What Technical Leads Can Learn from Great General Managers Throughout History

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Carbon Five

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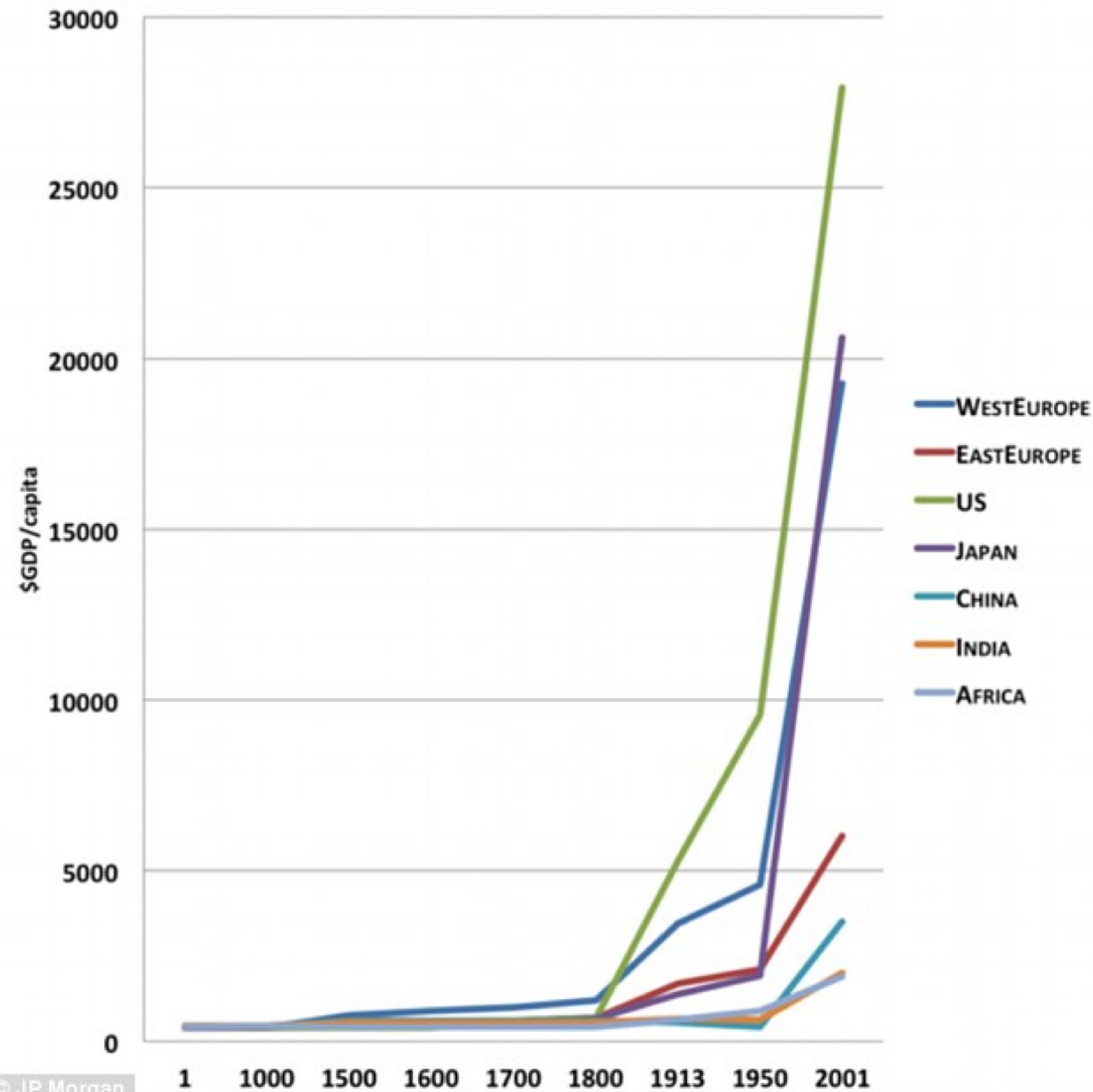
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The World Until 2000

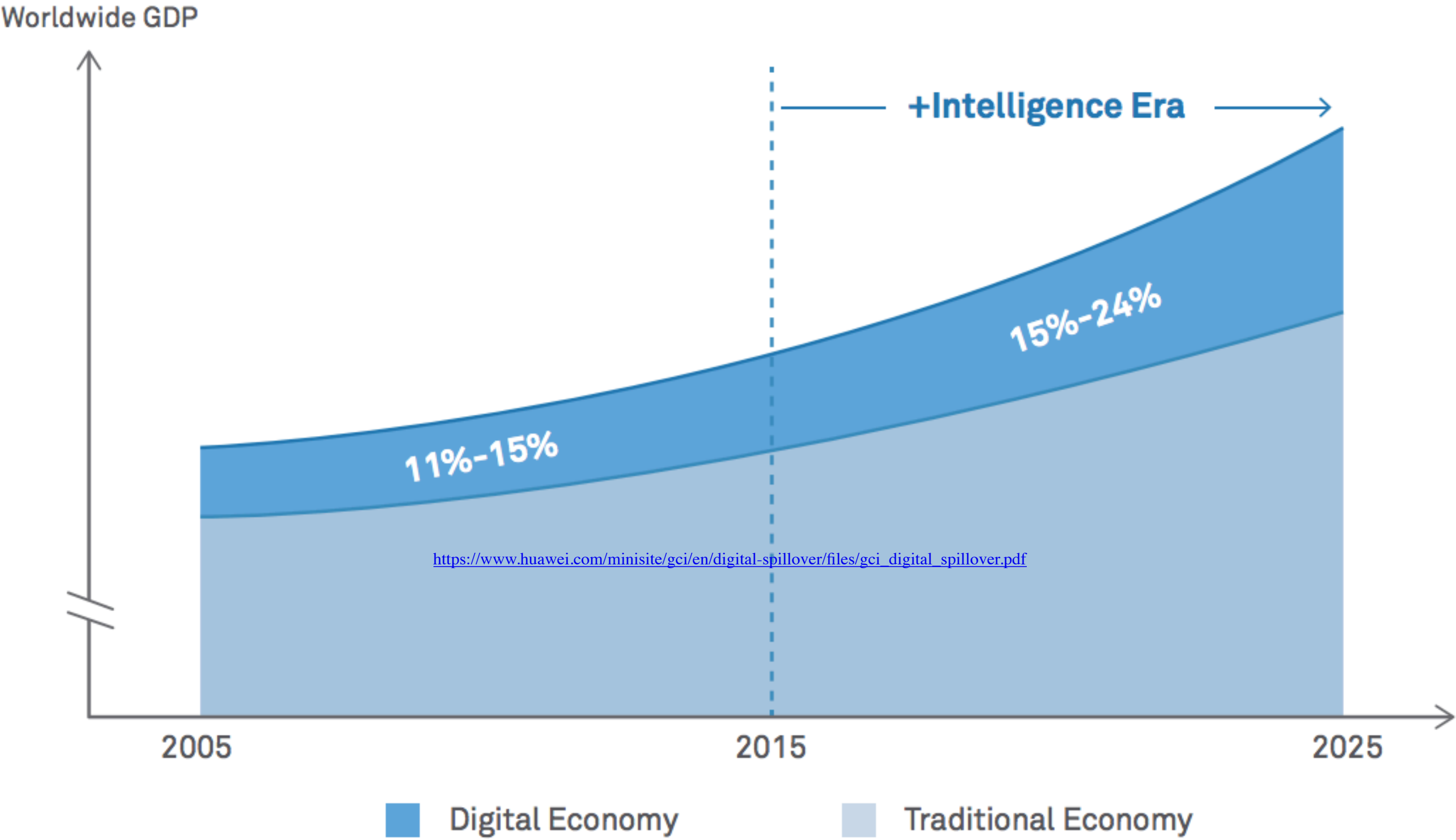WestEurope
EastEurope
US
Japan
China
India
Africa

$GDP/capita

1   1000   1500   1600   1700   1800   1913   1950   2001

© JP Morgan

Fig. 12. Projected growth in global digital economy

Worldwide GDP

+Intelligence Era ⟶

15%-24%

11%-15%

https://www.huawei.com/minisite/gci/en/digital-spillover/files/gci_digital_spillover.pdf

2005   2015   2025

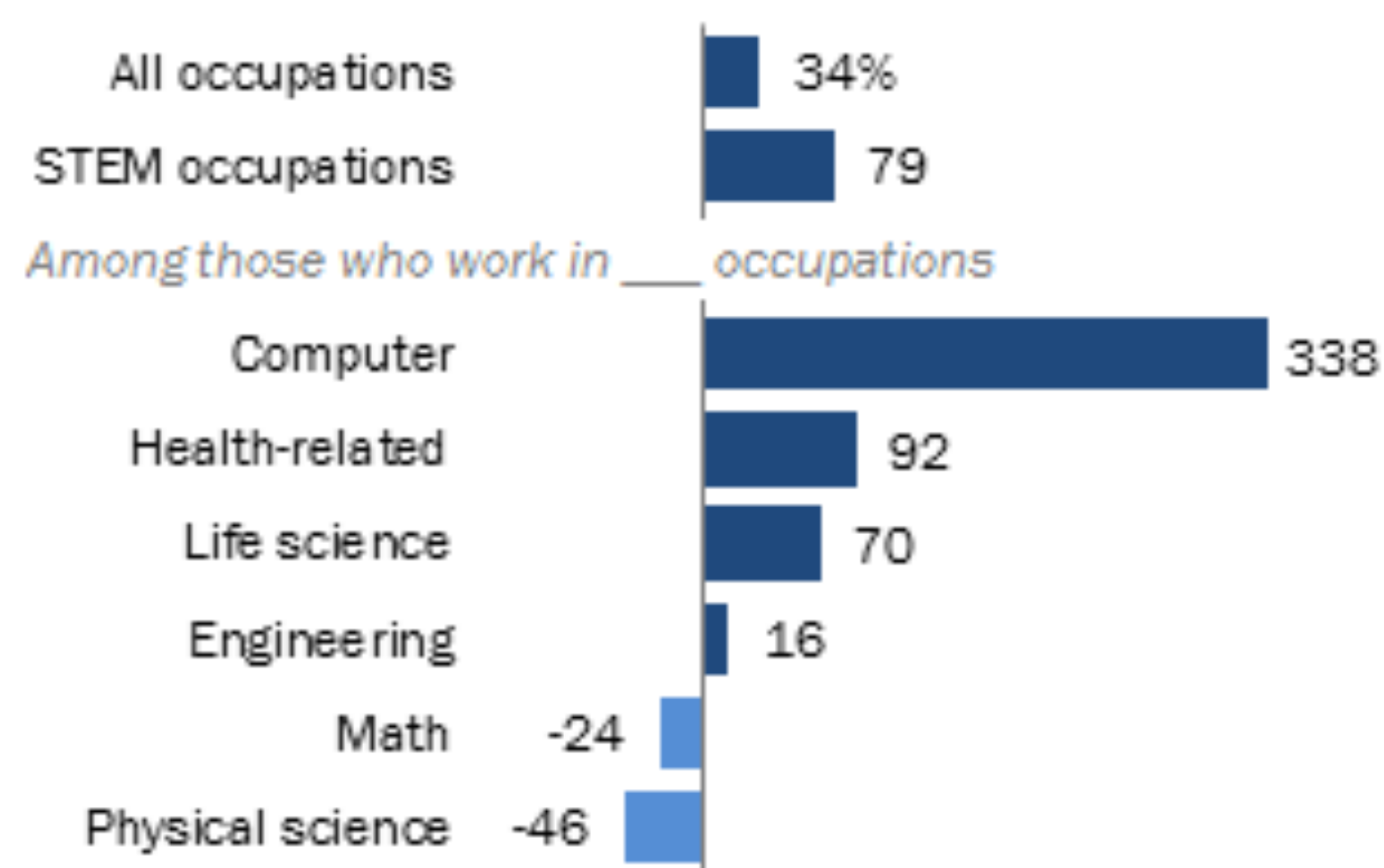■ Digital Economy   ■ Traditional Economy

Source: Oxford Economics, Huawei

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[5] Countries categorized in line with Huawei Global Connectivity Index groupings. Developing economies also include emerging economies, as defined by the International Monetary Fund.

Employment in computer jobs has more than quadrupled since 1990

% change in employment, 1990 to 2014-16

All occupations	34%
STEM occupations	79

Among those who work in ___ occupations

Computer	338
Health-related	92
Life science	70
Engineering	16
Math	-24
Physical science	-46

Note: Based on employed adults ages 25 and older. Engineering includes architects. STEM stands for science, technology, engineering and math.
Source: Pew Research Center analysis of 1990 decennial census and 2014-2016 American Community Survey (IPUMS).
"Women and Men in STEM Often at Odds Over Workplace Equity"

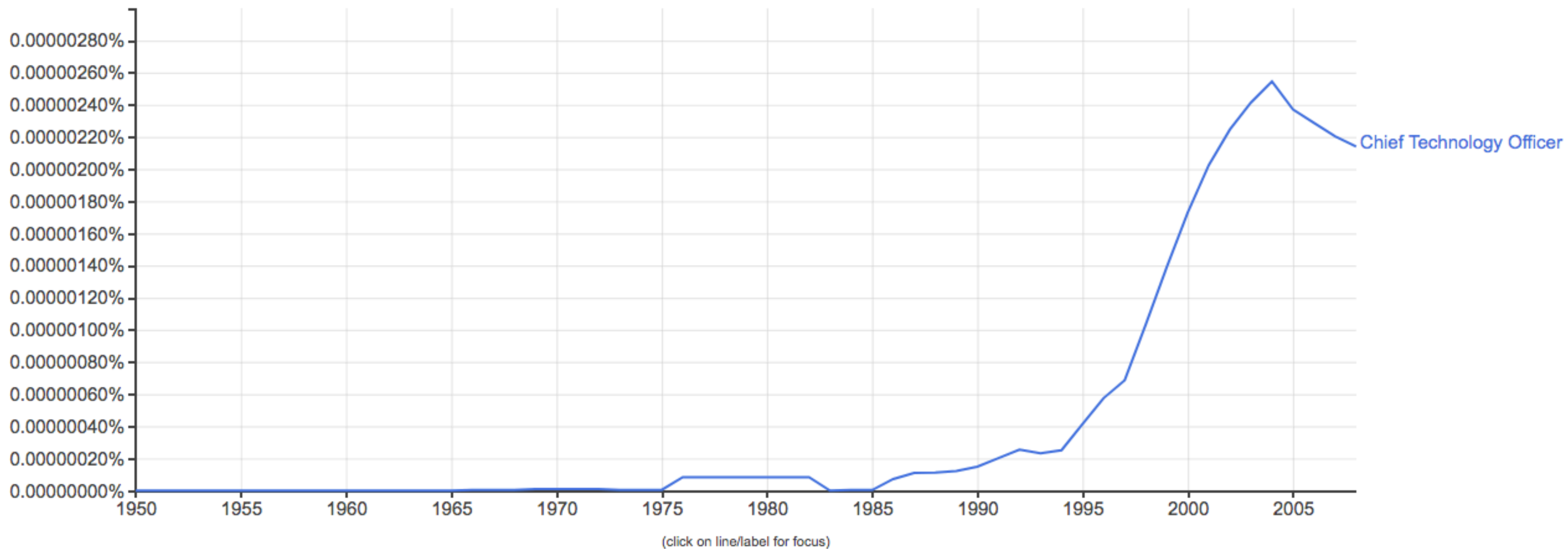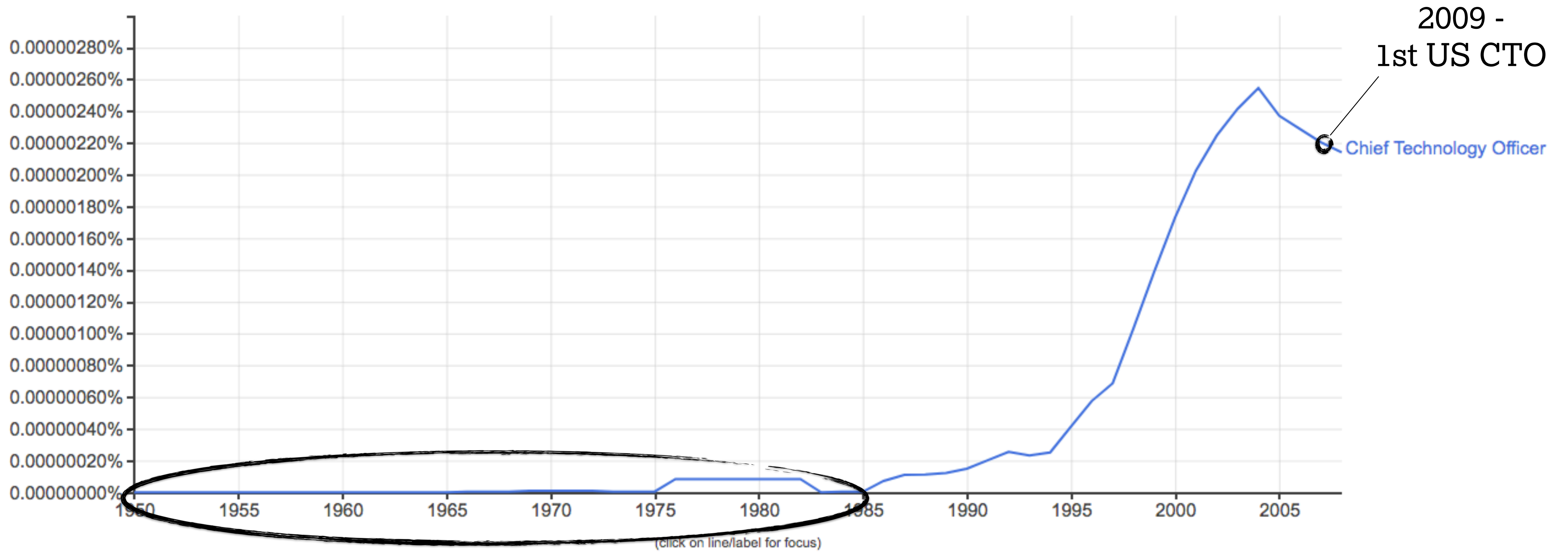PEW RESEARCH CENTER

Cost Center vs Profit Center

Then

- In-house back-office function focused on process automation and cost reduction.

- 10-15% of capital spend in the 1960's

- R&D groups, no representation on Executive team

Now

- Strategic driver of revenue and deeply integrated with business functions.

- over 50% of capital spending
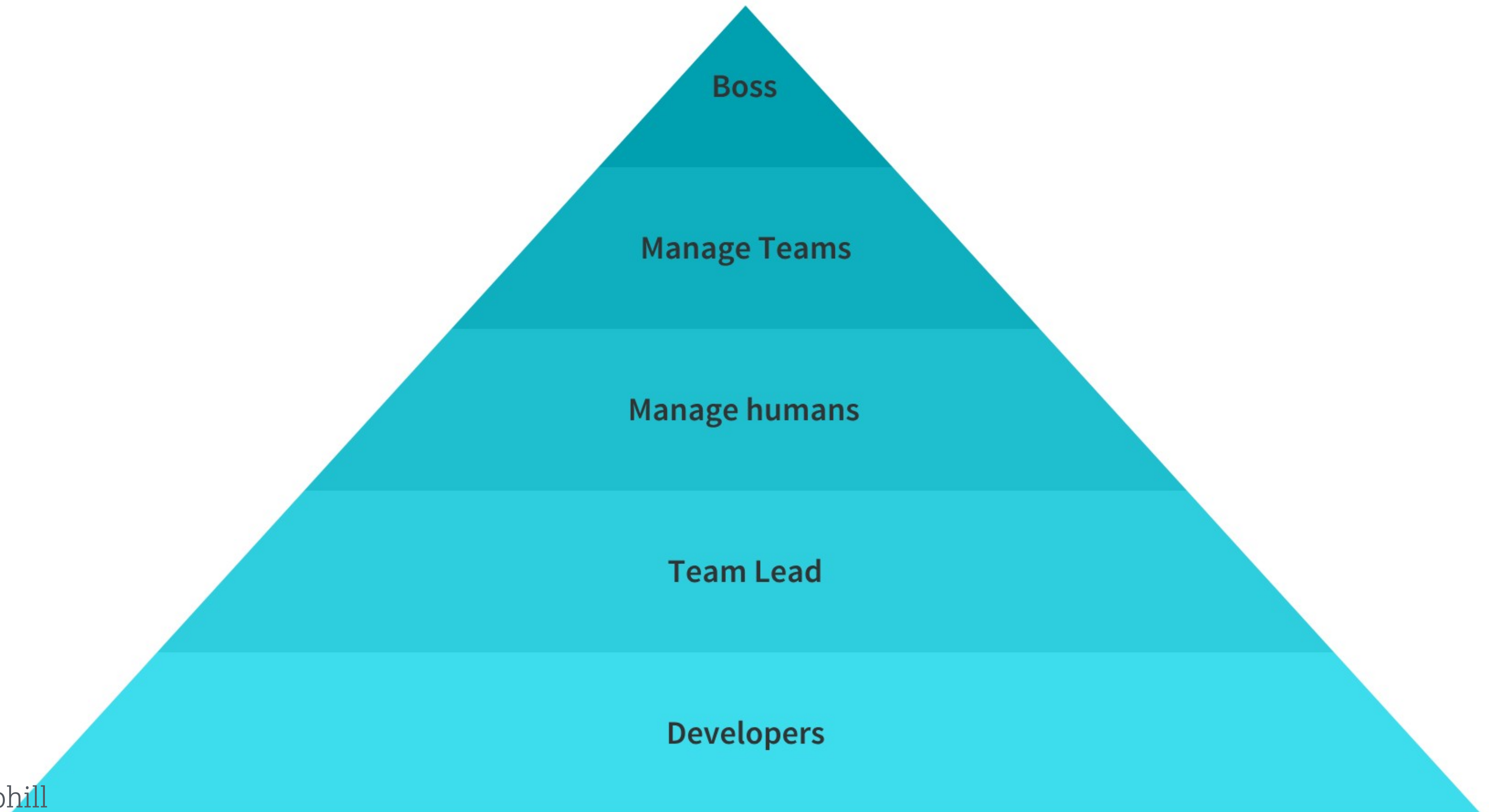
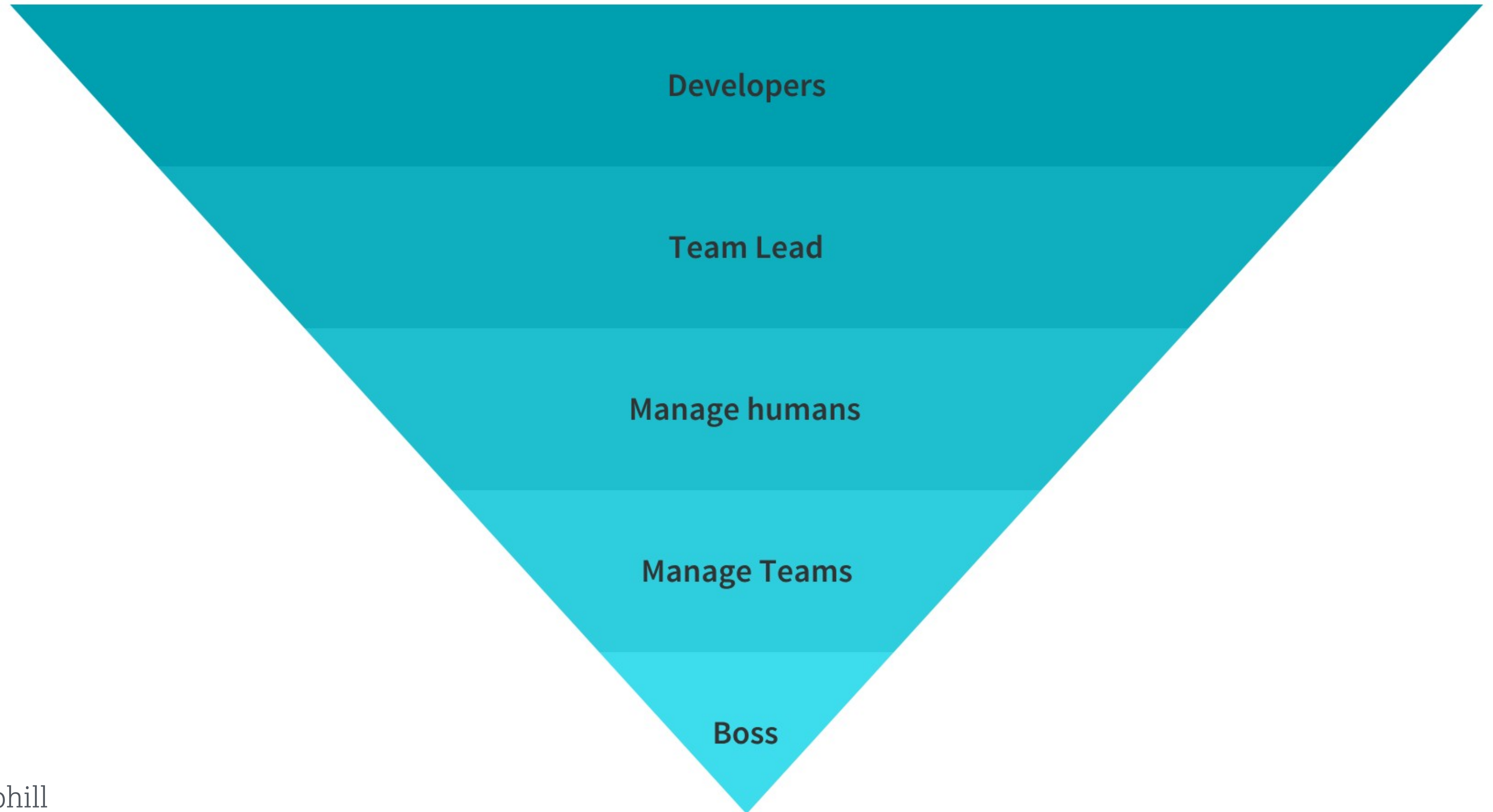*- CTO, CIO, CISO, CPO, VP Eng, Directors, etc, etc*

Many Paths...

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Expected

Boss

Manage Teams

Manage humans

Team Lead

Developers

Mechanical Engineering

Shop management and Frederick Winslow Taylor

(engineering productivity)

Frederick Winslow Taylor
(1856-1915)

- time clerk
- journeyman machinist
- gang boss over the lathe hands
- machine shop foreman
- research director
- chief engineer of the works & machine shop foreman

The Good

- Standardization (*speed-and-feed slide rules*)

- Time and motion studies (*Frank & Lillian Gilbreth*)

- Gantt charts (*Henry Gantt*)

- Wage incentives

- Statistical methods, quality assurance and quality control
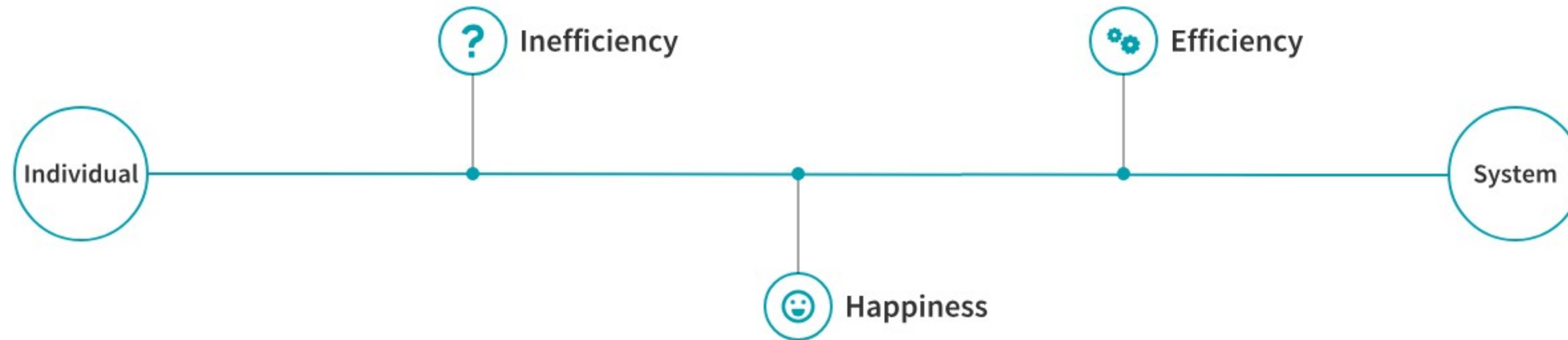
* Fordism, Lean, Agile

The Bad

- Mechanistic and inhuman

- Eugenics

- Skills and initiatives are passed from the individual to management

- False dichotomy of craft and business

- Efficiency over creativity

standard, mechanistic, inflexible, and precise

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The Balancing Act

Software	Management
Abstraction	*Messaging*
Code Reviews & Retros	*Feedback*
Story Writing	*Goals / OKRs*
Interoperability / APIs	*Diversity*
Continuous Integration & Deployment	*Strengths & Skill Development*
Pair Programming	*Mentorship*
Testing	*Psychological Safety*
Recursion	*Authenticity*

Software		Management
Abstraction	**Communication**	*Messaging*
Code Reviews & Retros		*Feedback*
Story Writing		*Goals / OKRs*
Interoperability	**Business Results**	*Diversity*
Continuous Integration & Deployment		*Strengths & Skill Development*
Pair Programming		*Mentorship*
Testing	**Motivations**	*Psychological Safety*
Recursion		*Authenticity*

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Communication

General Management 101

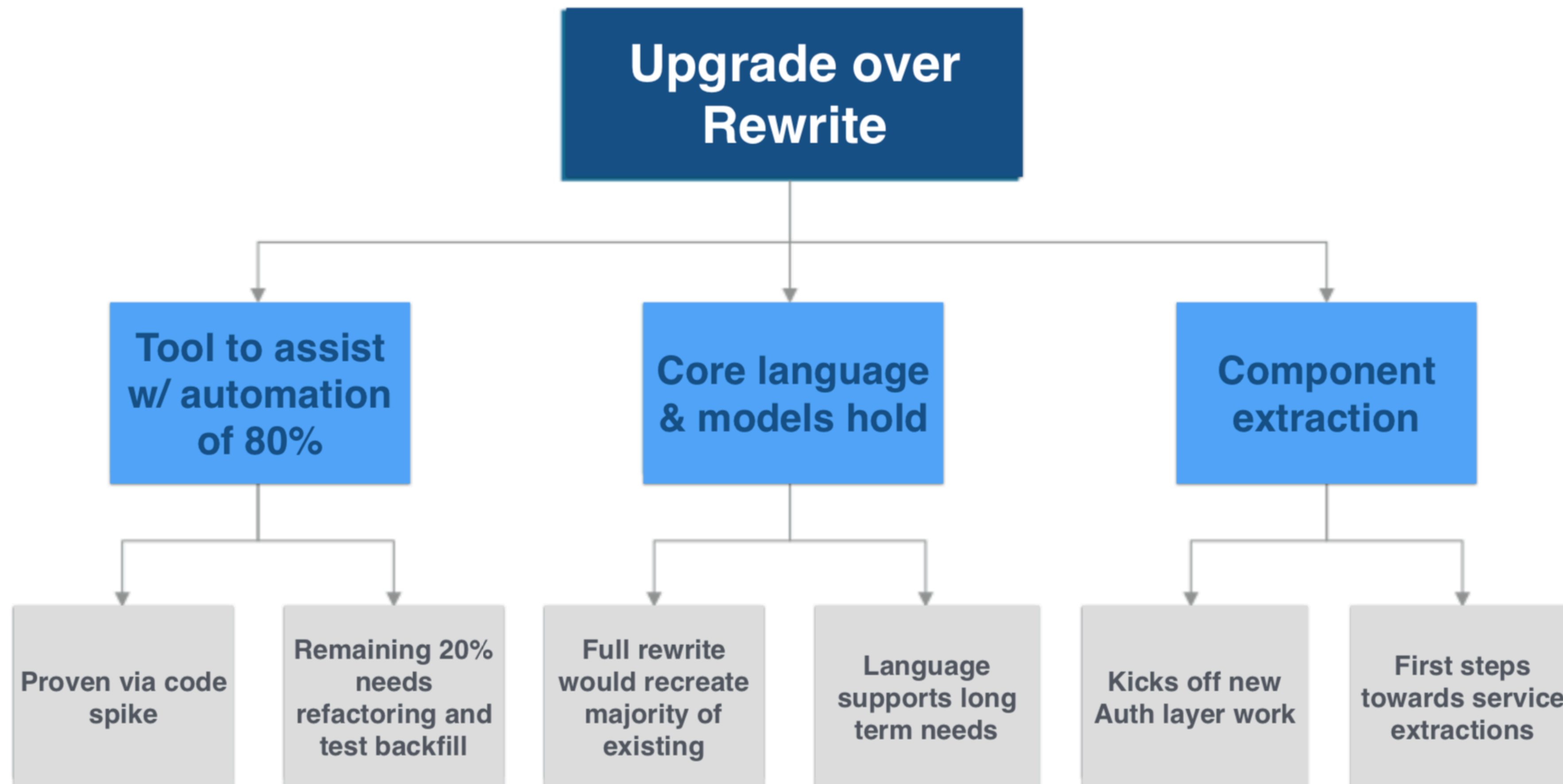*(thank you Michael Dearing & Harrison Metal)*

Messaging

The Pyramid Principle

(logic in writing, from a woman of many firsts: Barbara Minto)

Get to your point

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Storytelling

SCQA

- Situation -
- Complication -
- Question -
- Answer -

Feedback

Radical Candor

(Kim Scott on building stronger relationships through directness)

CARE PERSONALLY

CHALLENGE DIRECTLY

RUINOUS EMPATHY

RADICAL CANDOR

MANIPULATIVE INSINCERITY

OBNOXIOUS AGGRESSION

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cc Kim Scott @ Radical Candor https://www.radicalcandor.com/blog/gather-interview/

Business Results

Autonomy, mastery, and purpose

(We can only learn when we can measure the results of our actions)

Goal Setting

OKRs

(from Andy Grove, with love)

Prioritization

"The art of management lies in the capacity to select from the many activities of seemingly comparable significance the one or two or three that provide leverage well beyond the others and concentrate on them."
- Andrew S. Grove, High Output Management

Measure What Matters

- Company level, team, individual
- Go big (70% chance)
- Not too many (prioritize)
- Time bound (3 months or less)
- Never tie to bonus or comp

"Unrealistic beliefs on scope - often hidden and undiscussed - kill high standards."

- Jeff Bezos, shareholder letter 2017

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Diversity Matters

Retention, success, profit

(MIT Building 20 and its accessible knowledge base of producers)

"The edifice is so ugly…that it is impossible not to admire it, if that makes sense; it has 10 times the righteous nerdly swagger of any other building on campus, and at MIT any building holding that title has a natural constituency."

-Fred Hapgood, Up the Infinite Corridor: MIT and the Technical Imagination, Reading, Mass., 1992, 106.

- Gender-diverse companies perform **15%** better -
- Ethnically-diverse companies perform **35%** better -

For every **10%** increase in gender diversity in the same senior executive team, Earnings before interest and taxes (EBIT) increased by:
- **8%** in the United States
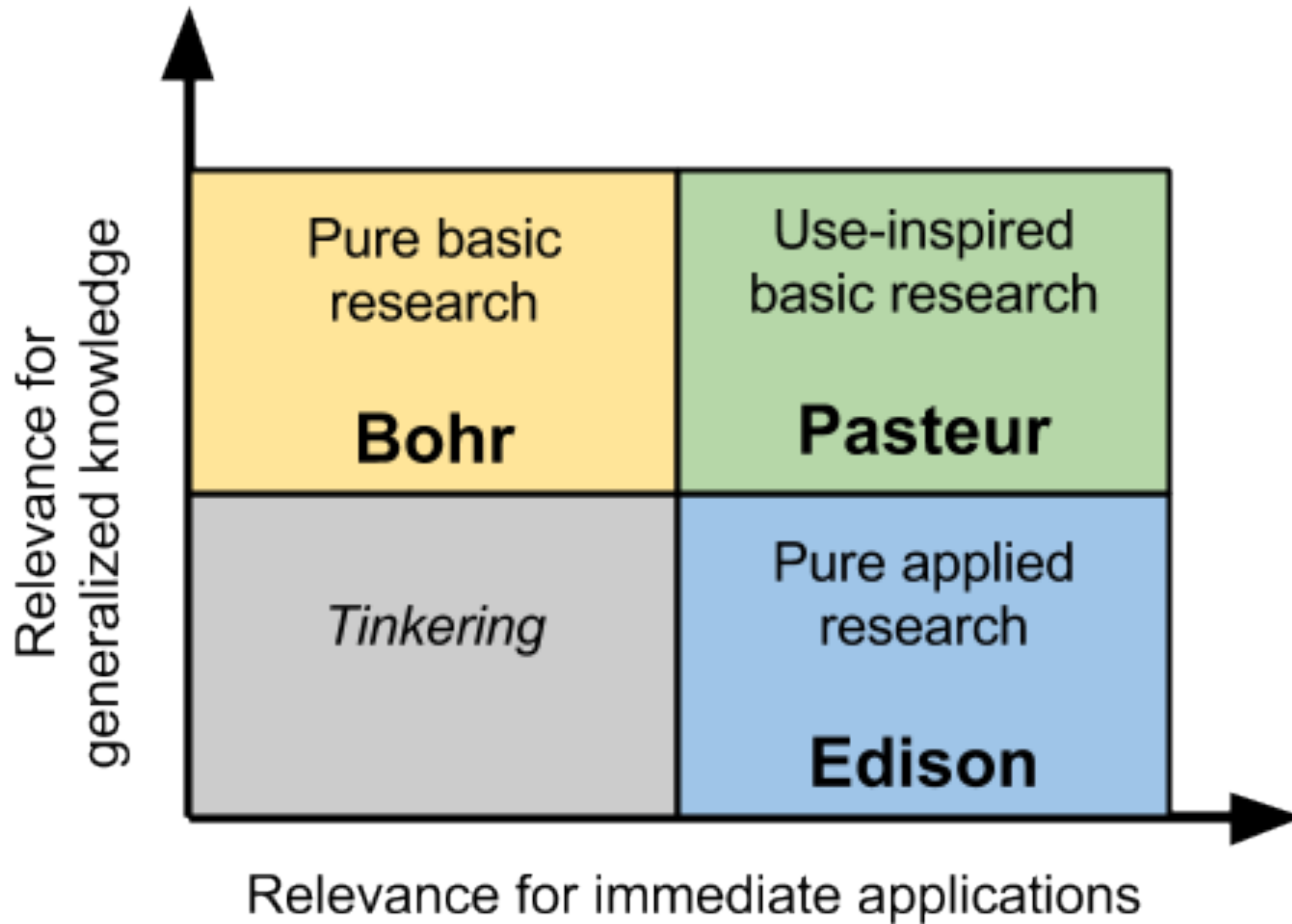- **3.5%** in the United Kingdom

Implicit (unconscious) bias

- Hiring, look outside your normal sources for candidates
- Create clear rubrics for interviewing and advancement
- Look for to match "stretch" projects to those that want to develop those skills
- Create inclusive environments that foster a sense of belonging

Motivation

The force multiplier of great managers

(Great products are to customers as great cultures are to employees)
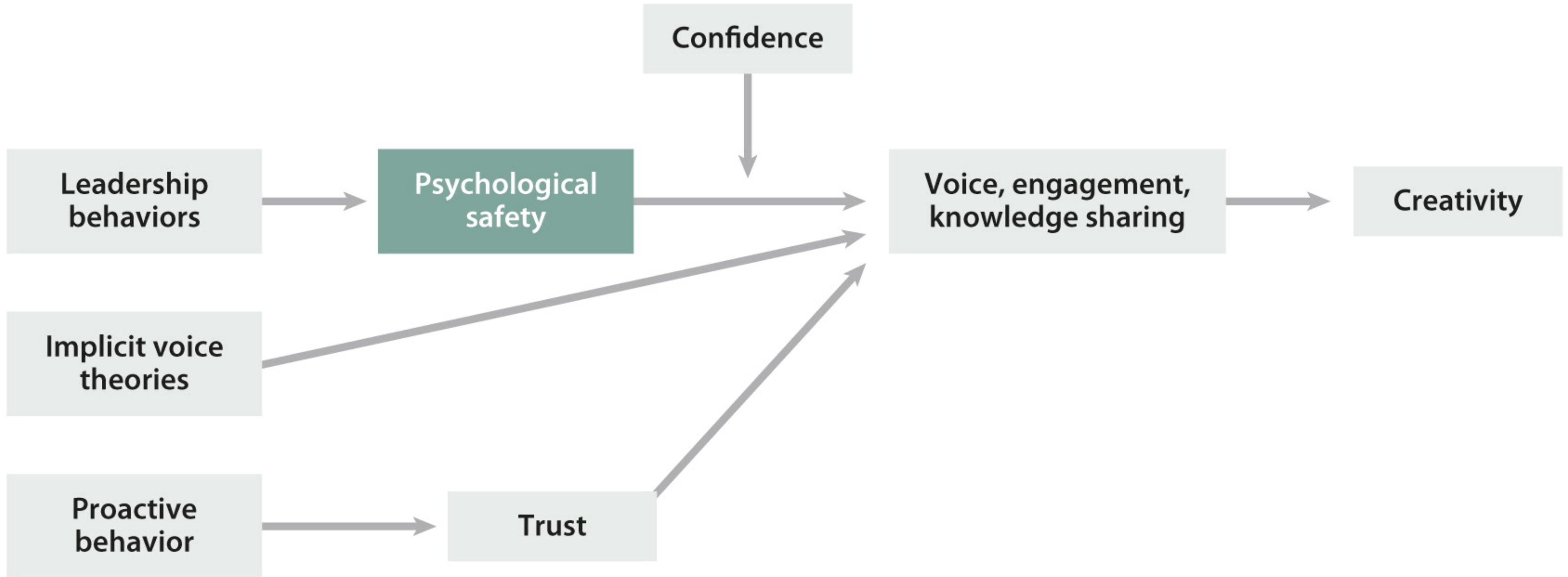
Skill portfolios

Calibrate your team

(Donald E. Stokes and his portfolio of scientists)

Psychological safety

Collective goals over self-protection

(Amy Edmondson analyses organizational learning)

Confidence

Leadership behaviors → Psychological safety → Voice, engagement, knowledge sharing → Creativity

Implicit voice theories

Proactive behavior → Trust

Edmondson AC, Lei Z. 2014.

Annu. Rev. Organ. Psychol. Organ. Behav. 1:23–43

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Initiative and Incentive

Reward systems and Harrington Emerson

(respect, clarity, and reward)

"Emerson conceived of an organic organization where efficiency was a natural occurrence, not an imposed set of targets and procedures"

- Witzel, Morgen"A short history of efficiency." Business Strategy Review (2002)

Process

- "The schedule is a moral contract or agreement with the men as to a particular machine operation, rate of wages and time. Any change … calls for a new schedule."

- Lack of insistence on the selection of "unusual" workers

- Bonuses were paid to foreman to "make of its employees industrious, well paid, and loyal workmen"

Photograph by Richard A. Ike

Planning department bulletin board of the Taber Manufacturing Company, showing how, under Scientific Management, the work for each man or each machine is mapped out in advance

Pitfalls

Roadblocks on the way

(not a full data set)

Common Struggles

Failure to delegate
- Stretch projects develop skills faster
- Trust your team, allow them to fail

Caught in complexity
- Underestimating
- Chasing "shiny" tech

Ego
- Condescending
- Pet Agenda
- Fail to work with other leaders @ company

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"Management is the opportunity to help people become better people. Practiced that way, it's a magnificent profession." - Clayton M. Christensen

Thanks!

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Resources

Communication

- Harrison Metal *(www.harrisonmetal.com)*
- Barbara Minto *(www.barbaraminto.com)*
- Radical Candor *(www.radicalcandor.com)*

Business Value

- OKRs *(John Doerr, https://www.youtube.com/watch?v=t-yeDb7stlw)*
- Implicit Bias *(https://implicit.harvard.edu/implicit/takeatest.html)*

Incentives

- Psychological Safety *(ReWork:Google)*