



Department of
**Labor & Workforce
Development**

Amyotrophia of America's Workforce

Technologies and Economies of Mass Disruption

The Future of Work

Technologies of Mass Disruption

Economies of Mass Disruption

Worker Classification

Skills and 21st Century Worker

Today's Work World?

Constant State of Discontinuity

What Do We Know in 2018?

We know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – the ones we don't know we don't know.

Donald Rumsfeld, February 12, 2002
Speaking About Weapons of Mass Destruction

Creates and Destroys



Destroys

Creates



Different This Time? Yes!

Speed of Change

Breadth of Change

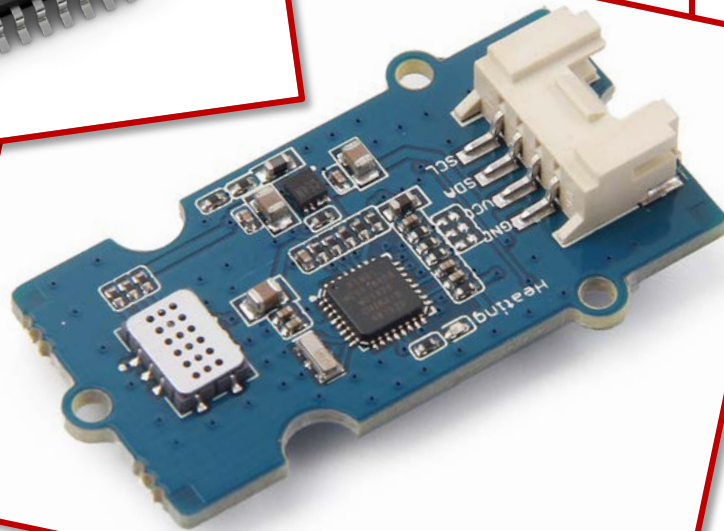
Depth of Change

From Analog to Digital



Digital Technology

Sensors



Moore's Law



Artificial Intelligence

Ordinary (Weak) AI

Artificial General Intelligence
(AGI)

General Purpose Technology

Technological advances that can

- spread to many sectors,
- improve rapidly,
- spawn further innovations
- have substantial and pervasive societal and economic effects.

Technologies of Mass Disruption

AI (Artificial Intelligence)

Robotics

The Cloud/Big Data

3-D Printing

Automation, 'Knowledge Work'

Autonomous Vehicles

Holography

Blockchain

Natural Language Processing

Crypto Currency

Genomics Technology

Energy Storage/Renewal

Advanced Materials

Nanotechnology

There Will Be Blood

University of Oxford, 2013

- *47% by 2033, 5% of occupations*

U.S Dept. of Commerce 2016

- *40% automated within 10 years*

McKinsey, July/2017

- *45% of all activities, currently automatable*
- *60% occupations have 30% of tasks*

There Will Be Blood

MIT & Boston Univ., March/2017

- *robotics impact***

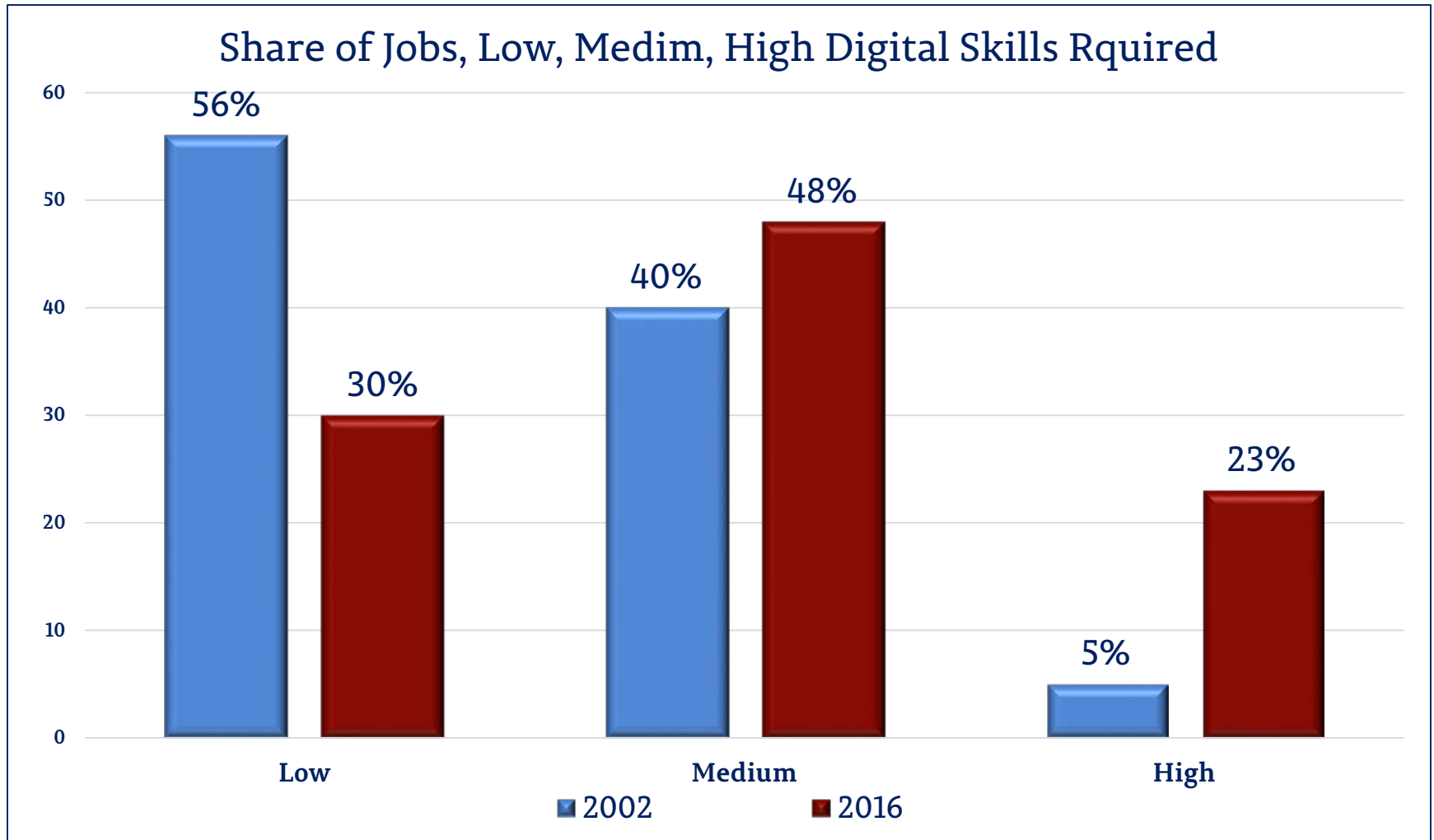
MIT Media Lab, September/2017

- *urban vs metropolitan areas and technology*

McKinsey, December/2017

- *75 million-375 million reskilled worldwide by 2030,*
- *39 million-73 million in U.S*

Percent Change - Digital Skills Required



Hollowing Out Middle Class

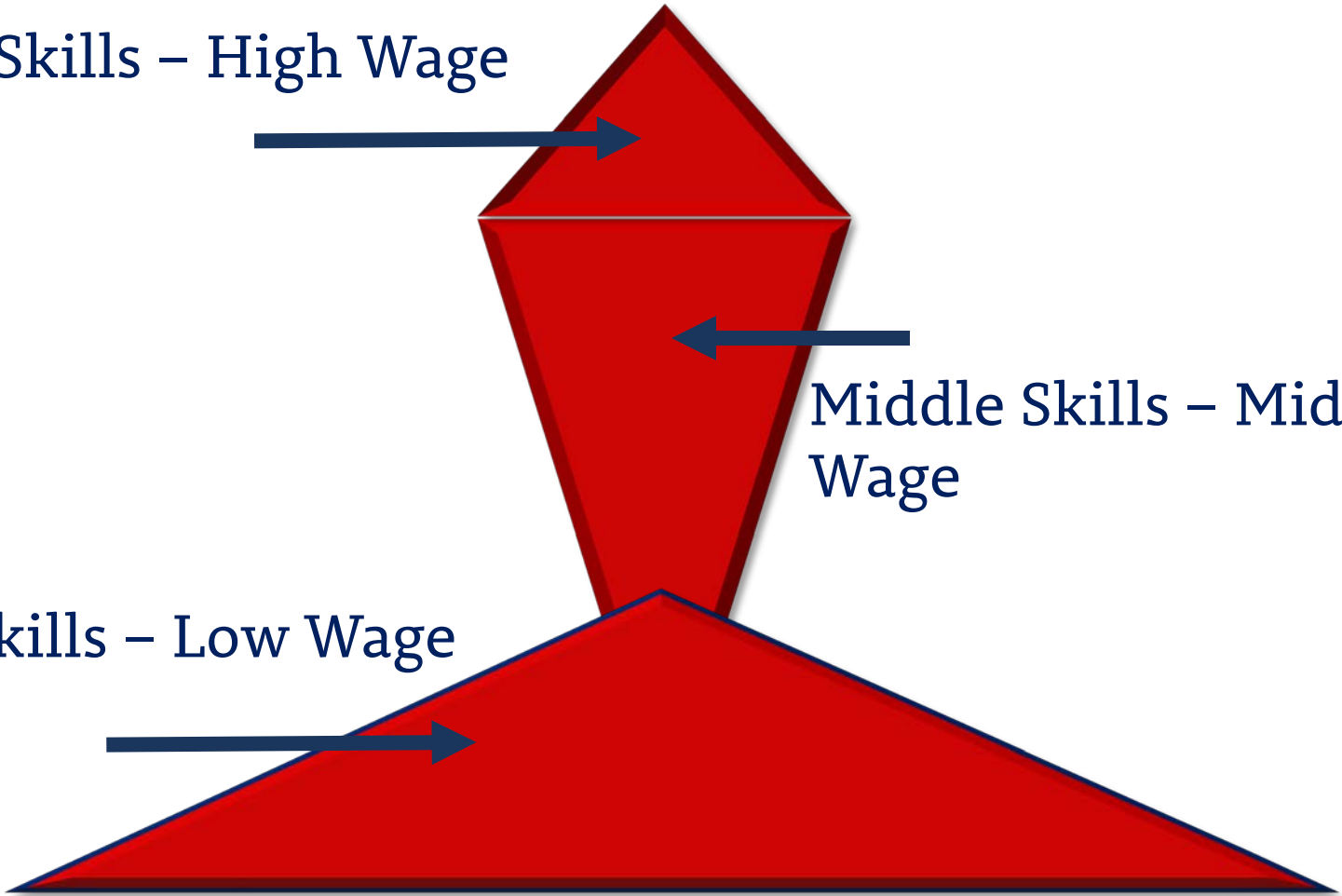
High Skills – High Wage



Middle Skills – Middle Wage



Low Skills – Low Wage

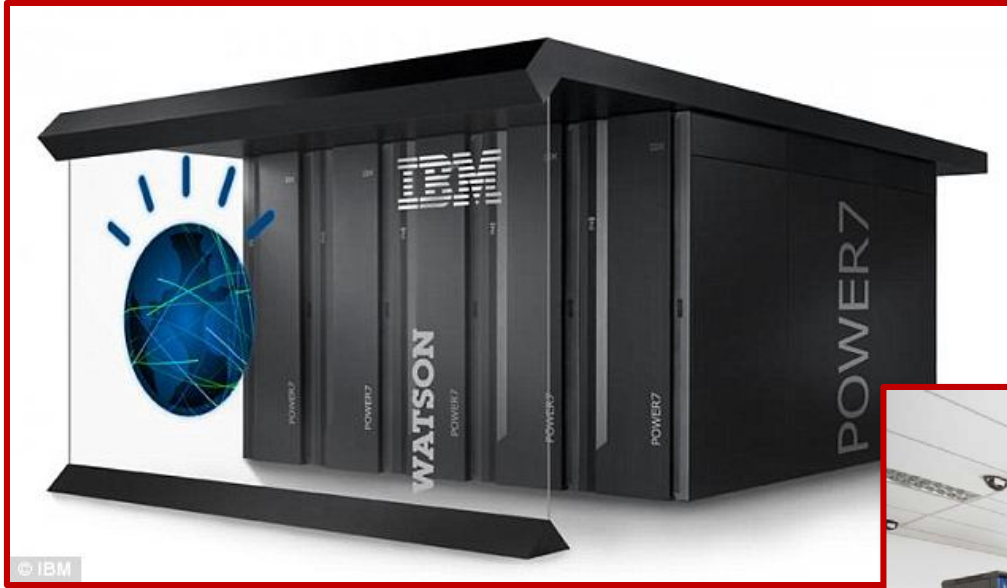




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Technologies of Mass Disruption

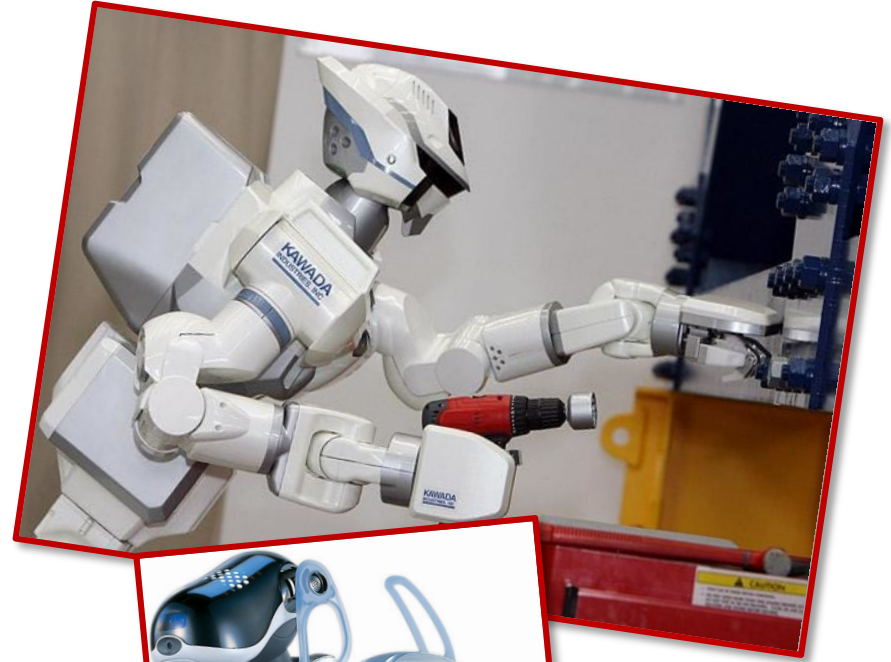
Watson and Deep Mind



Robotics



Robots



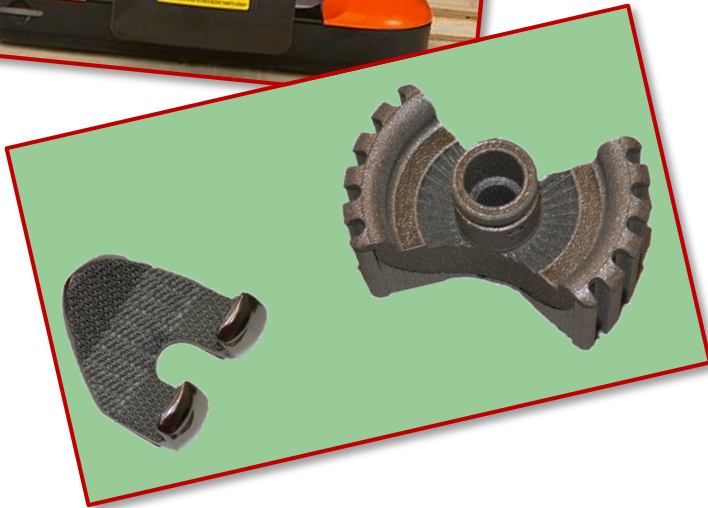
Autonomous Vehicles



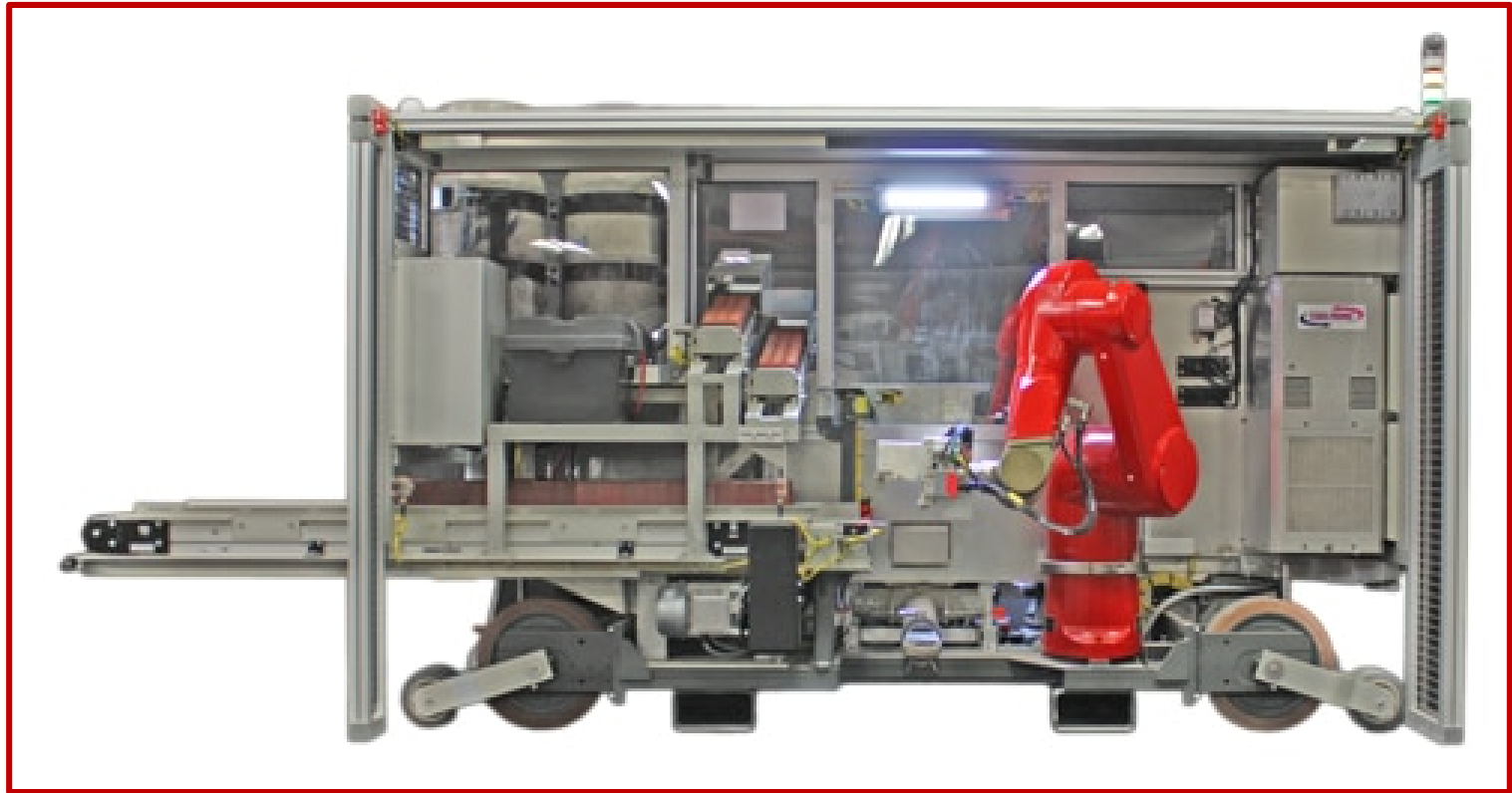
TESLA Manufacturing



3D Printing



SAM – Semi Automated Mason



Virtual and Augmented Reality



Smart Glasses





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Economies of Mass Disruption

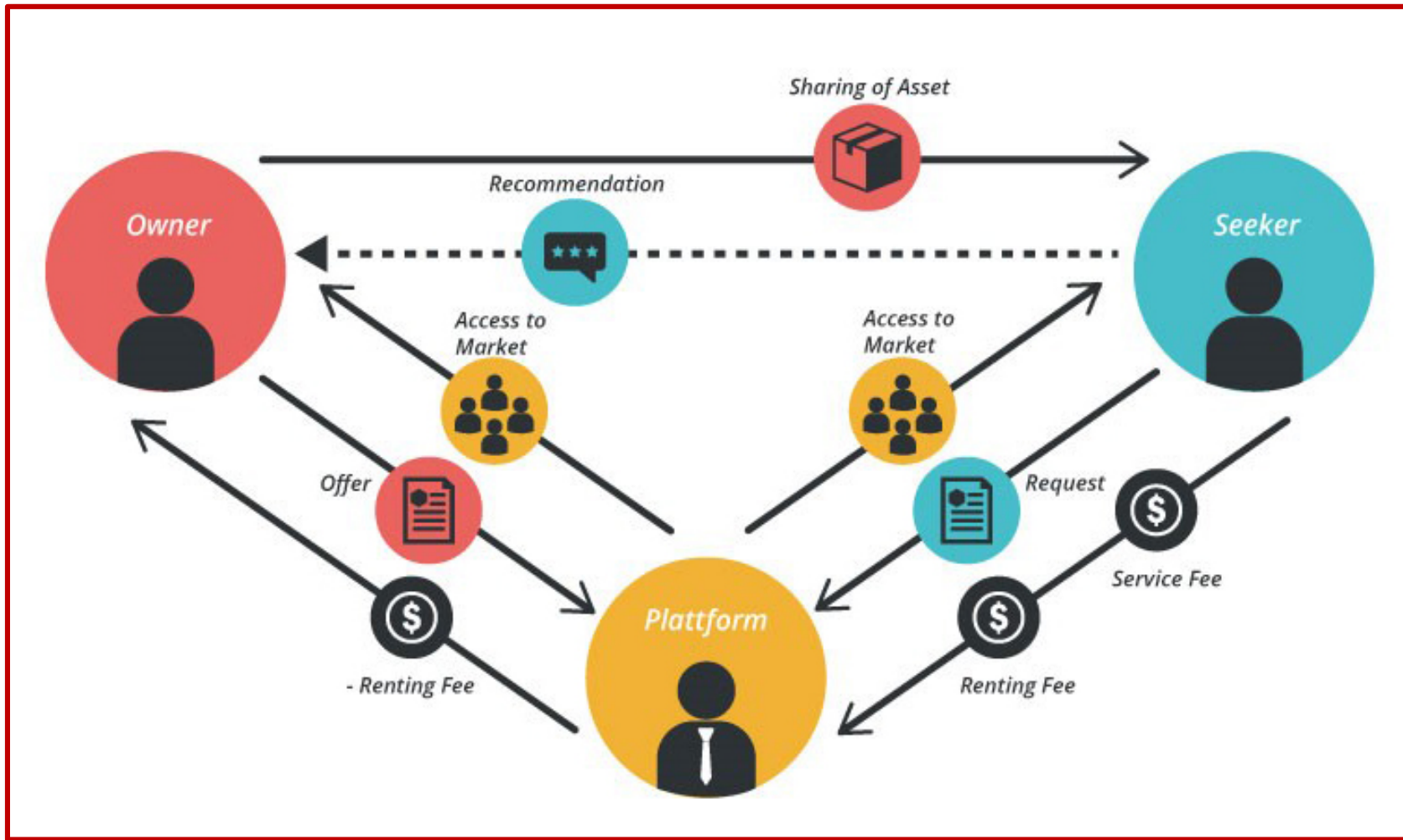
Platform, Sharing, Gig

Platform Economy

A Platform Is a 'Digital Network' That Connects Producers and Consumers and Facilitates Them to Exchange of Value

In Each Case the Value is Information, Goods or Services and Some Form of Currency

Sharing Economy



Gig Economy





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Worker Classification

Employee, Independent Contractor
or
Independent Worker?

Name, Position
Date



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21st Century Skills

Automation and Digitization

Retraining and Reskilling
Workers

21st Century Worker?



Education in the 21st Century

**EDUCATION AND TRAINING TODAY MUST
TRANSLATE TO THE REAL WORLD**

**HIGH LEVELS OF EDUCATION ARE NO
GUARANTEE AGAINST WORKFORCE
DISPLACEMENT DUE TO TECHNOLOGICAL
CHANGE**



Workforce Training in the 21st Century

In the near future the challenge that will confront business, education and policy makers will likely be retraining and redeploying tens of millions of midcareer, middle-age workers.



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Leading Indicators of Change

Employment Recovery Post Recessions

1991 15 Months

2001 39 Months

2008-2009 60 Months

Labor Force Participation Rate

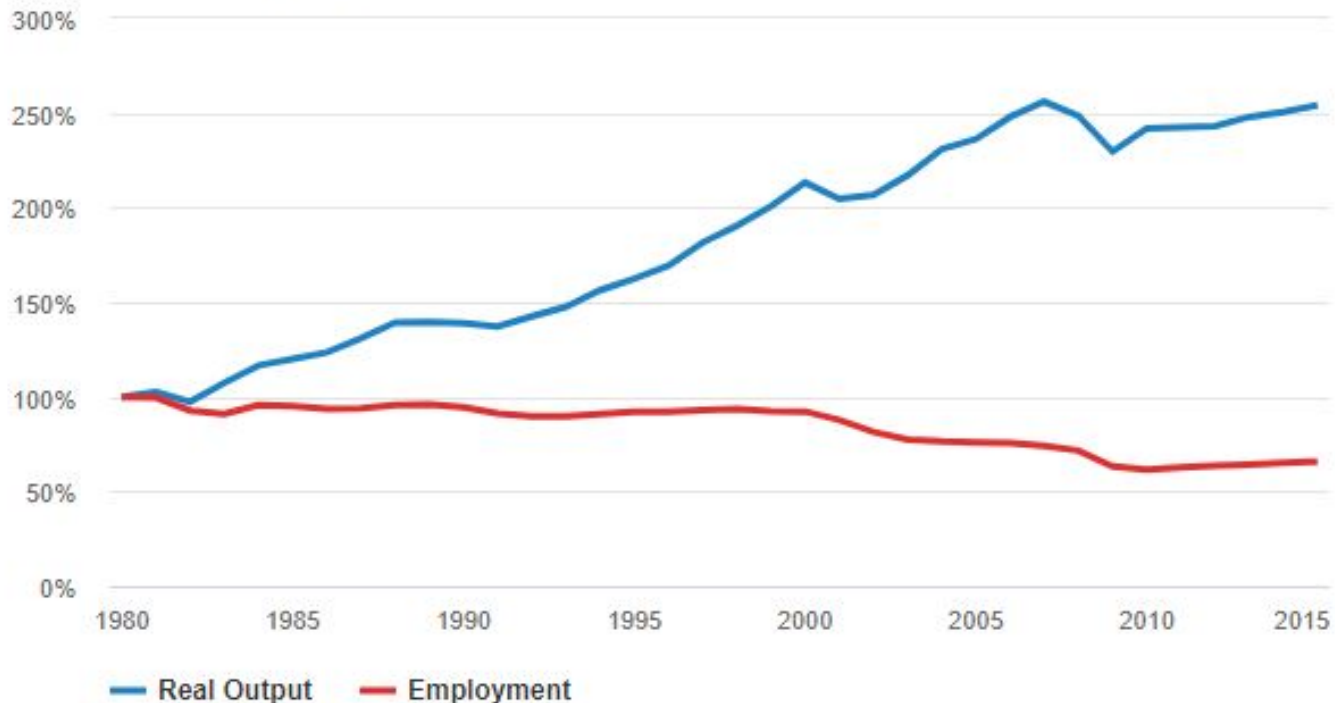
LFPR Historical Decline (January of Each Year)



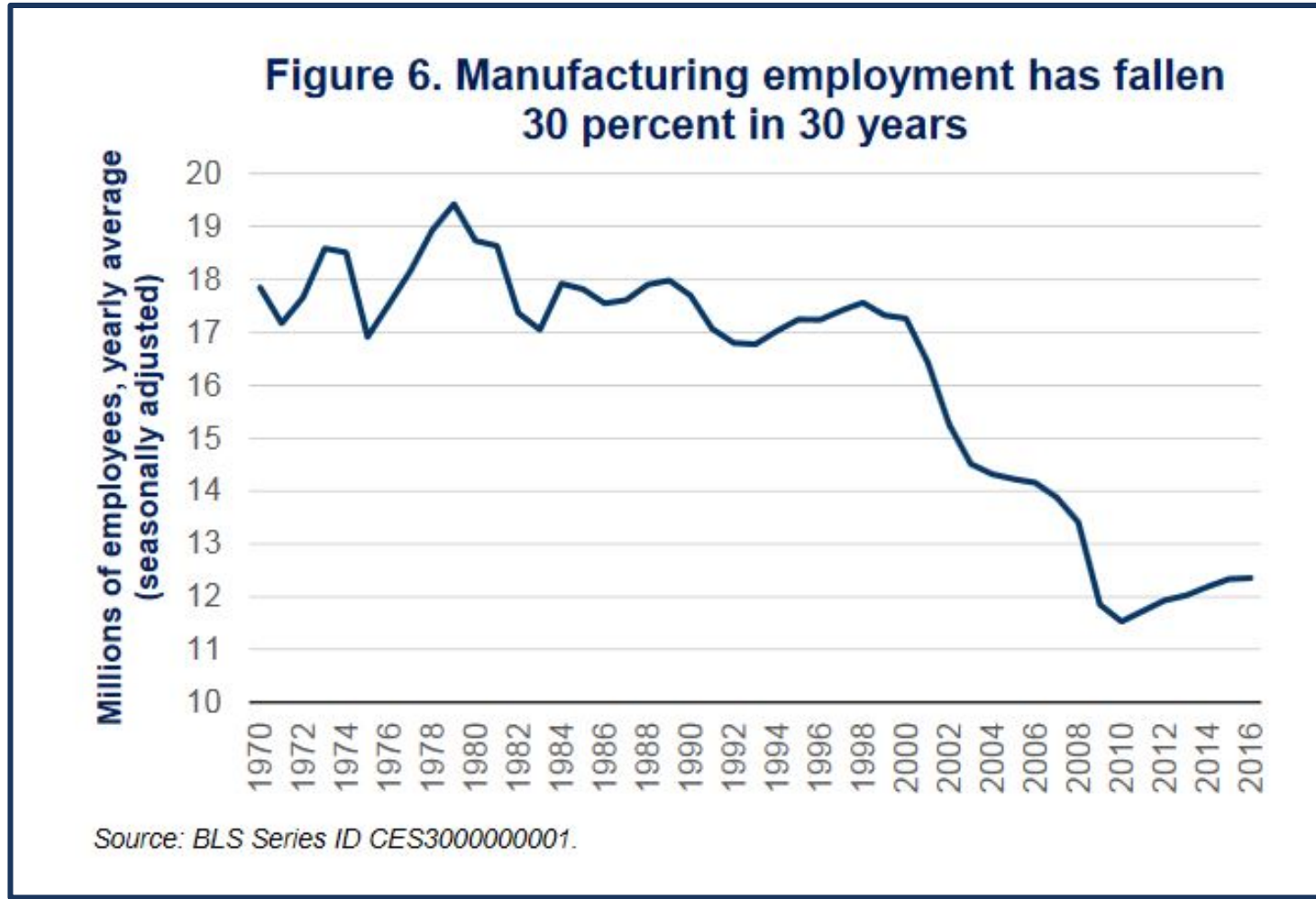
Manufacturing Productivity

More Output, Less Employment

The manufacturing sector has gotten more productive, while giving fewer people jobs (compared to 1980 levels).



Decline In Manufacturing Employment



Historically Wages Are Flat

After adjusting for inflation, wages are only 10 percent higher in 2017 than they were in 1973, with annual real wage growth just below 0.2 percent.¹

The Future?

Machine learning does not just give us new machines to replace old machines, pushing human workers from one industry to another. Rather, it gives us new machines to replace us, machines that can follow us to virtually any new industry we flee to.

Martin Ford, *“Rise of the Robots: Technology and the Threat of a Jobless Future.”* 2015

Utopia or Dystopia?

“It is Difficult to Predict,
Especially the Future”

Yogi Berra or Casey Stengel?

The Future is Now!

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TN-WIR²ED

A.R.T.

AWARENESS