

AI AND THE FUTURE OF PROJECT EXECUTION

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Andrew Thillainathan, PMP



AGENDA

- A Brief History Of Artificial Intelligence
- The Value AI Brings to Organizations
- Strategic Alignment with AI
- From AI Capability to Business Value
- How AI Can Enhance the Project Management Practice
- Managing AI Projects in a Changing Execution Landscape
- Ethical Responsibilities When Using AI Systems
- Interactive Discussions
- Case Studies (4)

OVERVIEW

- This session explores how artificial intelligence is reshaping project and program management. As AI accelerates planning and analysis, the constraint shifts to execution in fast-moving, data-driven environments. We examine how AI creates value, how organizations should align and govern its use, and how project managers can leverage it to improve decision-making while maintaining control and accountability. The goal is to understand AI not just as a tool, but as a force that changes how projects are executed and managed.

A BRIEF HISTORY OF ARTIFICIAL INTELLIGENCE

Why AI Emerged

- Human inquiry: Can machines emulate reasoning? (Turing, 1950)
 - ✓ Father of theoretical computer science
- Rapid growth of structured business data (relational databases, 1970s)
 - ✓ Rows/Columns/Tables- relationships between datapoints
- Expansion of enterprise systems and data warehouses (1990s)
 - ✓ Large volumes of historical data from multiple sources to support BI and decision
- Increasing need to analyze large datasets and support decision-making
- Advances in computing power and distributed systems (2000s)
 - ✓ large volumes of historical data from multiple sources to support BI and decision

How AI Evolved

- Rule-Based Systems (1950s–1980s)
 - ✓ Intelligence encoded as explicit “if-then” logic
 - ✓ Deterministic and structured (fixed rule execution)
- Machine Learning (1990s–2015)
 - ✓ Systems learned patterns from historical data
 - ✓ Shift from rules → statistical inference
- Foundation Models (2017–Present)
- Large-scale models trained on vast datasets
 - ✓ Transformers (2017 paper)
 - ✓ GPT, BERT, and Gemini
- General-purpose language and multimodal capabilities

(CONT'D)- A BRIEF HISTORY OF ARTIFICIAL INTELLIGENCE

How AI “Thinks”- Conceptual

- AI does not think or reason like humans. It operates through:
 - ✓ Pattern Recognition
 - ✓ Probabilistic Prediction
 - ✓ Optimization (error minimization over time)

Examples:

System	How it Works
Loan rules	deterministic outcome
Fraud detection	probability score
Language model	predicts next word

Managerial Implication

- AI evolved in parallel to improvements in data systems and computing power. As data scale increased, intelligence shifted from explicit logic (rules based) to probabilistic modeling.

- The leadership challenge is no longer “*Can machines think?*”

It is “*How does probabilistic intelligence alter decision structures, risk assessment, and governance mechanisms within organizations?*”

- AI systems generate **probabilities**, not certainty.
- Organizations must design **decision rules** around those probabilities.

THE VALUE AI BRINGS TO ORGANIZATIONS

Efficiency (Doing work better, faster, cheaper)

- Automates repetitive tasks
- Reduces manual effort and cost
- Increases speed and throughput

Outcome: Margin improvement

Intelligence (Improving decisions)

- Detects patterns in large datasets
- Generates probabilistic insights
- Supports forecasting and risk assessment

Outcome: Better decision quality

Decision Augmentation

- Ranks options and scenarios
- Provides context-aware recommendations
- Supports managers under uncertainty

Outcome: Informed—not automated—decision-making

Scale & Personalization

- Real-time adaptation to user behavior
 - ✓ Netflix changes recommendations as you watch
 - ✓ Amazon updates suggestions as you browse
 - ✓ Banking apps adjust alerts based on activity
- Personalized products, services, and pricing
 - Differentiated customer experience
 - ✓ Spotify playlists tailored to you
 - ✓ Personalized news feeds
 - ✓ Customized learning paths

(CONT'D)- THE VALUE AI BRINGS TO ORGANIZATIONS

Key Insight

- Efficiency improves margins.
Intelligence and personalization improve competitive advantage.
- AI is not just an automation tool — it is increasingly a **decision-support system for the enterprise.**
- AI improves decisions by identifying patterns, quantifying uncertainty, and predicting outcomes.

Two Types of AI Value

Type	Focus	Business Impact
Efficiency	Cost & speed	Margin improvement
Differentiation	Decisions & experience	Competitive advantage

STRATEGIC ALIGNMENT WITH AI

AI initiatives should support one or more of the following:

Not every organization should invest in AI in the same way.

- Cost structure optimization
- Revenue expansion
- Risk mitigation
- Competitive differentiation
- Strategic velocity (speed of execution)

Core vs. Supporting Function

1. Is AI central to how the organization competes?
2. Or is it primarily a supporting tool?

○ If AI is core:

- It requires internal capability, investment, and governance discipline.

Core examples:

- ✓ Google → search algorithms
- ✓ Netflix → recommendation engine
- ✓ Tesla → autonomous driving

Without AI, these companies lose their competitive edge.

○ If AI is supporting:

- It may be implemented through vendors or tools.
- Examples
 - ✓ Bank using AI for document processing
 - ✓ Retail using AI for inventory planning
 - ✓ Helpful — but not differentiating.

Clear positioning helps avoid misdirected investment and strategic drift..

(CONT'D)- STRATEGIC ALIGNMENT WITH AI

Data Maturity

AI is only as good as the data it learns from.

- AI capability depends on:
 - ✓ Data availability
 - ✓ Data quality
 - ✓ Data governance
 - ✓ Infrastructure readiness

Without data maturity, AI becomes pilot theater

Operating Model & Governance Readiness

AI introduces probabilistic systems — which require ongoing oversight.

- Clear ownership of AI systems
- Defined responsibility for outcomes
- Oversight to manage risk and compliance
- Regular checks to ensure the AI's results remain accurate and reliable.
- ✓ Without governance, AI initiatives can introduce operational and strategic instability.
- ✓ Governance readiness reflects an organization's ability to assign ownership, maintain accountability, manage risk, and supervise probabilistic systems over time.

FROM AI CAPABILITY TO BUSINESS VALUE

From AI Capability to Measurable Business Value

AI capability does not automatically produce business value.

Business value is realized only when AI initiatives:

- ✓ Align with strategic objectives
- ✓ Are integrated into operational workflows
- ✓ Achieve measurable economic outcomes

AI-driven value appears in four ways:

1. Cost Structure Improvement

- ✓ Lower operating costs
- ✓ Reduced errors and rework
- ✓ Increased productivity

Measured by:

- Cost per transaction, efficiency ratios, margin improvement

2. Revenue Expansion

- ✓ Improved customer acquisition and retention
- ✓ Increased conversion rates
- ✓ Faster product and service innovation

Measured through:

- ✓ Revenue growth, customer lifetime value, market share

(CONT'D)- FROM AI CAPABILITY TO BUSINESS VALUE

3. Risk Mitigation

- ✓ Better fraud detection
- ✓ Improved credit and compliance decisions
- ✓ Reduced operational risk

Measured by:

- ✓ Loss avoidance, reduced volatility, fewer regulatory penalties

4. Competitive Positioning

- ✓ Superior decision quality (based off better information/clarity)
- ✓ Faster response to market changes
- ✓ Differentiated customer experience

Measured by:

- ✓ Relative performance, speed-to-market, sustained margin advantage

AI initiatives must be evaluated not by technical sophistication, but by their contribution to economic performance and strategic durability.

- Many organizations focus on building AI models. Very few focus on measuring the business impact of those models.
- If you cannot measure the value, you are running pilot theater.

HOW AI CAN ENHANCE THE PROJECT MANAGEMENT PRACTICE

Planning and Forecasting Support

- ✓ More accurate task duration estimates
- ✓ Early detection of delays and bottlenecks
- ✓ Data-driven project planning

Risk Identification

- ✓ Detects patterns from past project failures
- ✓ Identifies schedule, cost, and dependency risks early

Decision Support

- Highlights schedule variances
- Surfaces resource constraints
- Identifies emerging delivery risks

Provides better inputs before decisions are made

Documentation and Communication

- Generates status reports

- Summarizes meetings and action items
- Reduces administrative workload

AI initiatives must be evaluated not by technical sophistication, but by their contribution to economic

Knowledge Retrieval

- Surfaces lessons learned
- Retrieves relevant documentation
- Prevents repeat mistakes

Key Insights

AI does not replace the project manager — it expands the manager's analytical capacity.

Role Shift

Project managers spend less time on:

- ✓ administrative tasks

And more time on:

- ✓ judgment, leadership, coordination

MANAGING AI PROJECTS IN A CHANGING EXECUTION LANDSCAPE

AI is changing how projects begin

- Faster research and analysis
 - Rapid plan generation
 - Early identification of risks and dependencies
- ✓ Projects move into execution much faster

But faster planning does not reduce complexity

- Execution pressure increases
- Coordination becomes more difficult
- Delivery risks emerge earlier

Key Insight

- ✓ AI shifts the constraint from planning → execution

What Makes AI Projects Different

1. Data Preparation is Foundational

- ✓ Data must be available, clean, and structured
- ✓ Often requires more effort than model development

2. Outcomes are Probabilistic

- ✓ Results are not fixed
- ✓ Teams must define how predictions are used

3. Continuous Review is Required

- ✓ Models degrade as conditions change
- ✓ Requires ongoing monitoring and adjustment

4. Governance Becomes Critical

- ✓ Oversight of decisions and risks
- ✓ Alignment across teams
- ✓ Control of fast-moving execution

Final Insight

AI projects are not one-time implementations — they are continuously managed systems. 13

ETHICAL RESPONSIBILITIES WHEN USING AI SYSTEMS

As AI systems increasingly support or influence decisions, organizations must consider several ethical responsibilities.

Bias and Fairness

- AI learns from historical data
- Bias in data → bias in outcomes
- ✓ Systems must be evaluated to avoid unintended discrimination

Transparency

- Decisions should be explainable
- Stakeholders must understand how outcomes are generated
- ✓ Builds trust in AI-assisted decisions

Accountability

- Organizations remain responsible for outcomes
- AI does not replace managerial responsibility
- ✓ Clear ownership must exist for decisions influenced by AI

Responsible Use of Data

- Data must be collected, stored, and used appropriately
- Must comply with privacy and regulatory standards

Key Insight

AI can inform decisions —
but responsibility for those decisions remains human

INTERACTIVE DISCUSSIONS

Question 1 – AI Thinking

- If an AI system predicts that a transaction has an 80% probability of fraud, should the organization automatically block it?

Discussion points:

- probability vs certainty
- false positives
- role of human oversight

Question 2 – Organizational Value

- If AI improves efficiency but does not improve customer value, has the organization created real competitive advantage?

Discussion points:

- cost efficiency vs differentiation
- operational value vs strategic value

Question 3 – Strategic Alignment

- Should every organization invest heavily in AI?

Discussion points:

- core vs supporting capability
- strategic fit
- capital allocation

Question 4 – Managing AI Initiatives

- If an AI system makes correct predictions 85% of the time, how should an organization design oversight for the remaining 15%?

Discussion points:

- governance
- human review thresholds
- risk tolerance

(CONT'D)- INTERACTIVE DISCUSSIONS

Question 5 – Ethics

- If an AI system recommends denying a loan application, who is responsible for that decision?
- ✓ Possible answers:
 - a. the developer
 - b. the bank
 - c. the manager
 - d. the AI system

CASE STUDY 1: AI IN FRAUD DETECTION (FINANCIAL SERVICES)

Organizational Context

- Large financial institutions process **millions of transactions per day** across credit cards, digital payments, and online banking.
- Fraud detection historically relied on **rule-based systems**, such as:
 - ✓ block transactions above certain thresholds
 - ✓ flag purchases in unusual locations
 - ✓ identify rapid transaction sequences
- While effective initially, these rules became easier for fraudsters to bypass.

The AI Initiative

- Banks began deploying **machine learning models** trained on historical transaction data.
- These models analyze patterns across thousands of variables, including:
 - transaction timing
 - location changes

- merchant category
- device characteristics
- customer behavior patterns

Instead of applying fixed rules, the system generates a **fraud probability score** for each transaction.

- Example output: “Transaction has an 87% probability of fraud.”

Project Management Challenges

- Implementing such a system required managing several non-traditional project elements.
- Data Preparation
 - Historical transaction data had to be:
 - ✓ collected from multiple systems
 - ✓ cleaned and standardized
 - ✓ labeled correctly as fraud or non-fraud
 - ✓ In many projects, **data preparation consumed the majority of the timeline.**

(CONT'D)-CASE STUDY 1: AI IN FRAUD DETECTION (FINANCIAL SERVICES)

Integration with Operational Systems

- The AI model needed to integrate with real-time transaction processing systems.
- This required coordination between:
 - ✓ data scientists
 - ✓ IT infrastructure teams
 - ✓ payment platform engineers
 - ✓ compliance teams

Governance and Oversight

- Because the system influences financial decisions, oversight mechanisms were required.
- Organizations had to determine:
 - ✓ acceptable probability thresholds for blocking transactions
 - ✓ procedures for manual review
 - ✓ monitoring for model errors or drift

Business Impact

- When implemented successfully, AI-based fraud detection systems can:
 - ✓ detect fraud earlier
 - ✓ reduce financial losses
 - ✓ minimize false transaction declines for legitimate customers
 - ✓ These improvements translate into both **cost savings** and **improved customer experience**.

Key Insight for Project Managers

AI initiatives often require as much coordination around data, governance, and operational integration as around model development itself.

Managing these elements effectively is essential for realizing business value.

(CONT'D)-CASE STUDY 1: AI IN FRAUD DETECTION (FINANCIAL SERVICES)

Classroom Discussion Question

1. If a fraud detection model is correct 92% of the time, how should a bank manage the remaining 8% of uncertain outcomes?
 - a. False Positives/ Negatives
2. AI systems provide probabilities, but organizations must design the decision rules that determine how those probabilities are used.

CASE STUDY 2: CASE STUDY 2: AI COPILOTS IN KNOWLEDGE WORK

Organizational Context

- Many organizations rely heavily on knowledge workers to produce:
 - ✓ reports
 - ✓ presentations
 - ✓ project documentation
 - ✓ analysis
 - ✓ These tasks are often time-consuming and repetitive.

The AI Initiative

- Companies have begun deploying **AI copilots** embedded within common productivity tools.
- Examples include AI assistants integrated into:
 - ✓ email platforms
 - ✓ document editors
 - ✓ collaboration tools
 - ✓ project management systems

These systems assist users by:

- drafting documents
- summarizing meetings
- generating reports
- retrieving relevant information from internal data.

Project Management Implications

- Implementing AI copilots requires project teams to address several considerations:
 - ✓ identifying appropriate workflows for AI assistance
 - ✓ ensuring responsible use of internal data
 - ✓ training employees on effective use of the tools
 - ✓ monitoring how AI-generated outputs are used in decision-making.

(CONT'D)- CASE STUDY 2: AI COPILOTS IN KNOWLEDGE WORK

Business Impact

- Organizations report improvements in:
 - ✓ productivity of knowledge workers
 - ✓ speed of document creation and analysis
 - ✓ access to institutional knowledge

Key Insight for Project Managers

AI copilots do not replace knowledge workers. They assist with routine tasks, allowing professionals to focus more on judgment, coordination, and decision-making.

Classroom Discussion Question

If AI can draft project reports and meeting summaries, how might the role of a project manager change?

CASE STUDY 3: CASE STUDY 3: AI IN SUPPLY CHAIN FORECASTING

Organizational Context

- Large retailers and manufacturers manage thousands of products across multiple warehouses and stores.
- Traditionally, demand forecasting relied on:
 - ✓ historical sales trends
 - ✓ seasonal patterns
 - ✓ manual planning adjustments.
 - ✓ However, these methods struggled when demand changed quickly.

The AI Initiative

- Organizations began deploying machine learning models to improve demand forecasting.
- These systems analyze large datasets including:
 - ✓ historical sales
 - ✓ promotions
 - ✓ weather patterns
 - ✓ regional demand signals

- ✓ supply chain constraints.
- ✓ The models generate predictions about future product demand.

Project Management Challenges

Implementing these systems requires coordination across multiple functions:

- ✓ data teams preparing historical datasets
- ✓ supply chain planners integrating predictions into operations
- ✓ IT teams integrating forecasting systems with ordering platforms.
- ✓ Projects also require ongoing monitoring as demand patterns change.

(CONT'D)- CASE STUDY 3: CASE STUDY 3: AI IN SUPPLY CHAIN FORECASTING

Business Impact

- Organizations using AI forecasting have reported improvements in:
 - ✓ inventory management
 - ✓ reduction in stockouts
 - ✓ reduced excess inventory
 - ✓ improved supply chain responsiveness.

Key Insight for Project Managers

AI can significantly improve operational forecasting, but successful implementation requires integrating predictive insights into existing decision processes.

The value is realized only when predictions influence real operational decisions.

Discussion Question

If an AI system predicts demand for a product will increase by 30%, should a company automatically increase inventory orders?

Factors to consider:

- uncertainty in predictions
- operational risk
- governance of AI-assisted decisions.

CASE STUDY 4: AI IN HEALTHCARE DIAGNOSTICS

Context

- Healthcare systems generate vast amounts of diagnostic data from imaging technologies such as X-rays, CT scans, MRIs, and pathology slides. Physicians and radiologists must analyze these images to detect conditions such as tumors, fractures, infections, or internal bleeding.
- The volume of imaging data has grown rapidly in recent years, placing increasing pressure on medical professionals to review large numbers of cases quickly while maintaining diagnostic accuracy.

The AI Initiative

- Healthcare providers have begun implementing AI systems trained on large datasets of medical images. These models learn to recognize patterns associated with specific medical conditions.

For example, an AI system may analyze a chest X-ray and estimate the probability of:

- ✓ pneumonia
- ✓ lung cancer
- ✓ abnormal tissue growth

Rather than producing a definitive diagnosis, the system provides **probability-based assessments** that assist clinicians in evaluating potential conditions.

In practice, these tools act as **decision support systems**, helping physicians prioritize cases and identify patterns that might otherwise be missed

(CONT'D)- CASE STUDY 4: AI IN HEALTHCARE DIAGNOSTICS

Implementation Challenges

- Deploying AI diagnostic tools requires coordination across several areas:
 - collecting and preparing high-quality medical imaging data
 - integrating AI tools with hospital information systems
 - ensuring compliance with healthcare regulations and privacy standards
 - training clinicians to interpret AI recommendations appropriately
- ✓ These initiatives therefore involve both technical implementation and organizational change.

Business and Clinical Impact

- When used appropriately, AI diagnostic systems can:
 - ✓ assist physicians in identifying conditions earlier
 - ✓ improve efficiency in reviewing medical images
 - ✓ reduce diagnostic variability across practitioners
 - ✓ support more consistent evaluations of complex cases

However, these systems are intended to **support clinical judgment**, not replace it.

Ethical and Governance Considerations

- Healthcare diagnostics also operate within economic and institutional incentives.
- Hospitals and providers may receive revenue from diagnostic testing, which can create incentives to increase the number of scans or follow-up procedures. AI systems that flag potential abnormalities may unintentionally contribute to **overdiagnosis** or additional testing.
- Conversely, organizations under pressure to reduce costs may use AI systems to limit testing, which raises the risk of **underdiagnosis** if predictions are interpreted too aggressively.
- As a result, strong governance is necessary to ensure that AI recommendations are used responsibly and that patient outcomes remain the primary objective.

(CONT'D)- CASE STUDY 4: AI IN HEALTHCARE DIAGNOSTICS

Key Insight

1. AI diagnostic systems illustrate how probabilistic AI tools interact with real organizational incentives. Successful implementation therefore requires not only technical capability but also clear oversight, accountability, and responsible decision processes.

Discussion Question

1. If an AI system detects cancer in an image with 94% accuracy, should the system be allowed to make the diagnosis automatically?