



AI @ work:

NEW PROJECTS / NEW THINKING

AI@Work:

Mapping the world's coral reefs. Streamlining communication between colleagues—even when they don't speak the same language. Predicting the spread of a virus by tracking prescription refills. Scanning the regulatory landscape for business risks.

Artificial intelligence (AI) has opened up a torrent of projects—and possibilities, helping organizations reimagine how we live, work and play. And it's happening at a rapid clip: Nearly 60 percent of organizations have deployed AI, according to a survey by Gartner.ⁱ While those organizations currently have an average of only four AI projects in the works, respondents expect that number will jump to 35 by 2022. AI is such a game-changer that Gartner predicts by 2021 the technology will create US\$2.9 trillion of business value and 6.2 billion hours of worker productivity globally.ⁱⁱ

AI isn't just changing the types of projects being delivered. Recent *Pulse of the Profession*[®] research reveals AI is also changing how projects are managed. Over the next three years, project professionals expect the proportion of projects they manage using AI to jump from 23 percent to 37 percent, according to PMI's *AI Innovators: Cracking the Code on Project Performance*.ⁱⁱⁱ The payoff could be substantial: *Pulse* research shows some AI technologies are already contributing to higher productivity and better quality.

Unlocking AI's full potential requires building—and constantly refreshing—your knowledge of emerging technologies. But that will only take you so far. To turn AI strategy into reality, organizations—and their project leaders—will need a high project management technology quotient, or PMTQ*.

- > New research from *Pulse* shows half of project leaders practice all three tenets of a high PMTQ. **These are the Innovators.**
- > Ten percent of respondents, however, say they only sometimes or never practice the three principles of PMTQ. **These are the Laggards.**

To read more about PMTQ, check out our reports *The Future of Work: Leading the Way With PMTQ* and *AI Innovators: Cracking the Code on Project Performance* on PMI.org.



*High PMTQ is defined by three essential characteristics:

- 1 **ALWAYS-ON CURIOSITY:**
Looking for emerging project delivery practices without chasing after every new digital trend.
- 2 **ALL-INCLUSIVE LEADERSHIP:**
Getting the best out of your teams, whether they're human or machine.
- 3 **A FUTURE-PROOF TALENT POOL:**
Recruiting the right people with the mindset to keep current and keep learning while helping their teammates do the same.

Get Smart



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AI is streamlining—and improving—project work. Here are the top technologies that project leaders say are boosting project management productivity and the quality of work, according to *Pulse* research:

AI technologies that increase productivity

1. Robotic process automation (74%)
2. Reinforcement learning (64%)
3. Machine learning (61%)

AI technologies that increase quality

1. Anti-bias solutions (68%)
2. Expert systems (61%)
3. Knowledge-based systems (59%)

AI@Work: Alibaba

Alibaba is known for its bleeding-edge AI projects. Look no further than its Dian Xiaomi, an AI-powered chatbot that can understand more than 90 percent of customer queries and serves more than 3.5 million users a day.

But the company isn't stopping there. It's also incorporating AI into its employees' daily lives—bolstering efficiency and improving how projects get done.

The company is leading the AI charge, and project leaders must be ready to embrace the change, says Stephen Xu, head of project management office, Infrastructure Service BU, Alibaba Group, Hangzhou, China. "Because when the AI era comes, you cannot turn it back."

Here's a look at some of the ways Alibaba is using AI at work:

Facial Recognition

Only a few months ago, teams were still swiping traditional identification badges to get around Alibaba's Hangzhou campus. No more. "Nowadays facial recognition helps a lot to commute between different buildings on the campus," says Mr. Xu. "This is one small thing that we started with to facilitate daily work."

Expert Systems

Aliwork is the company's embedded expert system, trained on a database of the company's most frequently asked questions. "You can search which meeting rooms are available, how to set up video conferences or the contact information of your colleagues," he explains. "You can easily search and then get the right answer."

Natural Language Processing

DingTalk, Alibaba's enterprise-level administration and communication app, was "designed from the beginning to be used for a faster-paced working atmosphere." And that means some truly innovative natural language processing capabilities. Along with automatically translating the sender's voice message into text messages on the recipient's phone, the app can also translate messages between languages. "You can bring more people on board if the communications are easier, if language is less of a barrier than it had been in the past," Mr. Xu says. "It also means that you can better support your customers, your clients and your sponsors as well."

THE GREAT AI DIVIDE

While Innovators are already jumping into the AI action, Laggards must make drastic changes—or risk being left behind. According to a recent IDC survey of organizations around the globe, more than 60 percent of respondents are already making changes to their business model in association with their AI adoption, with two-thirds driving an “AI First” culture.^{iv}

In today’s increasingly projectified economy, the most forward-thinking organizations know the realization of their strategy hinges on how well they can execute projects. And the race toward AI mastery is no exception.

In this case, most project leaders are starting from a good place. Across the board, both Innovators and Laggards cited their project management skills and experience as the top reasons they feel prepared to manage AI projects.

Innovators, however, have the upper hand: 74 percent say they’re confident their current skill set enables them to work with AI, compared to 51 percent of Laggards. And while there are some AI technologies that Innovators and Laggards feel equally prepared to manage—including robotic process automation and natural language processing—there are several that Innovators are more prepared for. These technologies include knowledge-based systems, decision management and expert systems.

So what’s separating Innovators and Laggards? Awareness and experience.

AI Awareness & Experience: Technologies

Innovators boast far more experience than Laggards with these technologies:

Type of technology	Have managed project involving technology	
	AI Innovators	AI Laggards
Knowledge-based systems	45%	20%
Decision management	34%	19%
Voice assistant	26%	14%
Speech recognition	25%	9%
Robotic process automation	25%	11%
Expert systems	24%	11%
Virtual agents	24%	7%
Graphic processing units	21%	7%
Facial recognition	17%	7%
Conversational computing	17%	6%
Deep learning	17%	5%
Natural language generation	12%	4%

But Innovators don’t have as much of an advantage over Laggards when it comes to these technologies:

- Recommendation engines
- Machine learning
- Computer vision
- Natural language processing
- Inference engine
- Reinforcement learning
- Anti-bias solutions
- Generative adversarial networks

Innovators vs. Laggards: Ready or Not

Innovators report being much more prepared than Laggards to manage certain AI technologies:

Type of technology	Feel very/somewhat prepared to manage technology	
	AI Innovators	AI Laggards
Knowledge-based systems	77%	46%
Decision management	76%	54%
Expert systems	63%	40%
Speech recognition	61%	41%
Virtual agents	61%	45%
Machine learning	60%	41%
Voice assistant	60%	43%
Deep learning	58%	31%
Graphic processing units	57%	36%
Facial recognition	56%	32%
Conversational computing	55%	32%
Inference engine	55%	30%
Reinforcement learning	51%	32%

Laggards were nearly just as prepared as Innovators with these technologies:

- Recommendation engines
- Computer vision
- Robotic process automation
- Natural language processing
- Natural language generation

It’s clear that organizations can do more to help project professionals who feel unprepared: Only 28 percent of Laggards said their organization provided the right support to work with AI.

A NEW WAY of Working

There's no denying that AI is transforming a wide swath of industries. By 2030, for example, AI could replace up to 20 million manufacturing jobs worldwide, according to a 2019 report by Oxford Economics.^v

Project leaders are no doubt navigating the AI wave of change. Yet 20 percent said the rise of AI has resulted in the creation of project management jobs over the last three years, versus 8 percent who reported the elimination of roles. And more see that trend continuing. Over the next three years, 27 percent of respondents say AI will cause the number of new project management jobs to increase, versus 14 percent who say it will drop.

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"We will always have a need for highly skilled project managers," says Alison Bakken, senior vice president and global head of the technology program office at Thomson Reuters, St. Paul, Minnesota, USA. "I don't see the technology taking that over."

The responsibilities of these project leaders may be changing, however.

Pulse data shows some project leaders rely on AI technologies to streamline their work. Innovators, for example, are more likely to report AI technology is decreasing the amount of time they spend on activities like monitoring progress, managing documentation, and activity and resource planning.

Ms. Bakken has seen the shift happening at Thomson Reuters: "There used to be people that would run around and collect information to create project and portfolio reports," she says. "But that's being automated now—and that's a good thing."

Why? Because that makes room for activities that might otherwise never make their way to the top of the to-do list.

"AI can offload project managers from hosting meetings, writing emails or recording the meeting minutes, etc.,"

says Stephen Xu, head of the project management office, Infrastructure Service BU, Alibaba Group, Hangzhou, China. "It means more time to do strategic thinking and high-level planning."

It's already opening up some new opportunities for Innovators: 14 percent say AI increases the amount of time project leaders spend on strategic planning versus only 6 percent of Laggards.

"Employees can actually focus more on value-adding tasks and use the time to focus on strategic or more complex topics rather than dealing with repetitive, non-rewarding tasks," says Hari Doraisamy, senior director, mission-critical support at SAP, Newtown Square, Pennsylvania, USA.

The activity most impacted by AI was analyzing data, with 47 percent of project managers reporting time savings, a finding that could speak directly to the value of AI to produce insights from large quantities of data. At the same time, this finding raises questions about whether the ways that project managers analyze data will change with time as well. While AI requires great data to run well, these technologies are often designed to produce high-quality data, too. The relationship between AI and data will surely continue to evolve.

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THE VALUE OF AI

The true test of AI will come down to the value it delivers, and Innovators are clear it benefits their project practice.

They see two key benefits in using AI: projects that deliver exceptional value to the end customer (53 percent) and projects that meet or exceed expected business benefits (46 percent).

Innovators are also more likely than Laggards to report a positive impact on their work when using these AI technologies:

Type of technology	Have experienced a positive impact on their work with these technologies	
	AI Innovators	AI Laggards
Knowledge-based systems	57%	39%
Decision management	52%	37%
Deep learning	37%	16%
Robotic process automation	36%	17%
Speech recognition	34%	14%
Facial recognition	25%	14%

AI can make a difference in value delivery, but it's up to organizations and their project leaders to hammer out which technologies can best help them achieve their specific goals.

At SAP, the company aims to use predictive technologies "to provide a faster response time to the front-office teams, channel resources toward more strategic and complex initiatives, and improve customer satisfaction."

Whether they're using an anti-bias solution to manage projects or launching a machine learning pilot, project leaders face a whole new world with AI. And it's one they should be excited about.

"The future is bright for AI," Mr. Doraisamy says. "I believe we're barely scratching the surface for the use of AI."



Interested in learning more?

Check out our first two Pulse reports of 2019: *The Future of Work: Leading the Way With PMTQ* and *AI Innovators: Cracking the Code on Project Performance* on PMI.org.

AI@Work: Thomson Reuters

Alison Bakken knows AI. As senior vice president and global head of the technology program office at Thomson Reuters, St. Paul, Minnesota, USA, Ms. Bakken has already led a slew of projects that incorporate AI technology. And while she clearly sees the benefits, she's also not afraid to swat down some of the sensational claims about AI replacing departments or functions wholesale.

AI will take over many of the more mundane tasks and will change the nature of work, but most roles will not go away, especially in the short term. While Ms. Bakken says the AI technology available today is used to help with decision making and with strategy development, there is a line. AI "helps leaders become more effective, but it doesn't replace them."

Part of the reason is that the technology just isn't there yet, Ms. Bakken says. Case in point: It took nearly a year for Thomson Reuters to build a recommendation engine that would help attorneys build the strongest case strategy possible for their clients by checking the strength

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of their briefs and recommending improvements—similar to a parent checking their children's homework.

"We create AI-powered solutions that help our customers be more effective in their jobs. It

takes a lot of data for the AI to get trained to create a really good set of recommendations," she says. "We went through a lot of trial and error to pull it together. At first, what it was recommending was not useful."

Then the team also had to build and train algorithms to make sense of the data input to make valid and useful recommendations. And for that, it needed to draw on the in-depth knowledge of expert users.

"All of the technology that we've developed is based on our expertise with our customers," Ms. Bakken says. "If people don't really understand the actual effort it takes to make things good, then you end up with an AI that's not very smart."

AI DEFINED

- **Anti-bias solution:** Automatically identifies bias in a range of AI algorithms
- **Computer vision:** Analyzes images and video to understand and interpret objects and object features within them
- **Conversational computing:** A style of human-computer interaction where users have a conversation with a computer program via a text or voice chat
- **Decision management:** Introduces rules and logic to AI systems so they can be used for setup, training and ongoing maintenance
- **Deep learning:** A type of machine learning that builds, trains and tests neural networks that probabilistically predict outcomes and/or classify unstructured data
- **Expert system:** Emulates and mimics human intelligence, skills or behavior; usually has expert knowledge in a particular field, topic or skill
- **Facial recognition:** Stores an image of a face or a set of its characteristics and compares that stored sample with a live one to authenticate the user
- **Generative adversarial networks:** A class of machine learning systems that can generate photographs, artwork or other realistic stimuli
- **Graphics processing units:** A type of AI-optimized hardware
- **Inference engine:** Makes logical deductions about knowledge assets to enhance business intelligence
- **Knowledge-based system:** Understands the context of the data being processed; used in problem-solving procedures and to support human learning, decision making and actions
- **Machine learning:** Allows computers to learn by employing pattern detection for improved decisions in subsequent situations
- **Natural language generation:** Generates language from non-language sources such as spreadsheets or metadata
- **Natural language processing:** Converts data into text, enabling computers to communicate ideas with the highest level of accuracy
- **Recommendation engine:** Identifies and provides recommended content or digital items for users
- **Reinforcement learning:** A machine learning technique that enables software to learn in an interactive environment by trial and error using feedback from its own actions
- **Robotic process automation:** Mimics and automates human tasks to support corporate processes
- **Speech recognition:** Identifies, categorizes and cross-references the actual substance or meaning of speech, not just individual words
- **Virtual agents:** An animated, human-like graphical chatbot embedded with a predefined script and responses
- **Voice assistant:** A software agent that performs tasks based on verbal commands

¹ AI and ML Development Strategies, Gartner, 2019

² Gartner, August 2019

³ AI Innovators: Cracking the Code on Project Performance, PMI, 2019

⁴ Artificial Intelligence Global Adoption Trends & Strategies, IDC, 2019

⁵ How Robots Change the World, Oxford Economics, 2019

About This Report

This *Pulse of the Profession*[®] In-Depth research was conducted online in June/July 2019 among 780 project management practitioners globally from the PMI Thought Leadership panel.



A I @ W O R K

N E W P R O J E C T S / N E W T H I N K I N G



[PMI.org](https://www.pmi.org) | pulse@pmi.org | [#PMIpulse](https://twitter.com/PMIpulse)

Project Management Institute
Global Headquarters

14 Campus Blvd | Newtown Square, PA 19073-3299 USA

Tel: +1 610 356 4600 | Fax: +1 610 356 4647 | Email: customercare@pmi.org