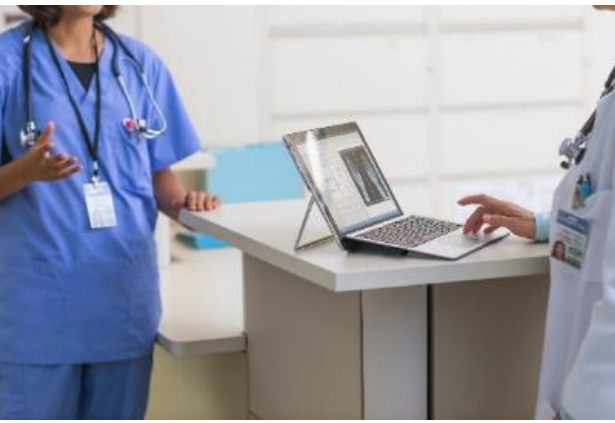


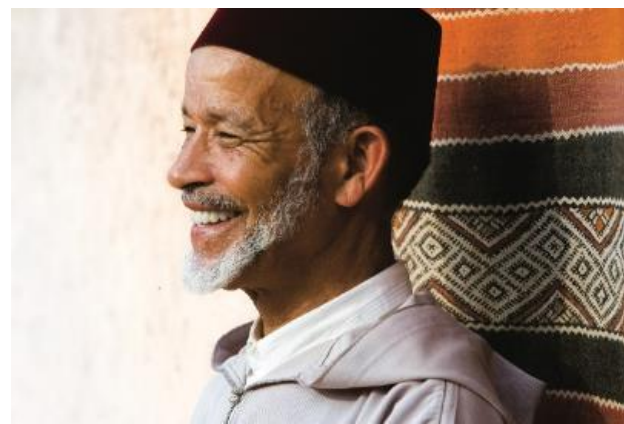
MEGATRENDS: PREDICTING THE FUTURE TO REINVENT TODAY

Shane Wall
HP CTO and Global Head of HP Labs
@ShaneWallCTO #LSEMEgatrends
January 25, 2018





Our vision: create technology
that makes life better for
EVERYONE, EVERYWHERE



Megatrends help us understand life for
EVERYONE, EVERYWHERE in the future



HP VISION INFORMED BY TRENDS AND TECHNOLOGIES

Megatrends

PHYSICAL

Human Experience / Blended Reality

DIGITAL

Disruptive technologies



SHAPING OUR FUTURE: MEGATRENDS



Rapid urbanization



8.6 billion world population in 2030



70% of the world's population will live in cities by 2050



41 megacities by 2030



Cities drive growth: by 2025 the Tianjin GDP will equal Sweden



Changing demographics



1.4 billion people will be over 60 by 2030



>30% of the workforce will be over 55 by 2030



2.6 billion Generation Z global population



\$15 trillion buying power of 'silver spenders' in 2020



Hyper globalization



143,000 Internet businesses launch in emerging markets each year



46% of the Fortune 500 will be headquartered in emerging markets by 2025



6.4 billion mobile phone users in 2030 (75% of global population)



75% of S&P 500 companies will be removed from the index by 2027



Accelerated innovation



1 billion times more powerful cell phones in 30 years



66x faster wireless speeds by 2020



20.4 billion connected devices by 2020



50x more information generated globally by 2020

MEGATRENDS, SUB-TRENDS AND DISRUPTIVE

Rapid urbanization

Cities as markets
 New consuming class
New business models
 Global sustainability
 City evolution
 She-economy
 Tale of two middle classes

Changing demographics

Aging and shrinking workforce
 Government pressure
 Healthcare problem
 Workplace productivity
 Aging customer base
 Gen Zeneration
 Digital health
 Gig Economy

Hyper globalization

Rise of digital platforms
 Rise of startups
 Emerging economy powerhouses
 Global stage, local requirements
 Disrupt or disrupted
Cyber trust and security
Digital / cryptocurrency

Accelerated innovation

Blended reality
 Innovation's building blocks
 Human skill gap
3D / digital manufacturing
Intelligence on tap
 Conversational interfaces
Rise of the autonomous workforce
The butterfly effect of self-driving cars
 Humans 2.0
 Personalized everything
 Digitization of education
 Blended retail
 Test tube food
 Space exploration

Megatrends
 2017 / 18



Bio-convergence /
 Nature inspired
 manufacturing

Beyond human /
 Theranostics

**Frictionless business /
 AI and blockchain**

NEW BUSINESS MODELS

From physical products

To services and experiences



2X the likelihood of Asia Pacific buyer seeing “as-a-Service” as critical to their business



\$335B sharing economy revenue in 2025

IMPLICATIONS:



Service platforms



Subscription business models



Uberization of services

KEY THEMES:

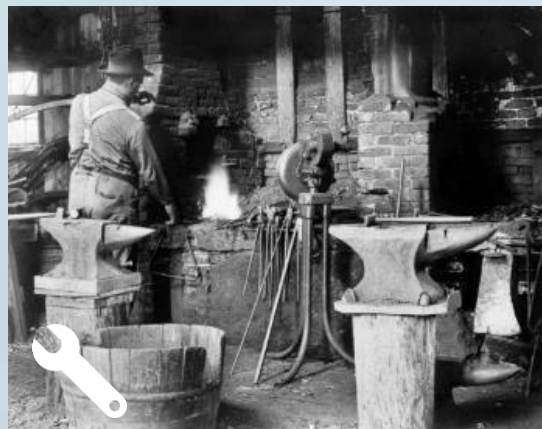
Everything as a service New business models Shared economy On-demand economy

3D PRINTING AND DIGITAL MANUFACTURING

From specialized design, mass production, inventory and global supply chains

To seamless digitization from design to localized production

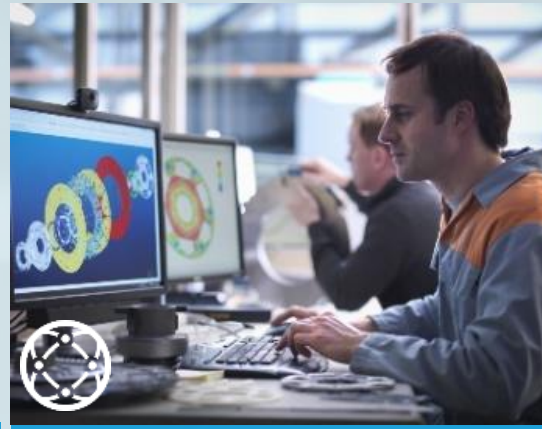
\$12T global manufacturing market



Pre-industrial
Handmade and time intensive



Industrial Revolution
Blueprint design and mass production



Internet
Computer-aided design and JIT machine production



3D Transformation
Immersive design and digital production



Next Industrial Rev
Democratization of design and ubiquitous production

1780s to 1860s

1870s to 1960s

1970s to 2010s

2010s – Future

KEY THEMES:

AI

Big data analytics

Industrial IoT

3D Printing

Robotics

INTELLIGENCE ON TAP AND CONVERSATIONAL INTERFACES

From connected

To cognitive and conversational

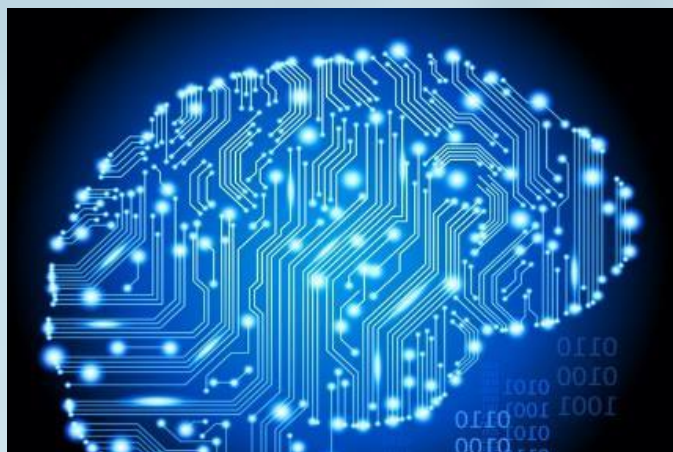


50x data increase by 2020 will drive AI



30% of human-computer interactions will be conversational by 2018

IMPLICATIONS:



AI on-demand and everywhere



Voice is the core conversational interface



Interfaces combine with AI to drive automation



Lower cost of operations

KEY THEMES:

Age of AI

Always-on / always-connected intelligence Bots and voice proliferate

RISE OF THE AUTONOMOUS WORKFORCE

From human workers

To no workers



1 of 3 white collar jobs will be converted to software, robots and smart machines by 2025



47% of U.S. jobs at risk in next 2 decades



\$5.2T to \$6.7T est. positive economic impact from automation by 2025

IMPLICATIONS:



Lower cost of operations



Impact on the workforce



Office of the future



Digital manufacturing

KEY THEMES:

Robotic AI workers

Global job impact

Human + machine

Jobless society



FRICITIONLESS BUSINESS – AI AND BLOCKCHAIN

From human-intermediated business tasks

To robotic and intelligent automation of tasks



600+ in sequence are performable by an RPA software robot



Up to 60% savings estimated in global financial transactions and settlement costs by using cryptocurrencies

IMPLICATIONS:



Rise of AI in finance and accounting



Non-sovereign / cryptocurrencies



Business process automation

KEY THEMES:

Robotic process automation

AI

Blockchain and cryptocurrencies

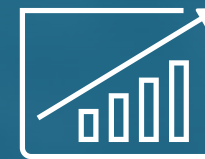
DIGITAL / CRYPTOCURRENCIES

From sovereign currencies and centralized obstacles

Decentralized fast, secure value exchange built on blockchain



100,000+ new users per day added on cryptocurrency exchanges



\$50B daily trading volume of cryptocurrency trading volume equates to NYSE average volumes

IMPLICATIONS:



Cross market liquidity



New types of legal tender (e.g., Japan)



Transaction speed and cost vs. risk



Fraud protection

KEY THEMES:

Blockchain

Non-sovereign units of value exchange

Volatility risk

Security



CYBER TRUST AND SECURITY

From hacking for data and profit

To hacking for destruction



\$445B annual cost of cyber attacks on global economy in 2016

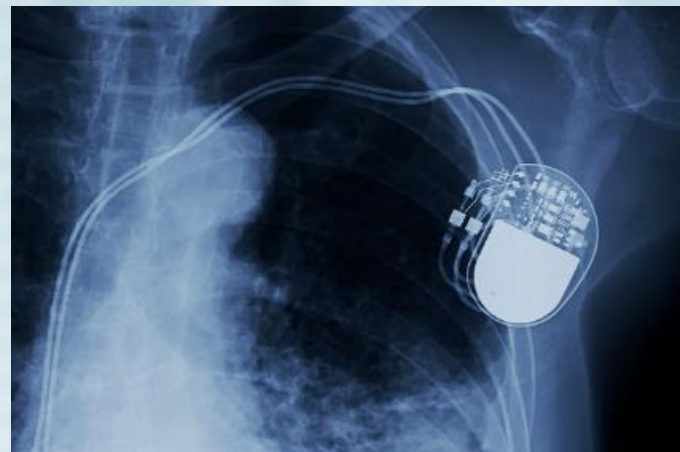


Over 1700 significant data breaches worldwide in 2016

IMPLICATIONS:



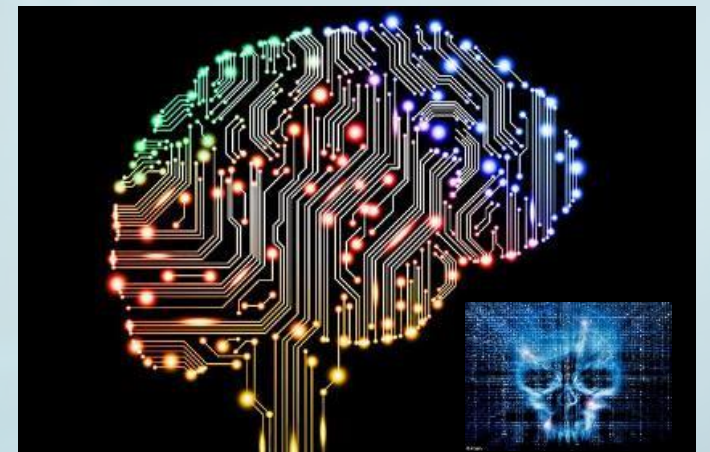
End-point security



Personal vulnerability



IoT for security



AI vs. AI

KEY THEMES:

Cyber espionage

Cyber warfare

IoT devices

Intelligent AI hacking



THE BUTTERFLY EFFECT OF SELF-DRIVING CARS

From driverless cars

To refined industries

\$2T annual revenue from U.S. automotive ecosystem

4M U.S. jobs lost in next 2 decades from self-driving

\$507B annual (est.) productivity gains in U.S.

1.1M lives saved annually in U.S. from eliminated accidents

IMPLICATIONS:



Roving offices



Secondary effects on businesses, roads and towns



Job impacts



Real benefits

KEY THEMES:

Butterfly effect

Driver unemployment

New businesses

Lives and money saved

MEGATRENDS WILL IMPACT THE WAY WE...



MAKE THINGS



SELL



LIVE AND
WORK

BIO-CONVERGENCE

Nature-inspired fabrication



BEYOND HUMAN

Theranostics and convergence
of microfluidics, compute
and genomics



FRICTIONLESS BUSINESS

AI and Blockchain
solutions



MEGATRENDS 2018

THANK YOU

