

INFO4444 Computing 4 Innovation

Week 3: Innovation Frameworks II:
Disruptive Innovation &
Innovator's Dilemma

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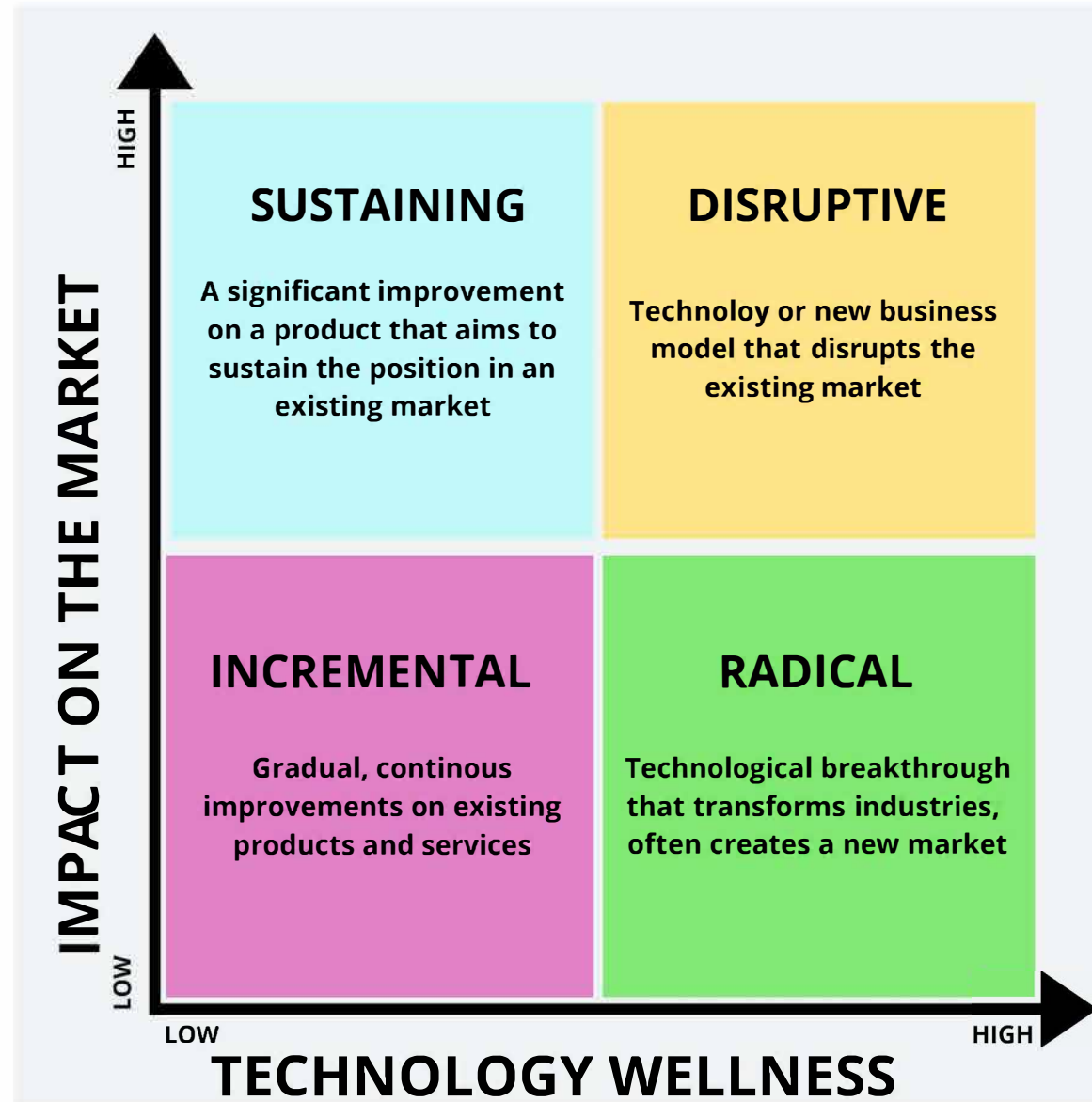
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Disruptive Innovation

Section 1

What Are The Different Innovation Models?



Innovation Models

1. **Incremental**: In this type of innovation, there is no involvement of a new business model or technology the company **keeps on improving the existing features**.
2. **Radical**: Radical innovation involves introducing **new technology components** in the products or systems to innovate the existing ones.
3. **Sustaining**: This type differs from the others, as it is marked by **introducing changes** in the business model but no evolution of the technology.
4. **Disruptive**: As its name indicates, both the **business model** and the **technology features** will be **changed** to meet the changing expectations of the consumers.

Disruptive Innovation Model

Section 1.1

“Disruptive Innovation”



Clayton Christensen,
Economist (Harvard
University) and
business strategist

- Introduced “*disruptive technology*” concept (1995)
 - “*disruptive innovation*” (1997)
- Author (or co-author):
 - The Innovator’s Dilemma (1997)
 - The Innovator’s Solution (2003)
 - Disrupting class (2008)
 - The Innovator’s Prescription (2008)
 - The Innovative University (2011)
- Good site source disruptive innovation topics:
 - <https://hbr.org/topic/disruptive-innovation>

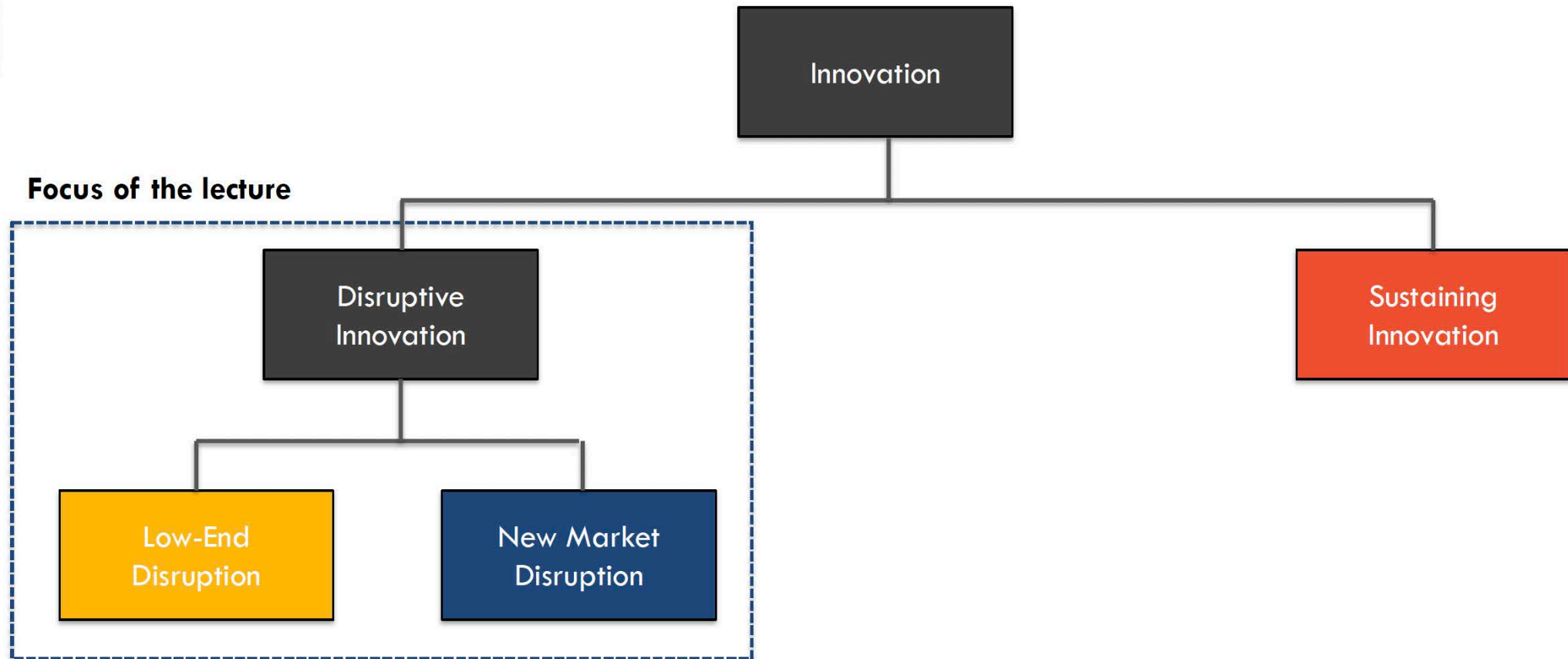
What is Disruption?

A **process** whereby a **smaller** company with fewer resources is able to successfully challenge **established incumbent** businesses.

Disruptive Innovation Vs. Sustaining Innovation

- According to Christensen:
- **“Disruptive innovations”** – Target markets overlooked by incumbents
- **“Sustaining innovations”** – Move upmarket
 - i.e. incremental advances or major breakthroughs

Structure of the Framework



Why Do Disruptive Innovation Happen?

Why Do Disruptive Innovation Happen?

- Disruptive innovations get started in markets where incumbents fail to notice or respond to new competitors, which can lead to the incumbents being replaced.

Low-End Foothold	New-Market Foothold
<p>Incumbents typically pay less attention to less-demanding customers.</p> <p>Over-focus on improving the product to high-end customers</p> <p>A disrupter provide low-end customers with a “good enough” product</p>	<p>Disrupters create a new market where none existed</p>

What Are The Phases of Disruptive Innovation?

A company or entrepreneur

- identifies an **under-served market** segment and
- introduces a **more accessible cost-effective and user-friendly** solution that challenges traditional industry norms.

This process follows a series of key stages that define its progression and ultimate impact . . .

What Are The Phases of Disruptive Innovation?

1. Recognizing an Industry Gap

Disruptive innovations originate when businesses detect unmet needs or inefficiencies in an existing market. For example, the shift toward sustainable mobility solutions paved the way for electric vehicles, addressing consumer demand for environmentally friendly transportation.

2. Launching a Novel Product or Technology

The next phase involves introducing a pioneering product or service designed to fill the identified market gap. Initially, these innovations may lack refinement or comprehensive features compared to established offerings, but they meet previously overlooked consumer demands.

What Are The Phases of Disruptive Innovation?

3. Building Momentum

As early adopters begin embracing the new solution, its market presence grows, gradually reshaping consumer preferences. The increased demand and acceptance drive further adoption, positioning the innovation as a viable alternative to traditional products.

4. Disrupting the existing market

With widespread consumer adoption, existing industry players experience the disruptive effects. Traditional businesses may struggle to compete, requiring them to either adapt their strategies or risk diminishing market relevance.

5. Establishing a New Market Standard

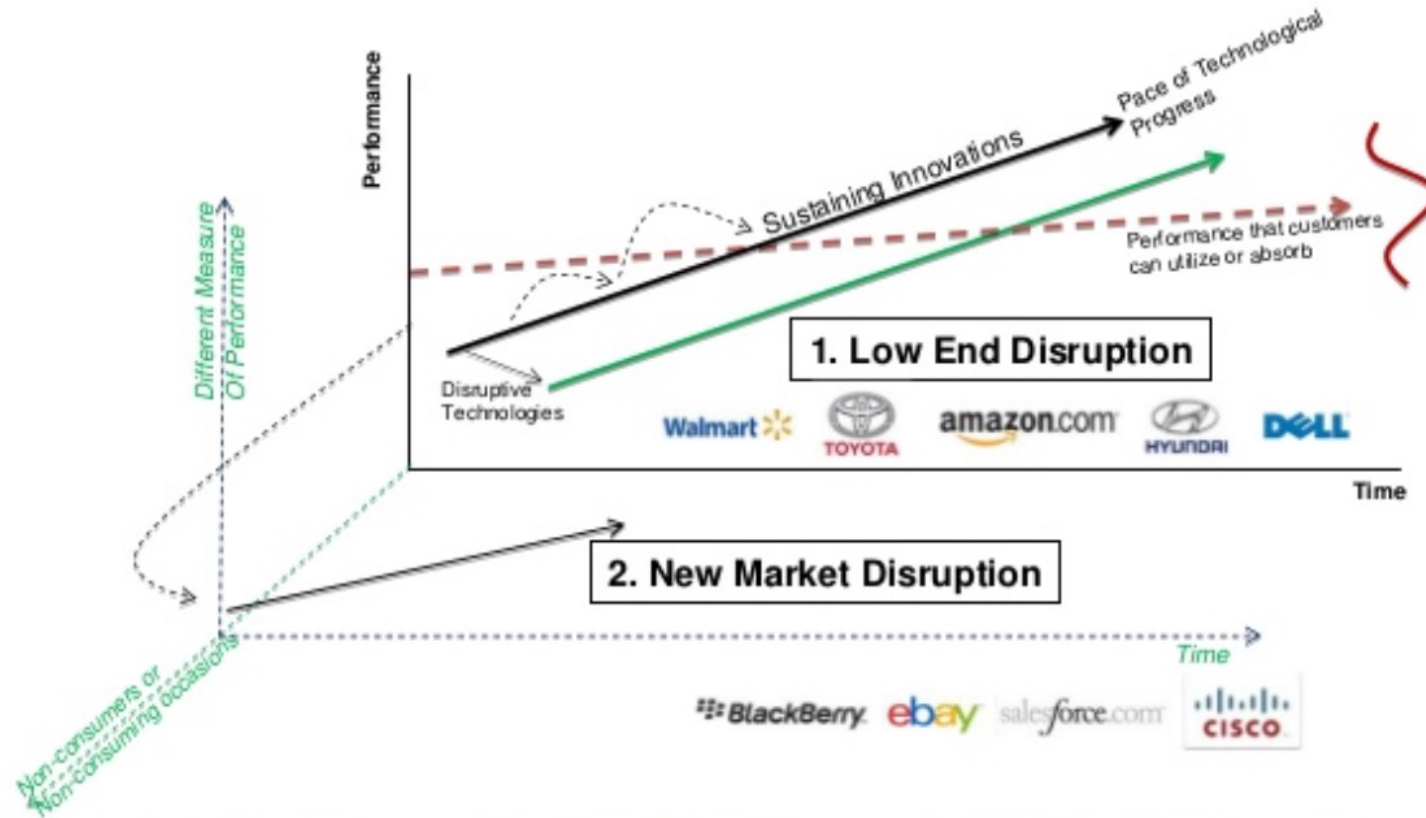
Over time, the innovation transitions from an alternative option to the dominant standard.

Two Types of Disruptive Innovation

- **“low-end disruption”** –
 - Cheaper product alternatives with less features can take over
- **“new-market disruption”** –
 - Needs not met in existing products

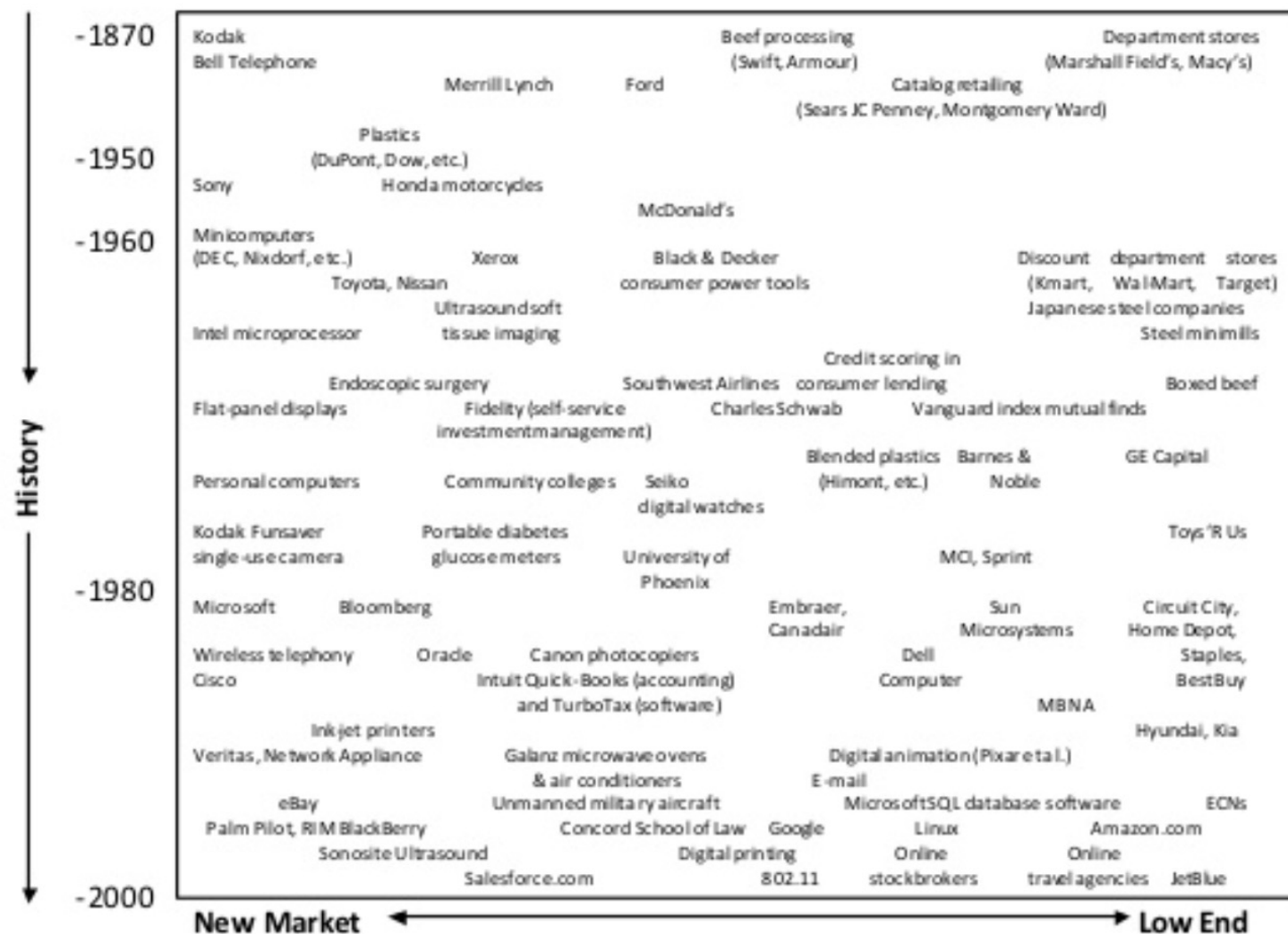
Christensen, C.M. and Raynor, M.E. 2003, 48

Two Types of Disruptive Innovation



<https://www.slideshare.net/PhilHogg/p-hogg-disruptive-technologies-alliances>

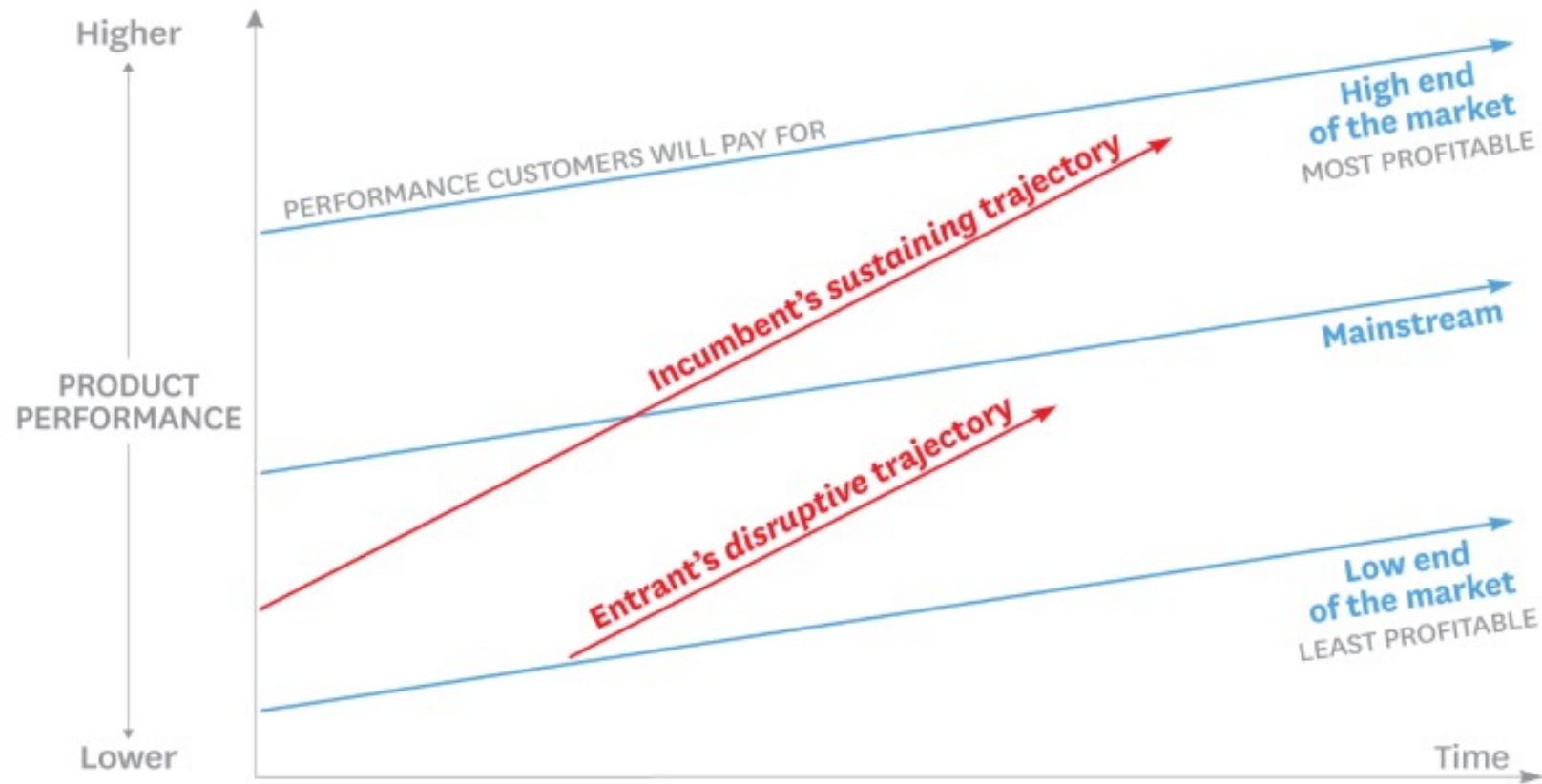
Low-end vs New-Market Disruptions



Low-End Disruption

Section 1.2

Disruptive Innovation Model – Low End Disruption

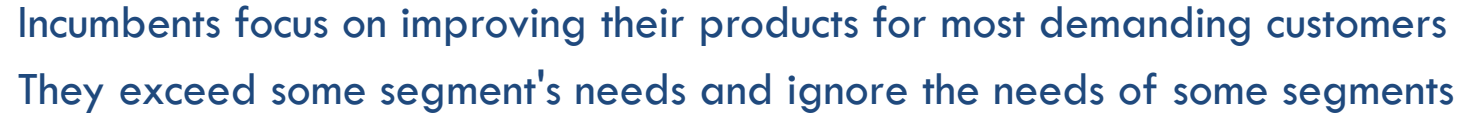


SOURCE CLAYTON M. CHRISTENSEN, MICHAEL RAYNOR, AND RORY MCDONALD
FROM "WHAT IS DISRUPTIVE INNOVATION?" DECEMBER 2015

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How Does Low End Disruption Happen?

Incumbents focus on improving their products for most demanding customers
They exceed some segment's needs and ignore the needs of some segments



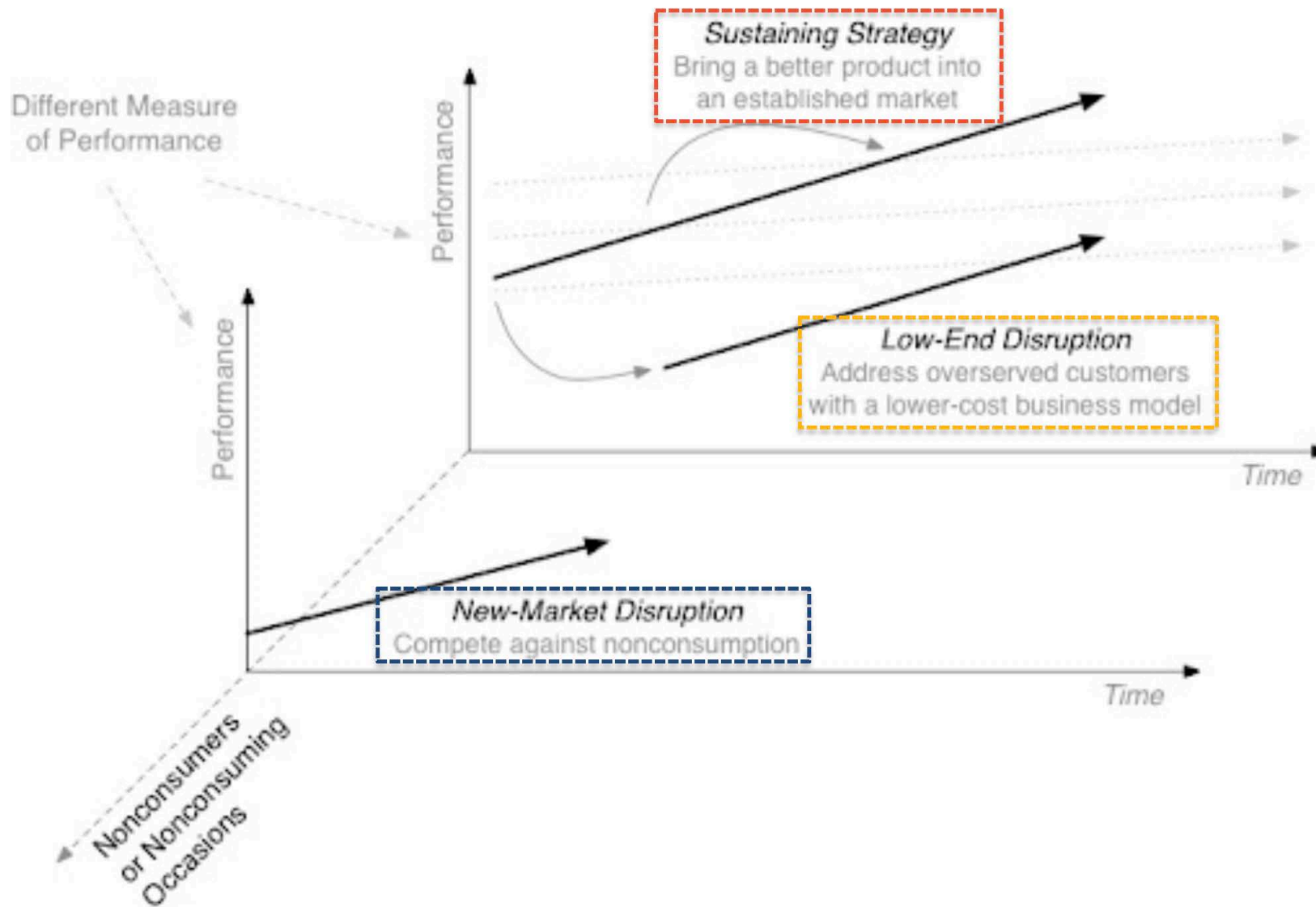
Entrants target overlooked segments
Offer more-suitable functionality at a lower price
Incumbents, chasing higher profitability in more-demanding segments

Entrants improve quality (targeting mainstream and low demanding customers)
End of the process disruption - mainstream customers adoption in volume

New Market Disruption

Section 1.3

Disruptive Innovation Model - New Market Disruption

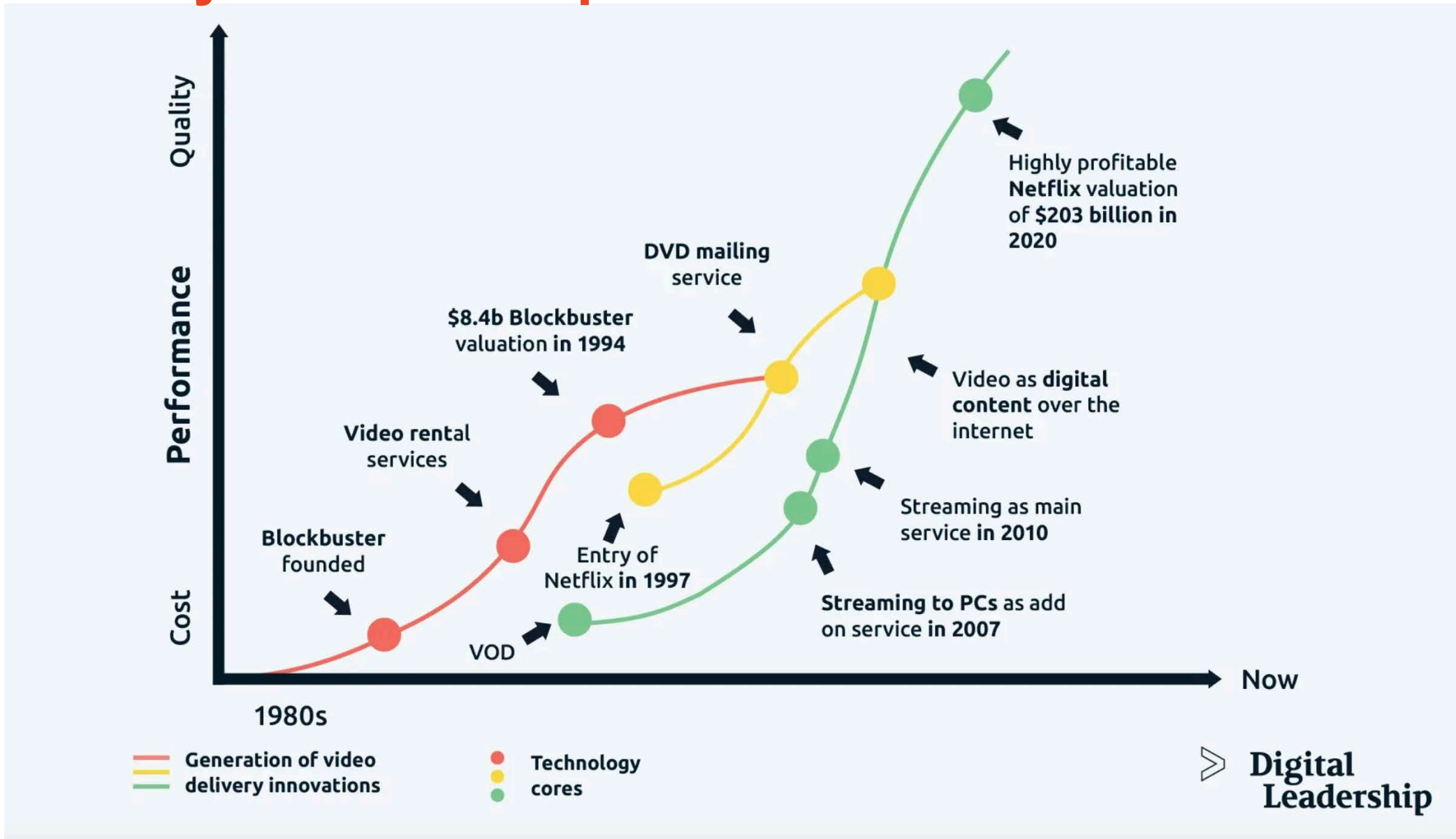


New Market Disruption

Innovation fits a new market not served by existing incumbents

- Conversion of non-consumers into consumers
- Initially caters to the new market
- Improves quality and induce consumers to defect from the existing market into the new market

Case Study: Netflix Disruptive Innovation



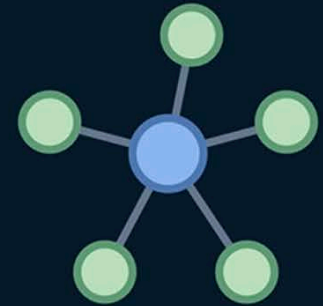
Can you share other recent disruptive innovations?

What Makes A Successful Disruptive Innovation?

Disruptive innovation succeeds when:

1. It leverages **transformative technology**.
2. It introduces a novel **business model** that reaches new markets.
3. It builds a strong **value network** that supports market expansion.

What Makes A Successful Disruptive Innovation?



Enabling Technology

An invention or innovation that makes a product more affordable and accessible to a wider population.

Innovation Business Model

A business model that targets nonconsumers (new customers who previously did not buy products or services in a given market) or low-end consumers (the least profitable customers).

Coherent Value Network

A network in which suppliers, partners, distributors, and customers are each better off when the disruptive technology prospers.

Value Chain & Value Network

Section 1.4

Disruptive Innovation affects “Value Chain”



Michael Porter
(Harvard University)
Expert on competition and
company strategy

images.businessweek.com

- Introduced “value chains” (1985)
- “Competitive advantage: Creating and sustaining superior performance”
- The father of company strategy
- Most cited author in business and economics

Porter's “Value Chain”

- How a value is added within different **business units** of a company
- Products pass through stages and a value is added at each stage
- Extended to **industry value chain**
- In this course, focus on **value chains within industries**

Industry value chains

- How **value** is **created** and **passed** on between **participants** in an industry
- Value may be from:
 - licensing a technology,
 - selling a product,
 - providing a service, etc

Industry value chains – Diagrams

Inbound logistics

Operations

Marketing/Sales

Outbound logistics

Service

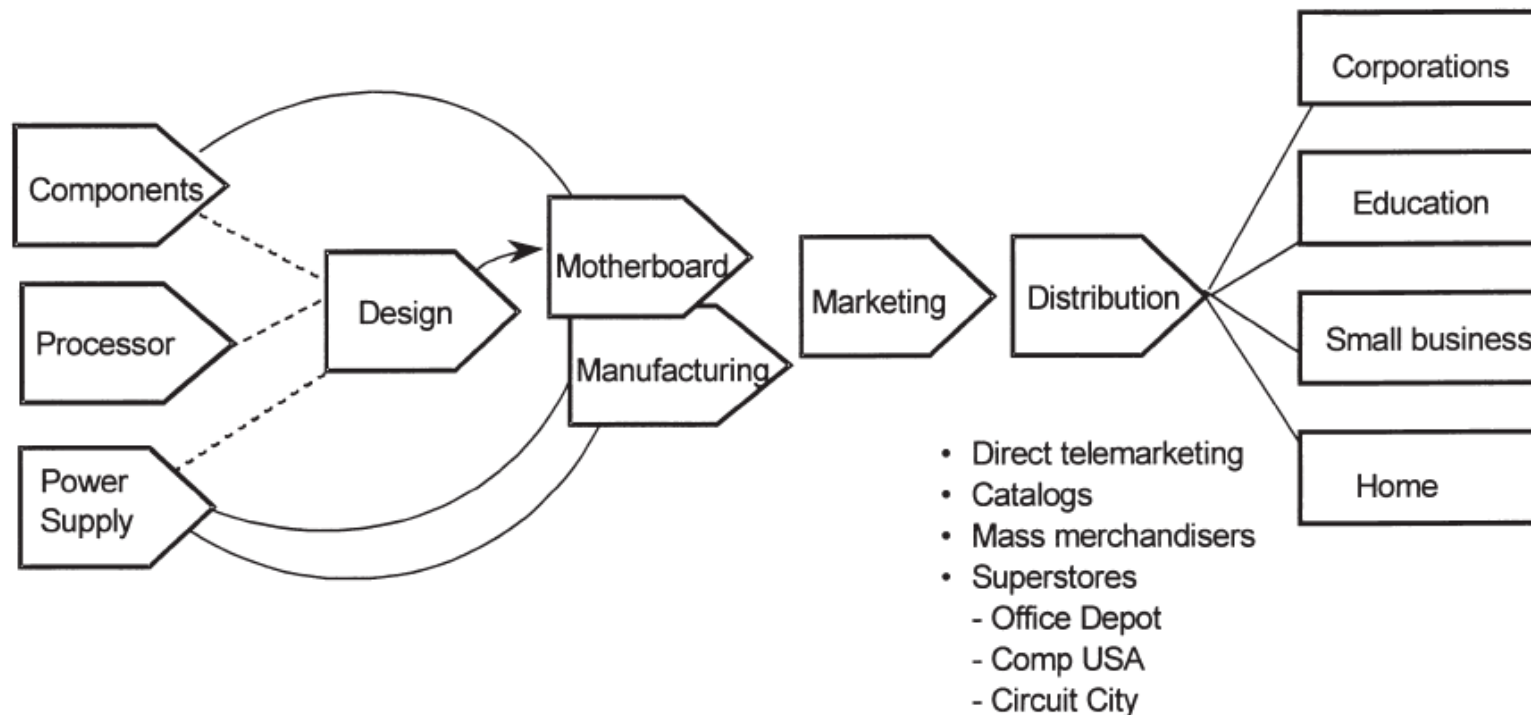
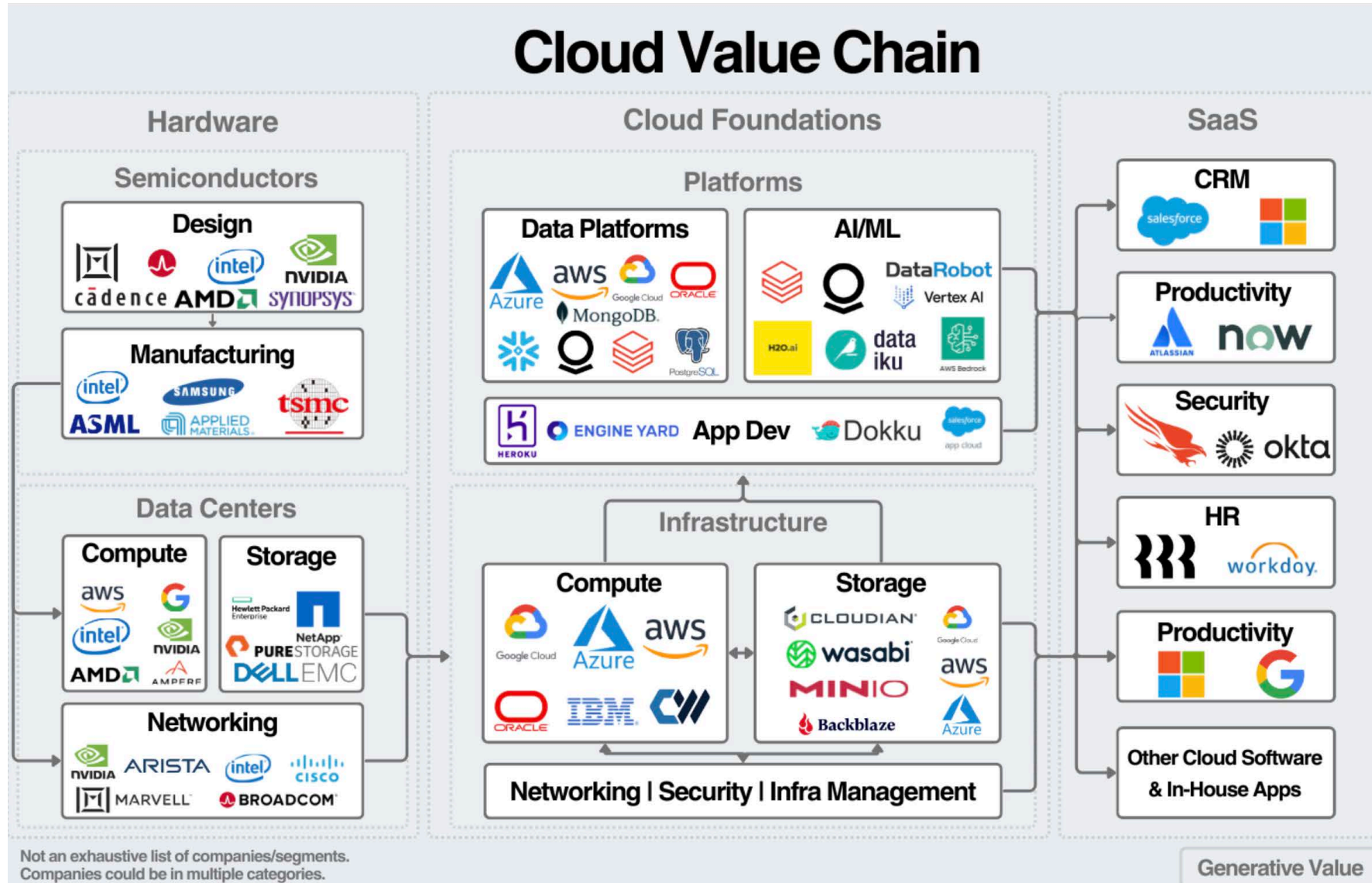


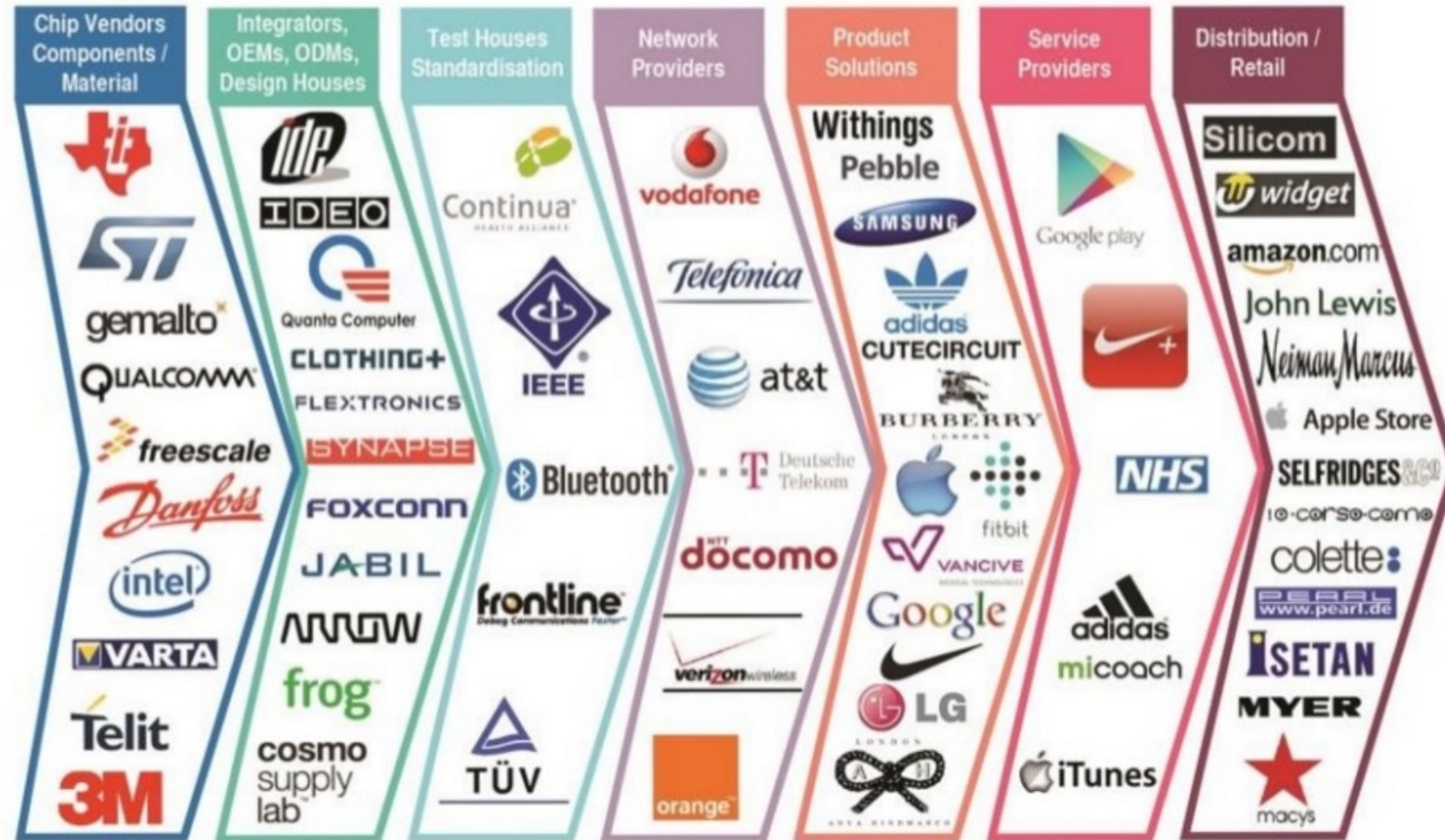
FIGURE 5. Building toward enacted value chain; a typical computer firm.

Source of figure: Kothandaraman and Wilson, “The Future of Competition: Value-Creating Networks” (2001)

Example industry value chain: Cloud



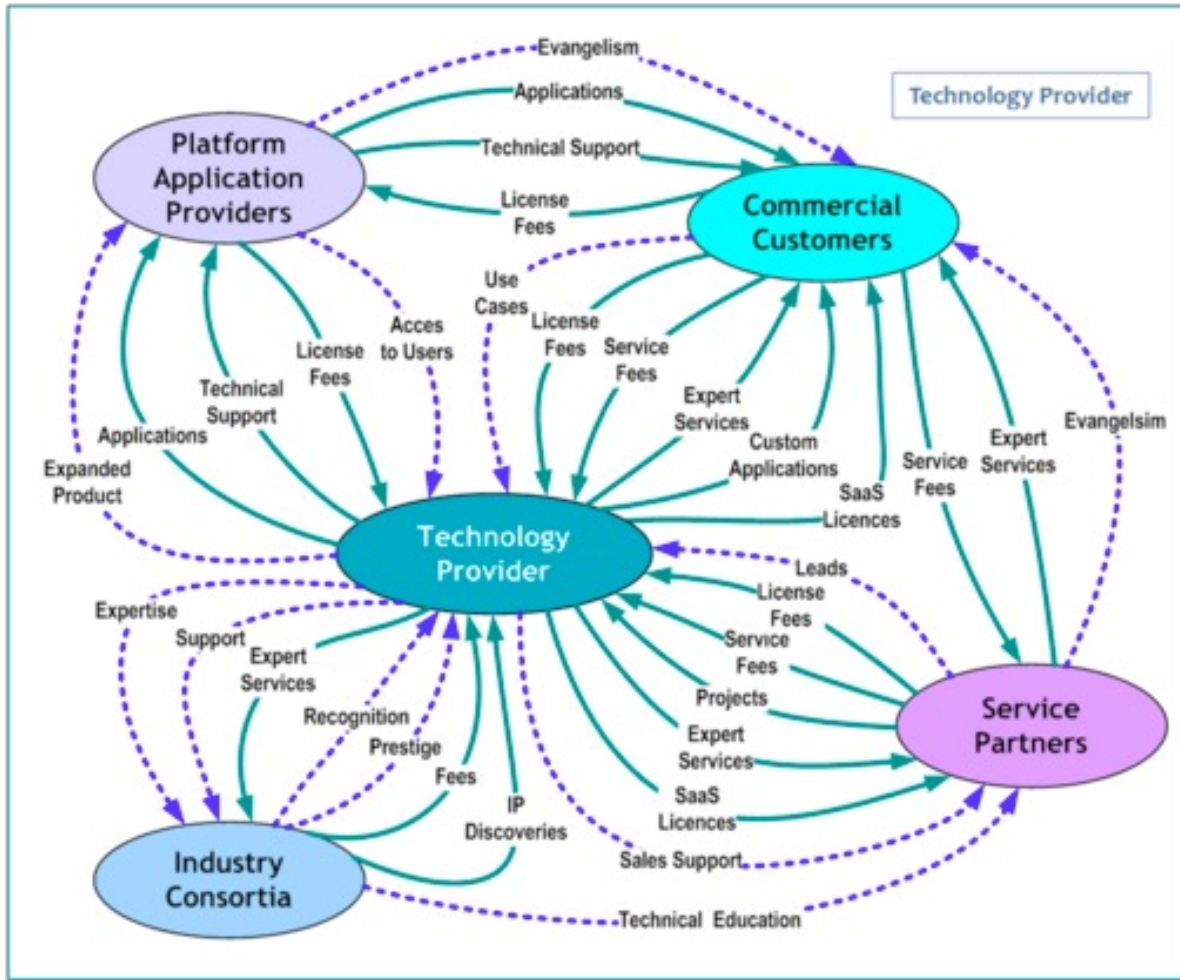
Example industry value chain: Wearable Technology (2013)



<http://www.slideshare.net/JohannaMischke/convergence-between-cloud-internet-of-things-and-wearable-technologies>

Can you find other value chain examples?

Value Network Analysis



A network of business partners (suppliers, distributors, vendors) that benefit from and support the disruptive model.

Resistance from key players can hinder market adoption.

Example: Tesla's integration of its own charging network to support EV adoption.

https://ocw.tudelft.nl/wp-content/uploads/Value_network_analysis_and_value.pdf

Source of figure: Verna Allee http://www.vernaallee.com/value_networks/Understanding_Value_Networks.html

The University of Sydney

“Disruptive Innovation” – in Value Network Context

Low-End Disruption

Come at the bottom of the market and take hold within an **existing value network** before moving upmarket and attacking the incumbent

New Market Disruption

Take hold in a completely **new value network** and appeal to customers who have previously gone without the product

Use of Value Chains/Network

Value Chain:

- Focuses on internal processes that create value (e.g., production, logistics).
- Disruptive innovation reshapes traditional value chains to lower costs and increase efficiency.

Value Network:

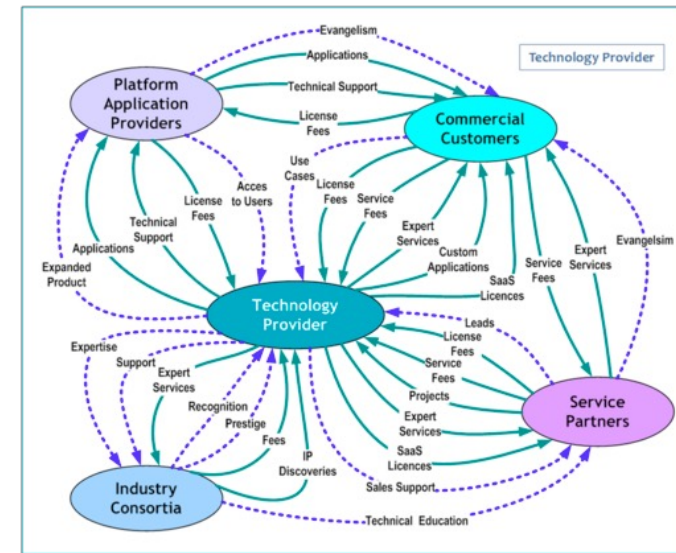
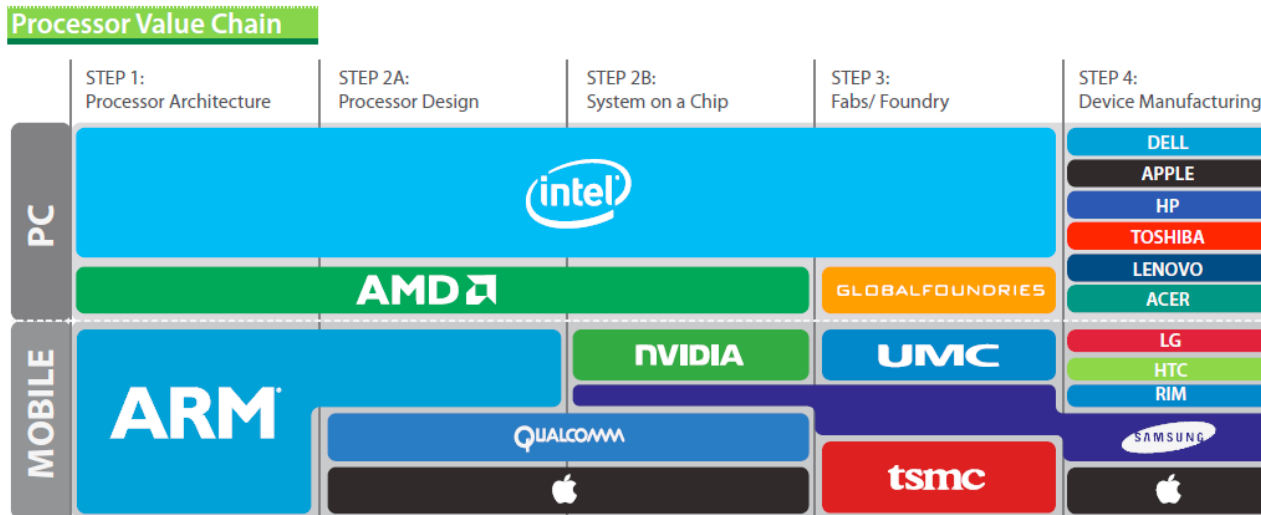
- Involves external stakeholders who contribute to value creation.
- A strong value network enables scalability and sustainability of disruption.

They enable the disruptive innovation to:

1. Access overlooked or underserved markets.
2. Enhance accessibility and affordability.
3. Align suppliers, contractors, and distributors with the new business model.

Use of Value Chains/Networks

- Understanding an industry
- Company's position within the market
- Company's strategy within that market
- Opportunities for disruptive innovations



Source of figure: Verna Allee

Innovator's Dilemma

Section 2

Innovator's Dilemma

Section 2.1

“The Innovator’s Dilemma”

- “innovator’s dilemma” (Christensen)
- A company needs to move upmarket to capture customer segments with higher profitability. However, they are more likely to get disrupted (low-end or new market disruption)

“The Innovator’s Dilemma”

- Examples:
 - Kodak and digital camera
 - focus on film cameras (exploitation) or shift to digital photography (exploration)?
 - Microsoft and their Operating System
 - continue refining their Windows OS (exploitation) or invest in new business models like cloud computing (exploration)?
 - Blockbuster and online movie streaming
 - continue expanding physical rental stores or invest in online streaming (exploration)?

Ambidexterity Strategy

Section 2.2

How to Solve The Innovation Dilemma?

Ambidexterity Strategy

- To resolve the Innovator's Dilemma
- The ability to simultaneously:
 - Concentrate on serving clients well on one hand (“**exploit**”)
 - Concentrate on innovation with the other hand (“**explore**”)

How Does Ambidexterity Solve the Innovation Dilemma?

- Overcomes Resistance to Change by encouraging firms to innovate while maintaining their existing business.
- Enables both Disruptive & Incremental Innovation
- Reduces Risk by balancing radical experimentation with profit-driven operations.
- Ensures Long-Term Growth the allows businesses to adapt to changing markets while leveraging their core strengths.

How Did Ambidexterity Solve the Innovation Dilemma for Amazon?

Case Study – Generative AI

Section 2.3

How Generative AI will Disrupt Following Industries

- Consider both
 - Low End
 - New Market

Medicine

- Diagnosis
- Treatments

Education

- Learning
- Research

Arts

- Music
- Literature

Recommended Readings

- What is Disruptive Innovation (Harvard Business Review, Dec 2015)
- When is a Disruptive Innovation Disruptive (J. of Product Innovation Management, 2008)
- Anticipating Disruptive Innovation (Research-Technology Management, 2016)
- The Innovator's Dilemma (Christensen, 1997)
- Value network analysis and value conversion of tangible and intangible assets (Verna Allee, 1990)
- Ambidexterity as a Dynamic Capability- Resolving the Innovators Dilemma (O'Reilly & Tushman, 2007)