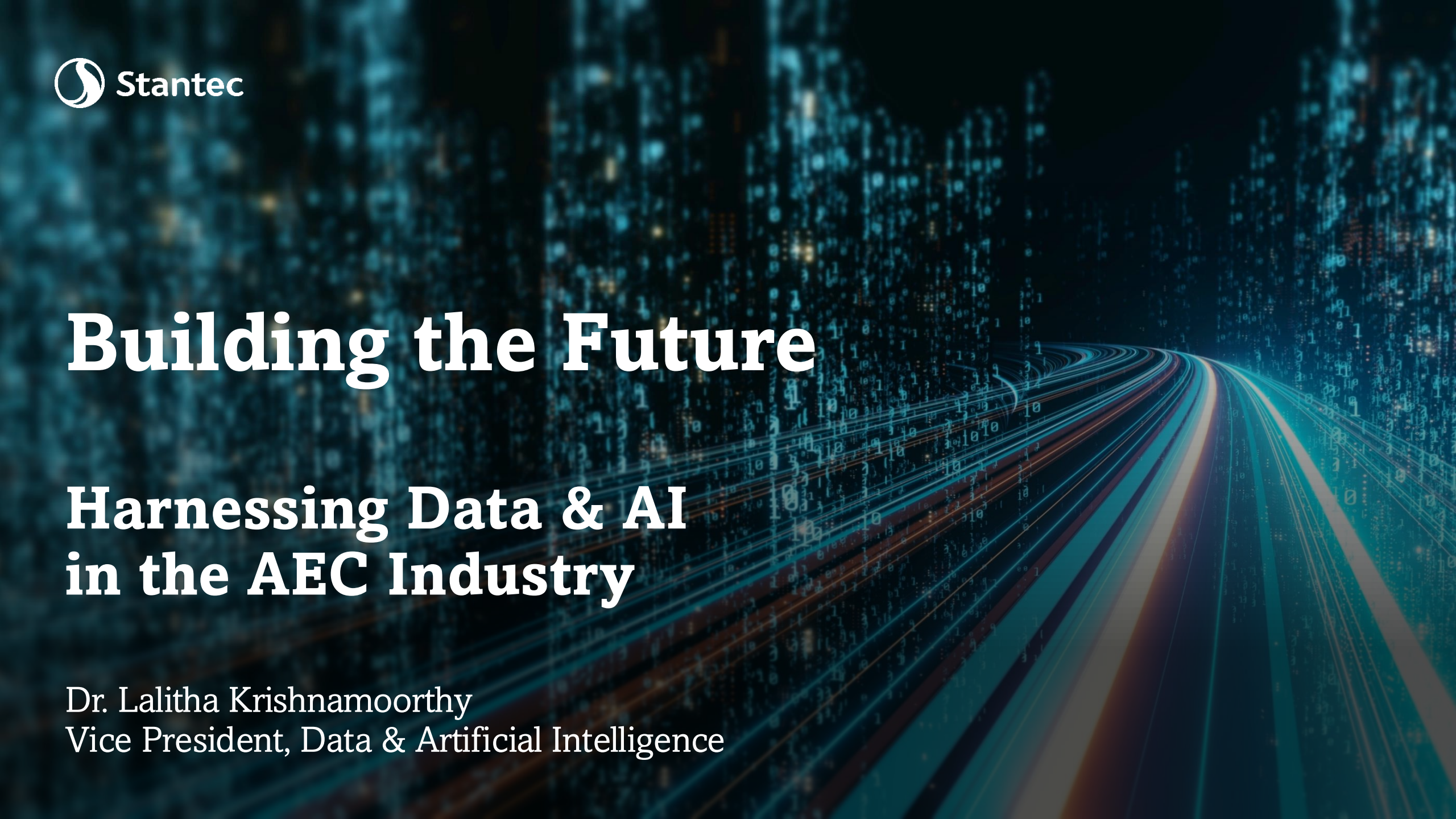
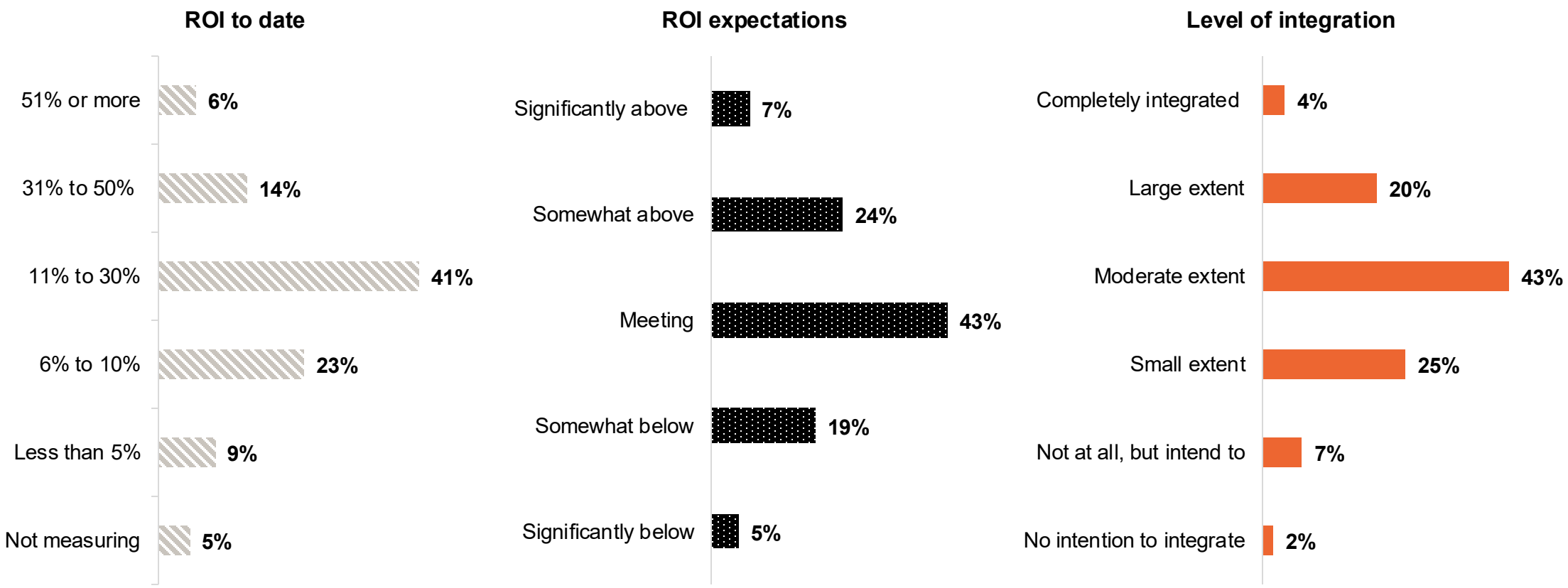


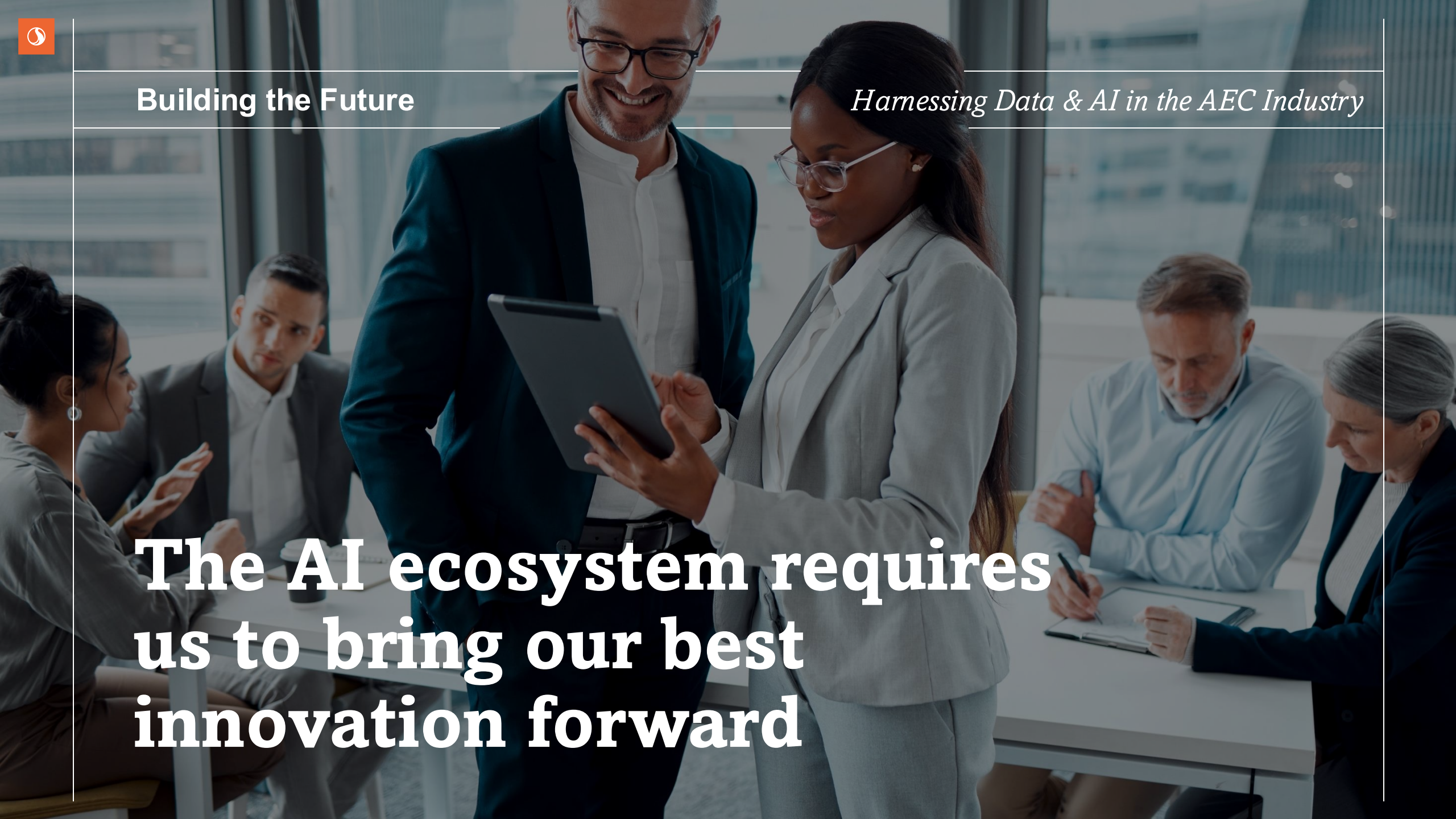
Building the Future

Harnessing Data & AI in the AEC Industry

Dr. Lalitha Krishnamoorthy
Vice President, Data & Artificial Intelligence

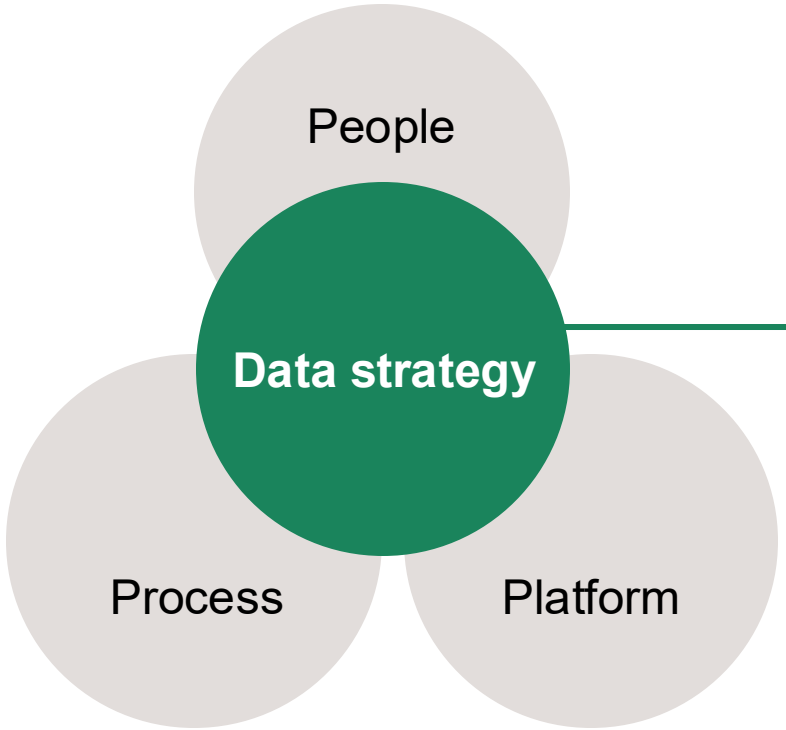
Is GenAI meeting ROI expectations?





The AI ecosystem requires us to bring our best innovation forward

Let's start with data



EXPECTED OUTCOMES FROM A DATA STRATEGY

Improved decision making

Enhanced operational efficiency

Increased revenue generation

Better customer experience

Data strategy guiding principles

Shared asset mindset	Unified data lake	Configurable and reusable services	Data ownership clarity
Common data model	Policy-driven data governance	Data quality assurance	Holistic data lineage and telemetry
Centralized data catalog	Lakehouse architecture	Automated data processes	Clean and curated data for AI use

Responsible GenAI use

Data quality

- Ensuring accurate, unbiased, and reliable data sources
- Regular monitoring and updating of data sets

Alignment

- AI outputs align with organizational values and ethical standards
- Human oversight to maintain responsible AI behaviors

Governance

- Establishing clear policies and procedures for AI usage
- Compliance with regulations and best practices for risk mitigation

Use cases

McDonald's drive-thru experiment

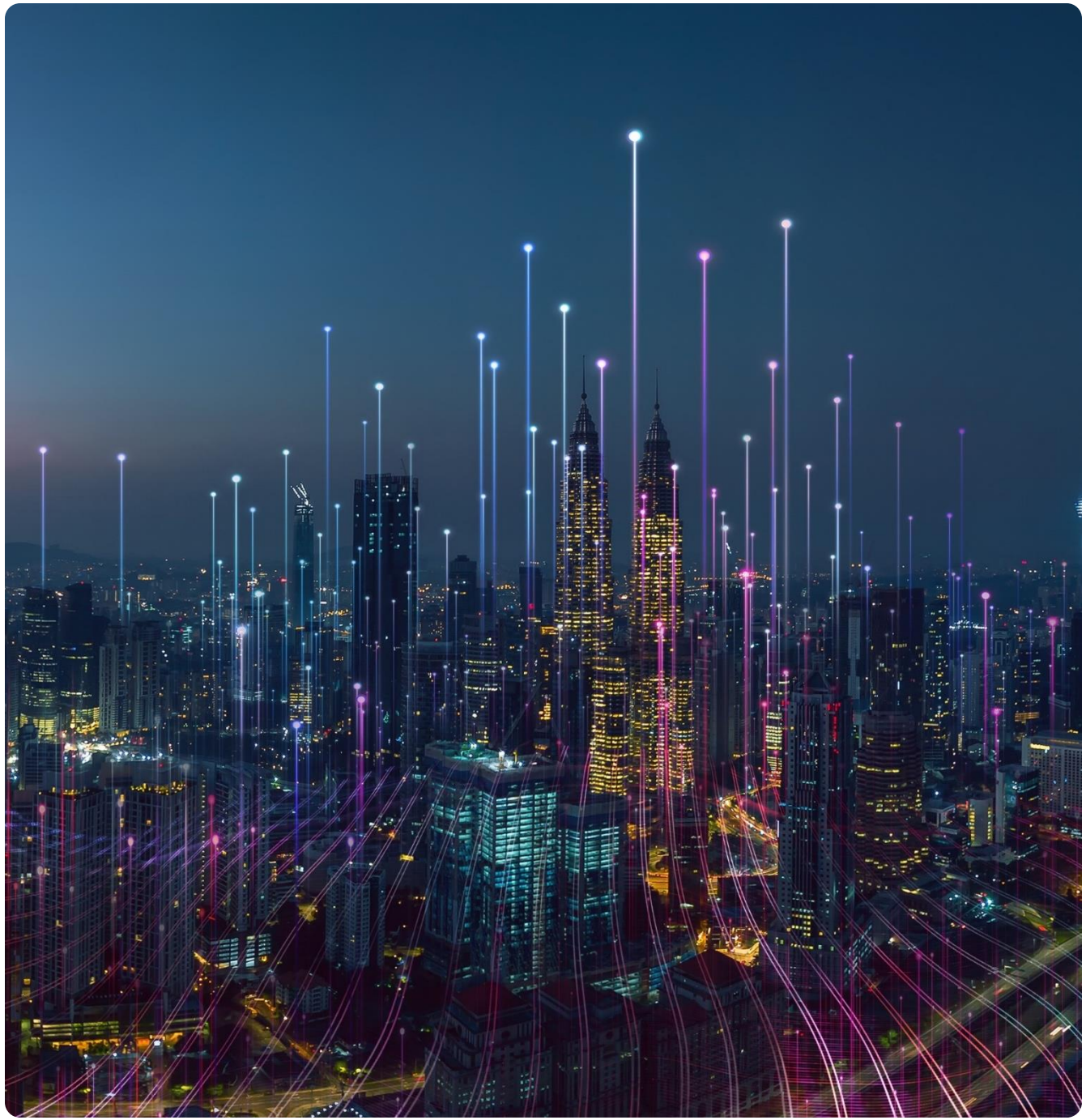
- AI frequently misheard orders. In one case, a customer was charged for $250 worth of chicken nuggets.

Bank chatbots

- Banks are adopting chatbots for customer service and financial advice. The CFPB reported numerous customer complaints about AI chatbots in banking failing to provide straightforward, timely answers, often providing irrelevant or incorrect responses.

Legal ChatGPT errors

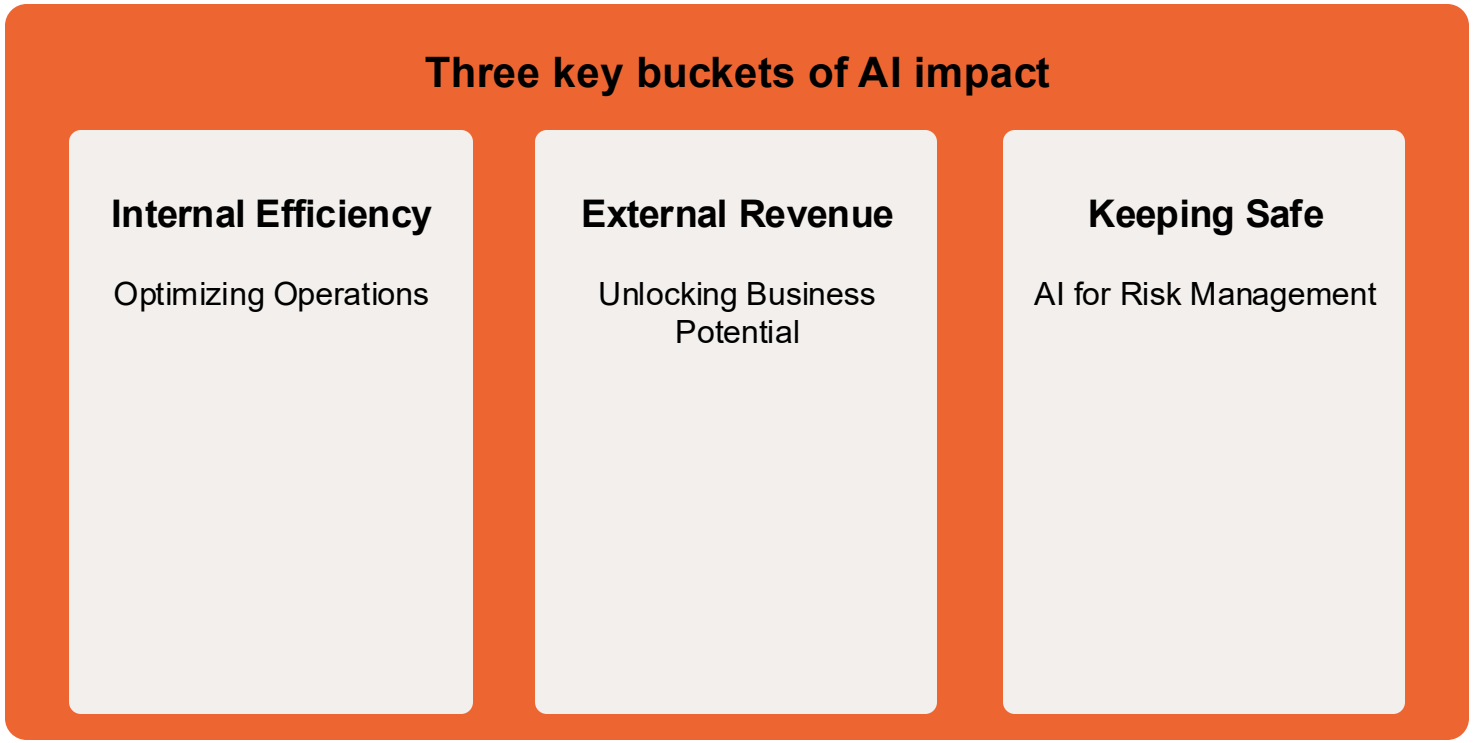
- Attorneys in New York used ChatGPT to help write a brief. Unknown to them, those cases were completely fabricated by ChatGPT. ChatGPT hallucinated: when asked for case law, it produced output that looked plausible but was false.



The very first step of the journey is not technical. It's establishing a great partnership with the business. The #1 goal is to deliver value to the company and to our customers.

AI ecosystem in the AEC industry

- AI in AEC is not a solo race
- Collaboration between people, companies, and technology is key
- AI success depends on shared knowledge, innovation, and adaptability



ROI in the AEC industry

Architecture	Engineering	Construction
35% Reduction in design time	**40%** Faster risk assessments	**30%** Fewer defects detected late
20% Lower energy consumption in buildings	**20%** Reduction in downtime	**25%** Faster project completion
25% More accurate budget predictions	**20%** Reduction in design rework	**15%** Reduction in material

Setting the stage for AI success

5 pillars of AI readiness

1. Business strategy
2. Technology and data strategy
3. AI strategy and experience
4. Organization and culture
5. AI governance

5 stages of AI success

1. Exploring
2. Planning
3. Formalizing
4. Scaling
5. Realizing

Best practices

- Recognize the potential impact of AI
- Gather insights on AI applications
- Assess different AI solutions and vendors
- Implement small-scale tests
- Analyze pilot results
- Secure executive consensus
- Finalize funding

Measuring success

“In the AEC industry, successful AI implementation requires both ambitious OKRs to drive innovation and precise KPIs to measure performance.”

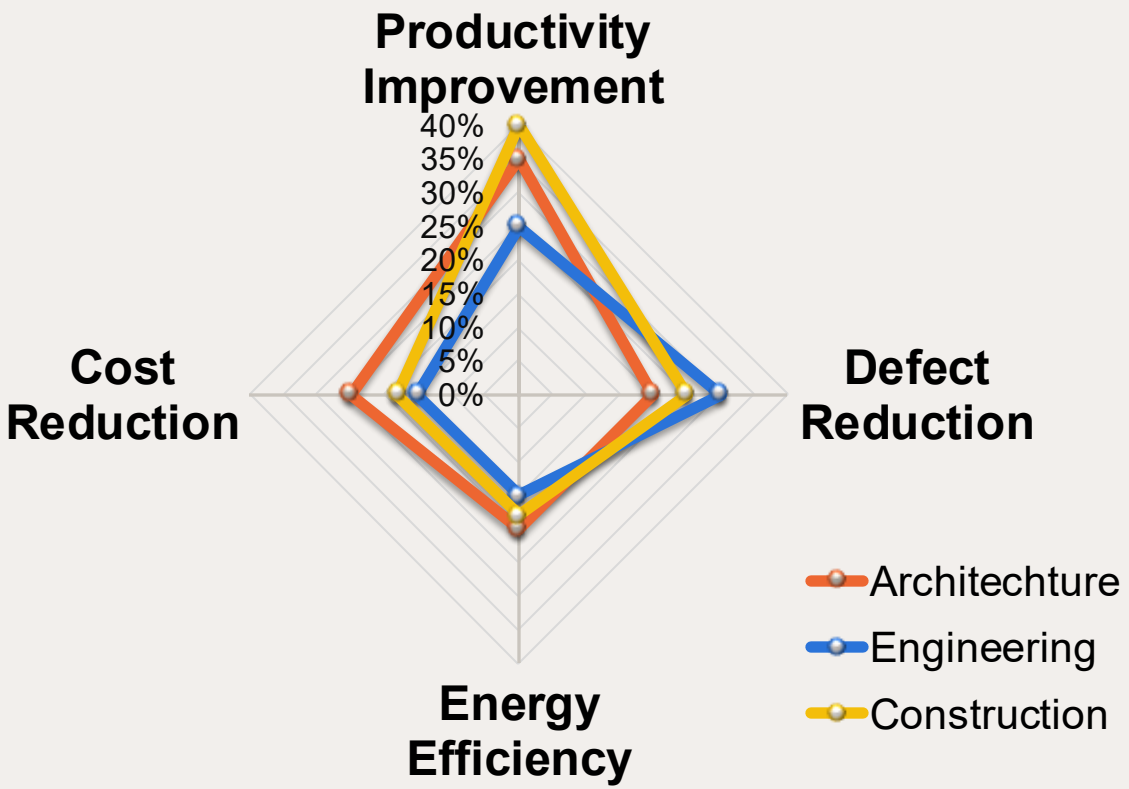
Remember the 5 drivers of AI readiness

1. Business strategy
2. Technology and data strategy
3. AI strategy and experience
4. Organization and culture
5. AI governance

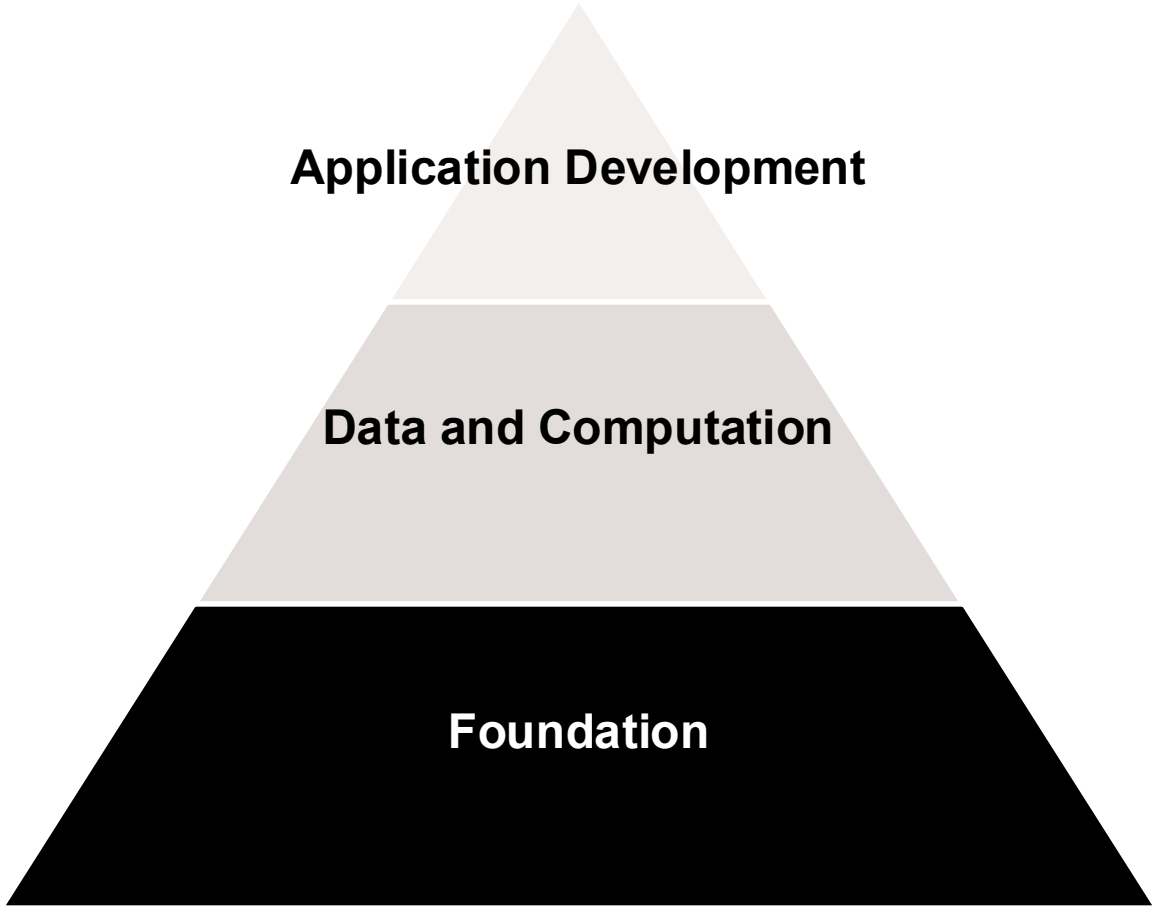
Key OKRs

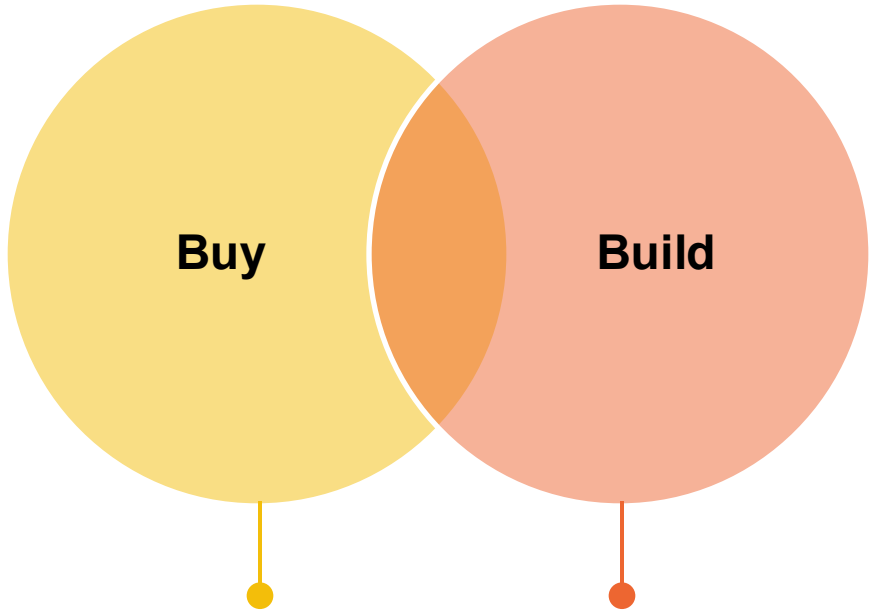
1. Design optimization
2. Construction productivity
3. Client experience

Key KPIs



Strategic partnerships





Tools and Platforms

Center of Excellence

AI can help solve complex challenges

90% Of G2000 organizations will leverage AI to enhance worker experiences by 2026, resulting in a 30% increase in labor efficiency

50% Of G2000 companies will integrate operational systems with GenAI by 2026 to improve efficiency by 5%

40% Of G2000 companies will be using comprehensive ecosystem sustainability data by 2027 to reduce their carbon footprints by 30%

74% Of AEC organizations have begun experimenting with and deploying AI use cases

40% Of AEC company executives aim to use AI to enhance speed and efficiency and minimize product failures

Los Angeles wildfires

Learning from the past

Could we have prevented this?

Enhance predictability

- AI-driven systems can improve risk assessment and decision making
- Innovative data-driven solutions can strengthen infrastructure and community support

How data-driven solutions can help

- Predictive analytics
- Real-time monitoring and alerting systems
- Fire spread simulation
- AI-driven risk assessment
- AI and water management

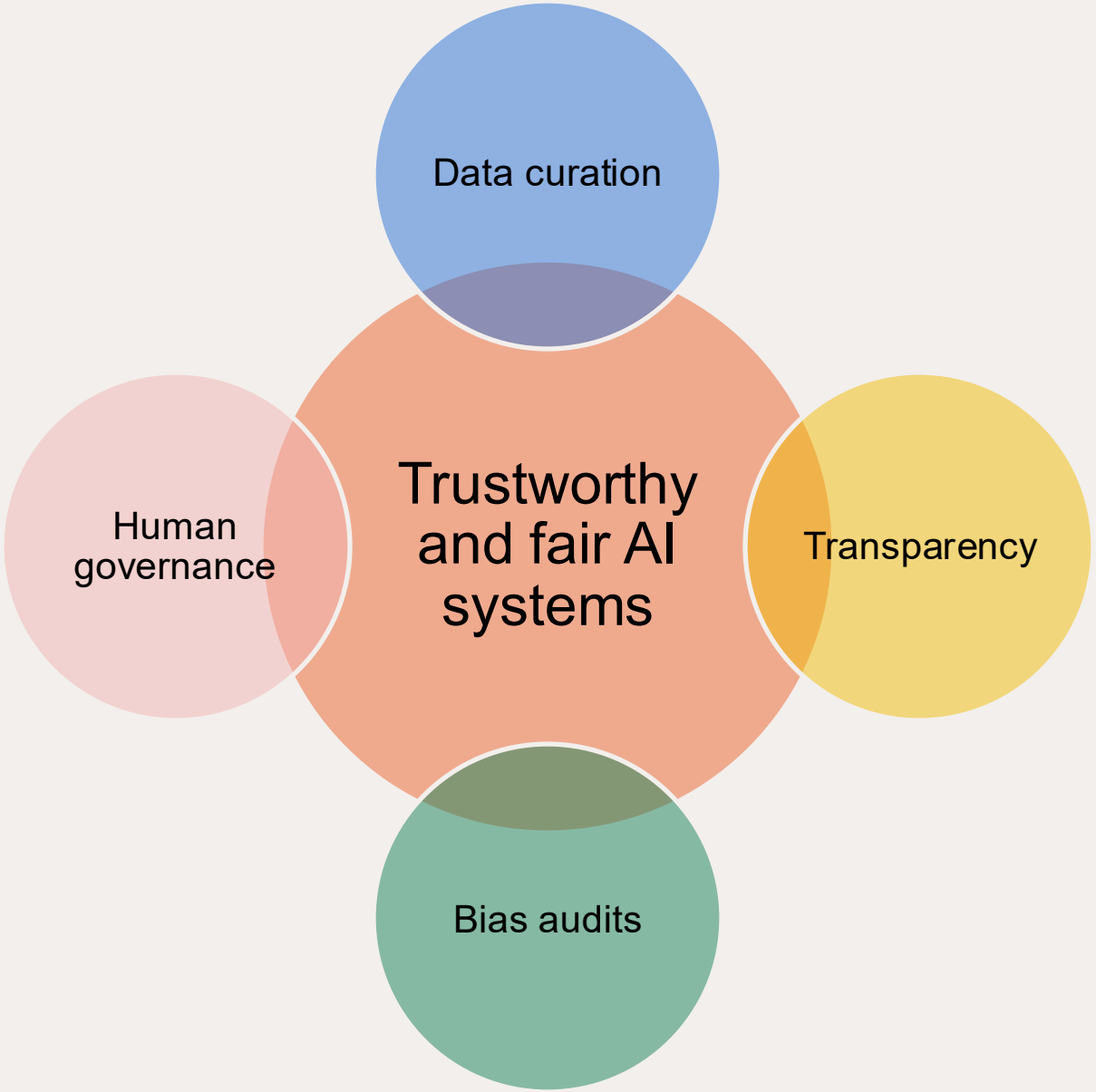
AI and ML are the keys to wildfire prevention and resilience

AI can empower people to rise to the world's greatest challenges

Responsible AI

We have a responsibility to build AI systems that are not only powerful but **trustworthy and fair**.

Our AI-forward stance is to embrace innovation while ensuring it's implemented responsibly and inclusively.



There is no single path to value creation with AI, and each organization has different business models, histories, and experiences.

Stantec

Thank you