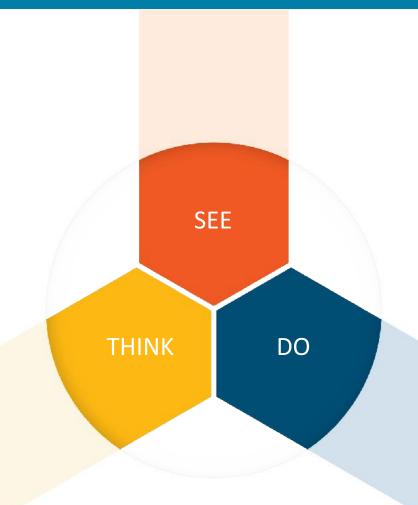
UC San Diego

CONTEXTUAL ROBOTICS INSTITUTE

Empowering People

Henrik I. Christensen, Director hichristensen@ucsd.edu



UC San Diego

JACOBS SCHOOL OF ENGINEERING

UC San Diego

Mega-Trends

Individualization of Products

Aging of Society

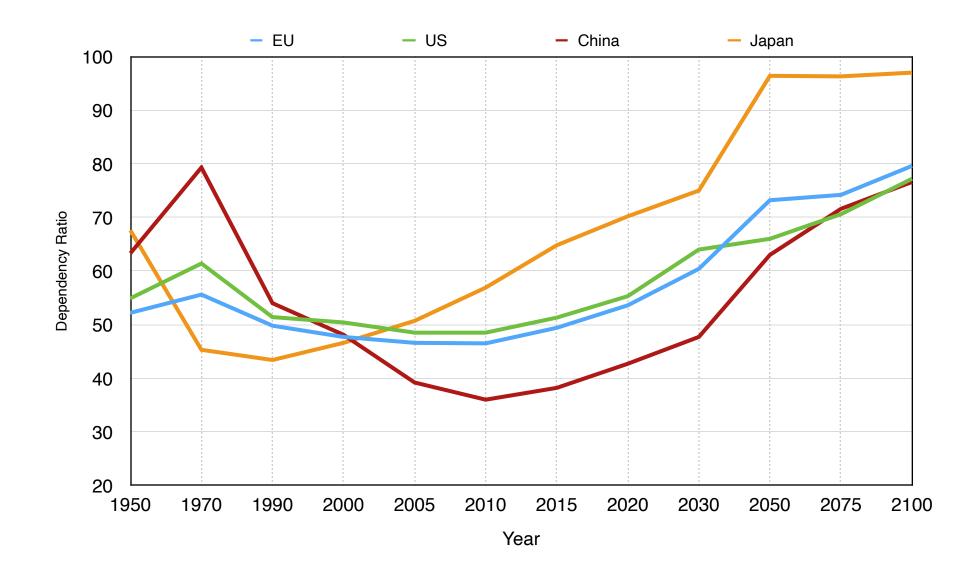
Transformation in business models (B2B & B2C)

Climate Change





Jemographics Drivers





Technology Landscape

- Sensing
- Display
- Wireless communication
 & internet
- Computing at the edge



Mobile Phones

Dynamic, Online, Real World





- IoT
- Robotics
- Industrial Internet
- Self-driving Cars
- Smart Grid
- Secure Autonomous Networks
- Real-time Data-to-Decision



Intelligent

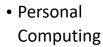
Cyber-Physical

Systems

Learn

Program





WiredInternet



Desktop / Workstation



Data Integration

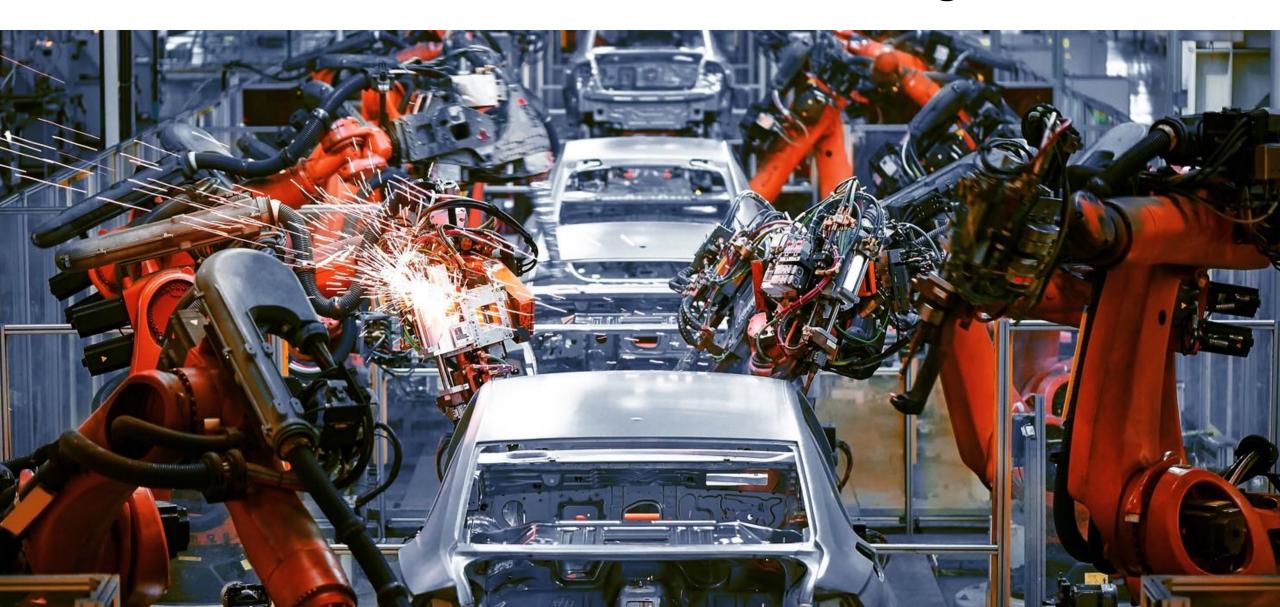
- Large scale storage
- Large scale computing



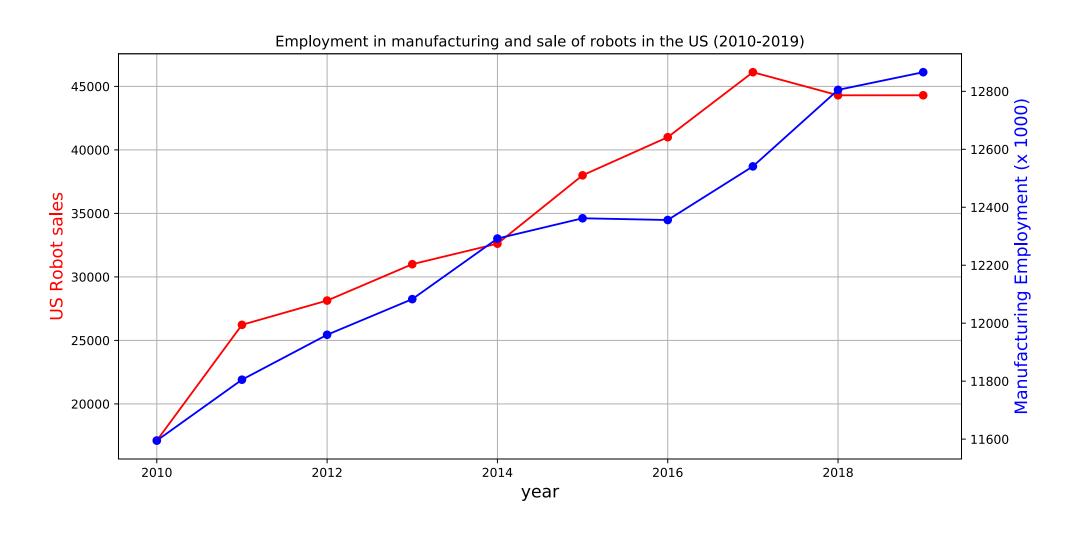
Data Center / Cloud

Static,
Offline,
Virtual World

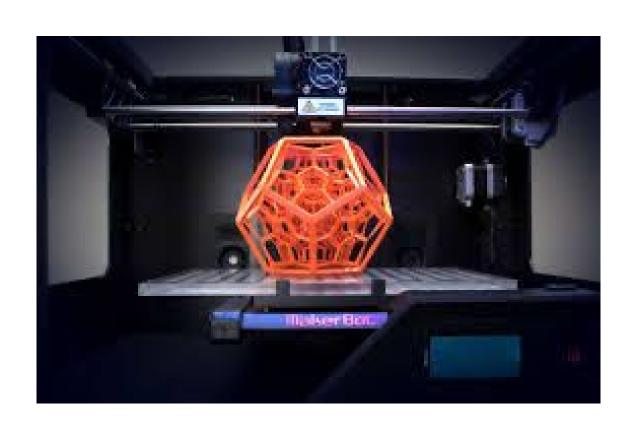
Customized Manufacturing



Robots & Jobs



3D printing in mixed materials



- 3D printing for spare parts
- Agile delivery
- New materials is opening markets
- Combined w. 3D scanning for repair work

 Tools for flexible additive manufacturing?

Healthy Aging in Place

- Lifespan increasing ~8 hours / day
- Birthrates declining
- Large fractions of population nearing retirement
- Increasing ratio of adults needing care / adults able to provide it
- Large cost of care in specialized nursing / assisted living facilities
- Very large drivers for technology that supports "healthy aging in place"

Companion Robots







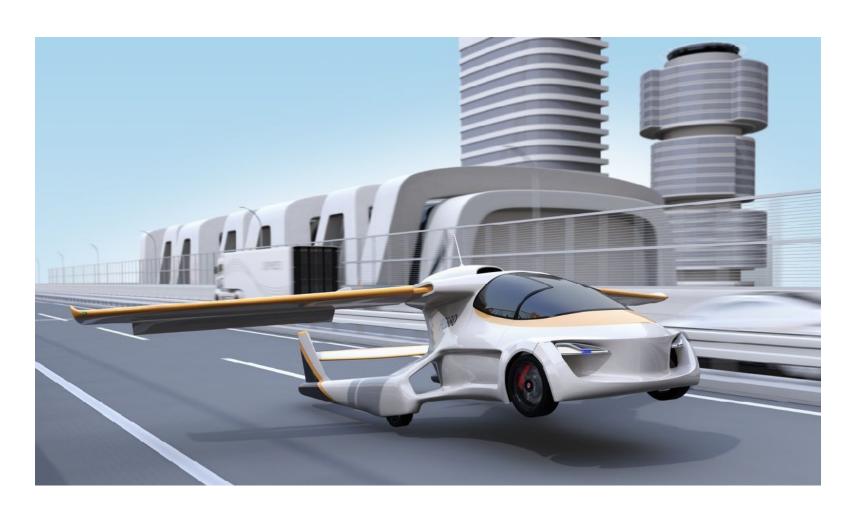


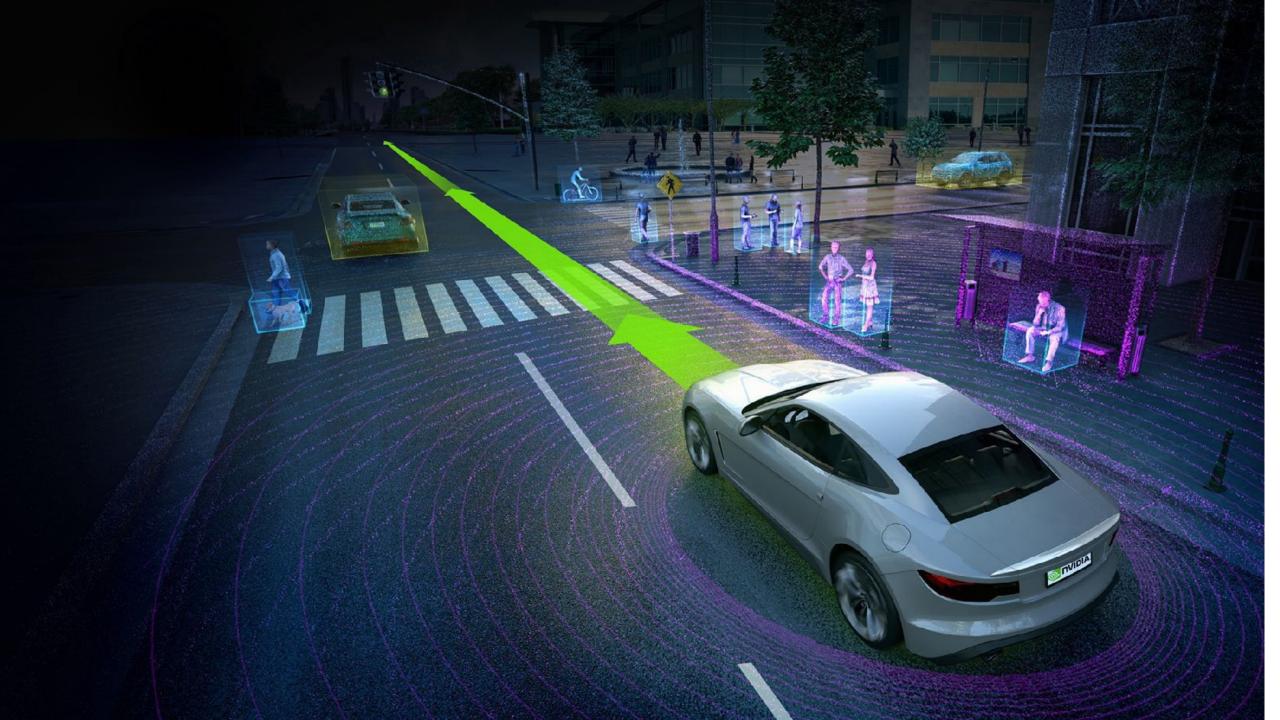






Next generation transportation





Autonomous Delivery Systems



November 7, 2016



A Roadmap for US Robotics

From Internet to Robotics

2016 Edition

Organized By

University of California San Diego Carnegie Mellon University Clemson University Cornell University Georgia Institute of Technology Northeastern University Northwestern University Oregon State University SRI Inc. Texas A&M University The University of Utah University of California Berkeley University of Nevada - Reno University of Southern California University of Tennessee Knoxville University of Washington University of Wisconsin Vanderbilt University Yale University

Sponsored by:

National Science Foundation University of California San Diego Oregon State University Georgia Institute of Technology Henrik I. Christensen hichristensen@ucsd.edu