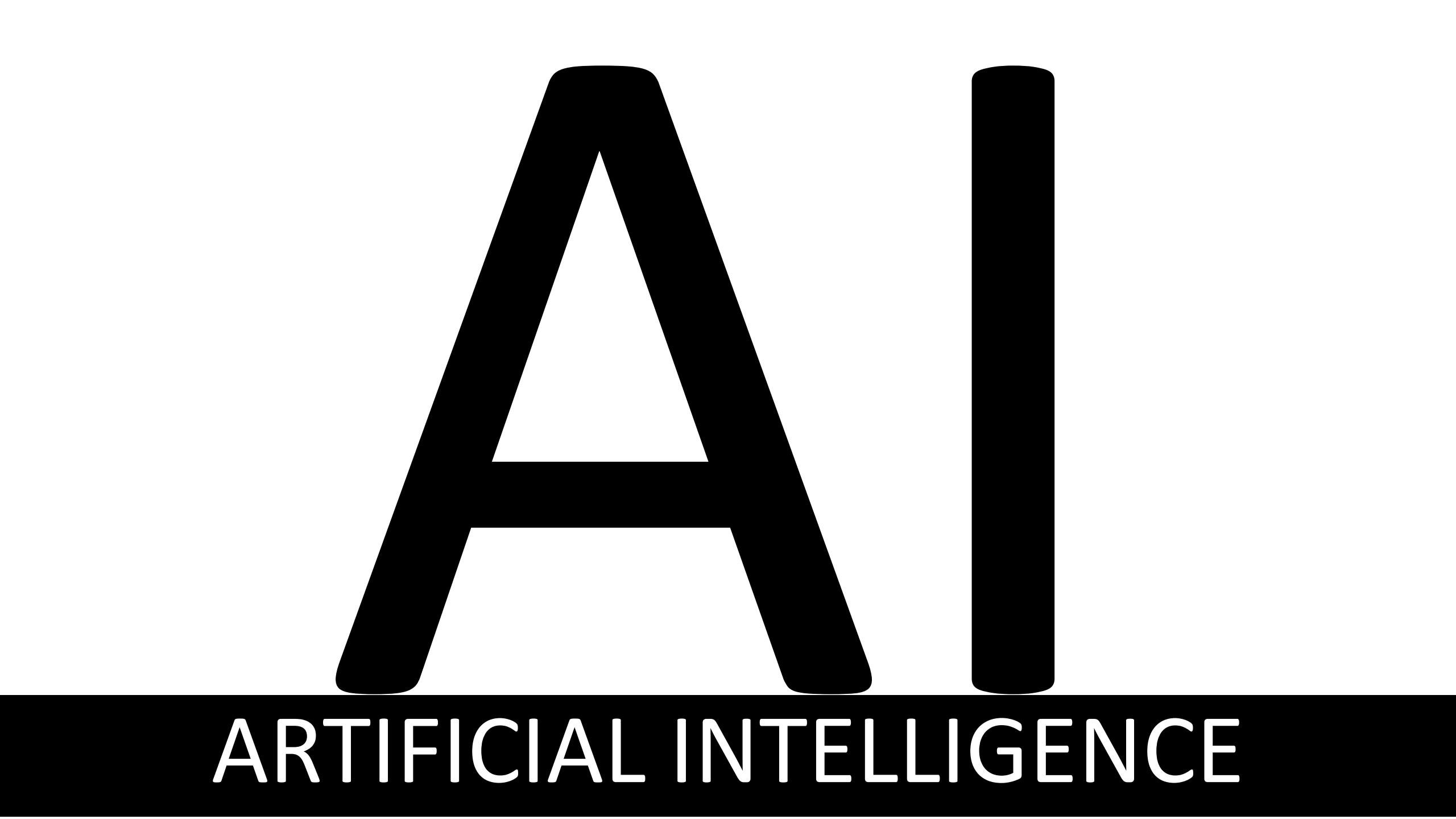
# Leveraging the Potential Power of AI while Mitigating the Equally Potential Peril

Tim Rahschulte, Chief Executive Officer
Email me at timr@pdaleadership.com

PROFESSIONAL DEVELOPMENT ACADEMY


EUNAVERSE


AI
ARTIFICIAL INTELLIGENCE


ROBOCOP
A PAUL VERHOEVEN FILM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POLICE

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**Artificial intelligence** (**AI**) is the simulation of human intelligence processed by machines.

# Your Most Connected Devices

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Nest Thermostat
Smart Thermostat

# Your Most Connected Devices

In.Sight
Wireless baby monitor

Nest Thermostat
Smart Thermostat

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Walabot Home
monitor

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In.Sight
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In.Sight Wireless baby monitor

Wallflower Smart Plug

LG Refrigerator

Nest Thermostat Smart Thermostat


Mr. Coffee Smart Coffeemaker

# Your Most Connected Devices

Walabot Home monitor

SmartMat
Intelligent Yoga Mat


LG Refrigerator

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Walabot Home monitor

Edyn Garden sensor

SmartMat Intelligent Yoga Mat


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Bose Audio Sunglasses

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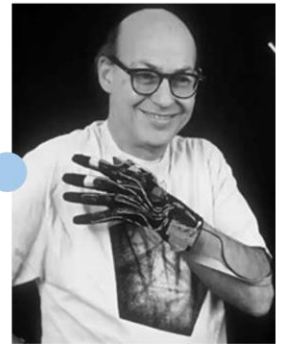
Wallflower
Smart Plug

Scientist and Professor of Complexity at the Santa Fe Institute, Melanie Mitchell did us all a huge favor in 2021 when she published *Why AI Is Harder Than We Think*.

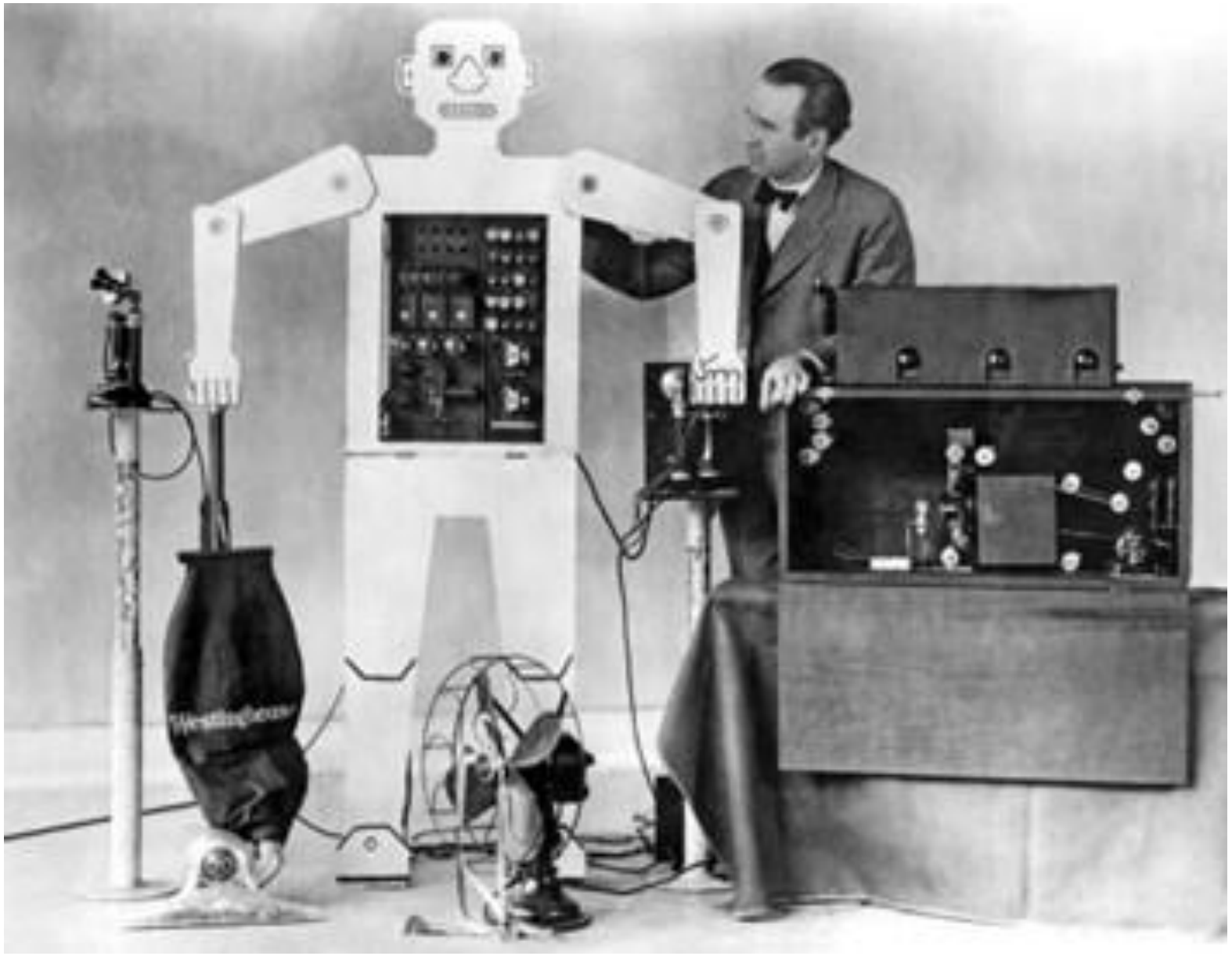
In **1961** Claude Shannon proclaimed: “I confidently expect that within a matter of 10 or 15 years, something will emerge from the laboratory which is not too far from the robot of science fiction fame.”

A few years later, in **1965**, Herbert Simon was confident that “Machines will be capable, within twenty years, of doing any work that a human can do.”



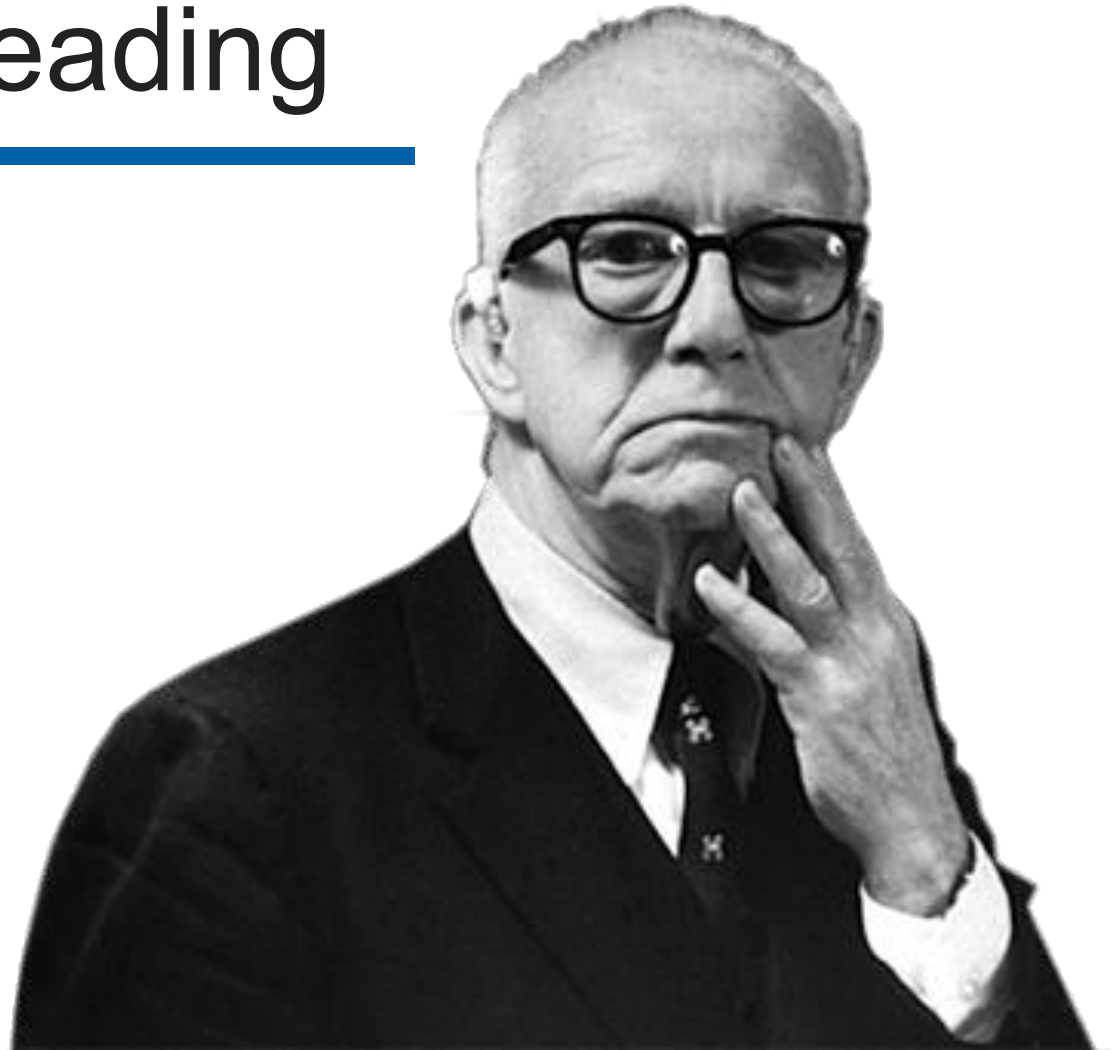
In **1967** Marvin Minsky thought “Within a generation...the problem of creating ‘artificial intelligence’ will be substantially solved.”

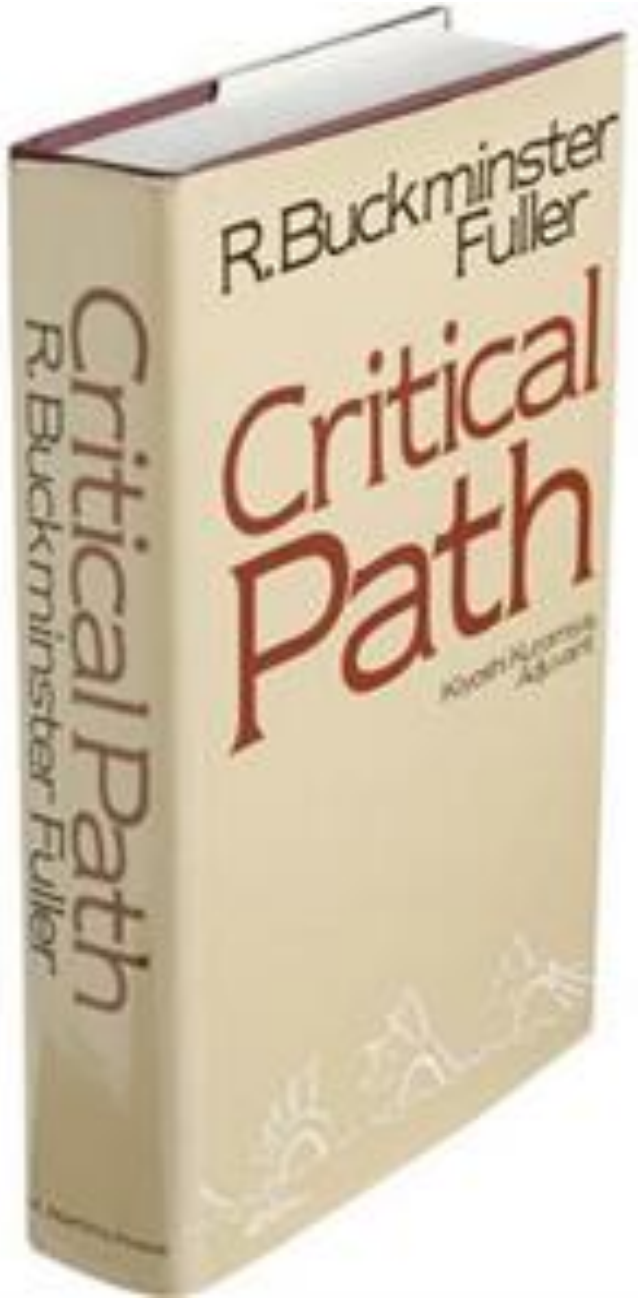
As John McCarthy noted, “AI was harder than we thought.”



Westinghouse’s Televox, a futuristic robot introduced in 1920

# What Digital Changes Are You Leading



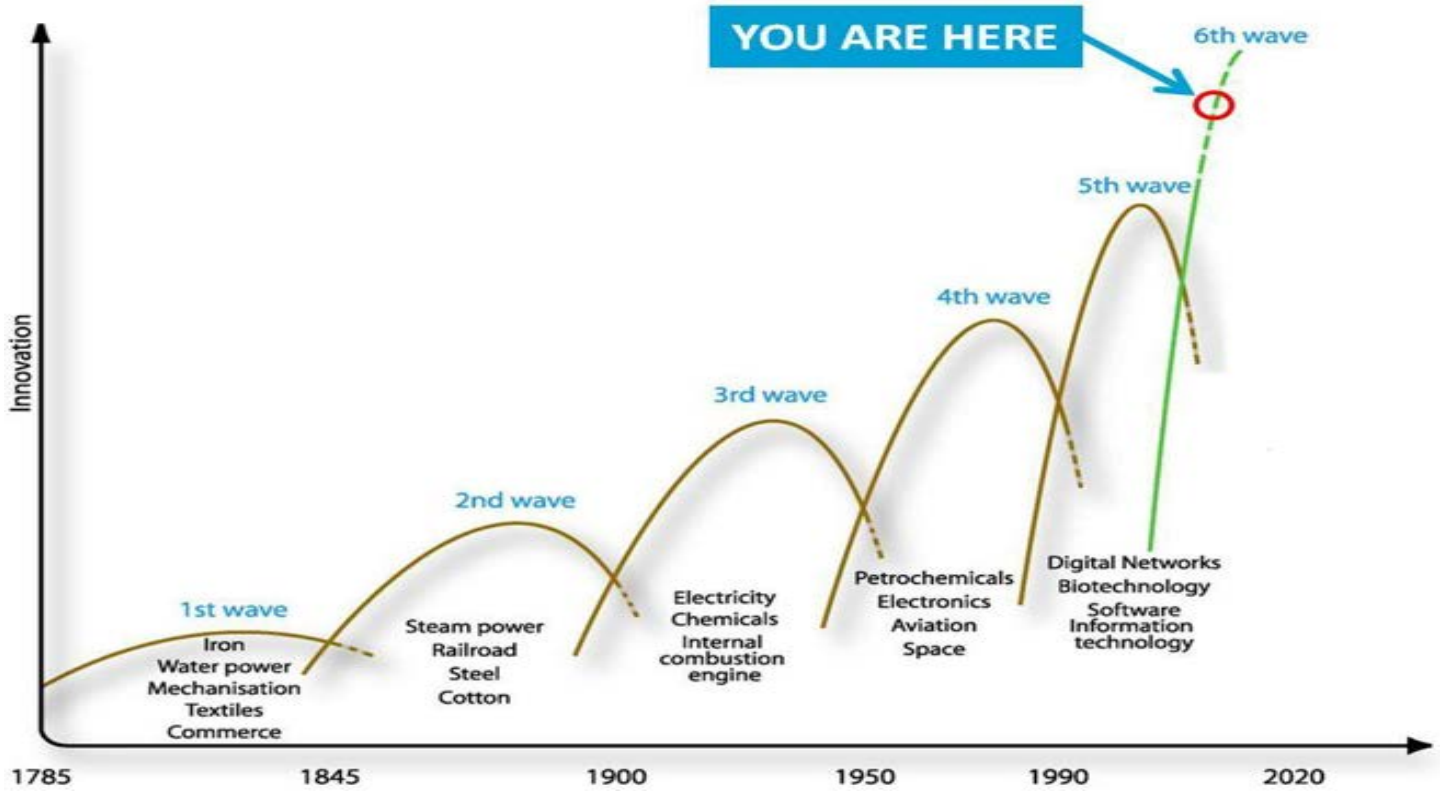


**“We learn on the fringe of what we already know.”**

**- Marc Varner**

# The Future Is Predictable

(To an extent)

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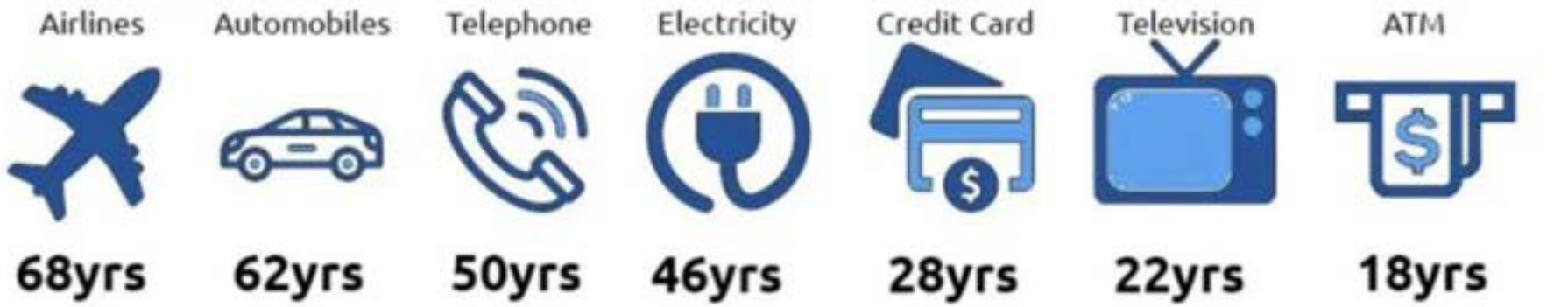
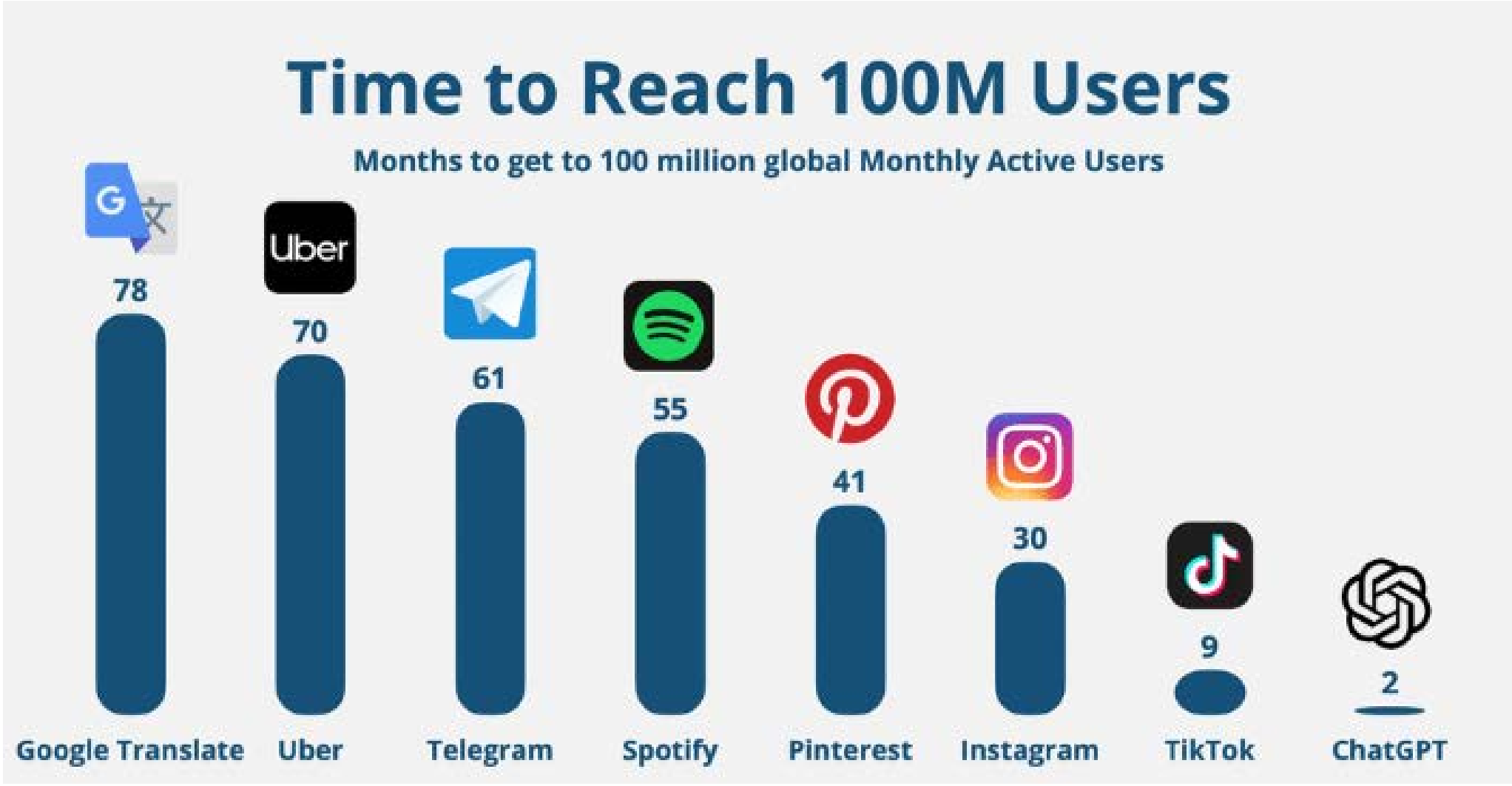
Your Most Connected Devices

*Stuff is either wow or it is not wow.*

# NUMBER OF YEARS IT TOOK FOR EACH PRODUCT TO GAIN 50 MILLION USERS:





Time to Reach 100M Users
Months to get to 100 million global Monthly Active Users
78
70
61
55
41
30
9
2
Google Translate
Uber
Telegram
Spotify
Pinterest
Instagram
TikTok
ChatGPT

# An Investment Opportunity

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**Domino’s Pizza provides you $21,238**

Your Most Connected Devices

*Stuff is either wow or it is not wow.*

**The purpose of business is people serving people, period.**

Rosabeth Moss Kanter

Tom Peters

At the beginning of the COVID crisis, a hospital in Italy realized they were running out of valves for patients' respirators, which are essential for the most serious cases of COVID-19.

The supplier wasn't able to provide them in the short term, as the company itself was facing a shortage caused by the outbreak. Italy has been hit incredibly hard, resulting in more than 2,500 deaths.

The hospital, sent out a distress call through the newspaper Giornale di Brescia, which caught the attention of physicist Massimo Temporelli, founder of FabLab.

FabLab is an Italian company that specializes in innovative manufacturing solutions connected with startup Isinnova, which is based in Brescia — near Chiari, where the hospital is located — and has a 3D printer.

Isinnova's Cristian Fracassi and Alessandro Ramaioli collaborated with Temporelli and began manufacturing valves in the space of 6 hours.

# Meet The Italian Engineers 3D-Printing Respirator Parts For Free To Help Keep Coronavirus Patients Alive

**The Italian Minister of Technological Innovation thanked the engineers for their work.**

**= Digital Transformation**

Your Most Connected Devices

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# What Digital Changes Are You Leading

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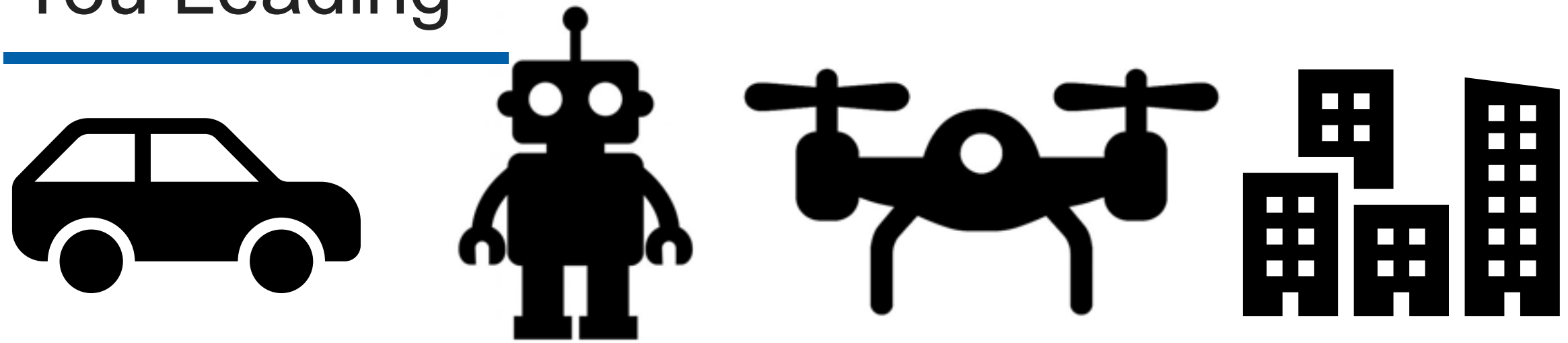
**What is one change benefiting your customers and one change benefiting your employees?**

**What is one change that is a challenge for your organization?**

# What Digital Changes Are You Leading



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AND IT IS CONSTANTLY CAHNGING

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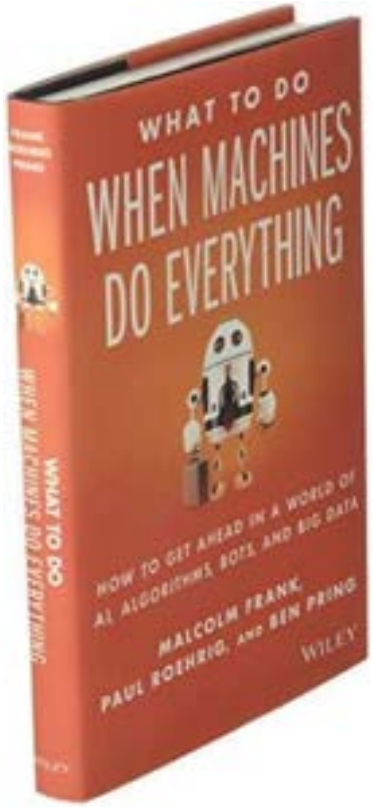
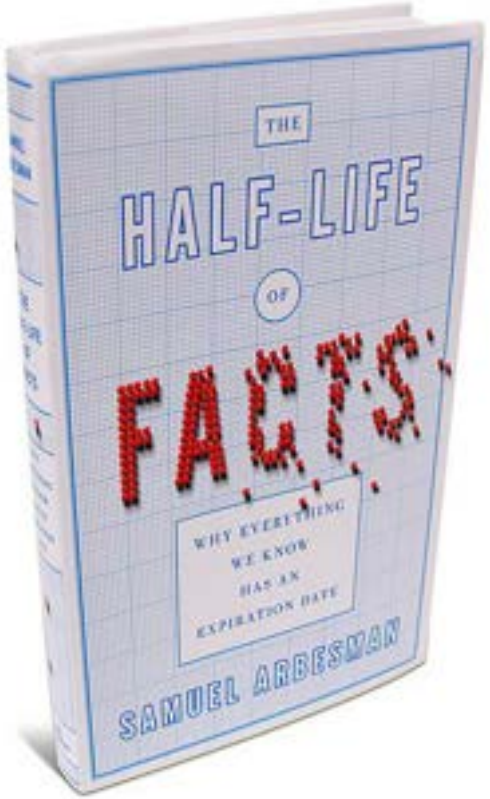
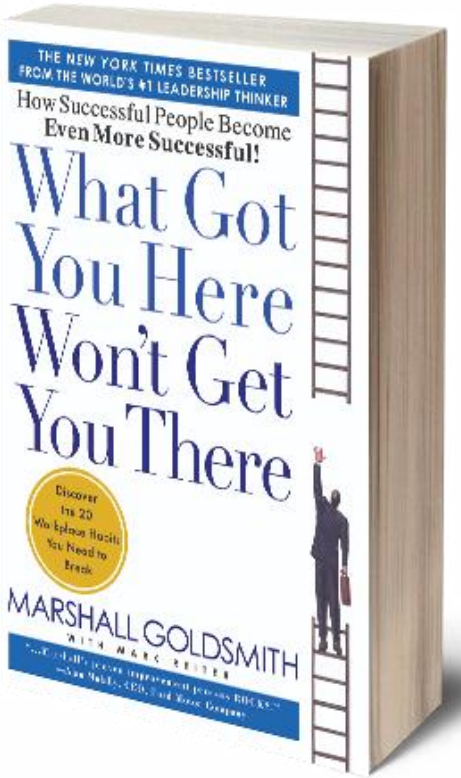
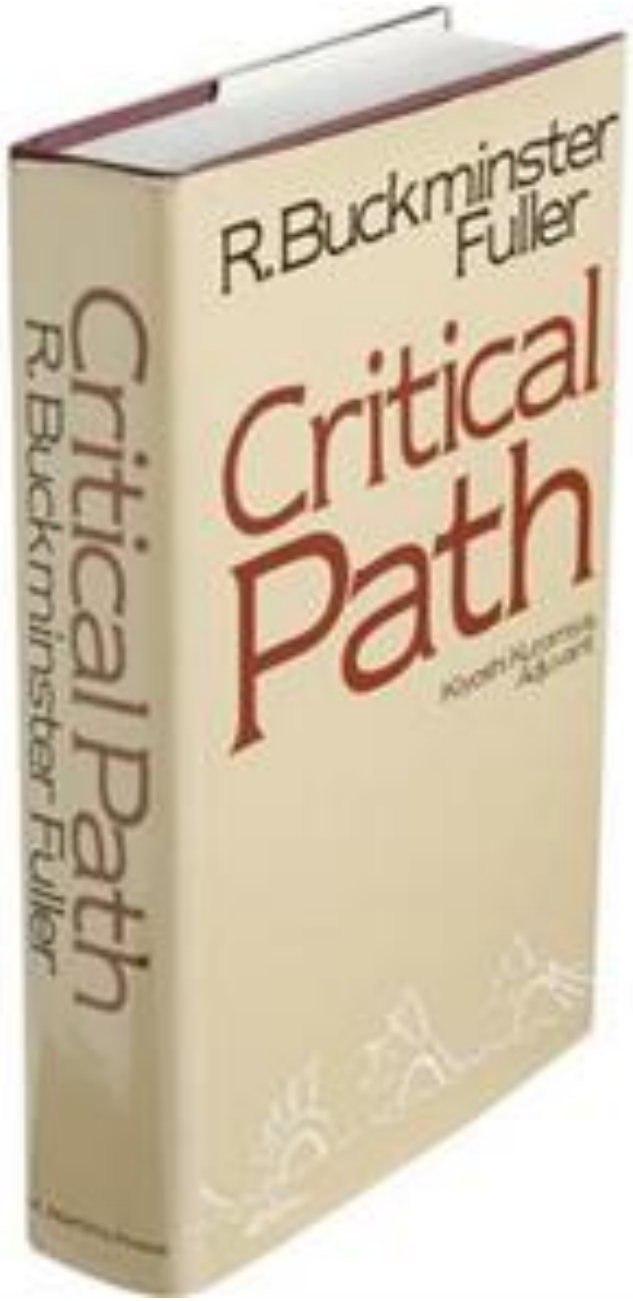
# What Digital Changes Are You Leading



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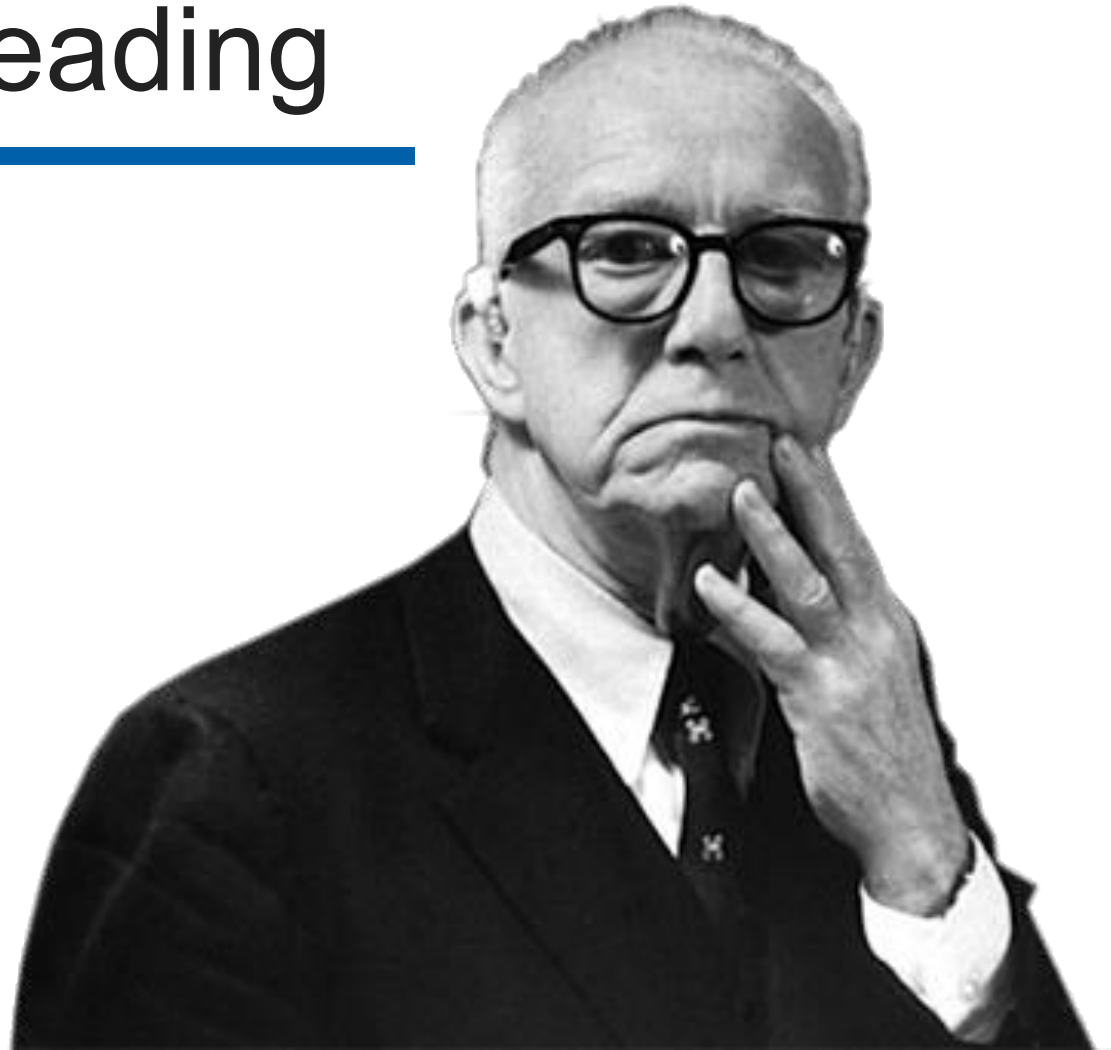

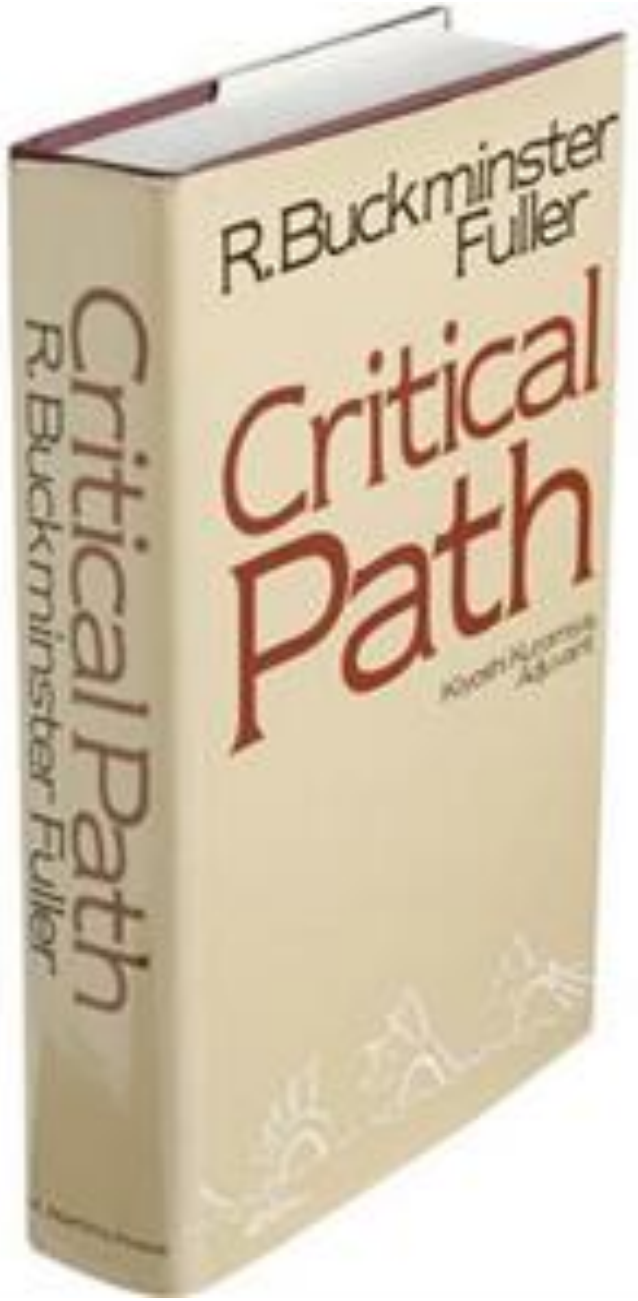


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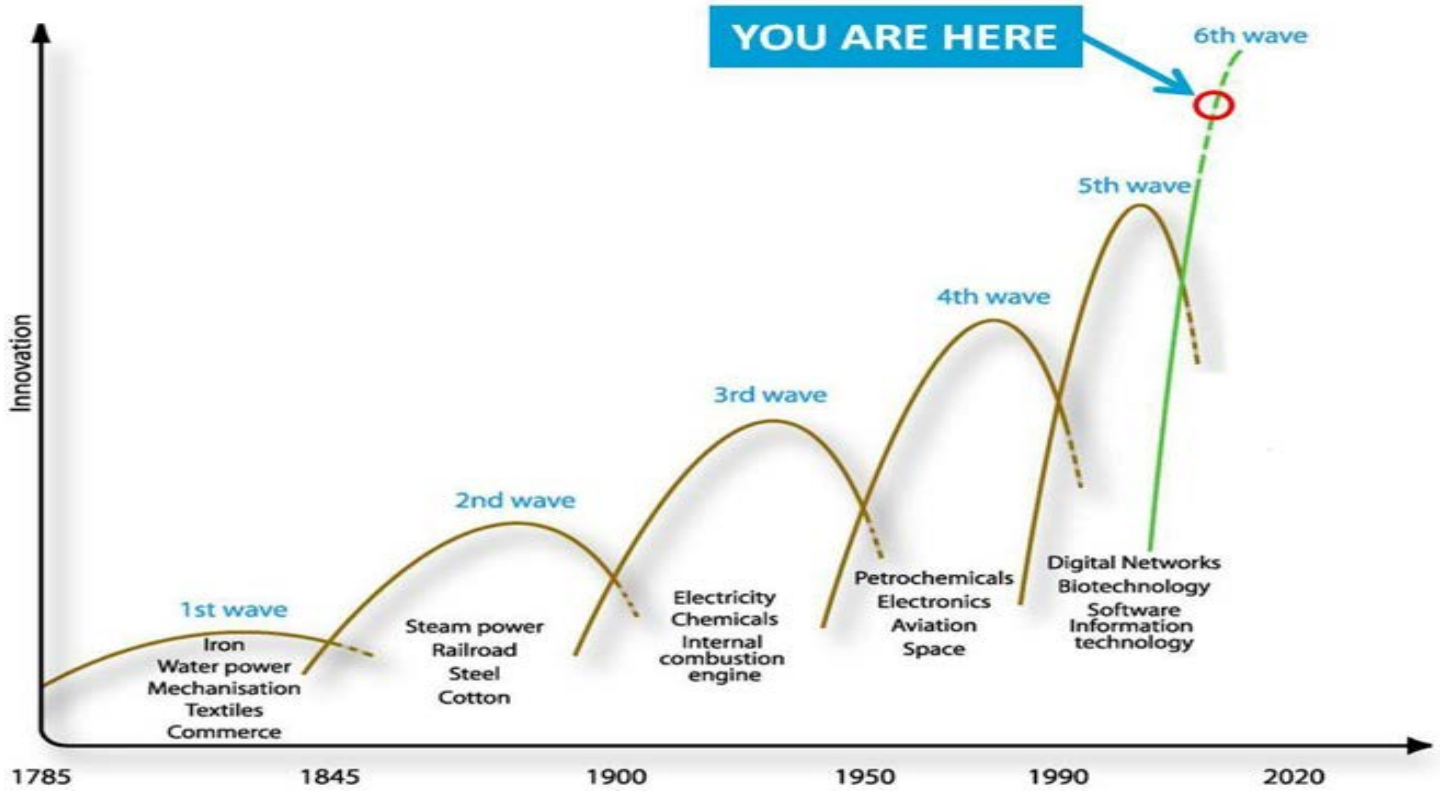


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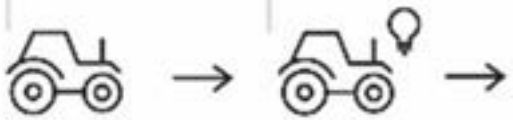
01
PRODUCT

We sell
a tractor

JOHN DEERE

**01**
PRODUCT

**02**
SMART
PRODUCT



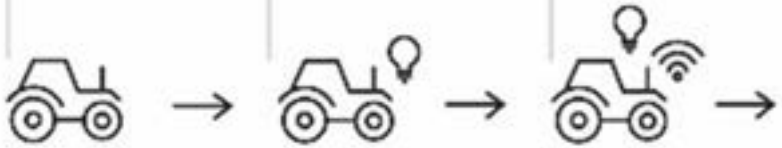
We sell
a tractor

We sell a
product that
generates
useful info

**01**
PRODUCT

**02**
SMART PRODUCT

**03**
SMART, CONNECTED, PRODUCT

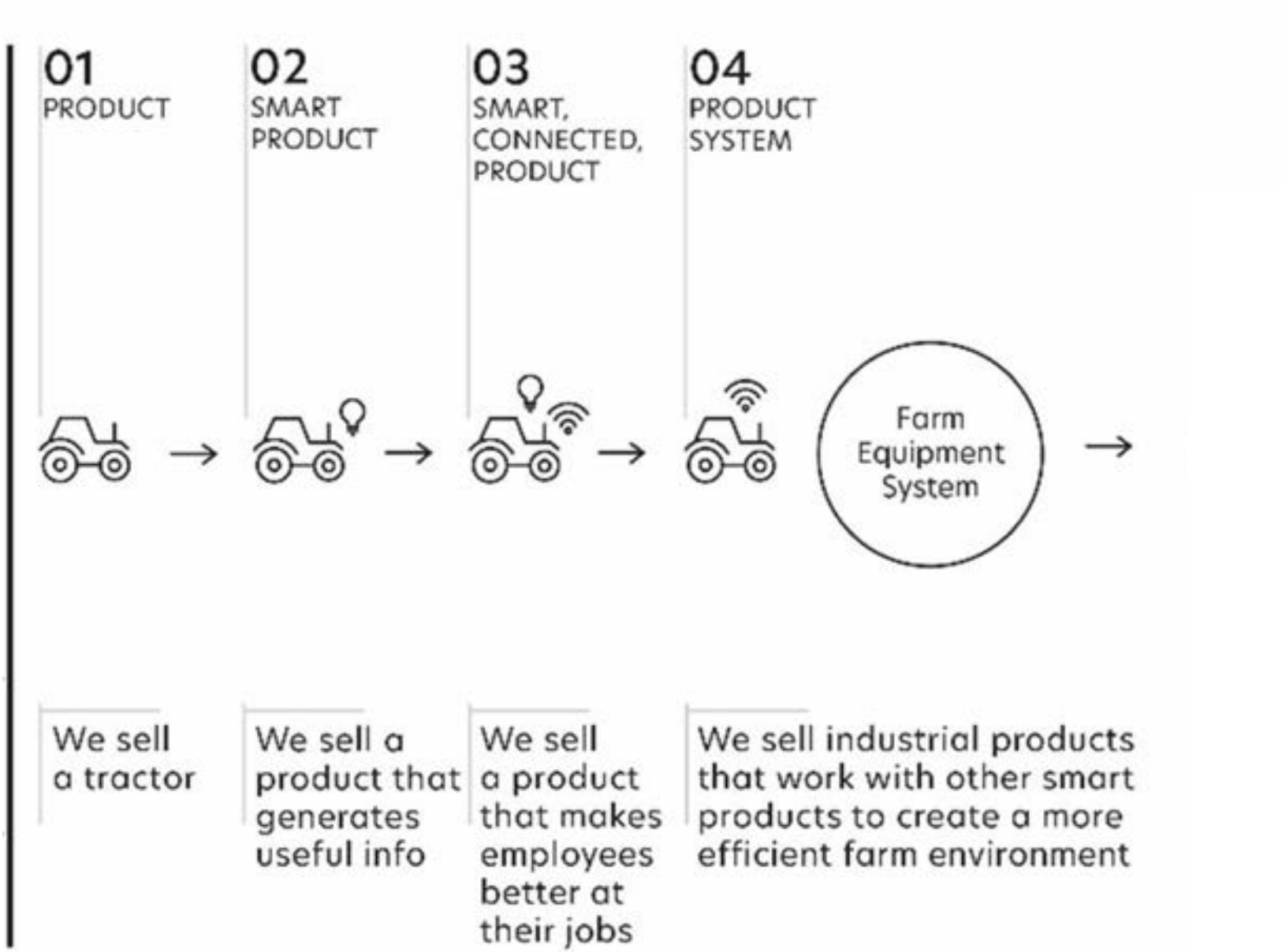


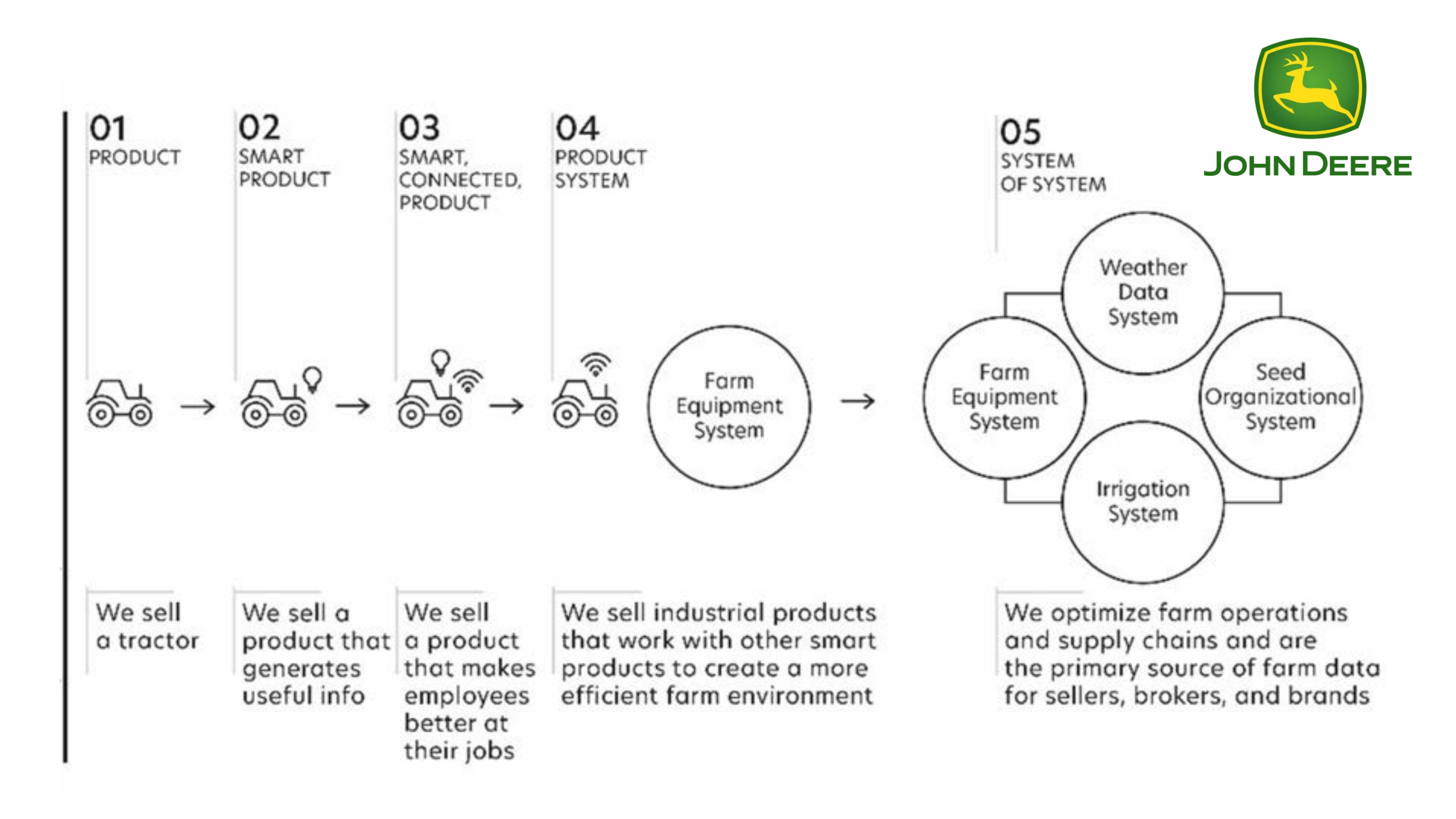
We sell a tractor

We sell a product that generates useful info

We sell a product that makes employees better at their jobs

JOHN DEERE


01
PRODUCT
02
SMART
PRODUCT
03
SMART,
CONNECTED,
PRODUCT
04
PRODUCT
SYSTEM
Farm
Equipment
System
We sell
a tractor
We sell a
product that
generates
useful info
We sell
a product
that makes
employees
better at
their jobs
We sell industrial products
that work with other smart
products to create a more
efficient farm environment


01
PRODUCT
02
SMART
PRODUCT
03
SMART,
CONNECTED,
PRODUCT
04
PRODUCT
SYSTEM
Farm
Equipment
System
05
SYSTEM
OF SYSTEM
Weather
Data
System
Farm
Equipment
System
Seed
Organizational
System
Irrigation
System
We sell
a tractor
We sell a
product that
generates
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We sell
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better at
their jobs
We sell industrial products
that work with other smart
products to create a more
efficient farm environment
We optimize farm operations
and supply chains and are
the primary source of farm data
for sellers, brokers, and brands

# The Future Is Predictable

Planning Your Digital Transformation

What are the irreversiblee market and customer trends happening right now?

What technologies will help you provide the services your customers expect?

How will you make sure your employees are ready for the changes needed?

# The Future Is Predictable

Some things will never change.

It’s all about people. Period.

People are the lifeblood of any team, organization, community.

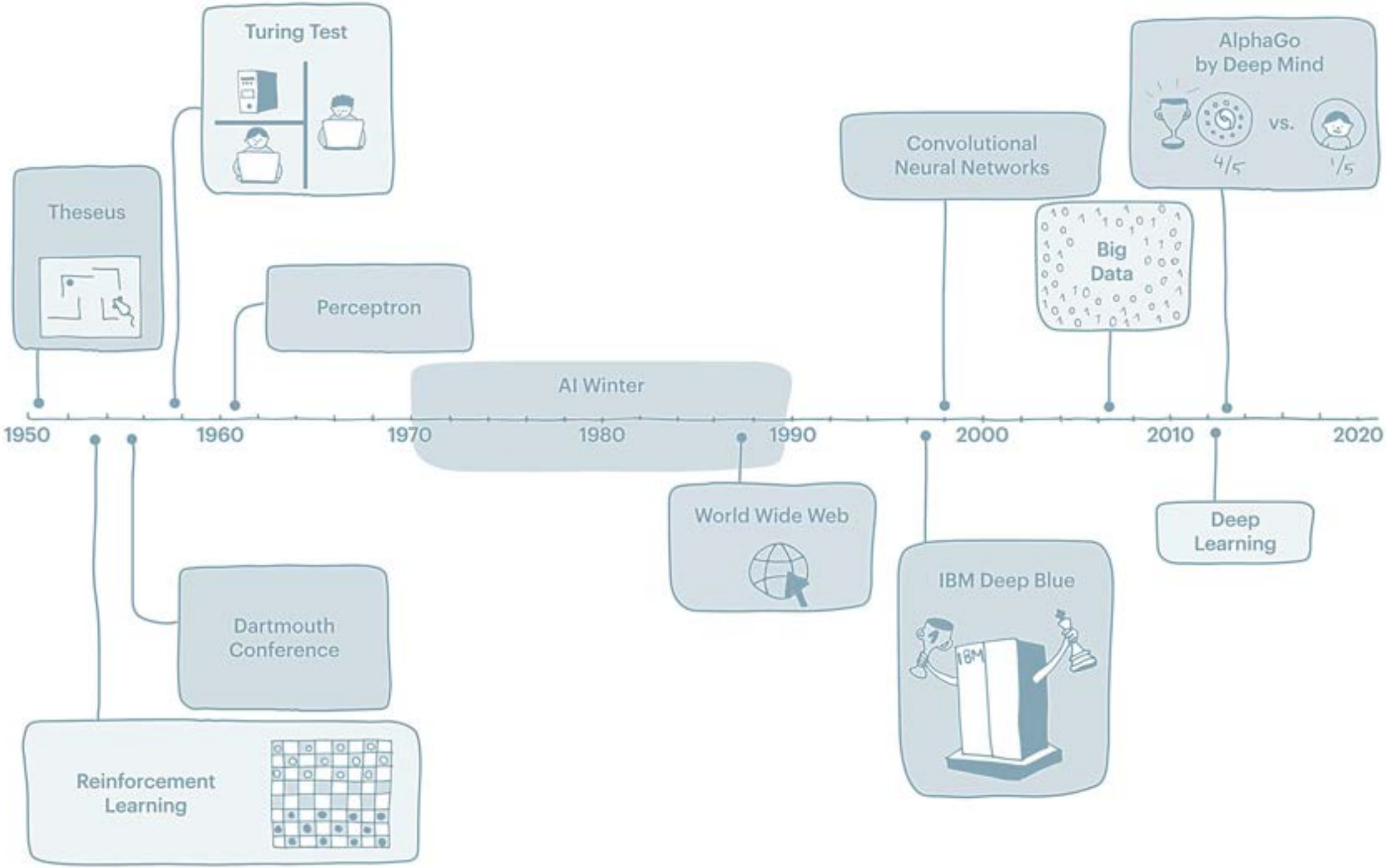
Effectiveness is grounded in our connections with one another – the touchpoints we have with one another – in our work throughout our workplace, and for the customers we serve.

# THE FUTURE OF WORK

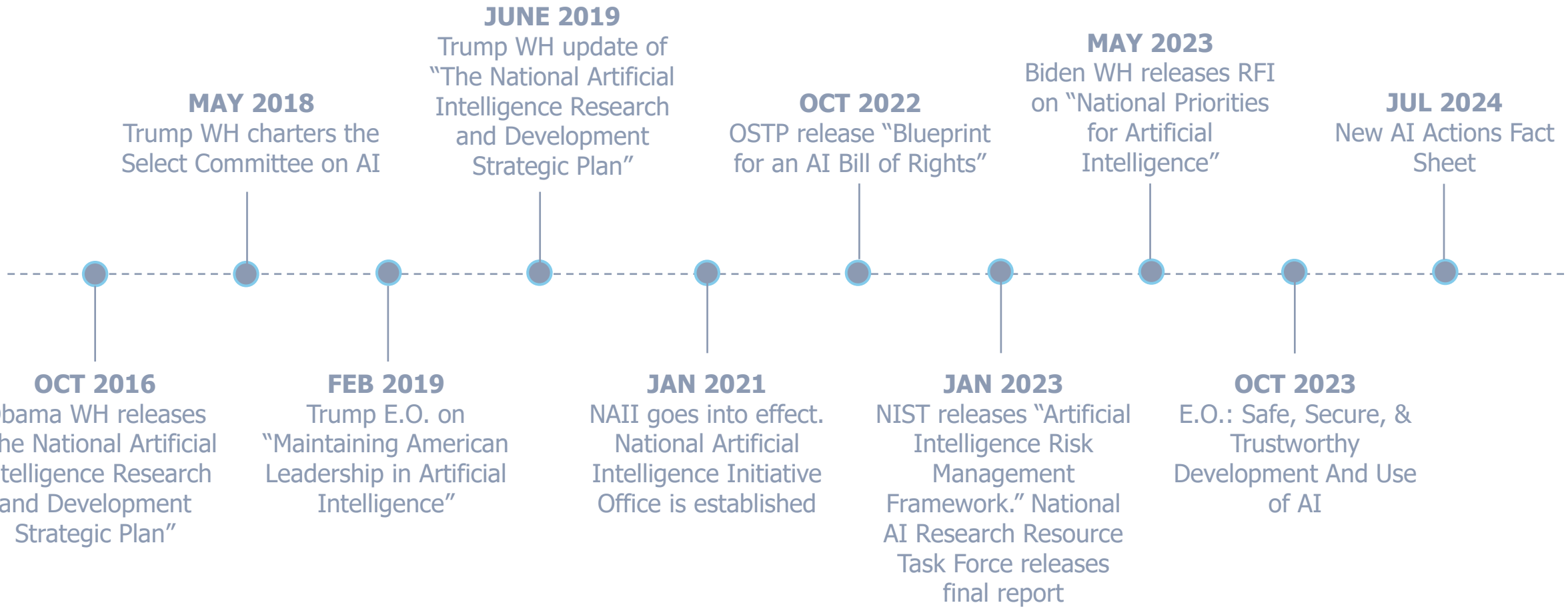

Source: Deloitte

# Emerging Digital Technologies

| | | | |
|---|---|---|---|
| ① 3-D Printing | ② 5G | ③ Appliances | ④ Artificial Intelligence |
| ⑤ Autonomous Vehicles/Drones | ⑥ Blockchain | ⑦ Conversation Interfaces (chatbots) | ⑧ Cybersecurity (on steroids) |
| ⑨ Data Analytics | ⑩ Digital Currencies | ⑪ Disposable Devices | ⑫ Edge Computing Technologies |
| ⑬ Facial Recognition | ⑭ Health-related Digital Devices | ⑮ Instantaneous Worldwide Communications | ⑯ Machine Learning |
| ⑰ Neural Networks (artificial) | ⑱ Privacy-Enhancing Technologies | ⑲ RFID | ⑳ Robotics/ Nanobots |
| ㉑ Sensors-Embedded and Connected | ㉒ Virtual and Augmented Reality | ㉓ Wearable Devices | ㉔ Quantum Computing (furthest out) |


Turing Test
Theseus
Perceptron
AlphaGo
by Deep Mind
vs.
4/5
1/5
Convolutional
Neural Networks
Big
Data
AI Winter
1950
1960
1970
1980
1990
2000
2010
2020
World Wide Web
Deep
Learning
IBM Deep Blue
IBM
Dartmouth
Conference
Reinforcement
Learning

# How the U.S. is preparing for AI




**These strategic principles have guided the AI strategies of the Trump and Biden administrations.**


POLICING WITH
ARTIFICIAL
INTELLIGENCE
WSJ


CNBC
AI AND
PREDICTIVE
POLICING


POLICING WITH
ARTIFICIAL
INTELLIGENCE
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PRE-CRIME
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**AI can help reduce crime in cities by up to 40%. Artificial intelligence may also cut emergency service response rates by 20 to 35%.**

- Deloitte

**Facial recognition:** AI can help identify suspects, victims or missing persons by comparing their faces with databases of images, such as mugshots, driver's licenses or social media profiles. Generative AI can also help create realistic facial composites based on witness descriptions or sketches or enhance low-quality images or videos to improve identification.

**Speech recognition and translation:** AI can help transcribe and translate speech in real time, enabling officers to communicate with people who speak different languages, or generate accurate and timely reports based on voice recordings. Generative AI can also help synthesize speech and generate realistic voice samples for various purposes, such as voice biometrics, voice cloning or voice phishing.

**Object detection and recognition:** AI can help detect and recognize objects in images or videos, such as weapons, vehicles, license plates or evidence. This can help officers locate and track suspects, vehicles or items of interest and automate the process of evidence collection and documentation. Generative AI can also help create realistic images or videos of objects based on descriptions or manipulate or enhance existing images or videos to improve detection and recognition.

**Behavior analysis and prediction:** AI can help analyze and predict human behavior based on various factors, such as facial expressions, body language, speech patterns and biometric data. This can help officers assess the risk level of a situation or anticipate the actions or intentions of a person. Generative AI can also help create realistic simulations or scenarios based on behavior models and generate synthetic data for training and testing purposes.

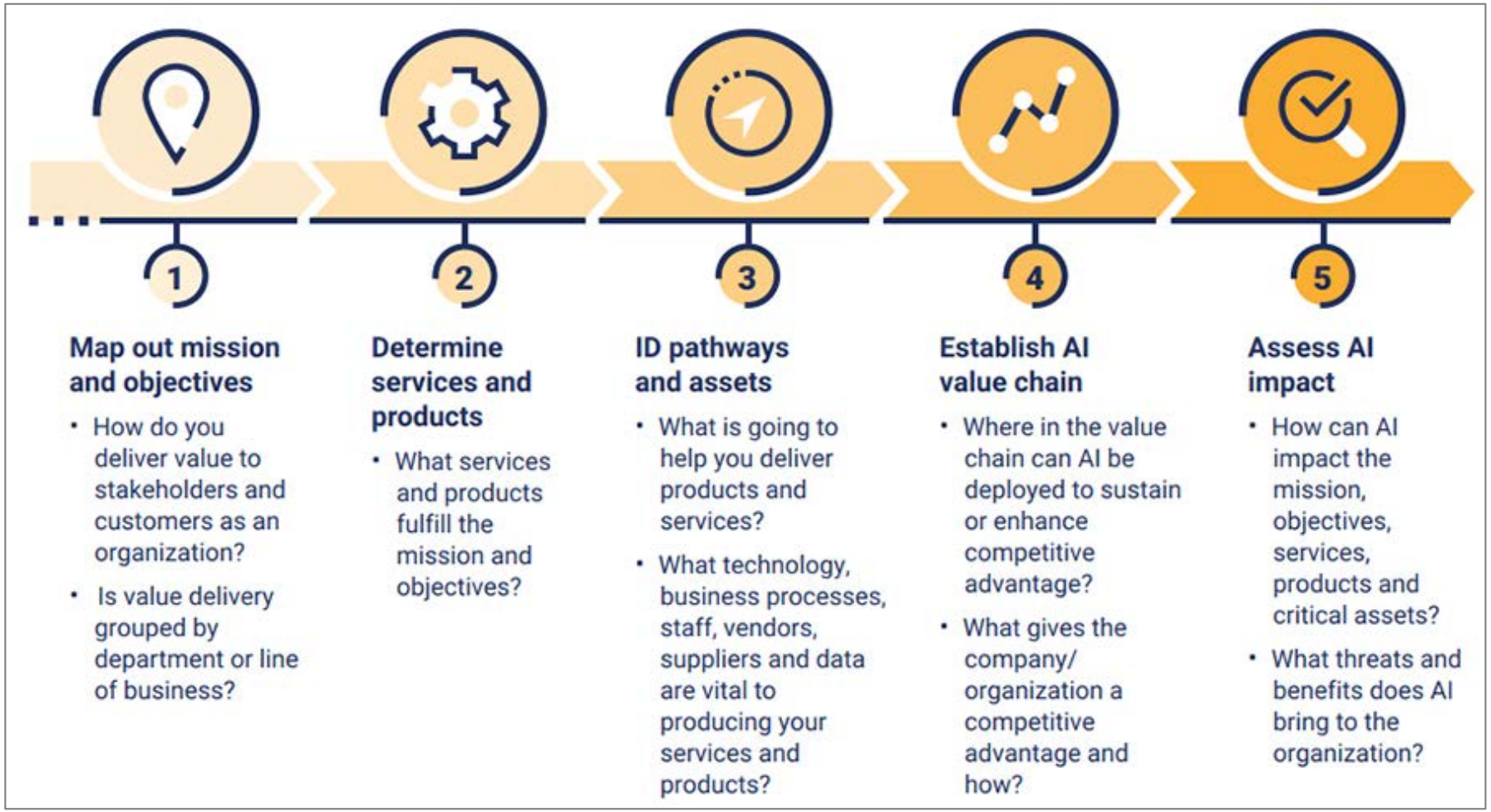
**Decision support and optimization:** AI can help provide officers with relevant information, suggestions and recommendations based on various data sources, such as databases, sensors and social media. This can help officers make informed and timely decisions and optimize their actions or strategies. Generative AI can also help generate alternative solutions and outcomes based on different criteria or constraints and evaluate the effectiveness or impact of different decisions and actions.

SOURCE: Police1.com

# The promise of AI is (nearly) incomprehensible.


The peril of AI is (often) perceived as a dystopic downfall of people and society; such as when trained or programmed software takes over nuclear launch codes (ie War Games) or when a system designed to help people, does the opposite (ie HAL in *2001: A Space Odyssey*). These are real risks, for sure, and we humans much prefer AI and systems being more like Number Five (“Johnny Five”) from *Short Circuit* and C3PO and R2D2 from *Star Wars* as compared to the destructive type like Data's evil twin, Lore, on the show *Star Trek*.

The first and second steps in the methodology aim to map out the mission, objectives, purpose, meaning, values, beliefs, products, services, and solutions of the organization (and people within it). These steps essentially define what you do, why, and how; it's your value proposition. Steps 3 and 4 detail people, partners, processes, policies, procedures, and practices that are constantly improving to achieve great efficiency and effectiveness. Especially regarding step 4, the focus is on determining ways and means to provide even greater value (ie "advantage" as noted in the illustration). This is achieved through problem-identification and then solving that problem with the best solution, which may or may not be AI. The determination of AI as a solution is discerned in step 5, assessing impact.




Source ISACA

# There are five elements (choices) used to facilitate the creation of AI strategy.

**Vision – What is our level of AI ambition?**

a. What specific goals, aspirations, and requirements do we have for AI?
b. Which elements of our larger strategy and goals will AI support?
c. What's the long-term ambition behind our investment in AI?
d. How will our organizational values help us deal with questions of ethics, privacy, and transparency?
e. Will AI produce savings or some other positive outcome to justify the investment?

**Focus – Where should we concentrate our AI investments?**

a. Who will be the user of AI, and who will benefit from its use?
b. Which problems will AI address?
c. How will AI transform our mission or the way in which we pursue it?
d. In which mission areas or functions will AI be used? And to further which mission?
e. Which processes and services will AI affect? Back-office processes, customer interfaces, or other activities?
f. Which goals should we pursue with AI, and which technology or combination of technologies should we use?
g. Will the application involve assisted, augmented, or automated intelligence?
h. How should we prepare for and accommodate future developments in AI and the underlying technologies?

**Value – How will AI deployment create (increased) value?**

a. What specific value will be created by applying AI? Are we improving a current process or allowing the organization to do something new? How will it be measured?
b. How do we define success with regard to our workforce? What goals do we set or what actions do we take to increase AI's value to our employees?
c. How will we define and demonstrate success in deployment?
d. How can we ensure value is achieved through the ethical usage of AI?
e. How mature or complex are the types of AI we might use? What are the appropriate performance expectations for this type of AI?
f. What applications and objectives should a successful pilot have? How do we define success for effective scaling? What timing should be used to implement AI? Which metrics should be used?

**Capabilties – What do we need to execute our AI initiatives?**

a. What are the skills needed to implement AI applications? What will scaling require? Is the workforce adequately trained? If not, how can we recruit talent with the necessary knowledge and expertise?
b. What will the workforce need to accept AI implementation and training?
c. How can we recruit AI talent? What advantages could be achieved by partnering with other entities?
d. What academic and industry partners can we use?
e. What organizational or cultural changes will be necessary?
f. What specific tools and platforms can be used for this AI solution?
g. What data governance and modern data architectures will it need?
h. What technology and data issues must we face?
i. What other process changes will be required?

**Management Systems – What systems will implement and manage AI?**

a. What's our operating model? Who will be responsible for AI? How should we track performance measures and indicators of AI's impact?
b. What communication strategies should we use to gain the trust of employees, external partners, media, and the public?
c. What change management skills do we need?
d. How can we manage AI risks?
e. How can we manage the piloting and scaling of AI across different departments?
f. How should AI resources be developed, accessed, housed, allocated, and managed?

# There are five elements (choices) used to facilitate the creation of AI strategy.

**VISION: U.S. Department of Defense AI Strategy**

Improving situational awareness and decision-making with tools, such as imagery analysis, that can help commanders meet mission objectives while minimizing risks to deployed forces and civilians.

Streamlining business processes by reducing the time spent on common, highly manual tasks and reallocating DOD resources to higher-value activities.

**FOCUS: U.S. Department of Energy**

The mission of the Energy Department is to ensure America's security and prosperity by addressing its energy, environmental and nuclear challenges through transformative science and technology solutions.

U.S. Department *of* Defense

**VALUE: U.S. Department of Defense**

It is likely that the most transformative AI-enabled capabilities will arise from experiments at the "forward edge," that is, discovered by the users themselves in contexts far removed from centralized offices and laboratories. Taking advantage of this concept of decentralized development and experimentation will require the department to put in place key building blocks and platforms to scale and democratize access to AI. This includes creating a common foundation of shared data, reusable tools, frameworks and standards, and cloud and edge services.

**CAPABILITIES: U.S. Office of the U.S. Director of National Intelligence AI Strategy**

Invest in programs for training and retooling the existing workforce in skills essential to working in an AI-augmented environment.

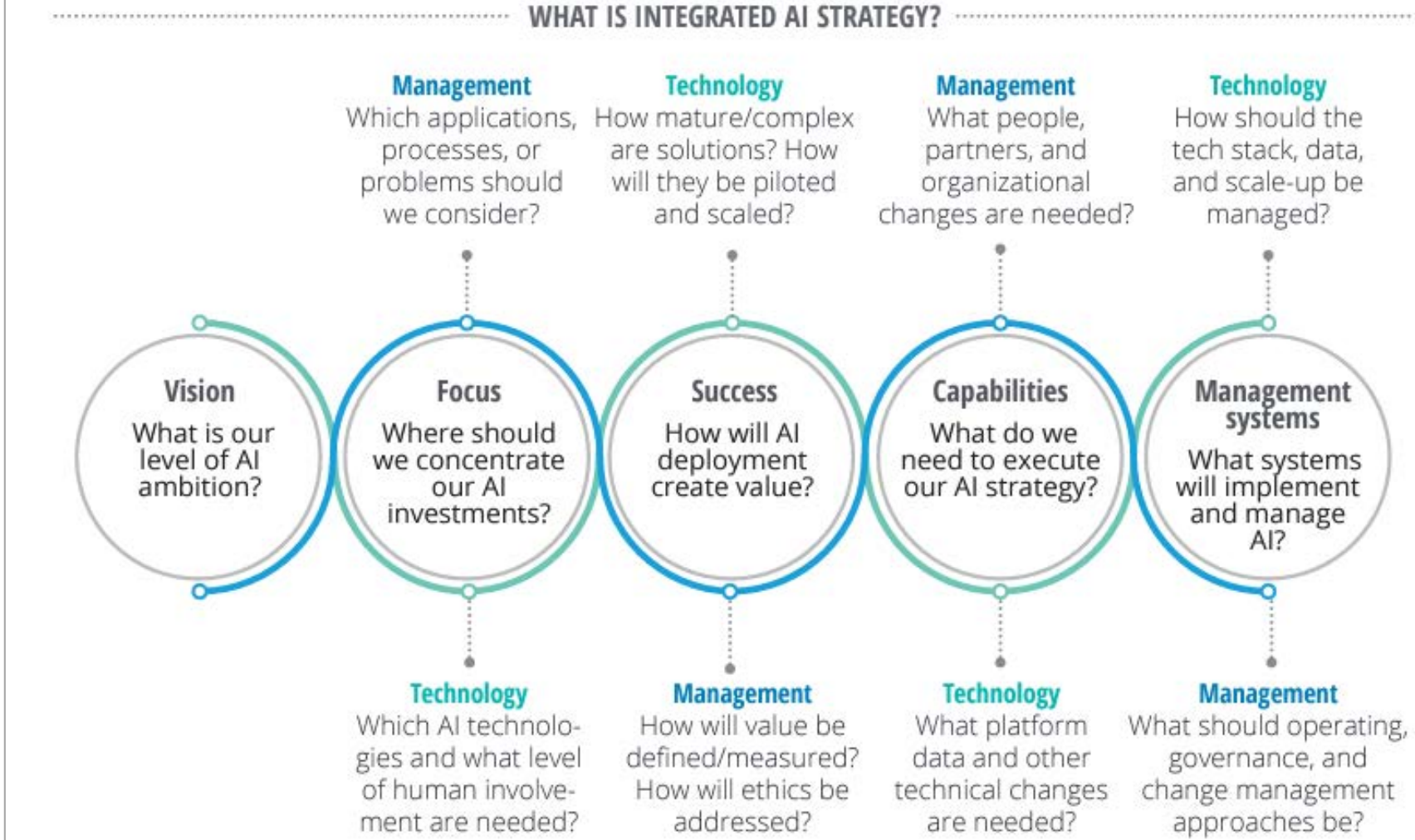
Redefine recruitment, compensation, and retention strategies to attract talent with high demand skills.

Develop and continually expand partnership programs with industry, including internship and externship programs, to increase the number of cleared individuals with relevant skills both in and out of government.

**MANAGEMENT SYSTEMS: U.S. Department of Defense**

The DoD will identify and implement new organizational approaches, establish key AI building blocks and standards, develop and attract AI talent, and introduce new operational models that will enable DoD to take advantage of AI systematically at enterprise scale.

# An integrated AI strategy considers technology and management choices




Source: Deloitte analysis.

VA | U.S. Department of Veterans Affairs

| Strategy 1: Use existing AI to improve outcomes and experiences for our Veterans.<br>• Develop shared public datasets and environments for AI training and testing.<br>• Measure and evaluate AI technologies through standards and benchmarks. | |
|---|---|
| Objectives | Key Performance Indicators |
| 1. Create and maintain inventories of VA AI applications, industry capabilities, and VA use cases.<br>2. Establish standards and benchmarks for evaluating all AI solutions against existing regulations, applying Trustworthy AI principles, customer satisfaction, performance, and ROI.<br>3. Design and conduct pilots using AI to improve value, outcomes, and experiences.<br>4. Create a development and funding pipeline for scaling successful pilots to the enterprise level.<br>5. Integrate ML Ops into the existing DevOps framework to ensure that AI products are efficiently transitioned, integrated, maintained, and monitored. | 1. Completion of annual AI Practice & Use Case Inventories.<br>2. Percentage of Agency use cases evaluated against outcome/implementation cost metrics.<br>3. Change in Patient/Caregiver Outcomes & Satisfaction in Pilot Areas.<br>4. Demonstrate Cost Savings as a Result of AI Implementation for pilots and scaled solutions. |

VA | U.S. Department of Veterans Affairs

| Strategy 2: Increase VA Artificial Intelligence capacity and capabilities.<br>• Make long-term investments in AI Research.<br>• Develop effective methods for human-AI collaboration.<br>• Develop shared public datasets and environments for AI training and testing.<br>• Better Understand the National AI R&D Workforce Needs. | |
|---|---|
| Objectives | Key Performance Indicators |
| 1. Conduct and promote cutting-edge research into Artificial Intelligence applications and capabilities.<br>2. Continually assess AI workforce capabilities to identify gaps between mission needs and VA capabilities.<br>3. Provide AI skills training to VA researchers and developers.<br>4. Establish clear guidelines for what types of AI pilots require clearance through IRB approval, Privacy Office approval, and regulatory agencies like the FDA.<br>5. Recruit world-class AI Professionals and Data Scientists. | 1. Growth in number of AI Research Studies and Pilots conducted.<br>2. Trended results of VA workforce need and capability assessments.<br>3. Size and competencies of VA AI & Data Science Workforce. |

VA | U.S. Department of Veterans Affairs

| Strategy 3: Increase Veteran and stakeholder trust in AI.<br>• Understand and address the ethical, legal, and societal implications of AI.<br>• Ensure the safety and security of AI Systems. | |
|---|---|
| Objectives | Key Performance Indicators |
| 1. Make available trustworthy AI training and other relevant resources to VA leadership, practitioners, and relevant end-users.<br>2. Build a community around AI that fosters learning and intra-agency collaboration.<br>3. Develop and distribute trustworthy AI Best Practices and management principles to ensure use cases are ethical, legal, and effective.<br>4. Assess the trust and concern expressed regarding AI by end-users and beneficiaries.<br>5. Develop a procedure for trustworthy AI certification that ensures the development and training of AI is based on representative samples that reflect the stakeholders that the VA services. | 1. Percent of VA Leaders trained in AI management principles.<br>2. Size and engagement of AI@VA Community.<br>3. Best Practices auditing data from AI tools deployed in VA operations.<br>4. Results of surveys targeting AI trustworthiness.<br>5. Percentage of AI tools that meet criteria for trustworthy AI certification.<br>6. Percentage of VA employees that complete AI ethics training. |

VA | U.S. Department of Veterans Affairs

| Strategy 4: Build upon the VA's existing partnerships across agencies and industry.<br>• Expand Public-Private Partnerships to Accelerate Advances in AI. | |
|---|---|
| Objectives | Key Performance Indicators |
| 1. Find industry leaders and practices that best align with VA Mission and Goals.<br>2. Collaborate with VA Governance Boards for AI implementation guidance.<br>3. Develop shared public datasets and environments for AI training and testing.<br>4. Expand Public-Private Partnerships to Accelerate Advances in AI. | 1. Number of shared public datasets and environments for AI training and testing.<br>2. Number of Cooperative Research and Development Agreement (CRADA) and other strategic AI agreements executed annually<br>3. Participation in VA Governance councils for collaboration<br>4. Agencies represented in AI@VA communities<br>5. Shared projects or best practices across agencies.<br>6. Size and conversion percentage of AI use case library. |

## How disruptors and data could change transportation work

### DISRUPTIONS

- Connected vehicles
- Use of IoT
- Smart infrastructure

### HOW WILL WORK CHANGE?

START: Incorporating new data from sensors or partner agencies to drive planning decisions

STOP: Building infrastructure without connected capabilities

CHANGE: The types of platforms used for better communication across agencies or how it hires with a focus on new skill sets.

CONTINUE: Planning for maintenance of existing roads and bridges

### NEW SKILLS

- IoT competency
- Data analysis
- Systems design

### EMERGING CAREERS

- Drone ops manager
- IoT analyst
- Sensor engineer
- IoT cybersecurity
- Digital procurement specialist

Source: The Deloitte Center for Government Insights.

***Human-in-the-loop*** is a branch of AI that brings together AI and human intelligence to create machine learning models. It's when humans are involved with setting up the systems, tuning and testing the model so the decision-making improves, and then actioning the decisions it suggests - after humans (in the loop) review the results and accept them as true.

# The Future Is Predictable

**The theory of work is simple: PEOPLE SERVING PEOPLE.**

Tom Peters Rosabeth Moss Kanter

Starbucks boss Howard Schultz visits 25 shops a week.

# Leveraging the Potential Power of AI while Mitigating the Equally Potential Peril

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PROFESSIONAL DEVELOPMENT ACADEMY


EUNAVERSE