



FinTech Security Innovation

Carlos S. Baradello, PhD



Conversation Themes

- Introduction
- Innovation: Acceleration
- FinTech: A Technology & Market Disruption
- Security: A MUST
- Putting all together
- Closing Reflection

Innovation

FinTech

Security

**From Science
Fiction to
Science Fact**

**De-Construction and
Re-Construction of
Financial Institutions**

**From Friction
To FLOW**

From Science Fiction to Science Fact

- 1. Digitalization**
- 2. Mobilization**
- 3. Personalization**
- 4. Disintermediation**
- 5. Anticipation**
- 6. Automation**
- 7. Virtualization**
- 8. Augmentation**
- 9. Datafication**
- 10. Cognification**
- 11. Platformation**
- 12. Robotization**

From Friction To FLOW

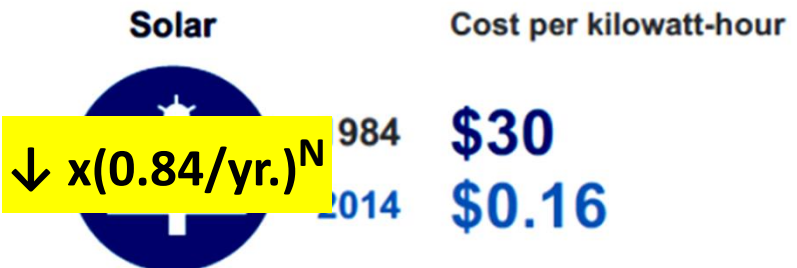
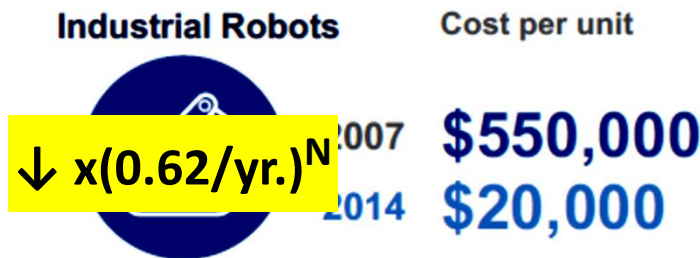
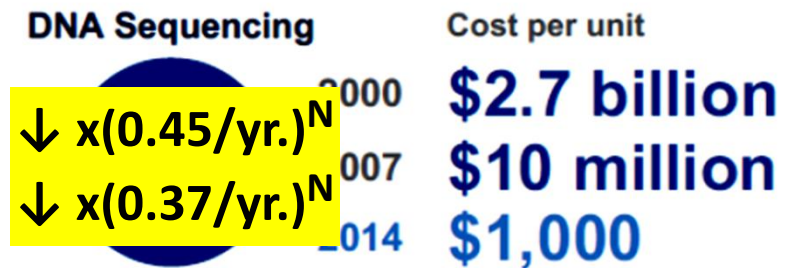
Mario Andretti (1940 -)

Formula 1, IndyCar, World Sportcar & NASCAR Winner

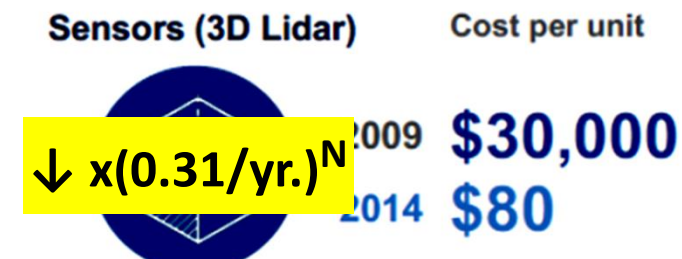
“If everything seems under control, you’re just not going fast enough”



Exponential Fall of the Cost of Key Technologies



Reduction Factor (Y)^N
 Y = reduction factor in one year
 N = number of years
 0 < Y < 1 and N is an integer > 1



Framing The Perfect Storm

**Established
Order of Things**



**New
Order of Things**

Framing The Perfect Storm

**Established
Order of Things**

Linear



**New
Order of Things**

Exponential

Framing The Perfect Storm

**Established
Order of Things**

Linear

Physical

ANALOG

DIGITAL

**50+ Years of
MOORE LAW**

**100+ Years of
METCALFE LAW**

**New
Order of Things**

Exponential

Virtual

Framing The Perfect Storm

**Established
Order of Things**

Linear

Physical

People

ANALOG

DIGITAL

**50+ Years of
MOORE LAW**

**100+ Years of
METCALFE LAW**

LOVE or HATE

**New
Order of Things**

Exponential

Virtual

Machine

Framing The Perfect Storm

**Established
Order of Things**

Linear

Physical

People

Ownership

ANALOG

DIGITAL

**50+ Years of
MOORE LAW**

**100+ Years of
METCALFE LAW**

LOVE or HATE

**SHARING
ECONOMY**

**New
Order of Things**

Exponential

Virtual

Machine

Access

Framing The Perfect Storm

Established Order of Things

Linear

Physical

People

Ownership

Scarcity

ANALOG

DIGITAL

50+ Years of
MOORE LAW

100+ Years of
METCALFE LAW

LOVE or HATE

**SHARING
ECONOMY**

Marginal
ZERO COST

New Order of Things

Exponential

Virtual

Machine

Access

Abundance



Framing The Perfect Storm

Established Order of Things

Linear

Physical/atoms

People

Ownership

Scarcity

Disconnected

ANALOG

DIGITAL

50+ Years of
MOORE LAW

100+ Years of
METCALFE LAW

LOVE or HATE

SHARING
ECONOMY

Marginal
ZERO COST

POWER OF
COMBINATORIAL

New Order of Things

Exponential

Virtual/bits

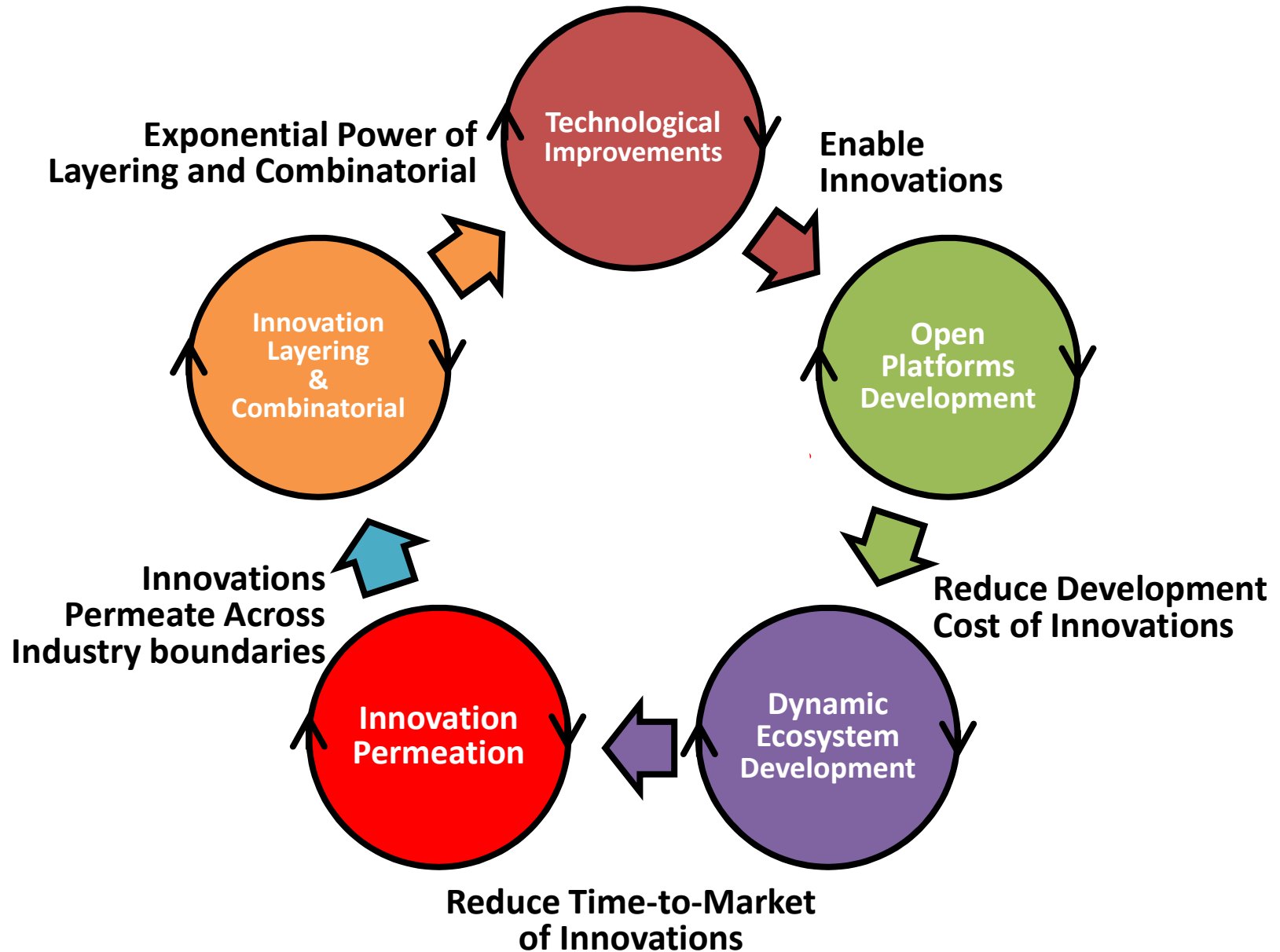
Machine

Access

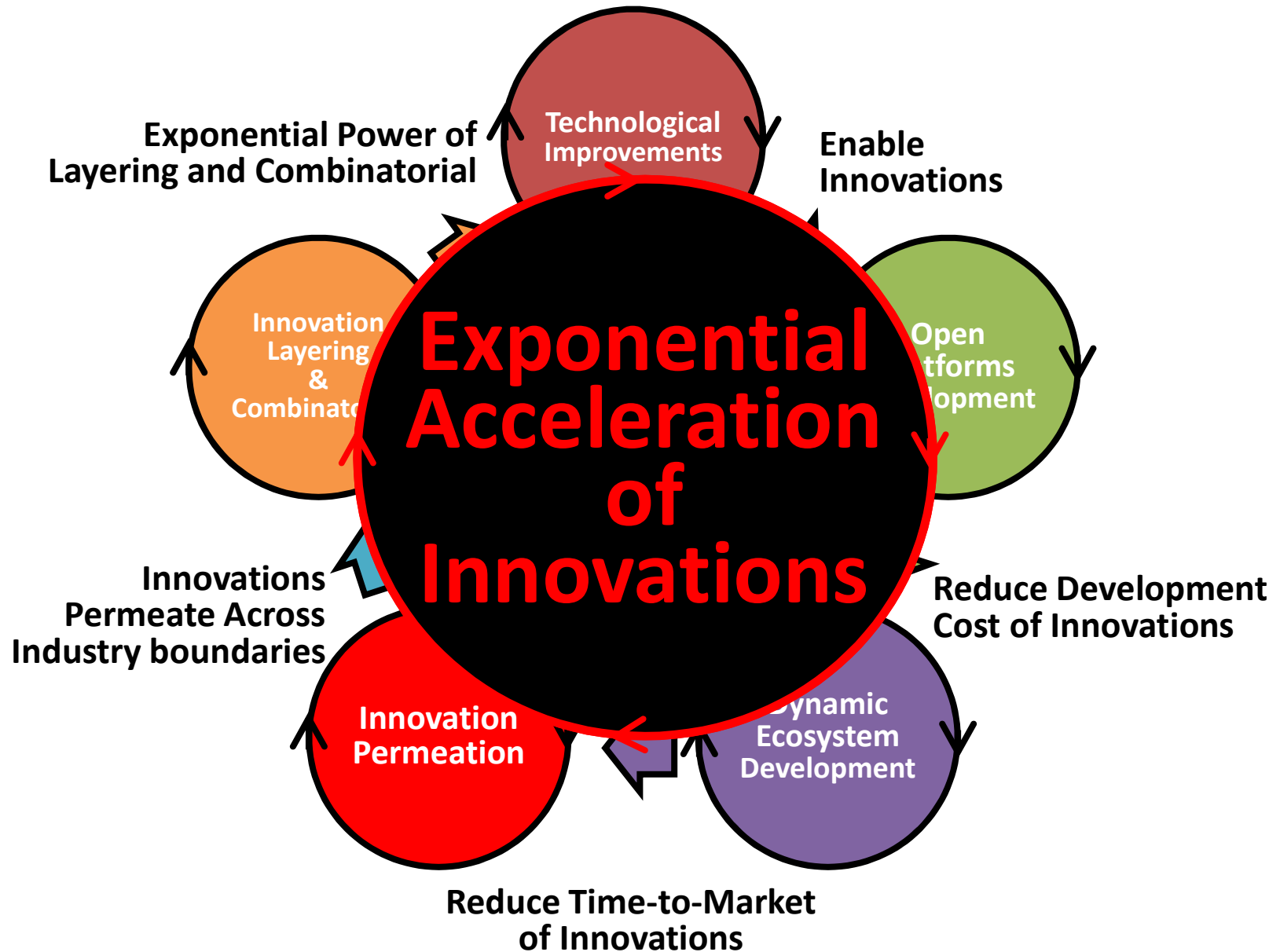
Abundance

Connected

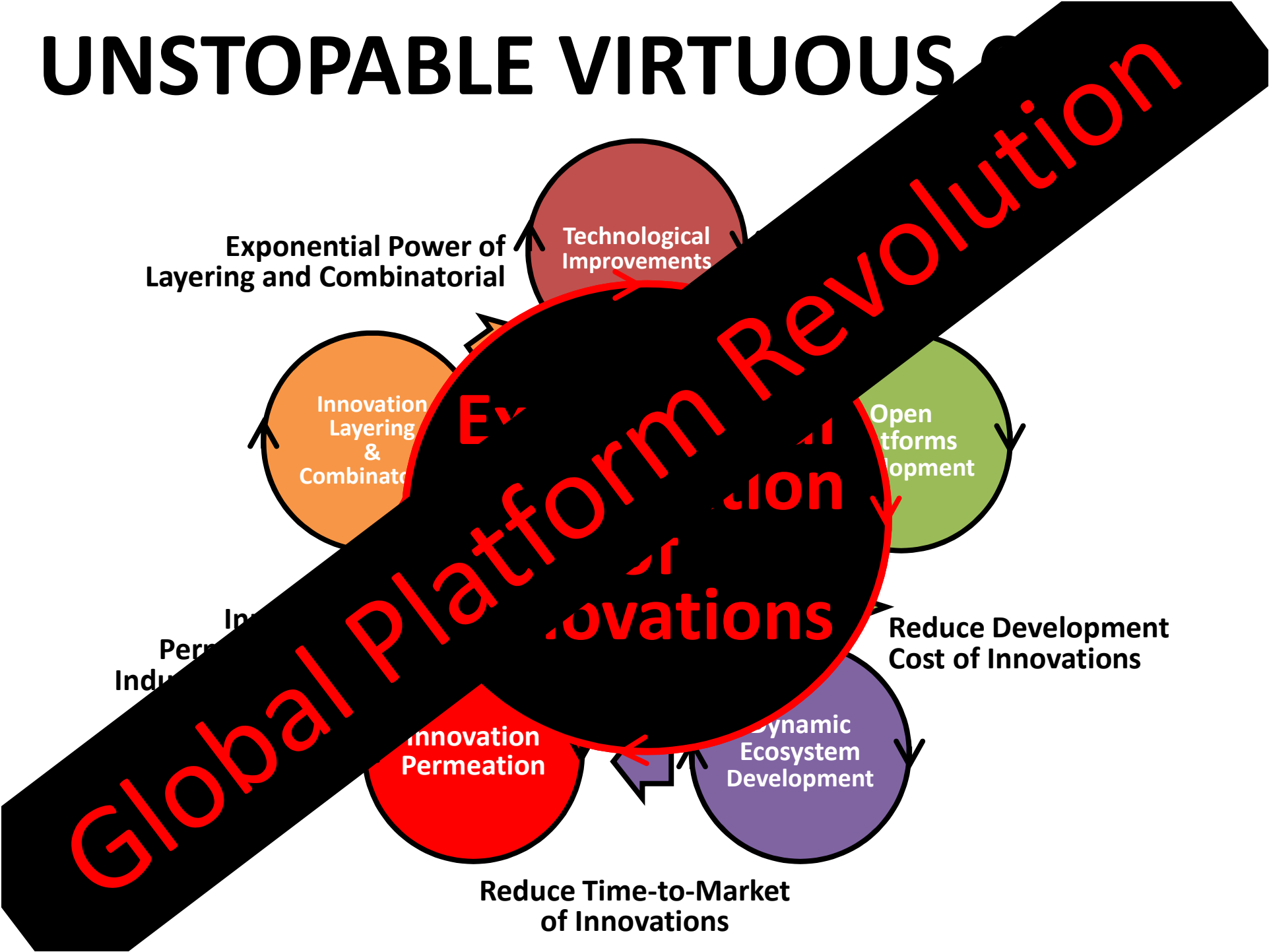
UNSTOPPABLE VIRTUOUS CIRCLE



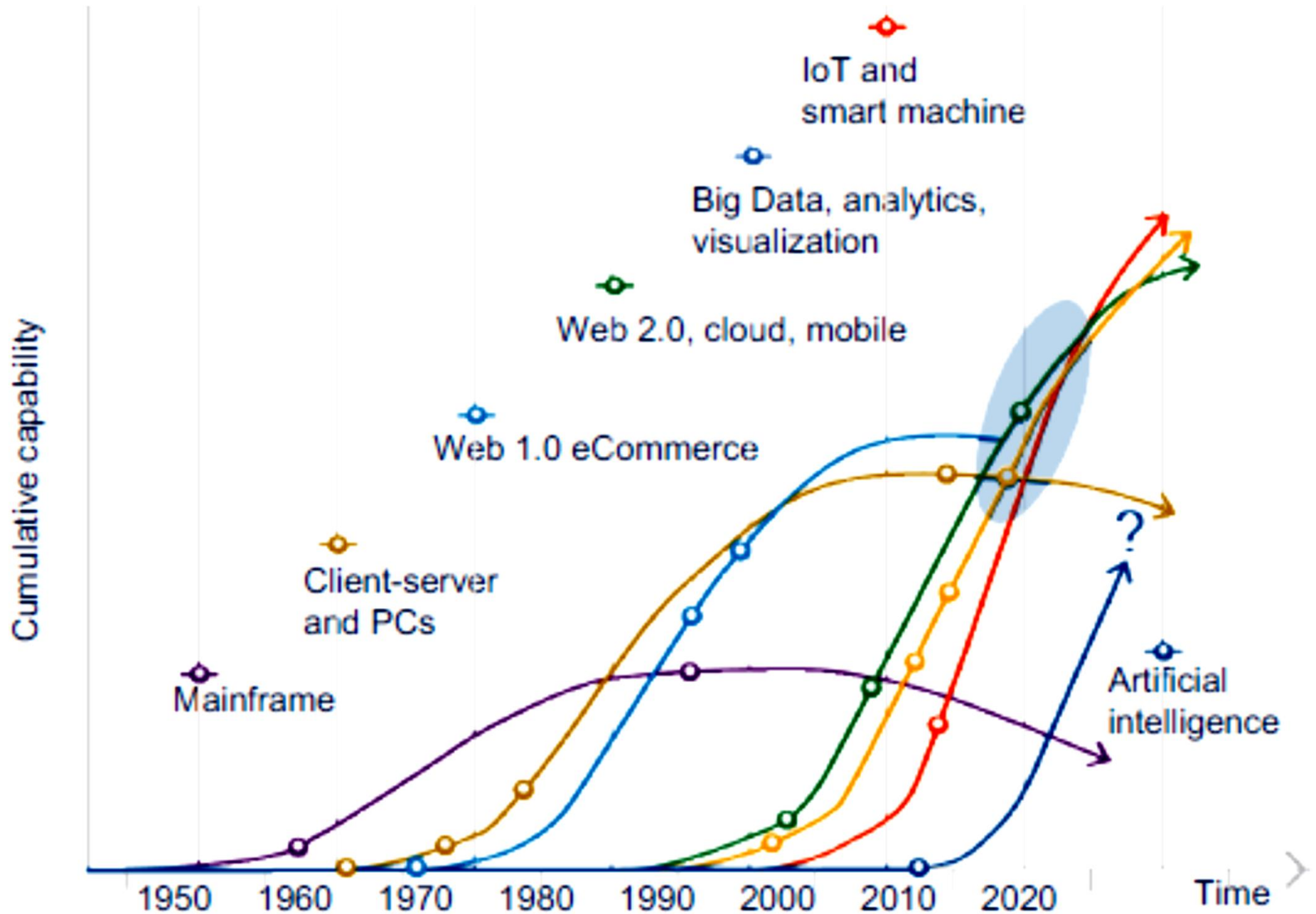
UNSTOPPABLE VIRTUOUS CIRCLE



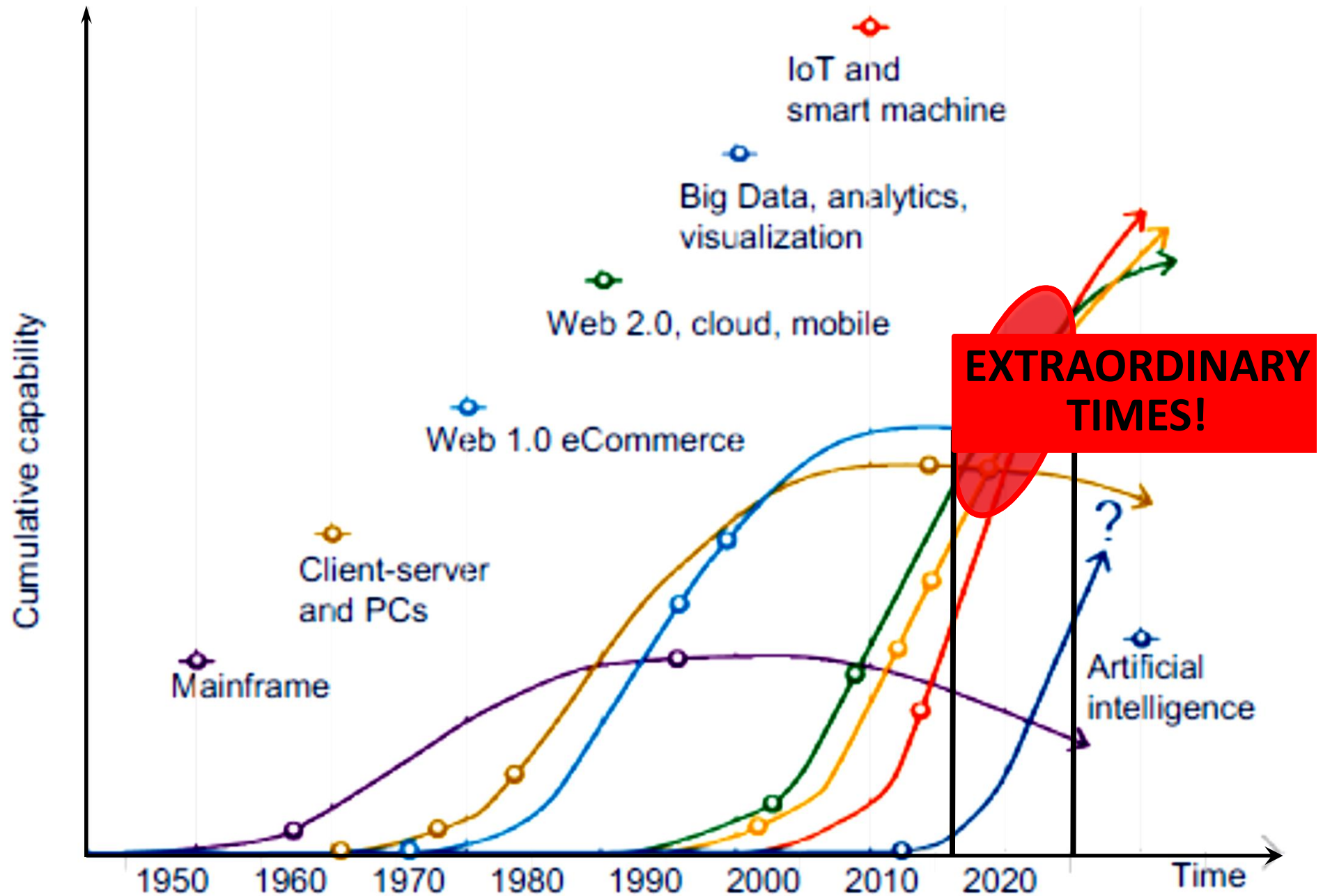
UNSTOPPABLE VIRTUOUS

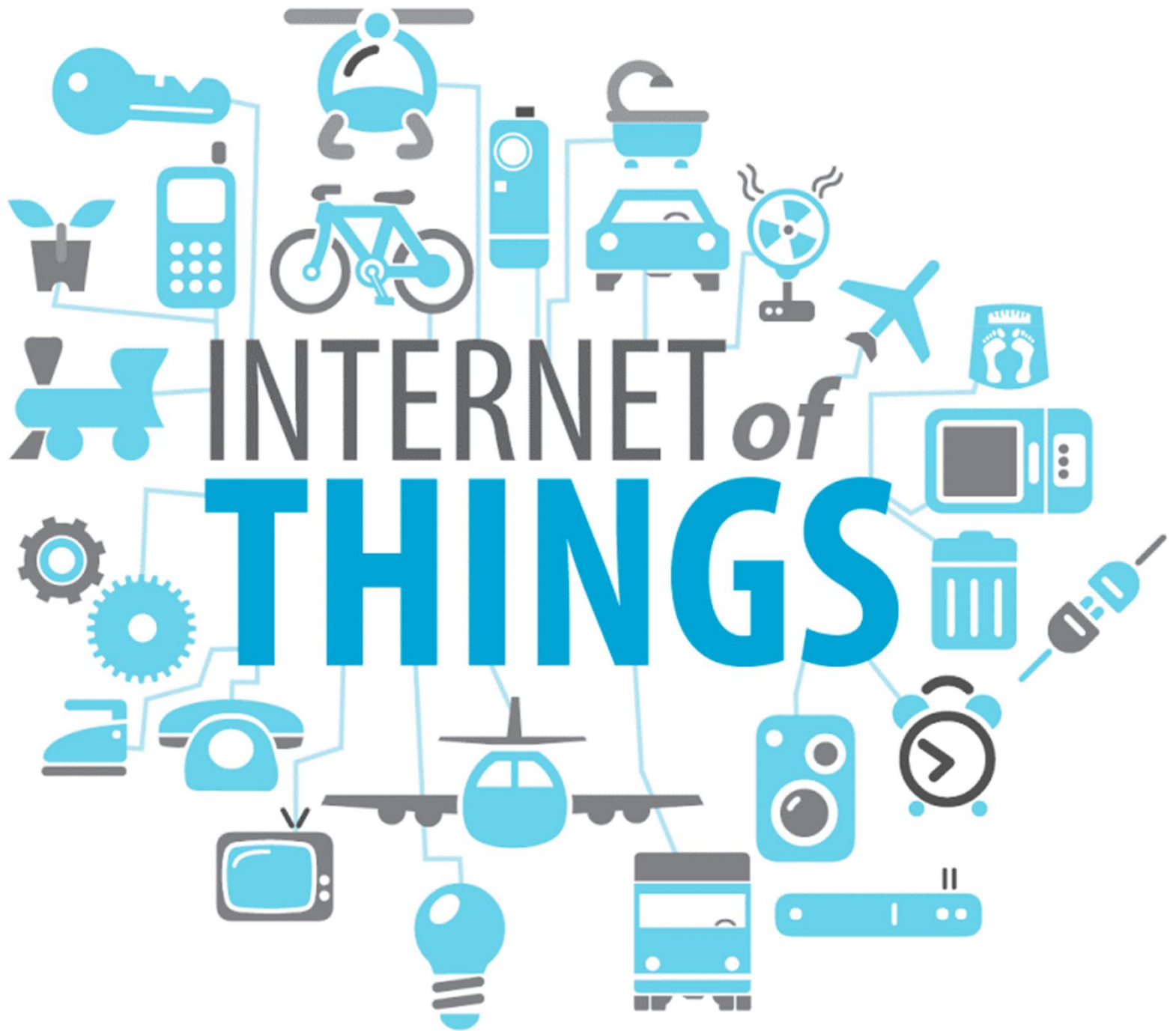


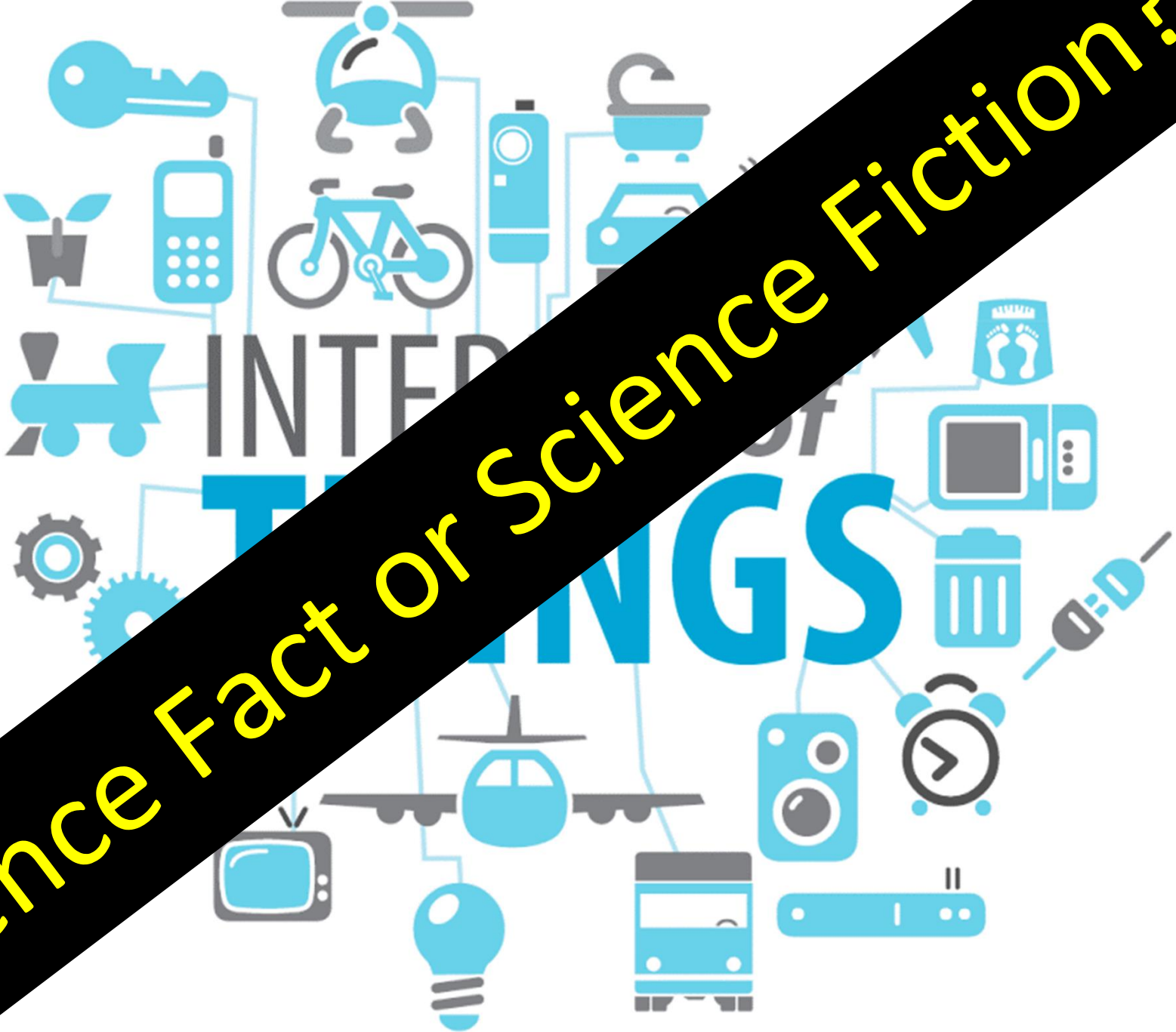
Waves of Technology Platforms Impacting our Lives



Waves of Technology Platforms Impacting our Lives







Science Fact or Science Fiction?

INTER
TINGS

Thomas Alva Edison (1847- 1931)

American inventor and businessman

“There's a way to do it better:
FIND IT!”

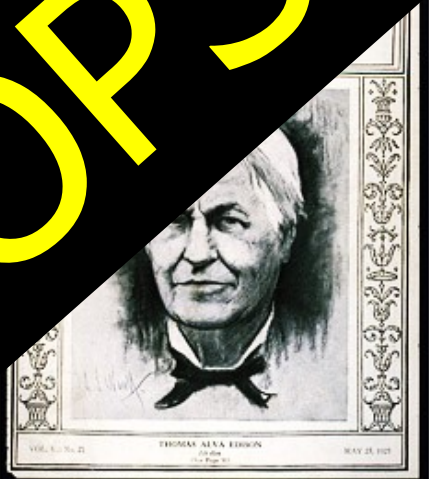


Thomas Alva Edison (1847-1931)

American inventor and businessman

“There is no royal
way
in
innovation!”

INNOVATION NEVER STOPS!

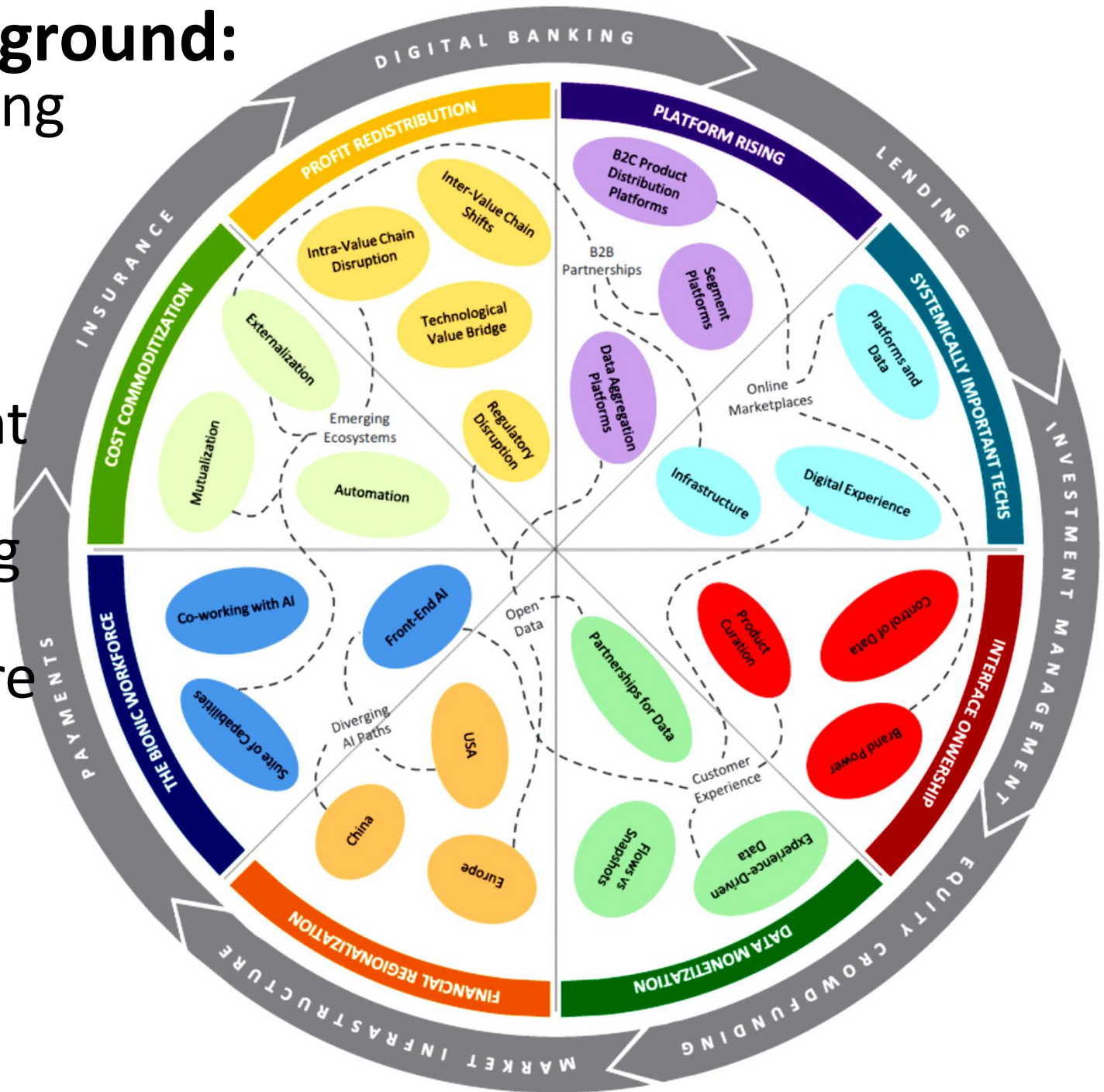


**Who will capture
these opportunities
and create new
value?:**

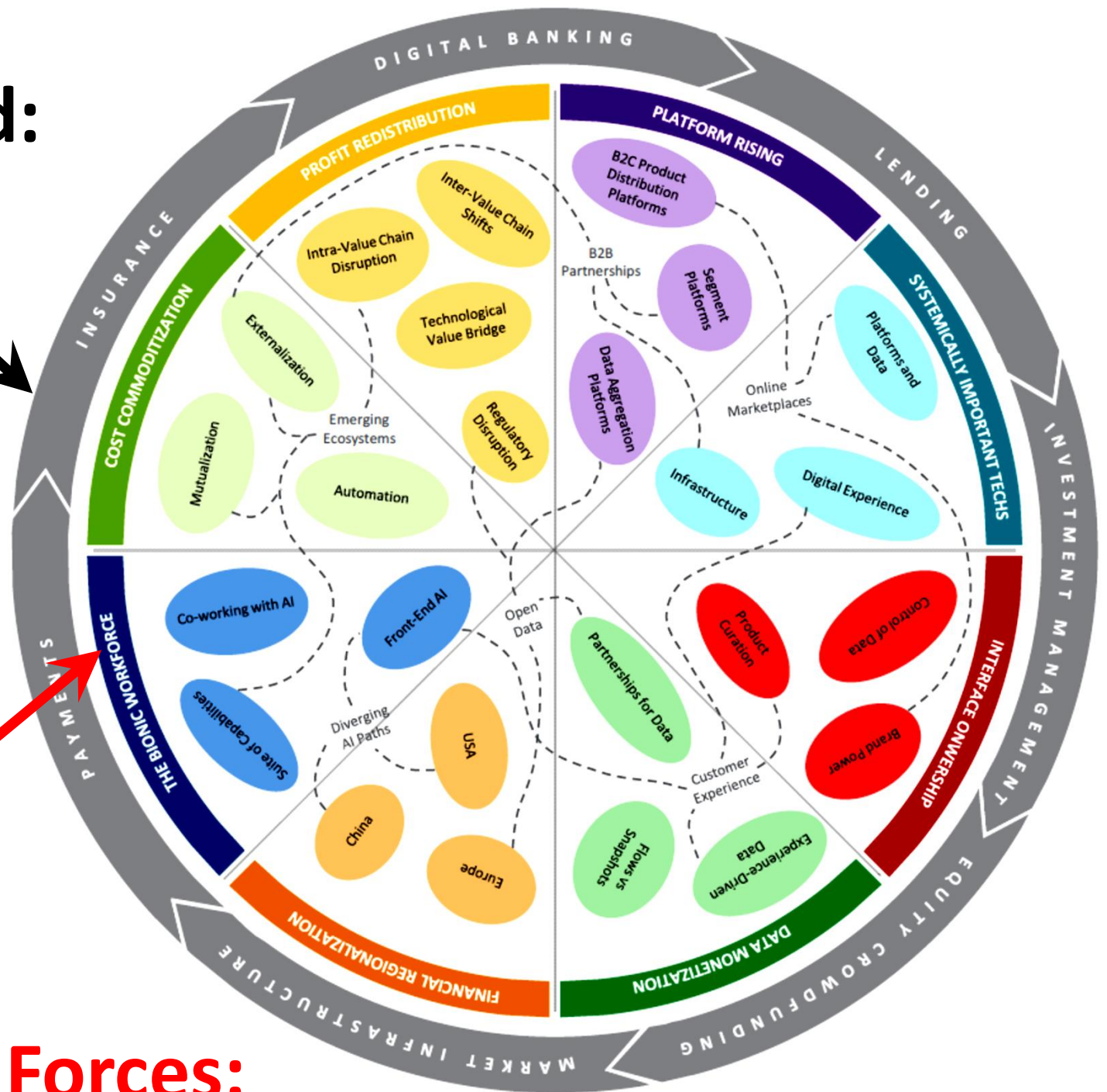
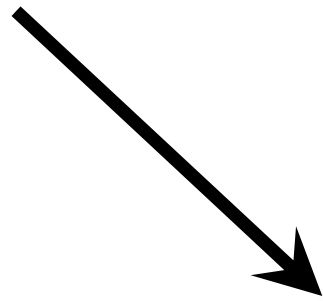
- 1. Established Firms?, or**
- 2. New Startups?**

FinTech Playground:

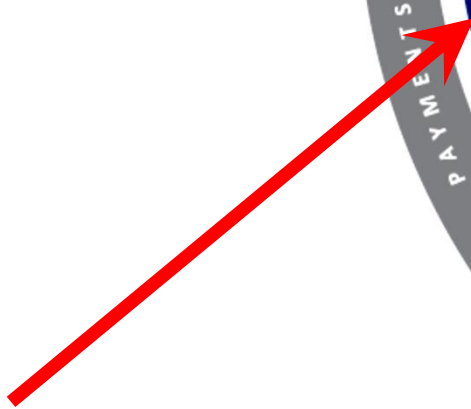
- Digital Banking
- Lending
- Insurance
- Payments
- Investments Management
- Equity Crowdfunding
- Market Infrastructure



FinTech Playground:



FinTech Disruptive Forces:



FinTech – Disruptive Forces

- 1. COST COMMODITAZATION:** acceleration of the commoditization of their strengths. cost basis, removing then as barriers to entry and competitive

IMPLICATION:

MUST CREATE NEW GROUNDS OF DIFFERENTIATION



Mutualization



Externalization



Automation

FinTech – Disruptive Forces

- 2. PROFIT RE-DISTRIBUTION:** Disruptive technologies and new partnerships will enable new entrants to bypass traditional value chains.

IMPLICATION:

RE-DISTRIBUTION OF TRADITIONAL PROFIT POOLS



Intra-Value Chain Disruption



Inter-Value Chain Shifts



Technological Value Bridge

FinTech – Disruptive Forces

3. **EXPERIENCE OWNERSHIP:** Who master and develops the best customer interface owns the customer.

IMPLICATION:

PURE PLAYERS MUST HYPER-SCALED AND HYPER-FOCUSED



Brand Opportunity



Product Curation



Control of Data

FinTech – Disruptive Forces

4. **PLATFORM RISING:** Platforms that deliver the experience integrating the services from different financial institutions in a single channel will become the dominant model for the delivery of financial services.

IMPLICATION:

NEW ENTRANTS WILL BE TECHNOLOGY PLAYERS ENABLED BY PLATFORMS + CUSTOMER EXPERIENCE



B2C Product Distribution Platforms



Segment Platforms



Data Aggregation Platforms

FinTech – Disruptive Forces

5. **DATA MONETIZATION:** Data will become the increasingly KEY for differentiation. Static data sets will be enriched by flows of data from multiple sources mixed and matched and used in real-time.

IMPLICATION:

DATA IS THE NEW OIL, INTELLIGENCE THE NEW GASOLINE



Flows vs Snapshots



Experience-Driven Data



Partnerships for Data

FinTech – Disruptive Forces

6. **BIONIC WORKFORCE:** Artificial Intelligence and deep machine learning enable increasingly machines (bots) to replicate human behaviors.

IMPLICATION:

FINANCIAL INSTITUTIONS WILL NEED TO MANAGE HUMAN CAPITAL AND MACHINE INFRASTRUCTURE INVESTMENTS AS A SINGLE SET OF CAPABILITIES.



Front-End AI



Coworking with AI



Suite of Capabilities

FinTech – Disruptive Forces

7. **SYSTEMIC DEPENDENCE:** Financial institutions look and feel alike, as they depend on large Tech Firms to provide the infrastructure.

IMPLICATION:

FINANCIAL INSTITUTIONS WILL NEED TO BALANCE THIS DEPENDENCE WITH INCREASED DIFFERENTIATION IN THEIR SERVICES AND EXPERIENCE.



Infrastructure



Platforms and Data



Digital Experience

FinTech – Disruptive Forces

8. **REGIONALIZATION:** Diverging regulatory priorities and customer needs will lead to financial services in different world regions to develop across different paths.

IMPLICATION:

GLOBALIZATION vs. LOCALIZATION WILL ADD TO THE COST STRUCTURE AND WILL SPLIT FINANCIAL INSTITUTIONS TO GLOBAL OR LOCAL PLAYERS.



Europe



China



USA

Looking into the Future: Today's Industry Leaders

Deutsche Bank  VISA  HSBC  Deloitte

 STANDARD & POOR'S
RATINGS SERVICES
McGRAW HILL FINANCIAL

 State Farm™

 WESTERN UNION WU

 Morgan
Stanley

 BARCLAYS

 XL
XL Group
INSURANCE
REINSURANCE

 Bank of America
Merrill Lynch

 TD

 DTCC
The Depository Trust &
Clearing Corporation

LLOYDS BANK



Standard
Chartered 

 AIG

Munich RE 

 Deutsche Börse Group

MORNINGSTAR

 cfpb
Consumer Financial
Protection Bureau

 UBS

BLACKROCK

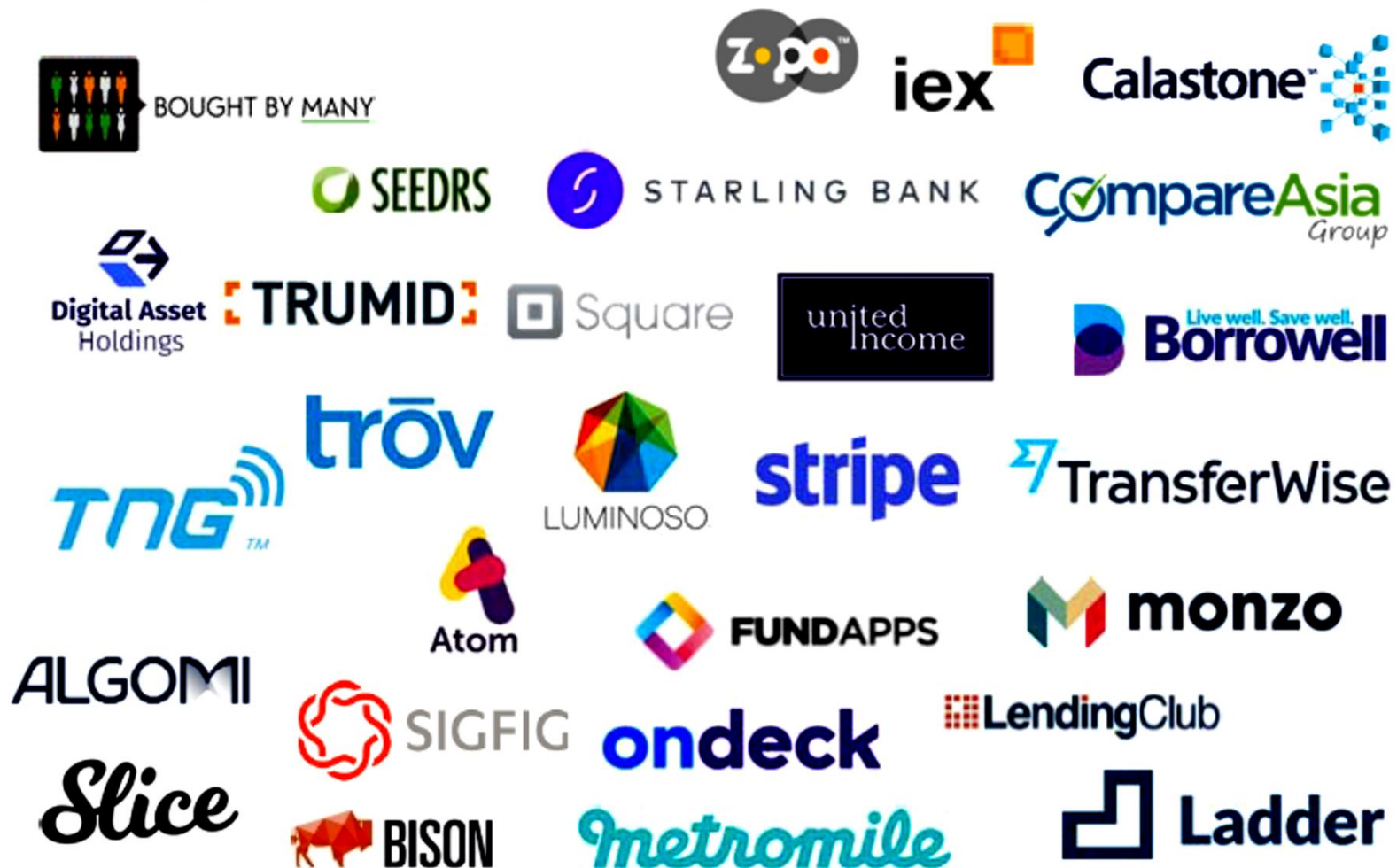
ING 

 citi 

 Fidelity
INVESTMENTS

 JPMorganChase

Looking into the Future: Today's Innovators... Tomorrow's Leaders?





GLOBAL UNICORN CLUB: 185 PRIVATE COMPANIES VALUED AT \$1B+ MARKET MAP as of 2/1/2017

E-COMMERCE/ MARKETPLACE

SOCIAL

INTERNET SOFTWARE & SERVICES

FINTECH

CYBERSECURITY

ON-DEMAND

BIG DATA

HEALTHCARE

MEDIA

HARDWARE

MOBILE SOFTWARE & SERVICES

REAL ESTATE

OTHER



GLOBAL UNICORN CLUB: 185 PRIVATE COMPANIES VALUED AT \$1B+ MARKET MAP as of 2/1/2017

E-COMMERCE/ MARKETPLACE

Grid of logos for E-commerce/Marketplace companies including: Africa Internet Group, Airbnb, 爱屋吉屋, AUTO1 GROUP, 贝贝网, Blue Apron, Coup, FARFETCH, 苏宁易购, 瓜子二手车直卖网, Lianjia, Eventbrite, Houzz, 酒仙网, 口袋购物, Mercari, 蜜芽, NewBoda, 美团, VANCL, 凡客诚品, WARBY PARKER, 微票儿, Wish, 小红书.

INTERNET SOFTWARE & SERVICES

Grid of logos for Internet Software & Services companies including: Anaplan, 知乎, APTTUS, AUTOMATA, DocuSign, FANR, GitHub, Glassdoor, Hootsuite, Infor, Zeta, Zoom.

ON-DEMAND

Grid of logos for On-Demand companies including: BlaBlaCar, ele.me, Careem, GOJEK, Instacart, GRABTAXI, 滴滴, 中国惠民, Lyft, OLA, UBER.

BIG DATA

Grid of logos for Big Data companies including: Octifio, Cloudera, Domo, INSIDESALES.COM, MarkLogic, mongoDB, OVH.com, Palantir, UPTAKE, Mu Sigma.

HARDWARE

Grid of logos for Hardware companies including: carbon3D, Datto, DJI, INFINIDAT, JAWBONE, RAZER, ROYOLE, MEIZU, UBTECH, 小米, 掌阅科技.

MOBILE SOFTWARE & SERVICES

Grid of logos for Mobile Software & Services companies including: APUS, Garena, ironSource, SHAZAM, yello mobile.

REAL ESTATE

Grid of logos for Real Estate companies including: COMPASS, GLOBAL SWITCH, Mofang, WORK, OPENDOOR, wework.

FINTECH

Grid of logos for Fintech companies including: 51信用卡, 凡信, AVAN, CreditEase, GreenSky, GUSTO, Kabbage, Kiarna, 众安保险, stripe.

HEALTH

Grid of logos for Health companies including: Bluebird bio, CUREVAC, FLATIRON, 强生, Zdoc.

SOCIAL

Grid of logos for Social companies including: hike, kik, 蘑菇街, Nextdoor, Pinterest, snapchat, sprinklr, Tango, viko.com, 一下科技, zomato.

CYBERSPACE

Grid of logos for Cyberspace companies including: Lookout, OKTA, TANIUM.

MEDIA

Grid of logos for Media companies including: BuzzFeed, STX ENTERTAINMENT, VICE, VOX MEDIA.

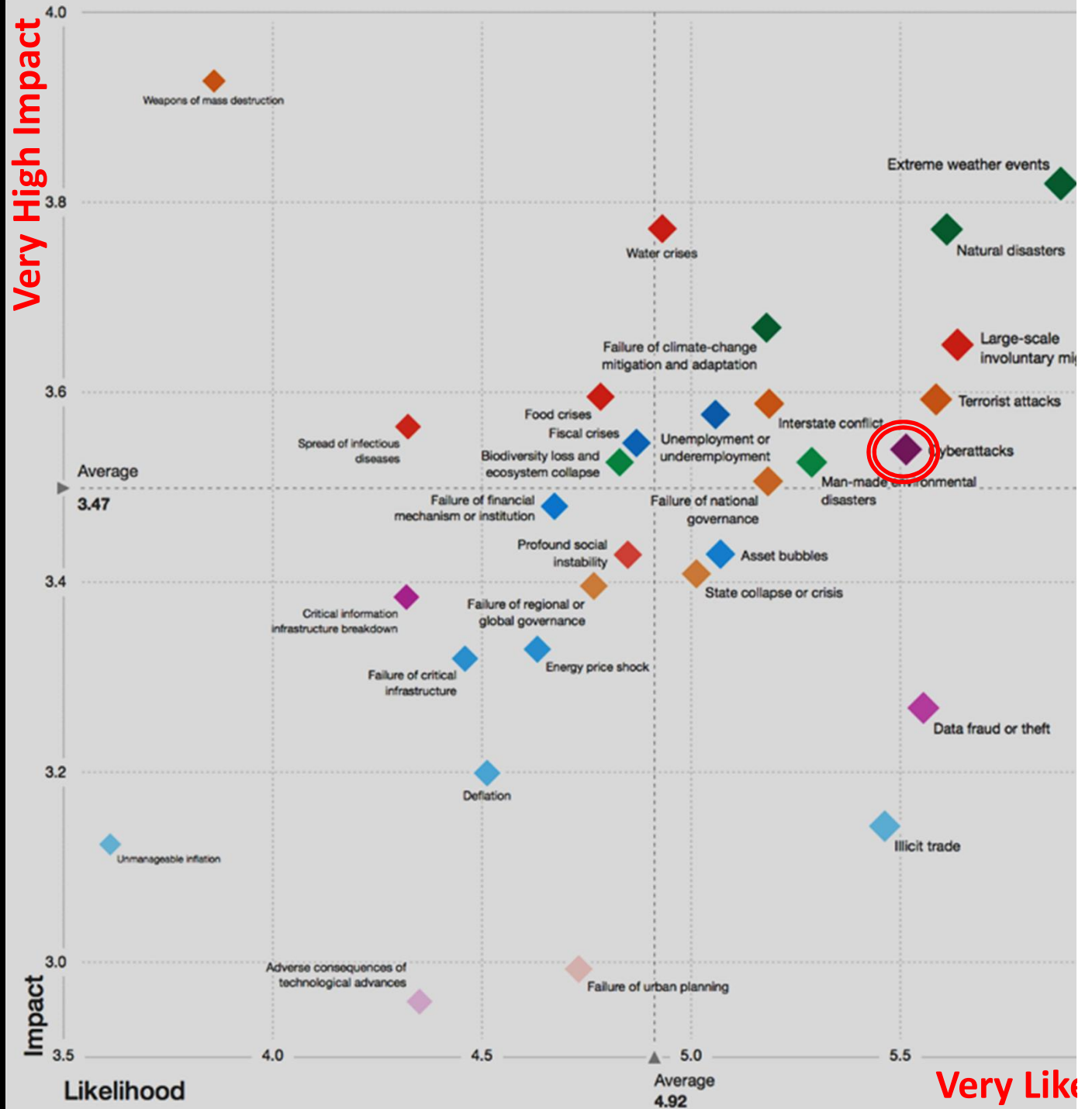
OTHER

Grid of logos for Other companies including: appnexus, INMOBI, PASHI, magic leap, KENDRA SCOTT, Age of Learning, i TutorGroup, mindmaze, PROMASIDOR, PLURALSIGHT, 猎聘网, SPACEX, LifeMiles, PROCORE, unity, decolar.com, QUANERGY, CJ, ZIX, Bloomenergy, 货车帮.

Ciber-Attacks

--

One of the Highest Global Risks



IS YOUR DATA SECURE?

Selected data breaches by number of: ■ Accounts/cards ■ Customers

COMPANY	SIZE OF BREACH	YEAR
Yahoo*	1 billion	2016
Yahoo*	500 million	2016
Equifax	143	2017
Heartland Payment Sys.	130	2009
LinkedIn	117	2016
Sony	100	2011
TJX	90	2007
Anthem	80	2015
J.P. Morgan	76†	2014
Target	70‡	2013
Home Depot	56	2014

*Believed to be separate incidents †Millions of households ‡Initial disclosure

Source: the companies

THE WALL STREET JOURNAL.

New Channels Present New Security challenges

- **Redes Sociales:** Filtración de datos sensibles
- **Mobile:** Ataques desde dispositivos legítimos
- **Big Data y Analytics:** Mayor complejidad y capacidad de almacenamiento, suscripción a las regulaciones acerca datos personales
- **Nube:** Controlar la seguridad es mas complejo ya que el perímetro se ha diluido
- **Internet de las cosas (IoT):** La cantidad de dispositivos a proteger demanda seguridad en una escala mucho mayor

Security -- Strategic Element of the Digital Transformation of the Firm

- **Gobernabilidad:** La seguridad como parte de la estrategia corporativa,
- **Marcos Regulatorios:** Fomentar la colaboración más allá de la organización,
- **Operaciones:** Establecer un centro de operación de ciberseguridad para afrontar las crecientes amenazas,

Security -- Strategic Element of the Digital Transformation of the Firm

- **Manejo de Crisis:** Lograr responder rápidamente para minimizar el impacto en las operaciones,
- **Manejo de Riesgo:** Focalizarse en mitigar las amenazas de seguridad según el riesgo que representan,
- **Factor Humano:** Crear una cultura corporativa mas sensibles a las temáticas de seguridad

Closing Reflections



VOLATILITY



UNCERTAINTY



COMPLEXITY

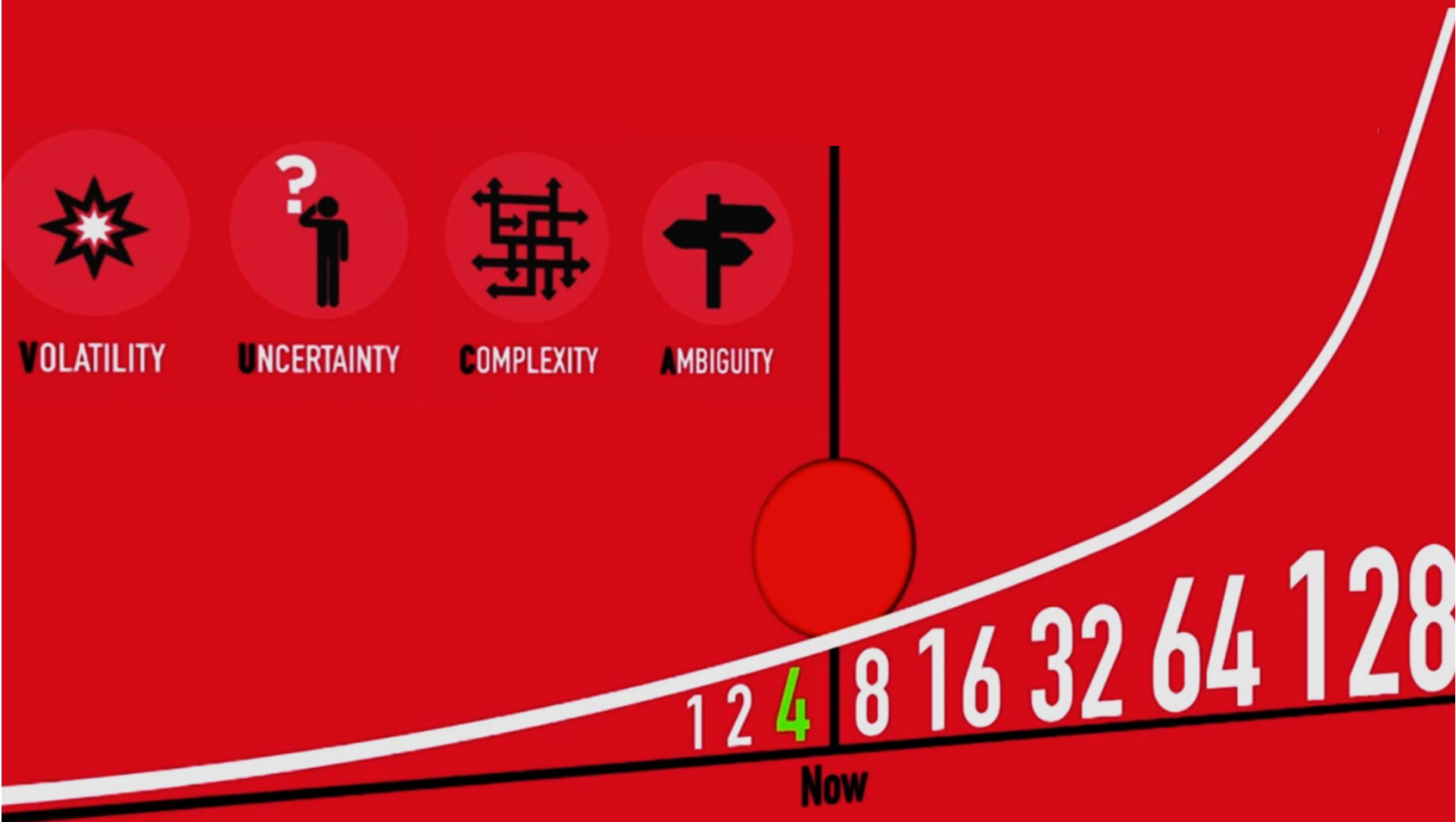


AMBIGUITY



1 2 4 8 16 32 64 128

Now





ATREVERSE más de lo que lo
otros piensan que es **SABIO**

ESPERAR más de lo que otros
piensan que es **PRÁCTICO**

ARRIESGAR más que lo que
otros piensan que es **SEGURO**

SOÑAR más de lo que otros
piensan que es **POSIBLE**

Thank you!

Carlos S. Baradello, PhD

Tel. +1 (415) 342-6663

E-mail: carlos@sausalitoventures.com

Blog: www.carlosbaradello.com

Firm: www.SausalitoVentures.com



More References

Sausalito Ventures presentation:

<http://prezi.com/lz3xhnhyye5k/sv-global-scaling/>

C Baradello Presentation of “DNA of an Entrepreneur”:

http://prezi.com/smagwjn_7eqt/?utm_campaign=share&utm_medium=copy&rc=ex0share

C Baradello Presentation “Top 10 Requirements for Foreign Entrepreneurs”

http://prezi.com/zf0vg6_rhuci/top-10-rules-for-foreign-entrepreneurs/

C Baradello video of the presentation “Success Favors the Prepared Mind”:

<https://www.youtube.com/watch?v=BmFhJLEUtHo>

More References about Megatrends

Five Megatrends and Implications -- PWC NOV 2016

<https://www.pwc.com/gx/en/government-public-services/assets/five-megatrends-implications.pdf>

The Upside of Disruption -- Megatrends Shaping 2016 -- EY 2016

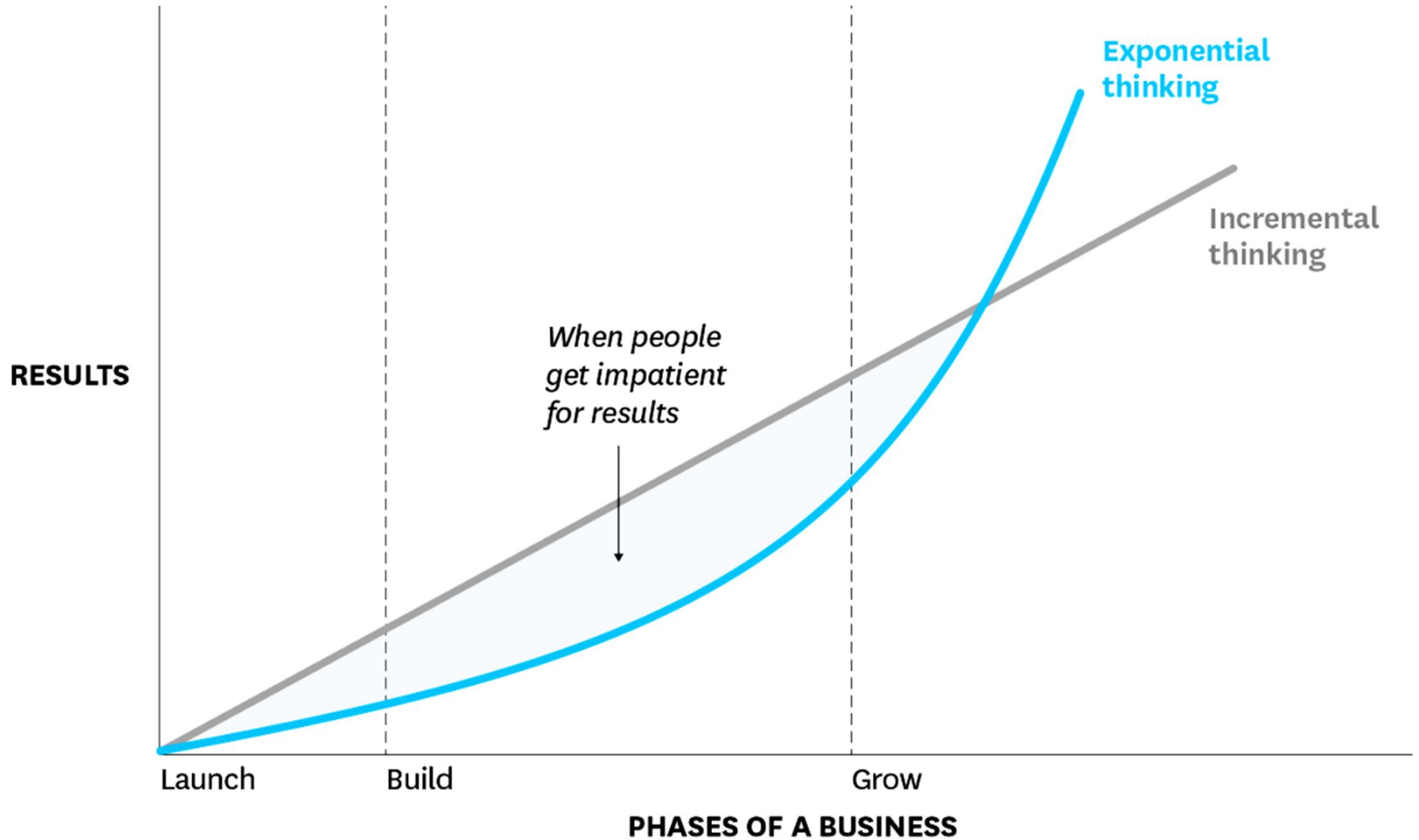
[http://www.ey.com/Publication/vwLUAssets/ALL_TLs_Temmuz_2016/\\$FILE/2016_TL_monthly_report_July.pdf](http://www.ey.com/Publication/vwLUAssets/ALL_TLs_Temmuz_2016/$FILE/2016_TL_monthly_report_July.pdf)

Frost & Sullivan – 2025 Megatrends

<http://www.investinbsr.com/ipaforum/wp-content/uploads/Iain-Jawad-IPA-Forum-2014-Presentation.pdf>

Exponential Trends

INCREMENTAL VS. EXPONENTIAL



INCREMENTAL vs. EXPONENTIAL



INCREMENTAL vs. EXPONENTIAL



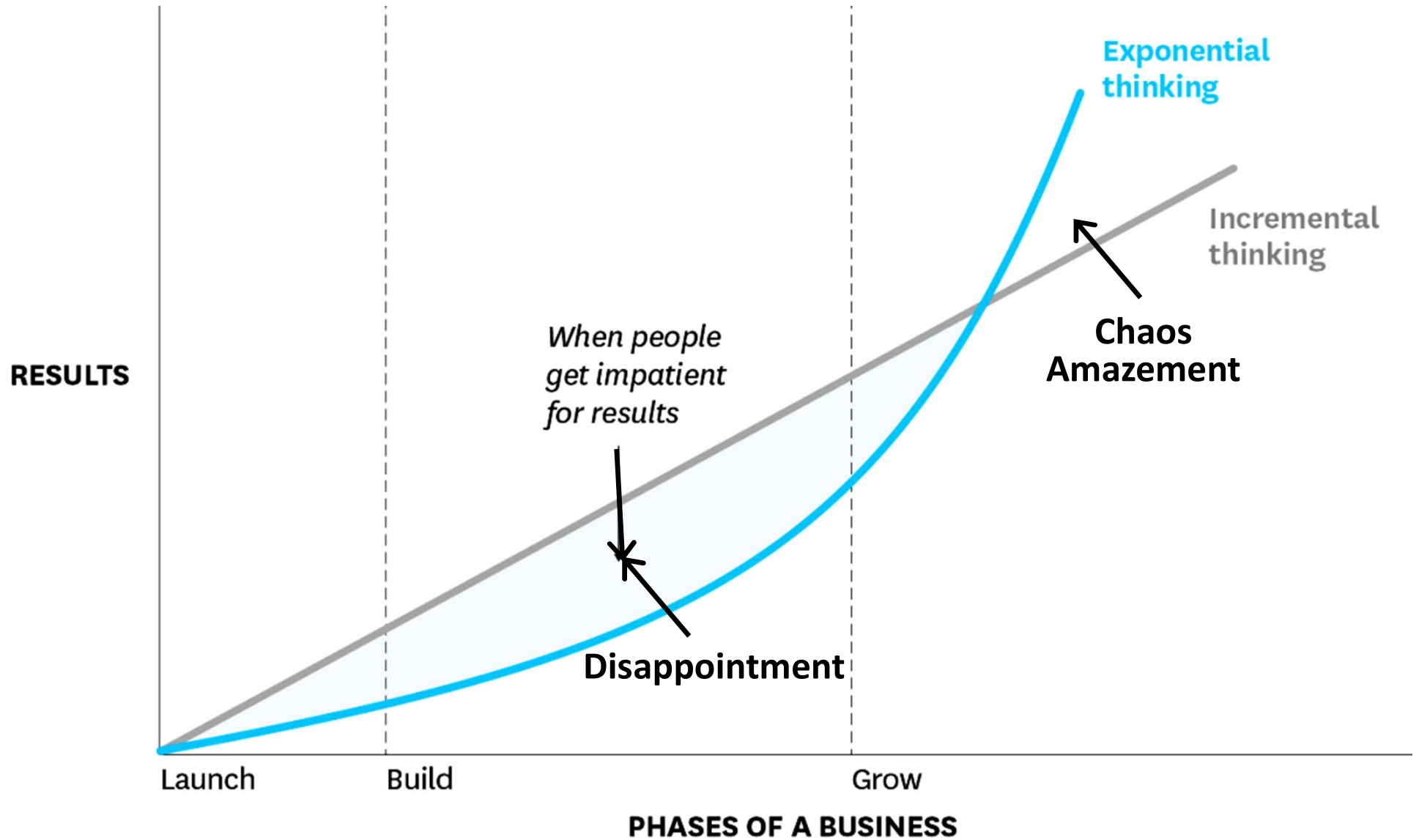
Linear vs. Exponential
Technology Leverage

2080 vs. 2^{64}

INCREMENTAL vs. EXPONENTIAL



INCREMENTAL vs. EXPONENTIAL



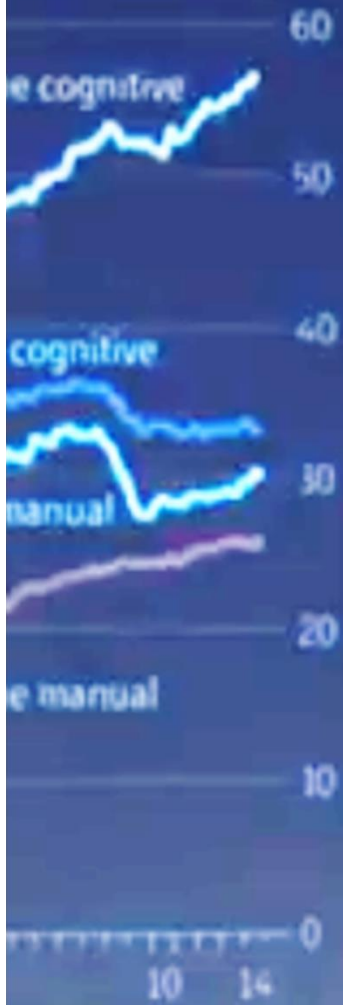
**Exponential Deception
vs.
Exponential Thinking** 

**Steady vs. Accelerated
RESULTS**

**10% vs. X10
INCREASES**

TOP 10 SKILLS IN 2020

type of work, m



- | | | | | |
|--|---|--|--|--|
| 1 | 2 | 3 | 4 | 5 |
|  |  |  |  |  |
| Complex Problem Solving | Critical Thinking | Creativity | People Management | Coordination with Others |
| 6 | 7 | 8 | 9 | 10 |
|  |  |  |  |  |
| Emotional Intelligence | Judgement and Decision Making | Service Orientation | Negotiation | Cognitive Flexibility |

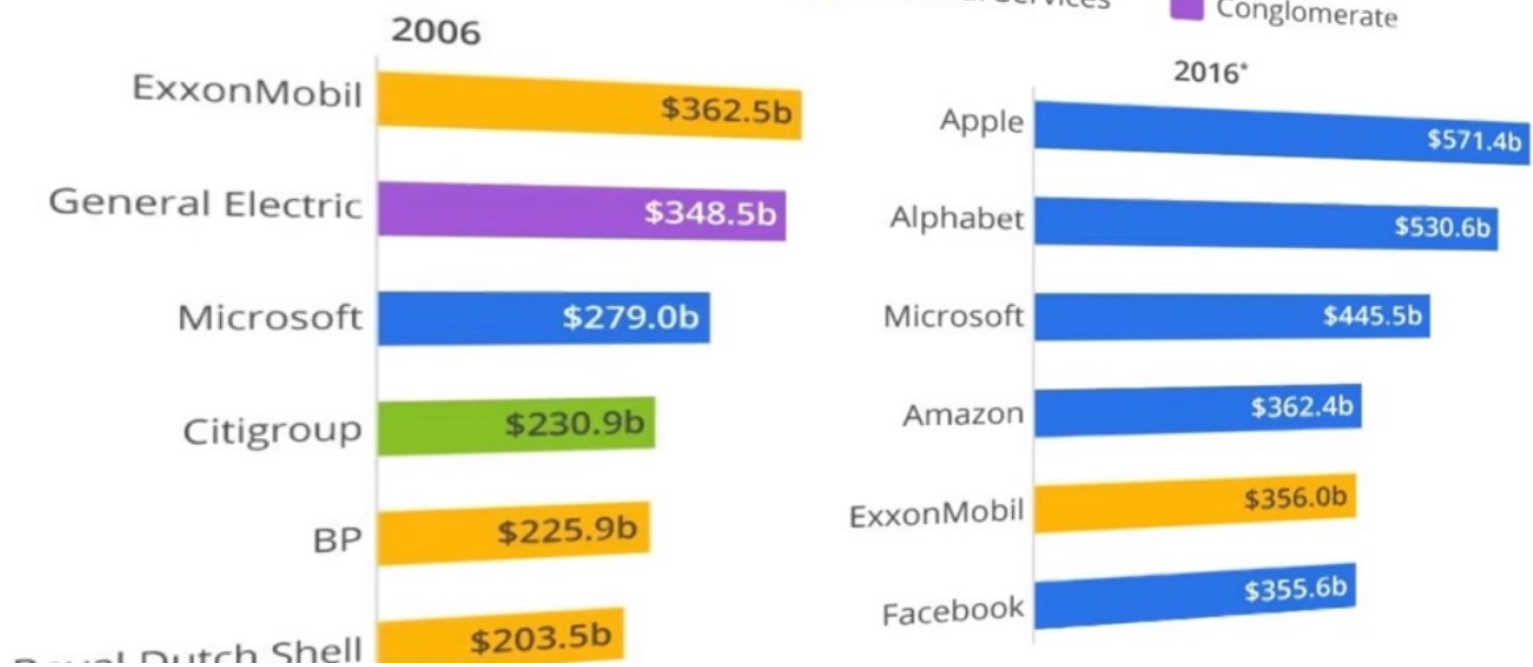
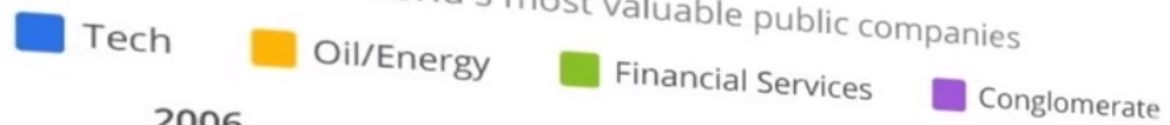
<http://www.weforum.org/publications/4th-2015>

SOURCE: WORLD ECONOMIC FORUM



The Age of Tech

Market capitalization of the world's most valuable public companies



CONNECTED APPS & PROCESS

SMART CONSUMER/USER (86)

FACILITATIVE REALITY (22)

CONNECTED HOMES (23)

SHARED ECONOMY (15)

SMART HEALTH (16)

CONNECTED CARS (10)

SMART ENTERPRISE (81)

UTILITIES (3)

TRANSPORTATION (14)

RETAIL (14)

GOVERNMENT (0)

BUILDING & CONSTRUCTION (4)

MANUFACTURING (8)

HEALTH-CARE (33)

OIL & GAS / ENERGY (8)

CONNECTED INTELLIGENCE

SMART DATA (161)

BIG DATA (45)

DATA SECURITY (40)

AI & MACHINE LEARNING (70)

PRIVACY & ACCESS (6)

SMART CLOUD (85)

CLOUD LIFE CYCLE (7)

DATA CENTER (19)

EVENT & CLOUD INTEGRATION (14)

DATA SECURITY (35)

IaaS (7)

PAAS (3)

CONNECTED EDGE

CONNECTED & AUTONOMOUS THINGS (60)

WEARABLES (24)

VEHICLES (10)

DRONES (7)

MACHINES (11)

ROBOTS (8)

SMART NETWORKS (60)

VPN/NETWORK SECURITY (30)

ETHERNET WIRED (14)

SATELLITES (6)

PLATFORMS (9)

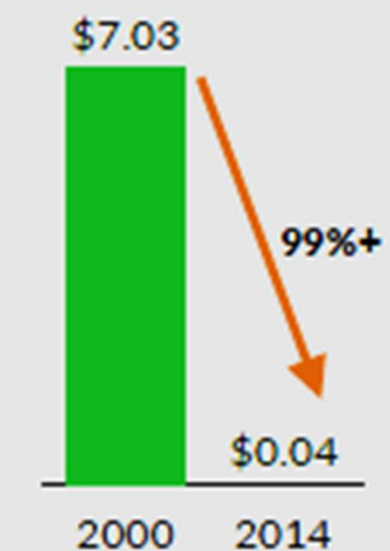
WIFI (1)

CELLULAR (0)

New Technology Fundamentals: Rapidly Declining Costs

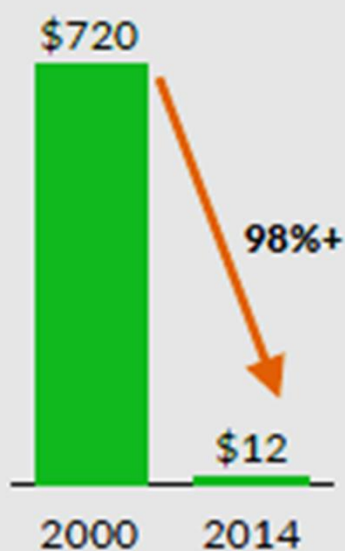
Cost of Computing, Bandwidth, and Data Storage, 2000 vs. 2014

Cost of Computing



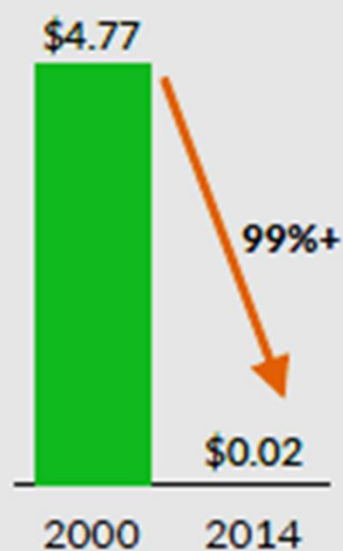
Per Million Transistors

Cost of Bandwidth



Per Thousand Mbps

Cost of Storage



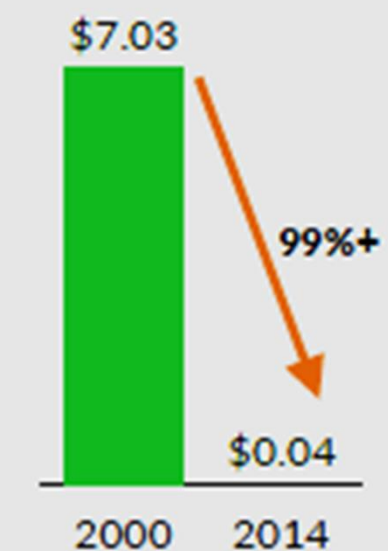
Per GB

Source: Deloitte

New Technology Fundamentals: Rapidly Declining Costs

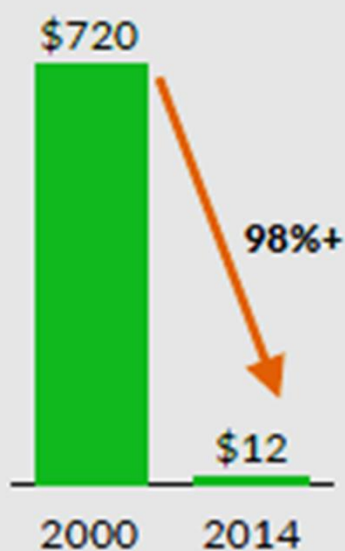
Cost of Computing, Bandwidth, and Data Storage, 2000 vs. 2014

Cost of Computing



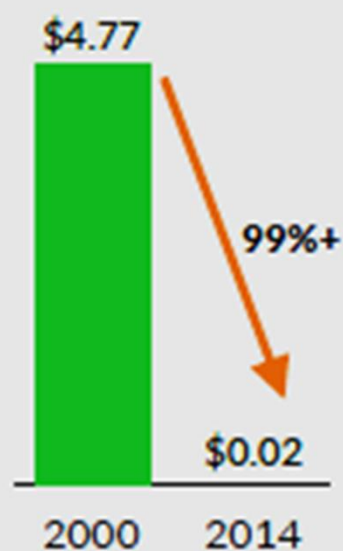
Per Million Transistors

Cost of Bandwidth



Per Thousand Mbps

Cost of Storage



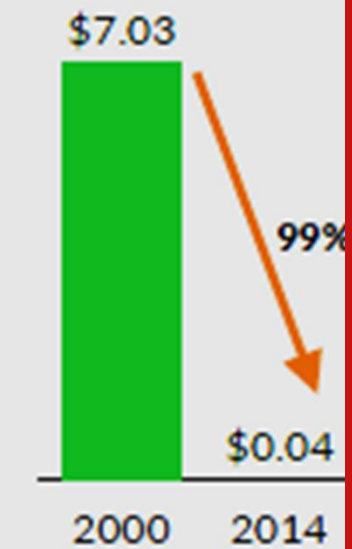
Per GB

Source: Deloitte

New Technology

Cost of Computing, E

Cost of Comput



Per Million Transisto

Source: Deloitte

Storage Costs

Storage



GB

MOORE'S LAW

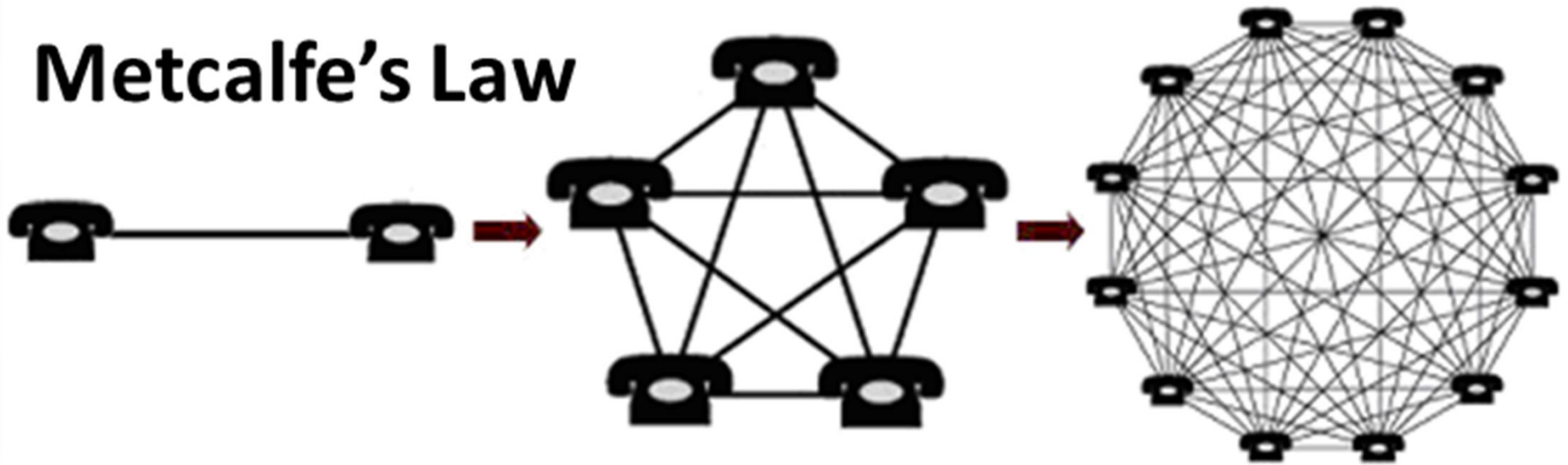
50

YEARS

The “Digital Tracks” have been laid....


Global Indicator	2000	▶	2016
------------------	------	---	------

Metcalfe's Law

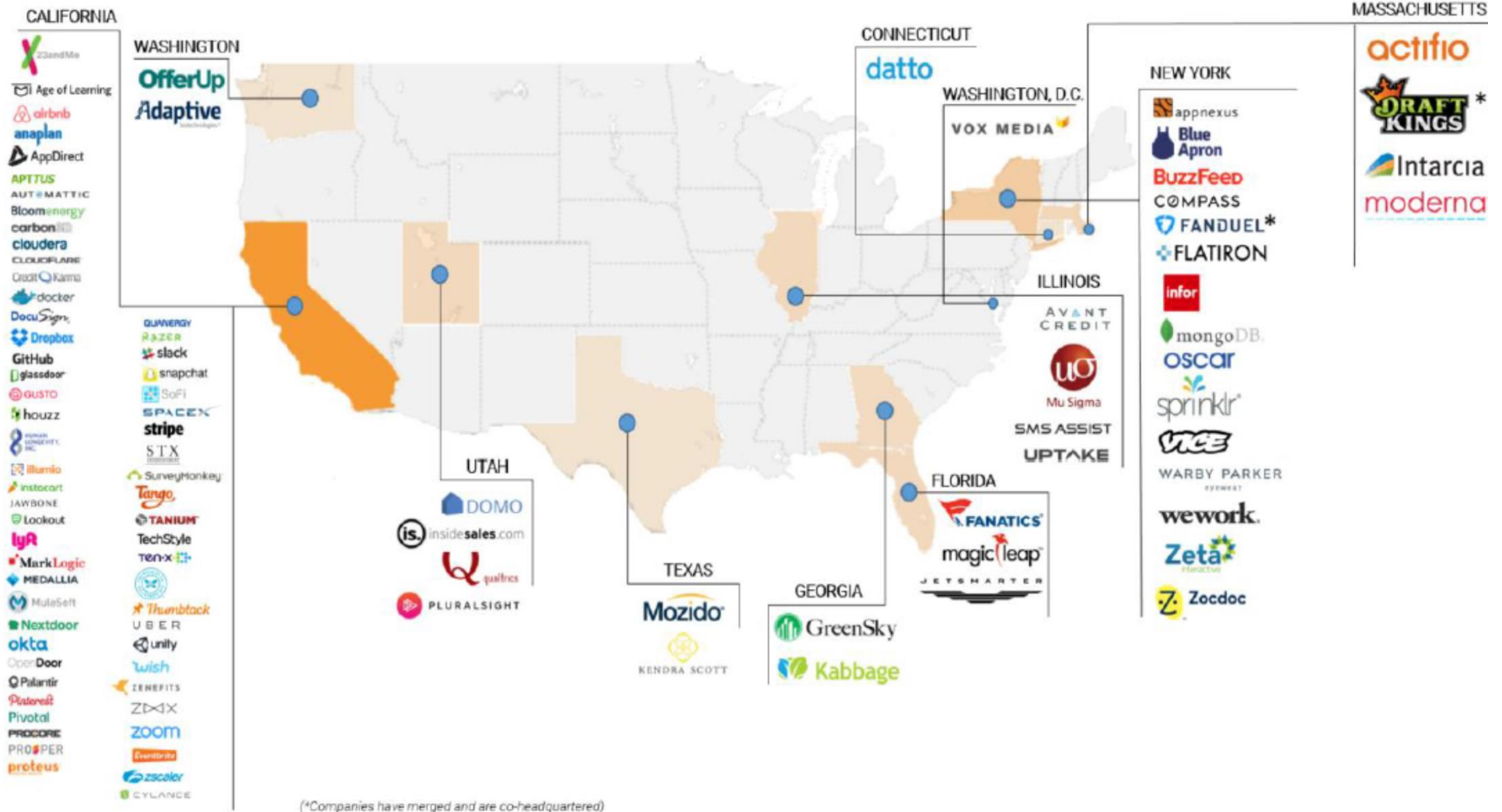


Mobile App Downloads	0	226+ billion
Digital Natives in Workforce	6%	35%
Global Middle Class	1.4 billion	2.5 billion

The “Digital Tracks” have been laid....

Global Indicator	2000		2016
Internet Penetration	370 million (6%)		3.1 billion (43%)
Broadband Penetration	60 million (1%)		2.3 billion (32%)
PC Penetration	180 million (3%)		1.4 billion (20%)
Mobile Phone Penetration	740 million (12%)		7.0 billion (73%)
Smartphone Penetration	0		2.6 billion (28%)
Tablet Penetration	0		500 million (7%)
Mobile App Downloads	0		226+ billion
Digital Natives in Workforce	6%		35%
Global Middle Class	1.4 billion		2.5 billion

Where the Unicorns live in USA?



Where Unicorns pasture in USA?



Why look at Megatrends?: KEY TAKE AWAYS

1. Megatrends are connected and intertwined creating “synergistic opportunities”,
2. Megatrends provide global and scalable business opportunities... “unexpected geographies” more profitable than others,
3. Each Megatrend (or synergistic subset) will create its own ecosystem and value chains, with components of varying degrees of profitability,
4. Driving forces change dynamically, creating new competences and making irrelevant others at accelerated pace,
5. Organizations will need to master the ability **to envision the future** to optimize its market relevance over time.

Andrew Carnegie (1835-1919)

Scottish American industrialist who led the expansion of the American steel industry in the 19th century, and one of the wealthiest people ever.

Commissioned a study about the world's great leaders and achievers of the time and concluded:

“Whatever the mind can conceive and believe,

it can achieve”

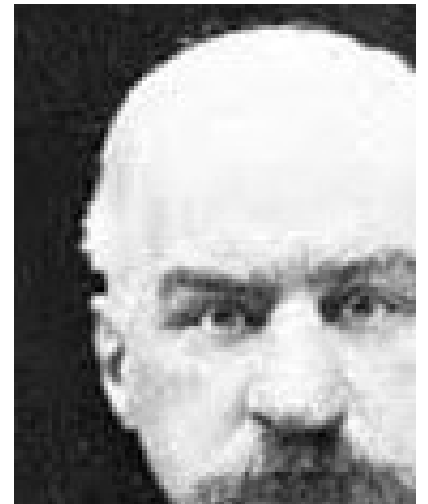


J.P. Morgan (1837-1913)

American financier and banker who dominated corporate finance and industrial consolidation in late 19th and early 20th Century.

“When you expect things to happen, strangely enough,

they do happen”



Andrew Carnegie (1835-1919)

Scottish American industrialist who led the expansion of the American steel industry in the 19th century, and one of the wealthiest people ever.

Commissioned a study about the world's great leaders and achievers of the time and concluded:

“Whatever the mind can conceive and believe

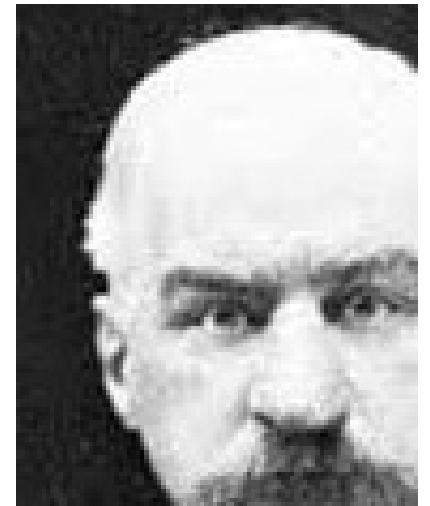


J.P. Morgan (1837-1913)

American financier and industrialist who dominated corporate and industrial consolidation in the late 19th and early 20th centuries.

“What you expect to happen, happens, and strangely enough,

they do happen”



Can you envision your own future?