



# ARTIFICIAL INTELLIGENCE

November 15, 2023

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# 01

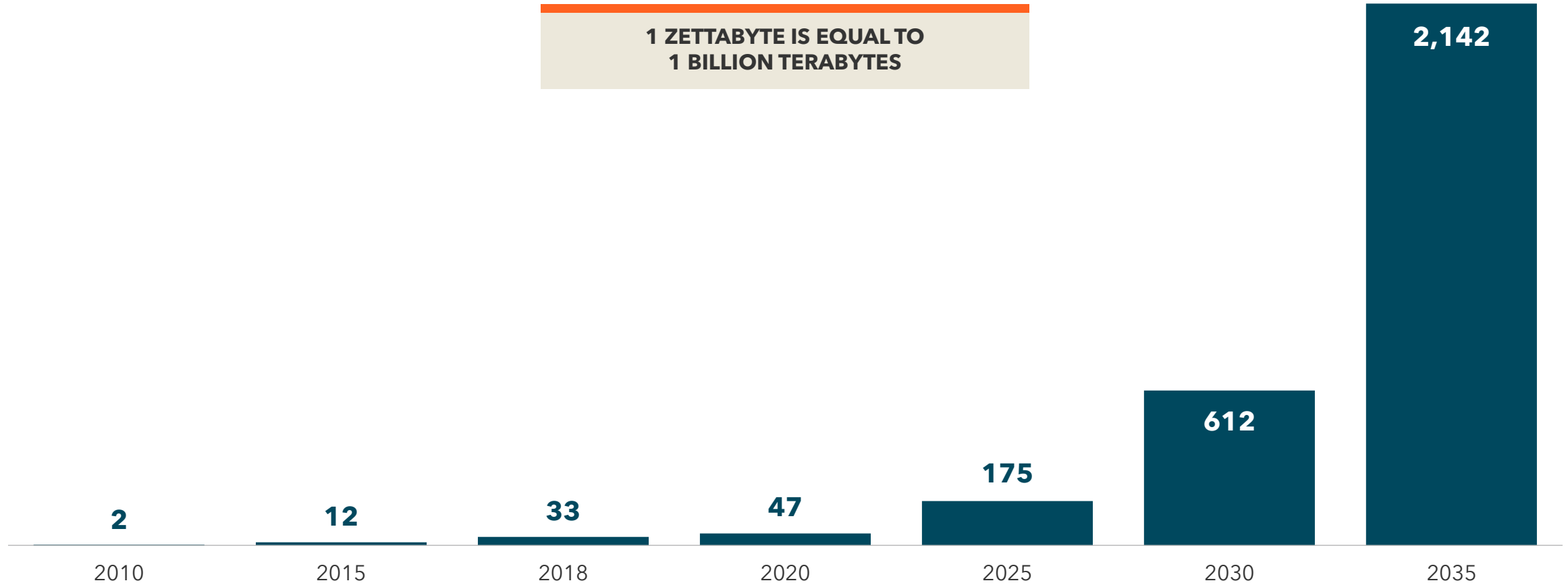


## **INTRODUCTION TO ARTIFICIAL INTELLIGENCE (AI)**

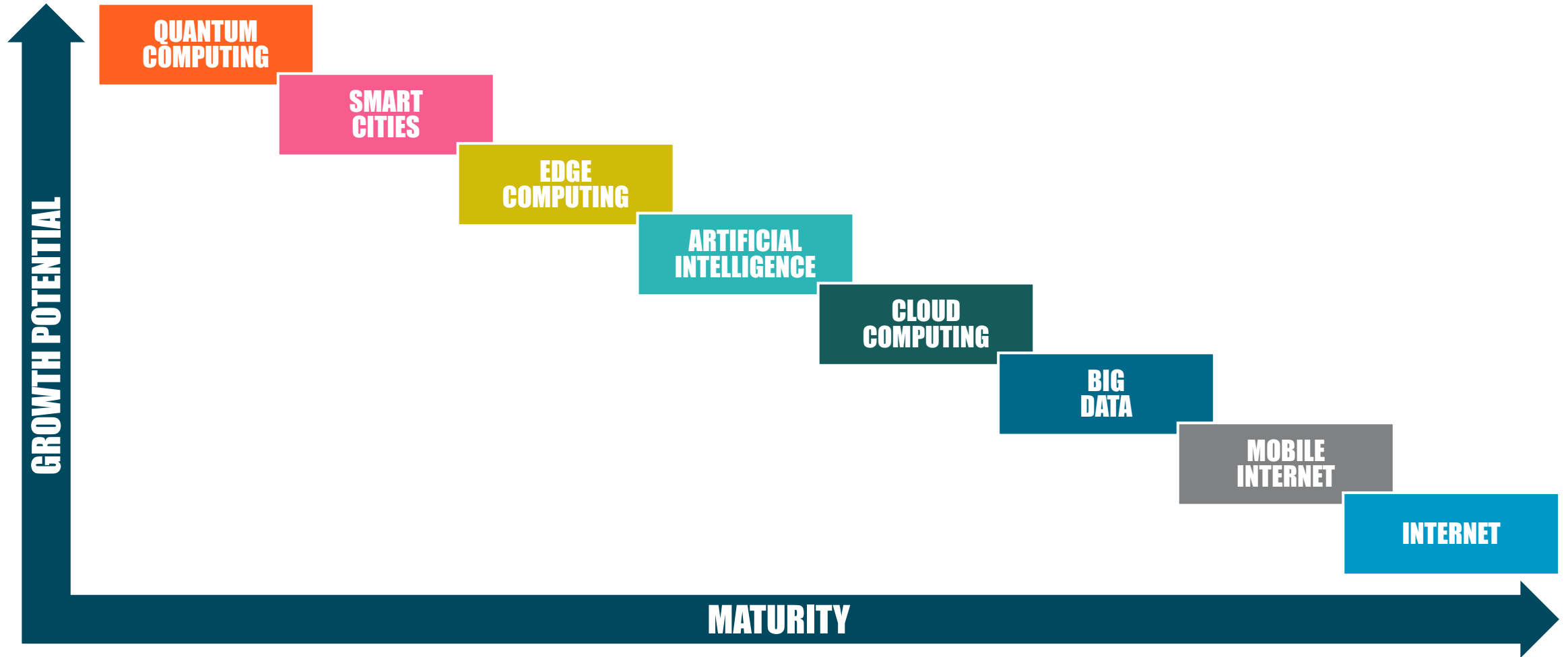
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# We Believe That Global Data Creation is About to Explode

Actual and forecast amount of data created worldwide 2010-2035 (in zettabytes)



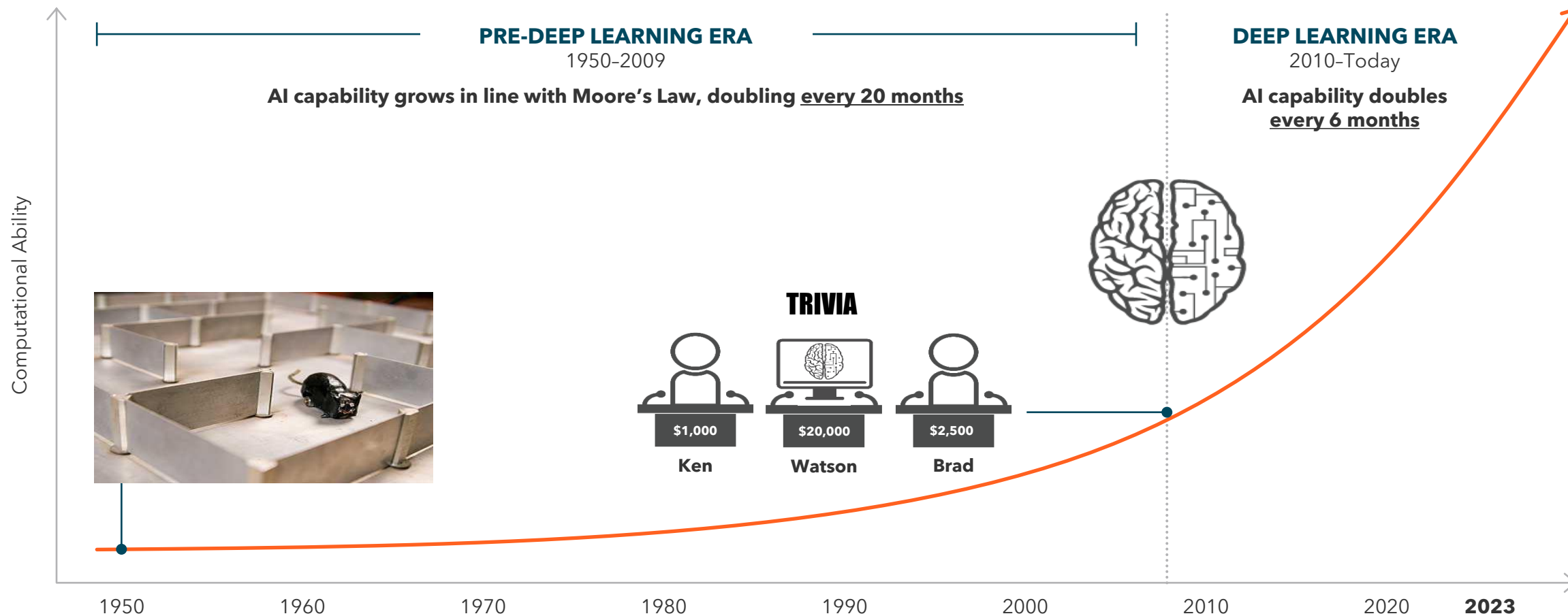
## Theme Escalator



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Source: Newton, September 2023.

# The Pace of Innovation is Accelerating...

2023 is an inflection point across a 70-year history



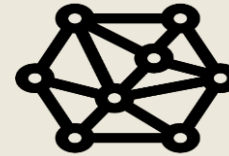
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Sources: Our World in Data, Newton. As of December 2022.

<https://ourworldindata.org/brief-history-of-ai>

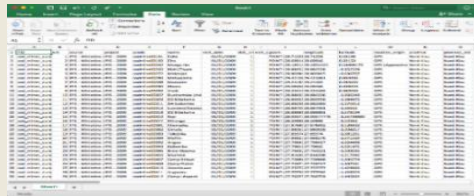
Intel: Moore's Law <https://www.intel.com/content/www/us/en/newsroom/resources/moores-law.html>

# AI Models Are Either Predictive or Generative

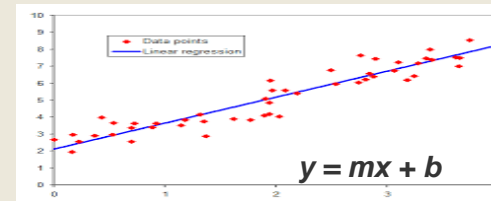


**PREDICTIVE**

Historical Dataset



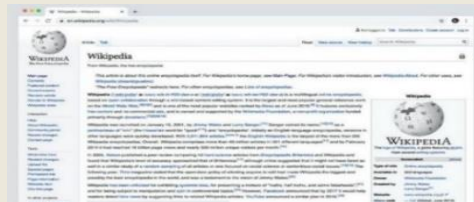
Model



**FORECAST**

**GENERATIVE**

Exemplary Content



Model

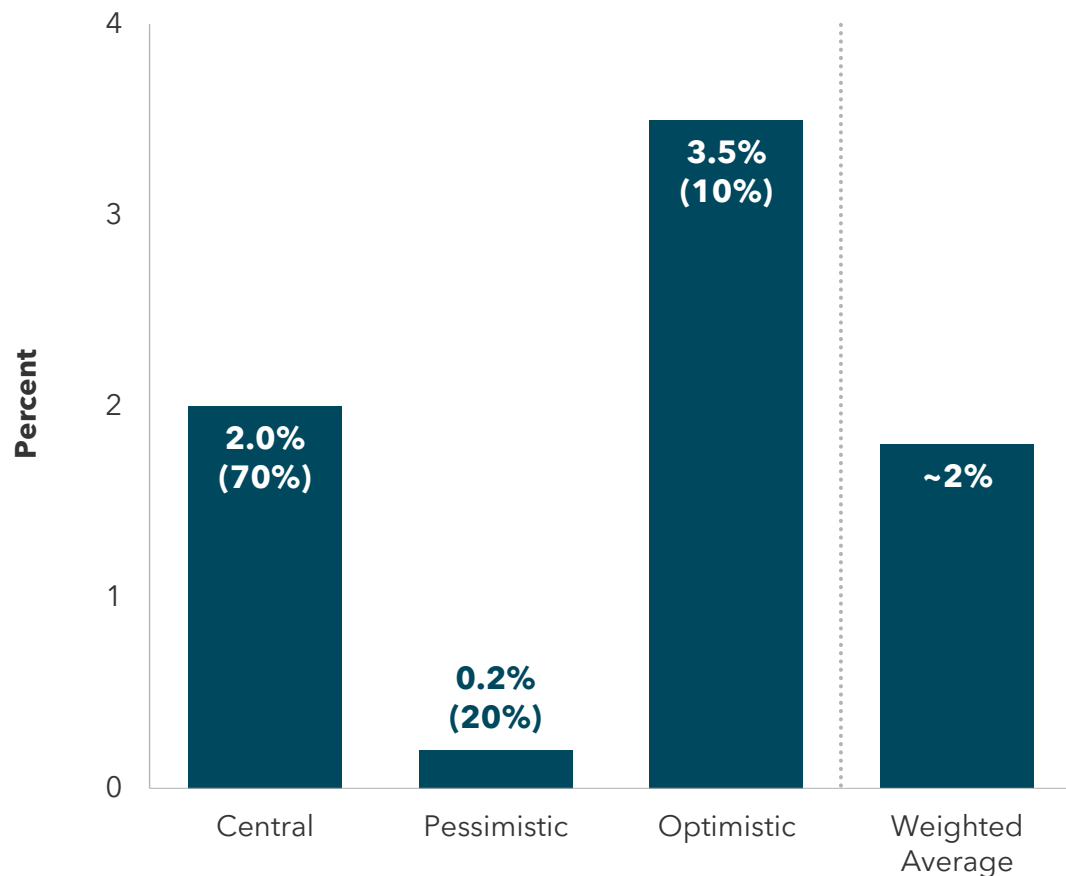


**CREATE CONTENT**

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# We Estimate the Impact of AI on Productivity Growth to be Substantial

## Impact of AI on Productivity Growth – Scenarios (Probability)



### We find that generative AI could lift productivity growth substantially over the coming decades

- Given the inherent uncertainty around any given approach, we use a scenario approach, different lines of attack to the question, and cross-checks:
  - We produce a top-down estimate based on macroeconomic variables and relationships: +2-2.5 pp/year
  - We produce an estimate based on a bottom-up assessment of the activities performed in various jobs: +2-2.5 pp/year
  - We look at external estimates: +1.8 pp/year (median)
- We take the median (~2pp/year) as a central estimate but consider other scenarios too.
- The final estimate is a probability-weighted average

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Source: BNY Mellon.

Charts are provided for illustrative purposes. The research and data contained in this document was commissioned by Newton in 2023.

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# 02

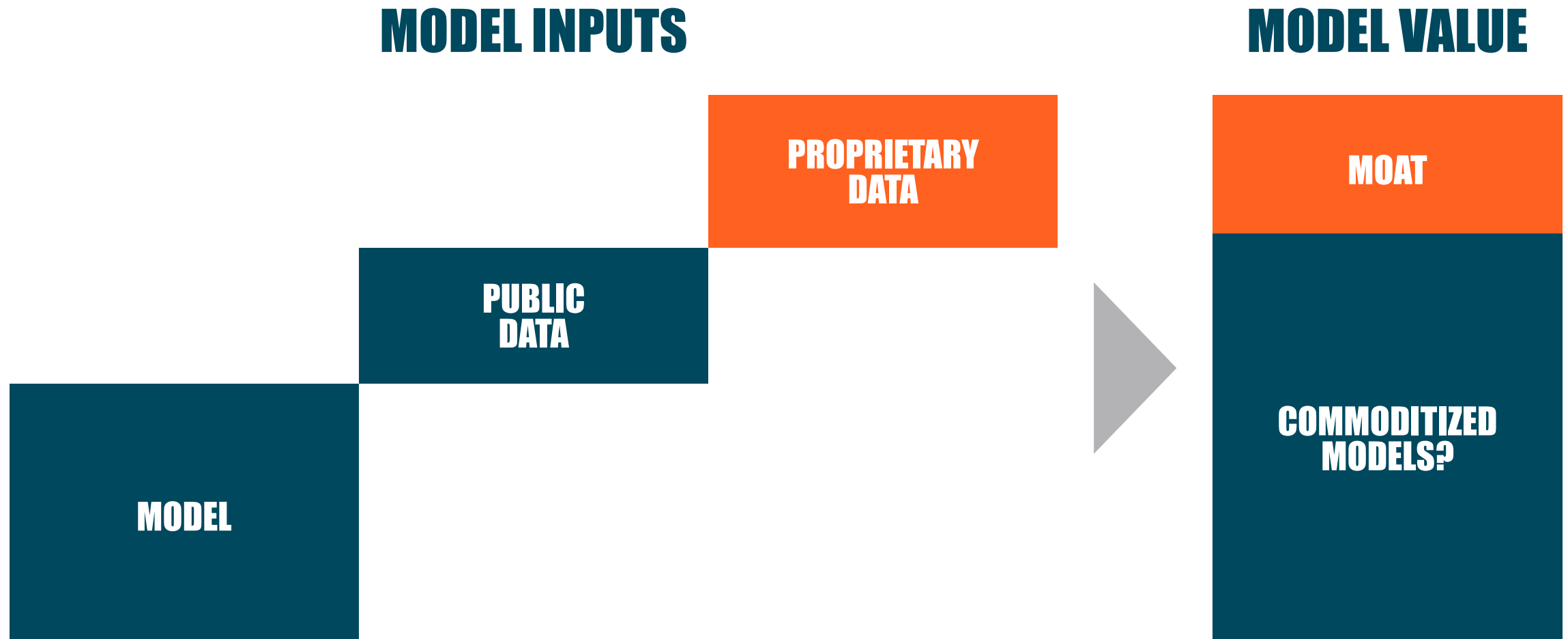


## **AI IMPLICATIONS FOR HARDWARE, SOFTWARE AND SEMIS**

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## Proprietary Data Is Key for AI Users



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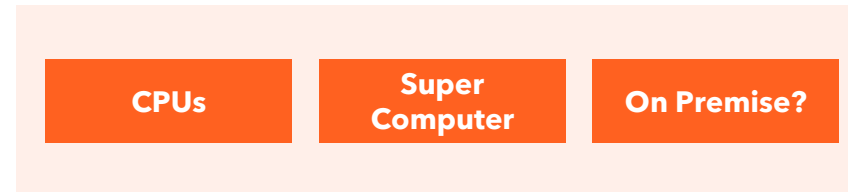
# Potential AI Hardware Beneficiaries

**NOW...**

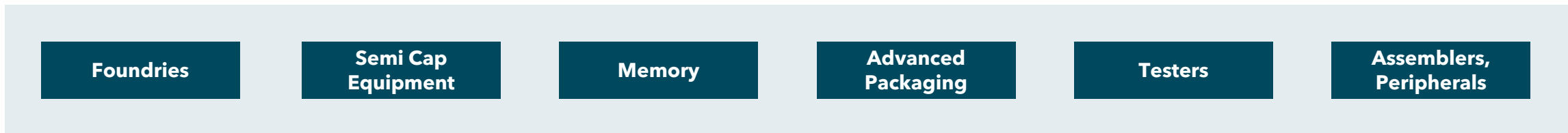
## Servers (First Wave)



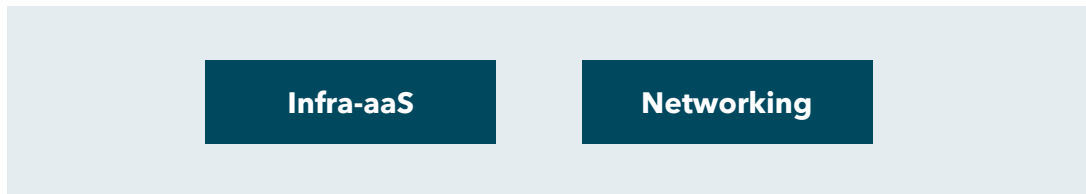
## Relative Losers



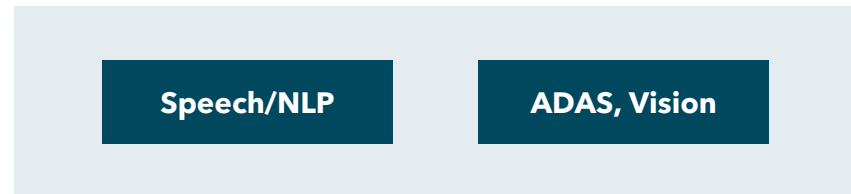
## Server Enablers (Smaller Direct Exposure)



## Edge, Infrastructure (Longer Term)



## Future Drivers of AI Demand (Future)



...LATER

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Source: Newton, September 2023.

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**AI  
DISRUPTION**

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# AI Across Industries

**RETAIL**



**FEDERAL GOVERNMENT**



**INSURANCE**



**LIFE SCIENCES**



**EDUCATION**



**TELECOMMUNICATIONS**



**While all industries are increasing their AI budgets, each industry has unique use cases.**

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Source: IDC, February 2023.

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**AI – AN ENVIRONMENTAL,  
SOCIAL AND GOVERNANCE  
(ESG) RISK PERSPECTIVE**

## AI and ESG

What are potential social risks of AI? And what do these mean for investors?

**JOBS  
IMPACT**

**MODEL  
BIASES**

**MISINFORMATION**

**DATA  
PRIVACY**

**INTELLECTUAL  
PROPERTY**

**SUPPLY CHAIN  
LABOUR**

**SOCIAL  
COMMUNITY**

**BAD  
ACTORS**

**EXISTENTIAL  
RISK!**

**“Biggest innovation since the  
user-friendly computer.”<sup>1</sup>**

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Source: Newton, September 2023.

<sup>1</sup> The quote from Bill Gates is not about Newton, nor is a testimonial or endorsement of Newton.

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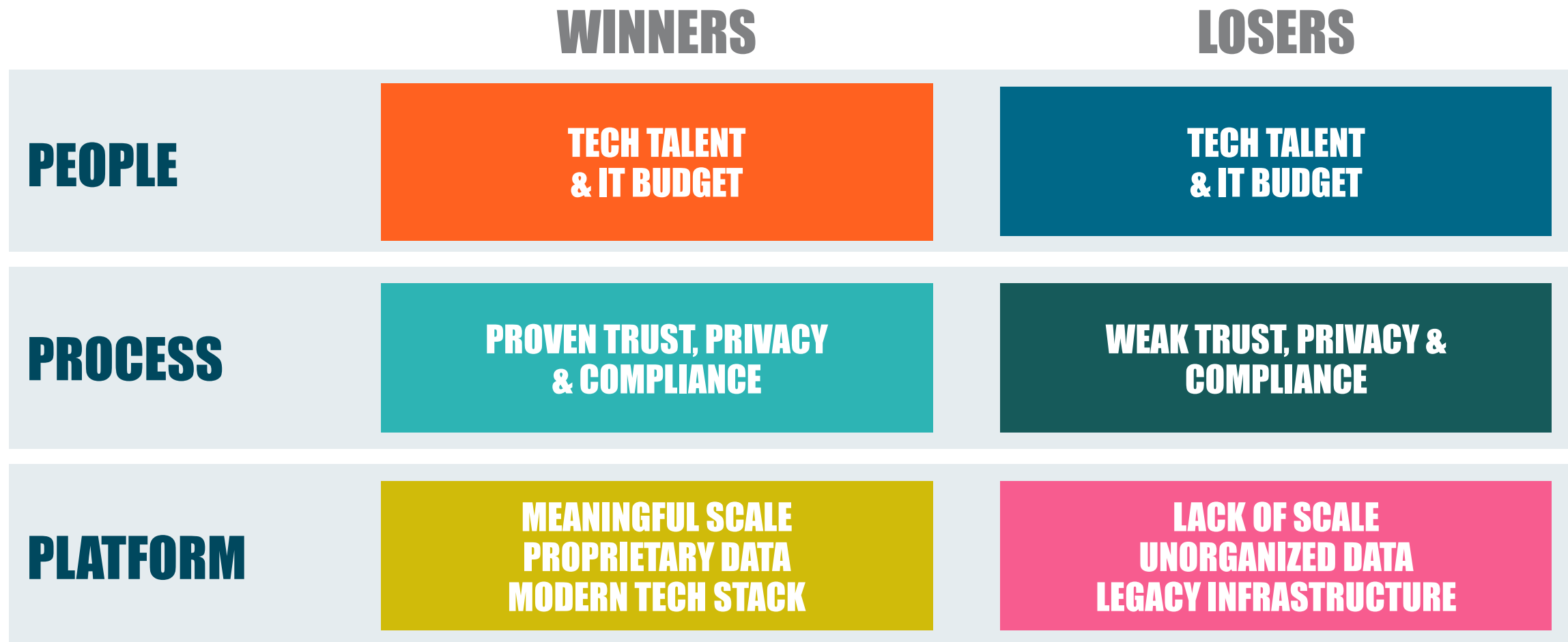
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**CONCLUSION**

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# Framework for Evaluating Potential Winners in AI



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Source: Newton, September 2023.



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