Innovation: What Every Developer Absolutely Needs to Know

Steve Vinoski
Architect, Basho Technologies
Cambridge, MA USA

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According to the trade press, blogs, Twitter...

...every company is

INNOVATIVE...

...and every
new technology & product
are
DISRUPTIVE.

Innovation

Disruption

Innovation

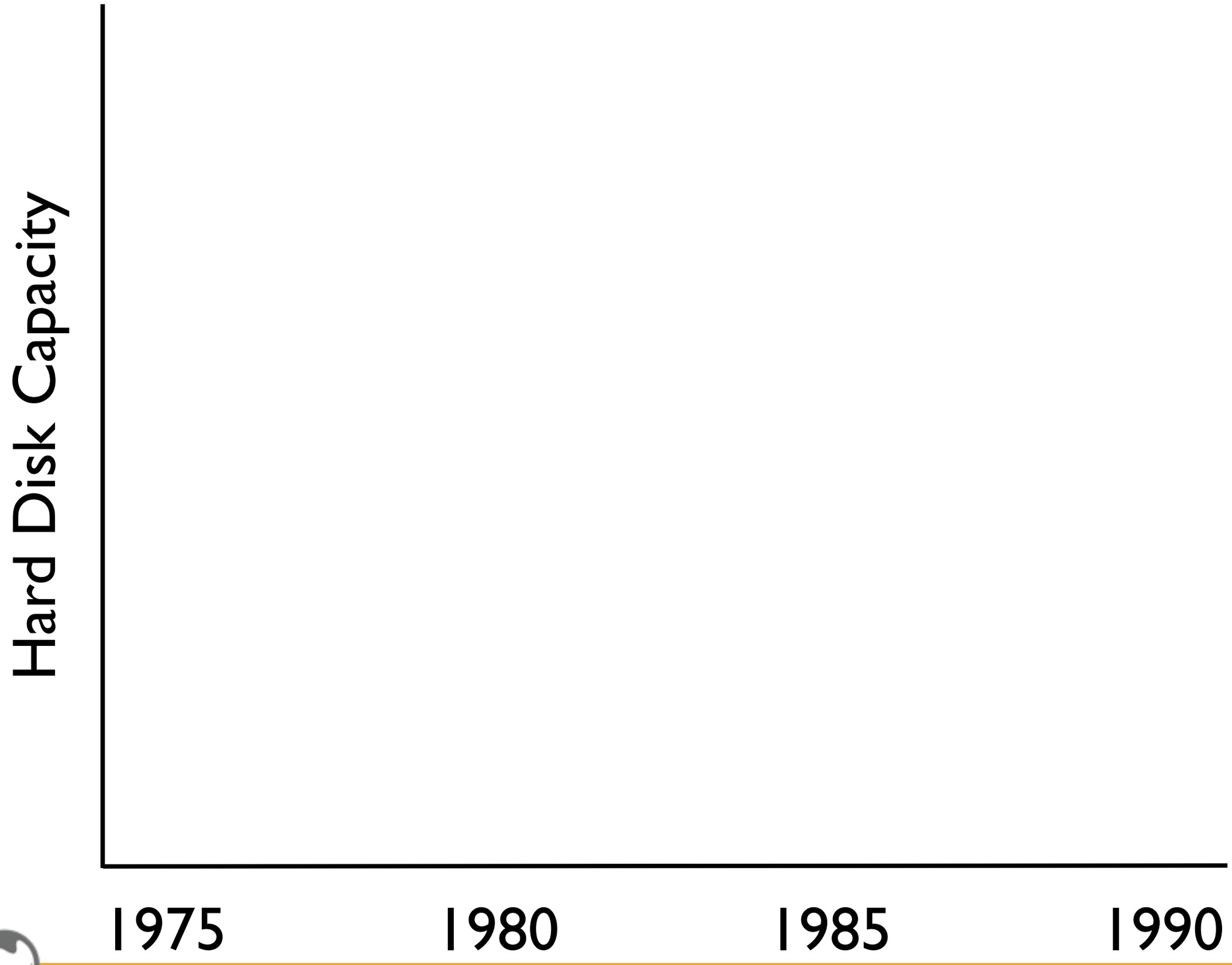
Disruption


Overused
Innovation
Misunderstood
Disruption
Cliches

Ever Wonder?

- Why something technically inferior wins?
- Why your manager doesn't like your new product idea?
- Why developers have never-ending arguments about technologies and approaches?

Technology Adoption



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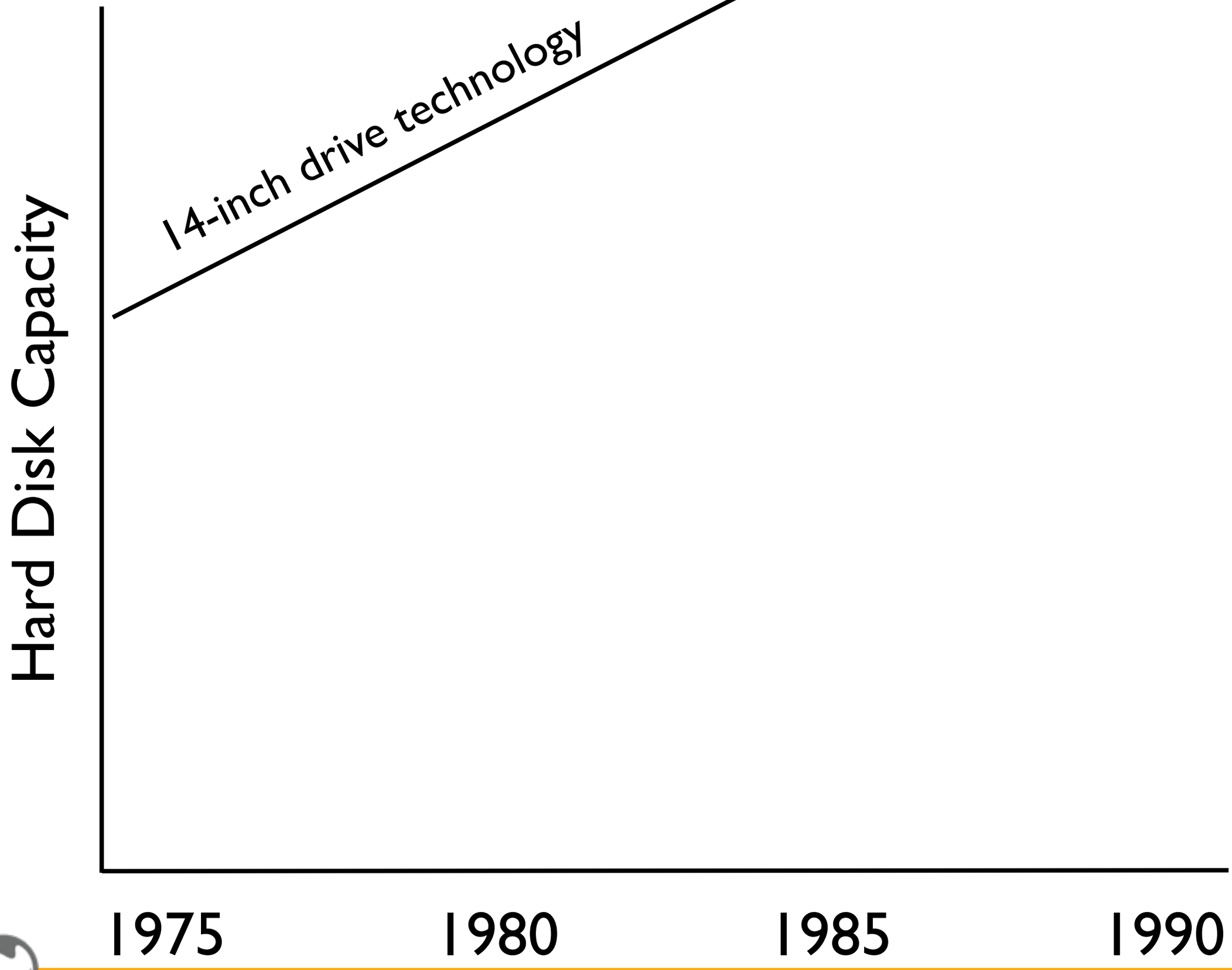

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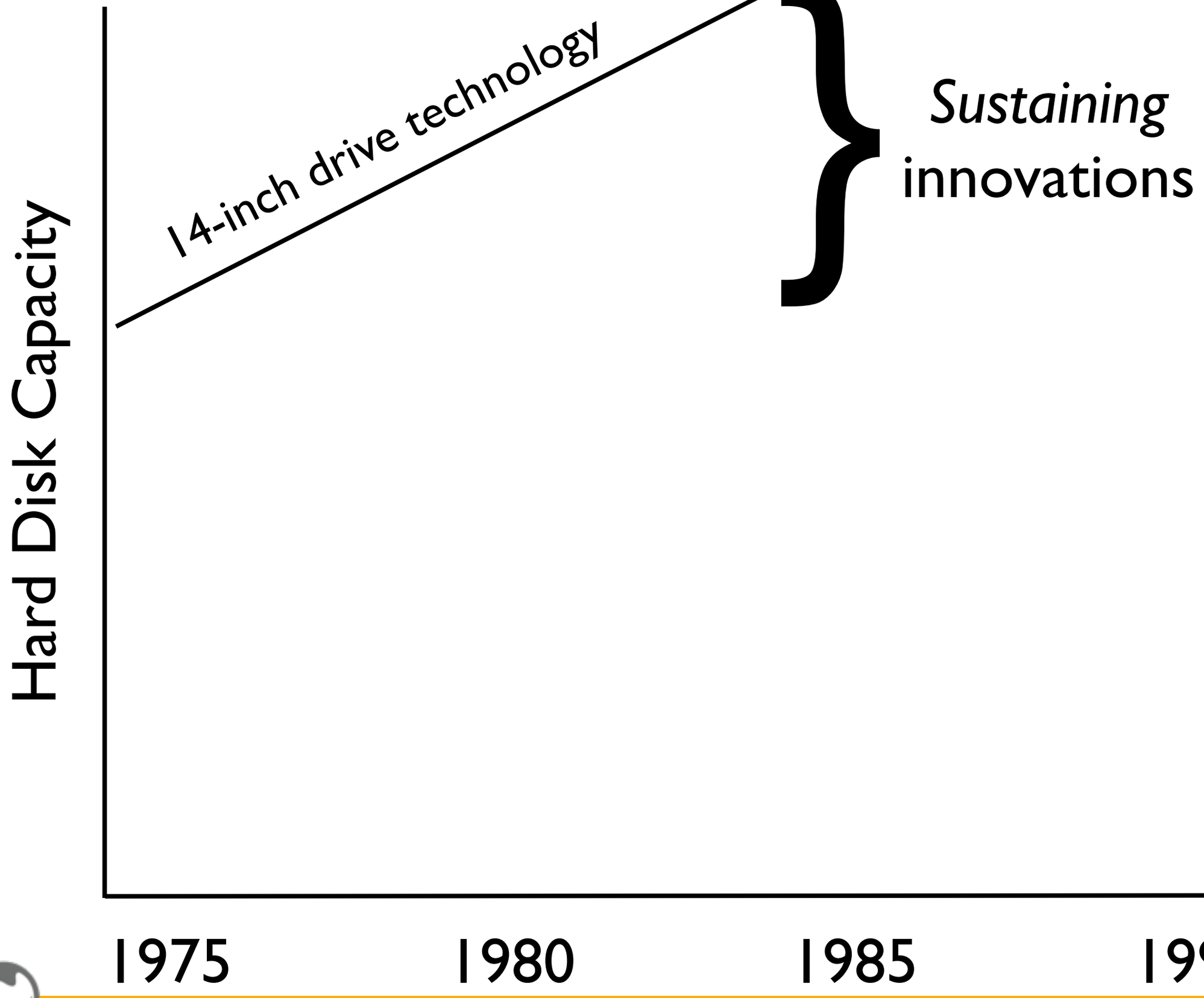

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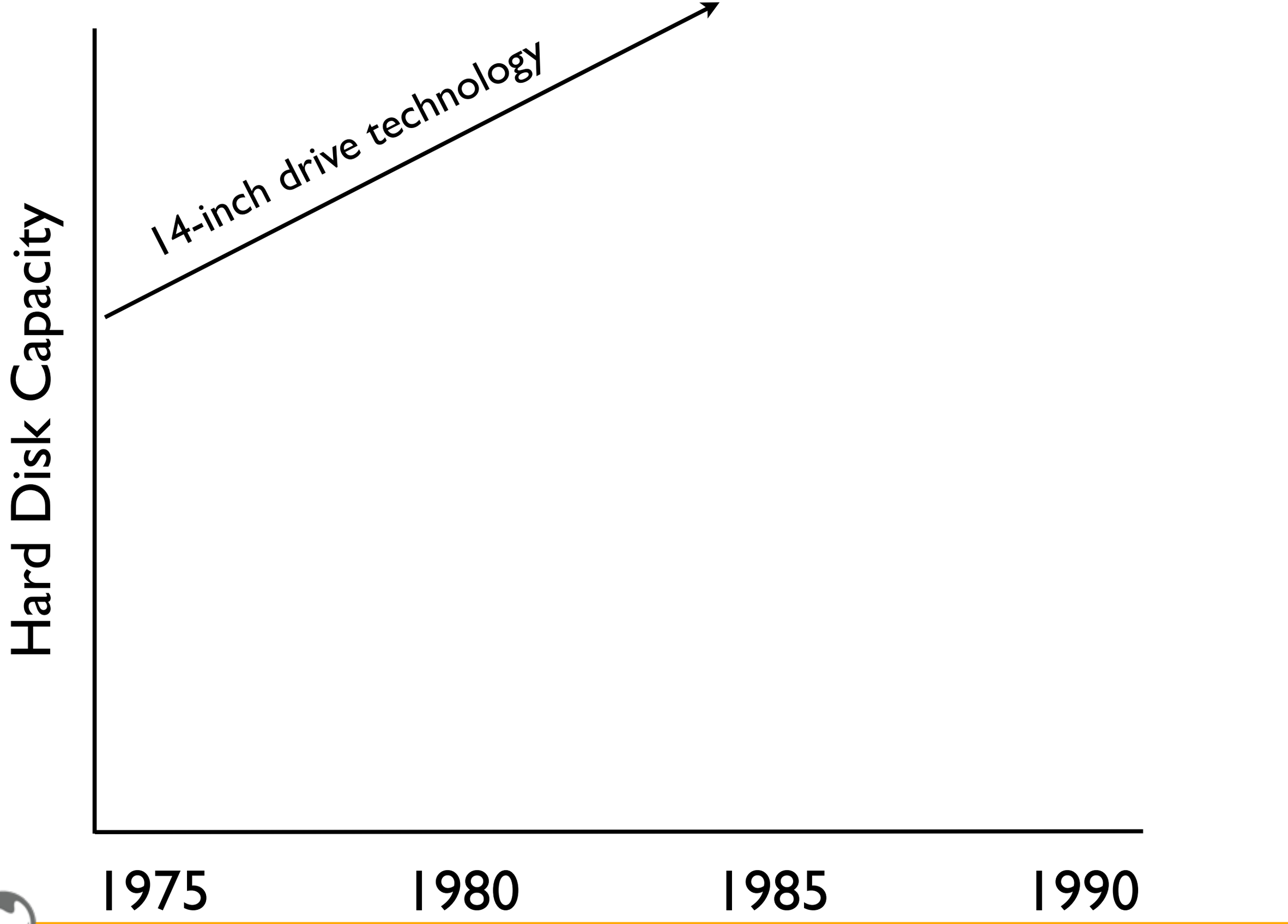

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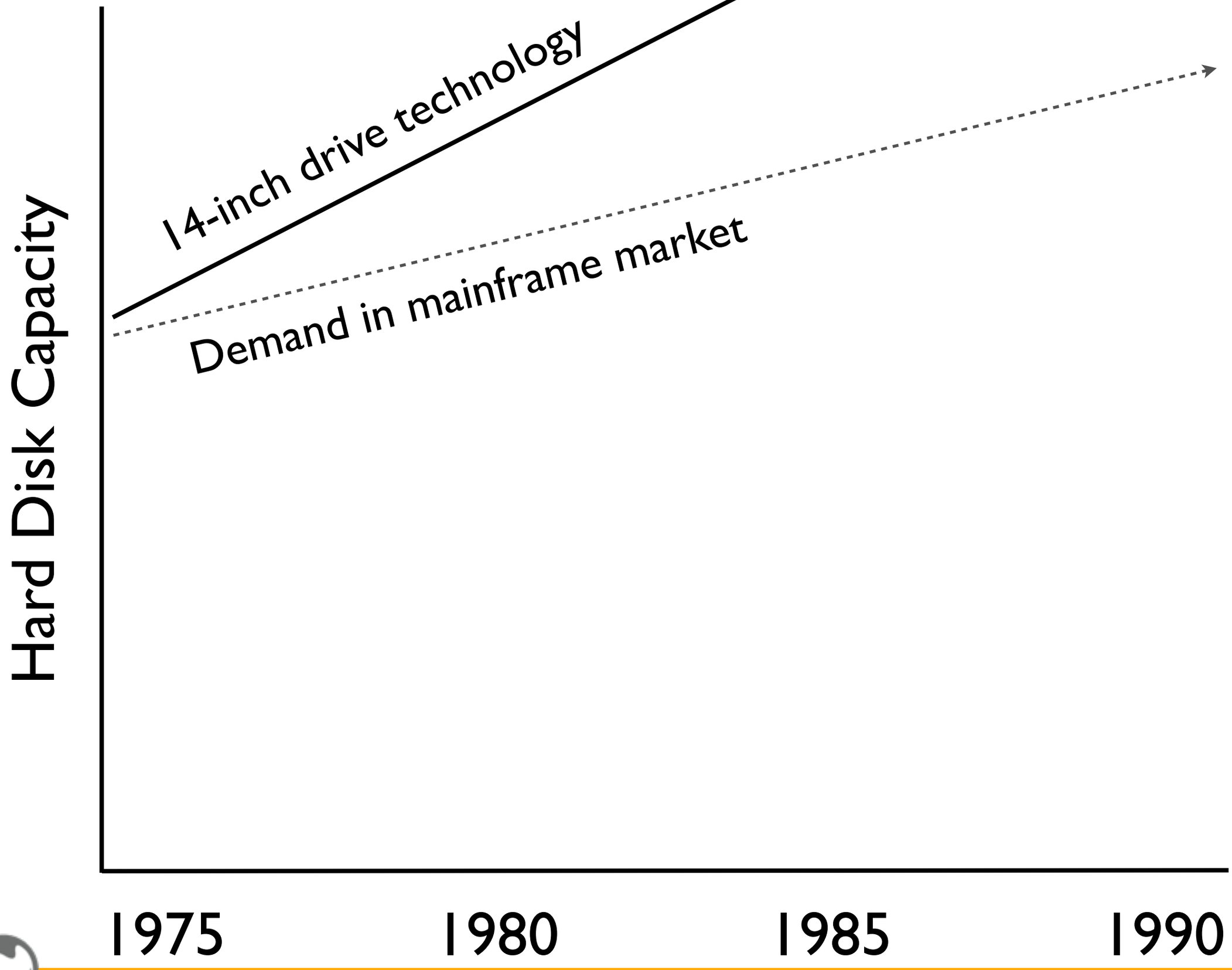

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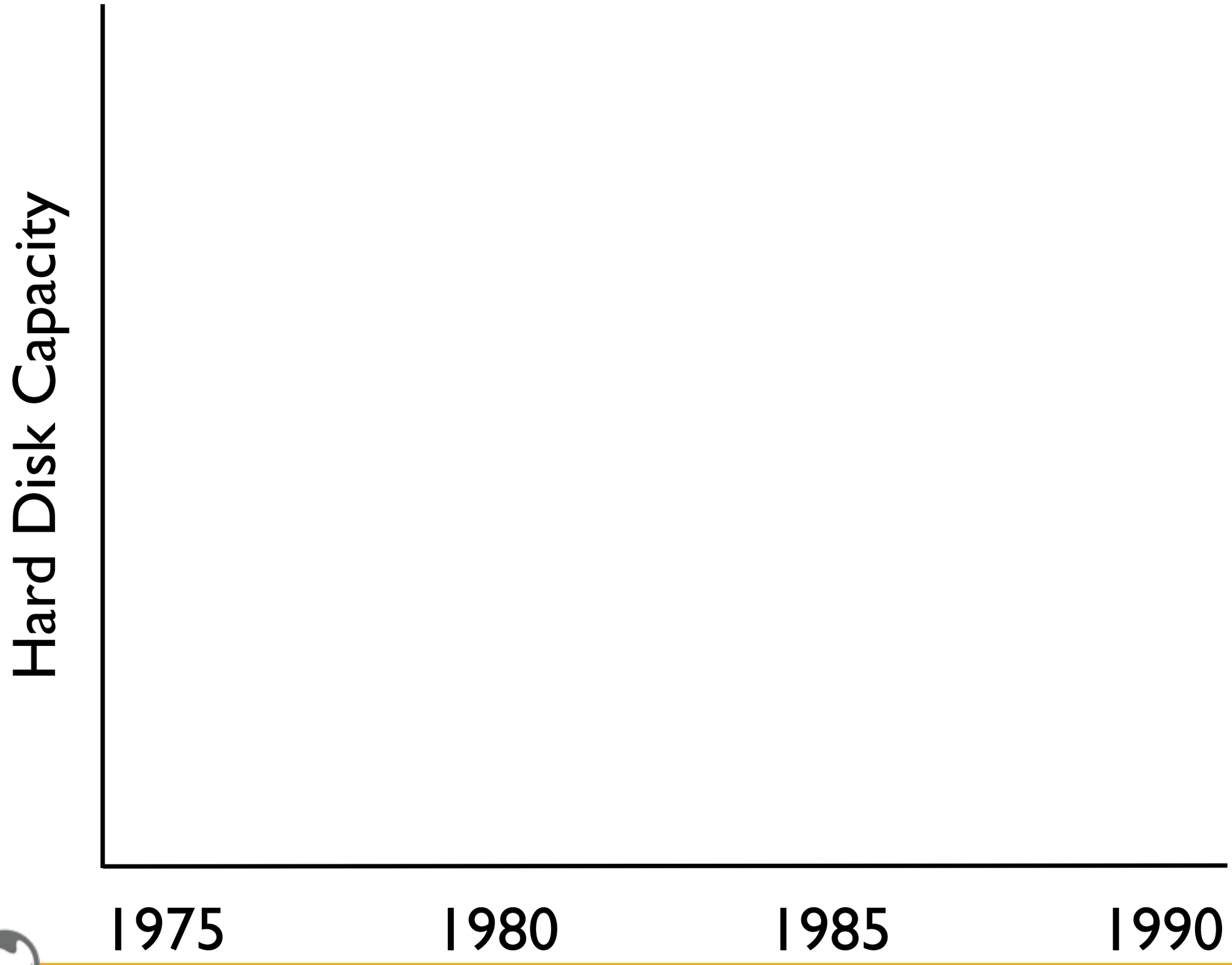

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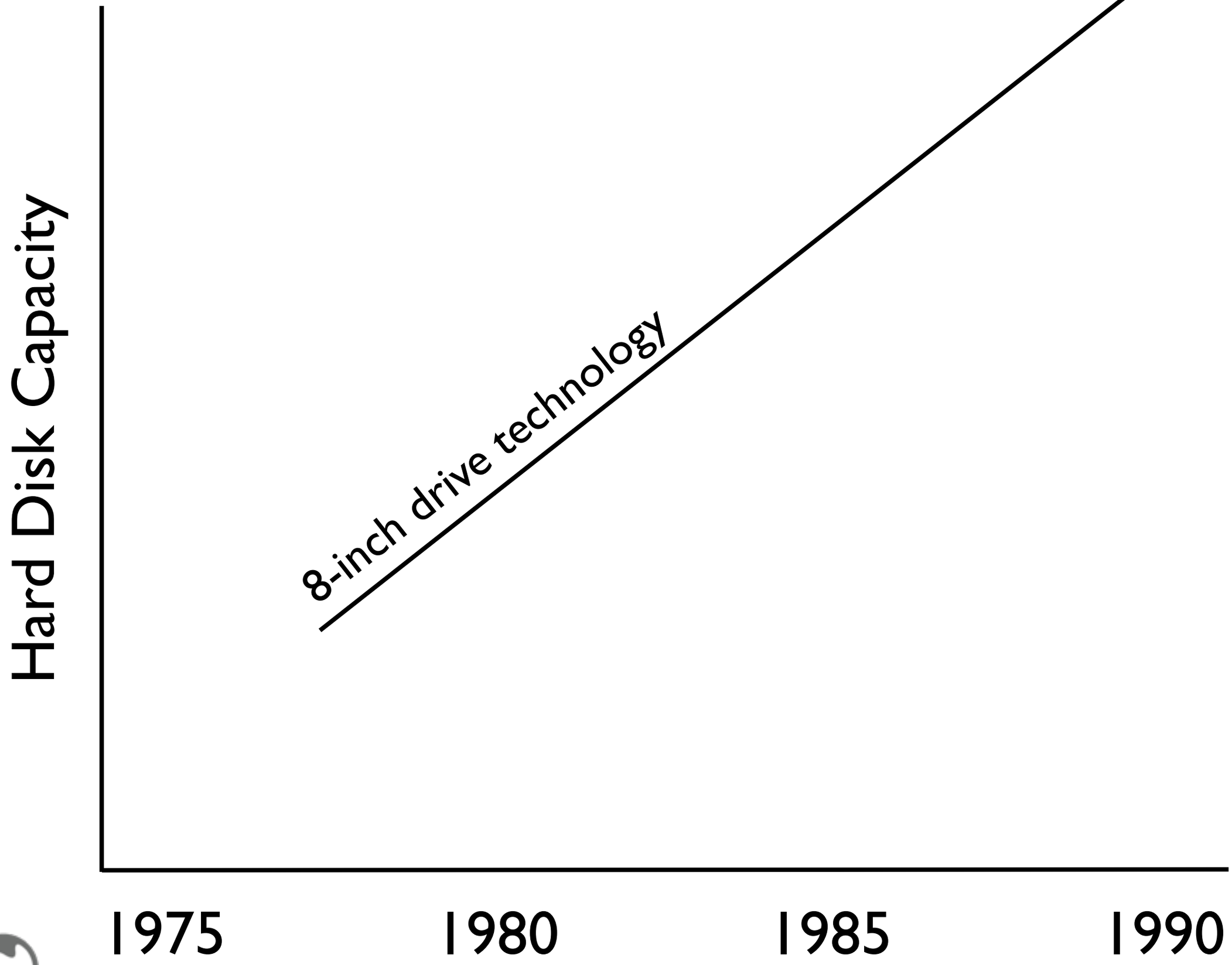

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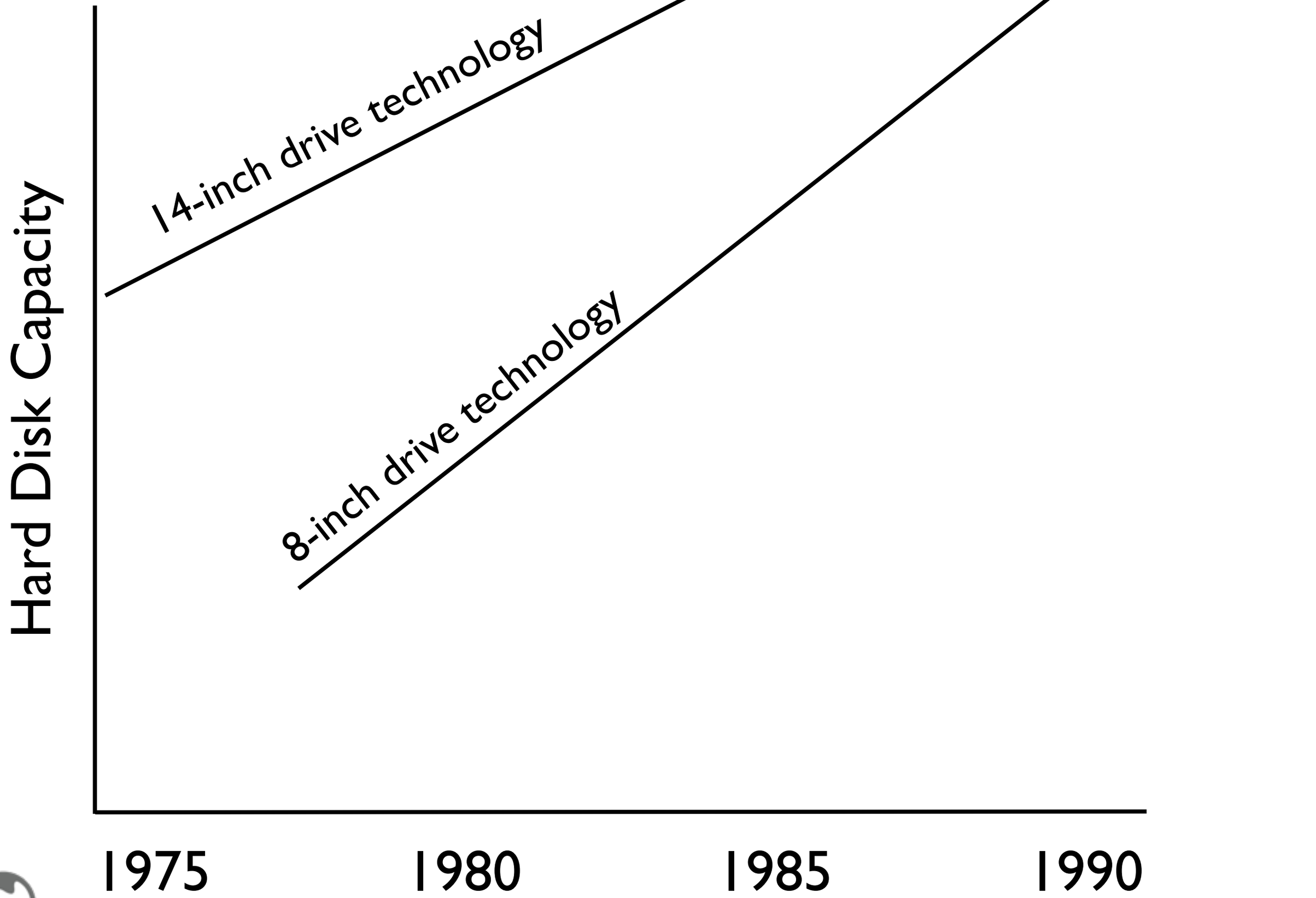

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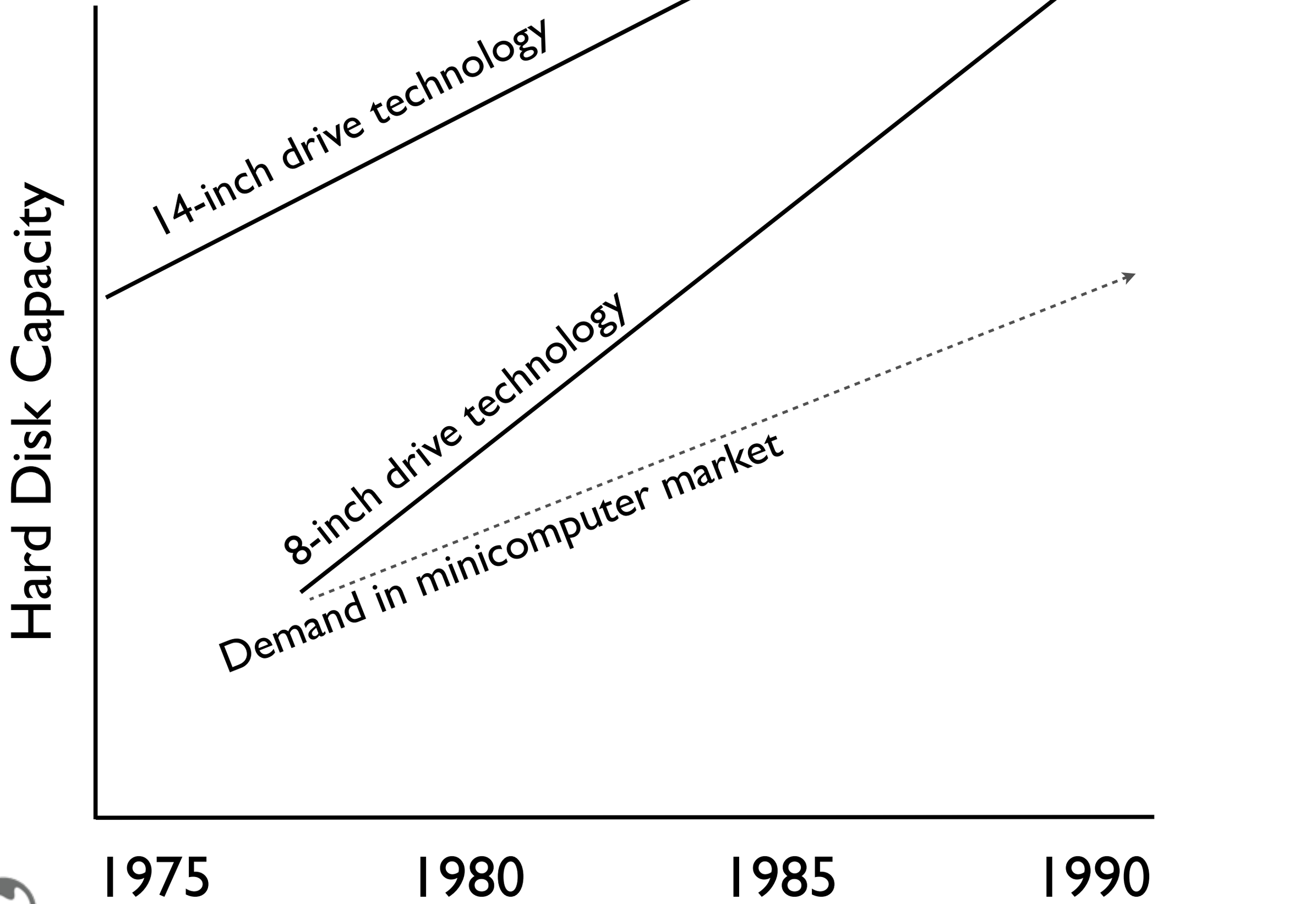

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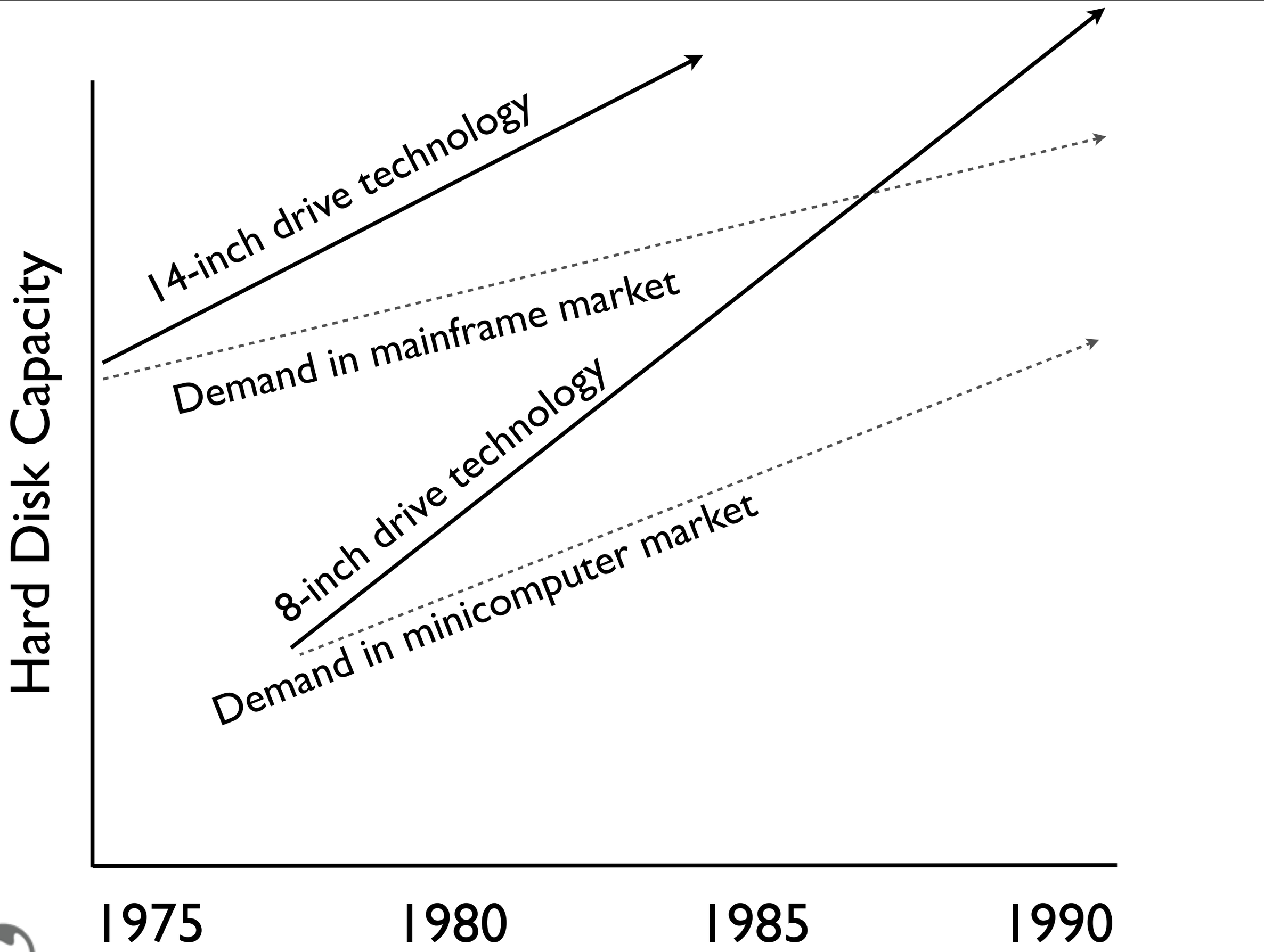

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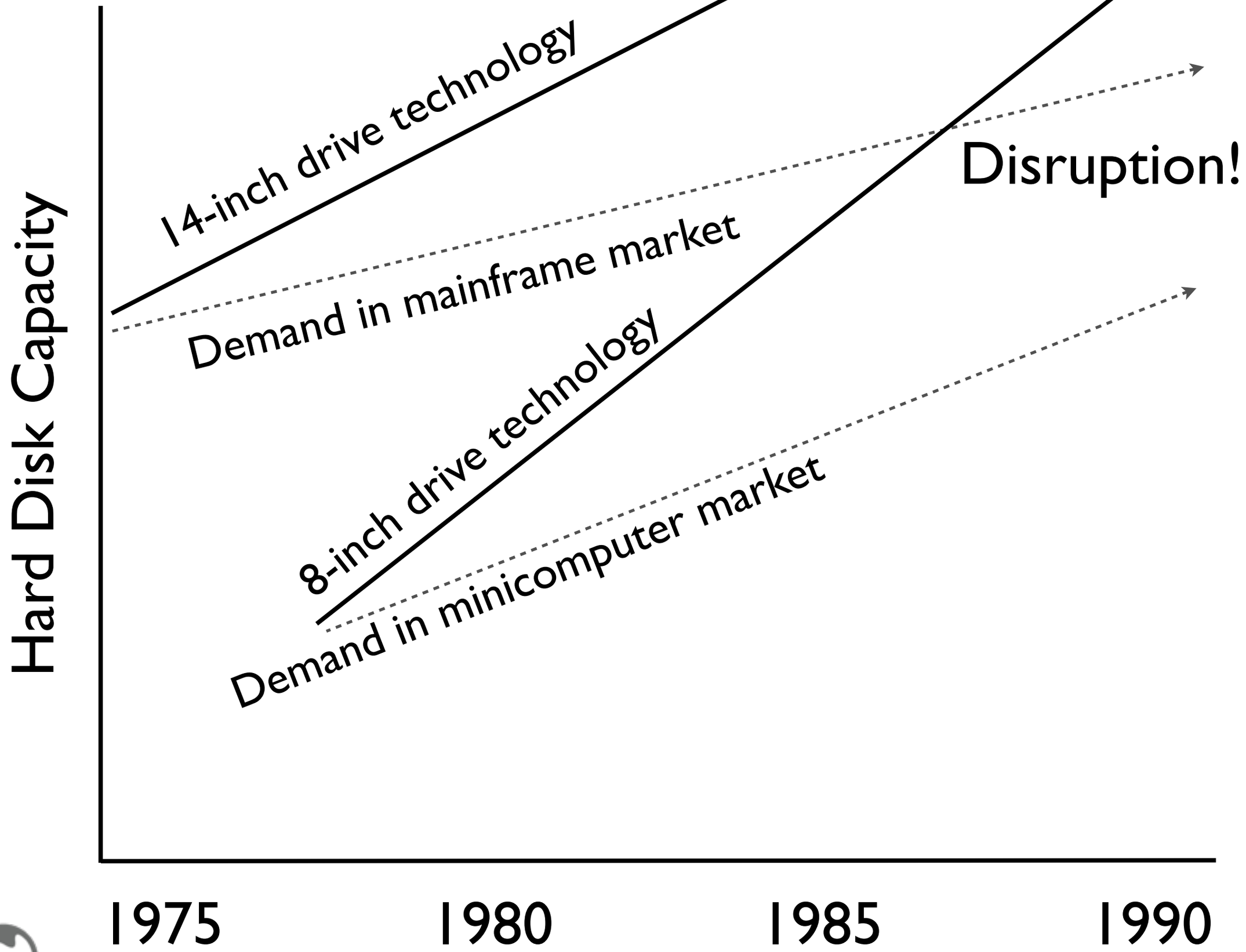

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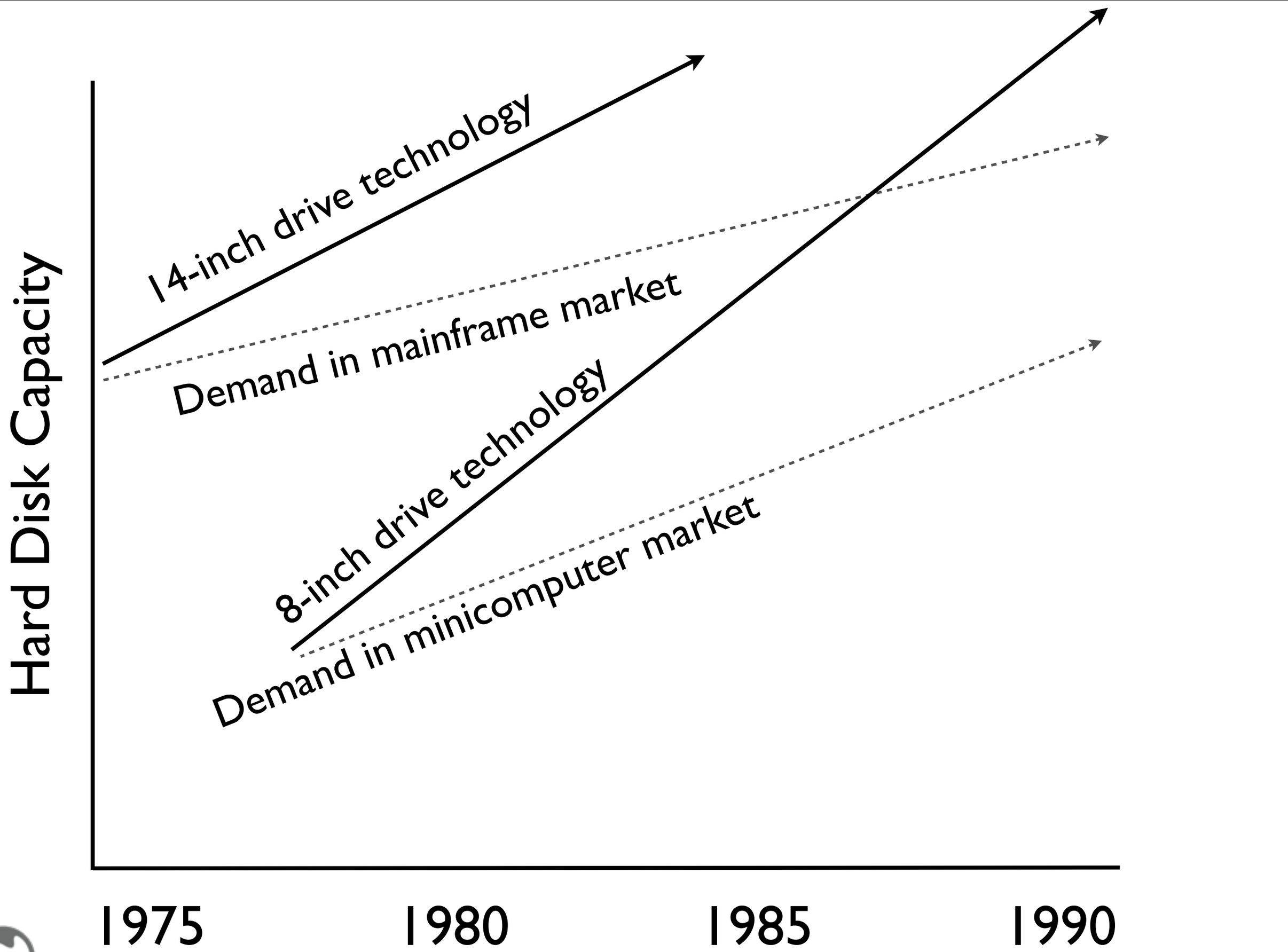

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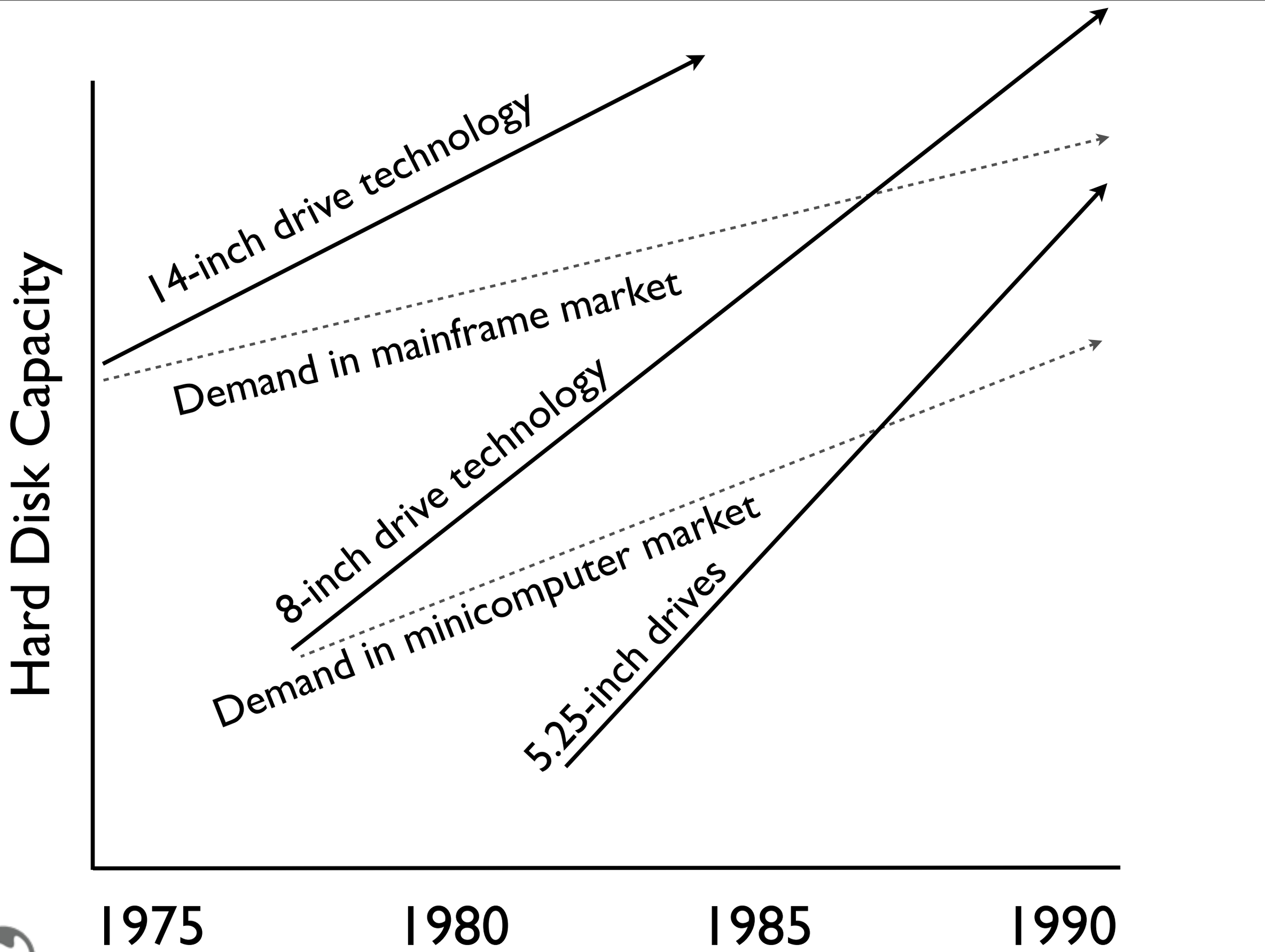

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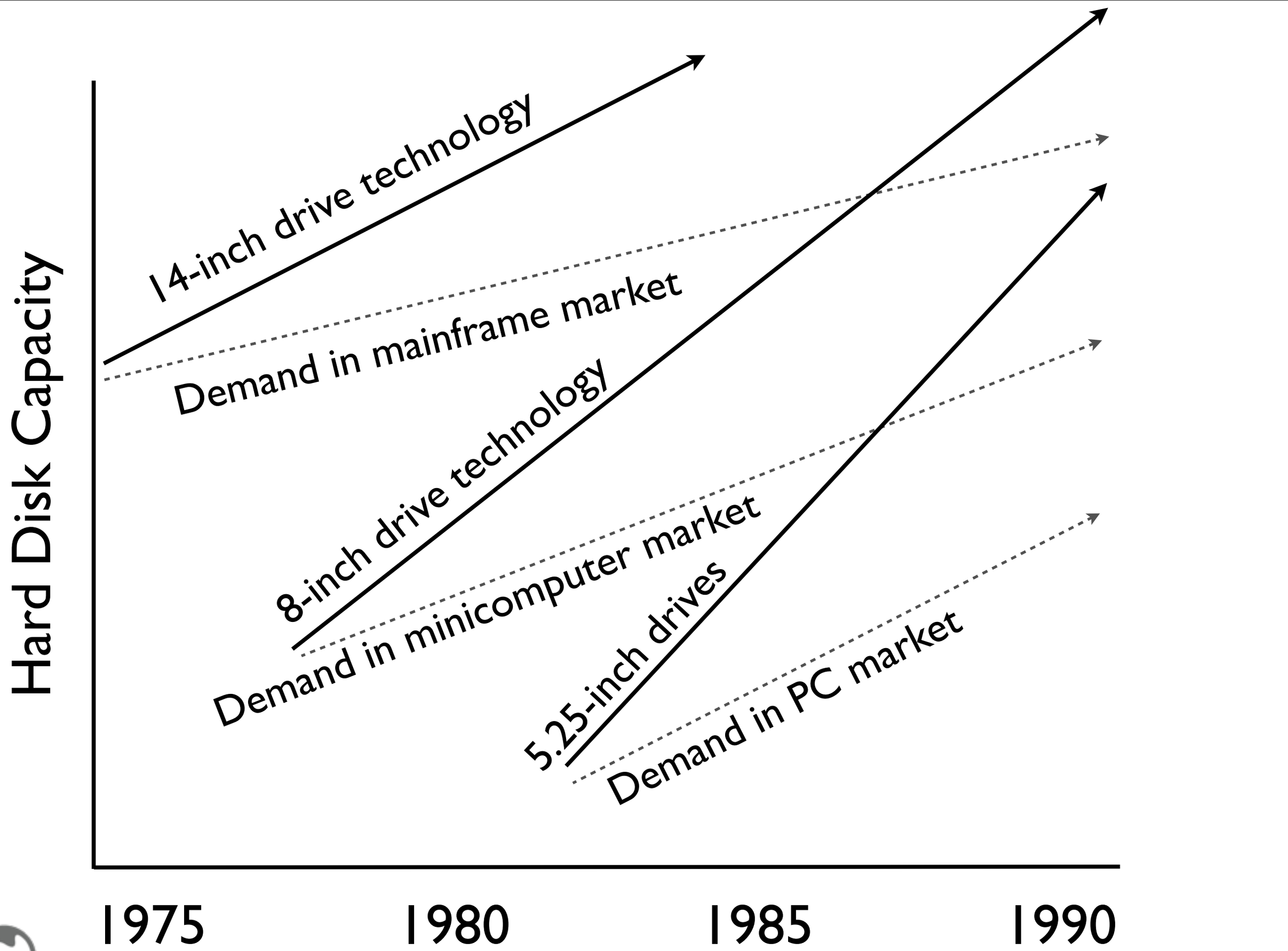

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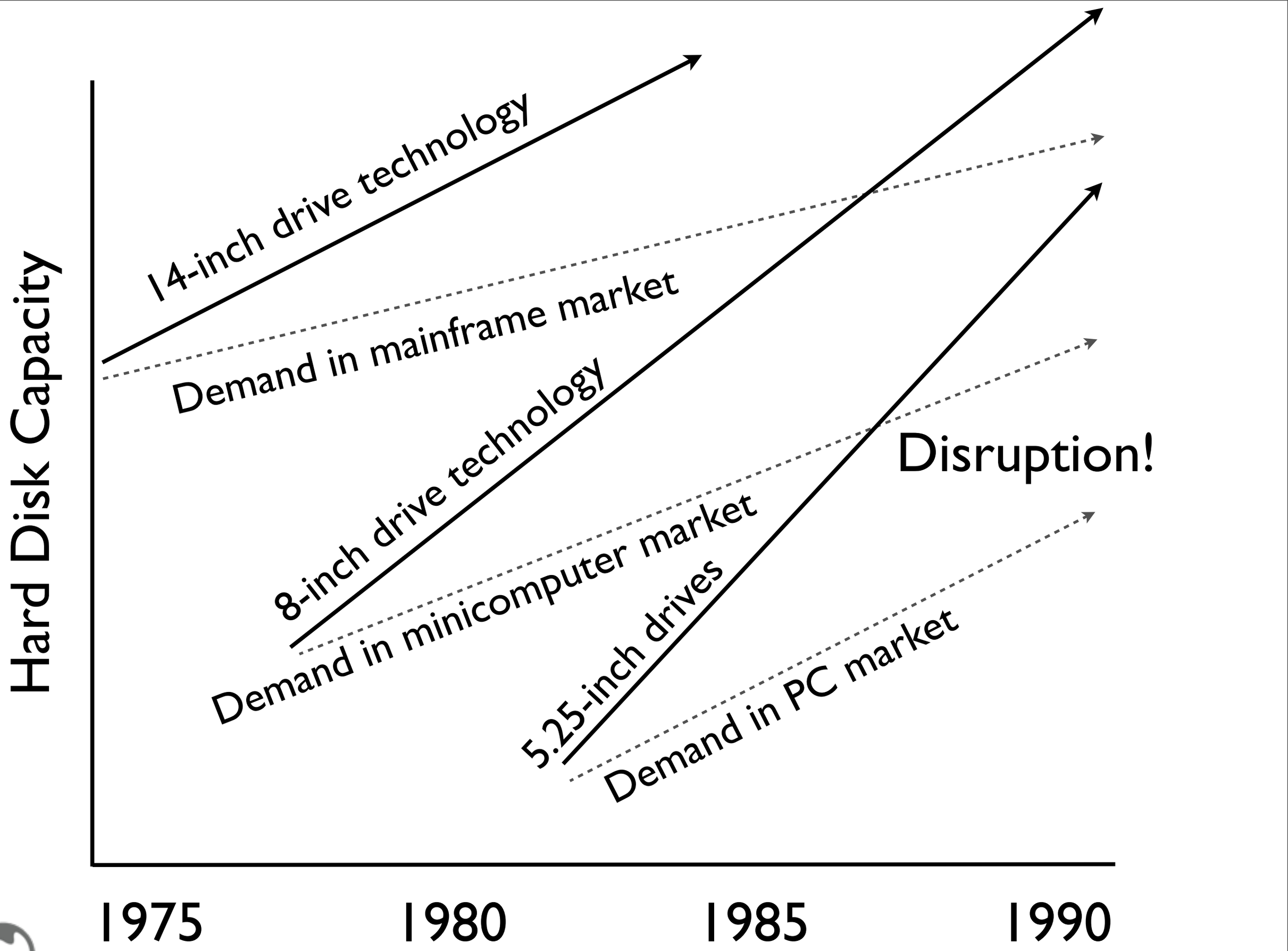

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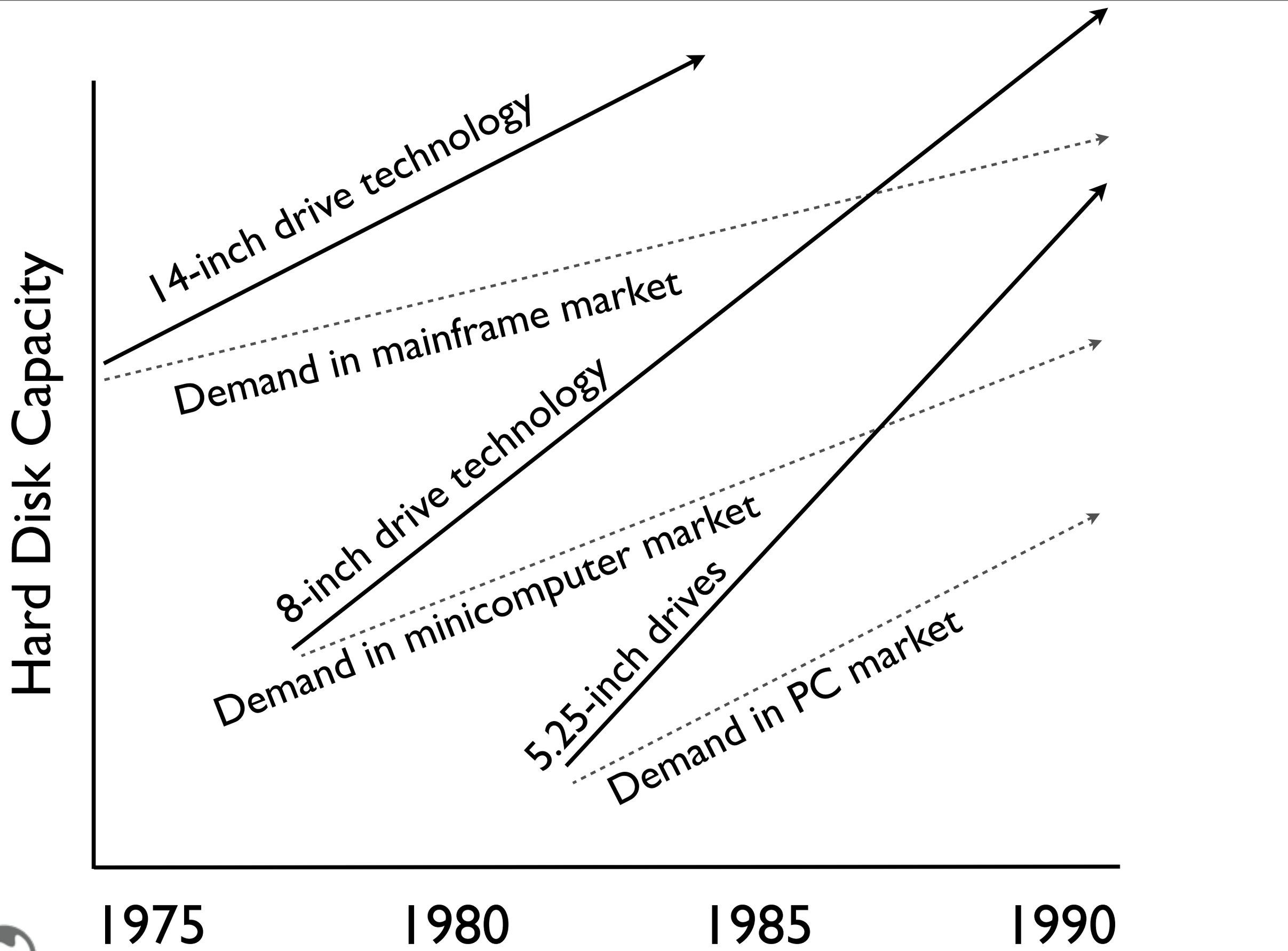

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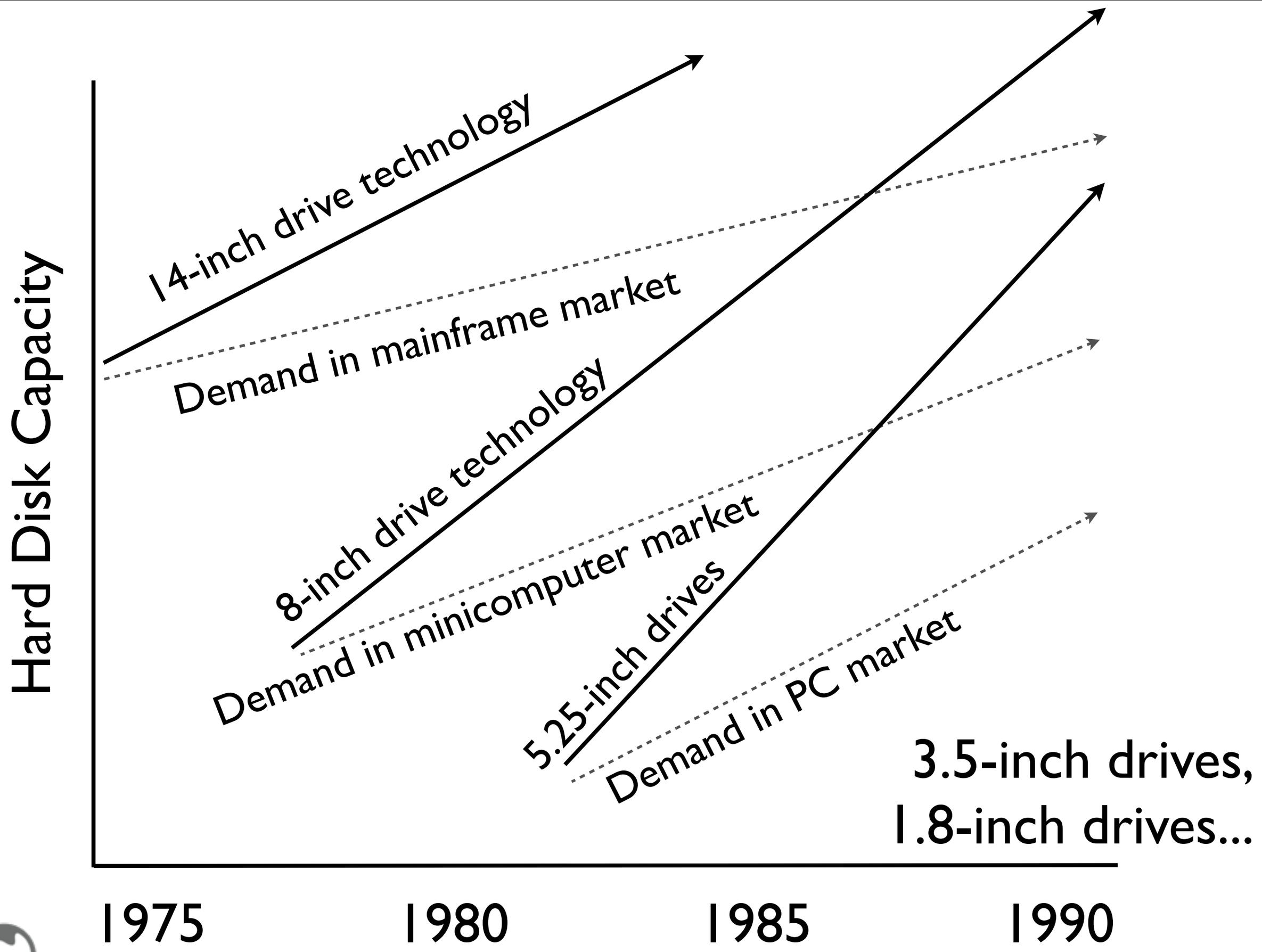

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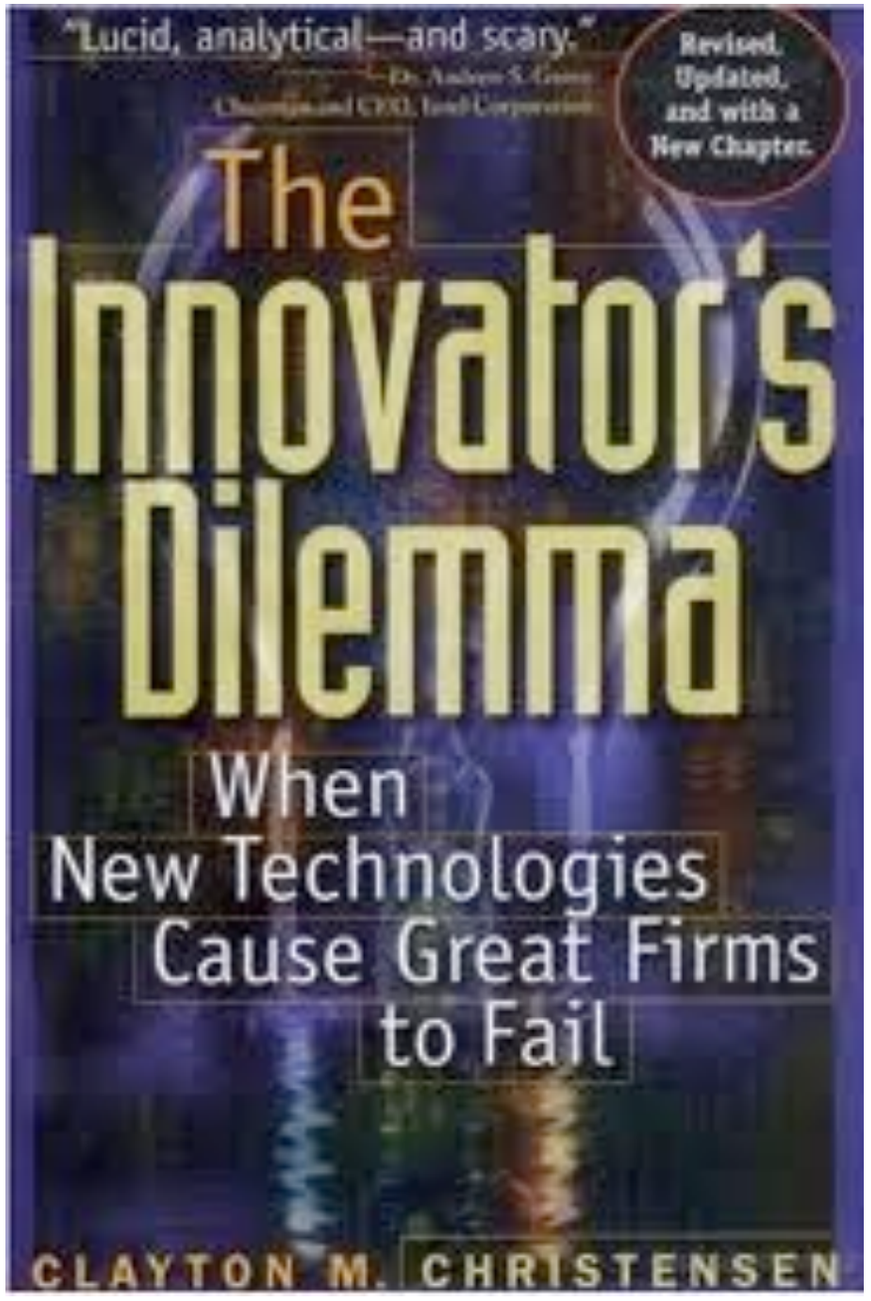
"Lucid, analytical—and scary."
Revised, Updated, and with a New Chapter.
The Innovator's Dilemma
When New Technologies Cause Great Firms to Fail
CLAYTON M. CHRISTENSEN

1. Technology Gains Traction with Customers

2. Sustaining Innovations Meet Customer Demands

3. New But Inferior Technology Initially Targets a Different Market Segment

4. Incumbents Ignore the Inferior Technology

5. Inferior Technology Moves Up-Market Via Sustaining Innovations

6. New Technology, No Longer Inferior, Disrupts the Incumbent's Market

7. Incumbent Cedes the Lower End of the Market, Focuses on Top Customers

8. Disruption Continues, Reaching More and More Incumbent Customers

9. Incumbent Finally Tries To React, But It's Too Late

The Innovator's Dilemma

- You find success with a technology or product, and you're making good profits
- But some disruptive technology will eventually destroy your market
- Do you:
  - pretend it won't happen?
  - create/adopt it first, thus destroying your own market?

More Examples
(from my career)

Apollo Computer vs. Sun Microsystems

Apollo

- Invented the engineering workstation in the 1980s
- Incredible technology, ahead of its time — but proprietary
- Major CAD/CAM customers like Boeing and Texas Instruments

Sun

- Started with low-end engineering workstations based on standard UNIX and TCP/IP
- Technology initially inferior to Apollo's
- Targeted customers not profitable to Apollo (e.g. colleges/universities)

Sun Disrupted Apollo

Apollo's Legacy

- http://example.com/foo
- \\hostname\path

Apollo's Legacy

- http://example.com/foo
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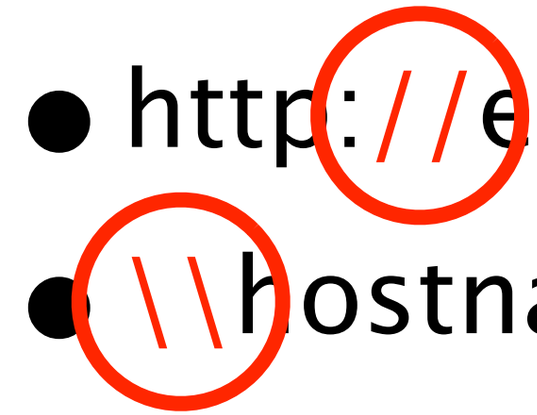


IONA Orbix vs.

OOC Orbacus

IONA Orbix

- IONA was an extremely successful Irish software company, leader in CORBA
- Orbix was a successful “enterprise grade” object request broker (ORB) product, with an enterprise price tag

OOC Orbacus

- Orbacus was an open source ORB, initially inferior feature-wise to Orbix
- Free for non-commercial use
- Inexpensive license for commercial use

OOC Disrupts IONA?

- As CORBA gained popularity, non-enterprise customers wanted to use it but didn't want to pay for Orbix
- Orbacus initially targeted those customers
- Customer demands drove improvements to Orbacus

OOC Disrupts IONA? No!

- Orbacus improvements allowed it to steal low-end customers from IONA
- So, IONA acquired OOC, but very importantly, IONA let Orbacus continue on its path
- IONA thereby profited in both the enterprise and low end markets

Over-serving

- Continued sustaining innovations eventually leads a product to over-serve part of its market
- Disruptive technologies often target over-served customers
- Example: digital cameras vs. smartphones with cameras

Non-consumption

- A future disruptive technology for market X can first start in market Y
- Non-consumption: incumbent technology for market X not used in market Y
- Disruptive technology targets non-consumption in market Y, then improves and moves into market X

Relational Databases vs. NoSQL Databases

Relational Databases

- Incredibly successful technology
- Provides ACID properties to applications, useful for a wide variety of apps and domains
- Top-end relational databases are very expensive

NoSQL Databases

- Choice: different tradeoffs than relational, e.g. availability over consistency
- Provide only a subset of what relational DBs can do (i.e., they're "inferior")
- But perfect for some applications
- Also much less expensive

NoSQL Disrupting Relational?

NoSQL Disrupting Relational?

- May 2011: Oracle publishes whitepaper “Debunking the NoSQL Hype”

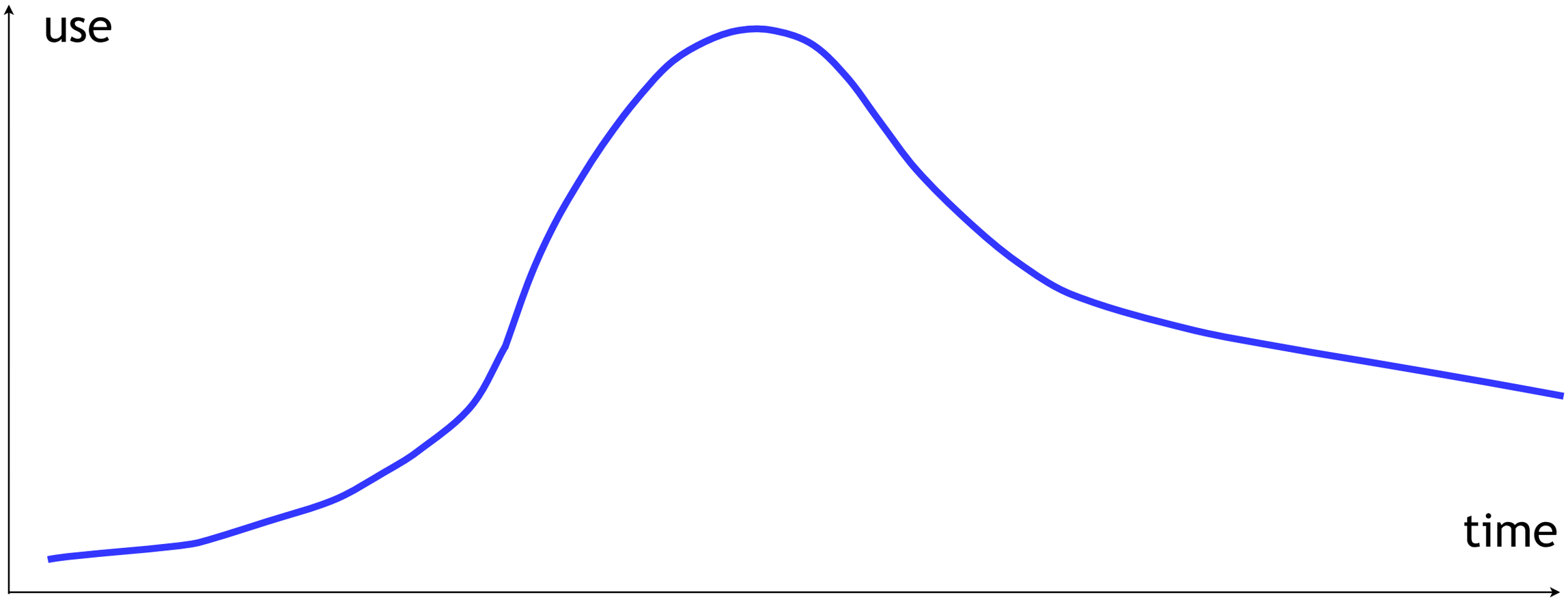
NoSQL Disrupting Relational?

- May 2011: Oracle publishes whitepaper “Debunking the NoSQL Hype”
- October 2011: Oracle announces their own new NoSQL product, whitepaper disappears from Oracle website

NoSQL Beachheads

- NoSQL being used in apps where relational doesn't fit well (non-consumption)
- Some low-end relational customers turning to NoSQL are over-served by relational products
- Relational products are reacting by introducing NoSQL features
- NoSQL systems will continue to advance

Technology Adoption Life Cycle



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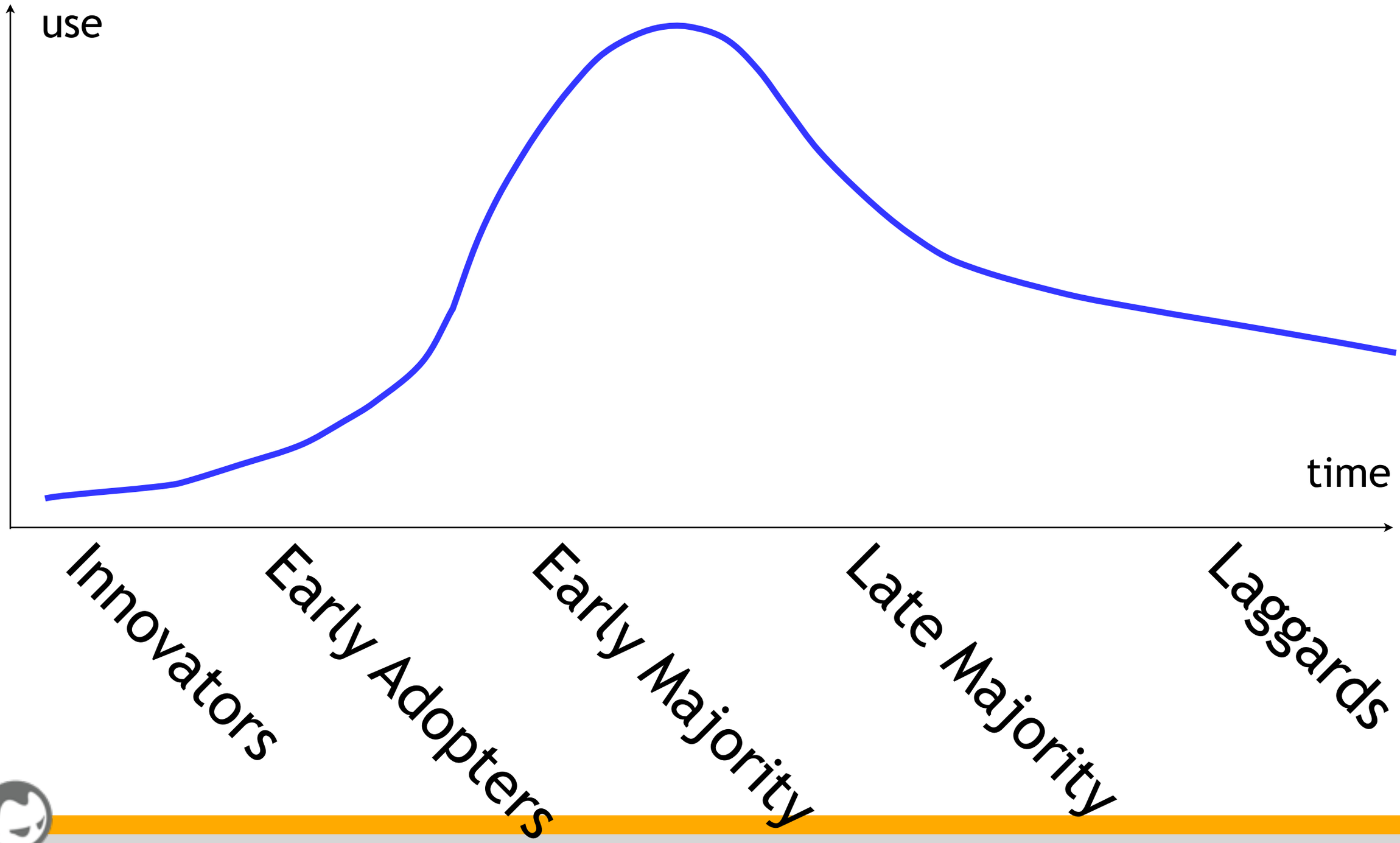

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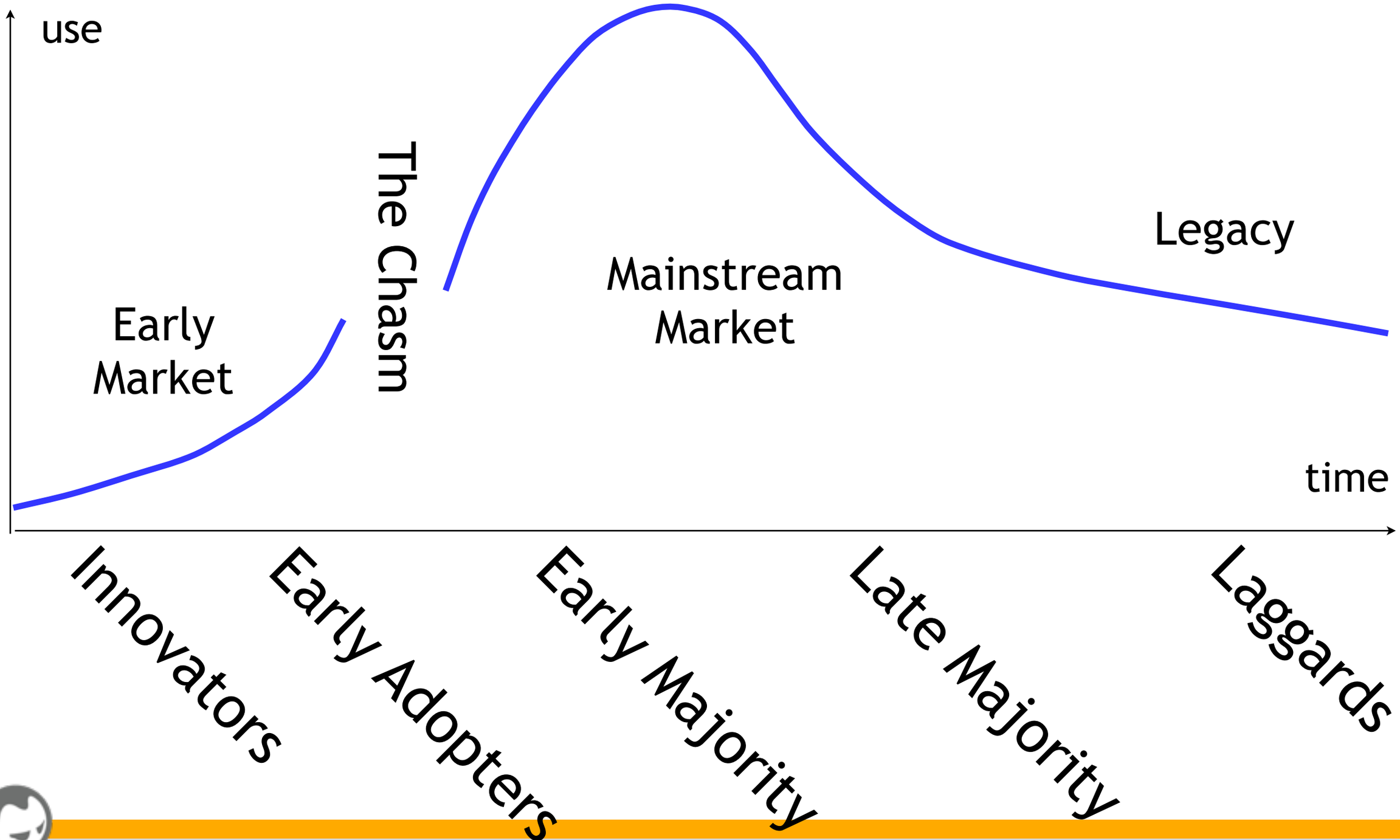

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see Geoffrey Moore, *Crossing the Chasm,* for more details

The Role of Management

- Managers often do just what they're supposed to do for their products
- Yet often the company still fails
- Why?

Pursuing Profit

- Product success means acquiring customers and keeping them happy
- Goal of management: sustaining innovations
- The most demanding customers help drive the product's success

Manager Rewards

- Focus on most demanding customers leads to profits, and manager wins
- But can also lead to markets ripe for disruption
- Protecting against disruption means investing in lower-profit products
- Managers don't get rewarded for that!

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"As soon as management mentality overwhelms leadership mentality, regardless of company size, the pull of the past begins."

—Geoffrey Moore
@geoffreyamoore

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"IT managers. Putting the 'No' in 'Innovation'."

—Lyndon Sharp
@lyndons

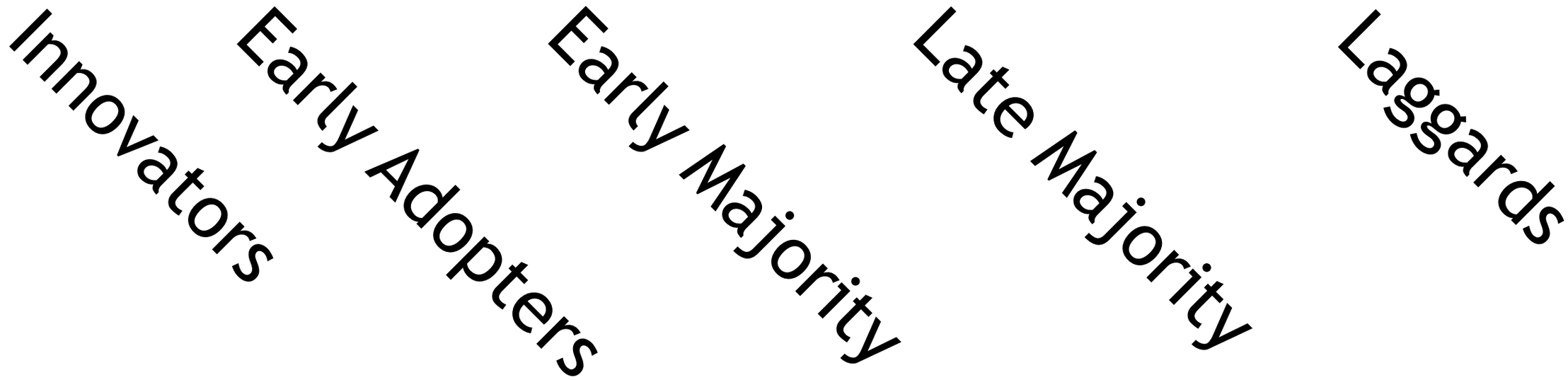
The Solution is Hard

- Organizations must be willing to disrupt themselves
- Nurturing multiple technologies and products at different life cycle points
- Even if the technologies are competitive

Innovating

- Know your customer, work with them, iterate with them rapidly
- Don’t be afraid to fail, failures help you learn
- Be agile and willing to change direction to meet new opportunities

Levels of Innovation Adoption Readiness



Source: Everett Rogers "Diffusion of Innovation" Theory

Which Type Is Your CEO?

Which Type Is Your Manager?

What Types Are Your Teammates?

Which Type Are You?

What Customer Type Does Your Product Currently Target?

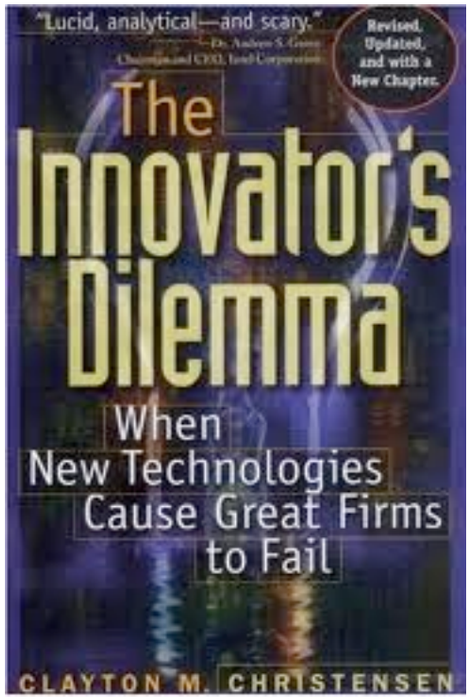
Two Important Lessons

Know Where Your Technology Sits on the Life Cycle Curve

Know Where Your People Sit on the Life Cycle Curve

With These Lessons

- Be A Better Judge of
  - Any Project
  - Any Product
  - Any Team
  - Any Job Opportunity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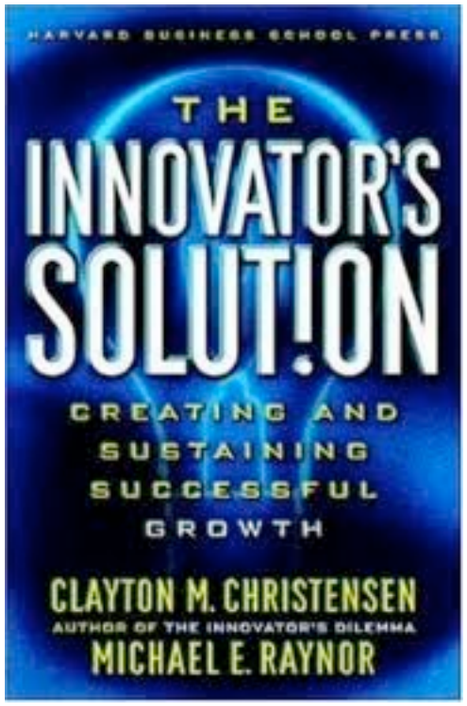
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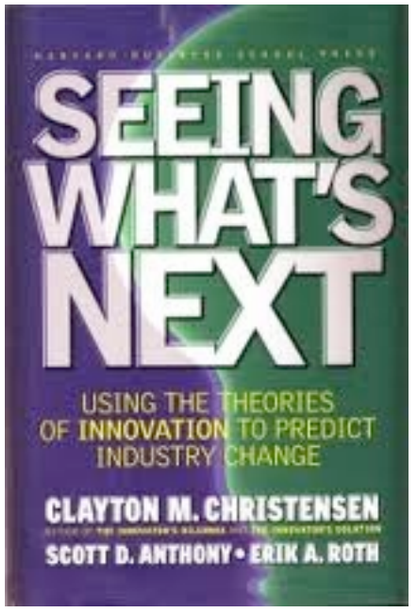
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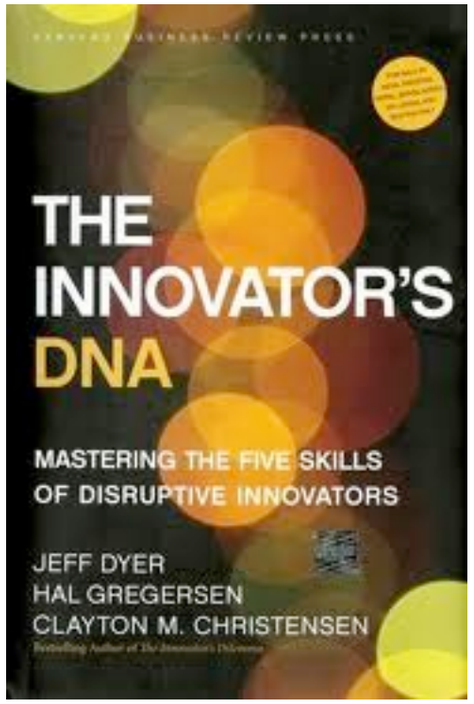
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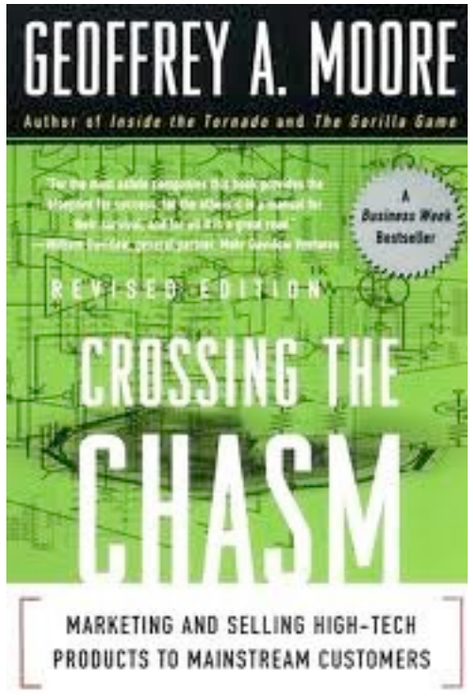
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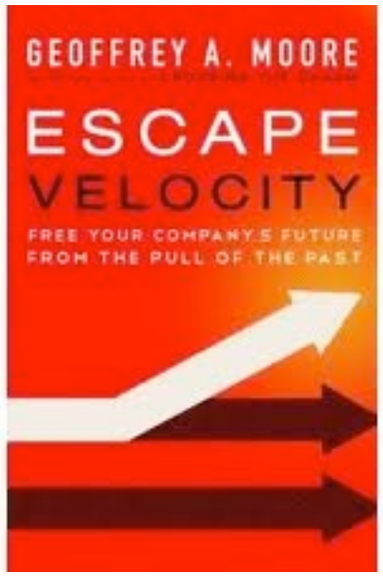
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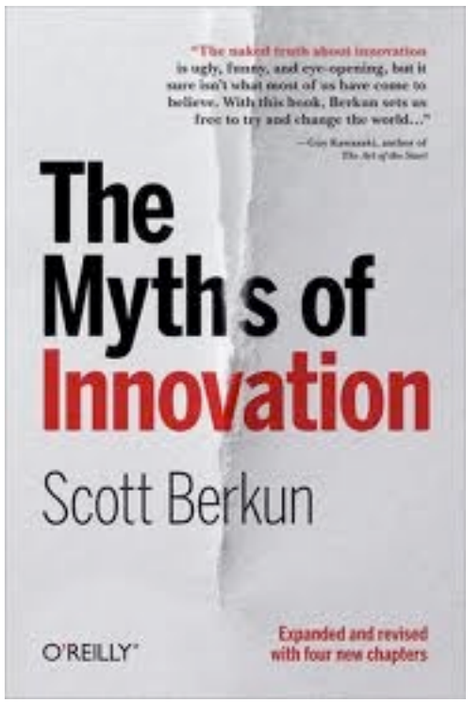
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Expanded and revised with four new chapters

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