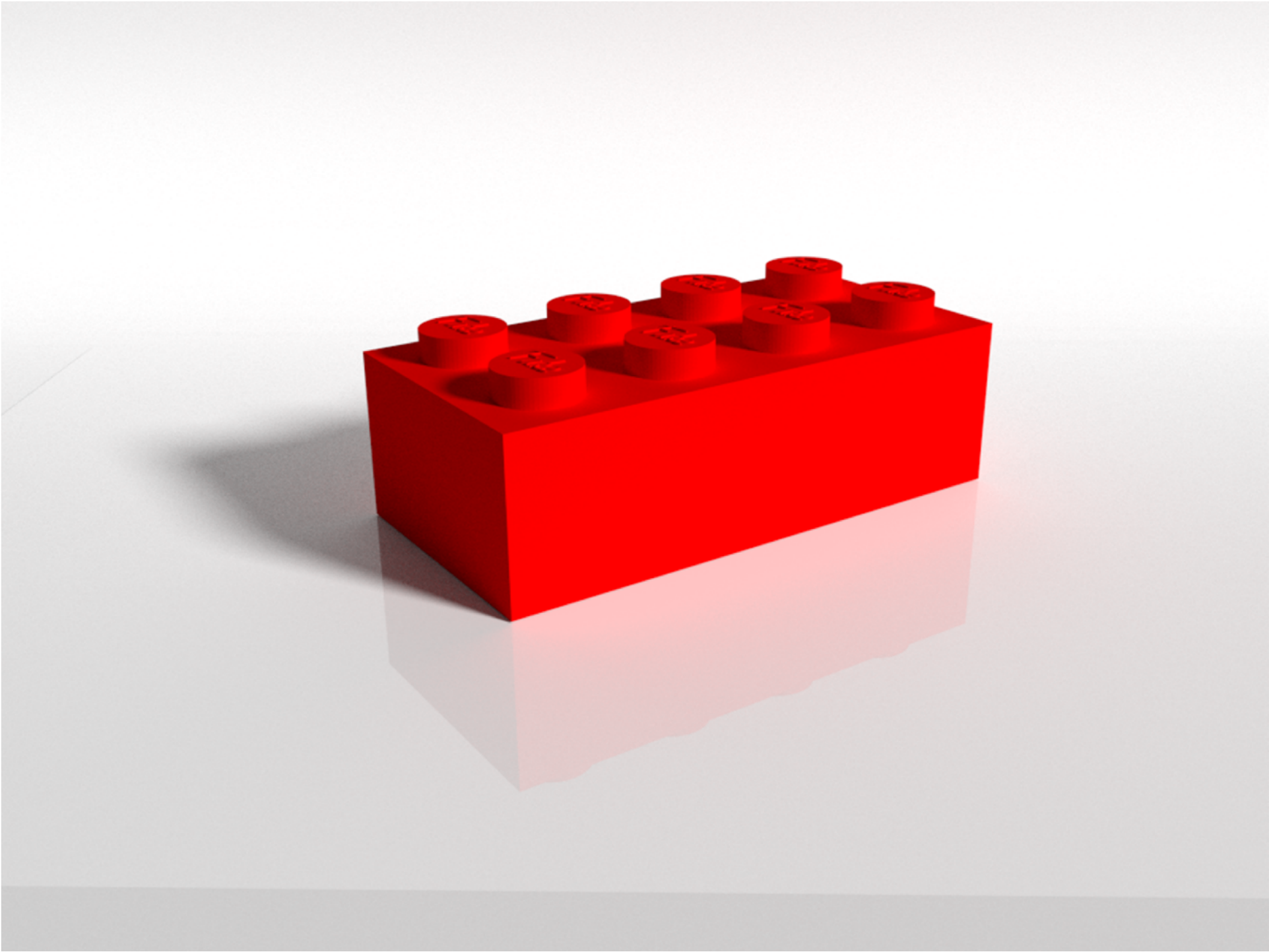
THE WAR ON SCIENCE



“No More Plastic Legos? Company Searches for ‘Sustainable’ Material.”

NBC News







■ **Advanced Manufacturing Partnership**



■ AMP Steering Committee

Robert Birgeneau, Chancellor, University of California, Berkeley

Wesley G. Bush, President, Chairman, and CEO, Northrop Grumman

Louis Chenevert, Chairman and CEO, United Technologies Corporation

Jared Cohon, President, Carnegie Mellon University

Mary Sue Coleman, President, University of Michigan

David Cote, Chairman and CEO, Honeywell

Richard Harshman, Chairman, President, and CEO, Allegheny Technologies

Curt Hartman, Interim CEO, Vice President and CFO, Stryker

John Hennessy, President, Stanford University

Susan Hockfield, President, Massachusetts Institute of Technology

Andrew Liveris, President, Chairman, and CEO, The Dow Chemical Company

Bob McDonald, President, and CEO, Procter & Gamble

Alan Mulally, President and CEO, Ford Motor Company

Douglas Oberhelman, Chairman and CEO, Caterpillar Inc.

Paul Otellini, President and CEO, Intel Corporation

G.P. "Bud" Peterson, President, Georgia Institute of Technology

Wendell Weeks, Chairman and CEO, Corning Inc.

William Weldon, Chairman, Johnson & Johnson

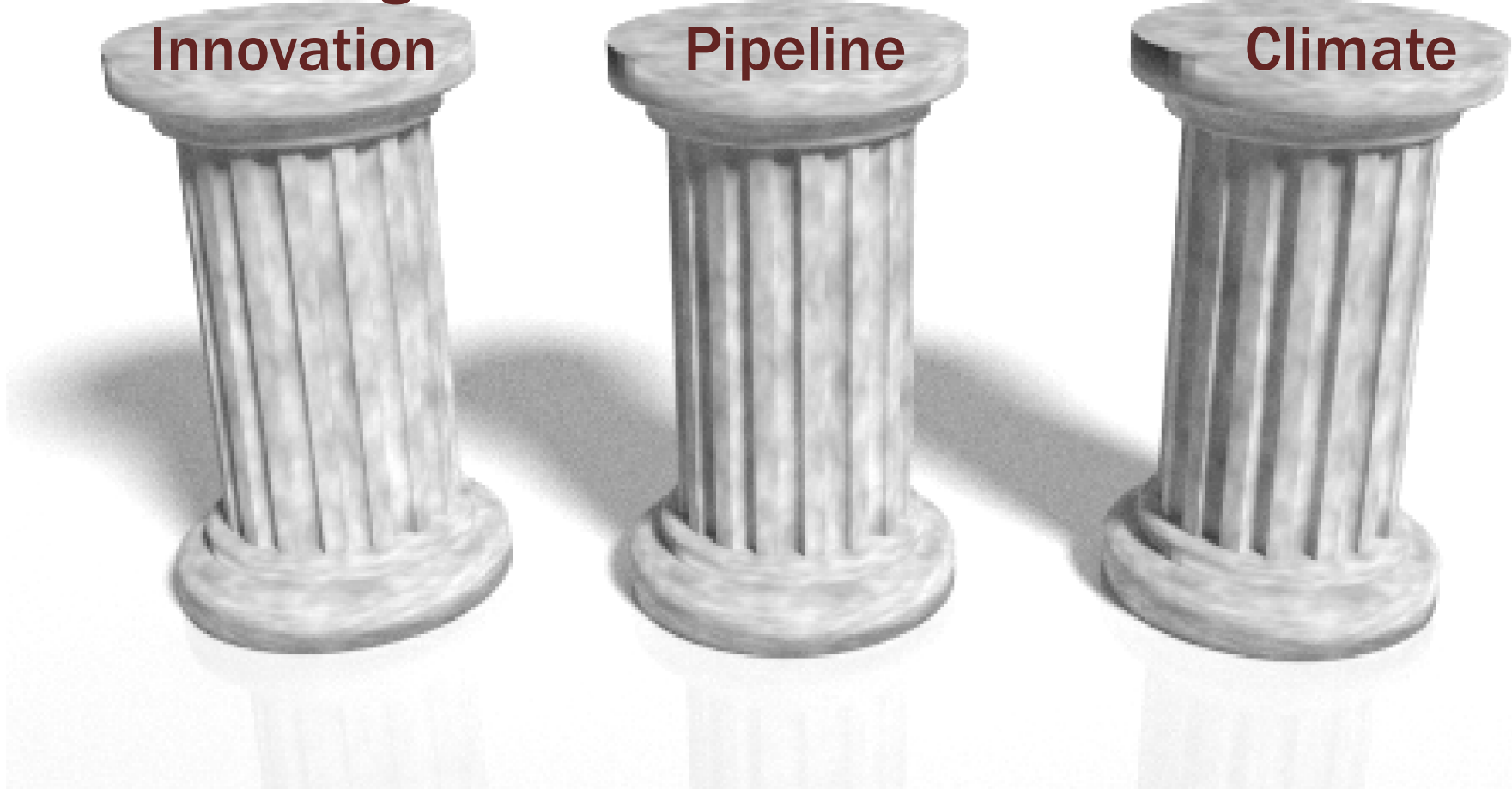


■ Three AMP Pillars

**Enabling
Innovation**

**Securing the
Talent
Pipeline**

**Improving the
Business
Climate**



■ AMP 2.0 Work Teams

Five priority areas:

- ✓ • Transformative Manufacturing Technologies
 - Demand-Driven Workforce Development
 - NNMI's (manufacturing technology infrastructure)
- ✓ • Scale-up Policy
 - Image and Engagement



■ AMP 2.0 Steering Committee

Wes Bush, Chairman, CEO and President, Northrop Grumman Corp.

Mary Sue Coleman President, The University of Michigan

David Cote, Chairman and CEO, Honeywell

Nicholas Dirks, Chancellor, University of California, Berkeley

Kenneth Ender, President, Harper College

Leo Gerard, International President, United Steelworkers

Hon. Shirley Ann Jackson, President, Rensselaer Polytechnic Institute

Eric Kelly, President and CEO, Overland Storage

Klaus Kleinfeld, Chairman and CEO, Alcoa Inc.

Andrew Liveris, President, Chairman, and CEO, The Dow Chemical Company

Ajit Manocha, CEO, GLOBALFOUNDRIES

Douglas Oberhelman, Chairman and CEO, Caterpillar Inc.

Annette Parker, President, South Central College

G.P. "Bud" Peterson, President, Georgia Tech

Luis Proenza, President, The University of Akron

Rafael Reif, President, Massachusetts Institute of Technology

Eric Spiegel, President and CEO, Siemens Corp.

Mike Splinter, Executive Chairman of the Board, Applied Materials Inc.

Christie Wong Barrett, CEO, Mac Arthur Corp.



National Network of Manufacturing Institutes

FlexTech Alliance

DMDII

lift

Integrated Photonics Institute for Manufacturing Innovation (IP-IMI)

America Makes

iacmi

Revolutionary Fibers and Textiles Manufacturing Innovation Institute (RFT-MII)

Clean Energy Manufacturing Innovation Institute on Smart Manufacturing: Advanced Sensors, Controls, Platforms, and Modeling for Manufacturing

POWER AMERICA



FlexTech

National



Institutes

- Additive Manufacturing (3D Printing)
- Flagship NNMI
- Established in 2012 and in Youngstown
- National Center for Defense Manufacturing and Machining (NCDMM).
- Member community is more than 140

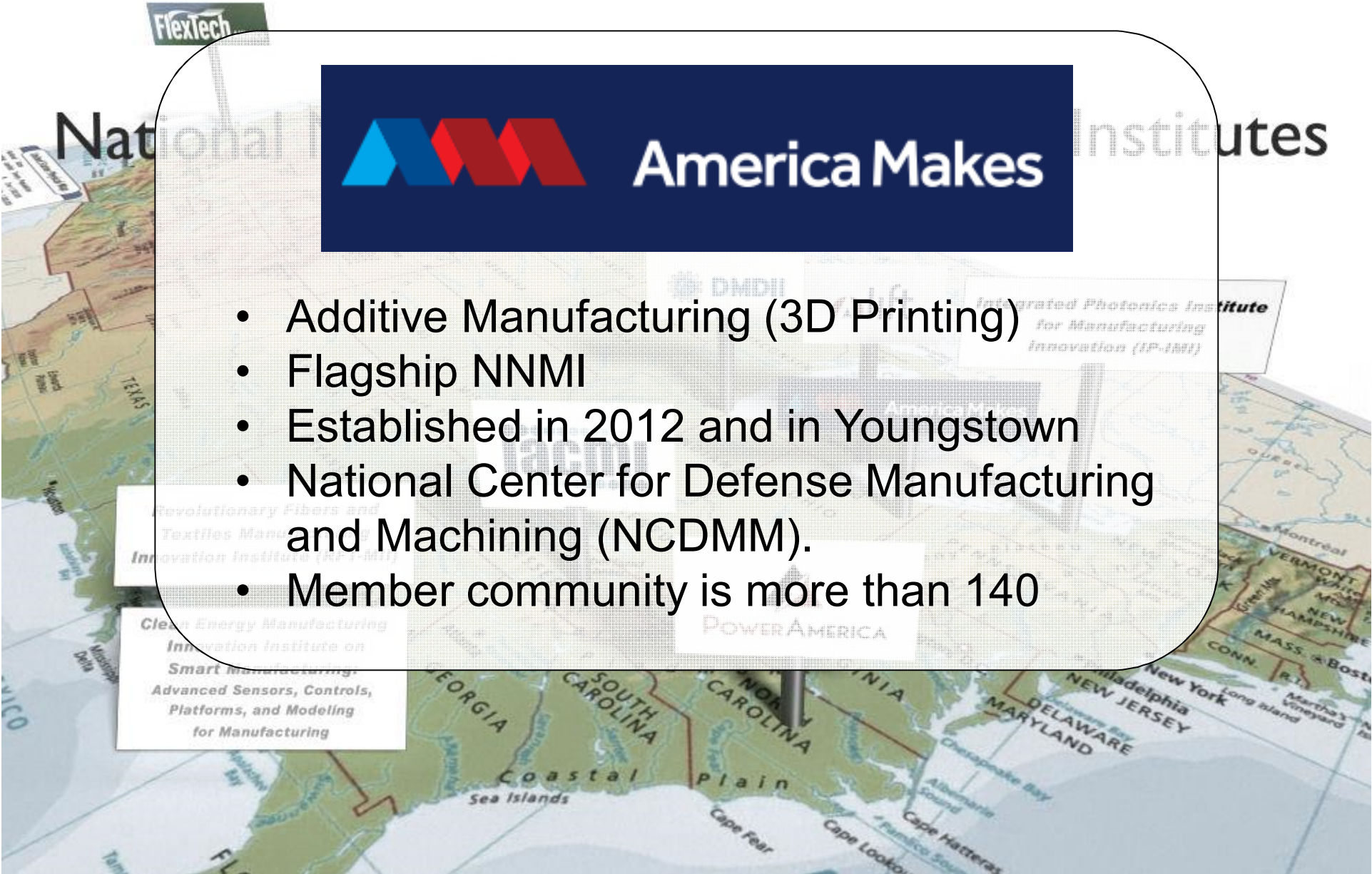
Revolutionary Fibers and Textiles Manufacturing Innovation Institute (RFMI)

Clean Energy Manufacturing Innovation Institute on Smart Manufacturing, Advanced Sensors, Controls, Platforms, and Modeling for Manufacturing

DMDII

Integrated Photonics Institute for Manufacturing Innovation (IP-IMI)

POWERAMERICA



FlexTech



DMDII

DIGITAL MANUFACTURING AND
DESIGN INNOVATION INSTITUTE

National Network of Manufacturing Institutes

- Digital Manufacturing and Design Innovation Institute
- announced 25 February 2014
- Chicago
- Encourages factories across America to deploy digital manufacturing and design technologies, so those factories can become more efficient and cost-competitive.
- >120 members

Integrated Photonics Institute
For Manufacturing
Innovation (IP-IMI)

Clean Energy Manufacturing
Innovation Institute
Smart Manufacturing:
Advanced Sensors, Controls,
Platforms, and Modeling
for Manufacturing

POWERAMERICA

FlexTech

National Network of Manufacturing Institutes



- Lightweight Innovation For Tomorrow
- Announced 3 March 2014
- Detroit
- New lightweight metal manufacturing processes using lightweight metals, including aluminum, magnesium, titanium and advanced high-strength steel alloys.
- > 80 members

Integrated Photonics Institute
for Manufacturing
Innovation (IP-IMI)

Revolutionary Fibers and
Textiles Manufacturing
Innovation Institute (RF-IMI)

Clean Energy Manufacturing
Innovation Institute (CE-IMI)
Smart Manufacturing:
Advanced Sensors, Controls,
Platforms, and Modeling
for Manufacturing

POWERAMERICA

FlexTech

National Network of Manufacturing Institutes



- The Institute of Advanced Composites Manufacturing Innovation
- Develop lower-cost, higher-speed, and more efficient manufacturing and recycling processes for composites.

- 9 January 2015
- Knoxville, TN
- > 122



Revolutionary Fibers and Textiles Manufacturing Innovation Institute (RFMI)

Clean Energy Manufacturing Innovation Institute (CEMI)
Smart Manufacturing, Advanced Sensors, Controls, Platforms, and Modeling for Manufacturing

Integrated Photonics Institute for Manufacturing Innovation (IP-IMI)

FlexTech

National Network of Manufacturing Institutes



POWER AMERICA

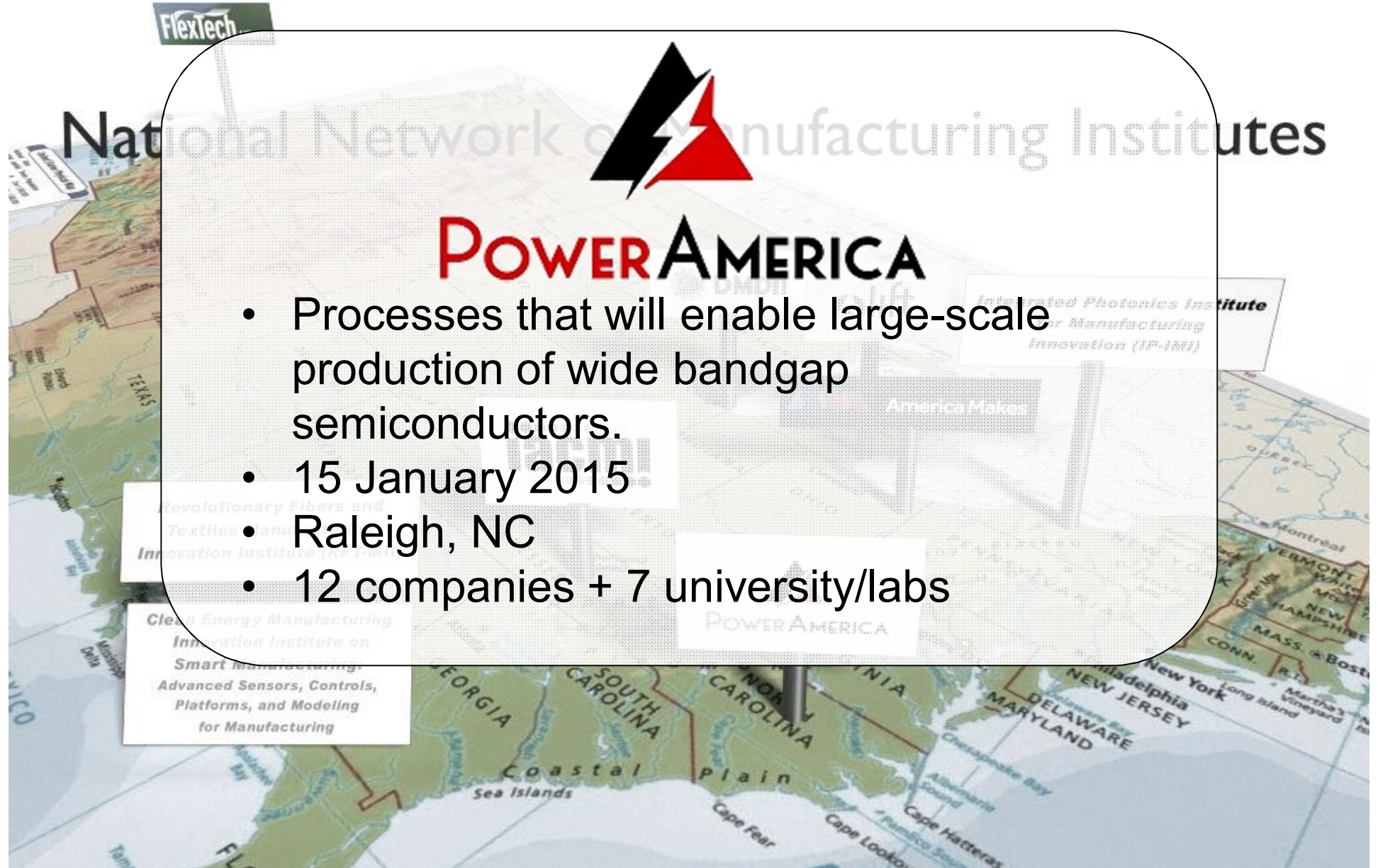
- Processes that will enable large-scale production of wide bandgap semiconductors.
- 15 January 2015
- Raleigh, NC
- 12 companies + 7 university/labs

Integrated Photonics Institute
for Manufacturing
Innovation (IP-IMI)

Revolutionary Fibers and
Textiles and
Innovation Institute for

Clean Energy Manufacturing
Innovation Institute on
Smart Manufacturing,
Advanced Sensors, Controls,
Platforms, and Modeling
for Manufacturing

POWER AMERICA



FlexTech

Integrated Photonics Institute for Manufacturing Innovation

- Announced 27 July 2015
- Rochester, NY
- End-to-end integrated photonics ecosystem in the U.S., including domestic foundry access, integrated design tools, automated packaging, assembly and test, and workforce development.
- 96 members

POWER AMERICA

FlexTech

National Network of Manufacturing Institutes

Flexible Hybrid Electronics Manufacturing Innovation Institute

- Announced 28 August 2015
- San Jose, CA
- Developing flexible hybrid electronics manufacturing through investments in materials scale-up, thinned device processing, device/sensor integrated printing and packaging, system design tools, and reliability testing and modeling.
- >160 members

Revolutionary Fibers and Textiles Manufacturing Innovation Institute (R2MI)

Clean Energy Manufacturing Innovation Institute (CEMI)
Smart Manufacturing: Advanced Sensors, Controls, Platforms, and Modeling for Manufacturing

DMDII

Integrated Photonics Institute for Manufacturing Innovation (IP-IMI)

POWER AMERICA



National Network of Manufacturing Institutes

FlexTech Alliance

DMDII

lift

Integrated Photonics Institute for Manufacturing Innovation (IP-IMI)

America Makes

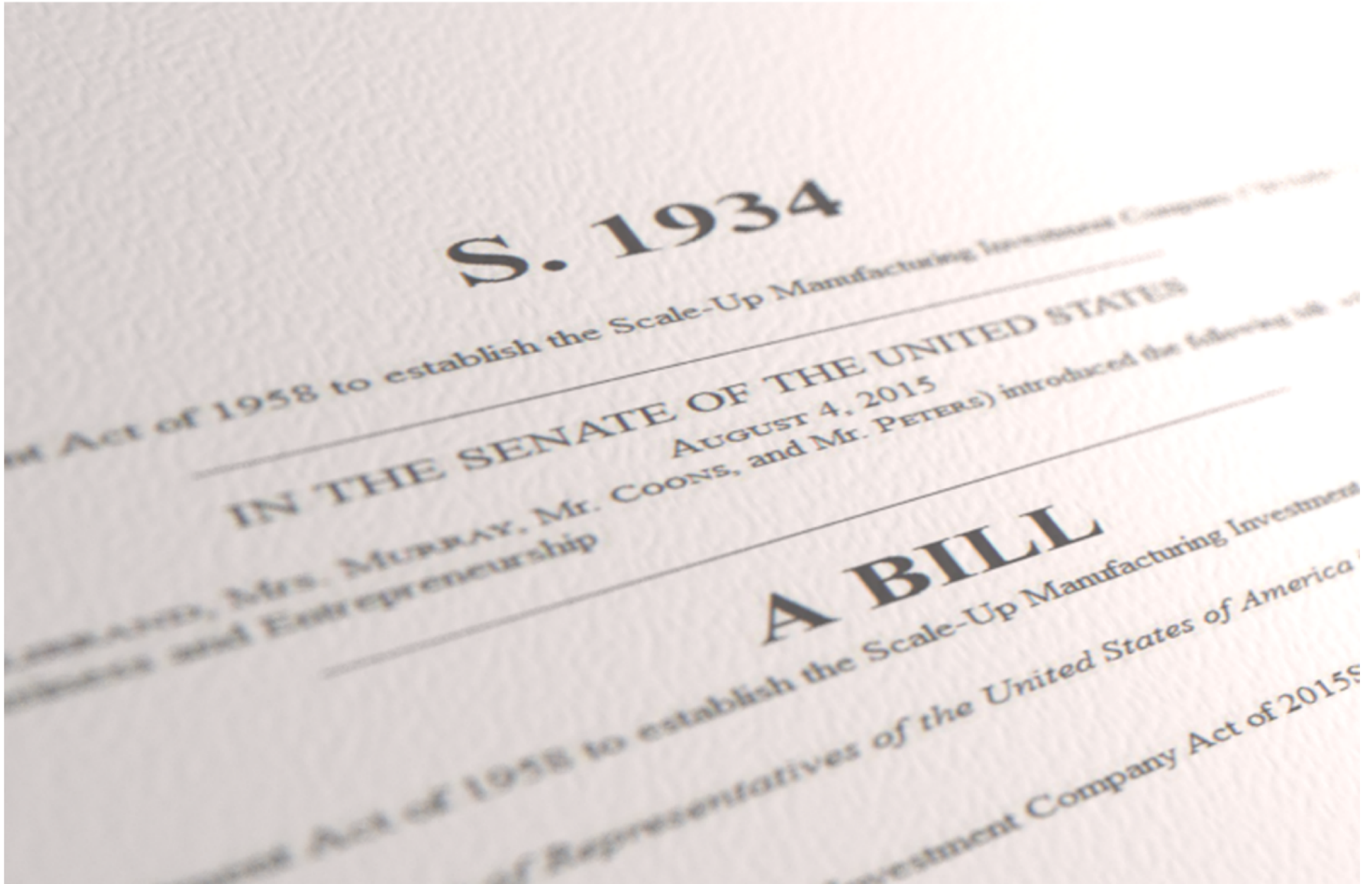
iacmi

Revolutionary Fibers and Textiles Manufacturing Innovation Institute (RFT-MII)

Clean Energy Manufacturing Innovation Institute on Smart Manufacturing: Advanced Sensors, Controls, Platforms, and Modeling for Manufacturing

POWER AMERICA

Scale-Up Manufacturing Investment Company Program



Manufacturing

