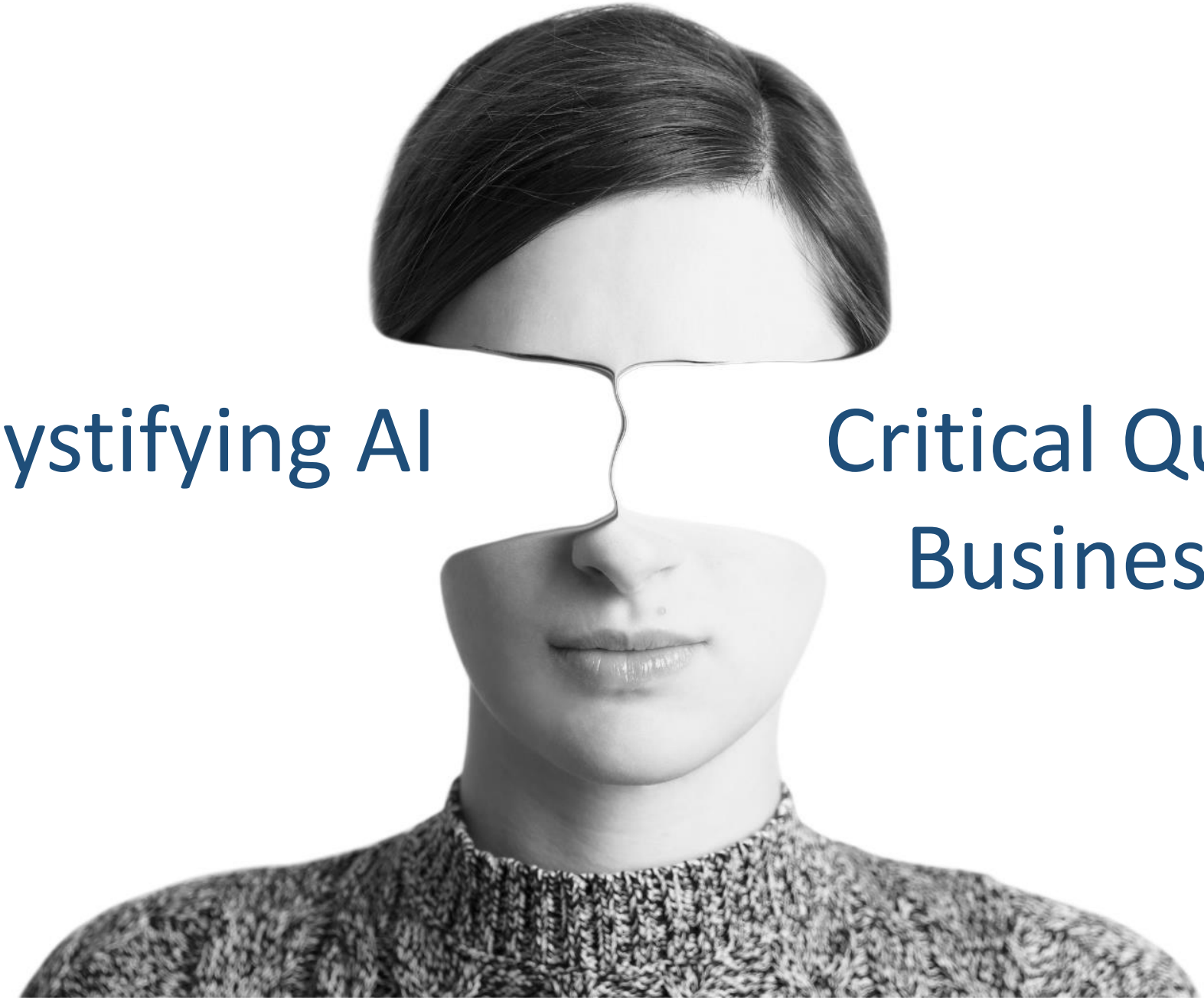
Demystifying AI



Critical Questions for Business Leaders

Access Sciences

AI for Business

A multipart webinar series focused on AI from a business, not technical, perspective

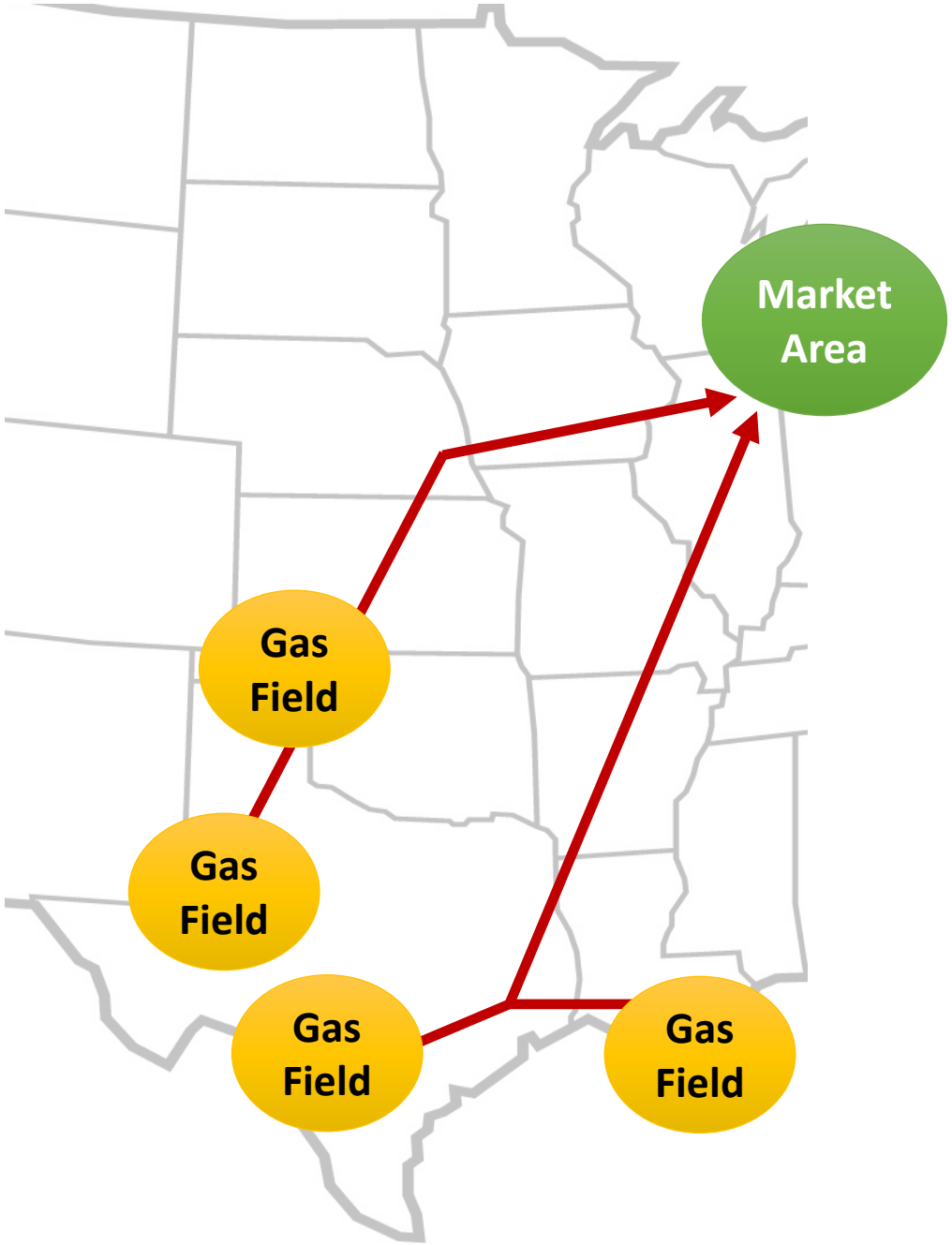
Session	Description
1	***Demystifying AI – Critical Questions for Business Leaders***
2	Deconstructing AI – A Deeper Dive Into Common AI Solutions
3	Unforced Errors – Four Common AI Mistakes
4	Change Is Hard – Not Preparing for Change is Harder
5	A Brave New World – A Different Kind Of Governance
6	Transformational AI – Think Program, Not Project

Where is your organization on its AI journey?

1) Not started
2) Researching
3) POC projects underway
4) Successful production projects

Glen Hilford, VP Corporate Development

If we could only…



What if we could forecast natural gas demand, three days in advance?

We could save millions.

What is AI?

How intelligent is it?

Self Awareness

Turing Test

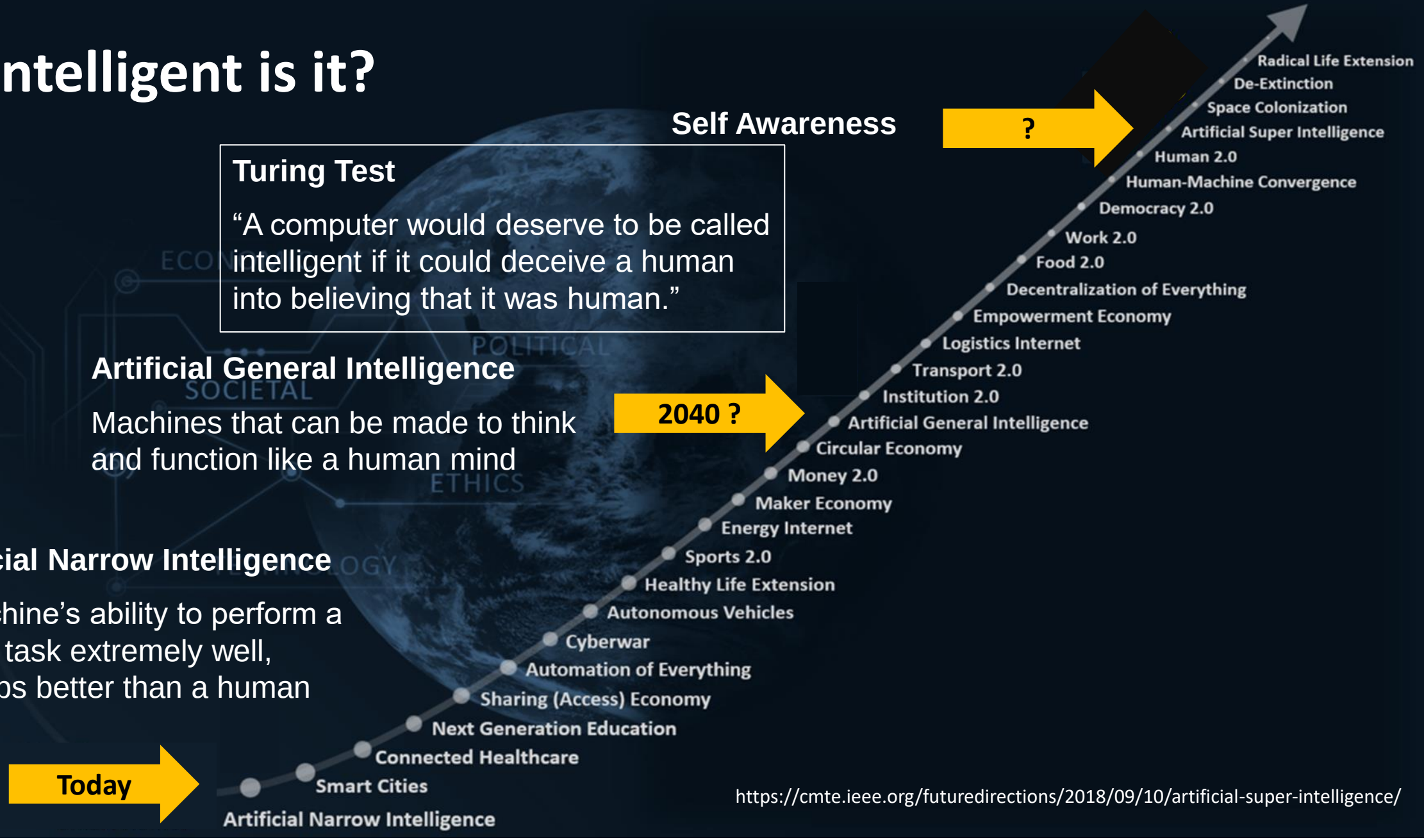
"A computer would deserve to be called intelligent if it could deceive a human into believing that it was human."

Artificial General Intelligence

Machines that can be made to think and function like a human mind

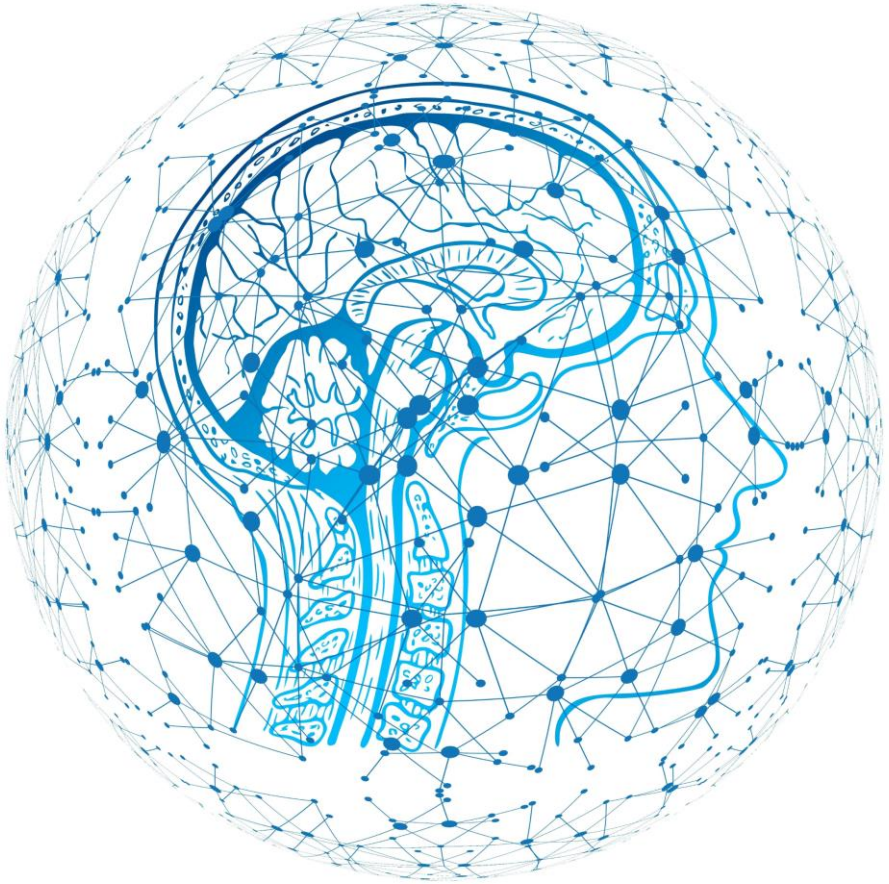
Artificial Narrow Intelligence

A machine's ability to perform a single task extremely well, perhaps better than a human



https://cmte.ieee.org/futuredirections/2018/09/10/artificial-super-intelligence/

What can it do?



The ability for a computer to mimic and, in some cases, improve on human functionality.

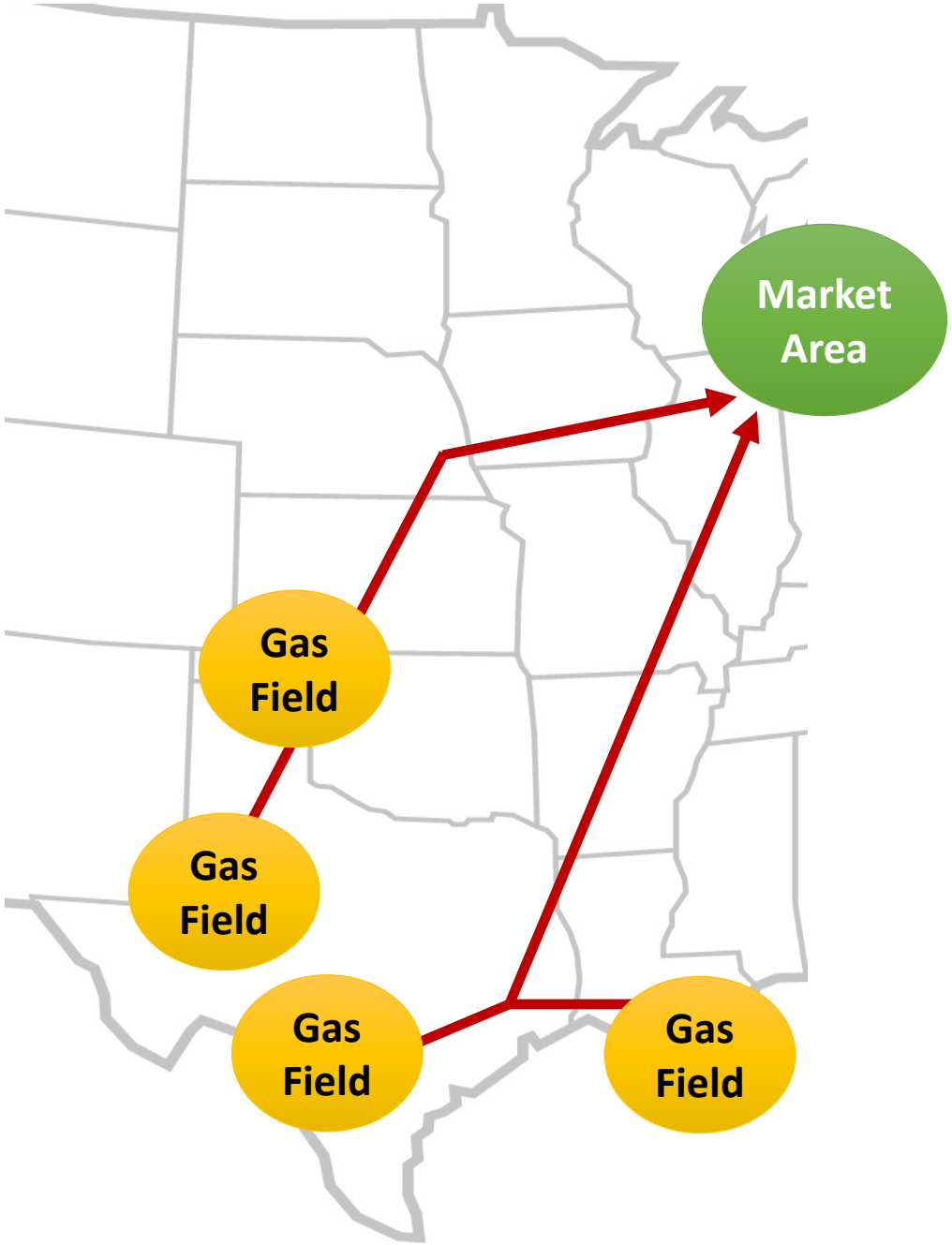
What can it do *for us?*

Address common business challenges

- Predict the future
- Classify information
- Discover hidden patterns in data
- Visually recognize objects
- Automate processes (intelligently)
- Convert unstructured text into meaningful data
- Connect and extract meaningful data through semantic relationships

Using AI technique

- Machine Learning / Prediction
- Machine Learning / Classification
- Machine Learning / Clustering
- Object Recognition
- Robotic Process Automation (RPA)
- Text Analytics
- Knowledge Graphs



Business Opportunity

If we can ***forecast*** what natural gas demand will be, three days in advance, the pipeline system can be ***configured to minimize cost***

Big Data

To recap, today's AI

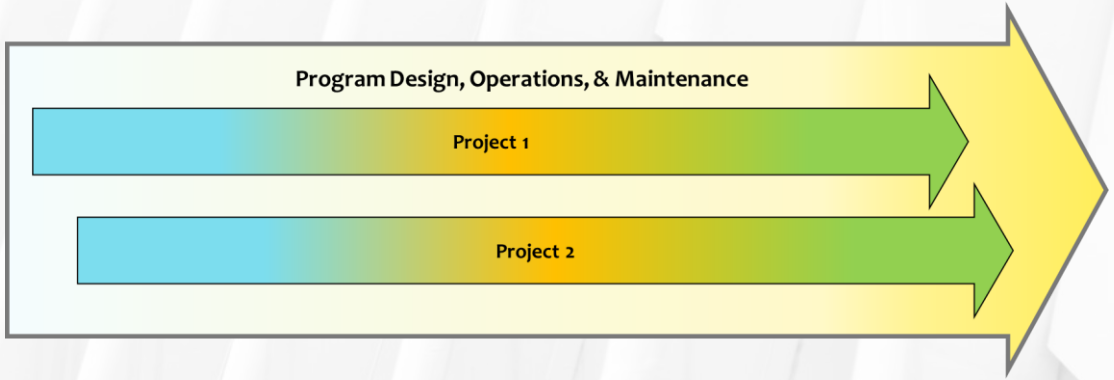
- Attempts to mimic human functionality
- Can perform a single task extremely well
- Addresses many business challenges
- Is fueled by data... lots and lots of data

Can my organization

- Identify valuable AI opportunities?
- Determine if AI is a realistic approach?
- Successfully design, implement, and deploy AI solutions?
- Reproduce, explain, and defend a solution's results?
- Address the change that AI brings to an organization?
- Operate, maintain, and govern an ***AI Program***?

AI Programs provide the framework to

- Confirm business value and viability for proposed solutions
- Provision robust and sustainable data “fuel” infrastructures
- Curate related data, models, and outputs
- Ensure that as business conditions evolve, solutions evolve with them
- Drive repeatability, transparency, and explainability
- Support users facing change
- Expand strategic opportunities



Are we at a disadvantage?

Where should we focus our efforts?

- Is there a way to gauge our maturity with AI?
- How mature do we really need to be?
- How do we identify gaps where we need to improve?

AI Maturity Model

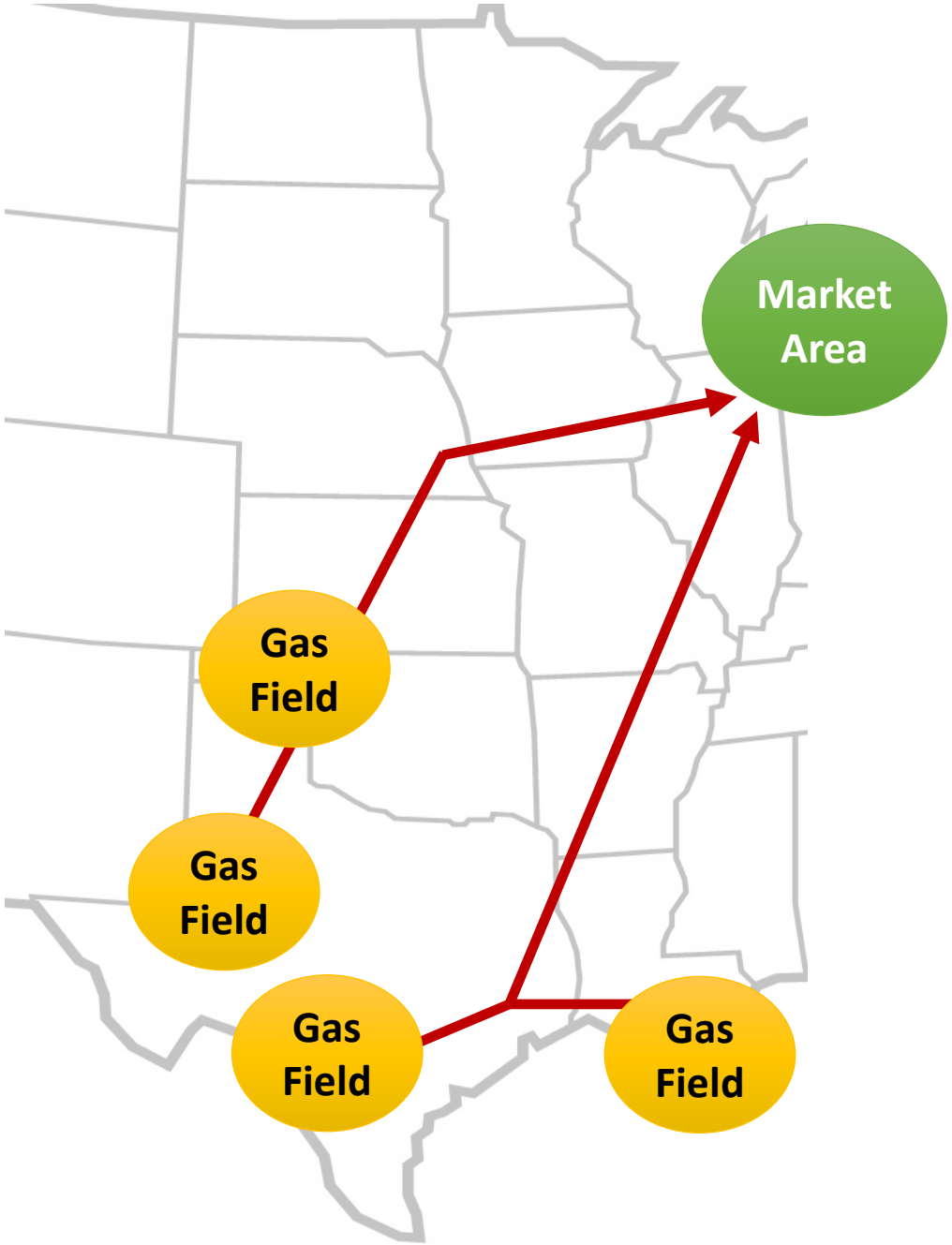
	Exploration (1)	Opportunistic (2)	Programmatic (3)	Strategic (4)	Transformational (5)
Strategy	Any AI efforts are ad hoc, experimental, and with no strategic intent or governance, focusing on easily understandable, product-oriented use cases such as RPA, chatbots, and semantic analysis. Pockets of AI interest exist, but not seen as a C-level strategy emperative.	Organic interest in AI grows. "Low hanging fruit" opportunities to leverage AI are identfied with little corresponding value analysis. Efforts are driven at the departmental level; funding and support is haphazard. Proprietary solutions are considered when no product is available. AI strategy, roadmap, and gap analysis remain lacking. C-level interest remains lacking.	AI gains the attention and support of middle and upper management. Efforts to look for strategic value opportunities using AI emerge. AI strategy, roadmap, and gap analysis are developed. Management mandates development of an AI program to action the strategy and justify / coordinate AI efforts. A process is defined for identifying, prioritizing, and implementing AI use cases (or use case classes) to be pursued.	AI gains the attention of senior leadership and business assumes leadership of AI strategy and investments. AI is increasingly linked to organizational performance and innovation. Internal organizational boundaries and limitations begin to be negated. Value and ROI for AI investments becomes paramount. Senior leadership champions AI within the organization.	AI becomes a strategic asset and is seen as transformational, (positively) disruptive, and integral to overall business strategy. Leveraging AI becomes a focus for corporate strategy and execution. AI is represented in senior leadership, typically as a Chief Data Officer or equivalent.
Program Governance	Little or no awareness exists about the need for AI governance, the need for repeatability, explainability, and proactive AI ethics, or the need for an AI program to coordinate these.	Since AI opportunities are approached opportunistically, there is limited (if any) awareness of or demand for an AI program. This phase should expose the need for governance and repeatability and begin to build support.	AI governance structures such as data/model/output curation, model maintenance, policy statement of use and intended outcomes, roles and responsibilities and organization design, stakeholder engagement and ce and risk rmalized into an r ongoing care	Ongoing AI operations and maintenance emerge as areas of emphasis as AI moves from project-centric to programmatic. Senior leadership recognizes the potential risks associated with AI-related ethical questions, repeatability, and explainability. An AI code of ethics and acceptable use standards are established. AI program components continue to mature and enforcement of governance standards is pushed down across the organization.	The CDO's office is charged with evolving the organization's AI program to support the transformational goals established in corporate strategy.
Value	Requirements development, value propositions, and ROI analyses are nonexistent.	Requirements development, value propositions, and ROI analyses remain lacking and are dependent on individual project leadership. Failed, underperforming, or cost overrun projects prompt leadership to act.	The introduction of an AI program and corresponding governance also introduce the need for more formalized requirements development, cost and value identification, ROI analysis, and early viability checkpoints.	A process is established to align the AI program and AI projects with corporate strategy.	Prospective AI initiatives are expected to not only align with corporate strategy, but to become strategic differentiators. AI influences investment decisions.
Data Management	Data is siloed, often missing, inaccessible, or contradictory. No centralized data strategy or governance. No data infrastructure capable of support AI / ML. Reporting is reactive, limited to canned reports and dashboards.	Data remains siloed, but the need for assured data quality and availability emerge as they relate to opportunities that are being addressed. The concept of a data strategy emerges. Reporting begins to become more proactive, supporting KPIs and forward-looking metrics.	Data is recognized as a strategic asset and processes are defined for its systematic collection, management, and provision in support of AI and non-AI solutions. Unstructured content is recognized as a rich source of data. Externally-sourced data is recognized as a potential asset. Analytics using siloed data emerges, cross-silo alignment remains unusual.	The need to implement a data strategy is recognized and a Chief Data Officer (or equivalent) office is created. Data siloes are analyzed and integrated into data collections (lakes, warehouses) where feasible and cost justifiable. As data is rationalized and aligned, integrated (cross-silo) analytics are enabled. Predictive and prescriptive analytics are seen as strategic differentiators.	Mirroring AI strategy, data becomes a strategic asset and is seen as transformational, (positively) disruptive, and integral to overall business strategy. Leveraging data to drive analytics and automation becomes a focus for corporate strategy and execution. Data is represented in senior leadership, typically as a Chief Data Officer or equivalent.
Tools & Platforms	Any analytics tend to be rearward looking. Tools are selected based on familiarity, marketing, or word-of-mouth with no standardization or governance. Platforms are nonexistent.	election of tools remains unstandardized and based on the needs of individual initiatives. The need for standardization and governance emerges.	Initial efforts towards standardization of tools and platforms begin, but progress is uneven and resistance in favor of familiar tools / platforms is encountered. The concept of ML Ops is introduced and begins to gain traction. The pace of AI toolset / platform advancement and co al AI product evolution necessitates stand	The AI program standardizes on specific toolsets and platforms, with a highly-governed exception process based on value, O&M requirements, and ROI. Strategic partnerships with tool and platform providers may emerge. ML Ops matures and is pushed down into the	The CDO's office moves the program from being reactive when new AI solutions gain industry traction to one that seek out, identifies, vets, and leverages these. An emphasis is placed on transformational solutions and products.
Expertise / Technique Breadth	Internal AI expertise is based on self education or a prior employment. No effort is made to develop organic data science or AI expertise. Little or no effort has been made to identify, vet, and engage third-party service providers.	nternal expertise remains limited. Expertise is introduced via recruiting or contracting. Interest in organic expertise development begins. Effort is made to identify, vet, and engage third-party service providers to address identified opportunities.	As AI b corres AI program. Service providers are used to fill the gaps while the internal team is developed. Internal expertise begins to coalesce around a limited number of specific AI solutions types / techniques that provide the most value to the organization. Agile project methodologies become standard.	tanding becomes a requirement for middle and nagement. Internal data sciences / AI roles are defined and filled. Business analysis skills are expanded to include knowledge of AI and how it can be applied. AI solution type / technique knowledge expands to support prominent use cases within the organization. Relationships with strategic service providers is established.	AI expertise evolves from an internal service, becoming a strategic differentiator. AI services are sought out by business units to help drive revenue and profitability growth, cost reduction, and / or risk mitigation. In some cases, operations are transformed by AI-generated analytics and insights.
Culture / Adoption / Change Management	AI is considered as promising within organizational leadership. Little concrete knowledge or awareness of AI across the workforce.	Scant AI knowledge and adoption mirror the opportunistic character of early-day AI initiatives. Informal knowledge and awareness of AI begins to spread across the workforce. Any change management support does not consider the unique characteristics of AI, especially those caused my ML.	Familiarity with AI and its potential value spread across the organziation. AI knowledge begins to expand within pockets of the organization. Adoption lags due to lack of AI-specific change management skills and experience.	As senior leadership champions AI within the organization, emphasis is placed on finding effective AI-focused change management and organizational effectiveness services. AI acumen becomes a corporate value and influences recruiting and hiring practices.	An "AI culture" that rewards insight-driven innovation is established.

Current State

Desired State

Do we have the right skills?

- Are our business analysts “AI savvy”?
- Do we have the data science and AI domain expertise to design, implement, and deploy AI solutions?
- Can we sustain and govern the solutions?
- Can we *successfully* communicate, train, and support our workforce when confronted with the changes that AI solutions introduce?



Business Opportunity

If we can forecast what natural gas demand will be, three days in advance, the pipeline system can be configured to minimize cost

Restated Using AI Terms

Predict hourly natural gas demand in the market area three days in advance of delivery

Access Sciences

In the past, has my organization been susceptible to software marketing hype

- Are we using thoroughly developed and vetted requirements to evaluate products?
- Can we separate fact from fiction when considering “AI” products?

Is there an alternative?

Probabilistic-ism

vs.

Probabilistic-ism

Deterministic Systems

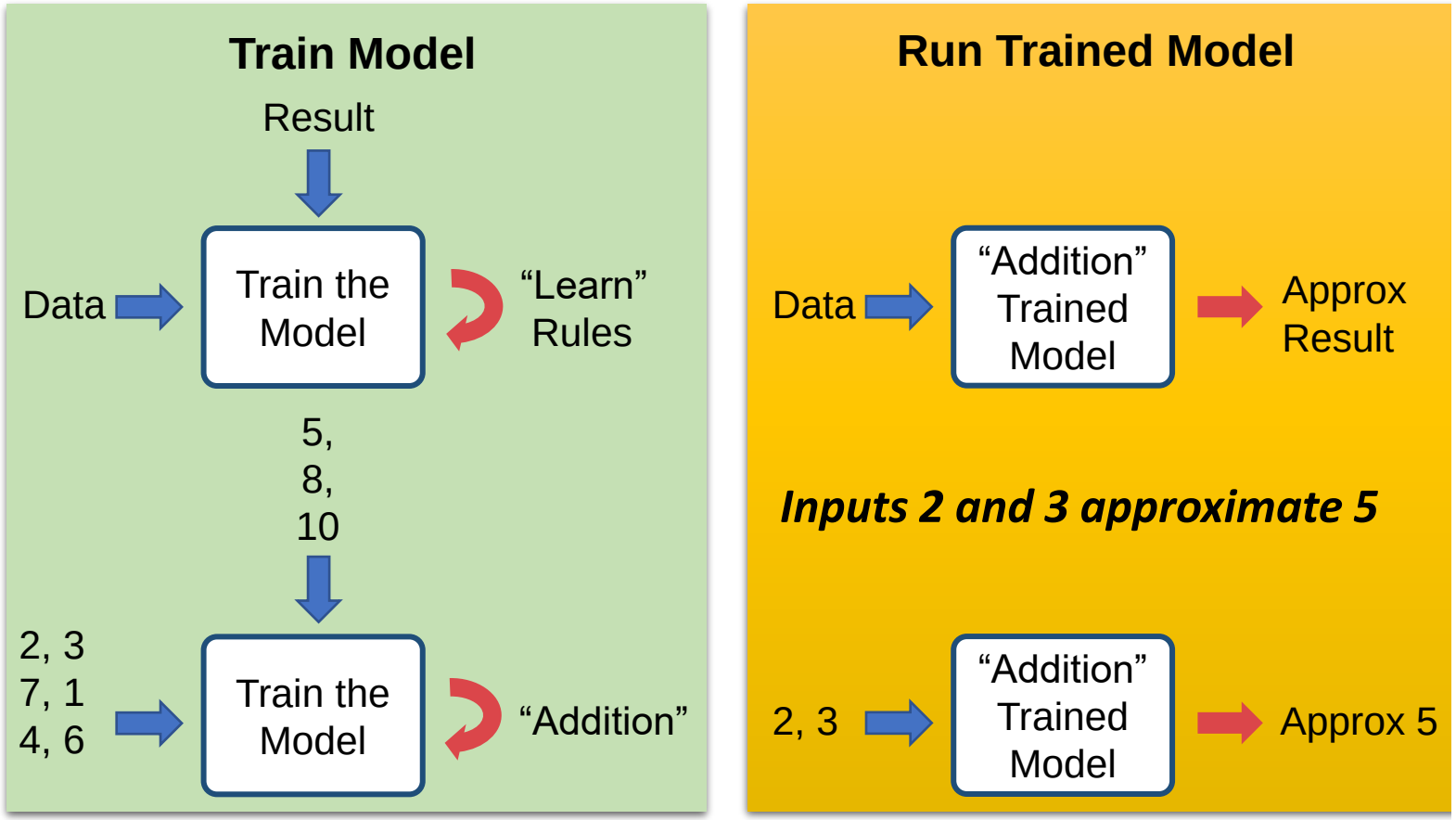
Data → Rules → Result

2 + 3 always equals 5

2, 3 → Addition → Always 5

Probabilistic-ism

Probabilistic (AI) Systems



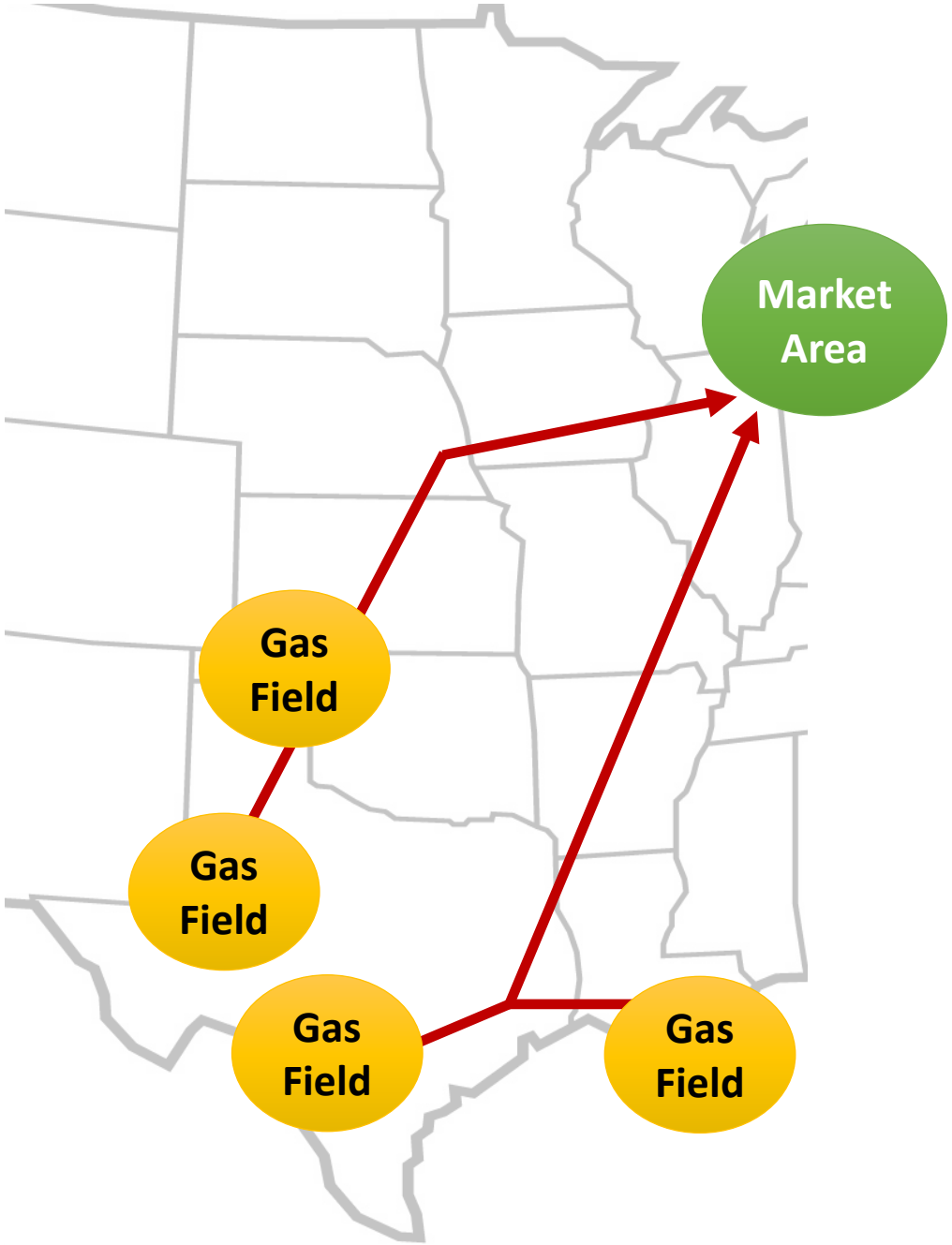
Sometimes, AI may not be optimal

- Have we developed requirements laser-focused on business needs?
- Are there non-AI alternatives for addressing the problem?
- What are the pros and cons of each?

Can we avoid the “Sunk Cost Fallacy”?

Sometimes, using AI may not be viable at all

- Have we identified an AI approach that directly addresses our business problem?
- Have we performed due diligence to determine if the approach is valid and that it can reasonably be expected to produce the needed results?
- Can we make this determination early enough in the process to avoid prolonging an investment in a dead end?



Due Diligence Is Key

"AI" Business Problem – ***Predict*** hourly natural gas demand in the market area three days in advance of delivery

Desired Output – Hourly market area natural gas demand for the next three days

Probable AI Technique – Machine Learning / Prediction

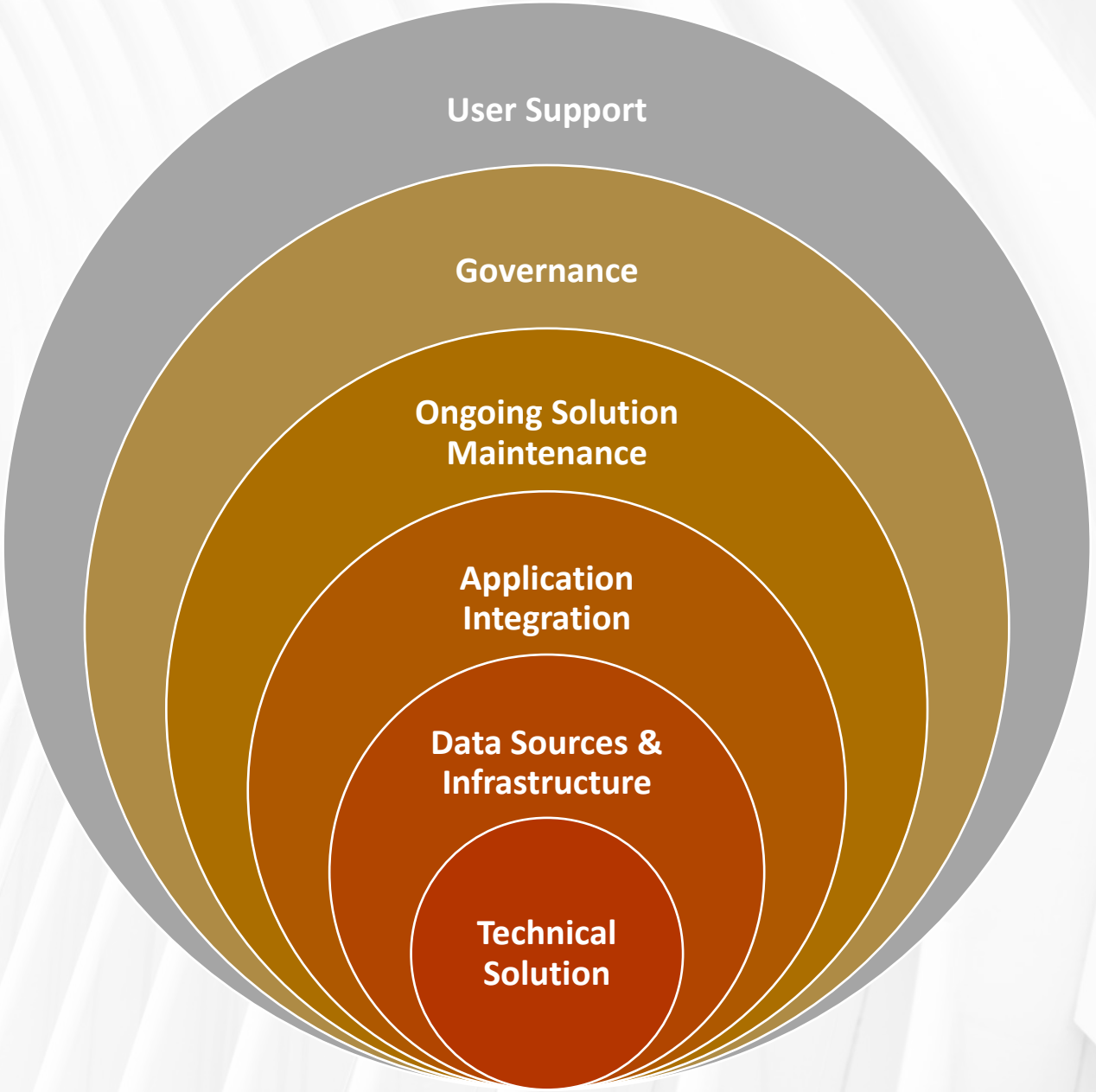
Probable Input Data – Historic demand, market area weather forecast, calendar factors, commodity prices

What is our motivation?

ROI and value should drive investment decisions

- What value does a solution generate?
- Can we quantify the value we intend to gain?
- How can we establish a measurable ROI?

The Real Cost



Change is hard

Are we equipped to anticipate, understand, and act on it?

- Are our employees prepared to shift familiar tasks to AI and “work alongside” a machine?
- Are we prepared to address the resistance that this will inevitably foster?

Can it be governed?

Familiar governance structures must change to be effective

- Are we equipped to curate an ***interrelated set*** of data, models, and results in a way that supports repeatability and explainability?
- AI can introduce unfamiliar ethical questions. Do we have the experience and expertise to anticipate, identify, and address these issues up front?
- How do we respond to audits?

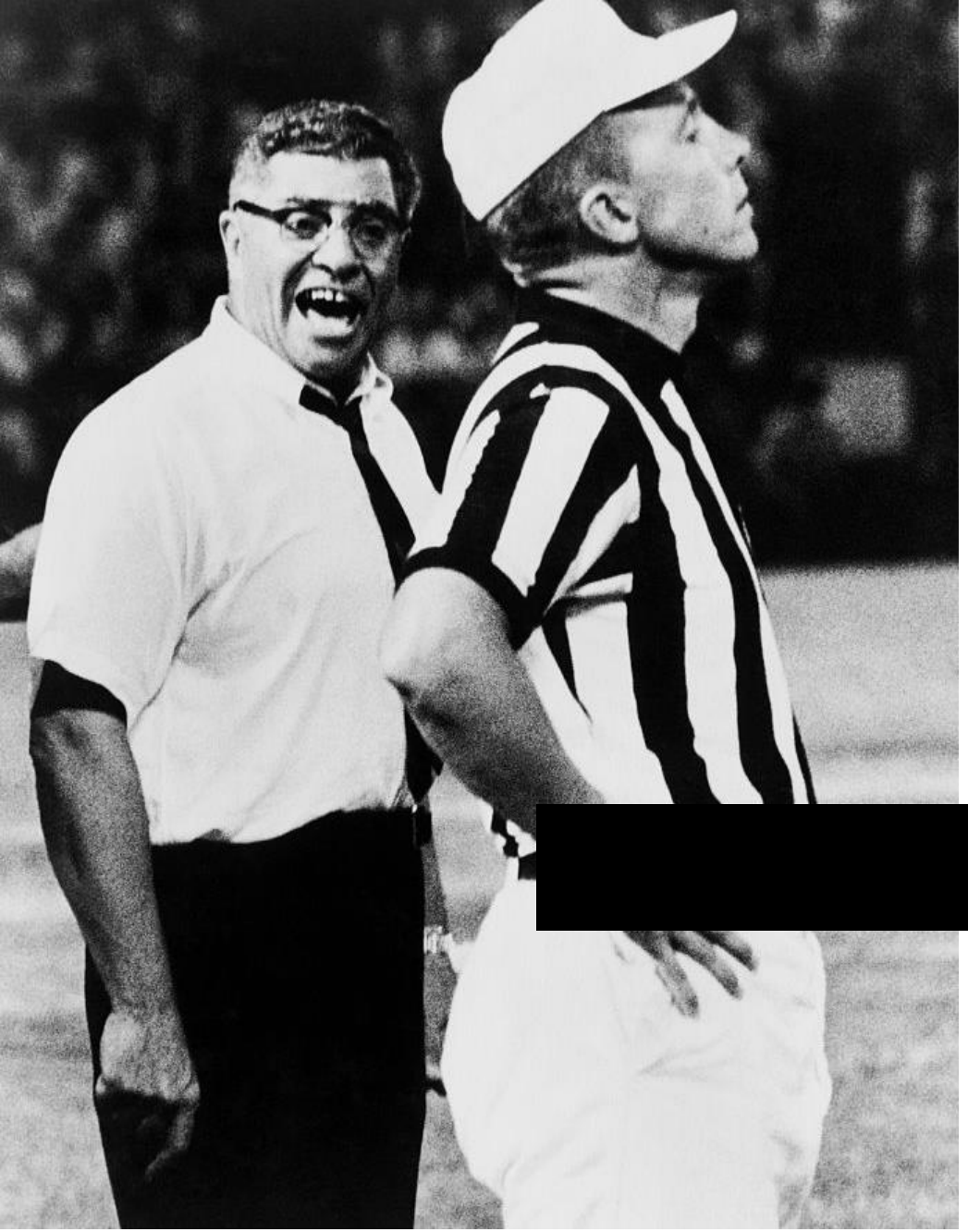
That Aha Moment

Can we recognize opportunities that

- Predict the future
- Classify information
- Discover hidden patterns
- Recognize objects
- Automate processes
- Convert text into meaningful data
- Drive connectivity through semantic relationships

In light of what we now know

Is my organization equipped with the knowledge and forethought to wager its money, time, energy, people, organizational stability, and reputation on AI?



There are only three kinds of people in this world.

Those who make it happen.

Those who watch it happen.

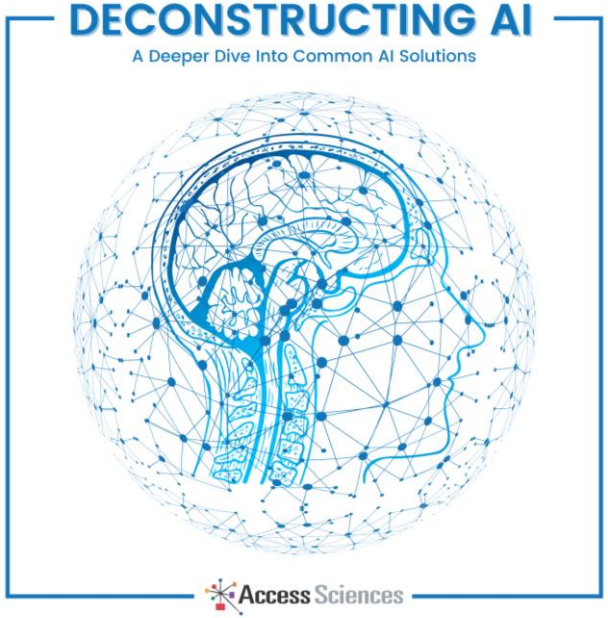
And those who ask, what happened?

Vince Lombardi

More from Glen Hilford...

LISTEN

READ



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Questions?