Presidential *Innovation Fellows*

AI Strategy for Senior Leaders

An exploration for Organizational Leadership and Business Strategists.

Matthew R. Versaggi, MS, MBA
PIF : AI Cohort of 2024

Your Presenter: Matthew Versaggi

- Has been in the AI Space since the Mid 80’s
- Senior Leader in the AI Space @ Fortune-5 Healthcare Level.
- Seen hundreds of use-cases while running our COE.
- Distinguished Engineer – UHG TLCP program.
- AoT (‘Academy of Technology’) Inaugural Inductee.
- Built the organization's "College of Artificial Intelligence“.
- Introduced Cognitive AI Technology and Quantum Computing.
- Chaired multiple Patent Review Boards (awarded multiple patents).
- Experienced public speaker, strategist, and mentor.
- Adjunct Professor (10yrs) – Won Teaching Award.
- AI Engineer – Military Contractor + CNA Insurance.
- Entrepreneur (16yrs) with 60+ clients.
- Consulting in the AI Business Strategy Space.
- Presidential Innovation Fellow – AI (Special Cohort ‘24)

AI Strategy for Sr Leaders.

AGENDA:

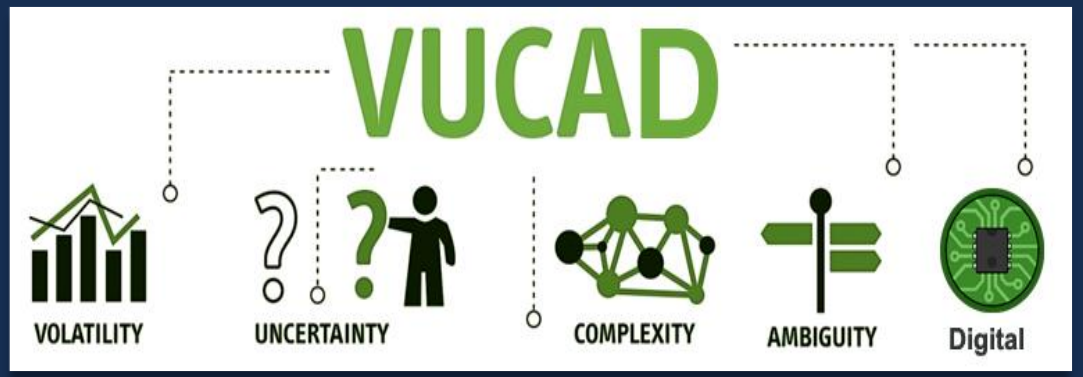
1. Global Context
2. Future Ready Orgs
3. The Nature of AI
4. AI Strategy Exploration
5. Developing Strong AI Use-Cases
6. Agentic Technology’s Promise

AI Strategy for Sr Leaders.

Global Context

AI Strategy for Sr Leaders.

VUCAD World:
Volatile, Uncertain, Complex, Ambiguous, Digital.



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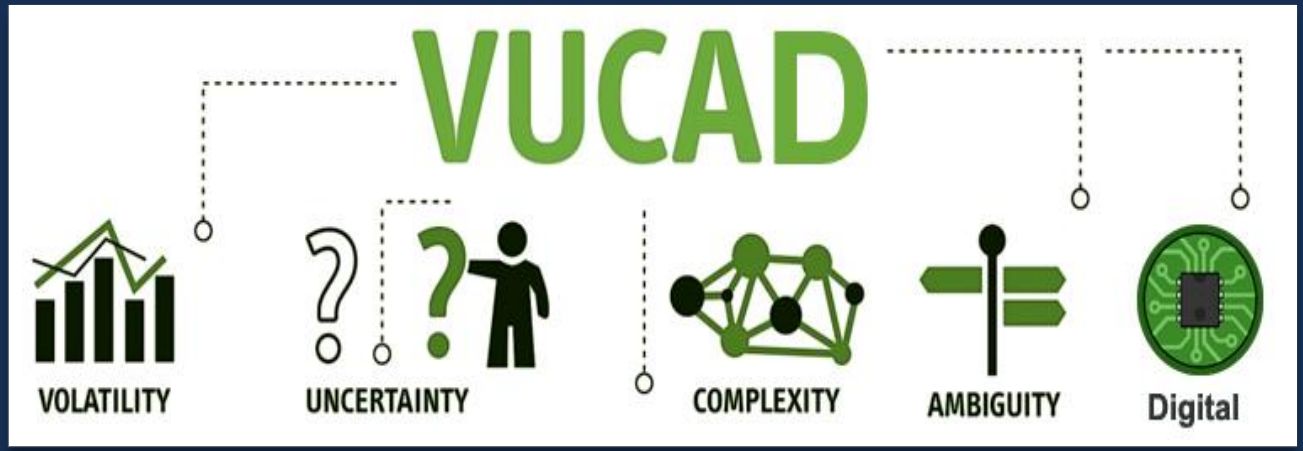
AI as a GPT
General Purpose Technology

REASON: These affect AI Strategy and Tactics significantly.

AI Strategy for Sr Leaders.

The VUCAD World

The VUCAD World.



1. Global Technology Arms Race
2. Accelerating Rates of Change – Time Dominates
3. Multiple Disruptive Tech Maturing Simultaneously, 3 are GPT's.
4. Accelerating Innovation on Global Scales
5. Foresighting **>** Strategic Planning (Inventing the Future)
6. Business Model Life Cycle Decline
7. Occupational Perturbances / Workforce Effects

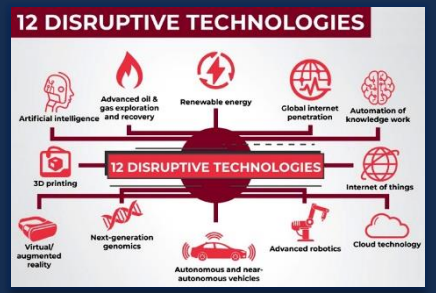
The VUCAD World.

Global Connectedness:
Time > Space

Speed Dominates!

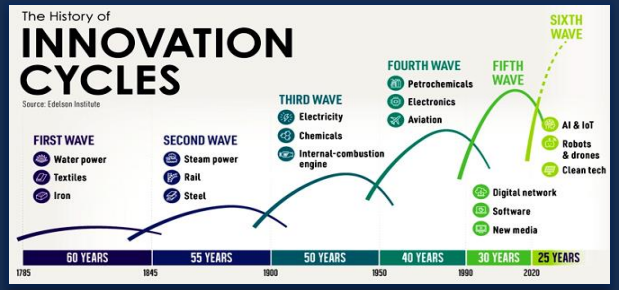
Line between Online and Physical Worlds blurs.

Multiple Disruptive Tech's Maturing Simultaneously

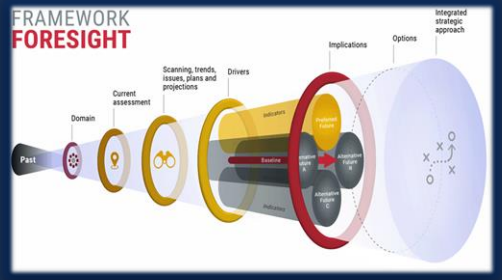


Three are GPT's!

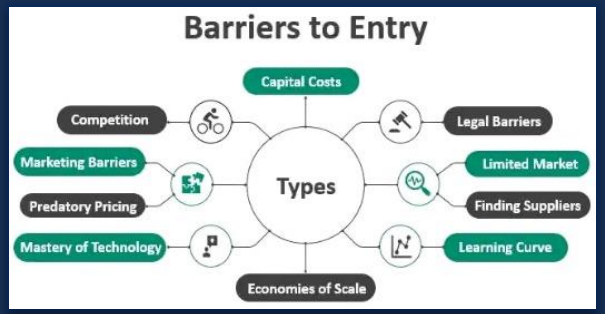
Accelerating Innovation Globally



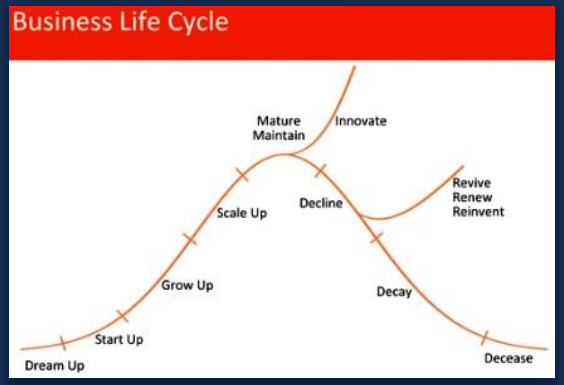
Foresighting > Strategic Planning



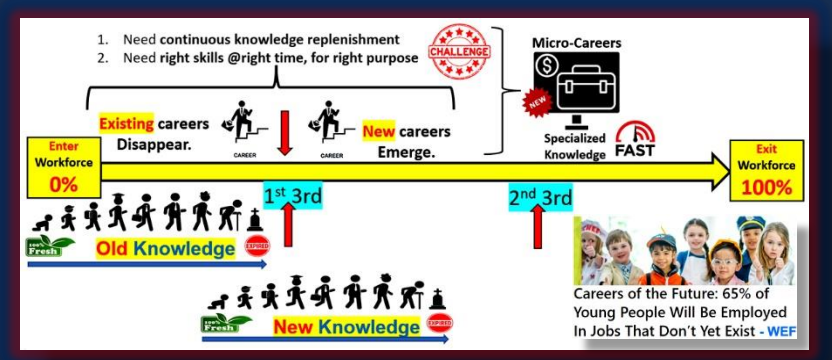
Entry Barriers to Scale Evaporating



Business Model Life Cycle Declining



Resulting Workforce Perturbances



AI Strategy for Sr Leaders.

AI as a GPT General Purpose Technology

AI as a GPT.

GPT's alter Geo-Political Power, Wealth, and Social Structures.

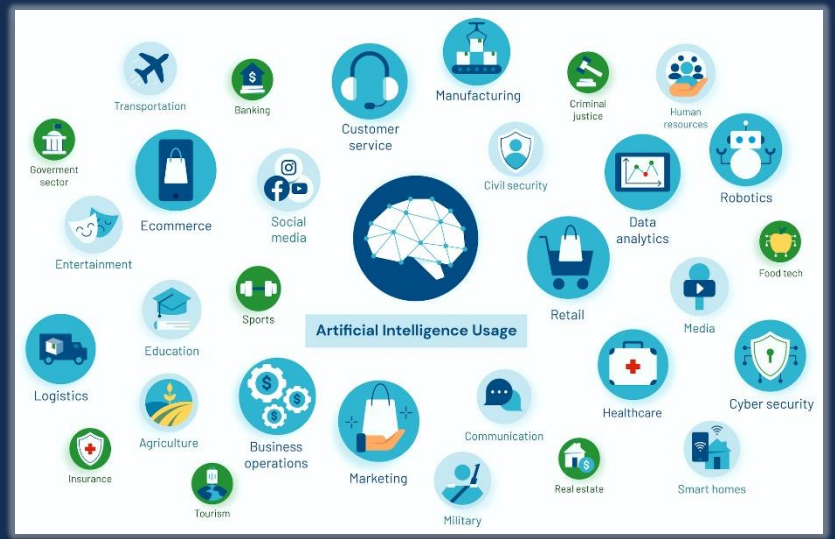
Three Key Attributes:

1. Pervasive
2. Evolve
3. Spillover Effects

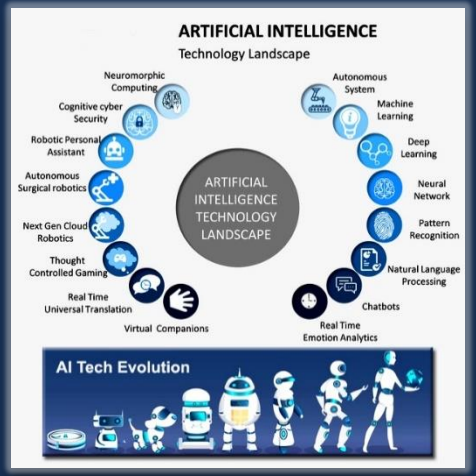
AI as a GPT.

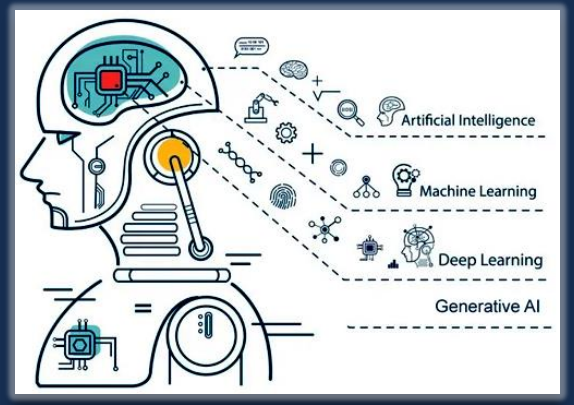
AI as a GPT

#1: Pervasive Across Sectors.



#2: Ability to Evolve over time.





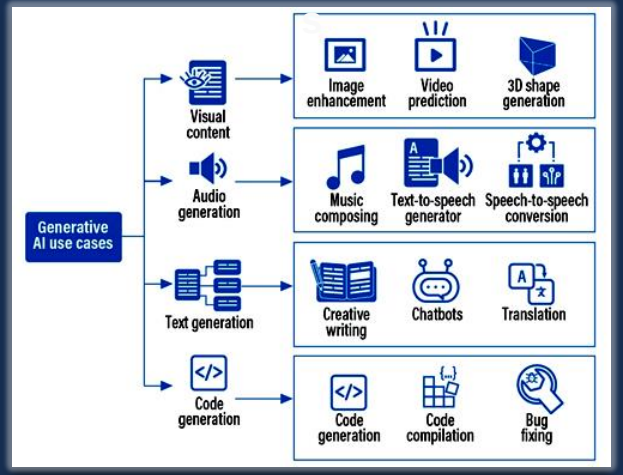
#3: Create Spillover Innovation through Complementarities.

Spillover Effect

/スピローバー・エフェクト/

(economics) The phenomenon in which an economic event in one context occurs because of something else in a seemingly unrelated context.

GenAI Economic **Complementaritie**



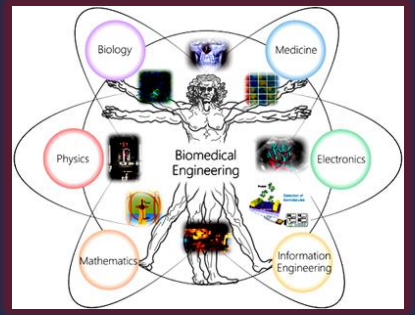
AI as a GPT.

GPT's are Special!

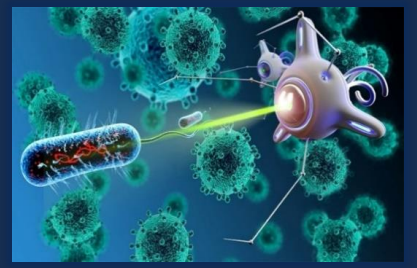
GPT	Spillover Effects	Date
Domestication of plants	Neolithic Agricultural Revolution	9000-8000 BC
Domestication of animals	Neolithic Agricultural Revolution, Working animals	8500-7500 BC
Smelting of ore	Early metal tools	8000-7000 BC
Wheel	Mechanization, Potter's wheel	4000–3000 BC
Writing	Trade, Record keeping	3400-3200 BC
Bronze	Tools & Weapons	2800 BC
Iron	Tools & Weapons	1200 BC
Water wheel	Inanimate power, Mechanical systems	Early Middle Ages
Three-Masted Sailing Ship	Discovery of the New World, Maritime trade, Colonialism	15th Century
Printing	Knowledge economy, Science education, Financial credit	16th Century
Factory system	Industrial Revolution, Interchangeable parts	Late 18th Century
Steam Engine	Industrial Revolution, Machine tools	Late 18th Century
Railways	Suburbs, Commuting, Flexible location of factories	Mid 19th Century
Iron Steamship	Global agricultural trade, International tourism, Dreadnought Battleship	Mid 19th Century
Internal Combustion Engine	Automobile, Airplane, Oil industry, Mobile warfare	Late 19th Century
Electricity	Centralized power generation, Factory electrification, Telegraphic communication	Late 19th Century
Automobile	Suburbs, Commuting, Shopping centres, Long-distance domestic tourism	20th Century
Airplane	International tourism, International sports leagues, Mobile warfare	20th Century
Mass Production	Consumerism, Growth of US economy, Industrial warfare	20th Century
Computer	Digital Revolution, Internet	20th Century
Lean Production	Growth of Japanese economy, Agile software development	20th Century
Internet	Electronic business, Crowdsourcing, Social networking, Information warfare	20th Century
Biotechnology	Genetically modified food, Bioengineering, Gene therapy	20th Century
Business Virtualization	Paperless office, Telecommuting, Software agents	21st Century
Nanotechnology	Nanomaterials, Nanomedicine, Quantum dot solar cell, Targeted cancer therapy	21st Century
Artificial Intelligence	Autonomous car, Inventory robot, Industrial robot	21st Century

~ Same Time Window

Bio-Technology



Nano-Technology



AI-Technology

Spillover Innovations are massive.

AI Strategy for Sr Leaders.

Future Ready Organizations

Future Ready Organizations

The Future READY Organization

Tough !

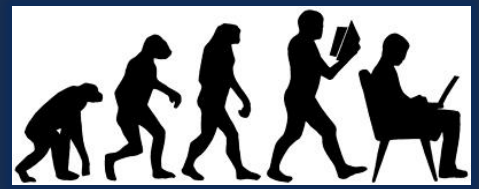
#4: Total Organizational Resiliency

Very Good

#1: Detect

#2: Respond

#3: Adapt



Entire Organization

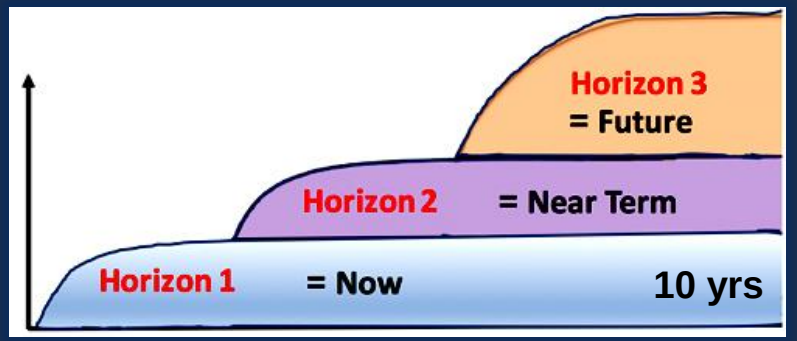
Anticipating !

A: Threats

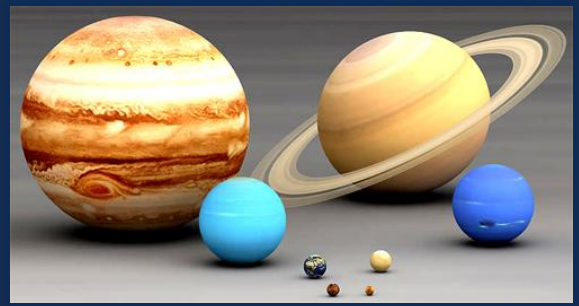
Proactive

Foresighting

B: Time Horizons



C: @ Different Scales



Future Ready Organizations

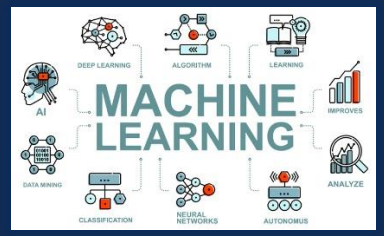
AI (GPT) + VUCAD Amplifies Time.

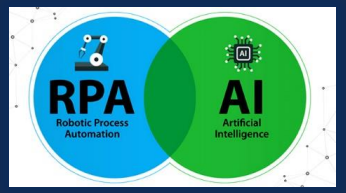
Global Connectedness:
Time > Space > Things

Time Dominates!

Strategic Products & Services

Speed to innovation.





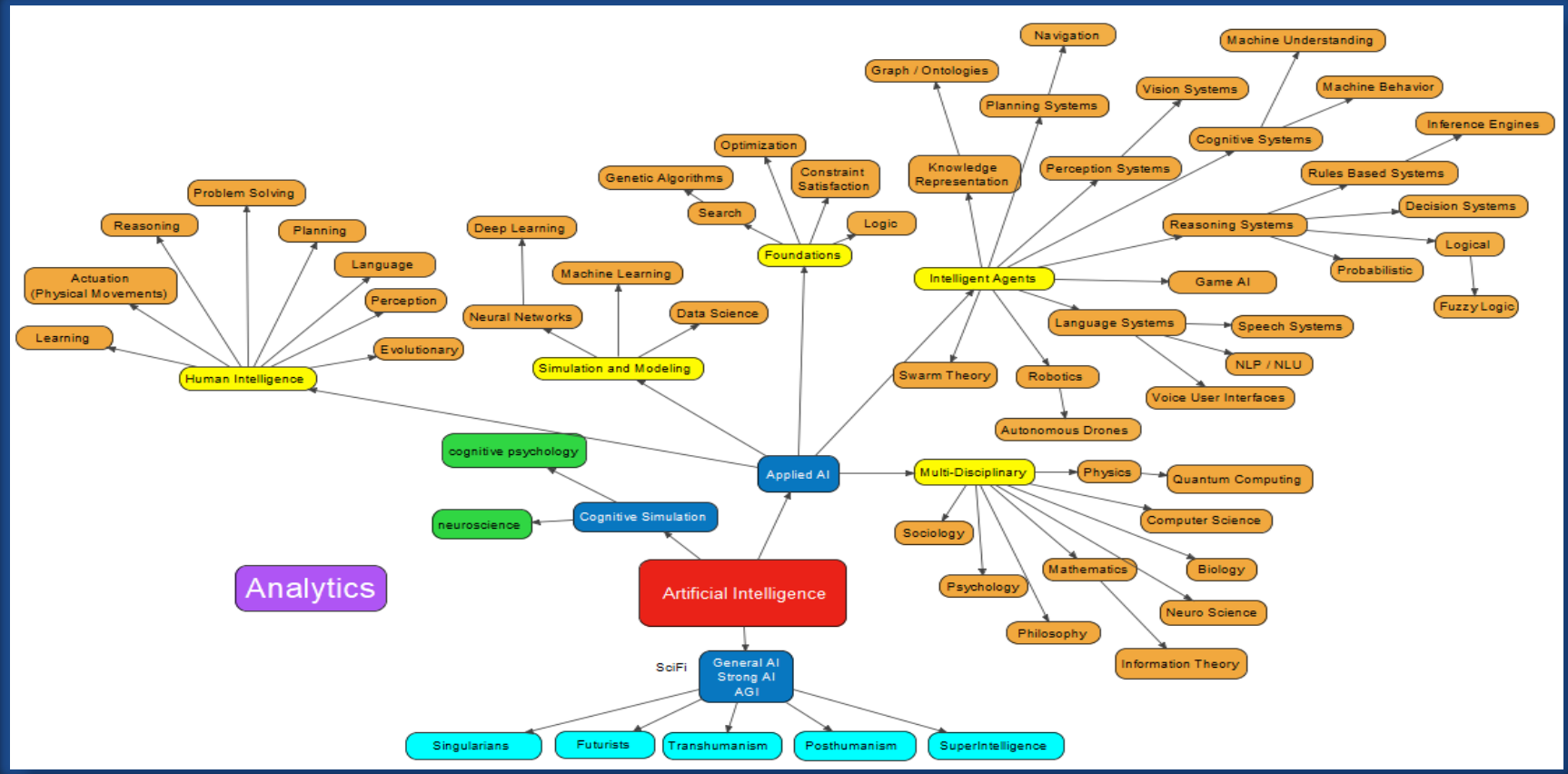
Intelligent Agents

AI Strategy for Sr Leaders.

The Nature of AI

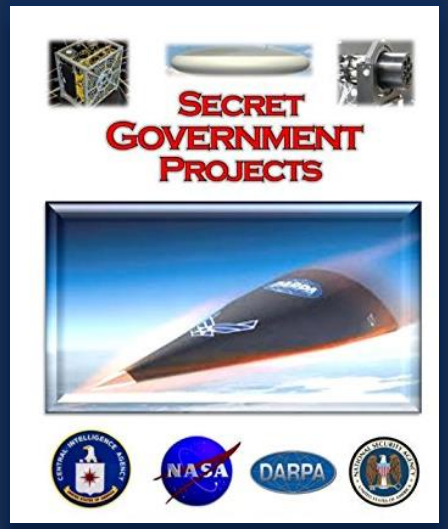
The Nature of AI

AI is a Portfolio of Technologies

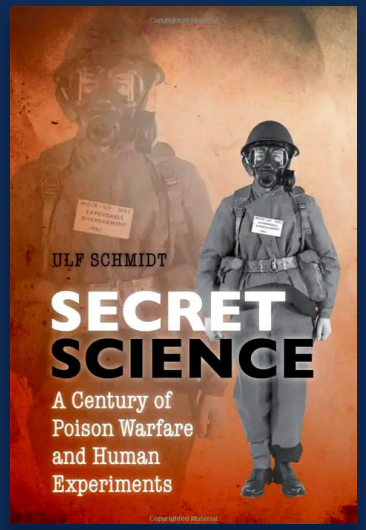


The Nature of AI

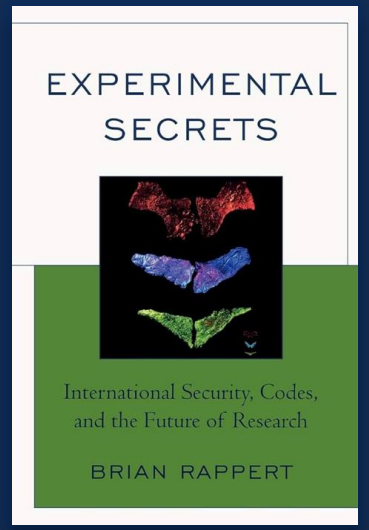
Much of AI is Hidden.



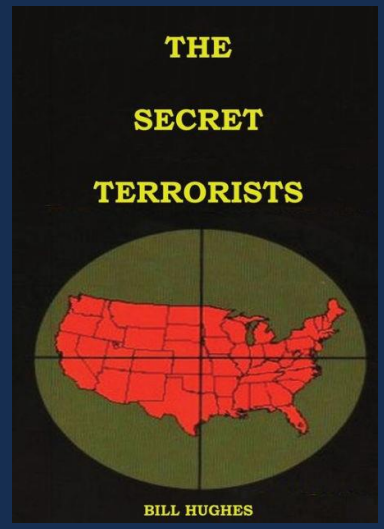
Governments



Universities



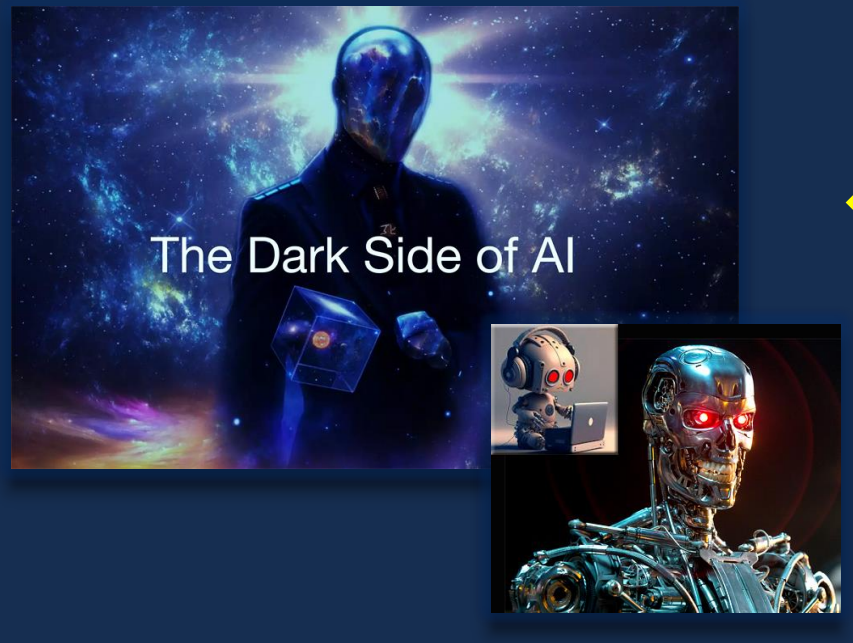
Private Industry



Terrorists /
Organized Crime

The Nature of AI

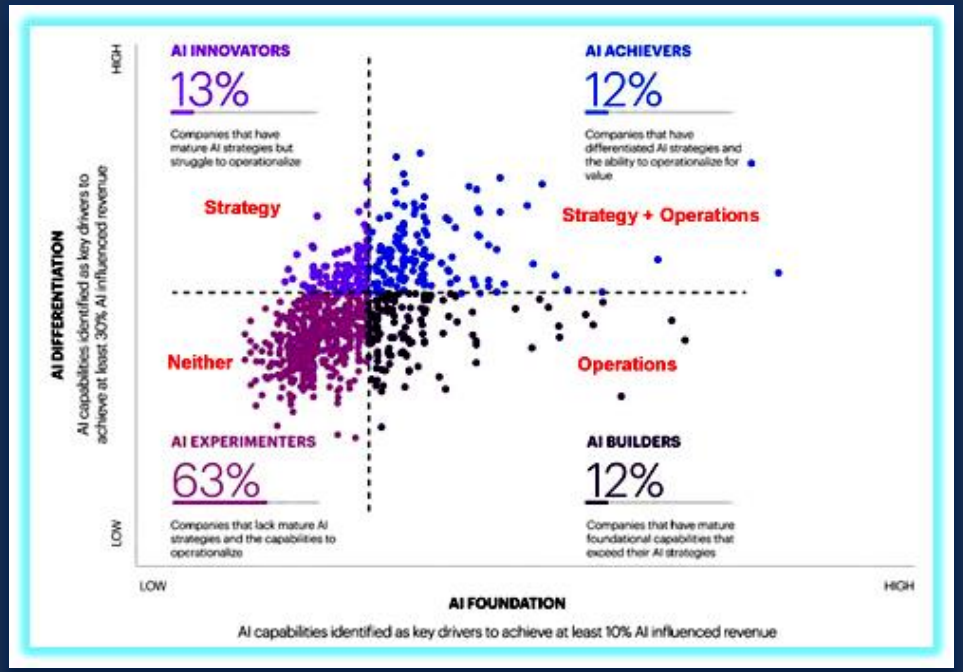
AI has a Dark Side.



The Nature of AI

AI Ready Organizations Perform Better

AI maturity measures the degree to which organizations have mastered AI-related capabilities in the right combination to achieve high performance for customers, shareholders and employees.



The Nature of AI

AI changes fundamental business processes.

(Organizations)

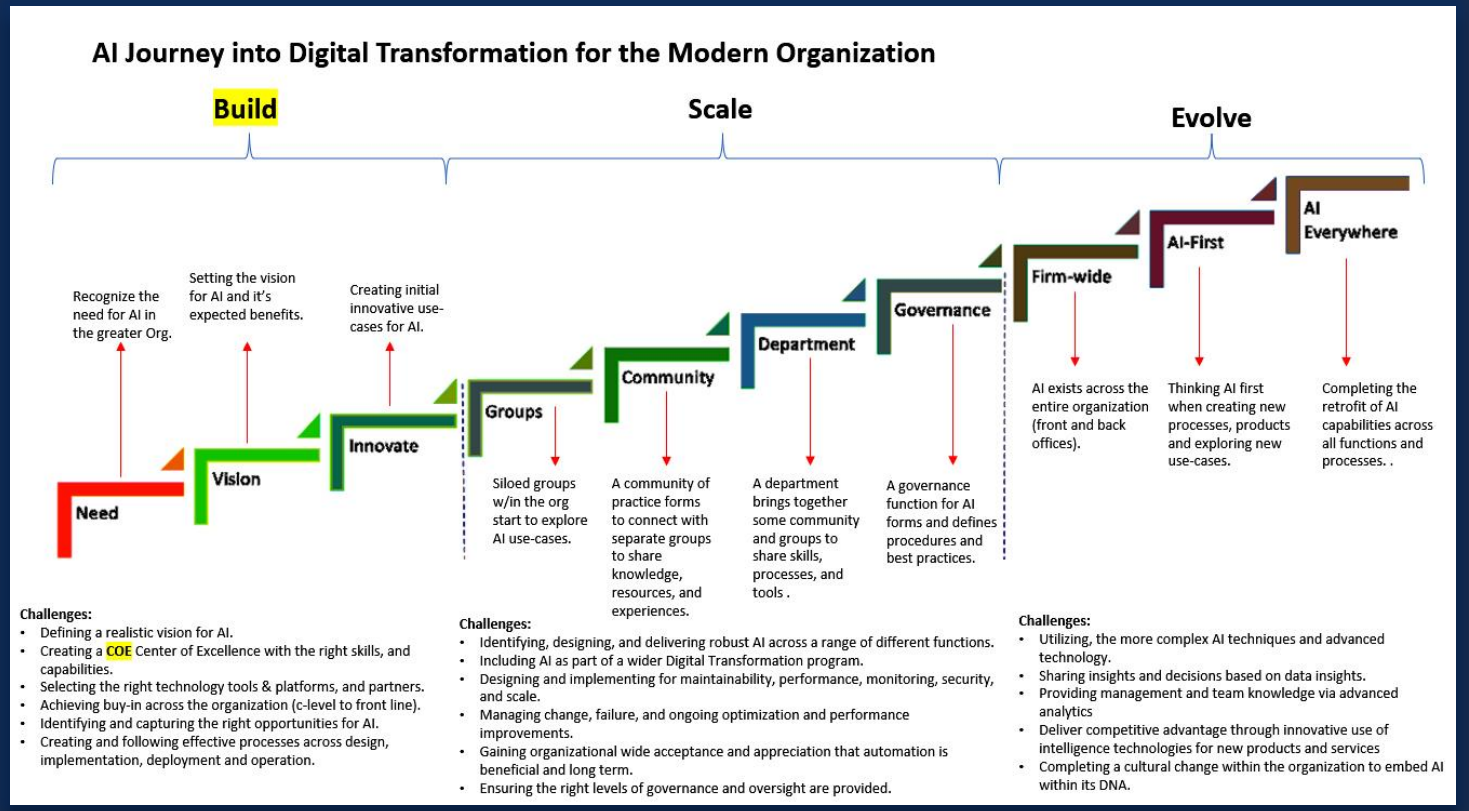
Significant financial benefits from their AI initiatives

(KPI's)

10x more likely to change success measures

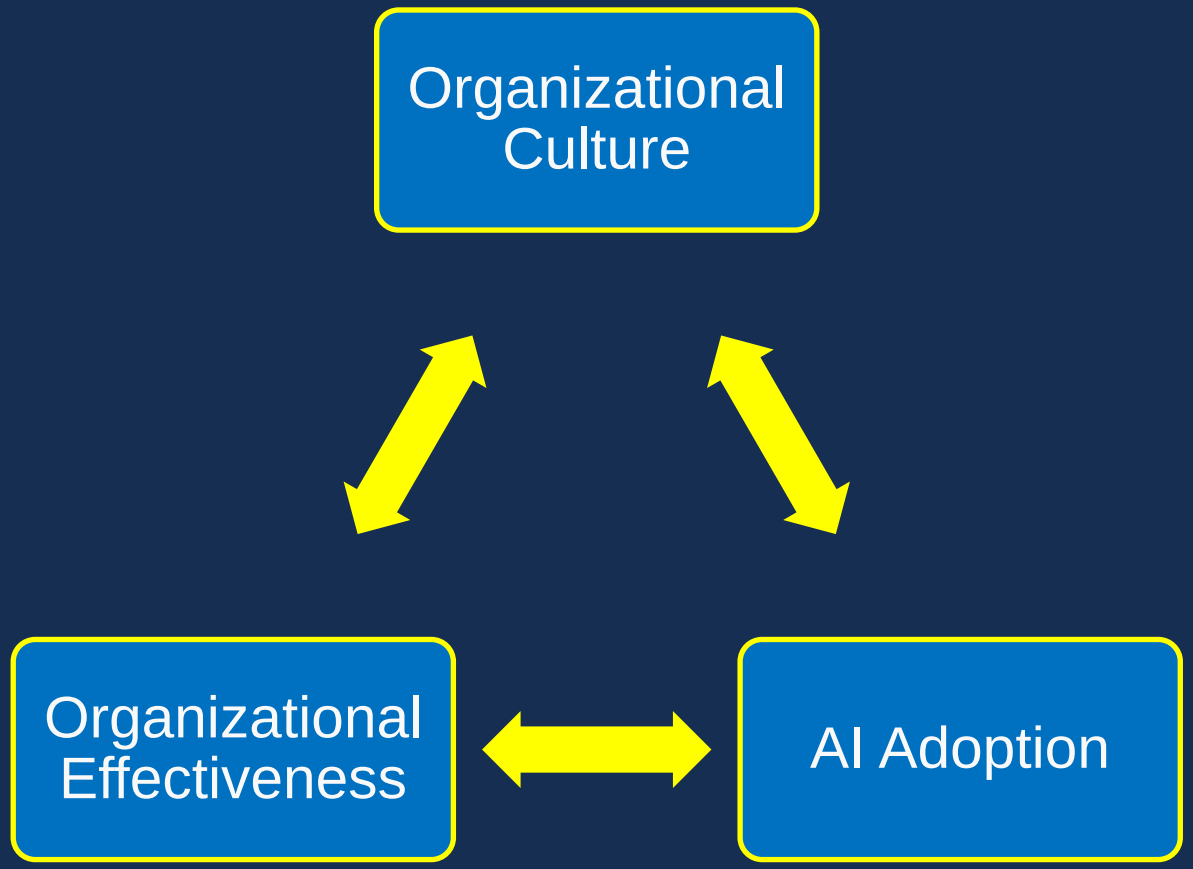
The Nature of AI

AI success depends on Organizational Digital Maturity



The Nature of AI

AI Adoption depends on Organizational Culture



It is **highly unlikely** that technical factors **alone** will increase performance.

Organizations also need to consider the **organizational factors** to increase their performance.

Investments in Change Management are directly linked to financially successful AI implementations.

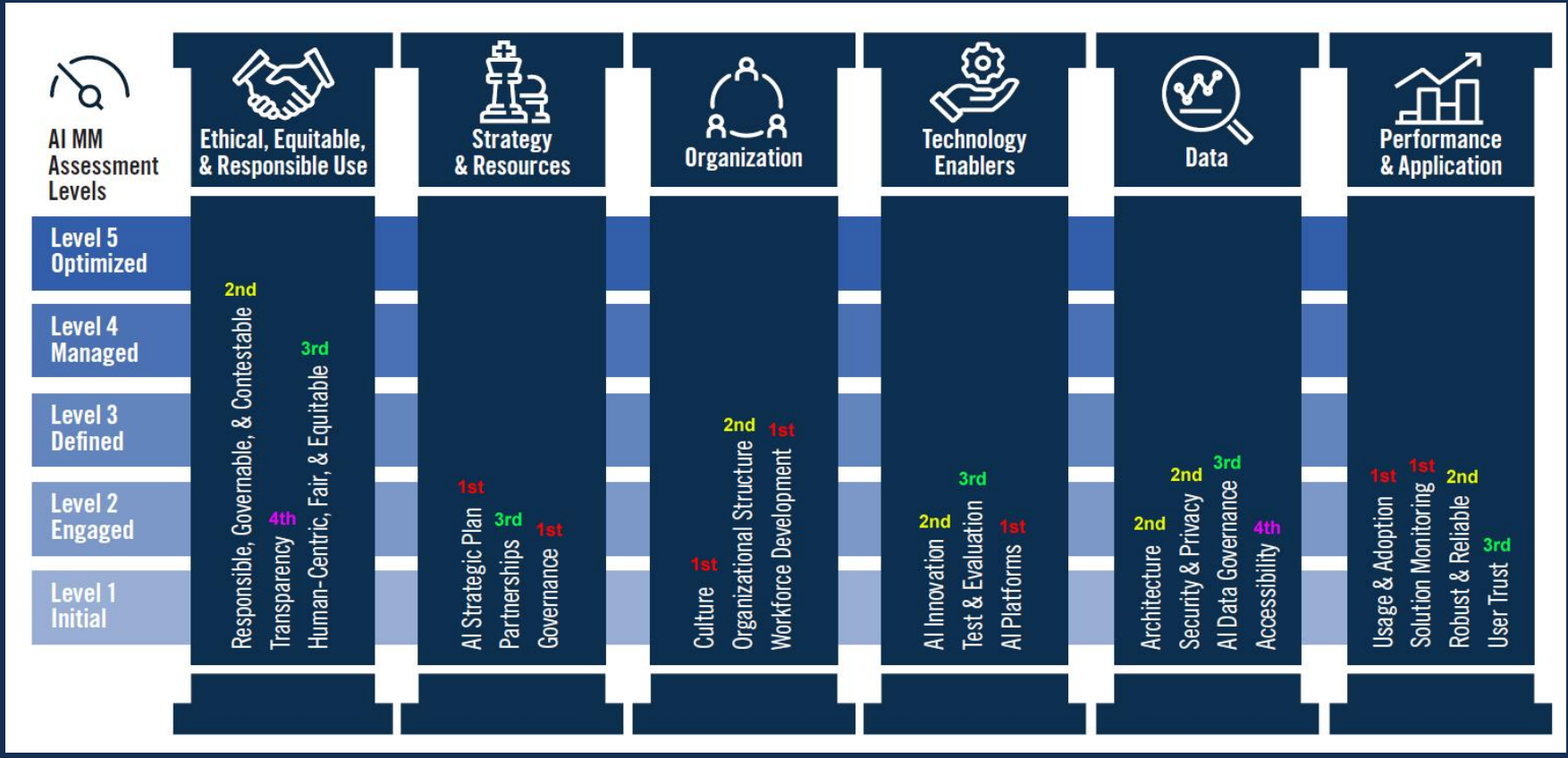
AI Strategy Exploration

The Nature of AI & Strategy Implications

AI Readiness requires both strategies.

The Nature of AI & Strategy Implications

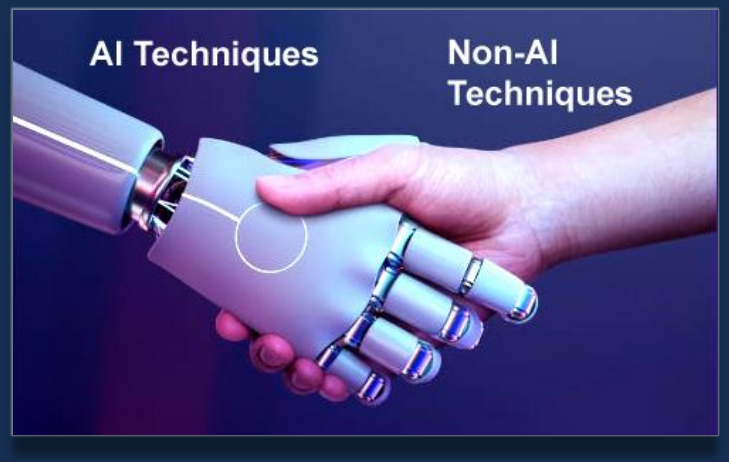
AI success requires
Organizational Maturity



The Nature of AI & Strategy Implications

When to NOT Use AI / ML Techniques?

Do not use AI / ML when:



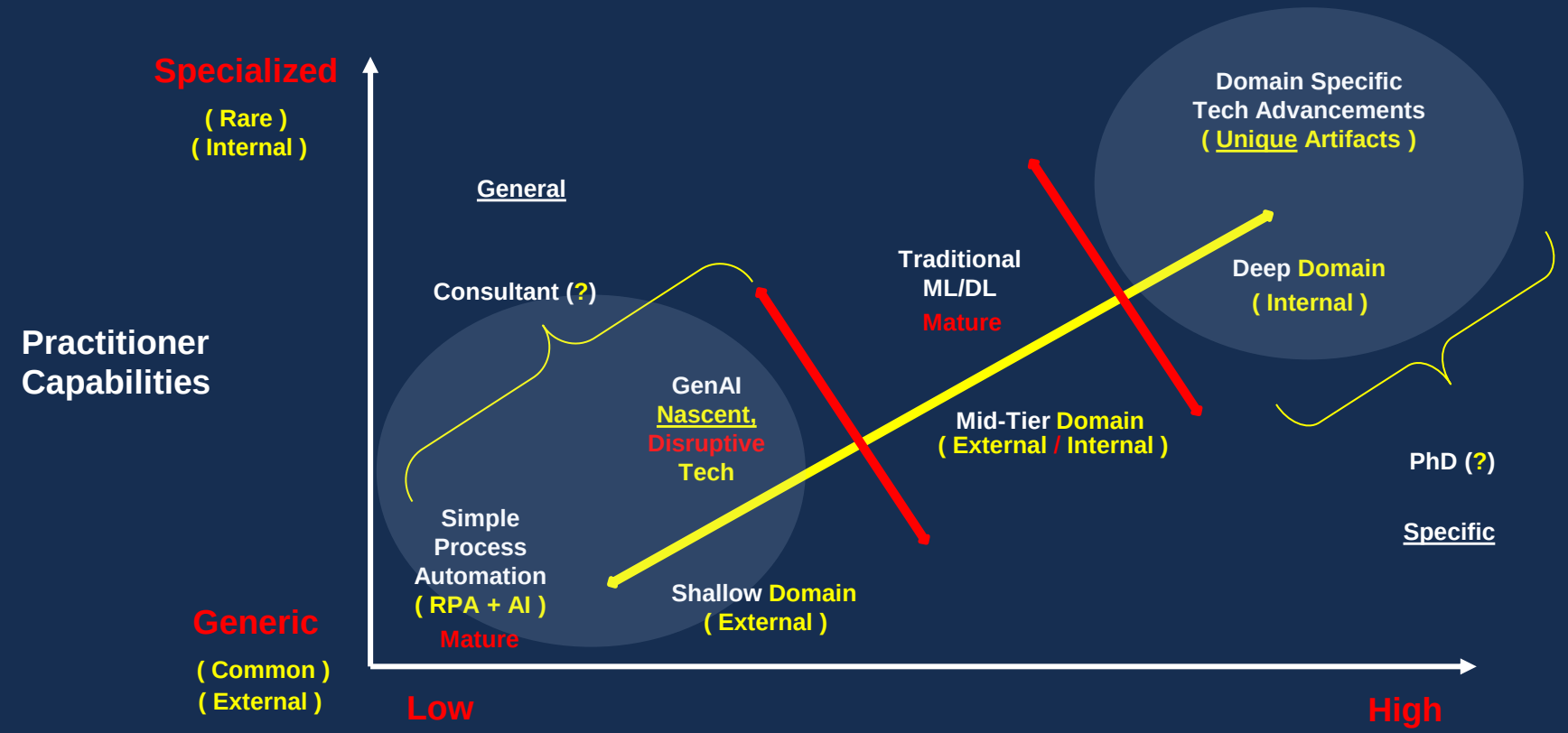
Big Arguments Against:

1. Non-ML solutions - superior results.
2. Non-ML solutions - adequate results far cheaper.
3. Problem can't tolerate ambiguity (experimental Nature) of AI/ML.
4. No Adequate data and/or infrastructure.

There are others …

The Nature of AI & Strategy Implications

Domain Complexity in AI Use-Cases

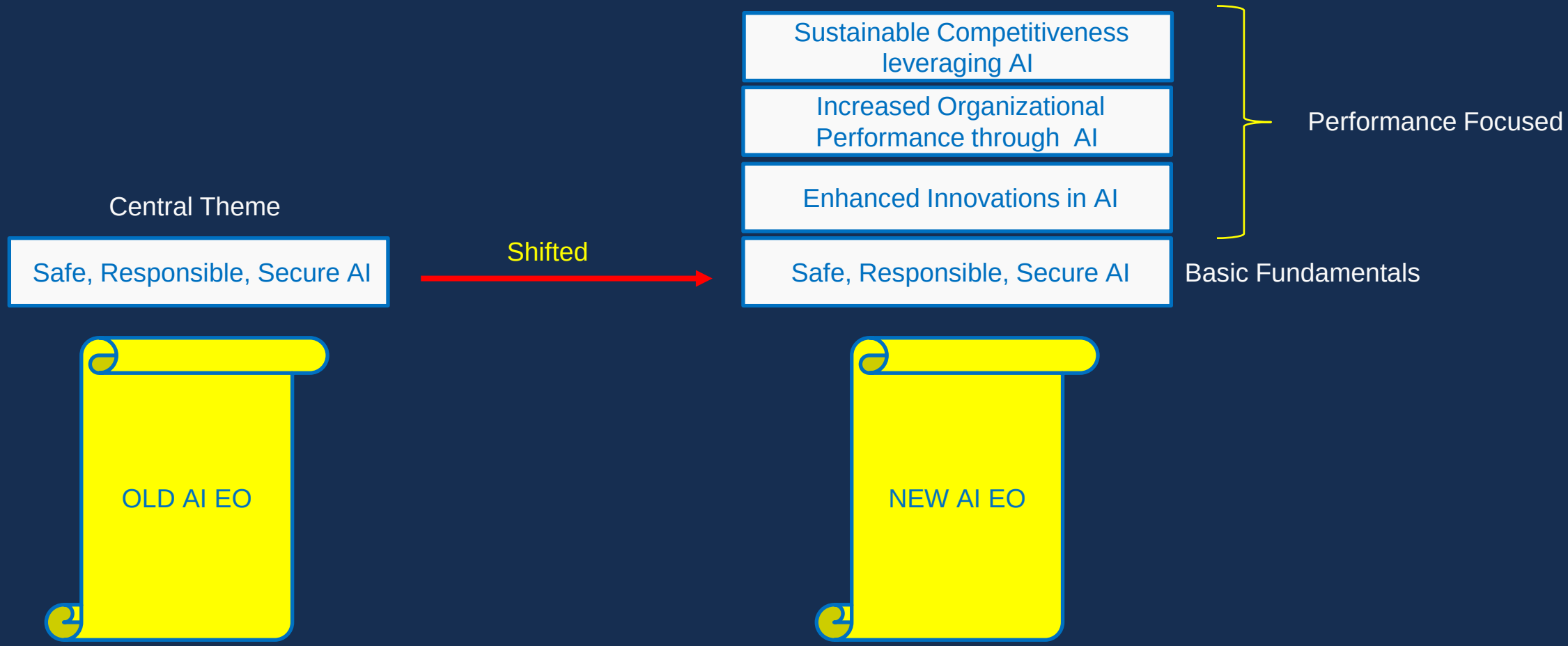


AI Strategy for Sr Leaders.

Developing Strong AI Use-Cases

CCIIO: AI Governance Process

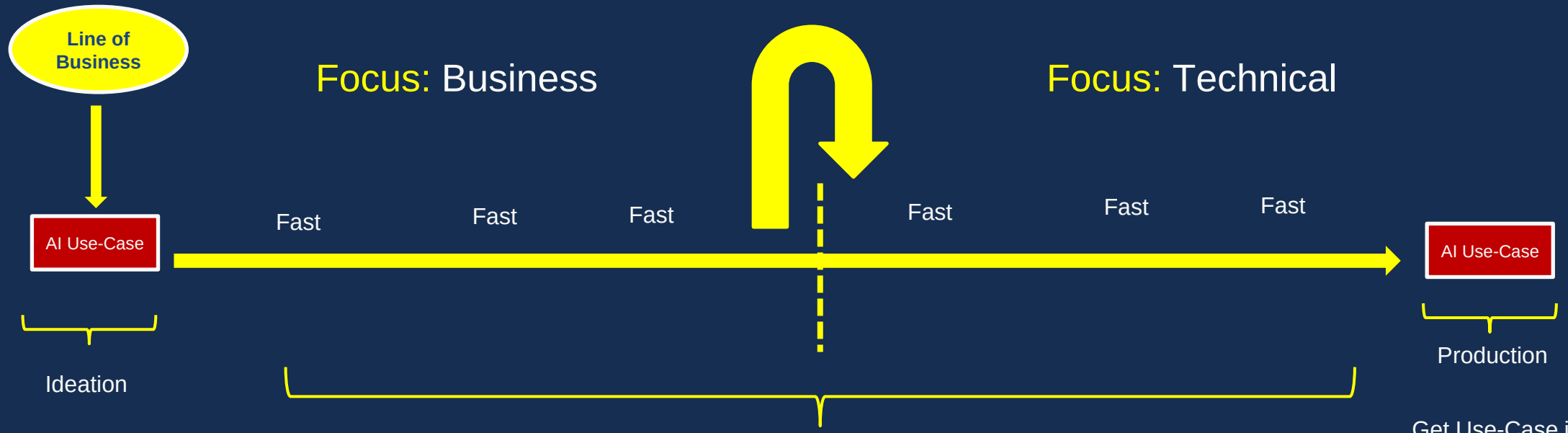
Executive Orders Old & New : AI



The Nature of AI & Strategy Implications

AI Governance Pattern:

1. Curate Impactful Use-Cases => Biz Performance
2. Focus on Speed to Production (Under Control)
3. De-Risk on both Biz & Tech Fronts

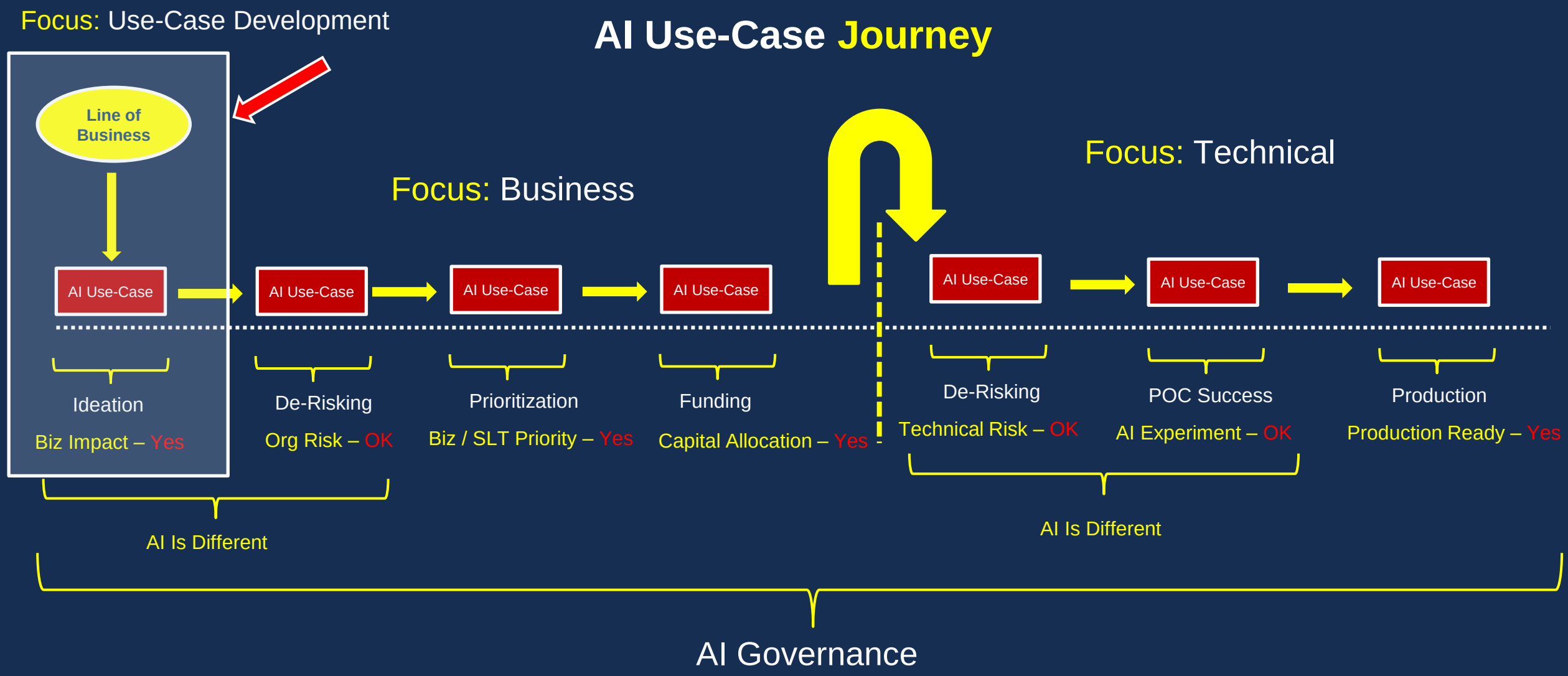


Curate and prioritize only those use-cases that provide the biggest impact on making the business perform better.

Do this under **Control** and **De-Risk** at every appropriate step along the way.

Get Use-Case into production so organization can benefit from it. Speed to value!

Developing Strong AI Use-Cases



Developing Strong AI Use-Cases

"Strategic Trajectory" and "Improved Performance".

TIME

Dig Here Last.

Disregard Time.

Dig Here Third.

Now

Dig Here Second.

Near-Term

Dig Here First.

Future

No-Term Focus

Compliance Demands or FOMO

Immediate Focus

Organizational Concerns

Short-Term Focus

Business Objectives

Long-Term Focus

Strategic Goals

Department

Group

Organization

Company

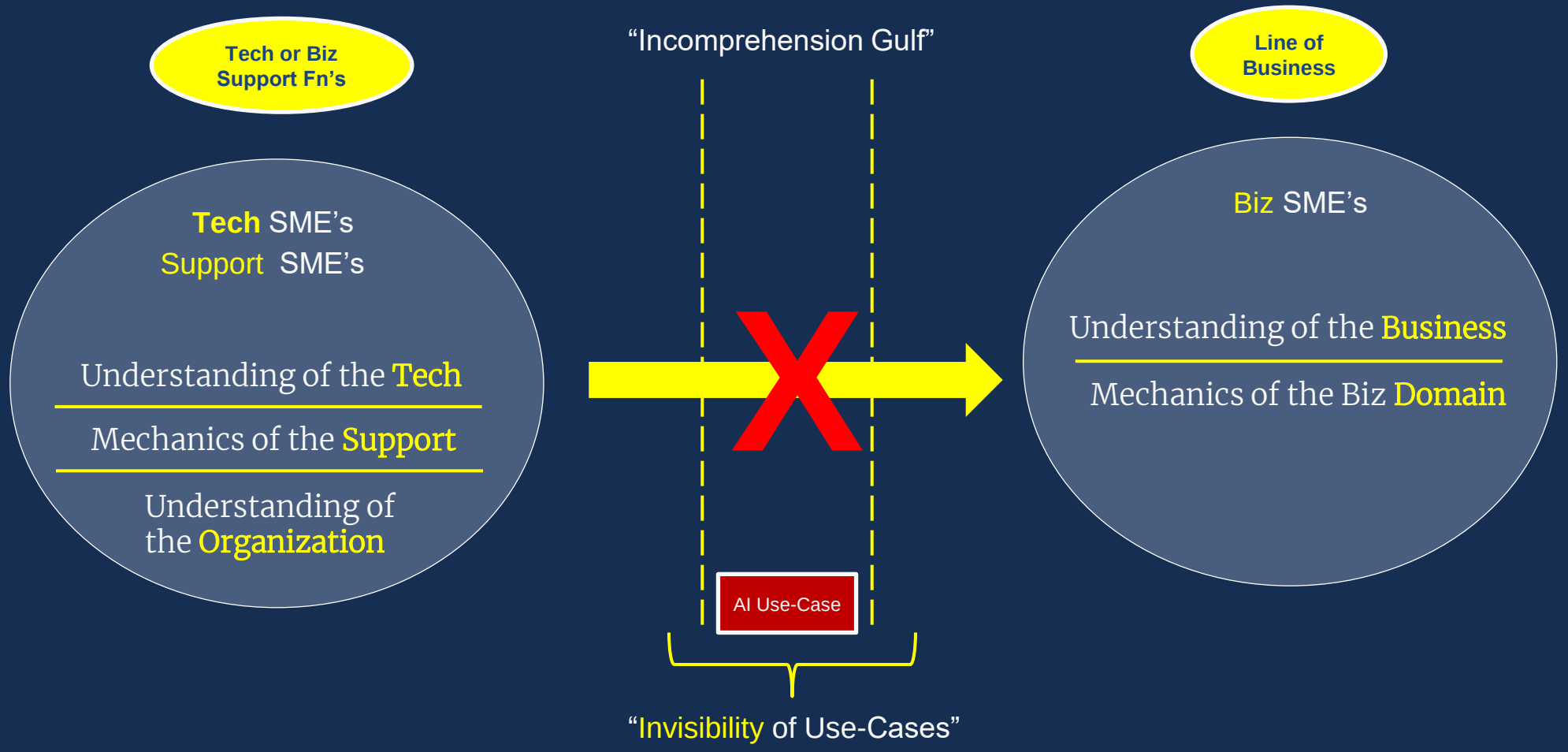
Least Fertile

Moderate Fertility

Most Fertile

Developing Strong AI Use-Cases

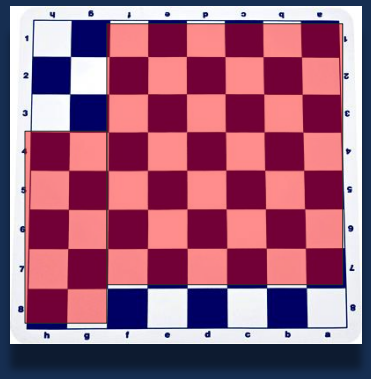
Challenge



Developing Strong AI Use-Cases

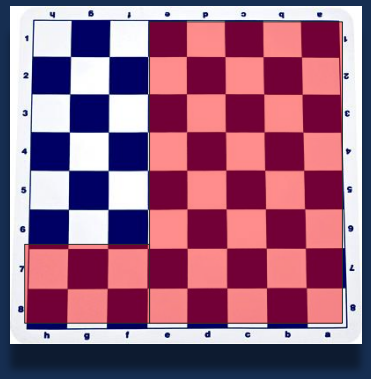
Invisibility of use-cases: Fn of a Restricted view of whole chess board

Tech only or Biz Support Staff.



Invisibility: High

Consultants & Vendors.



Invisibility: High

Biz SME's

Invisibility: Low

Sr Leadership

Invisibility: Low

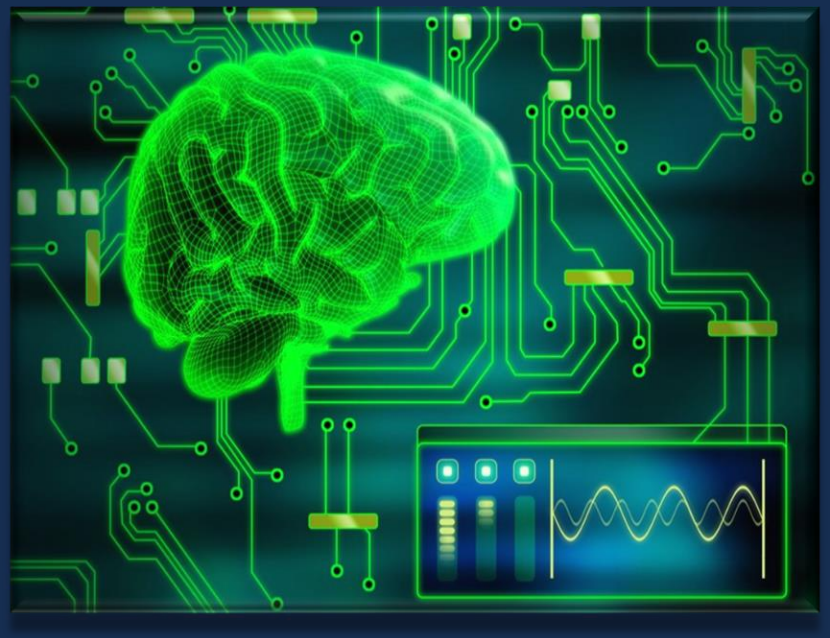
AI Strategy for Sr Leaders.

Agentic Technology's Promise

Exploring Intelligent Agents.

B r a i n M e c h a n i c s I n s p i r e d C o m p u t a t i o n

Brain Mechanics



Autonomous Entities

Agent Do Work !

Exploring Intelligent Agents.

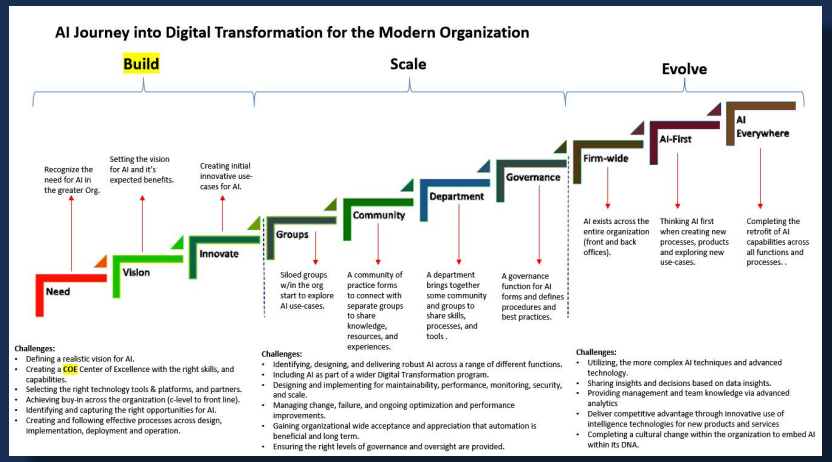
Agents are important strategically.

POC ==> COE => Distributed ==> AI Centric Org

Well Understood — Well Understood — - Agents - **Not** Understood

Well Understood — **Not** Understood

Well Understood — **Not** Understood



Exploring Intelligent Agents.

Agents Enable Change.

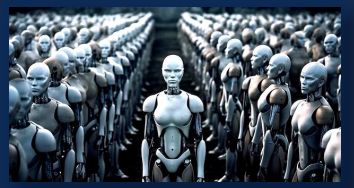
Distributed ========> AI Centric Org

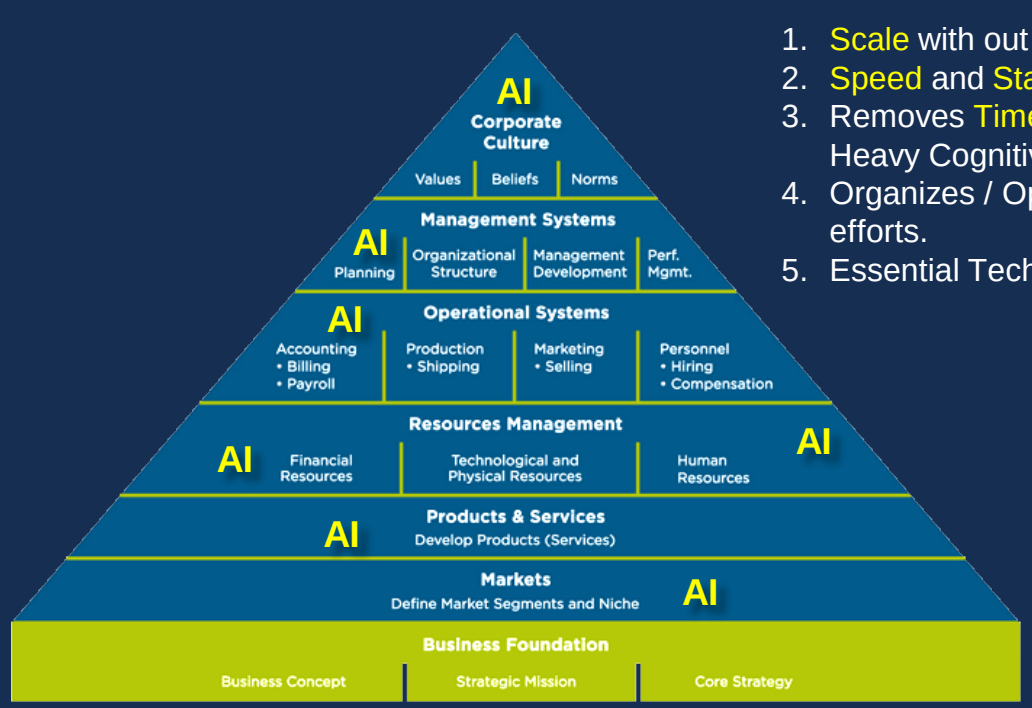
- Agents -

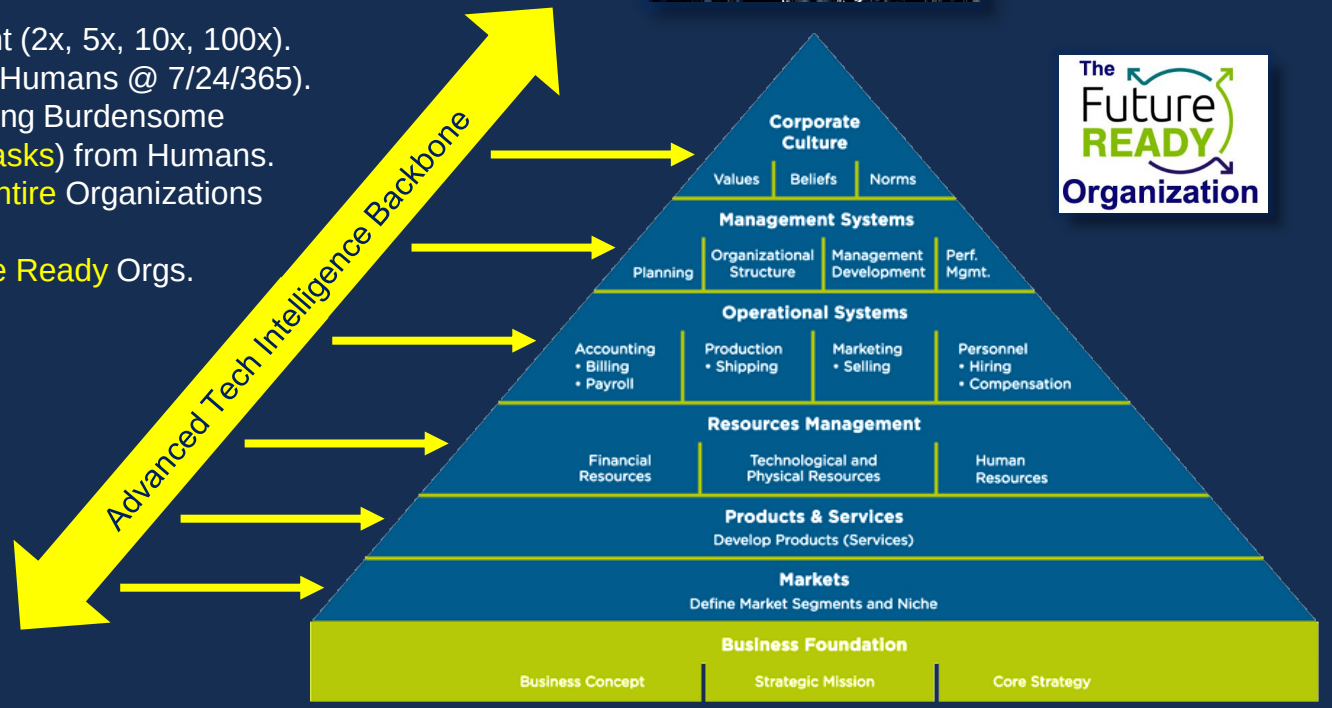
Transition Not Understood

Attributes of this Org Transition

1. Scale with out Headcount (2x, 5x, 10x, 100x).
2. Speed and Stamina (No Humans @ 7/24/365).
3. Removes Time Consuming Burdensome Heavy Cognitive Lifts (Tasks) from Humans.
4. Organizes / Optimizes Entire Organizations efforts.
5. Essential Tech for Future Ready Orgs.







The Future READY Organization

Portfolio of Discrete AI Projects in Org

Advanced Intelligence Optimizing the Entire Org

Exploring Intelligent Agents.

Different Tech Approaches/ Spaces.

Cognitive Agents

Problem Solvers, Search, Reasoners

Game / Military AI Agents

Drones, Monster Factories

Agents Space

Automated Reasoning Space

Autonomous Entities / Simulation Space

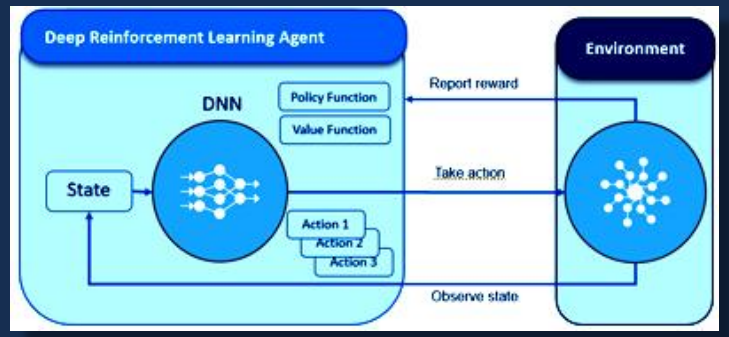
Experiential Learning Space

Language & Collective Intelligence Space

?

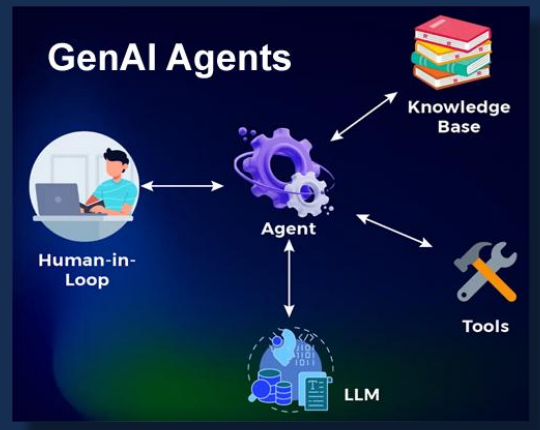
Unknown

RL / DRL (Reinforcement Learning)



Warehouse Robots, Processing Automation

GenAI Agents (Multi-Agents)

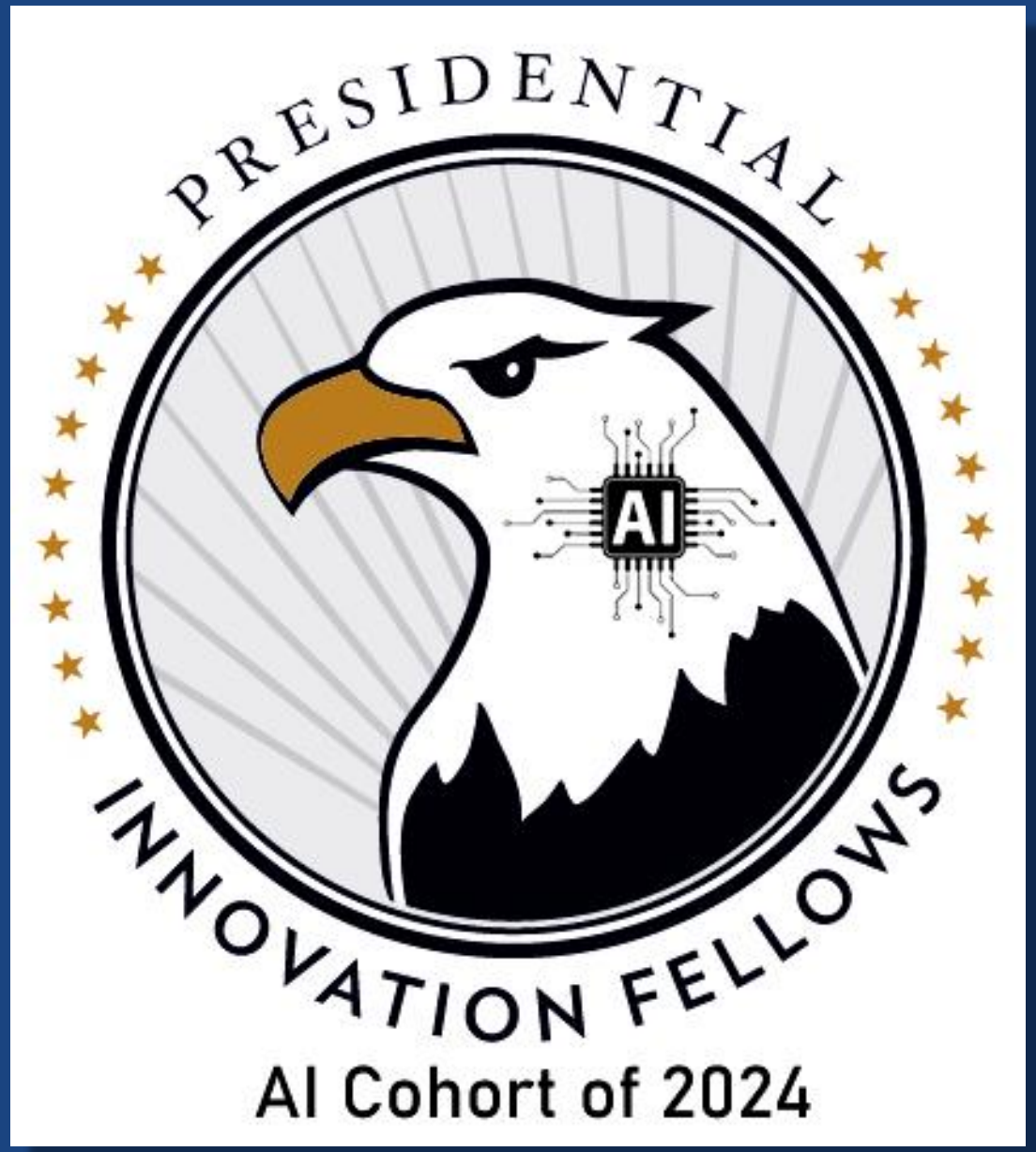


Language Understanding / Analysis

AI Strategy for Sr Leaders.

Discussion

AI Strategy for Sr Leaders.


PRESIDENTIAL
AI
INNOVATION FELLOWS
AI Cohort of 2024

AI Strategy for Sr Leaders.

Appendix

The VUCAD World.

We're in a Global Technology Arms Race where AI is one of three GPT's.

AI as a GPT.

GPT's are Special

#1: Pervasive Across Sectors.

#2: Ability to Evolve over time.

#3: Create Spillover <u>Innovation</u> through Complementarities.

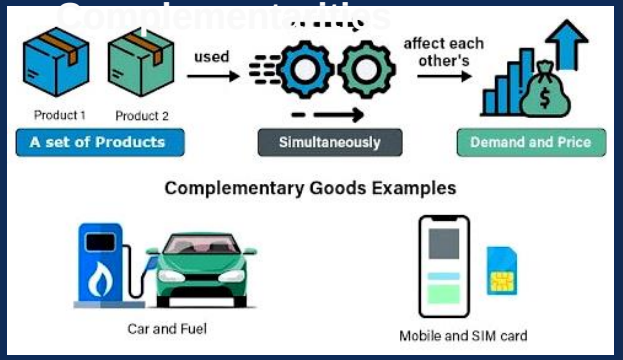
Spillover Economic Effect

Spillover Effect

/スピローバー・エフェクト/

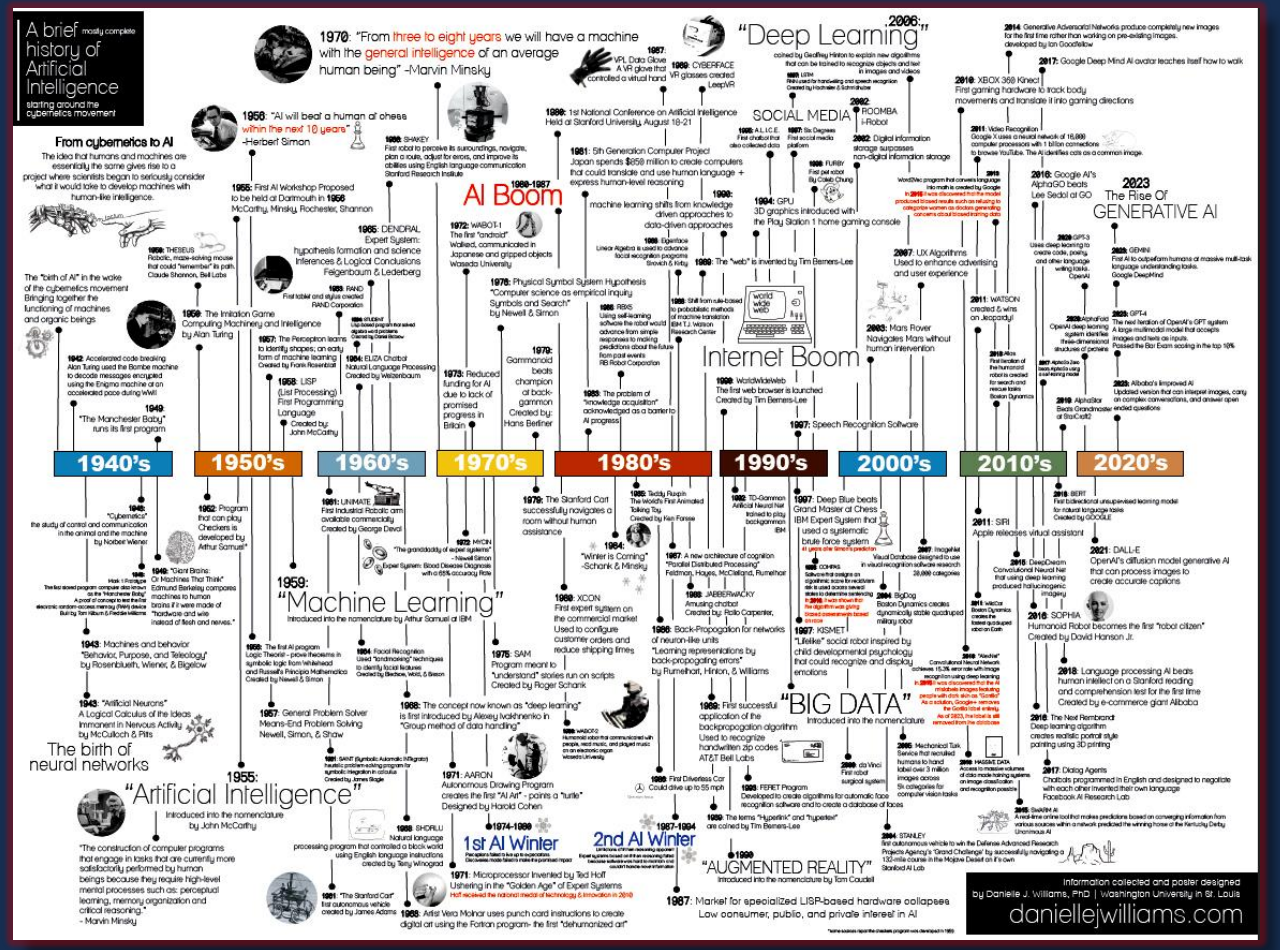
(economics) The phenomenon in which an economic event in one context occurs because of something else in a seemingly unrelated context.

Economic



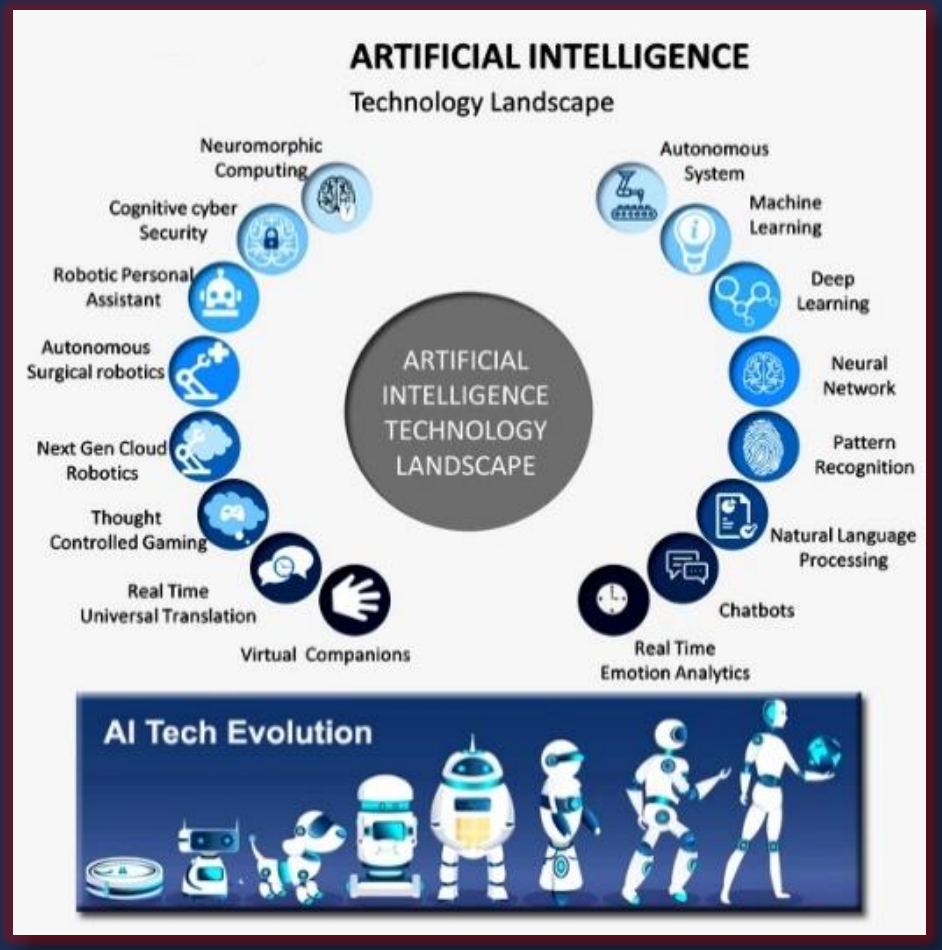
The Nature of AI

AI is Old and has a Long history.

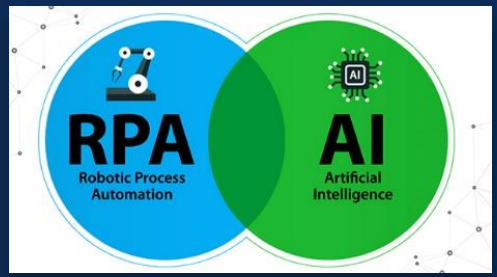


The Nature of AI

AI is Evolutionary

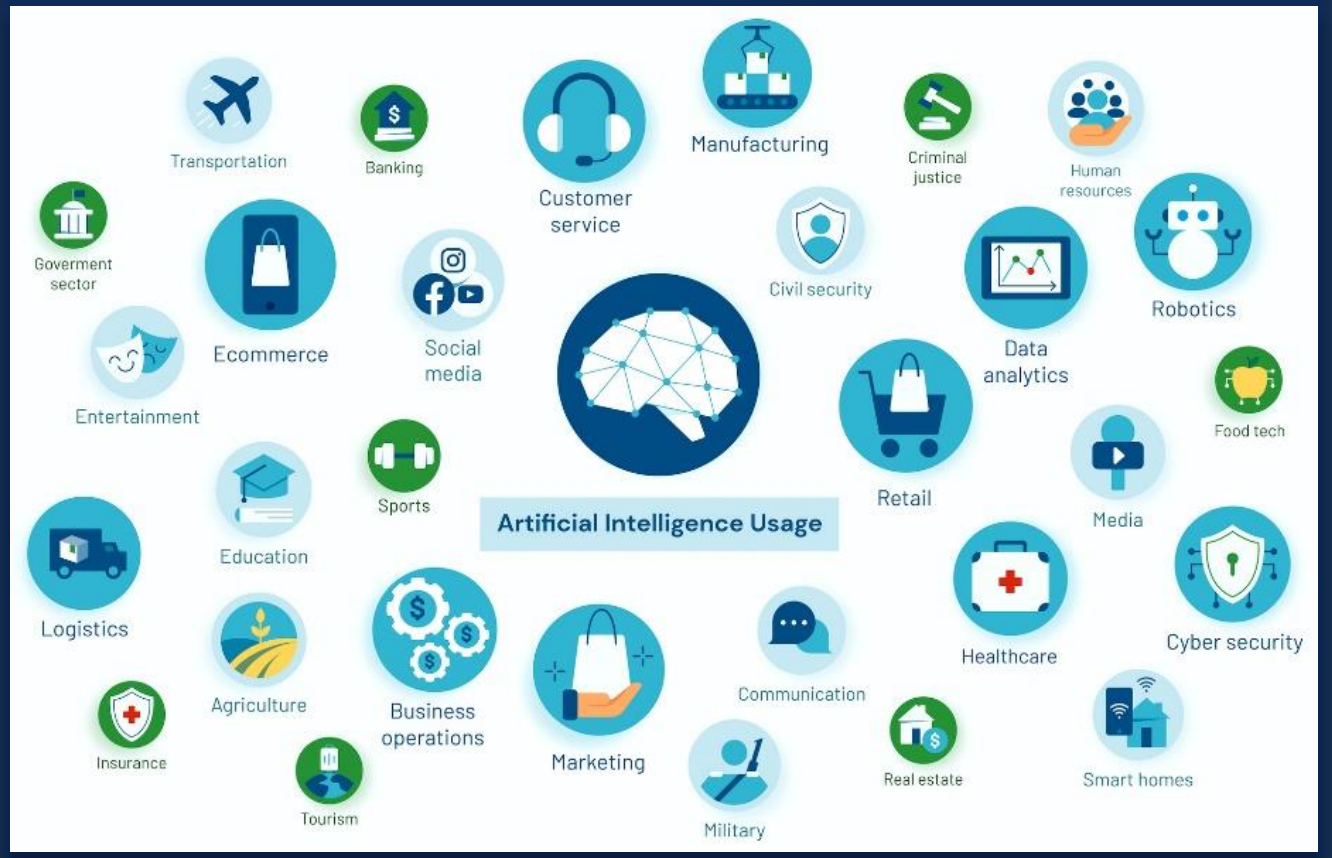


Intelligent Agents

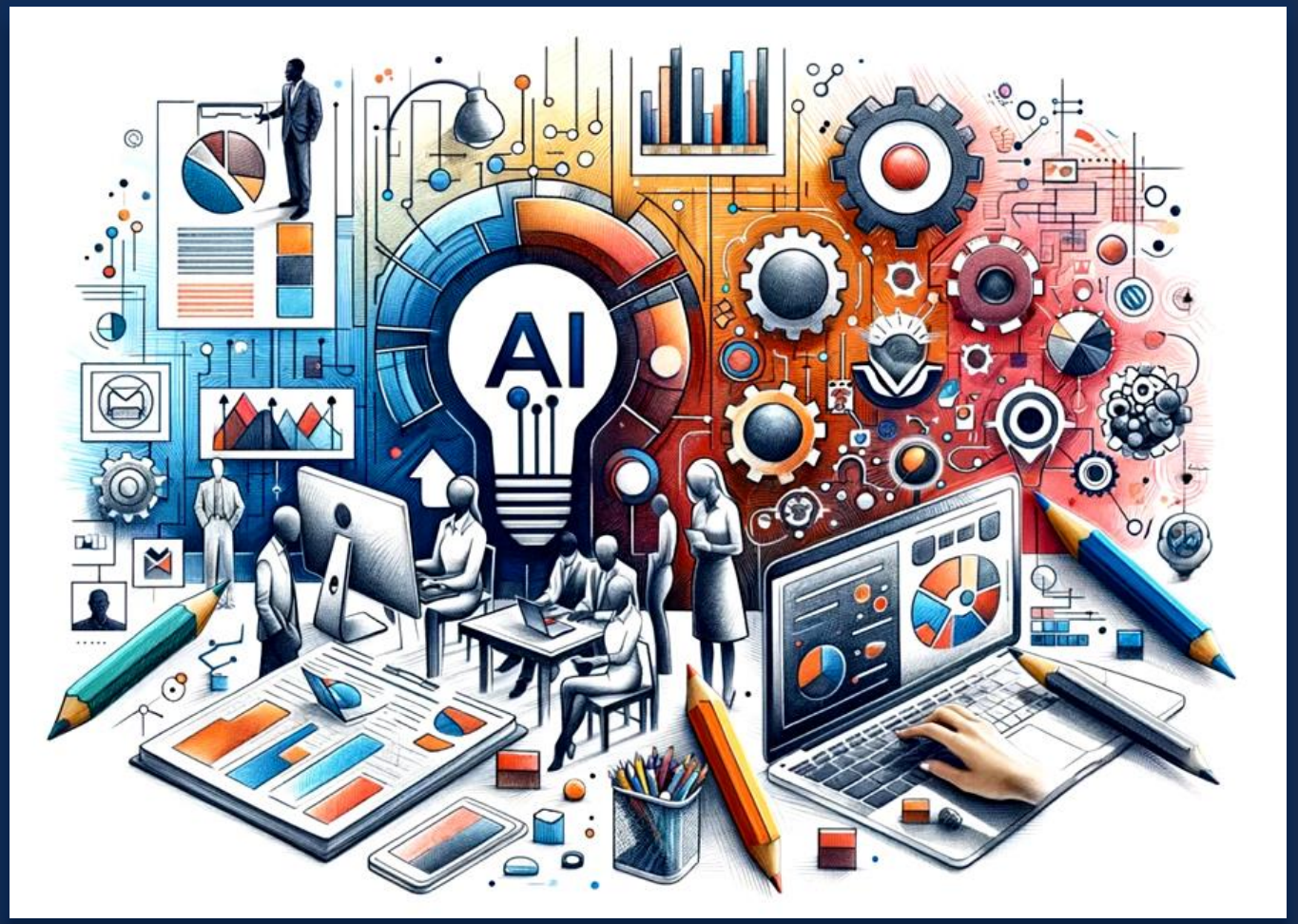


The Nature of AI

AI will be Everywhere.



The Nature of AI & Strategy Implications



Strategy Aspects

The Nature of AI & Strategy Implications

When To Use ML Techniques?

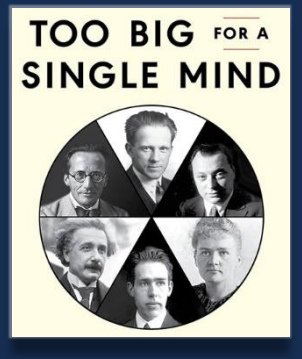
Big Arguments For using AI

Classical Techniques don't work.

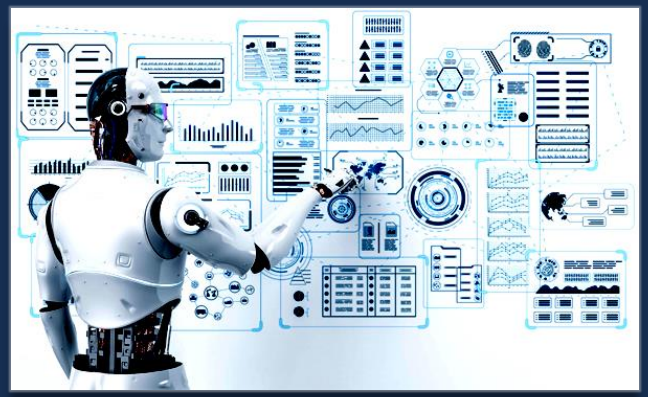
Problems the Org gave up on.

Scope of the problems exceeds the normal programming techniques.

Problem Dimensions / Complexity exceeds human capacity.



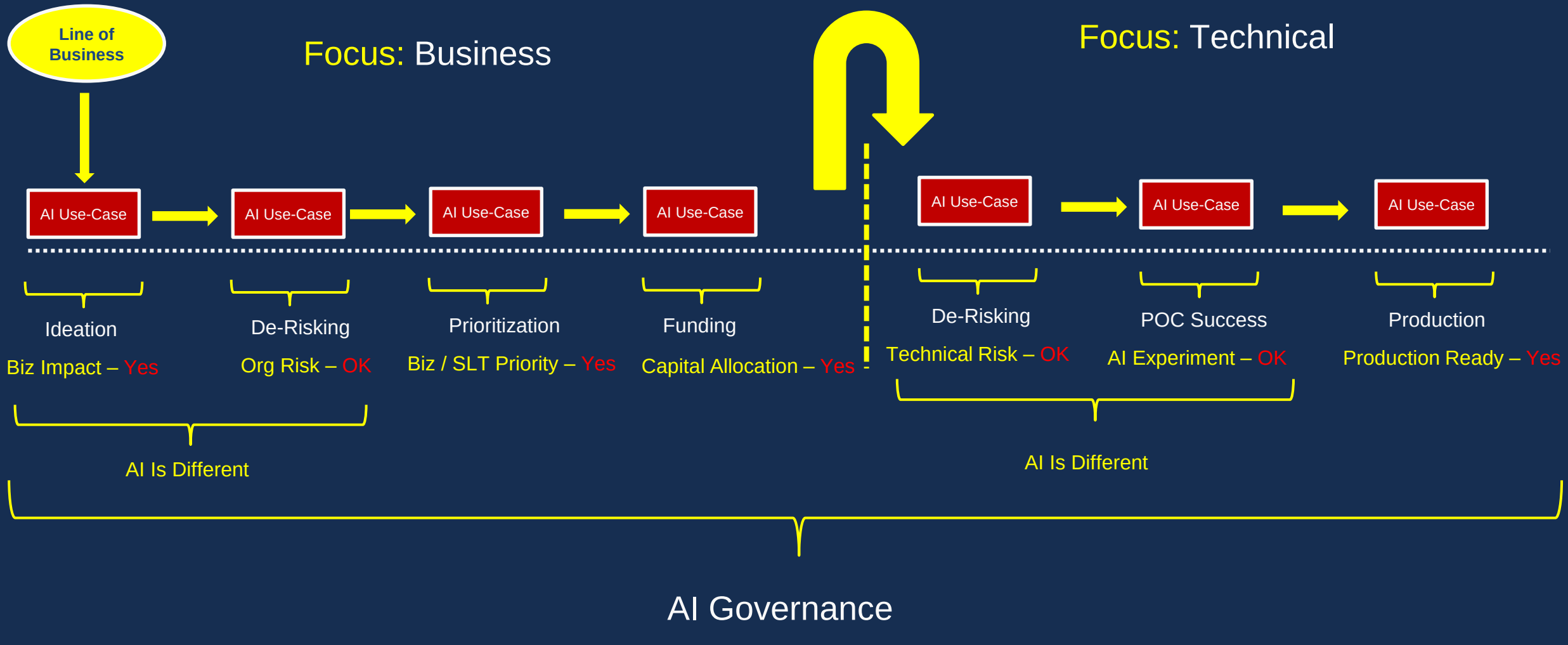
Problem maps well to AI / ML Techniques.



There are others …

The Nature of AI & Strategy Implications

AI Governance Pattern:



The Nature of AI & Strategy Implications

Organizational Objectives –
(Lens on Maturing AI for ROI on Biz Problems)

- Resist Creative ROI Practices - the urge to inflate ROI estimates.
- Know your business and ROI thresholds and stick to them.
- Understand what “Good Enough Means” on projects, go no further.

Management of Investment Cost –
(Prefer many inexpensive smaller wins over big investment projects)

- Avoid the Home Run Hero, they strike out a lot!
- More singles are better than home runs for value delivery with AI.
- It’s not incrementalism, because biz value adds up quickly.

De-Risking AI Use-Cases - (Do the hardest things first, not first things first)

- Do the scariest / hardest part of the project first, to fail fast.
- Cut your losers and let winners run instead to maximize portfolio results.
- Don’t get attached to any one problem you can’t solve to add biz value.

The Nature of AI & Strategy Implications

Adoption Issues –
(How will the existing business process tolerate something new)

- Adoption cannot be an afterthought – parallel process to actual development effort.
- Requires Comms, Education, Relationship building by evangelists.
- Flip-the Switch Strategy doesn't work! Gradual adoption works better.
- Work from the Edges (Very Sure)
- Leverage human in the middle with reduced role (given to the AI).

AI Use-Case Vetting for ROI – Stakeholders
(Prioritization: Hard Metrics, Soft Metrics, Effort vs Value)

- You and stakeholders must agree on how to measure value (early, middle, late).
- You must measure costs as well for ROI calculations.
- Only claim lift over existing classical solutions.

The Nature of AI & Strategy Implications

Success Metrics: -
(Opportunity, Data, Measurability)

- Biz opportunity statement defines how you will add value, scope to right size.
- Be very specific with data (amount, years, physical location, actual columns names)
- Have a formula to measure lift that your stakeholders agree on.
- Formula's do not have to be linear; the calculations can be variable.
    - Symmetry doesn't often exist in the wild!

Other Issues with AI adoption –
(Data, Infrastructure, Talent, management ranks, etc)

- The big three are (Talent, Data, Infrastructure)
- The hidden 4th , 5th are the Managerial Ranks + Org Reward Structures

Developing Strong AI Use-Cases

Digging for the most impactful AI use-cases for organizational performance.

Journey:

1. Department Level
2. Group Level
3. Organization Level
4. Company Level ***

Shift the mindset of tools seeking a use-case, to a Sr Leader advancing a strategic plan.

Developing Strong AI Use-Cases

"Strategic Trajectory" and "Improved Performance".

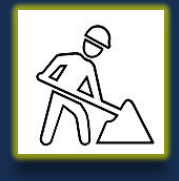
Dig Here Second.

Near-Term

TIME

Future

Dig Here First.



Short-Term Focus

Organization

No Tech

Business Objectives

- Increase Customer Base by 10%
- Increase Revenue by 20%
- Decrease Costs by 30%
- Improve NPS / Customer Experience by 5 pts.
- Reduce Response Times by 10%.
- Reduce Workforce by X%.
- Anticipate Market Behavior
- Optimize Operations by 15%
- Increase Fraud Detection by 90%
- Improve User Experience

Long-Term Focus

Company

No Tech

Strategic Goals

- Enter New Markets
- Enhance Competitive Advantage
- Develop New Products / Services
- Increase Market Share
- Exploit a Market Opportunity
- Creating Strong Brand Reputation

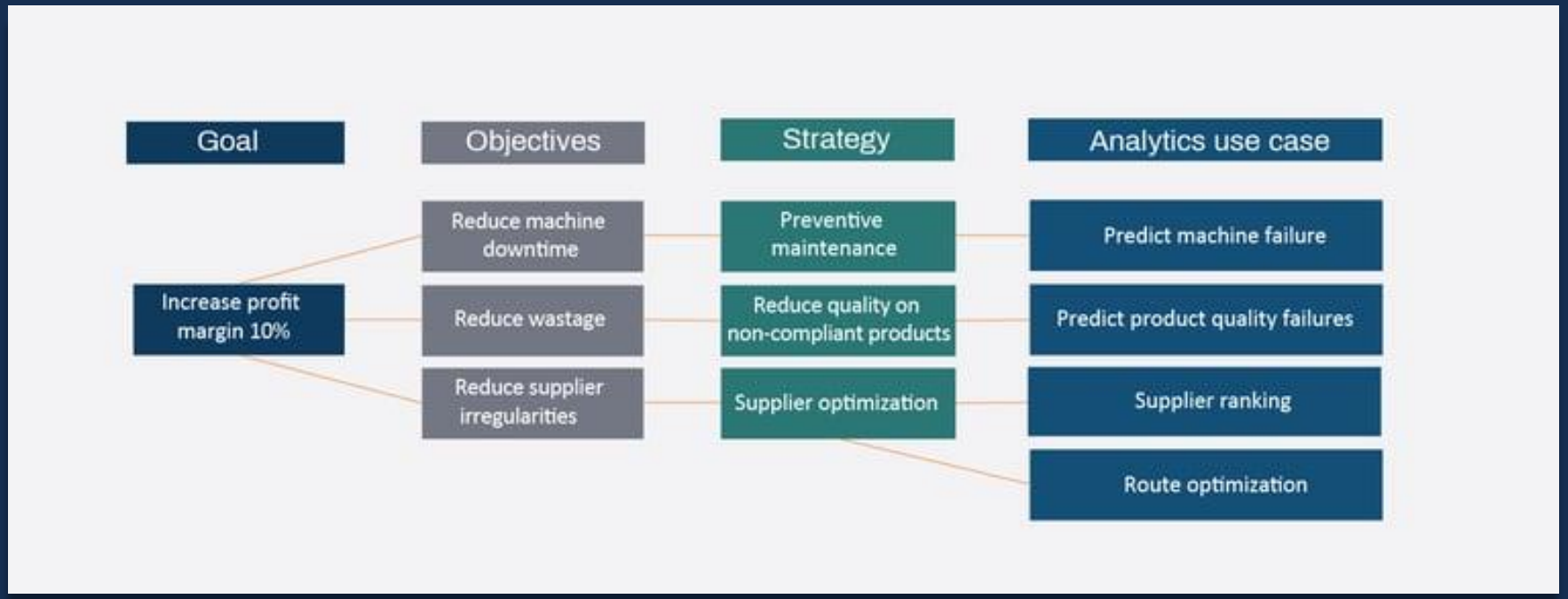
Business Objectives are designed to guide the organization's direction over a short-term, often a quarter or year. They are very specific in nature.

Strategic Goals are designed to guide the company's direction over a significant period, often several **years** or more

Developing Strong AI Use-Cases

"Example"

From Business Objectives to AI use-cases: Increase Profit margin by 10%



Goal => Objectives => Strategy => AI Use-Case

Developing Strong AI Use-Cases

Getting Better at Identifying

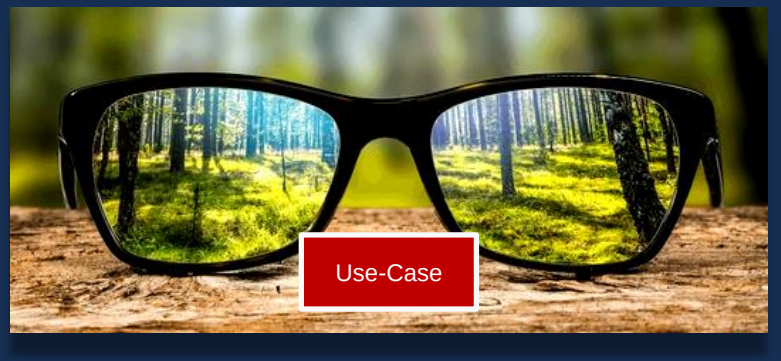
Becoming a better AI use-case spotter.

Developing Strong AI Use-Cases

Phenomenon Observed the Wild

Tool Focus : Use-Cases

Strategic Focus: Use-Case

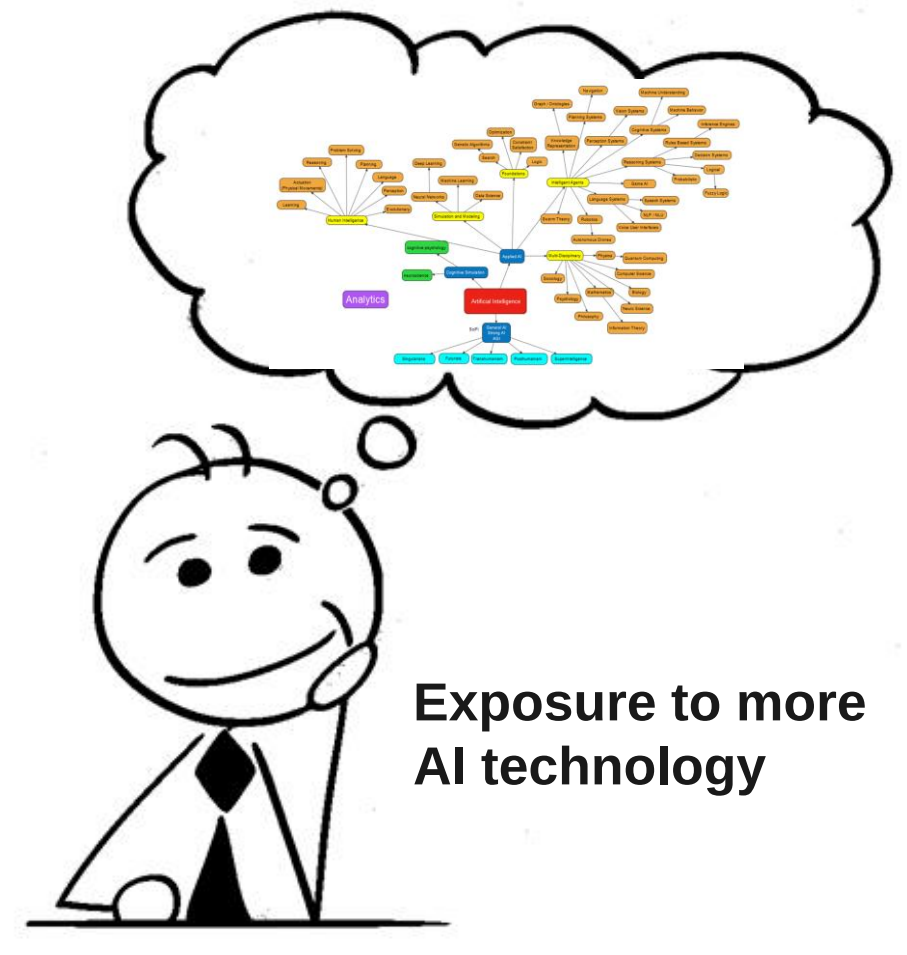


You've been likely conditioned to look for use-cases only through the lens of AI **tools** you've become aware of, instead of through the lens of business **leaders** focused on advancing their strategic plan.

Developing Strong AI Use-Cases

Developing Strong AI Use-Cases

Strategy #1



As Perspective Widens:

1. More use-cases
2. Higher value
3. Performance Impacting
4. Wider segment of business affected.

Tools Focus

Limited Perspective

Strategic Focus

Widened Perspective

Developing Strong AI Use-Cases

Strategy #2

Become Tech Agnostic and then Strategic in your perspective.

Work to **adjust your perspective** from an AI Tool frame to business strategy frame, so Tech doesn't play a role until after the key business issues are both **identified** and **understood**.

Developing Strong AI Use-Cases

“Rubric on Adding Value: Examples”

Inductive Reasoning Approach

Business Objectives: (tactical in nature**)**

- Increase Customer Base
- Increase Revenue
- Decrease Costs
- Improve NPS / Customer Experience
- Reduce Response Times
- Reduce Workforce
- Anticipate Market Behavior
- Optimize Operations by
- Increase Fraud Detection
- Improve User Experience

Strategic Goals: (master plan in nature**)**

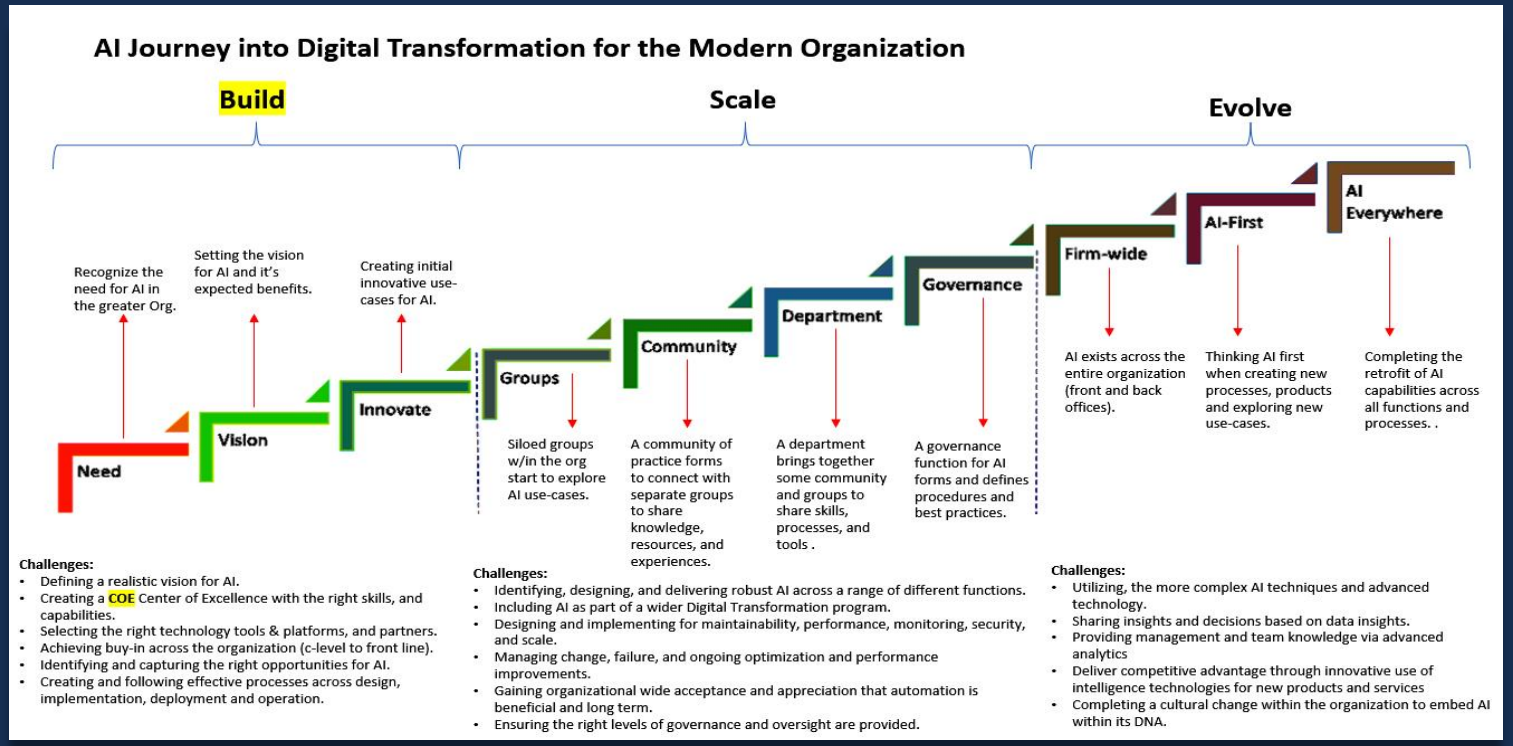
- Enter New Markets
- Enhance Competitive Advantage
- Develop New Products / Services
- Increase Market Share
- Exploit a Market Opportunity
- Creating Strong Brand Reputation

Developing Strong AI Use-Cases

Factors Influencing Identifying AI Use-Cases

Developing Strong AI Use-Cases

Where the org is on its digital journey influences use-case available choices.

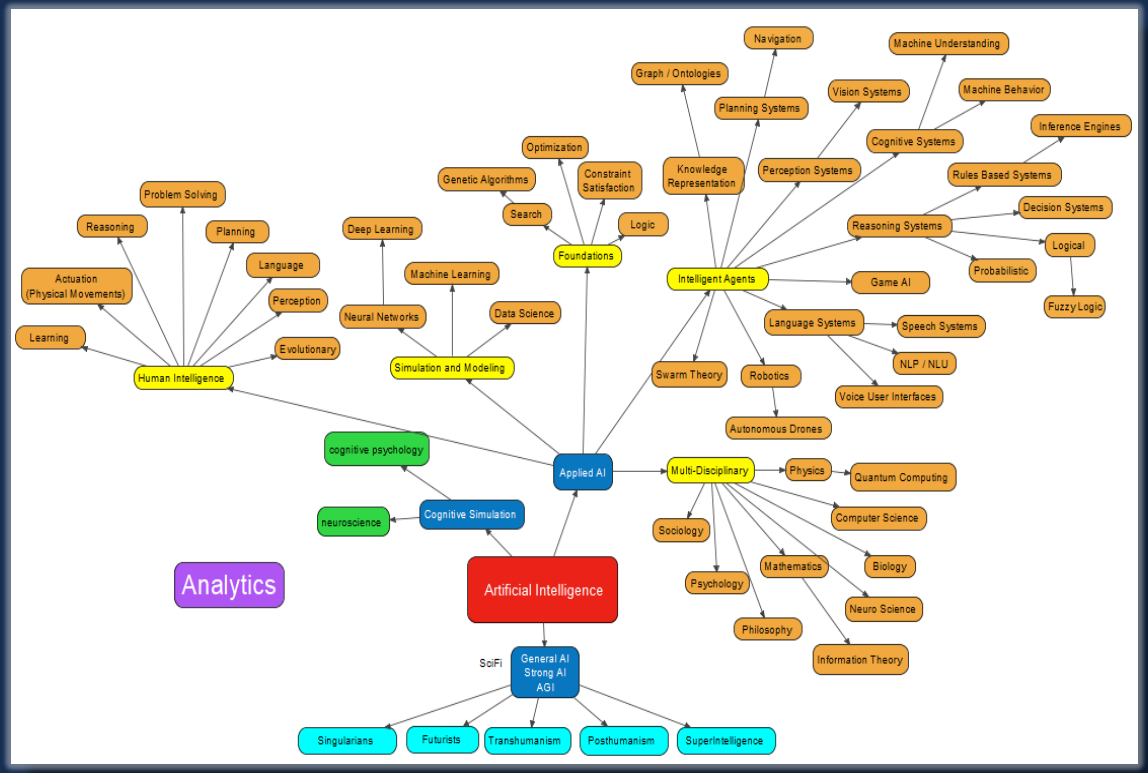


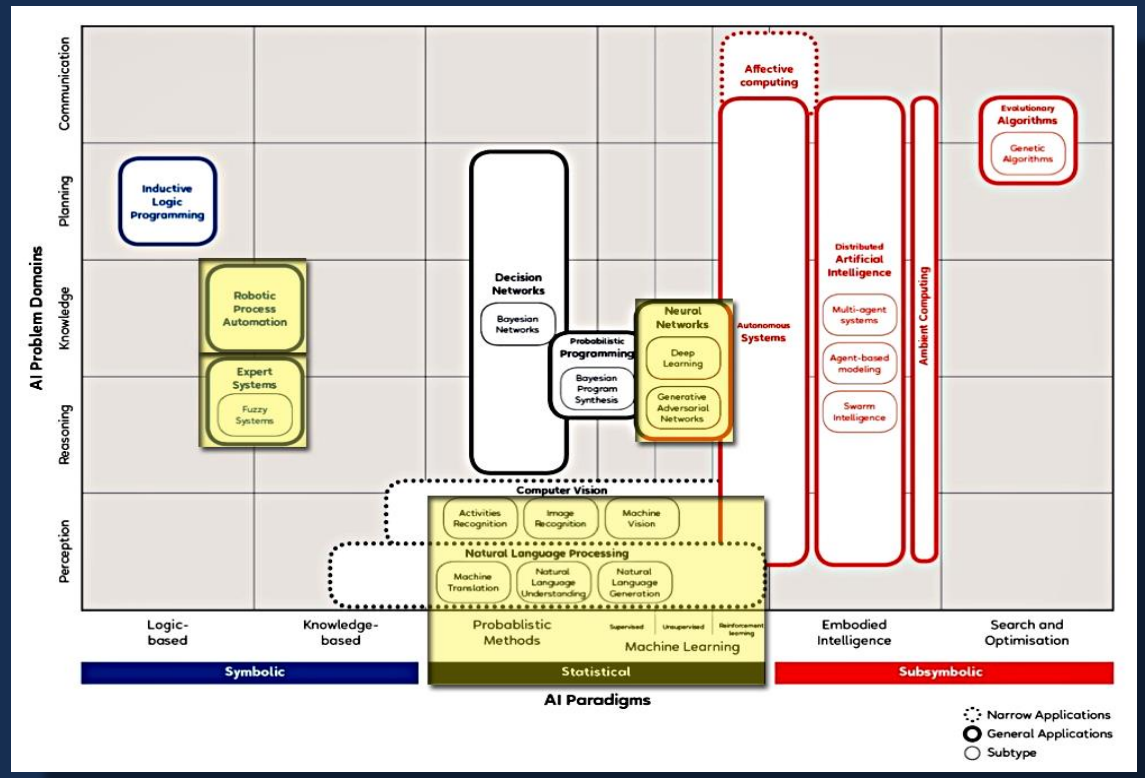
Only POC's | Unique Projects | Sophisticated Solutions

Developing Strong AI Use-Cases

Propensity to look at use-cases only through the simple awareness of tools.

"When you only have a hammer – everything looks like a nail".

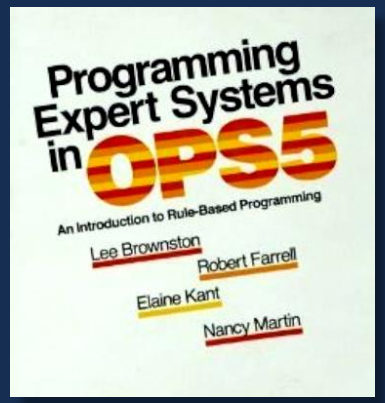




Exploring Intelligent Agents.

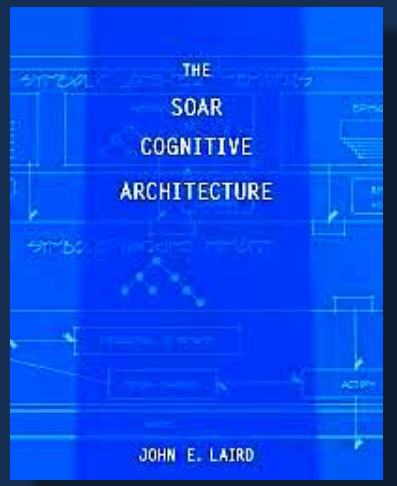
Doing Agents since the 90's.

RETE Algorithm

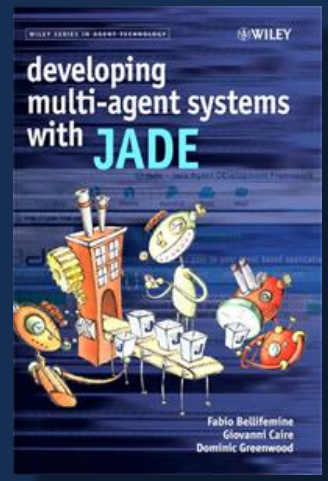


Logical Rational Agents

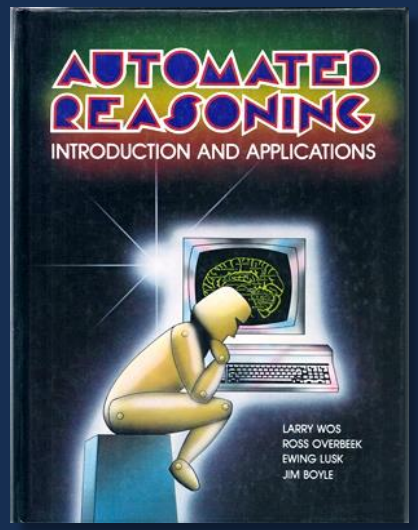
SOAR



Multi-Agent Systems

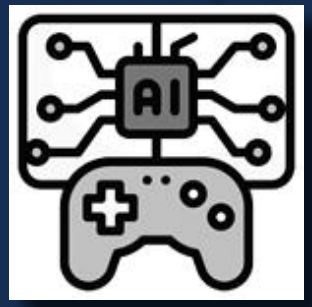


Automated Reasoners

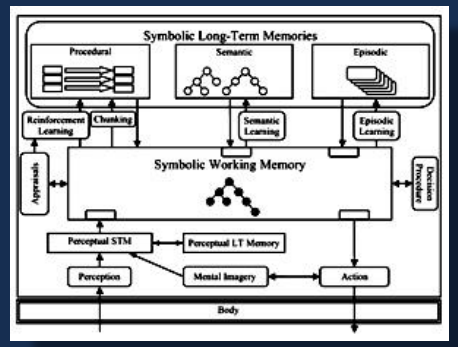


Inference Engines

Game AI Agents



Cognitive Architectures



GenAI

Multi-Agent Systems

Exploring Intelligent Agents.

Agents Human & Digital

Human (Intelligent) Agents

Digital Doppelganger

Digital (Intelligent) Agent

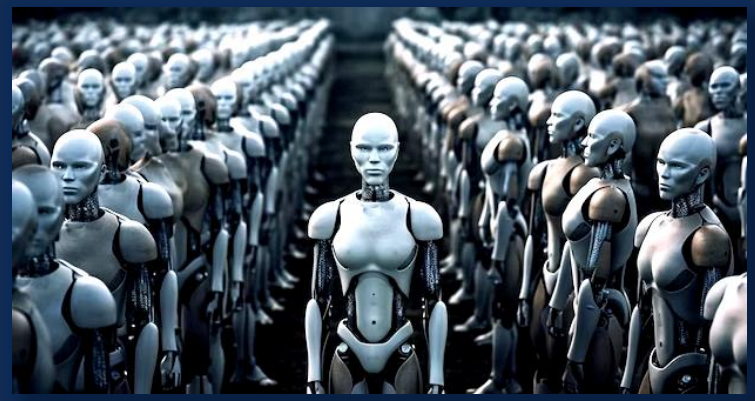
Halo's Cortana

Example: Nvidia's GROOT

Advanced Humanoid Robotics Platform

AI Agent Ecosystem

Multi-Agent System (MAS)



Thousands of Intelligent Agents

Exploring Intelligent Agents.

Agents are old and have evolved.

1950's - 1970's

Samuel Checkers-Playing Program (1959) **:-** AI that could improve its game strategy over time

Eliza (1966) :- Introduced NLP and Chat Bots

Dendral (1965) :- 1st Expert System, could ID unknown organic molecules

1971 – 2000's

Prolog (1971) :- programming language used to build the early intelligent systems

HEARSAY-II (1971) :- early example of speech understanding leveraging automated problem solvers

Deep Blue (1997) :- defeats world champion Garry Kasparov

Charles Forgy's RETE Algorithm (late 1970's) :- Algorithm that powered inference engines

XCON/XSEL [R1] (1979) : - expert system designed to configure orders (systems integration) for new computer systems

LSTM (1997) : - LSTM (Long Short-Term Memory) networks are a type of Recurrent Neural Network (RNN) that could remember information for long periods

SOAR Cognitive Architecture (1983):- first manifestation of the unified theory of cognition in a complex technological architecture -widely used by AI researchers to create intelligent agents and cognitive models of different aspects of human behavior

MIT's Kismet (Late 1990's): - a robot designed to exhibit and perceive emotions, marking the advent of affective computing

Honda's ASIMO (2000): - humanoid robotics (significant leap in capabilities)

iRobot's Roomba (2002**)**: - autonomous robotic vacuum cleaner

2010 - Present

Apple's Siri (2011): - allowed users to perform tasks and get information through voice commands

Amazon's Alexa (2004): - enabled users to control smart home devices, play music, get information, using voice commands

DeepMind's AlphaZero (2017): - It could teach itself to play and excel at chess, shogi, and Go from scratch - underscored the potential of AI to learn and excel in areas requiring strategic thought and planning.

DeepMind's AlphaStar (2019):- showcased AI's potential in real-time strategy games

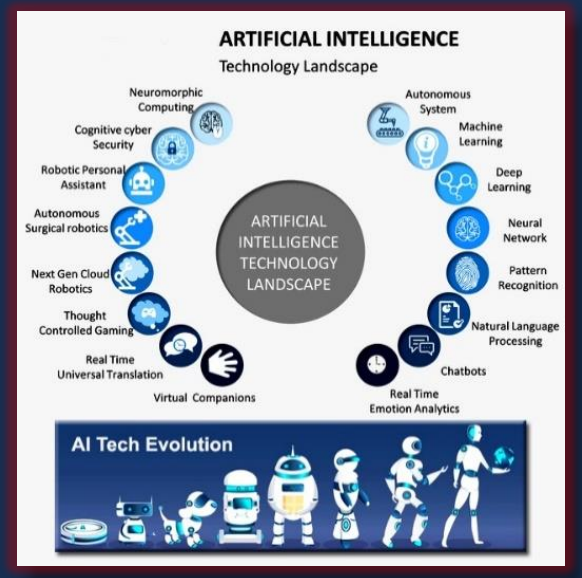
GenAI Agents [Agentic Tech] (2020) : - Agents (multi-agents) based in LLM's appear along with complex agent architectures

Nvidia's Project GROOT (2024):- general-purpose foundation model for humanoid robots

Exploring Intelligent Agents.

Agents Evolve.

RPA + AI = MAS => CI.

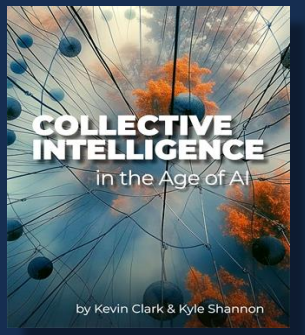


Simple RPA

Smart RPA

Multi-Agent Systems

Collective Intelligence



Exploring Intelligent Agents.

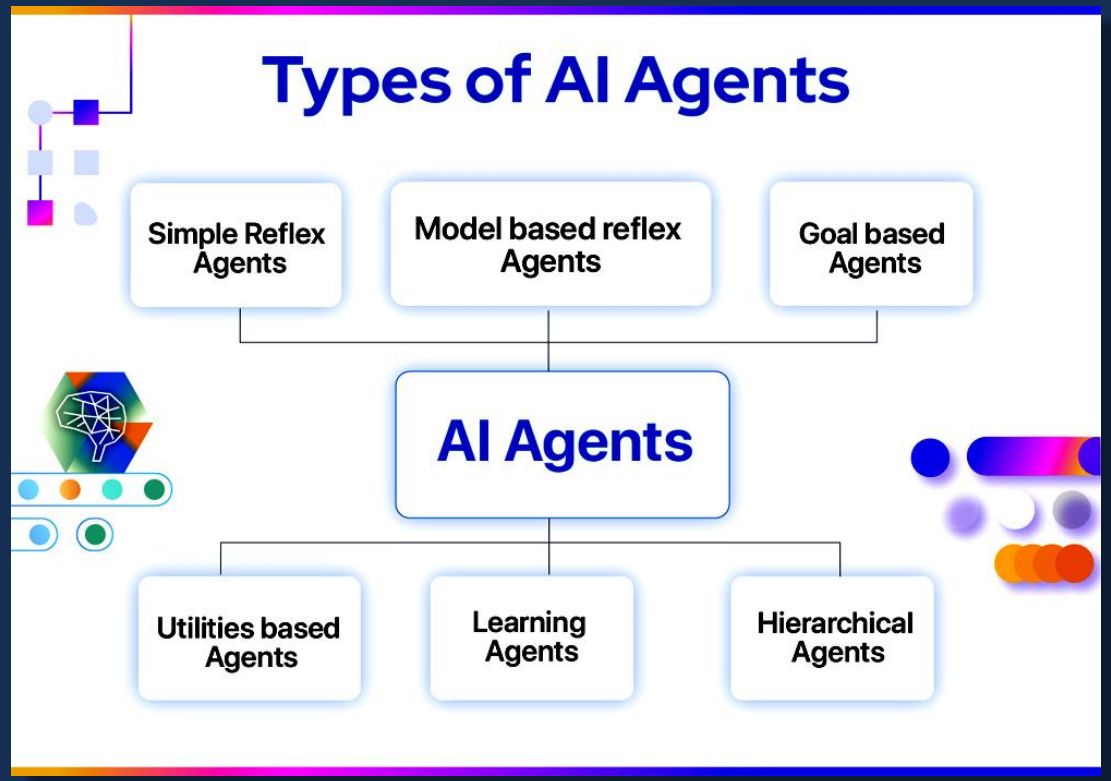
Different Kinds of Agents

Has Rule Based, is Explicit / Inflexible, No Memory, relatively dumb.

- Thermostat, Street Lamp

Autonomous reasoning capabilities for intelligent decision-making

- Robot Vacuum Cleaners



Chooses actions based on a **plan** to achieve its objectives and uses **search** algorithms to find the efficient path to the goal.

- Game AI

An advanced form of goal-based agents, equipped to analyze outcome risks and comprehensively assess scenarios. (Utility Fn Max)

- Trading Robots

Can learn from past interactions and, over time, improve their performance.

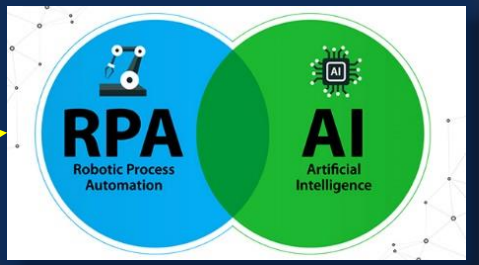
- Virtual Personal Assistants

Agents in the lower-level hierarchy execute the tasks, and the agents higher above them supervise them.

- Report Generators, Analysis

Exploring Intelligent Agents.

Agents and Platforms.



Exploring Intelligent Agents.

Agents' vs Machine Learning.

Machine Learning - & - Cognitive Technology

- Complementary (yet very different) Technologies.

Machine Learning: (ML)

Machine Learning is made for tasks that require learning from data and then predicting, classifying or clustering information, images, or language elements.

ML is not good at *augmenting* humans, *explaining* its decisions, and tasks requiring *reasoning*.

ML needs raw data to learn from.

Example Use-Cases:

- Emergency Room Predictions
- Provider Fraud Predictions
- Medical Coder Classification
- X-Ray / CT Scan Classification
- Automated Benefits Inquiry
- EOB language Translation
- Patient / Provider Matching
- Anti-Fraud Location Classification

Cognitive Technology: (CT)

What can CT do well today?

Cognitive Technology is made for tasks that require human cognitive skills, most particularly reasoning and problem solving skills. This type of AI "thinks" like humans do.

CT is not good at crunching *big data*, data *analytics*, or *business intelligence*.

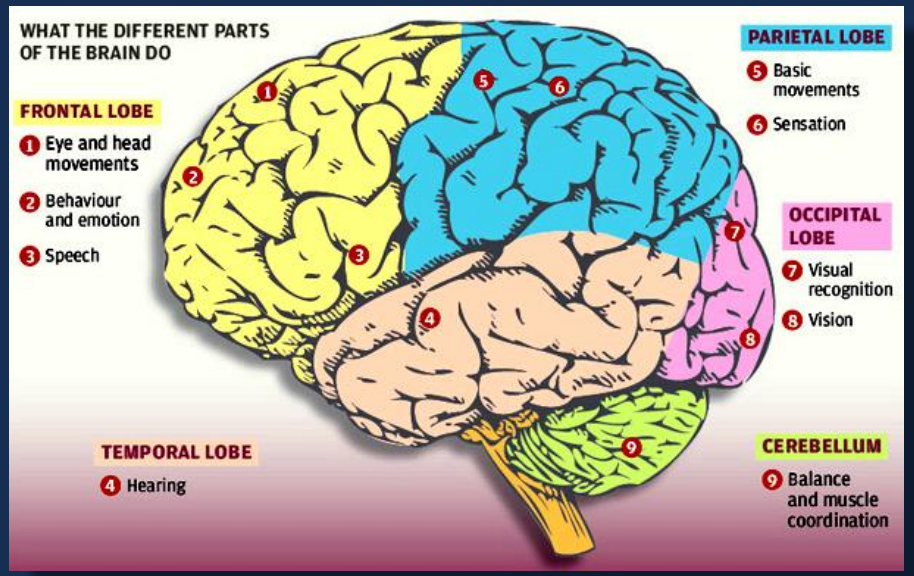
CT needs situational context and experts to learn how to "**think**" from.

Example Use-Cases:

- Clinical Decision Support Engine
- Automated Plan of Care Creation
- Augmented Medical Diagnostics
- Ambient Monitoring for Elderly Facilities
- Telemedicine Automated Triage
- Medical Digital Assistants

Exploring Intelligent Agents.

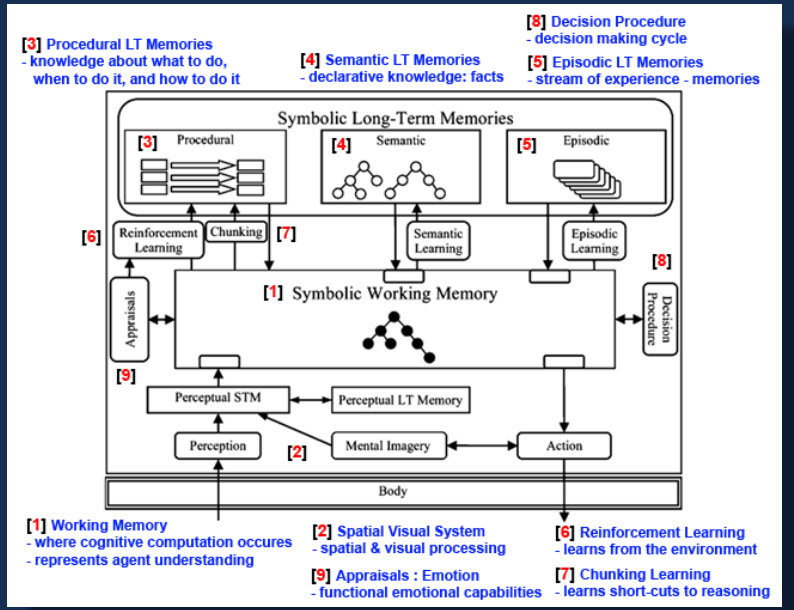
Computational Cognition.



Integration is the key!
Complex & Tight

COGNITION

Highly Integrated
Cognitive Architectures



Definition:- Human Cognition

1. Attention
2. Knowledge
3. Memory
4. Judgment
5. Reasoning
6. Problem Solving
7. Decision Making
8. Comprehension
9. Language
10. Learning

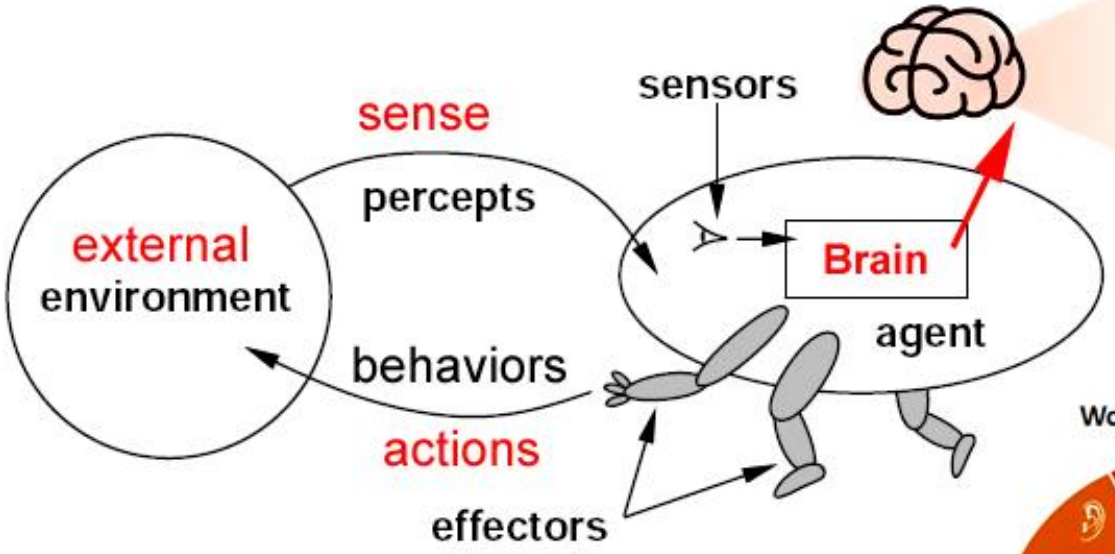
Definition:- Computational Cognition

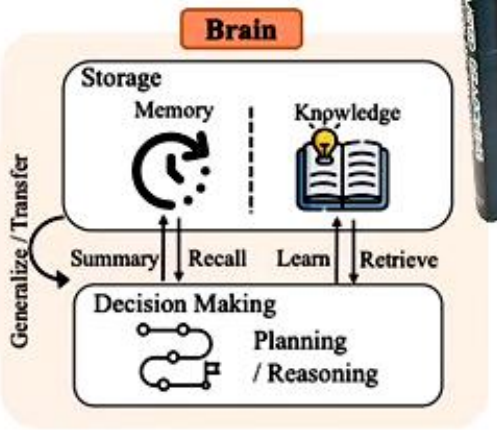
1. Attention
2. Knowledge
3. Memory
4. Judgment
5. Reasoning
6. Problem Solving
7. Decision Making
8. Comprehension
9. Language
10. Learning

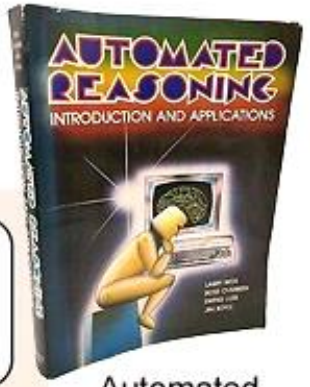
Exploring Intelligent Agents.

Anatomy of an Intelligent Agent - An **Entity** that:

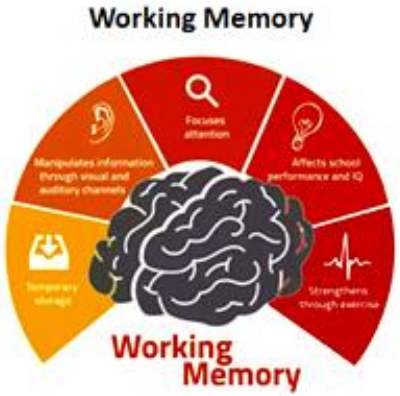
1. **Perceives** its environment
2. Performs **actions** w/in that environment
3. Has a **Brain Fn** that does **Automated Reasoning**
4. Has **Working Memory**
5. Uses **Reasoning Cycles**
6. Uses **Declarative** vs **Imperative** Programming.
7. **Learns** and **Improves**.

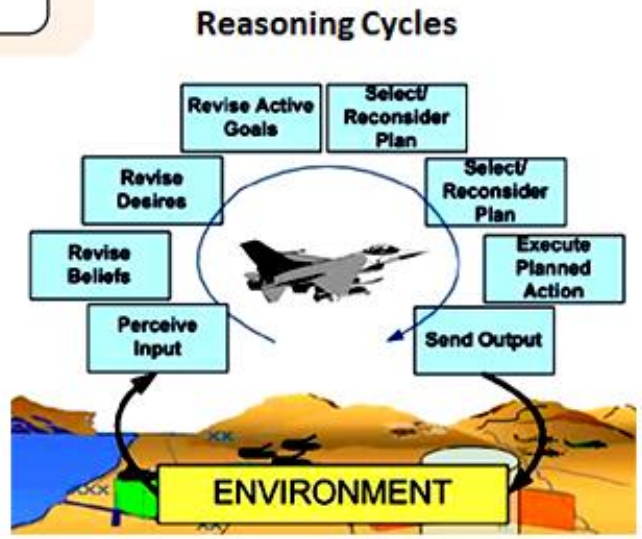






Automated Reasoner

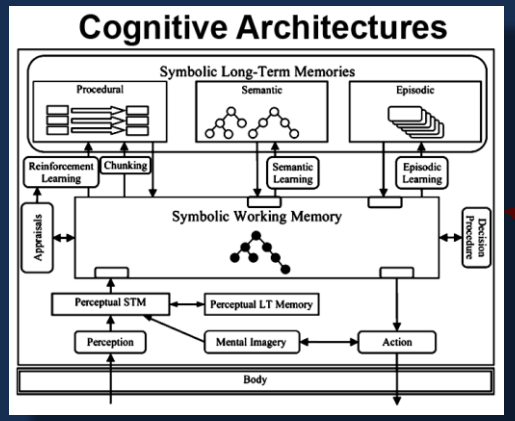




Exploring Intelligent Agents.

Programming Agents.

Agent Brain Capabilities

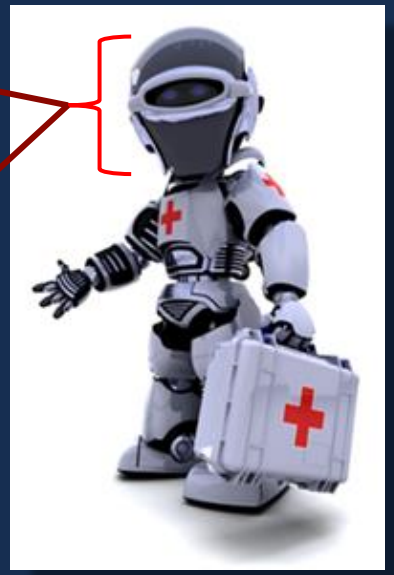


Expose to New Things

Can't Change.

Can Teach.

The Agent



YES

NO

WHAT

Declarative:

- **What** needs doing.

HOW

Imperative:

- **How** exactly to do it.

Developing Strong AI Use-Cases

Mitigation Strategy