



CORPORATE GOVERNANCE DEVELOPMENT FRAMEWORK

12th Annual DFI Corporate Governance Conference

Working Group members are:



hosted by



Corporate Governance

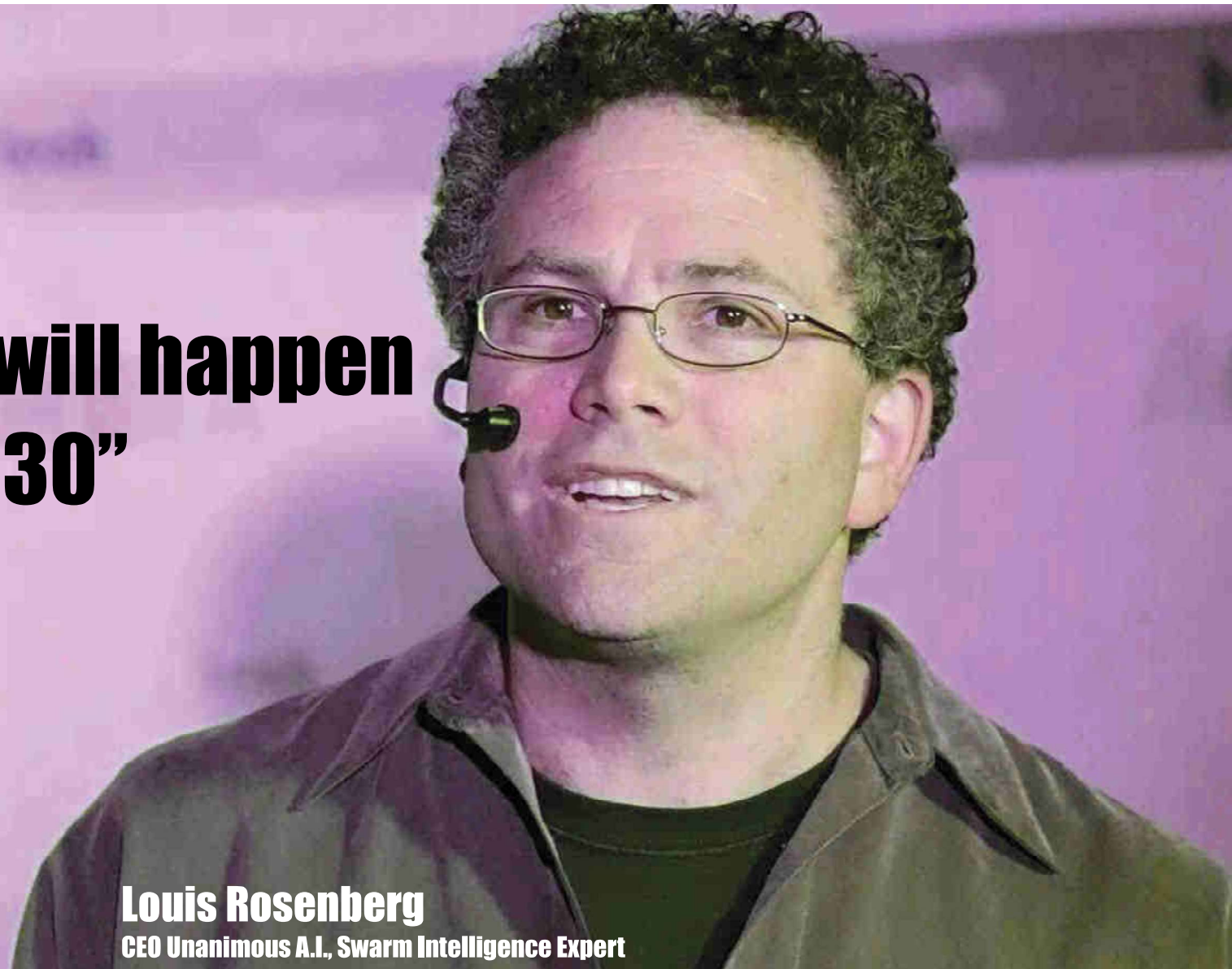


Erik P.M. Vermeulen



2030

**“Singularity will happen
in 2030”**



Louis Rosenberg
CEO Unanimous A.I., Swarm Intelligence Expert

Welcome to 2030. I own nothing, have no privacy, and life has never been better

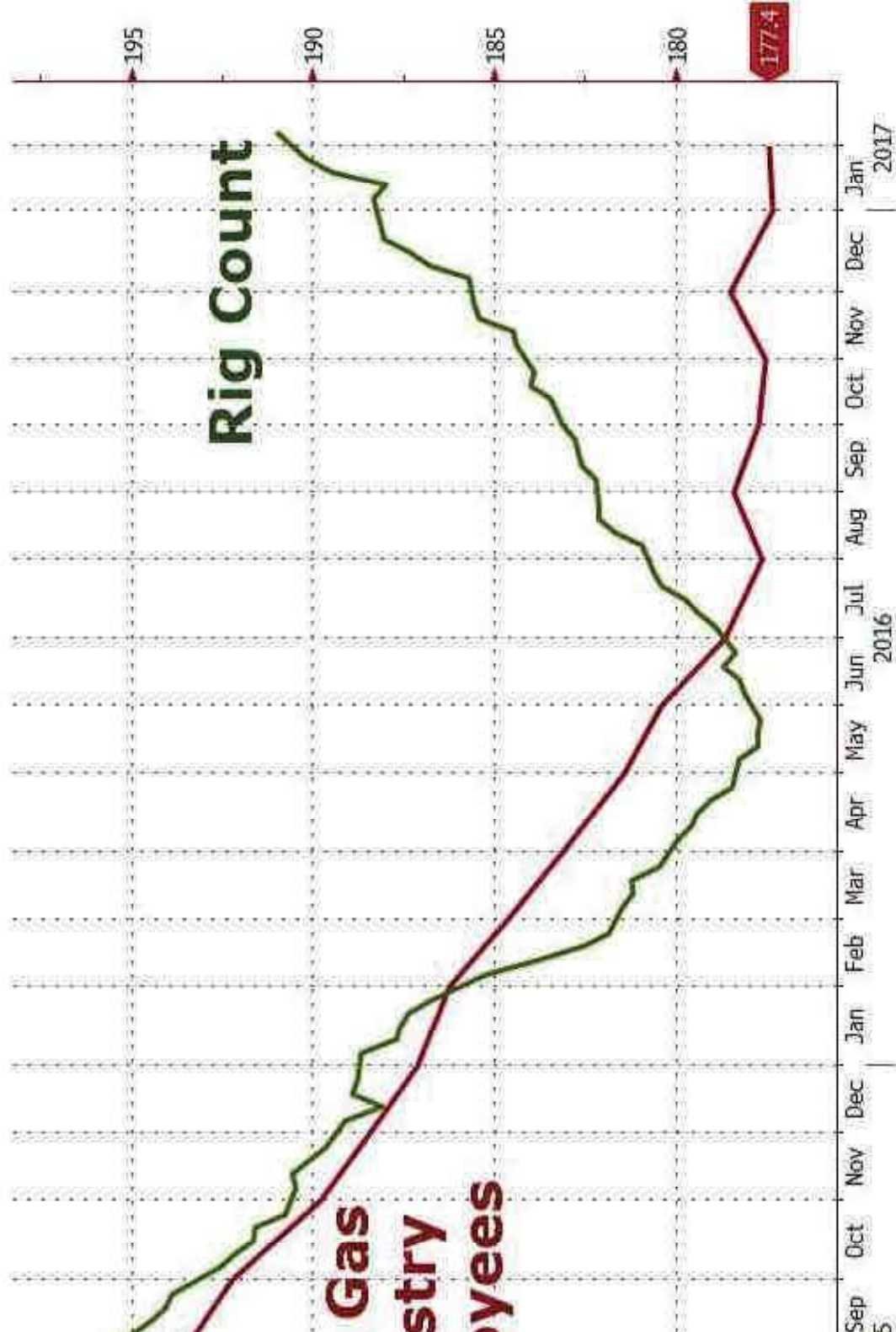


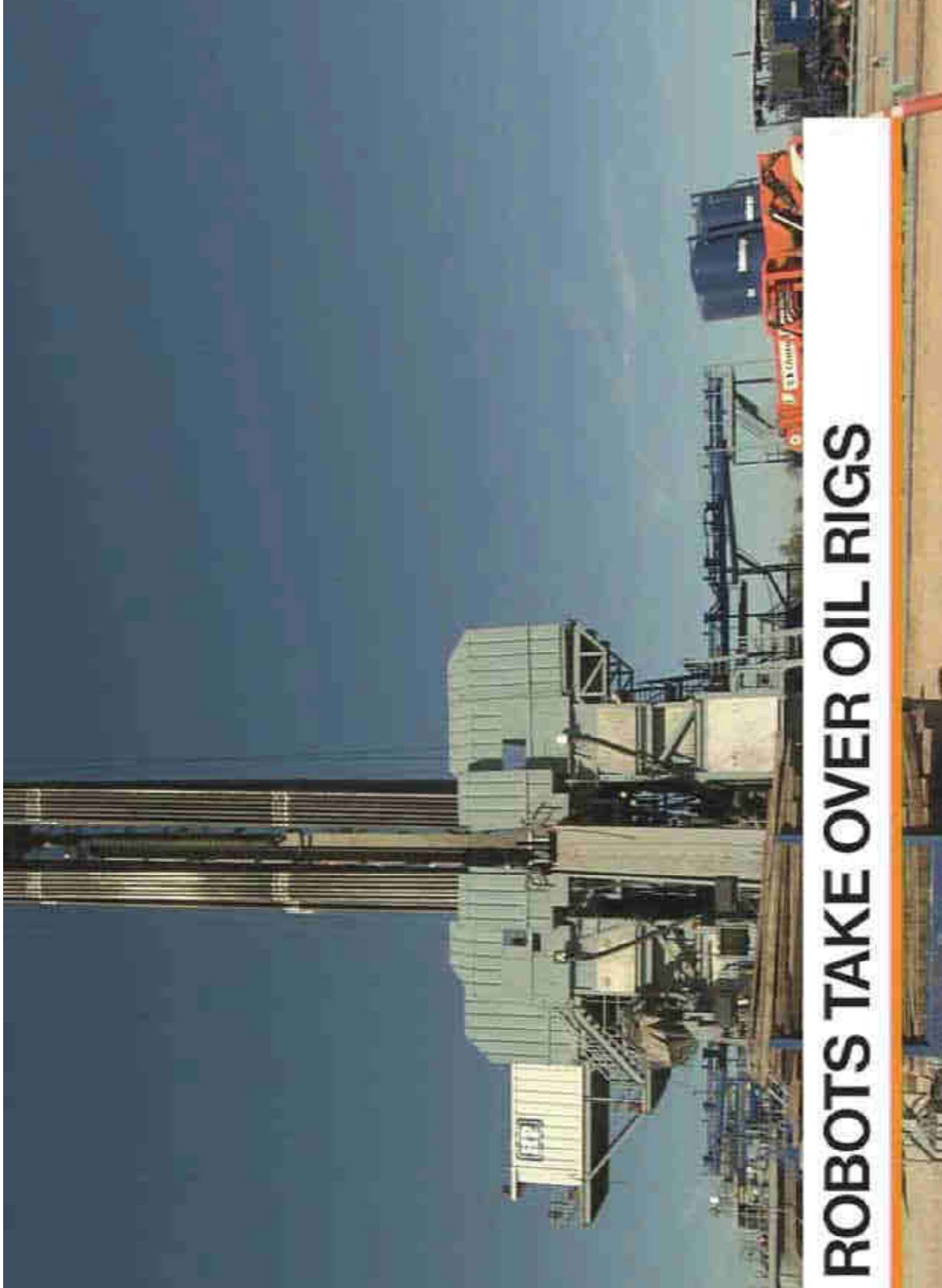
Ida Auken
Danish Politician

**“soon you’ll see
huge companies
with just two
employees—the
CEO and the CIO.”**



John Chambers
Former CEO Cisco





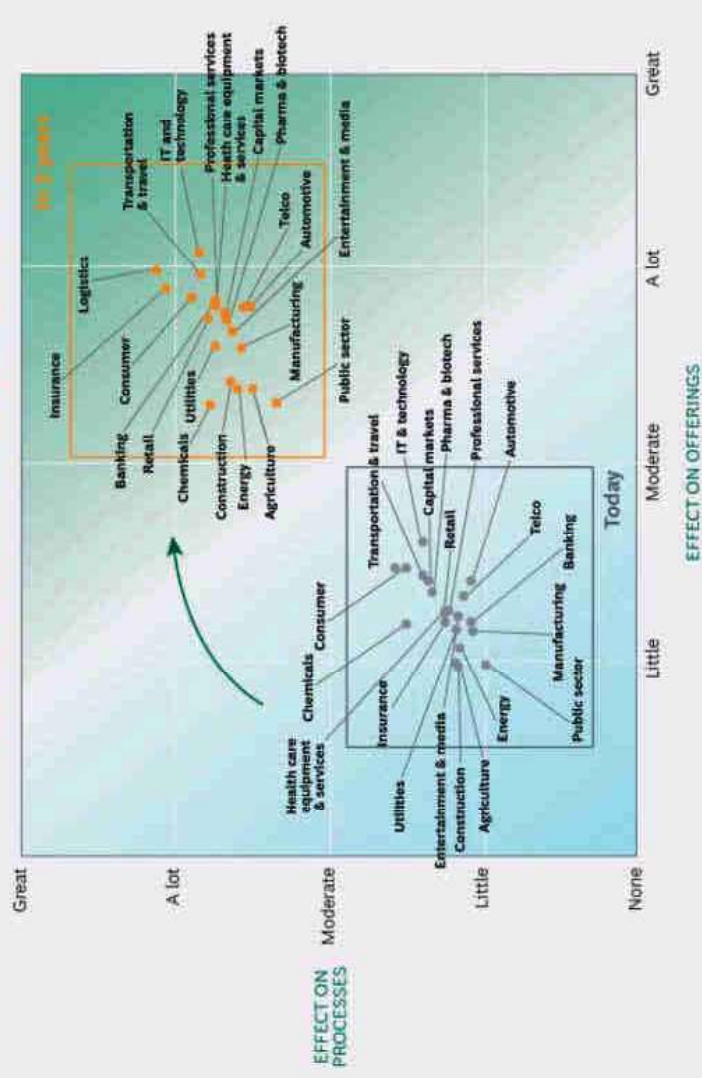
ROBOTS TAKE OVER OIL RIGS

You Need to Study e or You'll be a



EXHIBIT 1| Expectations Run High for AI's Effect on Business Across Industries

WHAT EFFECT WILL THE ADOPTION OF AI HAVE ON YOUR ORGANIZATION'S OFFERINGS AND PROCESSES TODAY AND IN FIVE YEARS?



Source: Joint BCG-MIT Sloan Management Review survey on the impact of artificial intelligence on business, 2017.
Note: Average of all respondents per industry, based on a five-point scale.

Every industry has the potential to benefit from AI

Ari Järvelä

Head of Data Driven Businesses

 @ari_jarvela | @TietoCorp

tieto

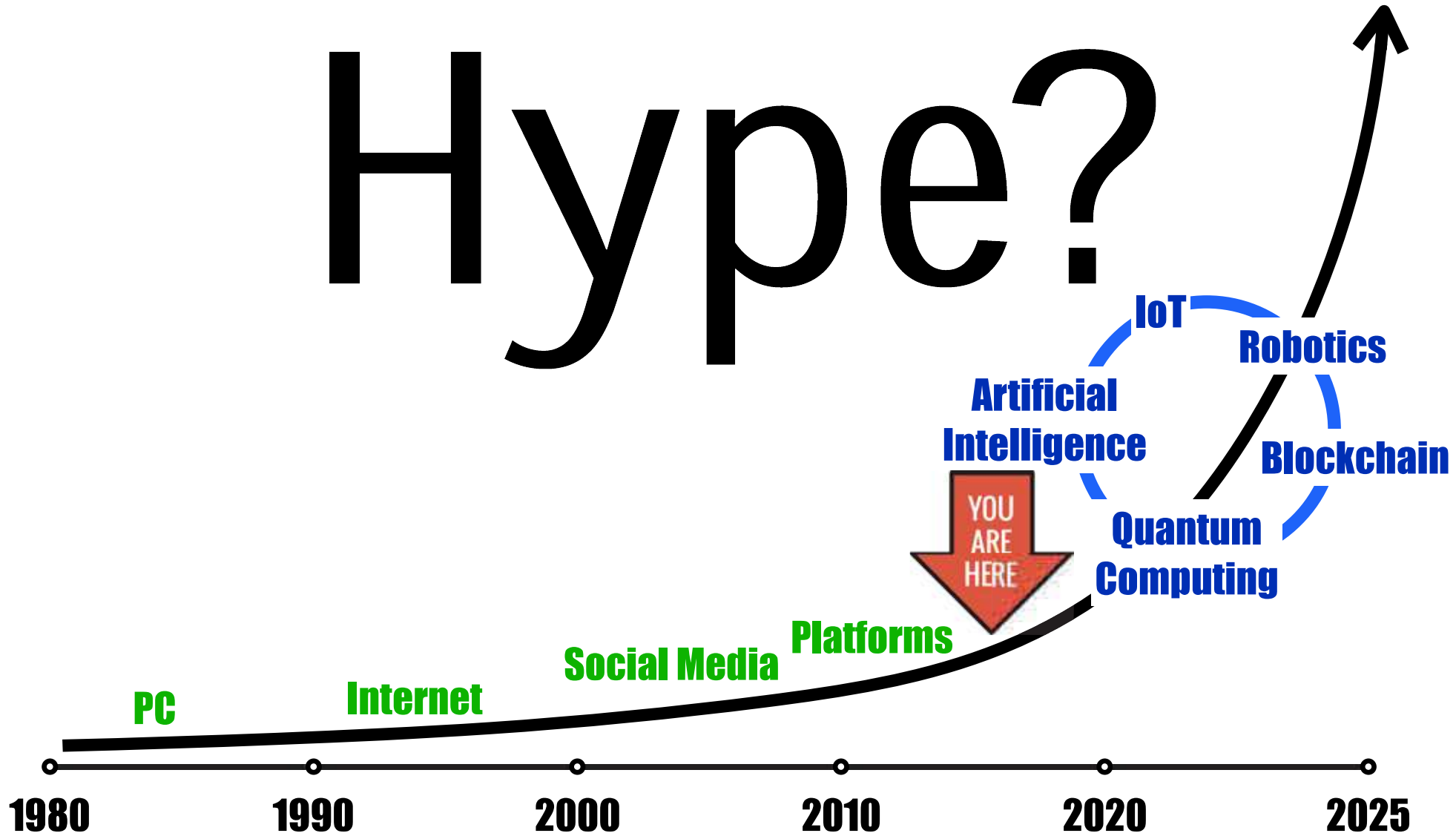
Alicia T.

AI's role in the leadership team is to drive truly data-driven decision-making and innovate new data-driven ideas

- With AI called Alicia T. we wanted **– in an agile 'startup' way –** to study the effects of decision-making in human-robot teams.
- Alicia T. will leverage semantic **natural-language processing** and **supervised learning**
- Over time, Alicia T. “learns” what type of information is **most useful to users** and delivers tailored results
- AI will **continue to evolve** in both form and data capacity – its story will continue



Hype?



What Should We Be Doing Now to get to

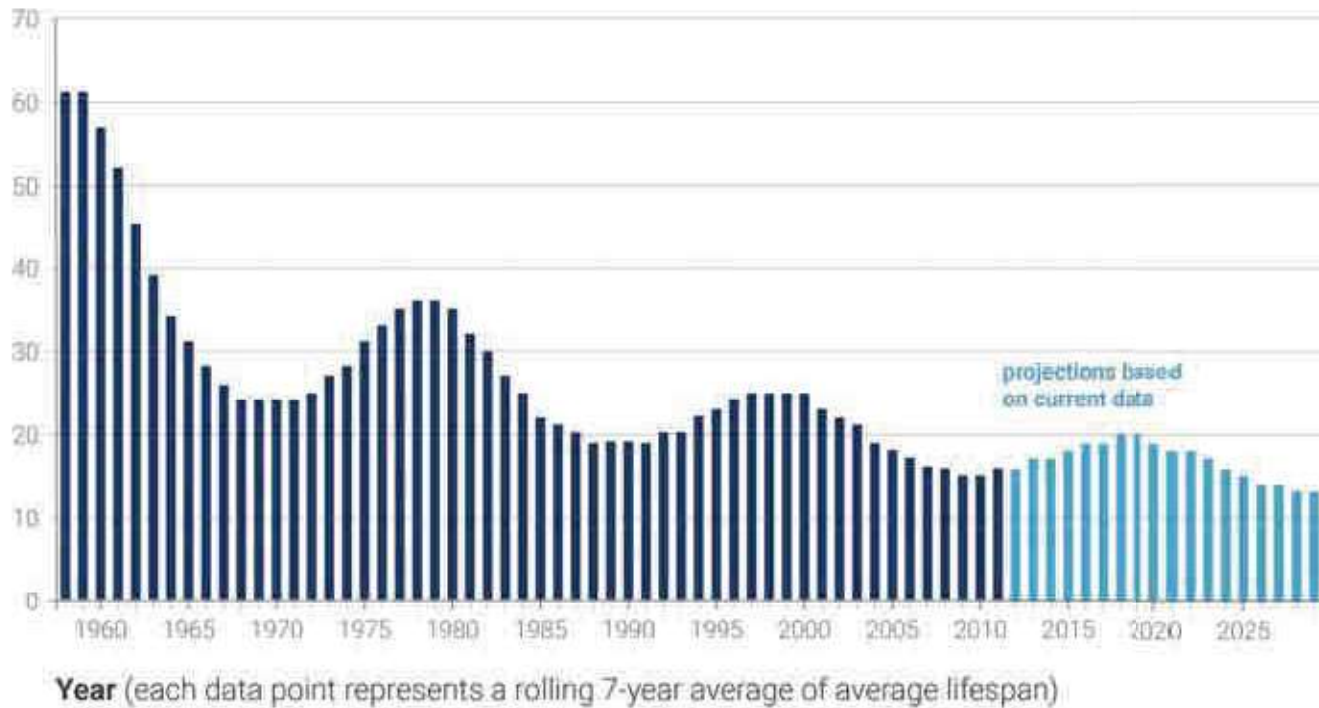


2030

IN THE LAST 15 YEARS

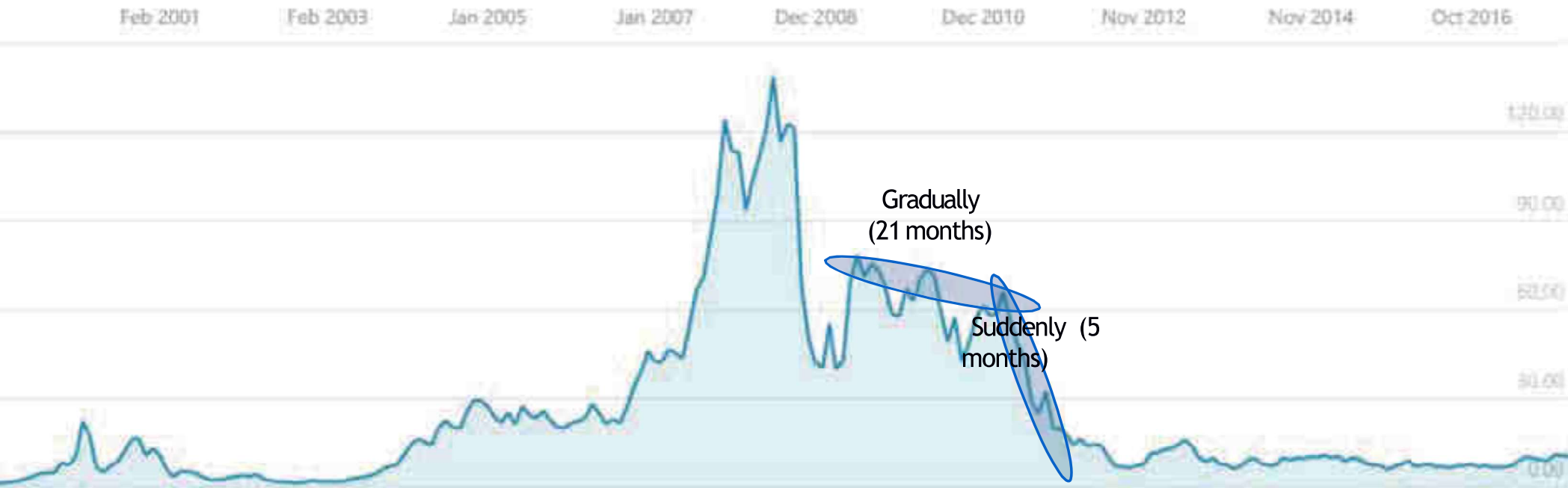
52% of S&P 500 companies have disappeared

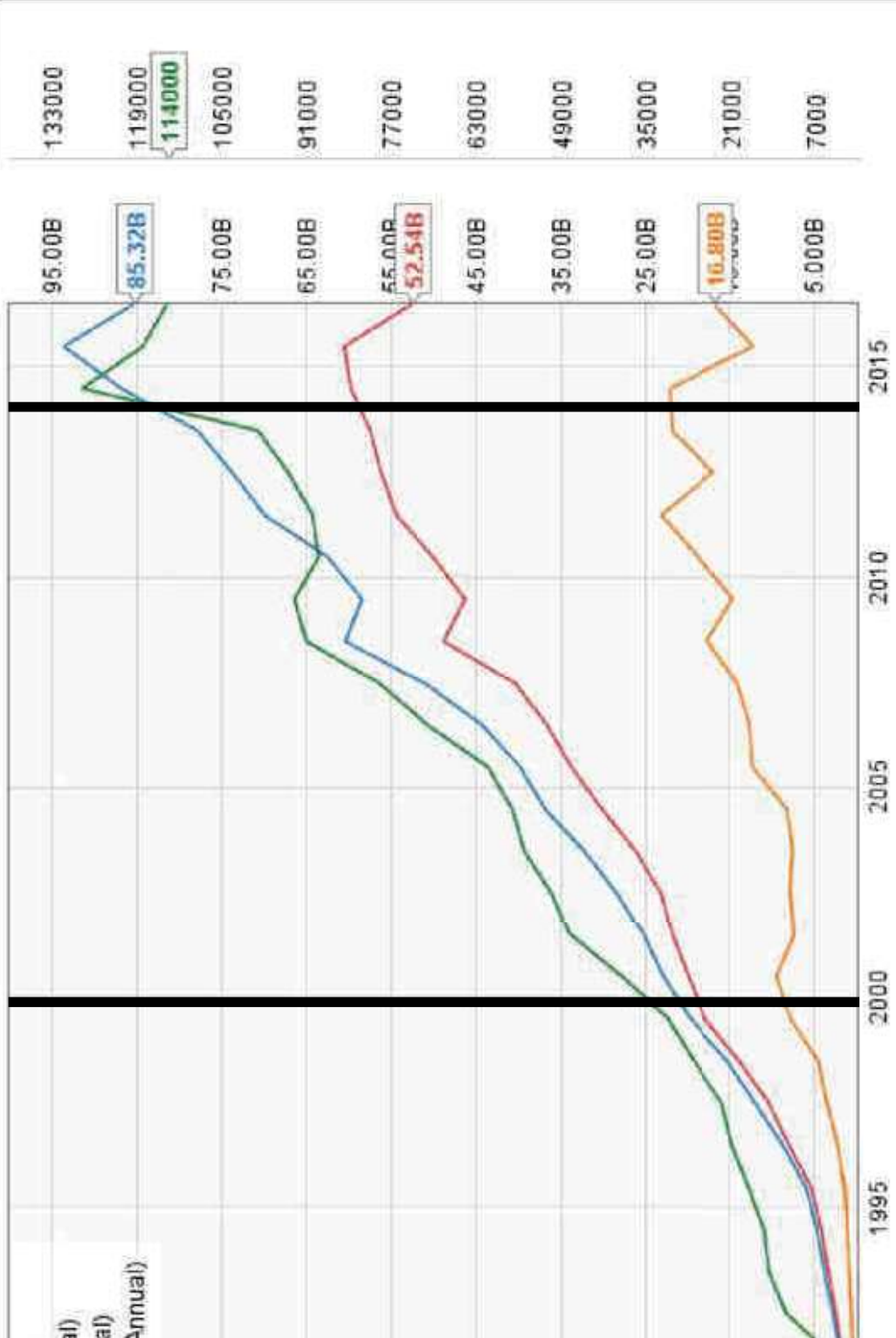
61-years
1955 lifespan



17-years
2015 lifespan

Gradually, then Suddenly in Action

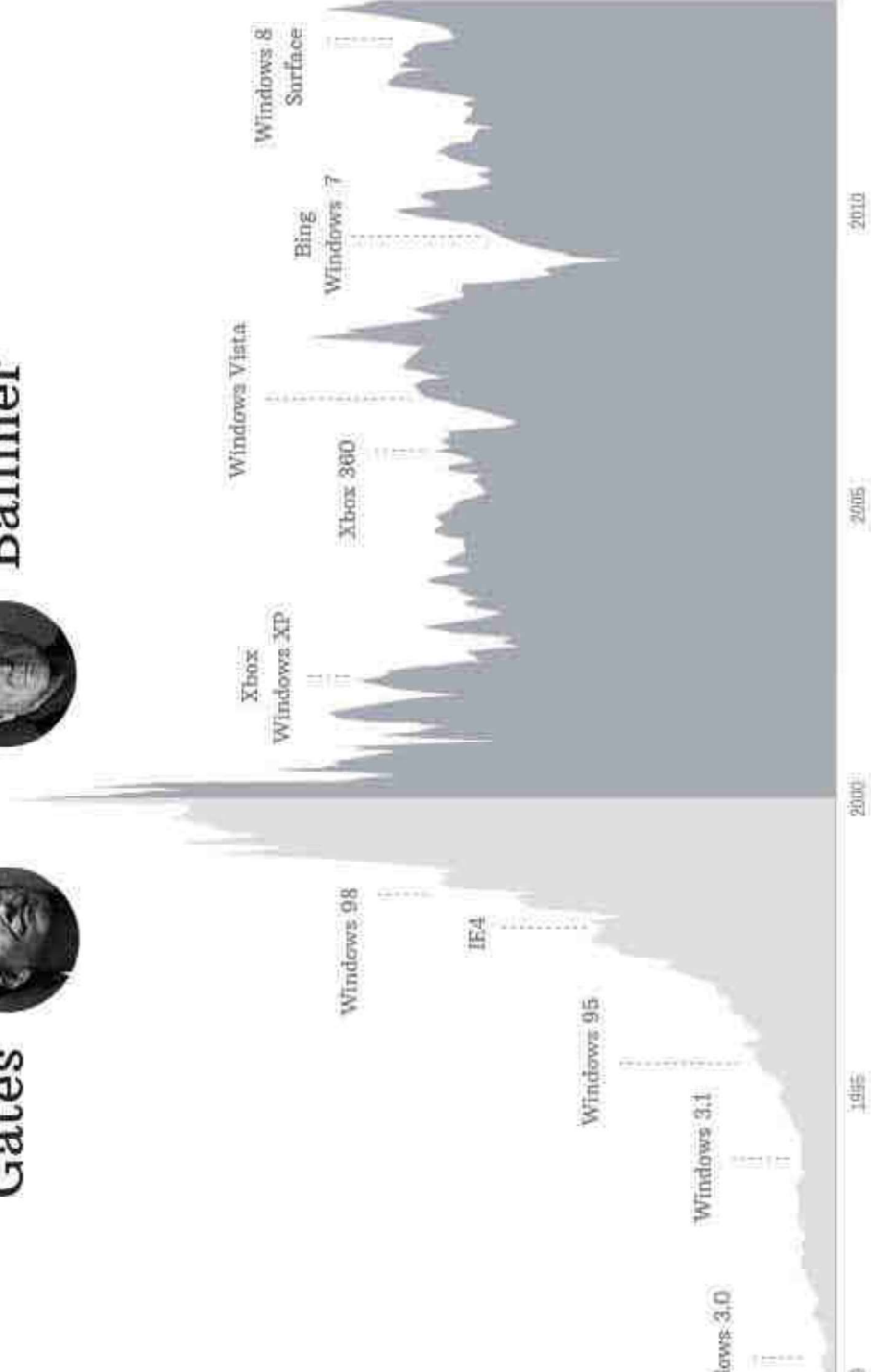




Gates



Ballmer



How to Miss the Boat – Five Times

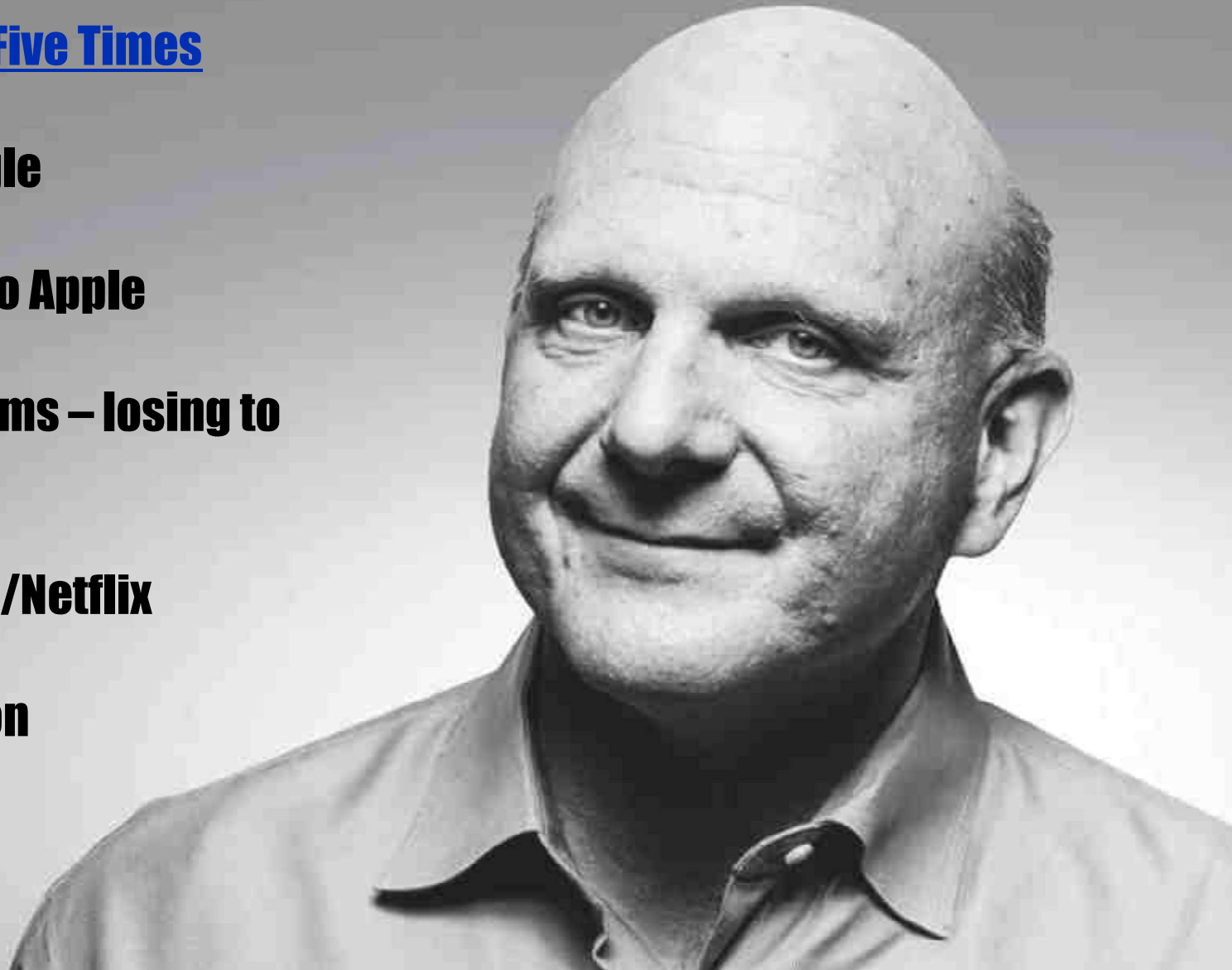
search – losing to Google

smartphones – losing to Apple

**mobile operating systems – losing to
Google/Apple**

media – losing to Apple/Netflix

cloud – losing to Amazon



TOP 5 BY MARKET CAP

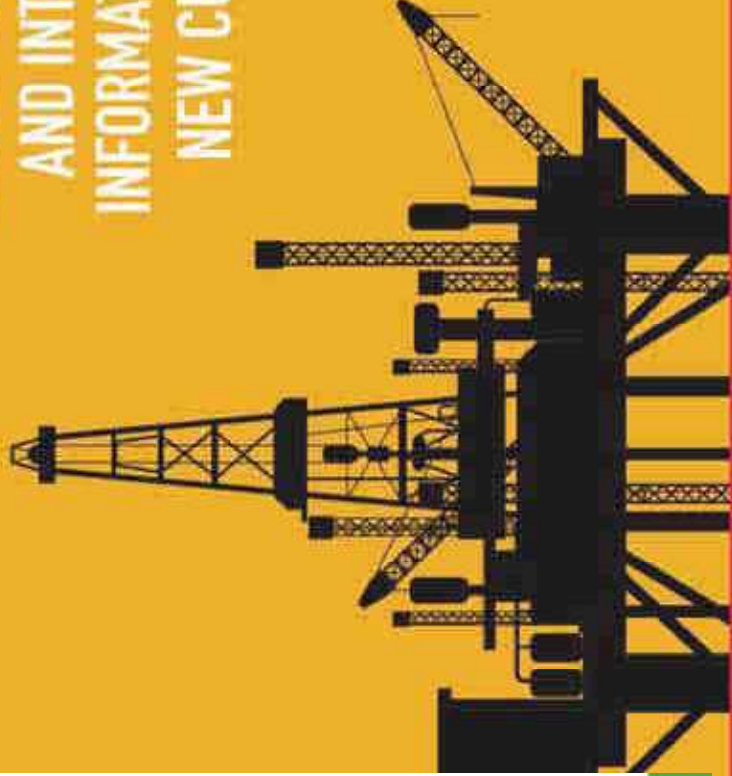
the whiz kids of Silicon Valley



www.capitalint.com



DATA IS THE NEW OIL.
AND INTELLIGENT
INFORMATION IS THE
NEW CURRENCY



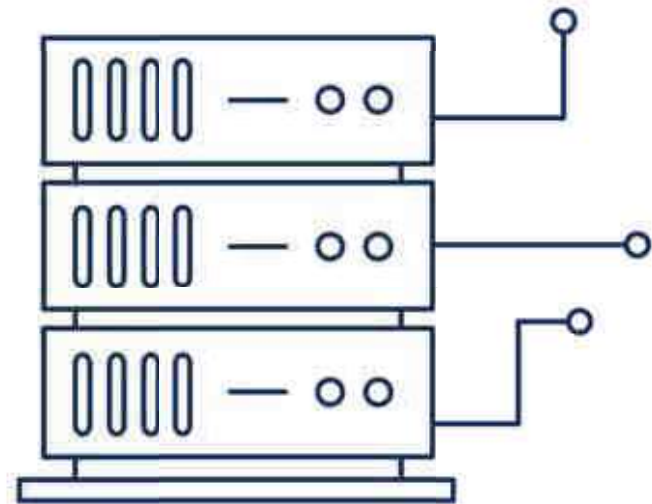
intelligence-driven enterprises win

A MARRIAGE MADE IN HEAVEN

The two things making business faster



Technology



Data

TRADITIONAL VERSUS PLATFORM BUSINESSES

Structure

Asset Heavy

Mixed

Asset Light

Traditional Organizations, Value Chains and Physical Assets

Platform Ecosystem

Example Companies

Platforms



amazon

Google airbnb

PREDIX



etrailer



Source: Global Platform Survey, The Center for Global Enterprise, 2016



**Decentralized
Crypto-Networks/Platforms**

Technology can do what “managers” used to do

Flatter, more decentralized, organizations innovate faster

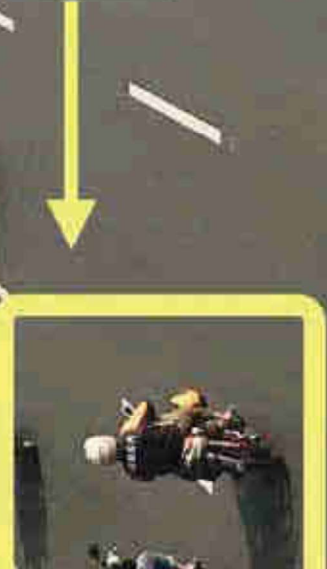


90 years	<i>Age</i>	9 years
1.1 million in 110 countries	<i>Rooms/Listings</i>	2 million in more than 191 countries
127,500	<i>Employees</i>	4,227
\$17.8bn	<i>Valuation</i>	\$30bn
\$0.1m	<i>Value per Employee</i>	\$7m

September 2016



**Ridesharing Services:
Grab, Go-Jek and Uber**



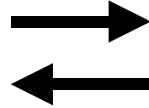
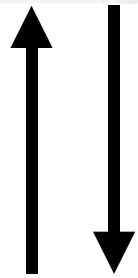
MAKING THE CUT

NADIEM MAKARIM
FOUNDER
GO-JEK

“The bigger we grow, the looser our control is. We allow different teams and leaders to run their teams their own way. The team leaders are free to develop their own management approach, so long as they can achieve their targets.”

Investors

Investor	Investment
Capital Group	Private Equity
DST Global	Venture
	Private Equity
Farallon Capital Management	Private Equity
Fisinvest Group	Private Equity
KKR & Co. (Kohberg Kravis Roberts & Co.)	Private Equity (Lead)
Northstar Group	Private Equity
NSI Ventures	Venture
	Private Equity
Redburn	Private Equity
Sequoia Capital	Venture
	Private Equity
Tencent Holdings	Private Equity (Lead)
Warburg Pincus	Private Equity (Lead)



Acquisitions







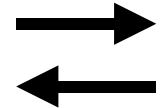



Investments



Partnerships



ride-sharing





delivery









services













payment







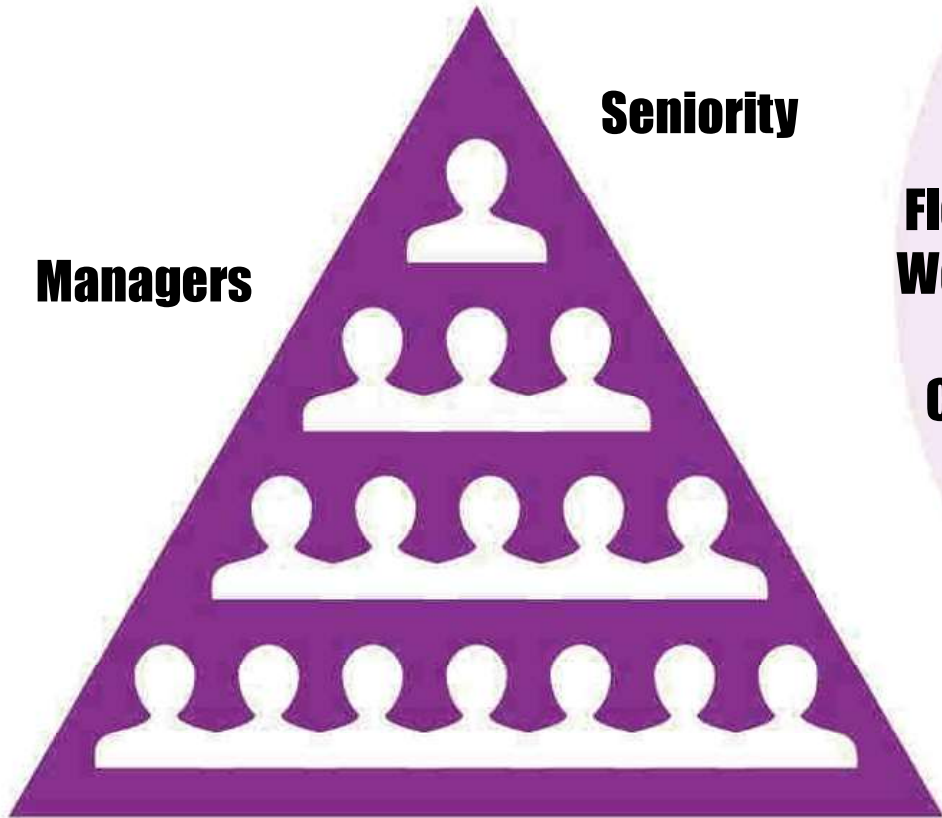


Hierarchical Organization

20th Century Company

Seniority

Managers



Flatter (more decentralized) Organization

21st Century Company

Employees Developers Investors

Flat Hierarchy
Visionary
Leadership

Open
Communication

**Flexible
Workers**

Meaningful,
Relevant
Experience for
Stakeholders

Governments

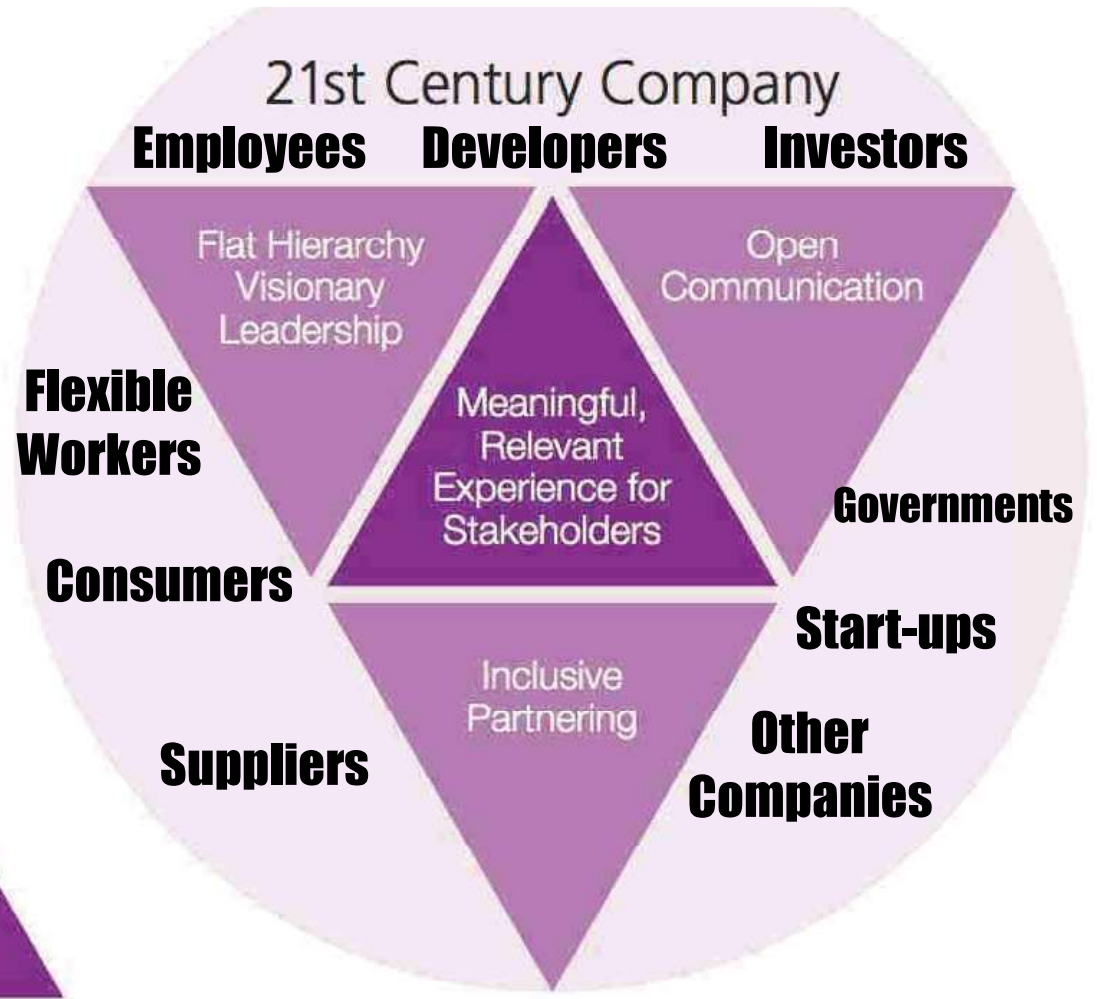
Consumers

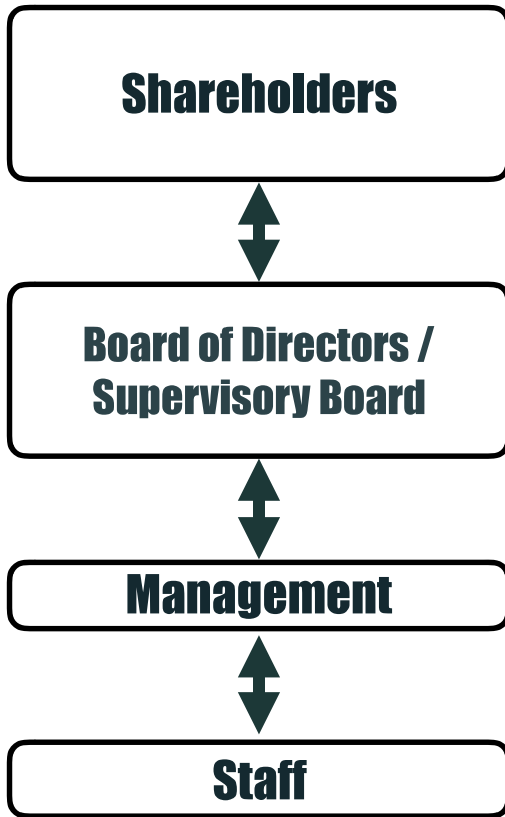
Start-ups

Suppliers

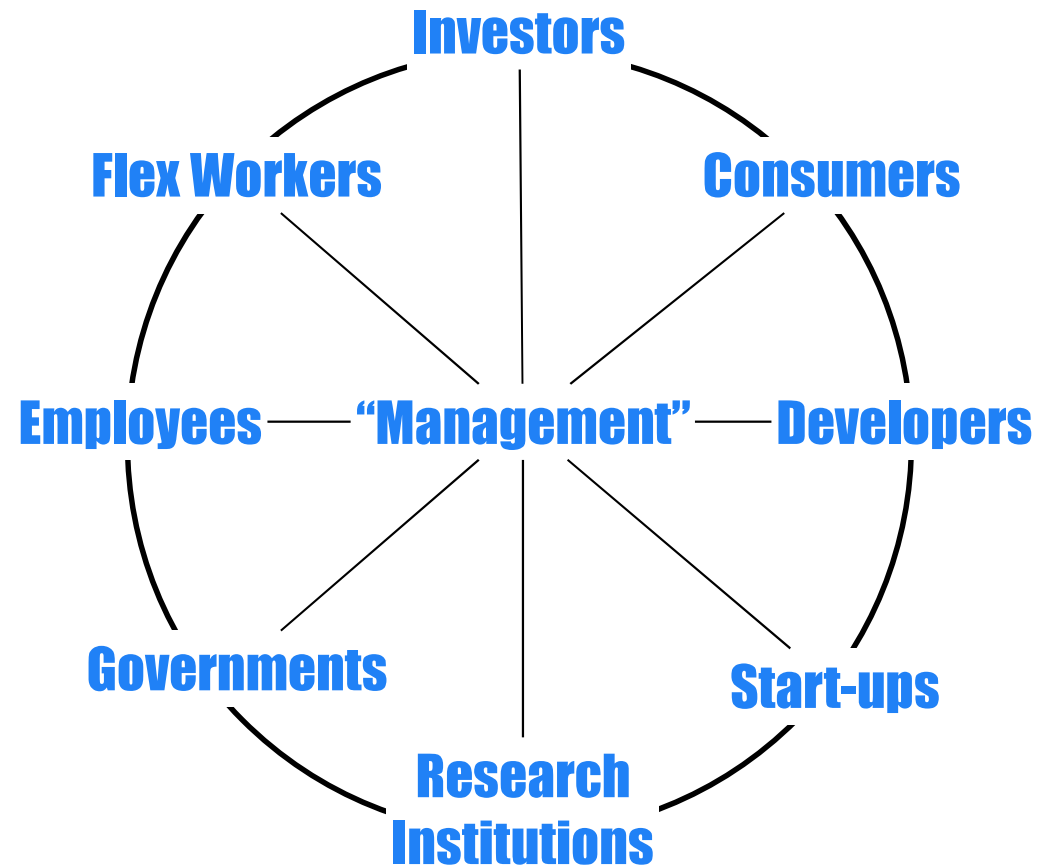
Inclusive
Partnering

**Other
Companies**





**Hierarchies, Profit, Control,
Focus on Managerial Misbehavior**



**Networks, Purpose, Empowering,
Experimentation, Collaboration, Co-Creation**



To 'Value-added Directors

**From Control of
Managerial Misbehavior**

Board of Directors



DEERE

Precision Agriculture Technology



Operator Stations



Displays



AutoTrac™



Implement Guidance



Receivers



GreenStar™
Documentation



Field Connect™



Mobile Apps



JDLink™ Connect



John Deere
Operations Center



Sheila G. Talton





Mary Barra's ability to adapt to a changing technological and consumer-focused landscape makes her uniquely suited for the Disney Board



Facebook's Sheryl Sandberg, Twitter's Jack Dorsey To Leave Disney's Board

Talented entrepreneurs who helped create groundbreaking new businesses in social media and commerce spaces



Directors as “Consumer Experts”



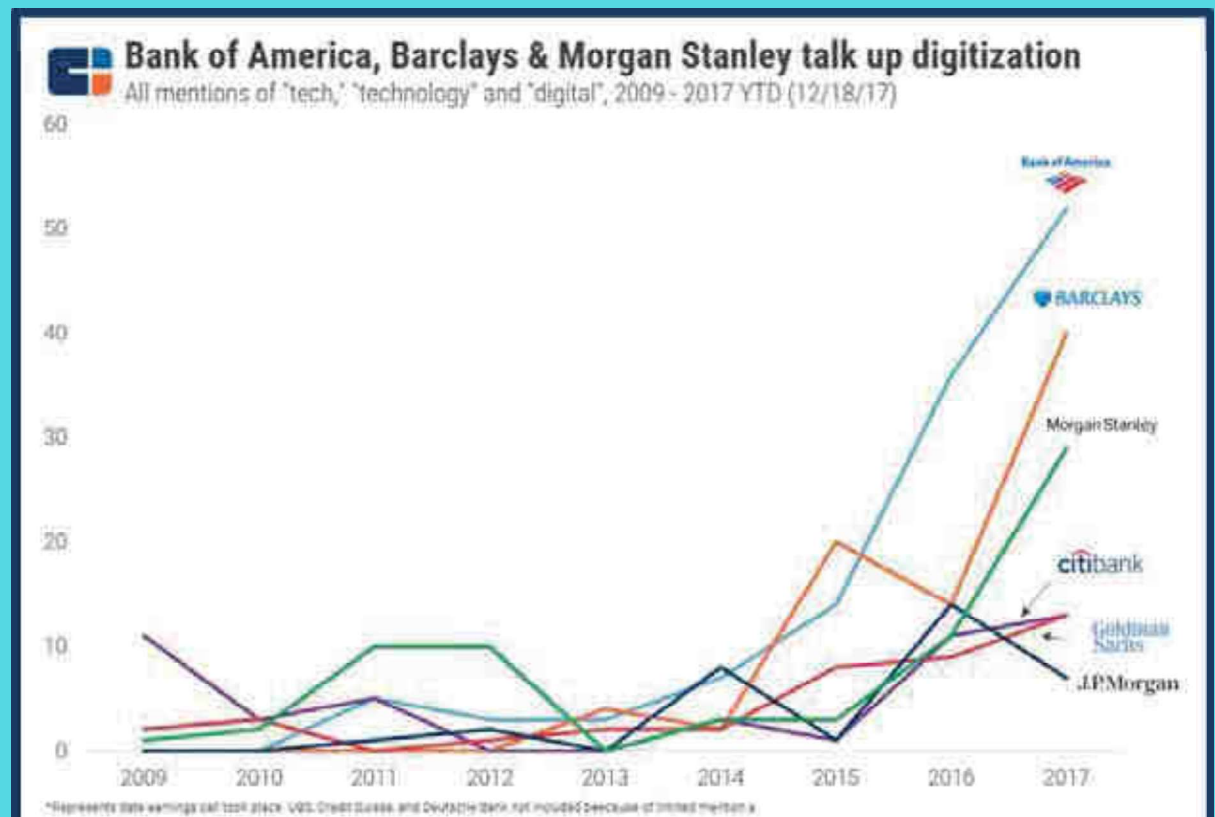
Compliance with classical corporate governance standards is not Enough



Storytelling is More Important

Now, more are talking up their own digital capabilities

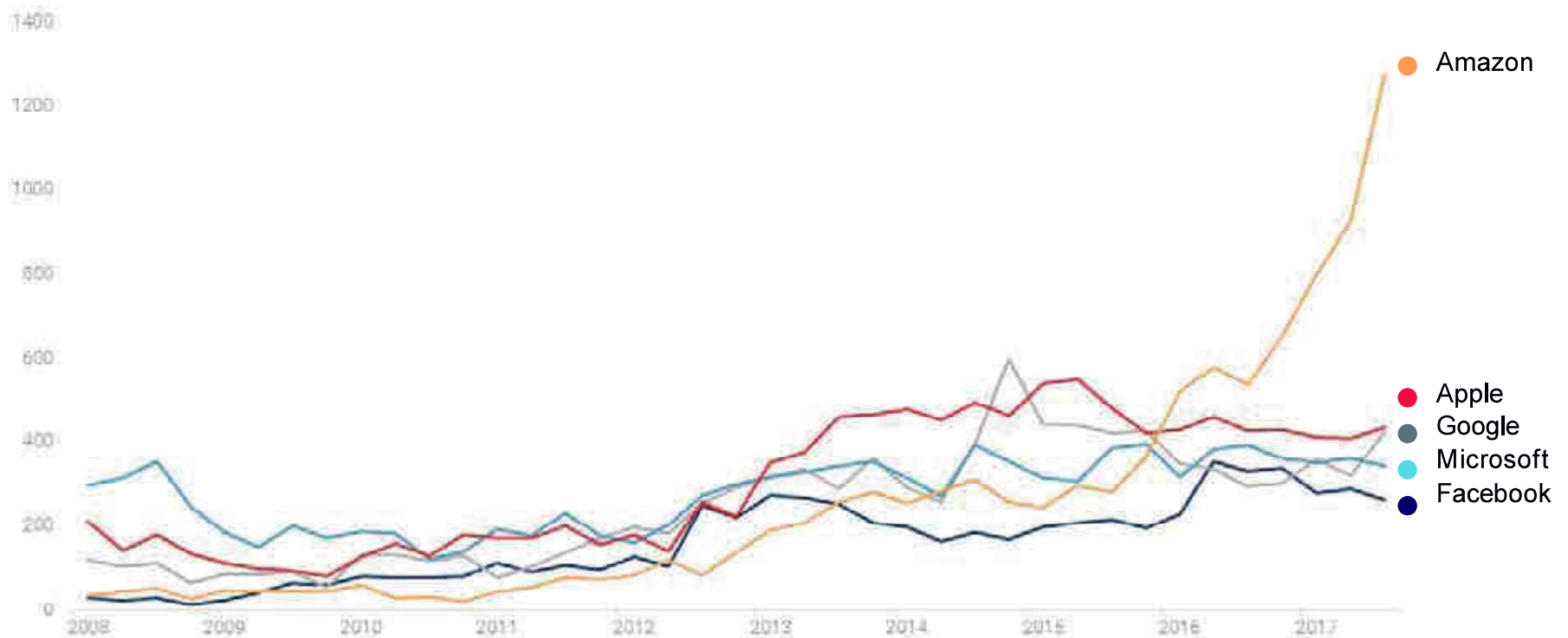
Mentions of “technology” and “digital” on bulge bracket bank earnings calls have jumped in 2017.



BEZOS ON THE BRAIN

Public co execs talking Amazon on earnings calls

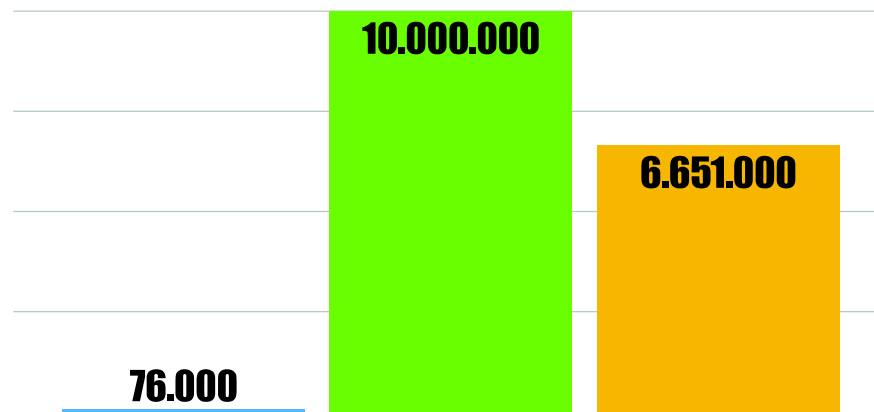
Mentions of the 5 largest tech companies in earnings calls by quarter



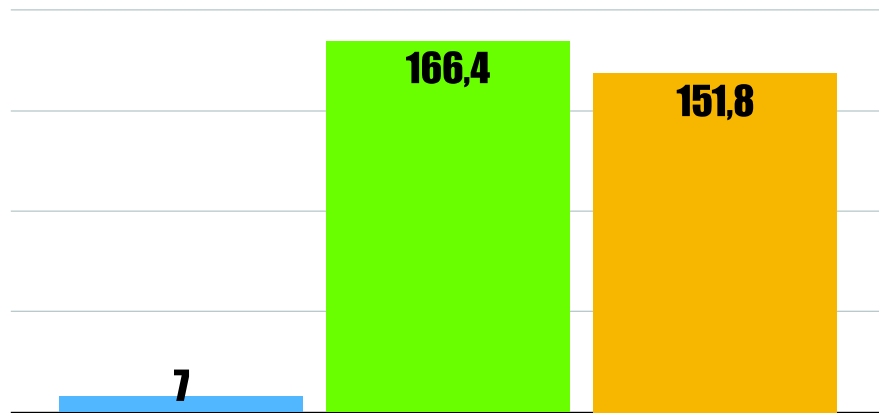


**Digital
Technology
Artificial Intelligence
Internet of Things
Big Data**

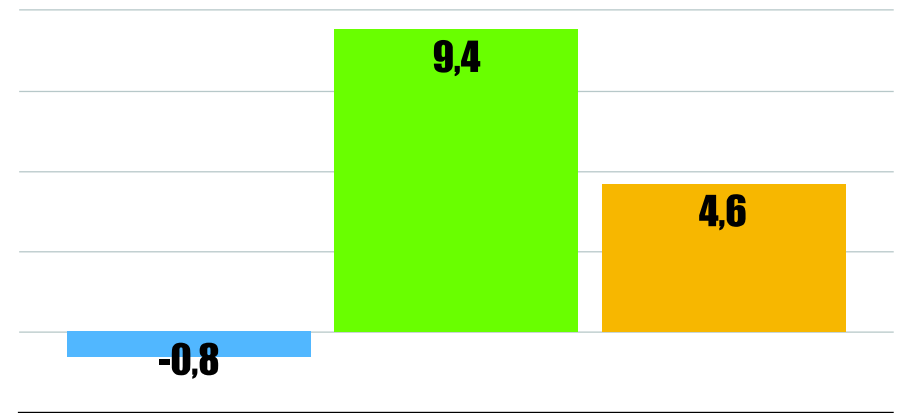
Often empty talk and actions without being genuinely committed to the digital transformation



Tesla GM Ford
Vehicle Deliveries in 2016



Tesla GM Ford
Revenue in 2016 (US\$B)



Tesla GM Ford
Net Income/loss in 2016 (US\$B)



The Economist [Follow](#)

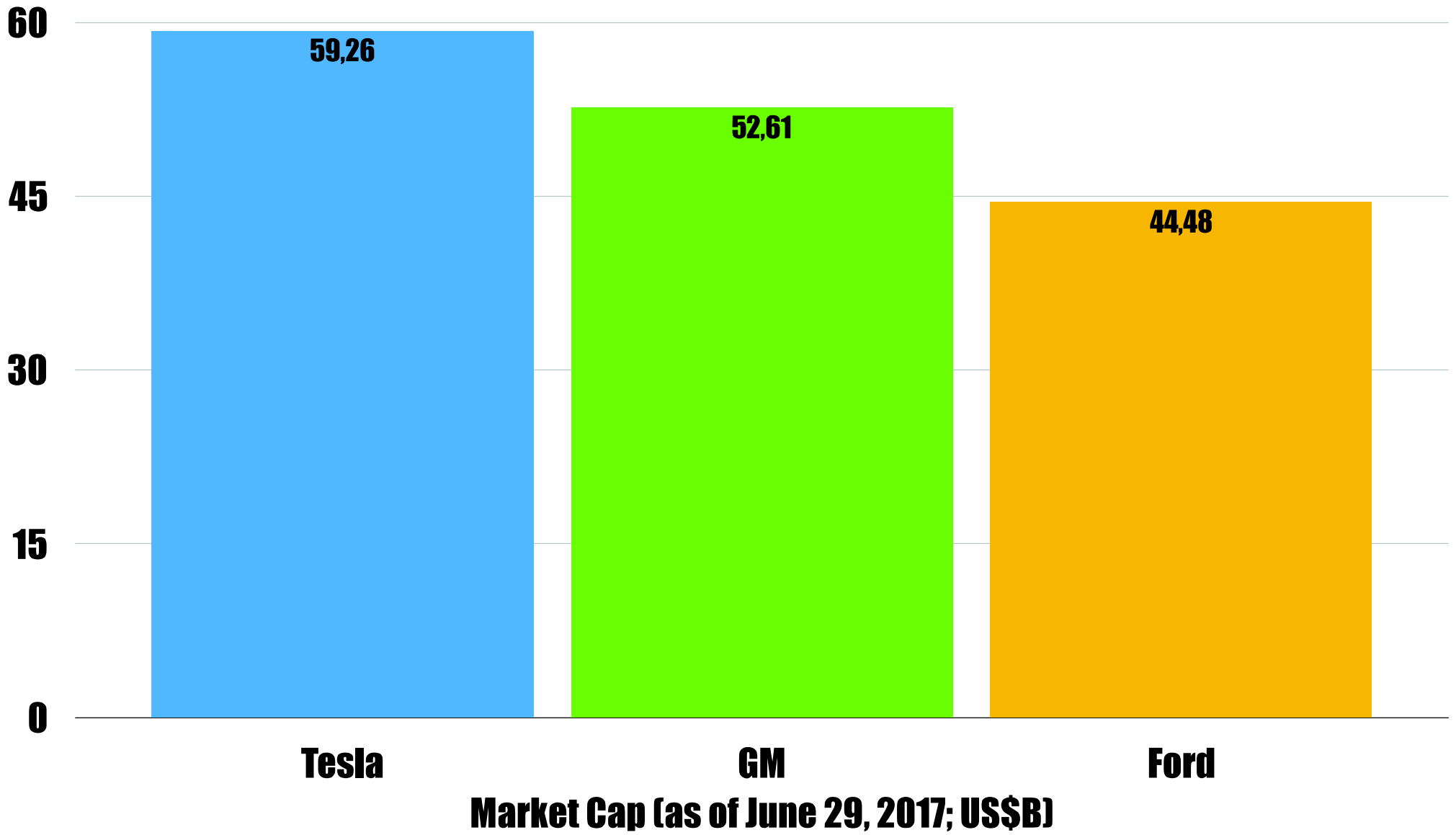
Insight and opinion on international news, politics, business, finance, science, technology, books and arts.

Oct 21 · 5 min read

Firms that burn \$1B a year are sexy but statistically doomed

Five outliers — Chesapeake Energy, Netflix, Nextera Energy, Tesla and Uber — have collectively lost \$100B in the past decade.







Follow

k is obviously high
but low if you
place bets

ber
uzak says the stock price is 'higher
erve' but/y/2u/100kct



Part Deux

10 years ago is now in the final stages of completion. It wasn't all consisted of:

which would necessarily be expensive
medium volume car at a lower price
affordable, high volume car

ing, this has literally been on our website for 10 years.



ter Plan, Part Deux is:

solar roofs with seamlessly integrated battery storage
ic vehicle product line to address all major segments
ving capability that is 10X safer than manual via massive fleet learning
o make money for you when you aren't using it





Plausible? Probable?

How to tell a story in the blockchain world?

See where the caveman has arrived since those cave paintings.





Demonstrate leadership

Generate buzz

**Take advantage of
social media**

**Review &
learn**

Invite input

Address the hard issues

Personalize & communicate a distinctive story

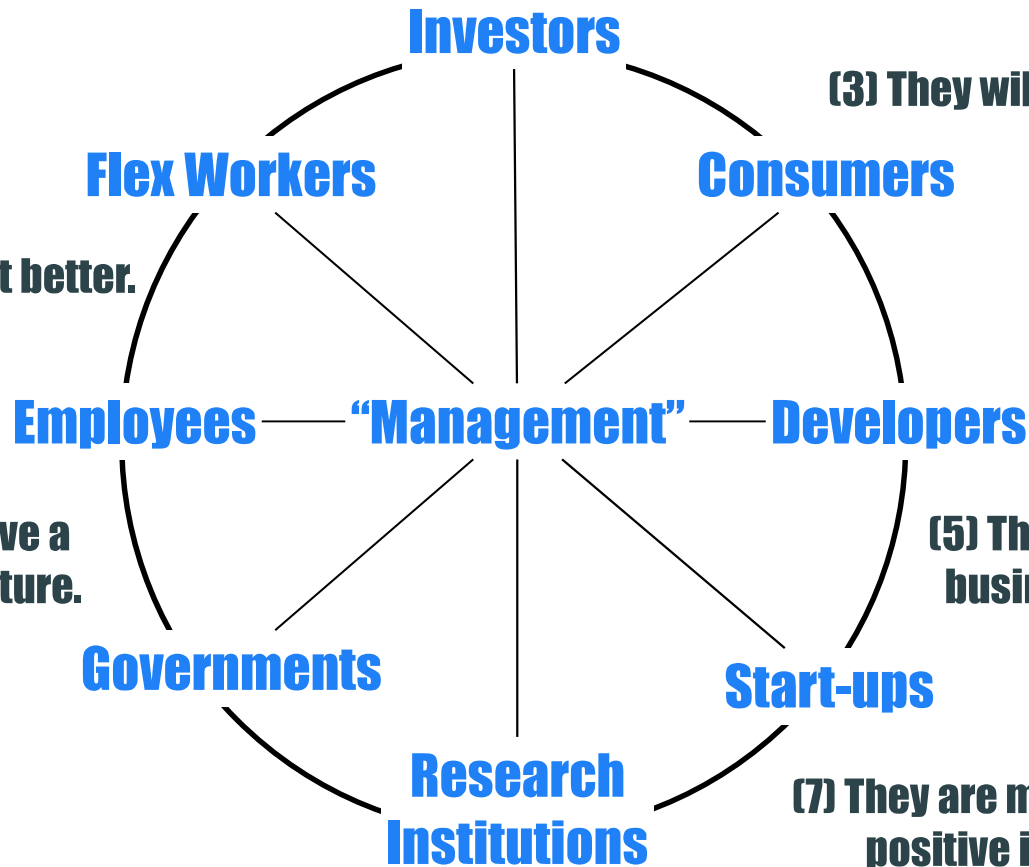
Aim for transparency and relevancy

(1) The great storytellers have an unfair competitive advantage.

(4) They are going to raise money more easily.

(3) They will be the darlings in the press.

(2) They are going to recruit better.



(6) They are going to have a strong and cohesive culture.

(5) They are going to close amazing business developer partnerships

(7) They are more likely to deliver a positive investment return

Corporate Governance in a Digital Age



**Not Just
Compliance**



**Platform
Companies**



**Technology &
Coordination**



**The “Value
Creating” Board**



Storytelling

Join the conversation!



e.p.m.vermeulen@tilburguniversity.edu

Medium

medium.com/@erikpmvermeulen



[@erikpmvermeulen](https://twitter.com/erikpmvermeulen)

LinkedIn

[erikpmvermeulen](https://www.linkedin.com/in/erikpmvermeulen)

12th Annual DFI Corporate Governance Conference

Do You WannaCry!

Decode cyber risk

Context

We have entered the Fourth Industrial Revolution

It is:

- a digital revolution
- characterized by the fusion of technologies blurring the lines between the physical, digital, and biological spheres
- A revolution of technological breakthroughs (e.g., Artificial intelligence, robotics, the Internet of Things)

It will:

- disrupt almost every industry in every country
- have a significant impact on jobs
 - significant job creation to job displacement
 - heightened labor productivity to widening skills gaps

We see:

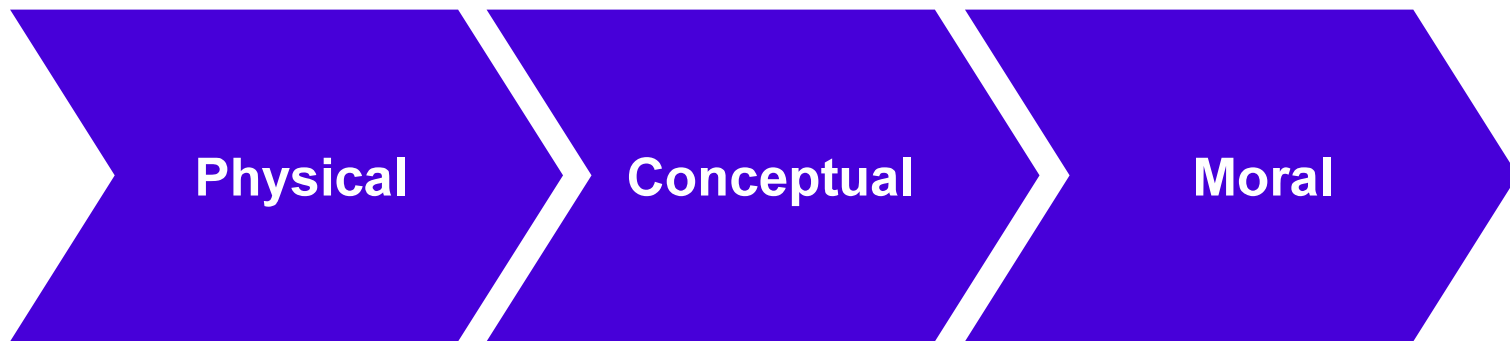
- the most in-demand occupations or specialties did not exist 10 or even five years ago
- 65% of children entering primary school today will ultimately end up working in completely new job types that don't yet exist

Context

Scope of the cyber landscape

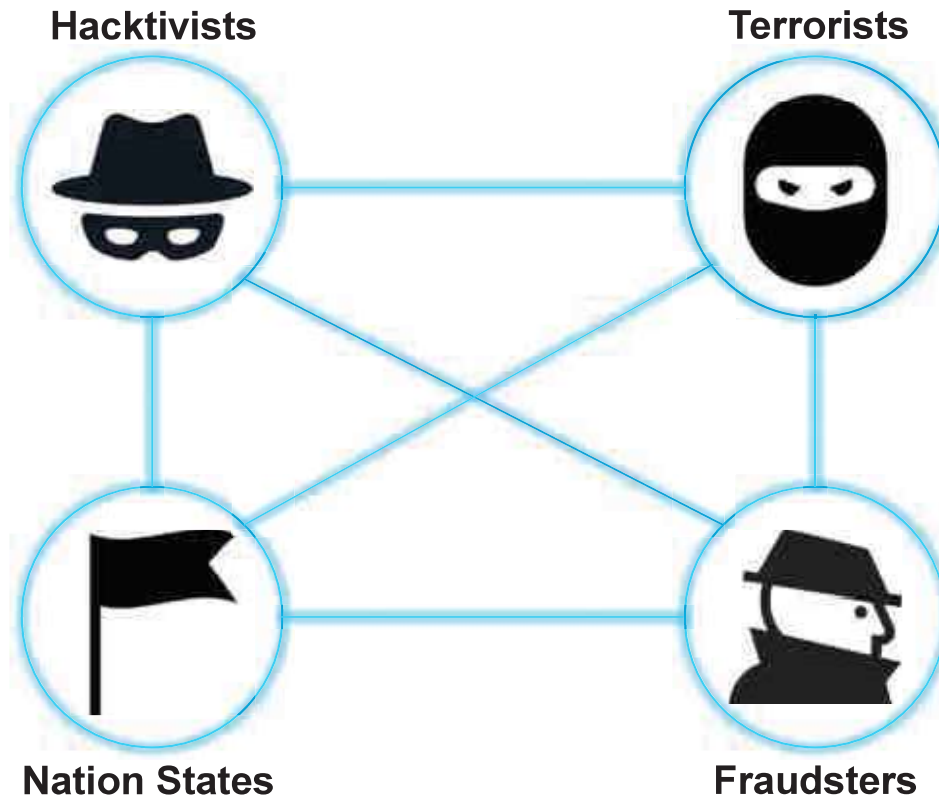
Global	Cyber	Threat
Covering, influencing or relating to the whole world, land, sea, air and space	Notional environment within which electronic communications occur	Intent, capability and opportunity. Indication of imminent harm, danger or pain

Capability



Challenge

Global cyber actors – intent?



Cyber Attacks

The world we live in

\$400bn

Global cost of cyber crime per year

\$4m

Average cost of a single breach

431m

New malware variants added in one year

2/3rds



LARGE FIRM BREACHES

'two thirds of large businesses experienced a cyber breach or attack in the past year'

1/3rd



EFFECTIVE POLICIES

'Only 'about a third of all firms, had formal written cyber security policies'

10%



EFFECTIVE MANAGEMENT

'only 10% had an incident management plan in place'

£M's

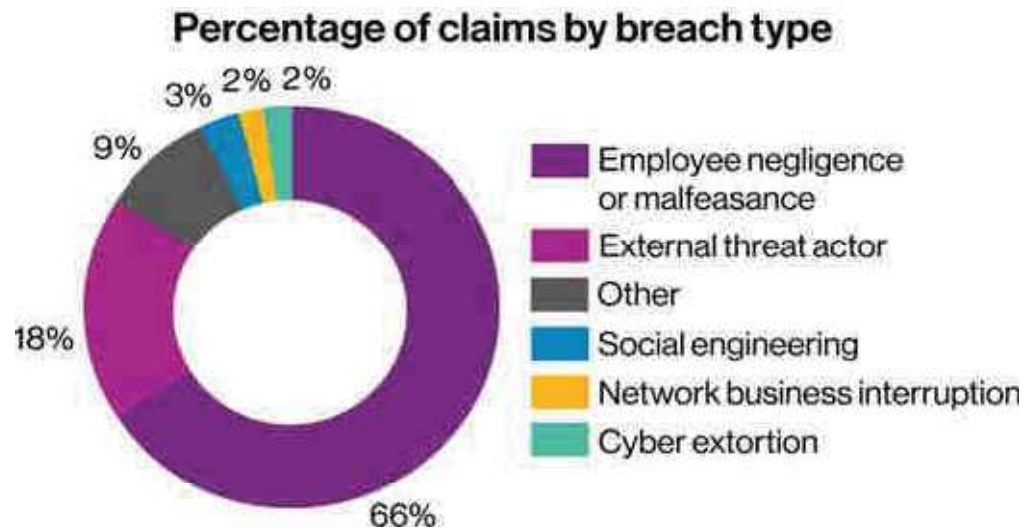


THE IMPACT

'in some cases the cost of cyber breaches and attacks to business reached millions'

Employee actors have become the top source of breaches

- Employee negligence or malicious behaviors are the most common source of cyber incidents
- The workplace is thus a major influence in mitigating cyber risk – using all the tools at an organization’s disposal, such as:
 - Strong culture
 - Effective recruitment, onboarding, and induction
 - Targeted training, compliance, and incentive policies



Source: Willis Towers Watson claims data

Cyber Risk

The *availability* of systems and data coming under increasing legal scrutiny



Cyber incident response – what should you do?

Reporting a cyber incident

Under Principle 11 of the FCA Handbook, you must report material cyber incidents. An incident may be material if it:

- results in significant loss of data, or the availability or control of your IT systems
- affects a large number of customers
- results in authorised access to, or malicious software present on, your information and communication systems

We will update these requirements in line with any future regulations.

EU Network & Information Security Directive

- Applies to providers of “Essential Services”
- Fines expected to be similar to GDPR
- Security of networks and information systems (not necessarily the data held on them)
- Make sure the digital economy stays up and running.

Art 32.1 GDPR

Implement appropriate technical and organisational measures to ensure a level of security appropriate to the risk, including inter alia as appropriate.... (b) the ability to ensure **the ongoing confidentiality, integrity, availability and resilience of processing systems and services**

Cyber Risk

GDPR Governance is key to avoiding.....

Enforcement

Supervisory Authority (e.g. ICO) may:

- carry out audits;
- issue orders to suspend or cease processing; or
- order suspension of data flows to third countries.

Enforcement applies a breach of **any** GDPR requirement.

Mandatory data breach notification may reveal wider GDPR breaches and therefore increase the number of enforcement actions.

Sanctions

Tier 1: 2% Annual Turnover / EUR 10m

Tier 2: 4% Annual Turnover / EUR 20m

Member States may introduce criminal sanctions.

Compensation

Compensation for material (i.e. financial) and non-material (i.e. distress / moral damage) for GDPR breaches.

Typical awards in UK for distress £2k - £15k but precedents exist for up to £250,000.

Engaged and Ready?

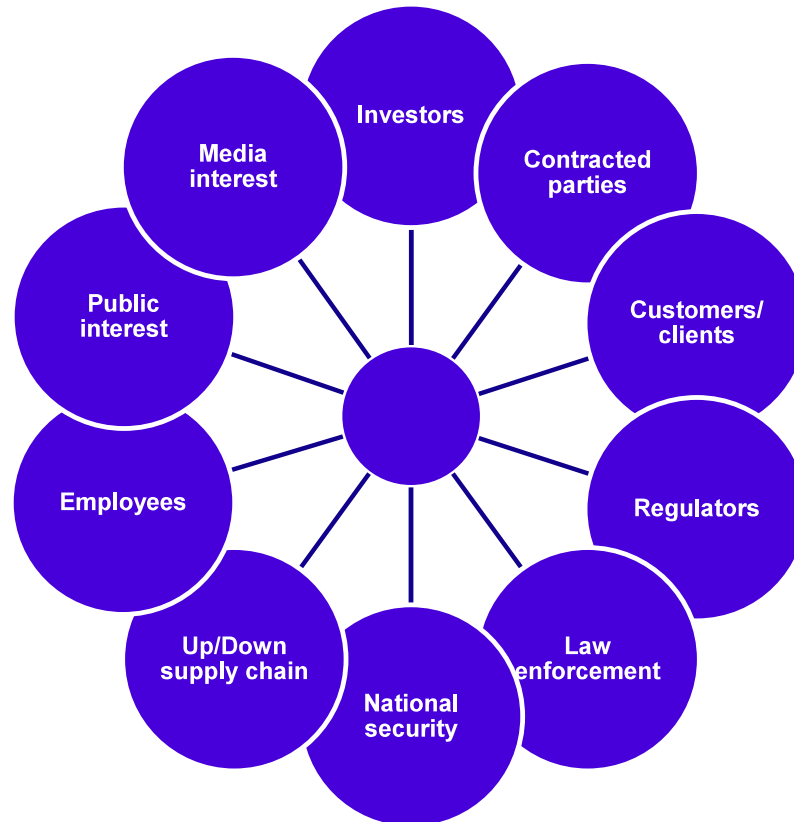
Board Responsibility (Corporate Governance Code) - Cyber

- Leading a framework of prudent and effective controls
- Enabling risk to be assessed and managed
- Set strategic aims
- Ensure the necessary financial and human resources are in place
- Review management performance
- Set the companies values and standards
- Ensure that obligations to shareholders and others are understood and met



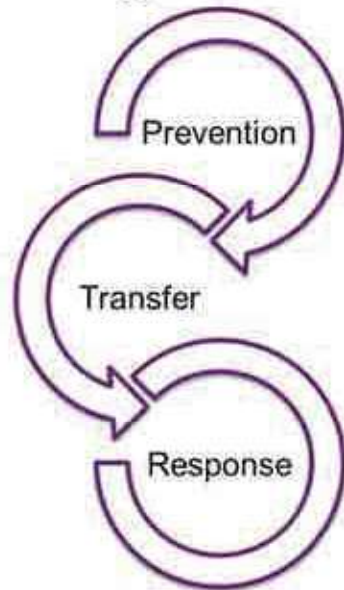
1 Cyber Risk

Stakeholders in the cyber security of your company

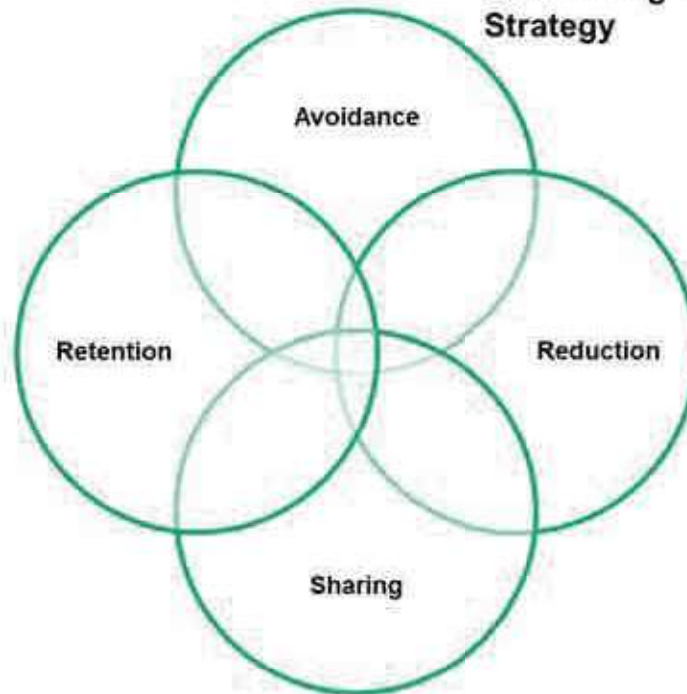


Cyber Strategy

Cyber Strategy



Risk Management Strategy

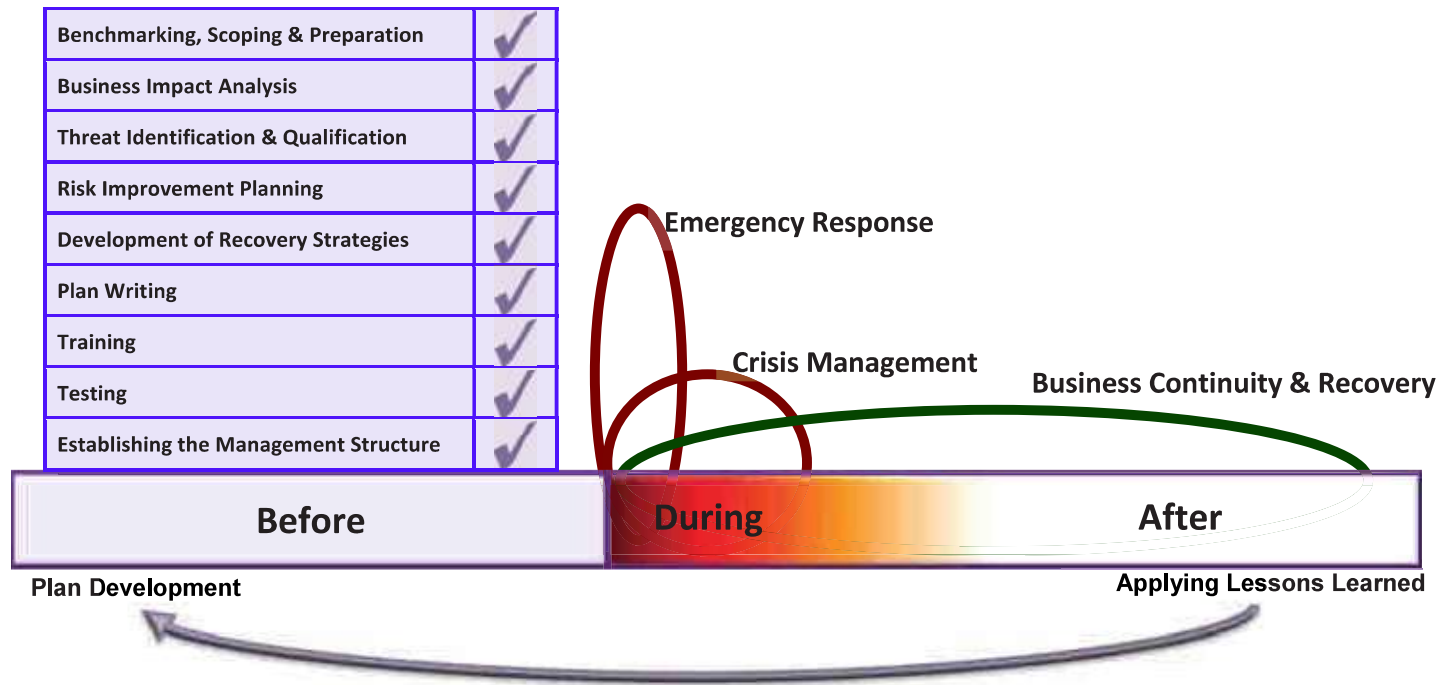


Business Continuity Lifecycle



The Crisis Journey

Technology failure





CORPORATE GOVERNANCE DEVELOPMENT FRAMEWORK

The Effective Board: Diversity and Beyond

Mike Lubrano Principal
Managing Partner, Cartica

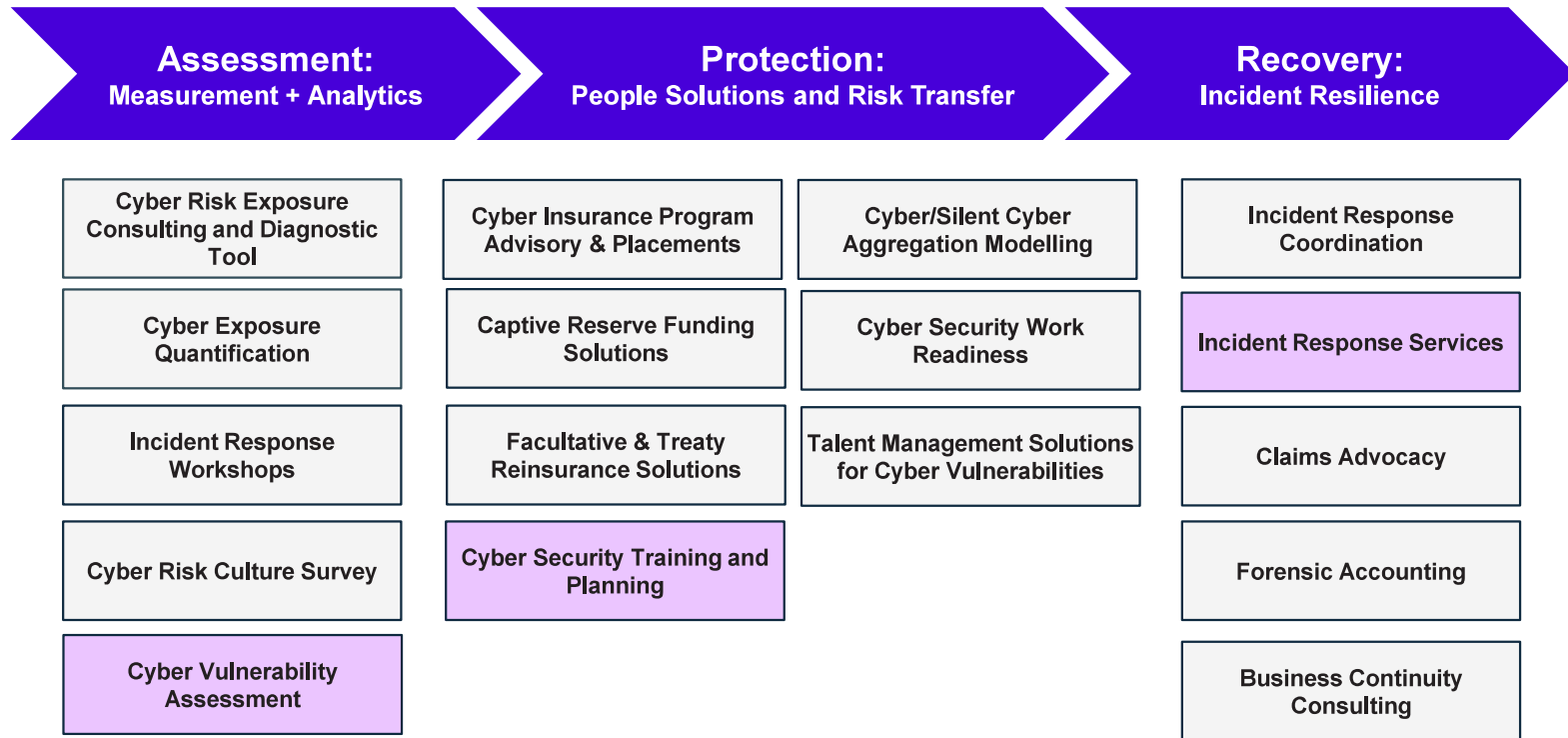


Cyber – Remaining on the front foot



Leading and Managing Your Responsibilities

Integrated Across People, Capital and Technology



Access to human capital consultants and risk advisors

Your Internal Knowledge and Actions

- Current and emerging law, regulation and policies (GDPR, NISD May 18 ...)
- International requirements – Atlantic Council ... where is your data
- Preparing your landscape – how long to work up
- Trends for your sector – what is happening, what can you expect
- How well are you embracing the National and International threat intelligence architecture
- Who might be interested in targeting your company and why
- How well do you know your people
- Are you structured and empowered to make quick decisions
- Ability to stress test your system

**“For the strength of the pack
is the wolf, and the strength
of the wolf is the pack”**

Rudyard Kipling

Basic Board Benchmark– Philippines

Filipino Companies BoD Benchmarking	# BOB	Ind. (per company)	True Ind.	Non-exec	Non-ind, non-exec	Female	Ind. Female	Age		Tenure		9yr violators (Ind)	Over-boarding		Mtgs 2016	Avg attendance	Ind. attendance	Ind. chairman?	Non-exec chairman?	Audit Comm. tenure
								All	Ind.	All	Ind.		All	Ind.						
Aboitiz Equity	8	38%	25%	63%	38%	0%	0%	63	57	26	7	1	2	2	7	99%	100%	No	Yes	13
Aboitiz Power	9	33%	22%	78%	56%	0%	0%	64	73	11	4	1	1	1	5	93%	100%	No	No	8
Alliance Global	7	29%	0%	57%	57%	0%	0%	61	N/A	13	N/A	2	2	N/A	17	99%	N/A	No	No	14
Ayala Corp	7	43%	43%	71%	29%	0%	0%	62	67	14	8	0	3	3	6	94%	94%	No	No	8
Ayala Land	9	33%	33%	78%	44%	22%	22%	61	59	11	4	0	2	1	6	92%	83%	No	No	7
BDO	11	45%	36%	64%	27%	18%	0%	68	65	16	4	1	0	1	17	100%	100%	No	Yes	15
BPI	15	47%	27%	93%	67%	33%	13%	64	62	15	4	3	2	1	13	94%	94%	No	Yes	18
Emperador	7	29%	29%	71%	43%	14%	0%	58	61	4	3	0	2	2	6	93%	86%	No	Yes	4
First Gen	9	33%	22%	67%	44%	0%	0%	63	60	12	3	1	4	3	7	89%	92%	No	No	10
GT Capital	11	36%	36%	91%	55%	0%	0%	59	59	6	4	0	0	0	7	90%	89%	No	Yes	4
ICT	7	29%	0%	86%	86%	0%	0%	68	N/A	22	N/A	2	2	N/A	28	100%	N/A	No	No	19
Jollibee	8	25%	13%	63%	50%	0%	0%	66	72	22	17	1	2	6	10	81%	80%	No	No	24
MegaWorld	7	43%	14%	71%	57%	14%	0%	65	N/A	17	2	2	2	0	5	100%	100%	No	No	18
MPIC	14	16%	7%	71%	64%	7%	7%	65	68	8	8	2	2	1	8	88%	100%	No	Yes	7
PLDT	13	23%	15%	77%	62%	23%	0%	65	66	9	4	1	4	5	16	93%	88%	No	No	8
San Miguel	15	27%	20%	73%	53%	7%	0%	70	74	12	5	1	2	2	8	96%	90%	No	No	11
Security Bank	15	13%	27%	87%	60%	20%	7%	64	65	16	2	2	0	1	14	97%	100%	No	Yes	19
SM Investments	8	38%	38%	75%	38%	25%	13%	66	70	16	3	0	1	1	6	98%	100%	No	Yes	5
URC	9	22%	0%	56%	56%	0%	0%	65	N/A	27	N/A	2	3	N/A	12	100%	N/A	No	Yes	32
Broad market avg	10	32%	21%	73%	52%	10%	3%	64	65	15	5	1	2	2	10	94%	94%			13
Cartica company avg	11	20%	8%	75%	66%	7%	3%	65	66	18	5	2	2	1	16	96%	100%			19

Basic Board Benchmark-India

Indian Companies BOB Benchmarking	Sector	# BOB	Ind. Director	Non-Exec	Non-Ind. (Govt)	Prom. %	Ind. Prom. %	Age	Tenure		EDY (years)	Over-boarding	MBO FT15-18	Avg. shares (L)	Ind. attendance	Ind. Chairman?	Non-executive (Chairman?)	External auditors	Members of audit committee	Audit committee board tenure	Meetings of audit committee	Audit committee attendance	Free float %	Market cap (B)		
									ED	MD															ED	MD
WIPAC	Tech	3	73%	33%	13%	0	0	27	27	3	0	0	2	2	0	90%	90%	Yes	Yes	ED (WIPAC)	4	3	6	100%	70	33
Wipro	Tech	10	70%	50%	30%	0	0	42	35	11	0	0	1	1	0	90%	90%	Yes	Yes	ED (WIPAC)	0	10	5	100%	14	23
Shree Anil	Telecom	3	30%	70%	30%	0	0	37	34	14	0	0	1	1	0	90%	70%	Yes	Yes	ED (SBI)	4	0	3	90%	14	23
ITC	Consumer	12	95%	95%	20%	0	0	40	39	8	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	4	3	22	70%	33	55
WIP	Consumer	9	90%	60%	11%	0	0	43	40	8	0	0	0	0	0	90%	90%	Yes	Yes	ED (WIPAC)	0	9	4	100%	31	41
Mahindra	Consumer	8	80%	80%	20%	0	0	38	38	12	0	0	1	1	0	90%	90%	Yes	Yes	ED (SBI)	4	11	8	90%	32	37
Colgate	Consumer	11	50%	20%	11%	0	0	43	32	14	0	0	1	1	0	90%	90%	Yes	Yes	C. Bawa & Co	2	11	8	90%	34	9
Page Industries	Consumer	12	50%	70%	20%	0	0	45	32	8	0	0	1	1	0	90%	90%	Yes	Yes	ED (SBI)	4	1	3	10%	36	9
HDFC	Finance	10	80%	70%	10%	0	0	70	70	12	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	2	20	5	100%	40	44
Cholamandalam	Finance	7	50%	50%	20%	0	0	46	34	6	0	0	0	0	0	90%	90%	Yes	Yes	Deloitte	0	7	5	90%	38	9
WGL Bank	Finance	11	60%	40%	10%	0	0	38	38	3	0	0	0	0	0	90%	90%	Yes	Yes	ED (SBI)	2	3	4	90%	37	9
Sun Pharma	Healthcare	8	90%	80%	11%	0	0	38	38	17	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	4	17	4	90%	78	18
Apollo Hospitals	Healthcare	8	100%	100%	0%	0	0	74	74	18	0	0	1	1	0	90%	90%	Yes	Yes	S. Vasanthan	2	15	8	100%	78	2
Dr Reddy's	Healthcare	3	100%	100%	0%	0	0	41	41	18	0	0	1	1	0	90%	90%	Yes	Yes	ED (WIPAC)	4	4	3	100%	68	4
Cipla	Healthcare	14	50%	50%	4%	0	0	42	31	13	0	0	1	1	0	90%	90%	Yes	Yes	J. J. Aggarwal	4	11	4	90%	14	4
Tata Motors	Auto	9	90%	80%	11%	0	0	43	34	7	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	4	8	18	90%	37	19
Harik Motors	Auto	11	64%	32%	10%	0	0	39	37	11	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	4	14	8	100%	45	11
MAE	Auto	10	70%	30%	10%	0	0	43	37	14	0	0	1	1	0	90%	90%	Yes	Yes	ED & Co.	4	13	8	90%	33	12
Tata Motors	Auto	8	90%	70%	22%	0	0	38	38	10	0	0	1	1	0	90%	90%	Yes	Yes	S. Varma, Kulk & Co.	2	10	4	90%	38	7
Hero Cycles	Auto	10	50%	80%	17%	0	0	38	37	10	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte & Touche	2	10	4	100%	41	11
Hero Cycles	Auto	2	80%	100%	10%	0	0	38	38	13	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	2	12	4	90%	37	8
Excel Motors	Auto	8	80%	80%	17%	0	0	38	38	12	0	0	1	1	0	90%	90%	Yes	Yes	ED (SBI)	2	14	8	90%	38	14
Amalgam	Consumer	12	40%	60%	20%	0	0	38	38	11	0	0	1	1	0	90%	90%	Yes	Yes	ED (SBI)	2	11	7	90%	36	8
Mitsubishi	Consumer	11	30%	40%	16%	0	0	34	37	8	0	0	1	1	0	90%	90%	Yes	Yes	ED & Co. (WIPAC)	4	4	4	90%	17	14
Recco	Consumer	8	30%	80%	3%	0	0	44	46	9	0	0	1	1	0	90%	90%	Yes	Yes	Keshav Prasad Kulk & Co., IAS & Associates	4	13	2	90%	34	8
Recco	Consumer	8	30%	60%	14%	0	0	44	41	8	0	0	1	1	0	90%	90%	Yes	Yes	S. R. Srinivasan	2	4	2	10%	37	8
Sala Care	Consumer	8	80%	100%	14%	0	0	70	74	10	0	0	1	1	0	90%	90%	Yes	Yes	R. P. Khanna	0	2	4	90%	37	3
Qaysar	Consumer	8	70%	110%	22%	0	0	44	71	19	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	1	23	8	100%	78	11
Shree	Consumer	11	90%	80%	24%	0	0	39	34	14	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte & Touche	1	11	4	100%	38	10
L&T	Construction	12	50%	30%	8%	0	0	34	39	6	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	4	6	7	90%	38	27
APOL Polysar	Materials	7	50%	70%	14%	0	0	42	38	12	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	4	12	5	100%	35	2
UPL Engineering	Materials	10	40%	50%	10%	0	0	39	39	19	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	4	11	7	100%	46	2
Polysar	Materials	10	60%	70%	10%	0	0	45	49	13	0	0	1	1	0	90%	90%	Yes	Yes	P. G. Khanna	0	14	1	100%	41	3
Disha	Materials	11	30%	70%	10%	0	0	70	73	12	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte & Touche	4	17	4	90%	35	8
Tata Steel	Materials	11	50%	30%	17%	0	0	43	48	11	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	4	11	5	90%	37	10
EO Fertil	Materials	7	50%	30%	20%	0	0	44	47	4	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	4	7	9	10%	46	2
Indo	Chemicals	8	20%	30%	20%	0	0	42	37	8	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte	4	11	6	90%	36	3
Asian Petro	Chemicals	14	50%	90%	40%	0	0	44	39	12	0	0	1	1	0	90%	90%	Yes	Yes	ED (WIPAC)	4	19	2	90%	35	19
UPL	Chemicals	12	50%	70%	20%	0	0	44	46	10	0	0	1	1	0	90%	90%	Yes	Yes	ED (SBI)	3	18	6	100%	70	4
Pharika	Chemicals	8	70%	30%	0%	0	0	40	40	8	0	0	1	1	0	90%	90%	Yes	Yes	ED (SBI)	3	4	4	100%	29	3
Shankar	Chemicals	12	50%	30%	8%	0	0	39	41	9	0	0	1	1	0	90%	90%	Yes	Yes	Deloitte & Touche	4	11	5	90%	18	3
R Industries	Chemicals	2	80%	40%	10%	0	0	38	48	1	0	0	1	1	0	90%	90%	Yes	Yes	ED	3	1	4	100%	42	2
Broad market average		10	71%	80%	10%	0	0	43	44	13	0	0	1	1	0	90%	90%		4	13	8	90%	38	11.3		
CARTICA industry average		8	80%	80%	10%	0	0	40	42	10	0	0	1	1	0	90%	90%		2	9	8	90%	34	4		
Consumer industry average		11	64%	70%	20%	0	0	43	43	10	0	0	1	1	0	90%	90%		4	9	7	90%	42	12.3		
Auto industry average		10	67%	80%	20%	0	0	43	44	13	0	0	1	1	0	90%	90%		4	12	8	90%	37	11.9		
Consumer industry average		8	61%	60%	11%	0	0	44	44	11	0	0	1	1	0	90%	90%		4	12	8	90%	48	1.4		
Chemicals industry average		11	43%	70%	20%	0	0	43	43	12	0	0	1	1	0	90%	90%		4	13	8	90%	41	3		

Director Skills Matrix

Director:	Skills											
	1	2	3	4	5	6	7	8	9	10	11	12
Strategy												
Marketing & Sales												
Capital Markets												
Finance												
Audit, Controls and Risk												
Corporate Governance												
Managerial Expertise												
Sector/ Industry Experience												
Intl. Business Experience												
Public Company Board Experience												
Sustainability												
Real Estate												
M&A												
Human Capital Resources												
ICT & Cyber												
Other (co. or indust. specific)												

Director:	Background											
	1	2	3	4	5	6	7	8	9	10	11	12
Legal												
Government												
Academic												
Economist												
Accounting & Audit												
Engineering												

Source: Bloomberg and Cartica Internal Reports.

Example: Board Competencies Table for a Cartica Portfolio Company

Directors:		Skills						
		1	2*	3*	4	5	6	7
1. Director		●	●	●	○		●	●
2. Director/CEO		●	●		●		●	
3. Director/CFO		●		●				●
4. Director		●		●	○		●	●
5. Director		●		●		●	●	
6. Director		●			○	●		●
7. Director								
			○		○			○
		●	●	●	○	●	●	●
			●	●	●			
			●	●	○			
		●				●	●	●
			○		○			○
		●	●	●	○	●	●	●
			●	●	●	●		
		●	●	●	○			
		●				●	●	●

* Indicates Executive Directors
 ○ Indicates Independent Director

- Competency apparent from public disclosures
- Competency present but not adequately disclosed in publicly available materials
- Directors that most evidently exhibit a particular competency and can be expected to show board leadership on related topics

Basic Board Competencies and Professional Backgrounds

Competencies¹:

1. Strategy
2. Marketing and Sales
3. Capital Markets
4. Finance
5. Audit, Controls and Risk
6. Corporate Governance
7. Managerial Expertise
8. Sector/ Industry Experience
9. International Business
10. Public Company Board Experience
11. Sustainability

Professional Qualifications²:

1. Legal/regulatory
2. Government
3. Academia
4. Economics
5. Accounting & Audit
6. Technical / engineering

¹ In general, we deem an important skill to be adequately present on a Board when at least three Directors can be shown to possess it.

² Qualification by as few as a single Director in each relevant profession may be sufficient.

Overview – Comparative Board Skillset Review

Board composition and competencies						
	Company A	Company B	Company C	Company D	Company E	Company F
Strategy	✗	✓	✗	✗	✗	✓
Marketing & Sales	✗	✓	✗	✓	✗	✓
Capital Markets	✓	✓	✓	✓	✓	✓
Finance	✓	✓	✓	✓	✓	✓
Audit, Controls and Risk	✗	✓	✗	✗	✗	✗
Corporate Governance	✓	✓	✓	✓	✗	✓
Managerial Expertise	✓	✓	✓	✓	✗	✓
Sector/ Industry Experience	✗	✓	✗	✓	✗	✓
Intl. Business Experience	✓	✓	✓	✓	✓	✓
Public Company Board Experience	✗	✗	✗	✗	✗	✗
Sustainability	✗	✗	✗	✗	✗	✗
Real Estate	✗	✓	✗	✗	✗	✓
M&A	✓	✓	✓	✓	✗	✓
Human Capital Resources	✗	✗	✓	✗	✗	✗
ICT & Cyber	✗	✓	✗	✓	✗	✓
Other (co. or indust. specific)	✓	✓	✓	✓	✓	✓

Legal	✓	✓	✗	✓	✓	✓
Government	✓	✗	✓	✗	✓	✓
Academic	✓	✓	✓	✗	✗	✗
Economist	✓	✗	✓	✗	✓	✓
Accounting & Audit	✓	✓	✓	✗	✗	✗
Engineering	✓	✓	✓	✓	✗	✓

we assign a check for 3 or more directors with a skill