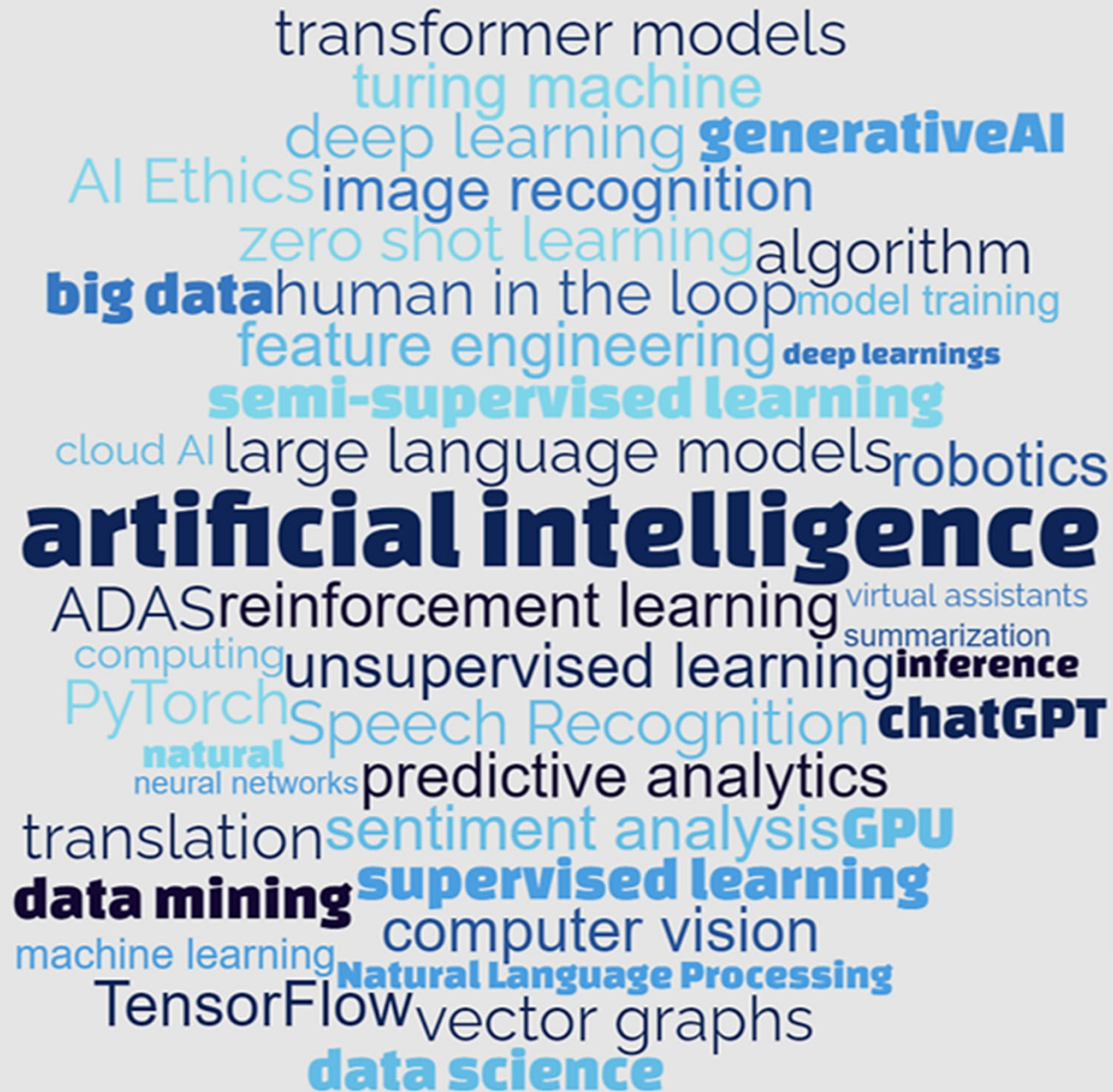


*William Blair*

# **Evaluating Small & Mid Capitalization AI Opportunities**

**Maryland Supplemental Retirement Plans**  
October 10, 2024

# Multiple Technologies Coming To Fruition

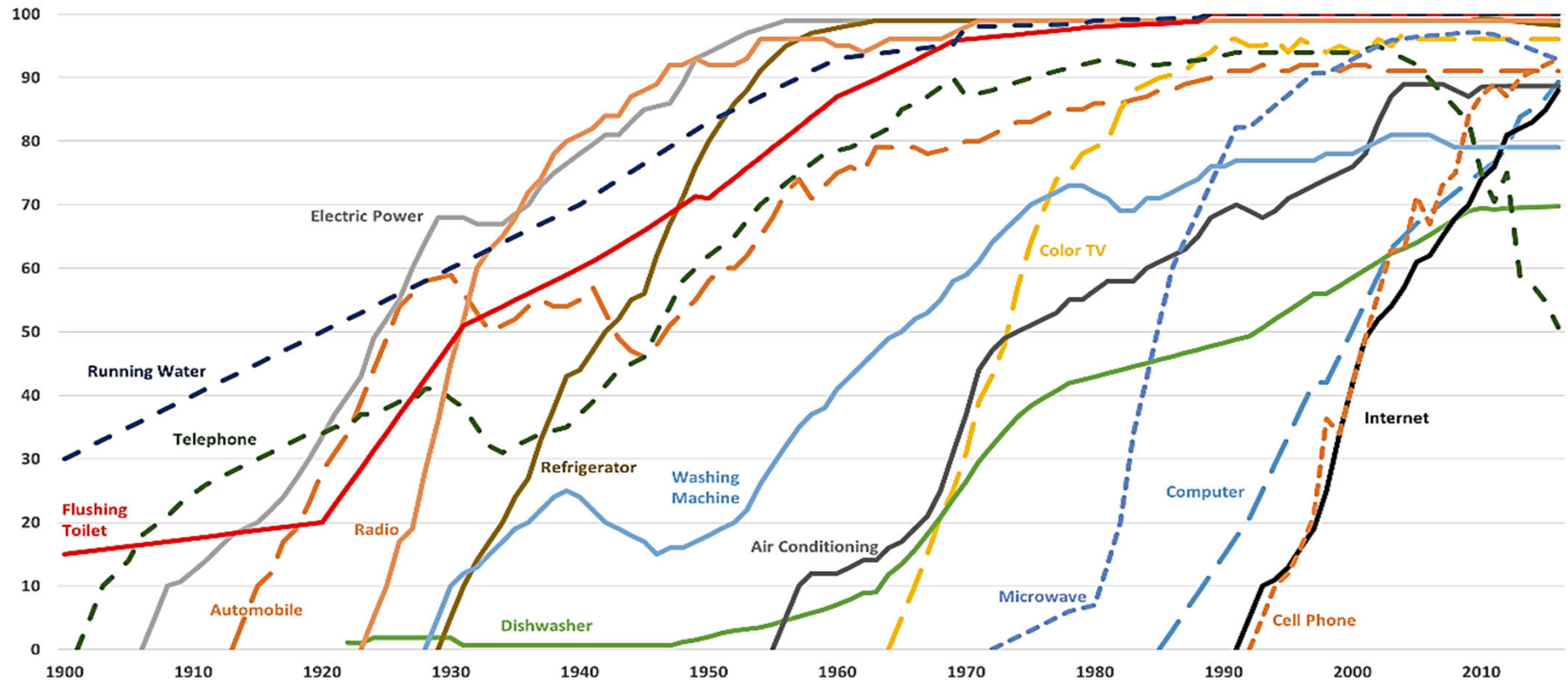


**The More Things Change,  
The More They Stay the Same**

**The More Things Change...**

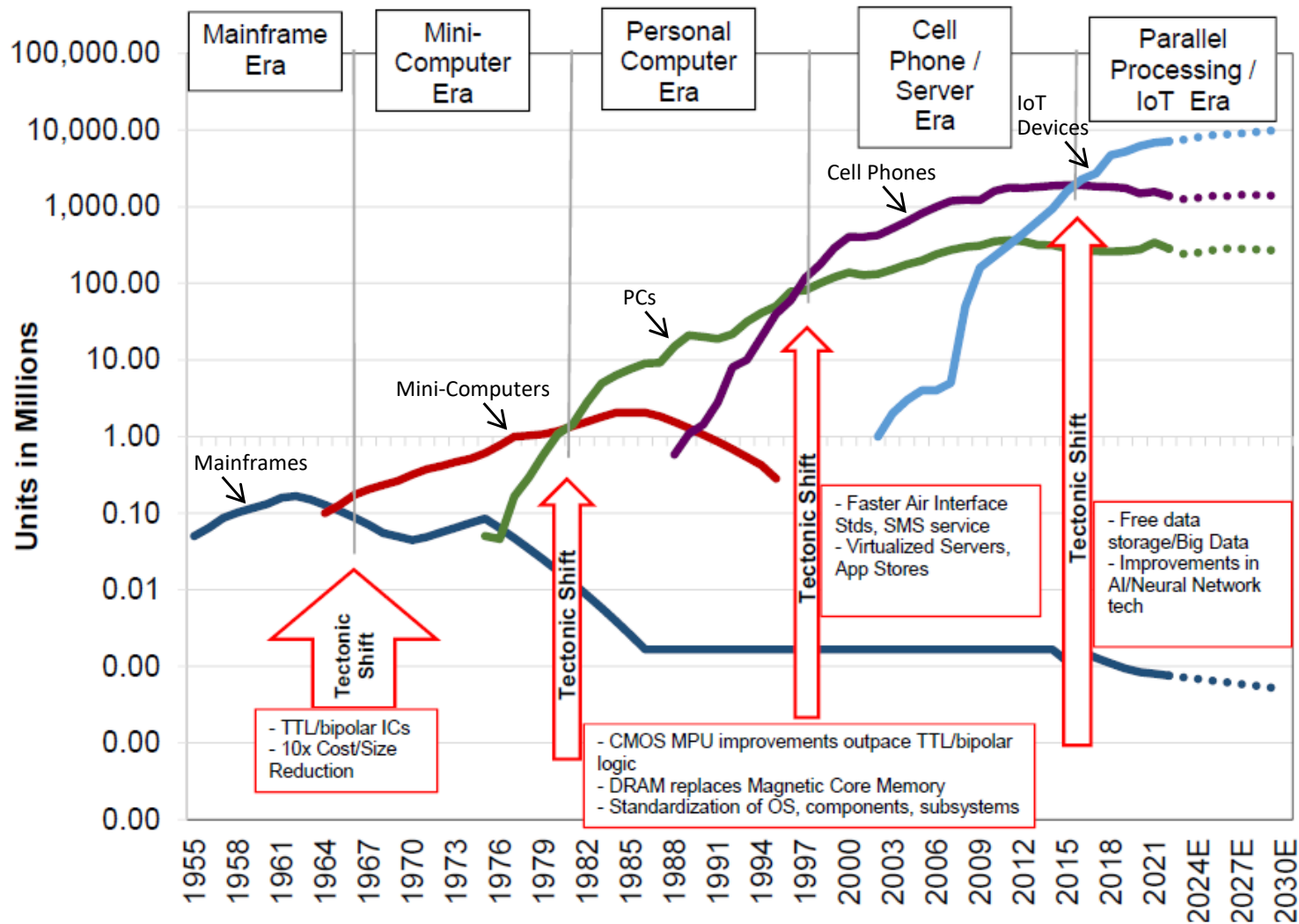
# Innovation Adoption Generally Accelerating

## Share Of United States Households Using Specific Technologies



Application	Time To 100M Users
Amazon	144 Months
Uber	70 Months
ChatGPT	2 Months

# We've Seen These Step-Function Changes Many Times Before

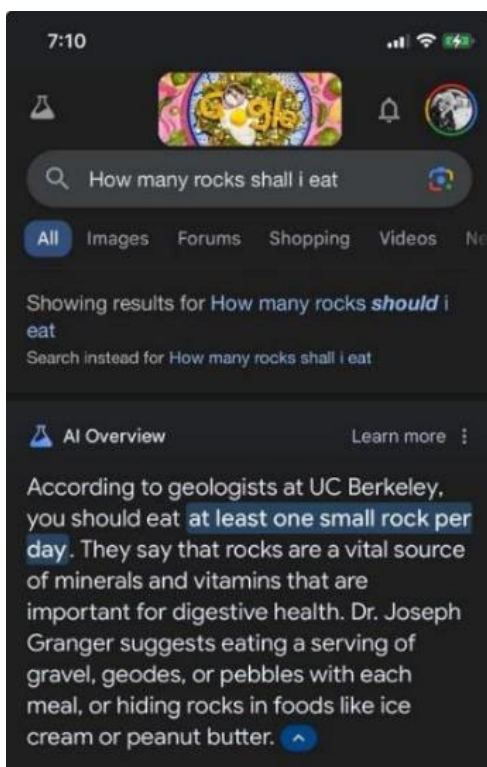


**AI Is Just The Next Tectonic Shift In Computing, Similar To Mainframes, PCs, And Mobile Phones**

Source: Evercore ISI Research Mainframe computer data sourced from IBM filings, "The Early Computer Industry: Limitations of Scale and Scope", A. Gandy; Minicomputer "History of Computer Communications", J. Pelkey, Personal Computer data sourced from "Total Share: Personal Computer Market Share 1975-2010", J. Reimer, Gartner; Mobile devices sourced from Counterpoint Research, Canlys Research, "Smartphones" Research Report, M. Ilyas, S. Ahson; IoT devices sourced from Gartner.

# It Rarely Starts Perfectly...

**McDonald's just fired its drive-thru AI and is turning to humans instead**



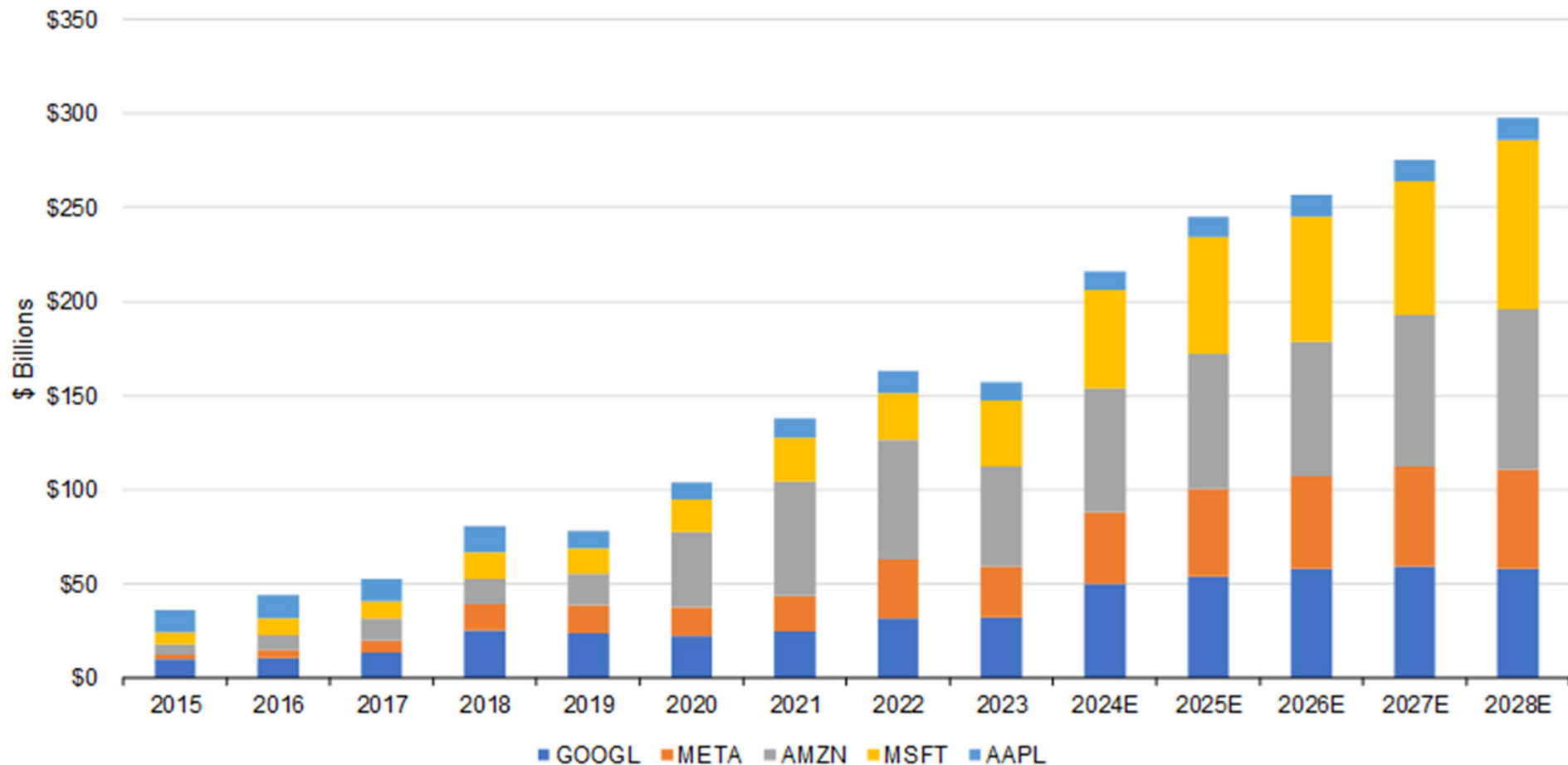
**Google AI Overview highlights eating "one small rock per day" for good digestive health.**

**What Went Wrong with Zillow? A Real-Estate Algorithm Derailed Its Big Bet**  
The company had staked its future growth on its digital home-flipping business, but getting the algorithm right proved difficult.

**Lawyer cites fake cases generated by ChatGPT in legal brief**

# ...And The Cost is Significant

## Capital Expenditures



Source: SEC filings and FactSet Consensus Estimates.

No consensus estimates for AAPL in CY'26-CY'28. AAPL's FY'26 CapEx dollar estimate rolled forward to CY'26-CY'28.

References to specific companies are for illustrative purposes only and are not intended as investment advice or a recommendation to purchase or sell any security.



## ...And The Cost is Significant

TECHNOLOGY EXECUTIVE COUNCIL

### Corporations looking at gen AI as a productivity tool are making a mistake

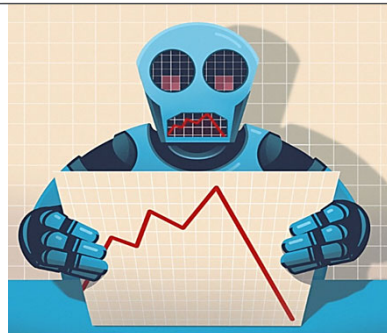
PUBLISHED FRI, MAY 31 2024-10:12 AM EDT

Bob Violino

**Key Point:** “Only 5% of companies have achieved mature generative AI initiatives, with 45% delaying investment...”

### The AI Revolution Is Already Losing Stream

The pace of innovation in AI is slowing, its usefulness is limited, and the cost of running it remains exorbitant.



### Key Point: Only \$3B In Revenues vs. \$50B of Investment, per Sequoia

“An oft-cited figure in arguments that we're in an AI bubble is a calculation by Silicon Valley venture-capital firm Sequoia that the industry spent \$50 billion on chips from Nvidia to train AI in 2023 but brought in only \$3 billion in revenue.” – **Wall Street Journal, May 31, 2024**

## Yes, The Value is Real – It's Just a Matter of Time



**By 2005 or so, it will become clear that the Internet's impact has been no greater than the fax machine's.**

– Economist Paul Krugman, circa 1998



# Is There Any There, There? Yes!

**Waymo significantly outperforms comparable human benchmarks over 7+ million miles of rider-only driving**  
The Waymo Driver demonstrated a 6.8 times lower crash rate involving an injury....and 2.3 times lower police-reported crash rate.

**The Bigger Picture on [Tesla] Autopilot Safety**  
Tesla Autopilot is ~10x safer than the US average.

**AI can now outperform conventional weather forecasting - in under a minute, too**  
Google DeepMind outperforms 90% of the targets used by the world's best weather prediction systems.

**AI Tools Make Programmers More Productive**  
Throughput increased by 126% for developers who used the AI [Copilot] tool.

**AI can predict cancer risk through mammograms**  
Research team at the University of Hawai'i found that deploying deep learning AI technology can improve breast cancer prediction.

## Yes, The Value is Real – It's Just a Matter of Time



**We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run.**

– Roy Amara



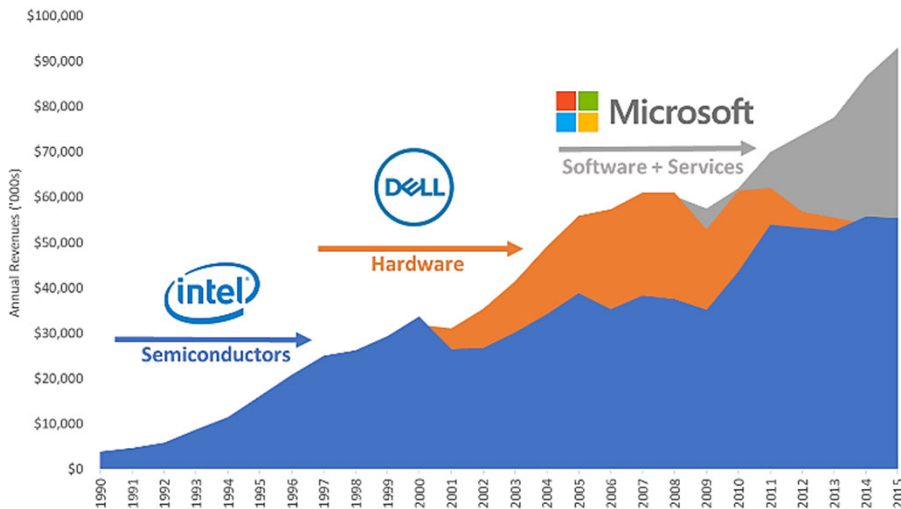
**...The More They Stay The Same**  
(From An Investment Perspective)

# “History Doesn't Repeat Itself, But It Often Rhymes”

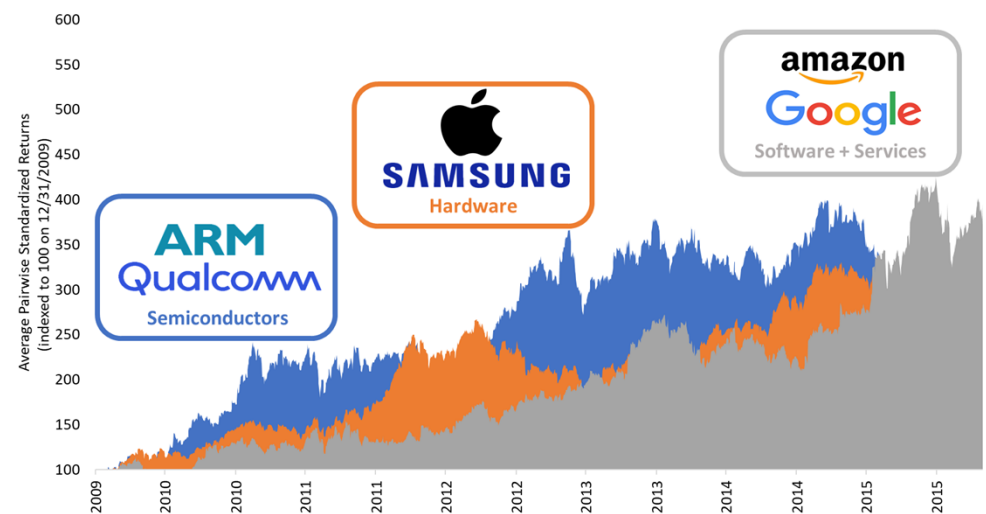
— Mark Twain

## Capital Flow In Prior Compute Transition Cycles: Semis → Hardware → Software → Services

### PC Adoption



### Mobile Phones



Source: FactSet.

**Past performance is not indicative of future returns.** References to specific companies are for illustrative purposes only and are not intended as investment advice or a recommendation to purchase or sell any security.

## Winning Investments Still Need An Inefficiency



**Some people get rich studying artificial intelligence. For me, I make my money studying natural stupidity.**

— Carl Icahn



# Investment Philosophy

We Seek To Invest In Quality Growth Companies When They Are Undervalued

## Quality Growth

*Superior, Longer-Term Earnings Growth*

Strong Management

Sustainable Business Model

Solid Financials

### Market Inefficiencies We Seek to Exploit

#### Traditional Quality Growth



A Better Company Than  
The Market Expects

- Faster growing
- More durable growth rates

#### Fallen Quality Growth



Short-Term Issue

- Growth is non-linear
- Market overreacts
- Deep company knowledge

#### Undiscovered Quality Growth



Not Broadly Known  
Or Understood

- Insufficient analyst coverage
- Company change/evolution



# Winners and Losers – A Framework

## We're Focused On The Same Factors That Can Determine Fundamental Success Outside of AI!

- Strong Management
- High Value Proposition
- Large Market Opportunity
- Formidable Competitive Barriers

## However, As With Prior Tech Stack Shifts, The Competitive Barriers Become More Important

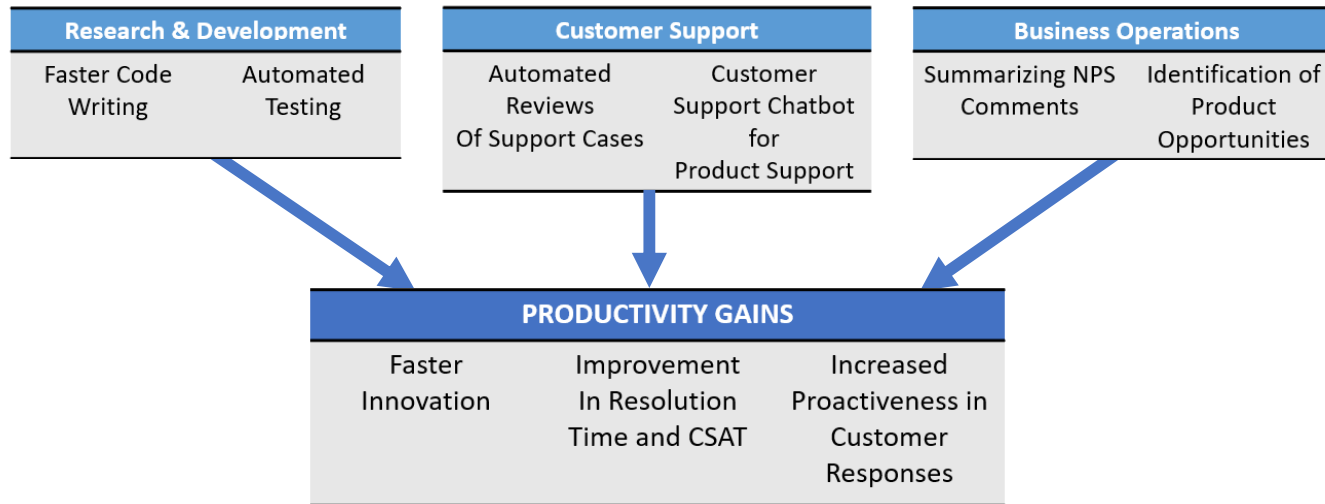
- As the cost of development decreases and the speed of innovation increases, certain barriers erode faster

### Key Areas of Focus:

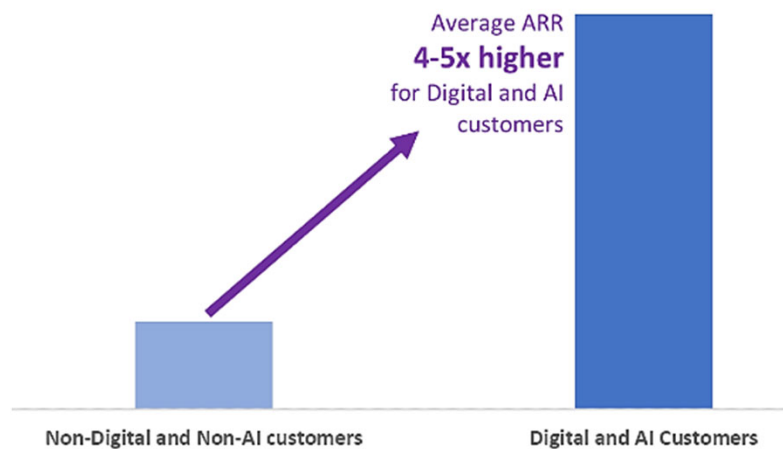
- Proprietary, Constantly Refreshing Data Set
- Network Effect
- Vertical Expertise
- Platform Offering (vs. Point Solutions)
- New Products Require High Levels of Expertise and Ability to Invest
- Sticky Applications and Customer Lock-In
- Economies of Scale and Low Incremental Costs
- Increasing Returns to Scale (Customers Benefit as the Vendor Grows)

# Increasingly Seeing Vendors & Their Clients Capture Value

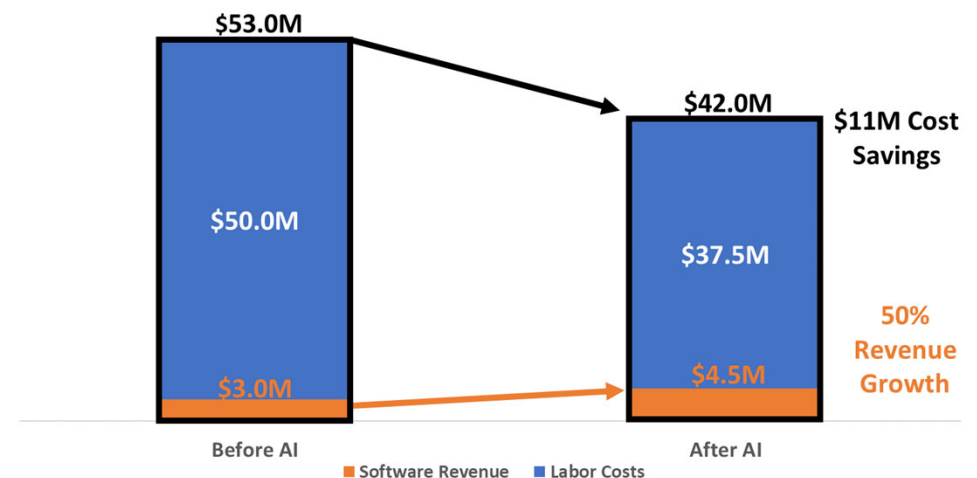
## Internal Use of AI – Enhancing Profitability and Innovation



## Average Revenue (ARR) Per Customer



## Win-win: Customer Saves \$11M, while Software Vendor Increases Revenue 50%



# Increasingly Seeing Vendors & Their Clients Capture Value



## Challenge

Advertisers need to ensure brand safety alongside user-generated media (such as TikTok, Instagram, etc.)



## Solution

Use AI image recognition technology to ascertain if images within videos have changed, and if so, review for suitable content



## Benefit

Significantly faster time to value and lower cost of processing

# Increasingly Seeing Vendors & Their Clients Capture Value

Industry	Issue	How AI Assists The Clients	How AI Benefits The Vendor
<b>Cyber Security Software Vendors</b>	Hackers will use AI to find and capitalize on security weaknesses	AI can help enable IT teams detect vulnerabilities, lock down sensitive information, summarize attack paths and provide mitigation guidance faster	Vulnerability management and data protection is even more important in the world of AI; increases the vendors' value proposition
<b>Software Vendor For The Construction Industry</b>	The construction industry is under-digitized; 96% of data is unused	SW vendor collects 224+ TBs of data per month; can be leveraged to deliver greater customer value in areas such as project bidding, quality control, cost, and supplier management	Drives greater value for clients, which should result in higher ASPs, margins and ROIC
<b>Auto Body-Shop Management Software Vendor</b>	Repairs estimation is expensive and time consuming	Leverage image recognition, parts and labor databases to auto generate repair estimates; high increases in client satisfaction with significant decrease in cost	Similar to other vertical SW vendors: drives greater value for clients, which should result in higher ASPs, margins and ROIC

# Pressing Open Questions....

1. Does AI Solve Our Demographic / Workforce Problem?
2. Will AI Eliminate the Services That BPOs Offer, Or Does It Unlock Greater Volume?
3. How Does AI Impact Customer Service and Call Centers?
4. Does Automated Coding Help Or Hurt Long-Term Software Margins?
5. What Is the Future of Data Center Interconnections?
6. Can Any Company Catch Up With Nvidia's Chip / Software Portfolio? And Where Does This Leave Intel?
7. What happens to content companies in a world of customized entertainment on-demand?

# Summary

- Today's Pace of Innovation Is The Slowest We Will Experience For The Rest of Our Lives
- How We Evaluate Investment Opportunities, However, Remains Consistent: Invest In Quality Growth Companies When An Inefficiency Emerges

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