AGENDA17
STRATEGY>IDEAS>ACTION

New Technologies in the Enterprise: An Ideation Exercise

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A Recipe to Accelerate Innovation

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Background

- Some organizations are able to accelerate into the future much faster than others. (1)
- Some organizations (”Exponential Organizations” or ExOs) are ten times more productive than others. (2)
- We live in a time of Accelerations (3)
- How can/could/should we react to this to become more agile, deliver work even faster, able to react to technology and market changes, reduce bureaucracy, increase innovation, and be admired for how we work as well as what we do?

(1) **XLR8** by John Kotter
(2) **Exponential Organizations** by Salim Ismail et. al.
(3) **Thank You for Waiting** by Thomas Friedman

Examples: Technology Challenging Old Businesses

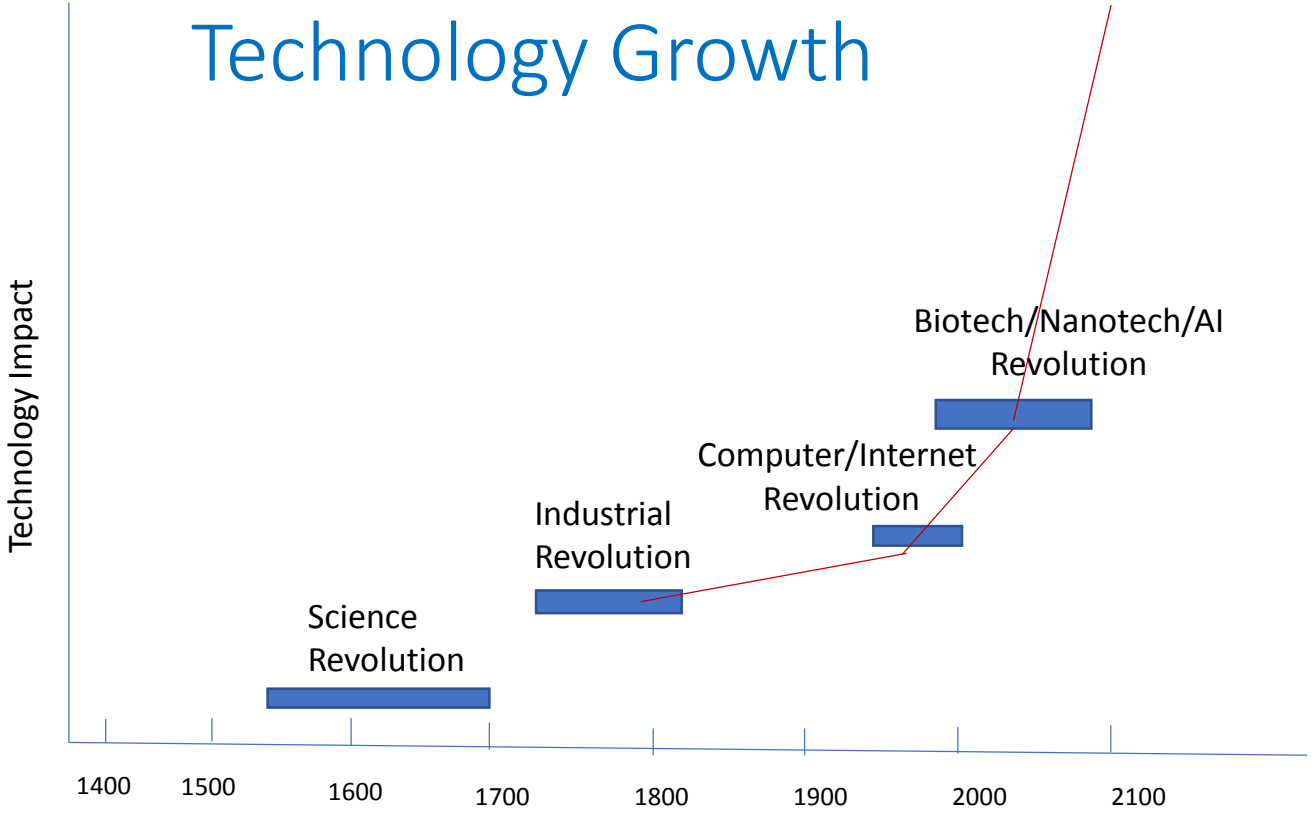
* Courtesy Firouz Naderi

Example: Keep up or Perish

- In 1888 George Eastman founded Kodak.
- In 1998, Kodak had 170,000 employees
- Taking photograph then required film and Kodak sold 85% of all photo paper worldwide.
- Within just a few years, they went bankrupt.

* Courtesy Firouz Naderi

Technology Growth



* Courtesy Firouz Naderi

Exponential Organizations Overview: SCALE

SCALE comprises the external mechanisms that ExOs use to fuel their growth

- **Staff on demand:** ExOs leverage external resources instead of maintaining large employee bases.
- **Community and crowd:** ExOs build and join communities to achieve rapid scale.
- **Algorithms:** As the world turns to big data, ExOs excel in the use of algorithms and machine learning.
- **Leased assets:** ExOs access or rent assets to stay nimble. For example, Lyft doesn't own its cars.
- **Engagement:** Techniques such as gamification and incentive prizes are core to ExOs' ability to quickly engage markets.

http://dupress.com/articles/tech-trends-2015-exponential-technologies/

Exponential Organizations overview: IDEAS

IDEAS comprises the internal control mechanisms that ExOs use to increase their organizational velocity:

- **Interfaces**: ExOs configure interfaces for their external constituents. Uber, for example, has its own system to manage its drivers.
- **Dashboards**: To track and monitor performance, ExOs use real-time metrics and performance-tracking techniques like the Objectives and Key Results methodology.
- **Experimentation**: ExOs use approaches such as lean production for rapid experimentation and process improvements through fast feedback loops.
- **Autonomy**: ExOs are extremely flat organizations, sometimes with no management layers.
- **Social**: File sharing and activity streams drive real-time, zero-latency conversations across the organization.

http://dupress.com/articles/tech-trends-2015-exponential-technologies/

A Recipe to Accelerate Innovation…

1. EXPERIMENT WITH:

+ CLOUD COMPUTING
+ HOW WE WORK
+ SMART DATA and ANALYTICS
+ INTERNET of THINGS
+ VOICE as a platform
+ ROBOTICS and 3D PRINTING
+ SMART PHYSICAL and VIRTUAL SPACES
+ AI and IA

Using:

2. SCALE (external) *

- Staff on demand
- Community and crowd
- Algorithms
- Leased assets
- Engagement

3. IDEAS (internal) *

- Interfaces
- Dashboards
- Experimentation
- Autonomy
- Social

4. Score yourself at
http://www.exolever.com/public/assessment/welcome/exponentialorgs/

*** From Exponential Organizations** by Salim Ismail et. al

What do you remember from 2007-2008?

- Bank closures and bail outs
- Investment firms bail outs
- Housing foreclosures
- Stock market nose dive
- Recession
- …

DOW Jones
From http://www.macrotrends.net/

This also happened in 2007 *

iPhone was released by Apple
Cloud computing was begun by Amazon
facebook went beyond college campus
GitHub began
Kindle was released by Amazon
Twitter went global
Android was released by Google
Airbnb was founded
YouTube was bought by Google
Watson was begun by IBM

Hadoop was released
Software-enabled networking was launched by AT&T (for the iPhone)
Michael Dell returned to Dell
Palantir launched big data
Non-silicon materials in microchips by Intel ("saved" Moore's law)

Internet crossed 1B users
Change.org was released
DNA sequencing had a break-through
Clean energy movement took off
Fracking began

* From Tom Friedman's book "Thank You For Being Late"

What happened afterwards? (Key Trends)

Some key trends

- Exponential curves (compute, storage, networking)
- Everything is digitized (60% YOY data growth)
- Everything is connected (IoT)
- Everyone participates (Open Source, Social networking)
- Everything can be done on a smartphone
- Everyone get a digital assistant (Siri, Alexa, Google, Cortana)

- Next: everyone gains Intelligent Assistance (IA)
- Next: learn faster, be agile, grow smarter… all the time
- Next: put an "expire by" date on everything
- Next: transform workplace & workforce of the future

DOW Jones
From http://www.macrotrends.net/

In 10 years, what will we remember about 2017?

The companies on the prior page went from $1T to $3T Market Cap in 2017.

A few examples of new things that have we tried to evolve HOW we work *

- New organizational constructs (Principles and Goals tried by Tom)
- Crowd sourcing of ideas (JPL Pitch Day)
- Collecting best practices of improvements (SPARK)
- Encouraging sharing for developers (Open Development Forum, GitHub)
- External and Internal Hackathons (Search, Internet of Things, Parking Pitch, …)
- Open environments (167 Cafeteria, SmallSat Maker Space, B303 4th floor, Atelier, Innovation Experience Center, …)
- 3D Printing for everyone (Robotics Lab, Hub, B303, B301, many places)
- What else should we try?
  - Crowd Sourcing
  - What ideas do you have?

* For more examples, look at Innovation Ontology by Tom

Exponential Organizations Top 100

- There were no government or educational institutions on the top 100
- Most were new'ish companies:
  - 13 were founded before year 2000
  - 54 were founded between 2000-2010,
  - 23 were founded 2010 or later.
  - Only 2 were older than JPL (GE and The Guardian).
- Max score is 84. The highest scored 76 (GitHub). Number 100 scored 56 (Tesla).

Exponential Organizations Top 100 (cont.)

- The biggest gap between the average organization and the top 5 ExOs are in the following attributes (in order)
  - Small, decentralized teams vs. top-down hierarchies [Autonomy]
  - On-demand staff vs. full-time employees [Staff on Demand]
  - Specialized interfaces to manage externalities vs. standard operating procedure [Interfaces]
  - Massive Transformative Purpose vs. standard mission statement [MTP]
  - Actively use the Crowd [Community & Crowd]

Useful links

- http://top100.exponentialorgs.com/
- https://backchannel.com/here-are-the-secrets-of-unicorn-companies-c8951b99215b#.2hlnemgx9
- http://www.equitas-capital.com/2016/research/welcome-to-the-exponential-age-the-new-industrial-revolution/