Future Disruptors and Implications for Real Estate

Presented by: Geoffrey Kasselman, SIOR, LEED AP
NKF National Industrial Services Group Chair / 2017 SIOR Global President / Founder & CEO, Op2mize Energy

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Today’s Agenda

- The A360 Visionaries
- Moore’s Law
- Transformative Disruption (1st Wave & 2nd Wave)
- Convergence
- X Factors
- RE Impact & Opportunities
- Q&A

**Addendum:**
- Need to Know
- Companies to Watch
- Recommended Reading List
Geoffrey Kasselman, SIOR, LEED AP

- NKF EMD & National ISG Leader
- 2017 SIOR Global President
- Founder & CEO, Op2mize Energy
- 30+ years comm’l RE experience
- Speaker, author, award-winner
- Tech-centric mentor & board member
- Global research: Smart buildings & cities
- ‘Pragmatic futurist’… innovation & sustainability with ROI dynamics
Three Fundamental Premises

1) Digitization is systematically eliminating inefficiencies.

2) Past results are no longer a predictor of future success.

3) There’s no spectating… everyone plays.
Words to Die By…

“WE HAVE ALWAYS DONE IT THIS WAY”

THE 7 MOST EXPENSIVE WORDS IN BUSINESS
The A360 Visionaries

Peter Diamandis
Founder, X-Prize; Co-Founder, Singularity Univ. (w/RK)
MIT; Harvard; Harvard Medical School
Accomplished Entrepreneur
Best-Selling Author

Ray Kurzweil
Director of Engineering, Google
Inventor; Mathematician; Futurist
20 Honorary Doctorates; 5 National Best-Sellers
Honors from 3 U.S. Presidents
“The only constant is change, and the rate of change is increasing.”

-- Peter Diamandis
“We won't experience 100 years of progress in the 21st century - it will be more like 20,000 years of progress (at today's rate).”

-- Ray Kurzweil
Moore’s Law

• Since 1958 computing power / price performance doubles every 18-24 mos

• 59 years later, on verge of 30 iterations (exponential)

• Linear vs Exponential:
  • 30 linear steps = 30 meters vs. 30 exponential steps = 1 billion meters
  • 50 folds of 0.135mm piece of paper = Earth to the Sun
  • Today’s computers 138,000x more powerful than 1988; still accelerating

• Kurzweil’s “Law of Accelerating Returns” - ML is merely 5th paradigm
  1) Electromechanical; 2) Vacuum Tube; 3) Relay; 4) Transistors; 5) Integrated Circuits

• What’s next… Quantum computing?
  • Uses “Qubits” - exponentially capable; much faster, smaller, less power usage, etc
Moore’s Law
Moore’s Law

THE INTERNET OF THINGS
AN EXPLOSION OF CONNECTED POSSIBILITY

BILLIONS OF DEVICES

YEAR

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IBM estimates that 90% of all the electronic data in the world has been created in the past 2 years.

-- WSJ 3/3/17
Moore’s Law – Don’t Get Kodak’d!
“With Moore's Law, everything will be obsolete in 10 years – I'll be obsolete in 10 years!”

-- Jerry Zucker
Transformative Disruption: 1\textsuperscript{st} Wave

Mainstream \textit{next 3 to 5 years}:  

- Big Data
- Automation
- Internet of Things
- 3D Printing
- Cybersecurity
- Drones
Transformative Disruption: 1st Wave

Recent Headlines from Vetted Sources

- Big data, analytics to be $187 billion market in 2019
- Apple supplier Foxconn replaces 60,000 humans w/robots in China
- UPS & SAP push on-demand 3D printing // Would you eat 3D cheese
- Nevada gets first FAA-approved urban drone delivery
- IBM, Cisco ink IoT deal integrating Watson AI into Cisco gear
- Public cloud computing growing almost 50 percent annually
- Report: 65% of Federal agencies have had a data breach
Transformative Disruption: By the #’s

- **4 BILLION**: Connected People
- **$4 TRILLION**: Revenue Opportunity
- **25+ MILLION**: Apps
- **25+ BILLION**: Embedded and Intelligent Systems
- **50 TRILLION**: GBs of Data

Source: Mario Morales, IDC.
Transformative Disruption: Here & Now!

Data will drive the future of corporate real estate decisions

TODAY

28% Now use data and analytics to shape most decisions

2017

56% Will use data and analytics to shape most decisions

43% North America

22% Latin America

13% Europe

32% Asia Pacific

61% North America

55% Latin America

48% Europe

59% Asia Pacific

*Forrester consulting
Transformative Disruption: 3D Printing
Transformative Disruption: Robotics
“We become what we behold. We shape our tools and then our tools shape us.”

-- John Culkin
(based on Marshall McLuhan’s ideas)
Transformative Disruption: 2\textsuperscript{nd} Wave

Mainstream next 5 to 15 years:

• $10^{16}$ calculations/sec (= 1 human brain) for +/-$1,000
  ✓ Unlimited ubiquitous quantum computing
• 24/7 learning via Artificial Intelligence (AI)
• IoT becomes IoE (or IoS)
• Autonomous vehicles (AVs & ACVs); T/MaaS
• 3D printed everything
• Blockchain(s): digital currency & transactions
• BioTech + Nanotech + CRISPR-Cas9 = ?
• Abundant low-cost solar energy
Recent Headlines from Vetted Sources

- Eighty million U.S. jobs at risk from automation
- First driverless taxis hit the streets of Singapore
- Norway to completely ban all petrol powered cars by 2025
- Caltech’s 2500 orbiting solar panels could provide Earth with limitless energy
- The future of humanity's food supply is in the hands of AI
- The next Big Thing for tech: The Internet of Everything
- The Blockchain is the new Google
- Preliminary prices for human-level computerware
- Editing our genes to cure — not just treat — disease
Transformative Disruption: ACVs

On October 20, 2016, Otto and Budweiser completed the world’s first shipment by self-driving truck.

The truck drove itself on I-25 from Fort Collins, through Denver, to Colorado Springs.

The driver was out of the driver’s seat during the entire 120 mile stretch of highway.
Transformative Disruption: Hyperloop
“By the time we get to the 2040’s, we’ll be able to multiply human intelligence a billionfold, a profound change that’s singular in nature.

Computers are going to keep getting smaller & smaller. Ultimately, they will go inside our bodies & brains & make us healthier, make us smarter.”

-- Ray Kurzweil
Convergence

Anything, anytime, anywhere…

• aka “The Singularity” (+/- 2045 per RK)
• $1,000 for a computer 1Bx more intelligent than every human combined
• EaaS: Everything as a Service… Workers on tap? Print to suit!
• Simulated reality indistinguishable from reality
• Magnifier Effect: abundance + turbulence = unexpected consequences
• Parity vs. scale
• Profound implications
  ✓ Geo-political
  ✓ Socio-economic
  ✓ How/where we live/go
  ✓ Life expectancy 150++
  ✓ Existential risk: SH - 100 yrs
Convergence: Is Any Job Safe?
Convergence: The Future of Mobility?
Convergence: Extinction List (partial list)

- Jobs Everywhere
  - MDs, Pro Athletes, Drivers, Hospitality, Services... Middle Class?
- Combustion Engines & Vehicles
  - Drivers Licenses, Traffic Controls
- Newsprint / Printing
- TVs, Cameras, Mobile Phones
- Physical Currency
- Traditional Retail
- Privacy
X Factors

- Global Politics
- Local Policy-making
- Economic Cycles
- Cost/Access to Capital
- David vs Goliath
- Legal Precedence
- Data Standards
- Climate Change
- Other / TBD
“And then the day came when the risk to remain tight, in a bud, became more painful than the risk it took to blossom.”

-- Elizabeth Appell
RE Insights & Opportunities

- Change Management – Inefficiencies systematically go away
- Future-proof – Be indispensable to your clients & employer
- Become a leading expert – training / re-training (i.e. learn to code?)
- Invest accordingly – spend $ to make $$$
- Relationships matter – can’t be fully automated
- Understand client’s pain points; initiate the ‘convergence’ discussion
- Form new, mutually-beneficial partnership & alliances
- Cater to the Cloud (data centers; BC/DR; LiFi; WiGig)
- Embrace extreme photomapping / VR & AR / 3D imagery & tools
RE Insights & Opportunities (more!)

- Reduced space allocations/increased utilization... 24 hour occupancy
- S/T/MaaS: Space/Transport/Mobility-as-a-service... flexibility wins
- Zoning / entitlements & financing challenges... new taxes?
- Blockchain(s) will drive transaction activity... fee compression
- Inventory & delivery disruption; battle for “last mile”... 3D printing
- Industrial / retail convergence... “DICE” or no dice!
- New construction materials & techniques... different amenities
- Facility redesign: drone docks; cross-drive; AV/ACV staging; parking; FAR; redundant infrastructure; microgrid power; cybersecurity; etc.
RE Insights & Opportunities (**even more!**)  

- Next battleground: VTOL air space & air rights  
- CBDs/MSAs ripe w/change opportunities (i.e. parking garages)  
- Evolved urban planning; embrace STEM  
- Legal & insurance implications... and reinvention  
- *Decreased* labor emphasis & abundant low-cost energy  
- Evolved facility location & site selection dynamics  
- Significant valuation changes  
- Emergence of clusters & competing super-regions  
- Premium on cybersecurity (infrastructure, software, personnel, etc)
A Word of Caution: Cybersecurity
“It is not the strongest of the species that survive, nor the most intelligent, but the most responsive to change.”

-- Charles Darwin
Q&A / Discussion

Thanks for exchanging insights & ideas!

For more information, please contact me:

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Need to Know

- Superintelligence (ANI/AGI/ASI): IBM Watson, Tiahne-2 & Friends
- Solar & Perovskite; also, what is a Prosumer?
- Graphene / Carbon Fiber
- Cloud & Li-Fi
- Coding & Algorithms
- Fintech (i.e. Blockchain) and Bitcoin
- DAO - Decentralized Autonomous Organization
- Biotech (i.e. CRISPR-Cas9) & Nanotech
- Cybersecurity and Ransomware
- Ray’s Predictions for the Next 25 Years
Companies to Watch

• Meta / Magic Leap / HoloLens (Interactive VR / AR)
• Stratasys / 3D Systems / Materialise NV (3D Printing)
• 3DR / CANVAS Tech / Fetch (Commercial Robotics)
• Mobileye (Advanced Sensors)
• Hyperloop / Space X / Blue Origin (Extreme Transport)
• Tesla / Faraday Future / Otto / 2getthere (Energy & Solar; Vehicles)
• Bloq (Blockchain)
• Uber / NuTonomy / WeWork / Flexe (EaaS + Copycats)
• 15 AI Start-ups to Watch (Artificial Intelligence)
• Internet Retailer Top 1000
• “Four Horsemen”: Alphabet (Google); Amazon; Apple; Facebook (Tesla too)
Recommended Reading List

- Peter Diamandis: “Abundance” and “Bold”
- Ray Kurzweil: “The Singularity is Near”
- Alec Ross: “The Industries of the Future”
- Nick Bostrom: “Superintelligence: Paths, Dangers, Strategies”
- Eric Drexler: “Radical Abundance”
- Don Tapscott: “Blockchain Revolution”
- Erik Brynjolfsson & Andrew McAfee: “The Second Machine Age”
- James Barrat: “Our Final Invention”

- Futurism // Singularity Hub // Future Timeline // Internet Retailer
- Diamandis.com // Kurzweil.net
One Final Thought…

“You need to get to the future, ahead of your customers, and be ready to greet them when they arrive.”

-- Mark Benioff, CEO, Salesforce.com
Let’s Go To Work!

KEEP CALM
AND
LET'S GO
TO WORK

Changing a culture to a culture of change