

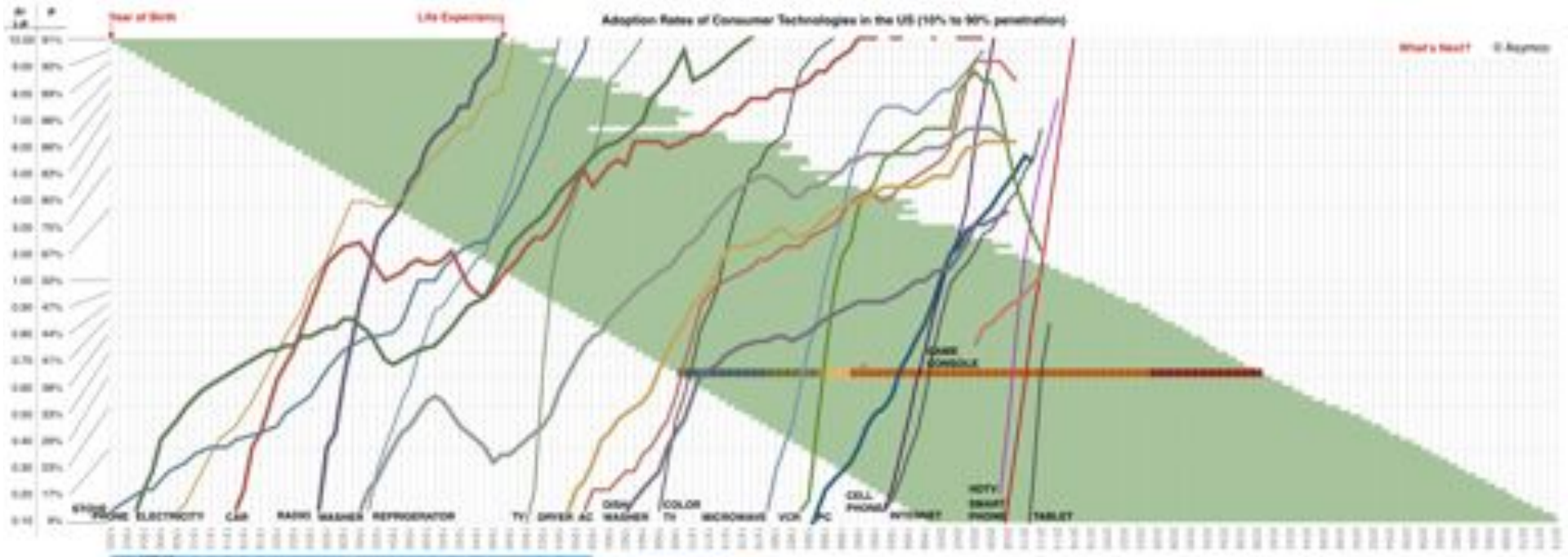
# Toward the Fourth Industrial Revolution

Daniela Rus

CSAIL

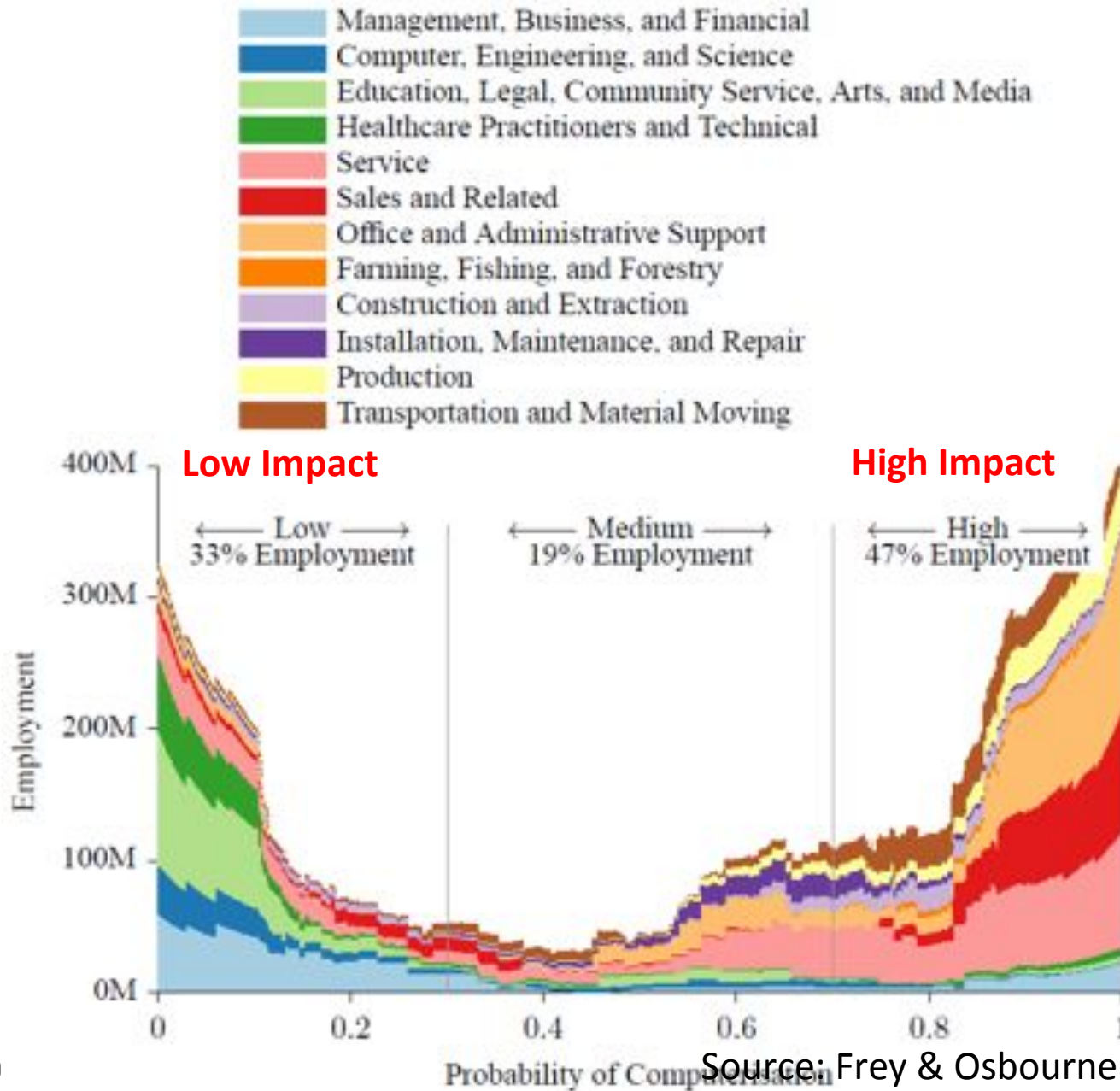
MIT

# Technology Adoption Rates



Phone: 50 years  
Cell Phone: 10 years  
Smart Phone 5 years

# Computing Impact on Jobs





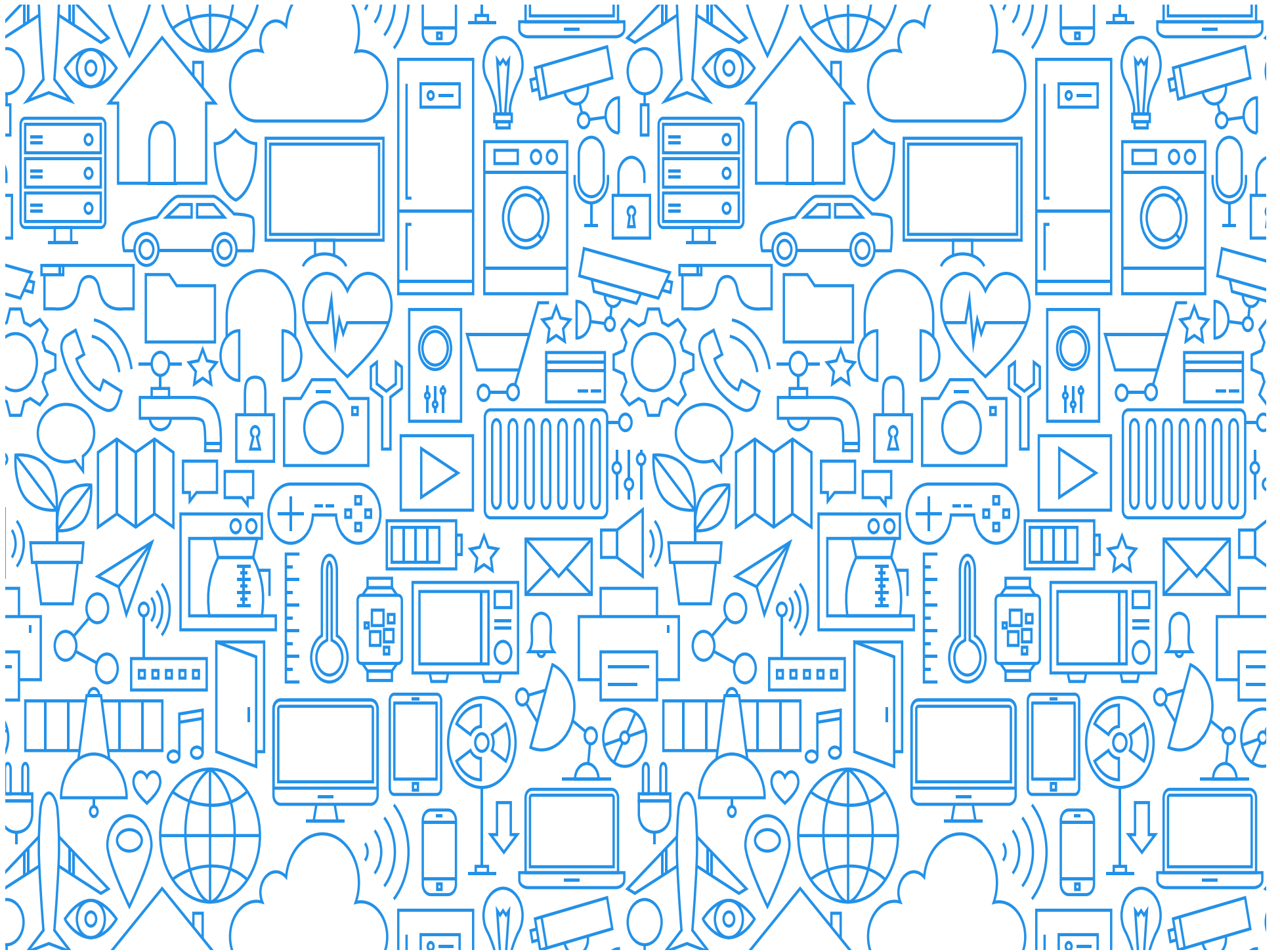
VS



# Sensors

# Data

# Interaction



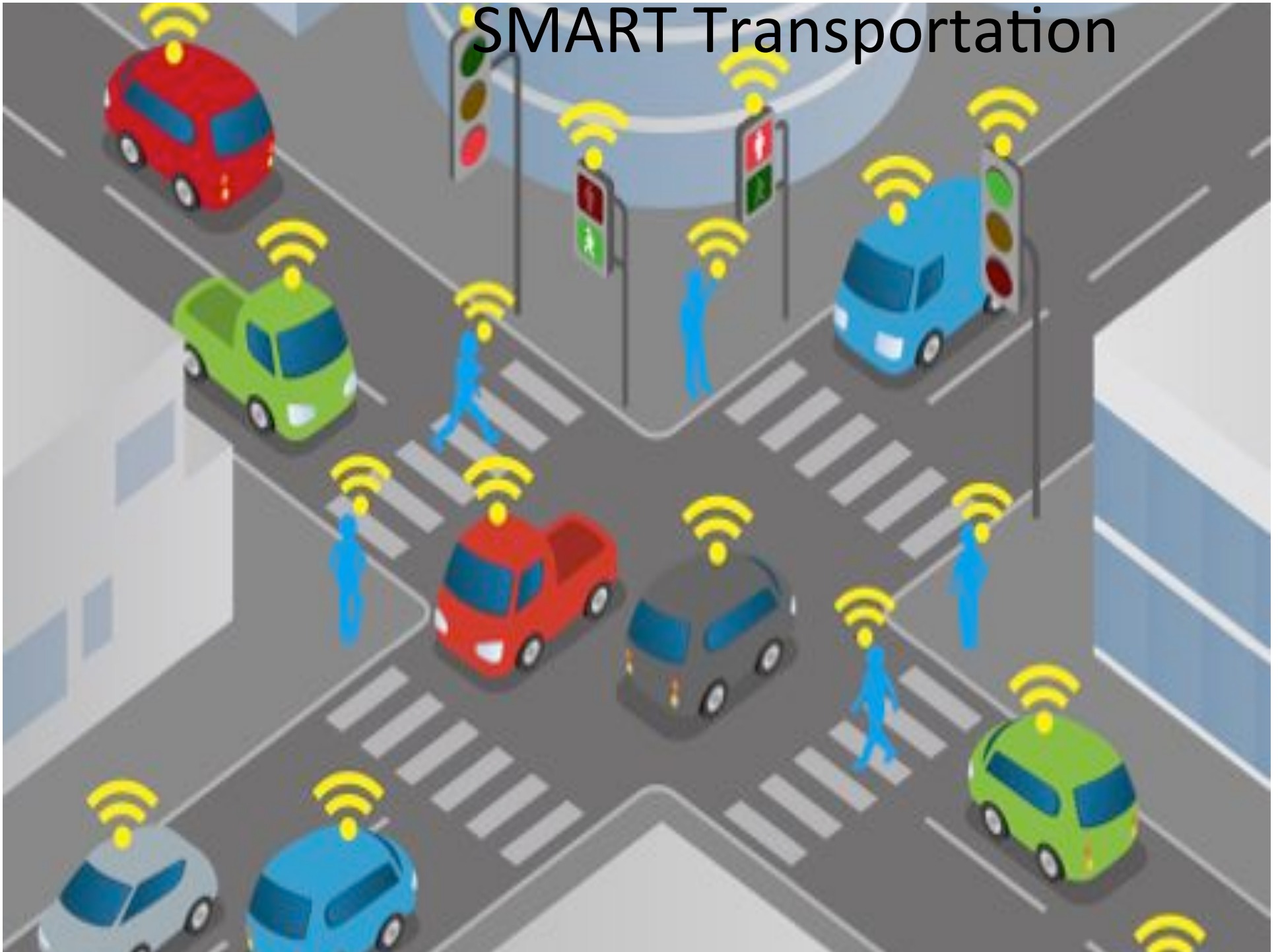


# SMART Cities



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# SMART Transportation





# SMART Shopping



# Smart Homes



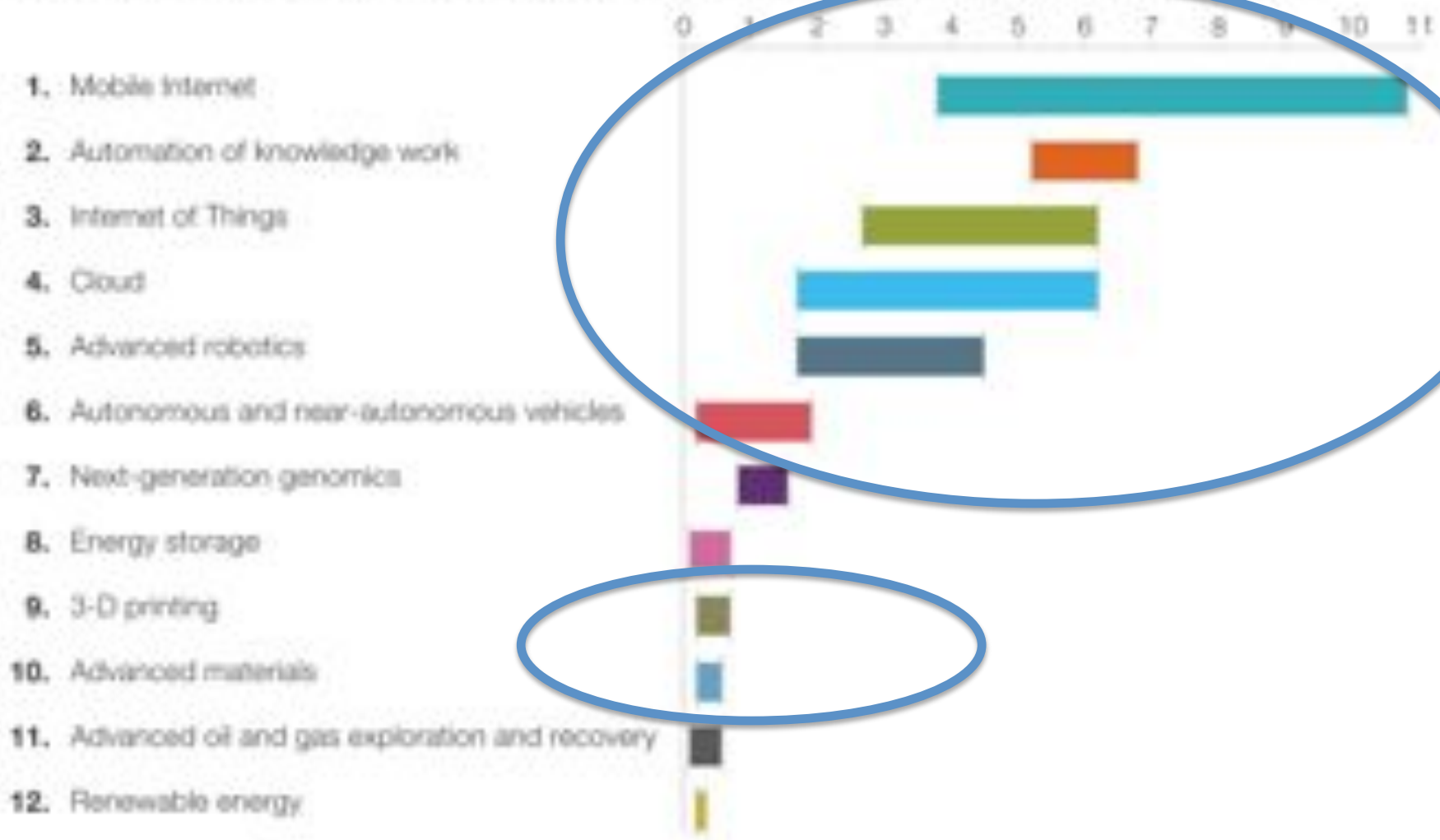
# SMART Healthcare



# Huge Potential: Computing Robots, AI



Estimated potential economic impact of technologies across sized applications in 2025, \$ trillion, annual



SOURCE: McKinsey Global Institute



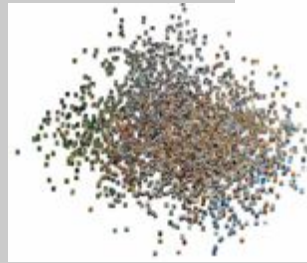
# Major Initiatives at CSAIL



wireless@csail



bigdata@csail



security@csail



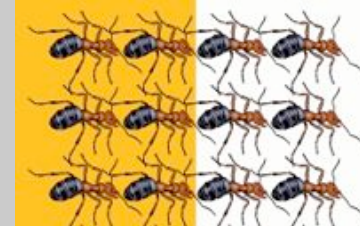
rethinking AI@csail



entrepreneurship@csail



Complex-systems@csail



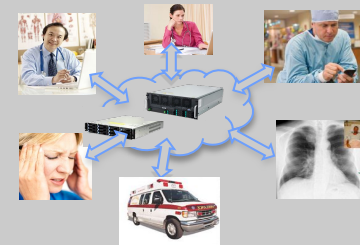
learning@csail



robotics@csail



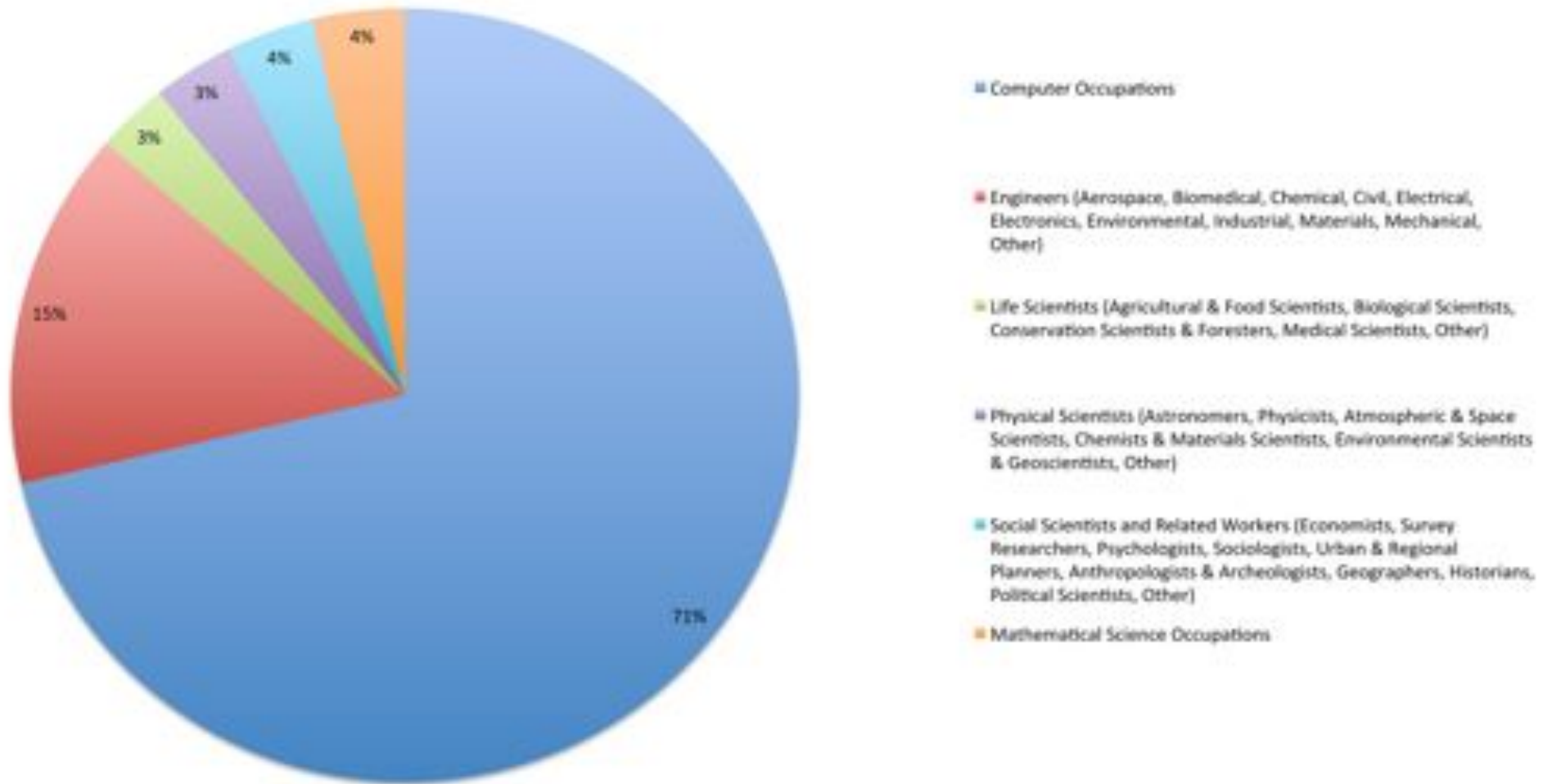
healthcare@csail



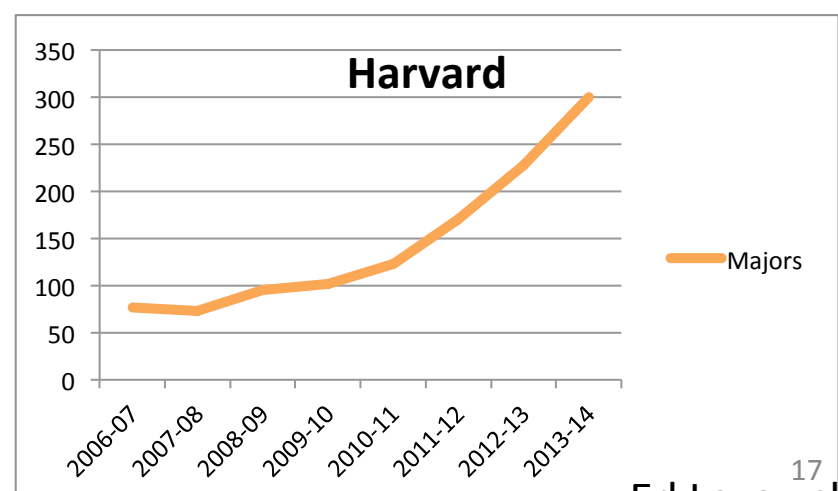
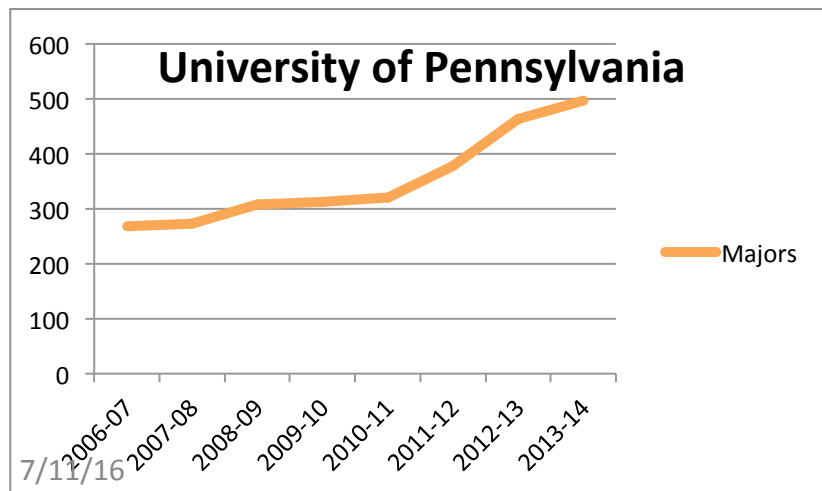
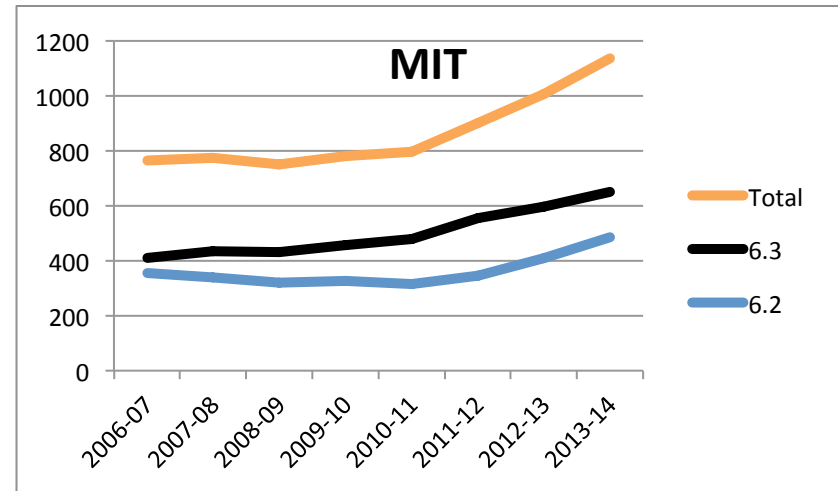
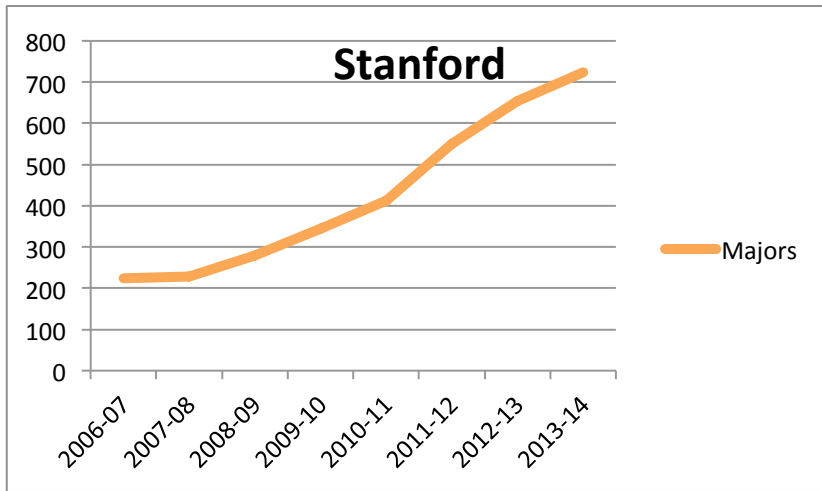
- Computational thinking is a new way of solving problems
- All fields are enhanced by data and computation
- Computing is fun
- Computing is a superpower, it can change the world
- Best jobs are in STEM; all STEM jobs are in computer science

## Job Growth, 2012-22 - U.S. Bureau of Labor Statistics

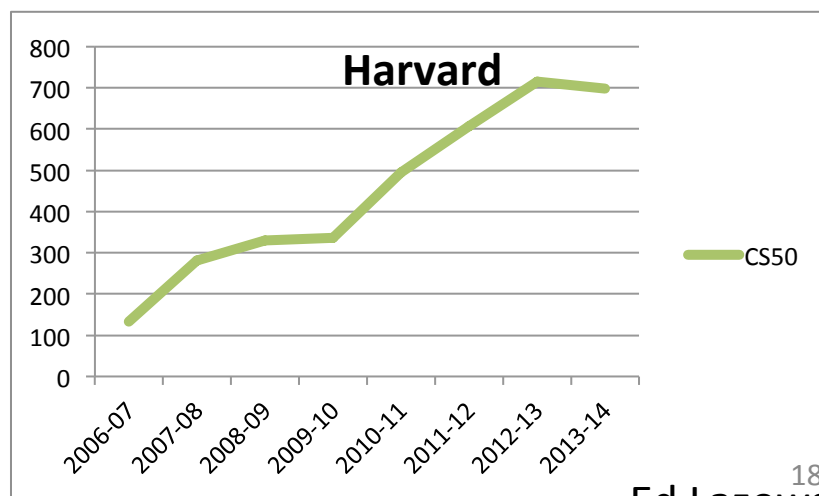
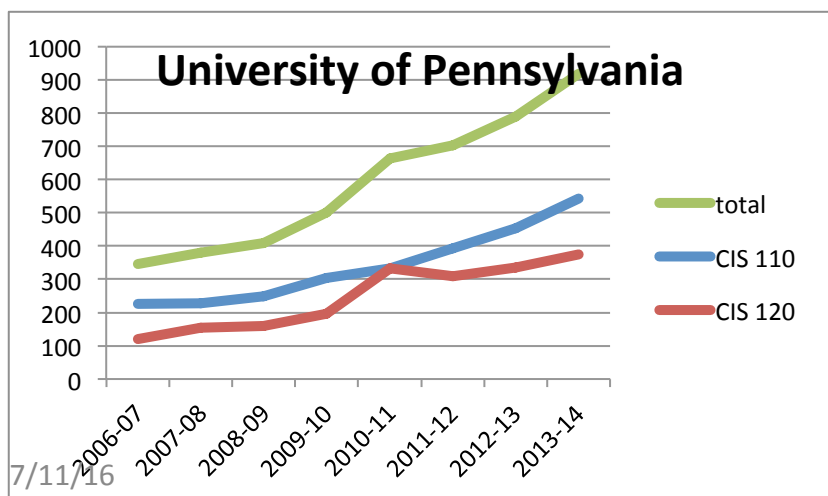
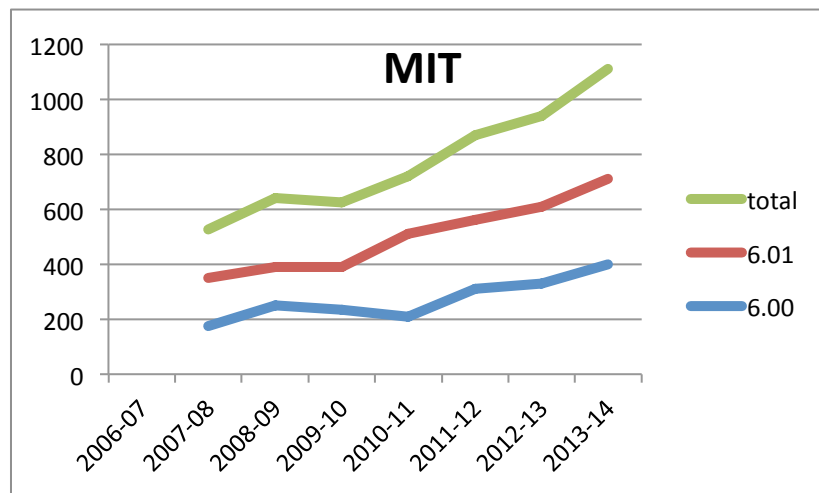
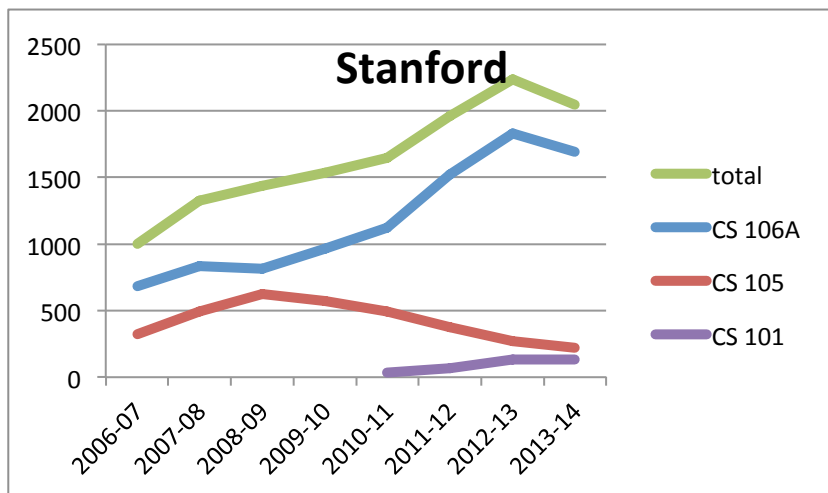
Computer Occupations = 71% of all STEM



# Huge Demand for the Computer Science Major



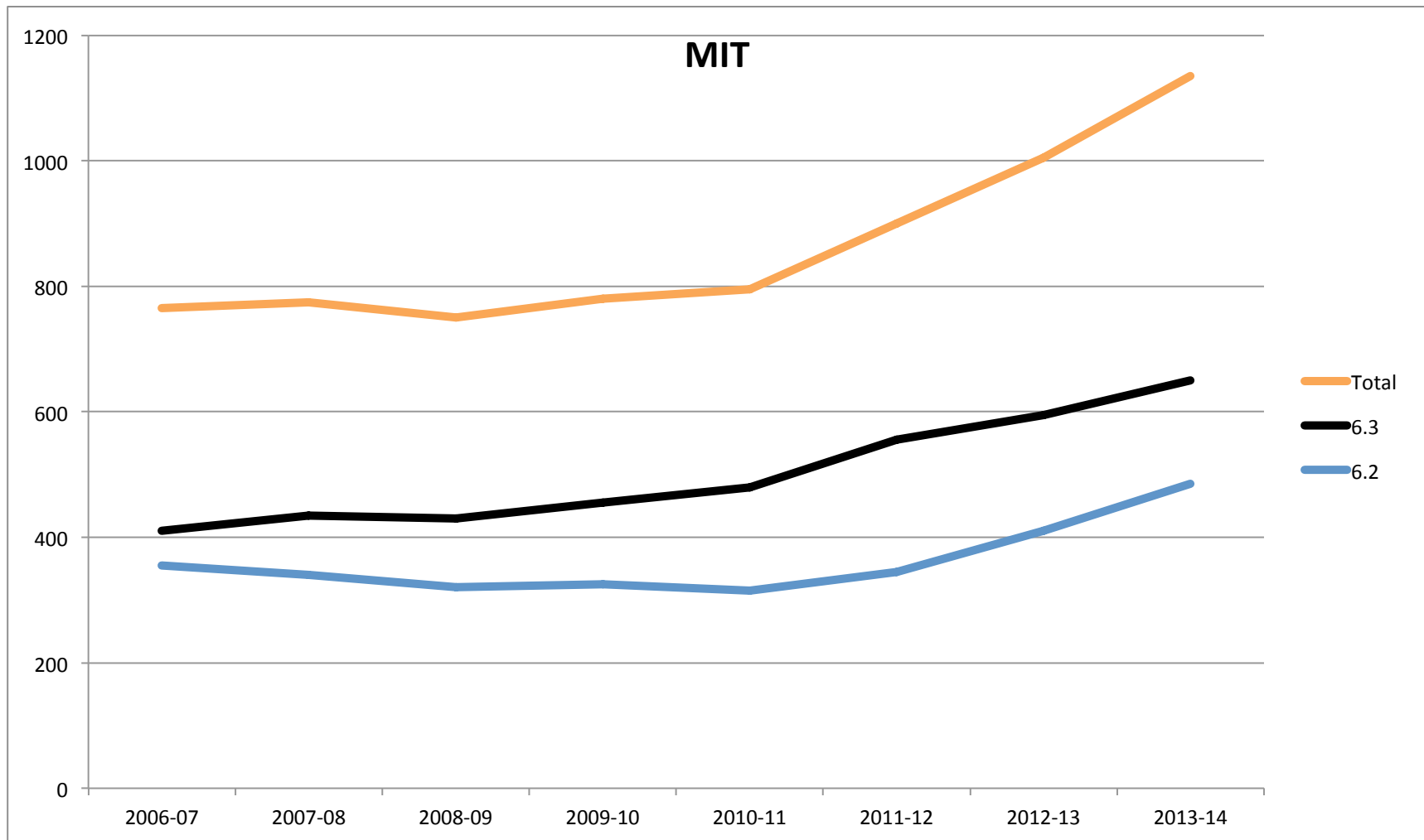
# Introductory Courses Exploding



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# Computer Science Major



# Students from Japan

- 5 undergraduates
- 1 PhD student
- 1 visiting student

# Learning for Super Students

- Rigorous Solid Foundations
- Problem Solving not Memorization
- Interdisciplinary: CS + X
- Collaborations vs One way conversations
- Focus on creativity and independence
- Integrating significant challenges
- Making it fun

# 4 Rs of Literacy

Reading

wRiting

aRithmetic

pRogramming

# 4 Ps of Innovation

Projects

Peers

Passion

Play



# Conclusions

- Computation is a utility: harness it in all fields
- Computational thinking a pillar of the future
- Skills, Creativity, Leadership