# LEADING HUMANS & MACHINES

## Initial Findings from a Pilot Study on A.I. and Leadership in Knowledge Organizations

In the new digital era -- powered by artificial intelligence and machine learning -- businesses face a fundamentally different leadership challenge. Leaders will need to create new organizational narratives about the nature of work, the roles humans and machines play in integrated teams, and address the emotional needs of their followers during exponential change.

Given the evolving organizational landscape, our team sought to answer the following questions:

▷ *How has Artificial Intelligence (AI) transformed strategy and operations in knowledge organizations?*

▷ *What do leaders and knowledge workers need to do in order to effectively integrate AI into their organizations?*

We interviewed nearly 40 people, in the United States and United Kingdom, including senior business leaders, professional advisors, and academics researching the application of AI in knowledge organizations. We presented our findings at the 2018 International Leadership Association (ILA) Global Conference. This paper provides a brief overview of our findings, our recommendations for leaders, and our future plans.

## *Artificial Intelligence Integration Model* ©
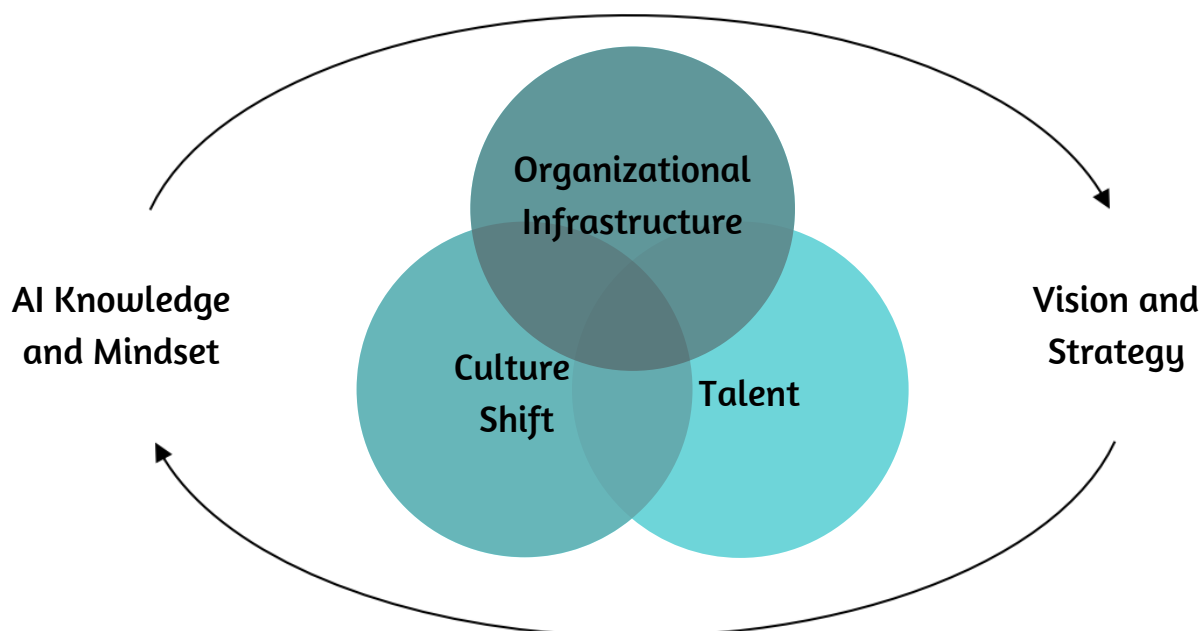
## AI Knowledge and Mindset

Organizational leaders must develop a basic knowledge of artificial intelligence capabilities and adopt a mindset that supports successful implementation. We identified three key factors in this domain:

> ## *It's not magic. It's math.*

▷ **Understanding.** Demystify the 'Black Box' of AI and find out what it can really do for your business.

▷ **Inspiration.** Look beyond your sector to see how others have used AI, including talking with academics and technology experts.

▷ **Curiosity.** Suspend premature critical judgement, which can be counter-cultural in professions whose reputation is built on applying critical judgement to clients' problems.

## Vision and Strategy

Unlike many business challenges, the impact of AI on the vision and strategy may not be clear at the start of implementation, but will emerge as awareness increases of AI's true potential. Many businesses start with small pilots to test AI applications, which may have a high initial failure rate. Leaders need to:

▷ **Focus on the Business Problem.** Start with the business problem, not the technology. Clarity on the problem you want to address will help in identifying the technology which may help, rather than finding an application for a technology that seems enticing.

▷ **Identify Required Strategic Change.** Identify how your business model and strategy may need to change, which may not be clear at the start.

▷ **Listen to the People with New Ideas.** Ensure that people with new ideas have access to people who can make them happen.

▷ **Act as a Champion.** Leaders need to champion new ideas and AI projects so that they grow and flourish. Without high-level champions, these new ideas and projects might be beaten back by legacy programs and interests, not receive adequate funding, or not be supported by new employee habits and business workflows.

## Organizational Infrastructure

Leaders responded they had to think creatively to adapt organizational structures so that they helped rather than hindered AI implementation.  Infrastructure challenges included:

▷ **Investment Decisions.**  Making investment decisions by looking at the long term benefits, not just the early implementation costs.  For some businesses this will involve looking way beyond current business planning horizons, which may be counter cultural.  Leaders also need to have realistic expectations of the short term payback.

▷ **Funding.**  Finding new ways to fund investment in AI, both in terms of money and time.  Barriers included short-termism, the ownership model in partnerships, the dominance of quarterly reporting, the lack of capital.  In some sectors this is starting to drive major changes to the business model, e.g. IPO in a partnership, mergers, joint ventures, etc.  Leaders need to make commercial investment decisions, after consideration of the costs, benefits and risks.

▷ **Protected Spaces.**  Creating a space and environment in which the AI implementation team can operate effectively was deemed important.  Many described cultures which were less than ideal for this.  Options for addressing this ranged from creating innovation hubs or skunk works, to create separate companies to research and test AI.

▷ **External Expertise.**  How to leverage outside expertise is also important, which may include partnering with technology businesses and academics, as well as hiring AI expertise.

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> *You need to take a long view, which doesn't fit with quarterly reporting.*
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## Culture Shift

For many organizations, a cultural shift is a critical component of the successful integration of artificial intelligence into their workforce and organizational processes.  We identified four key aspects of successful positioning of an organization's culture:

▷ **Trust and Ethics.**   The organization's employees need to value and trust the output of the artificial intelligence systems.  Trust can be enhanced demonstrating how AI can extend what human team members can do by themselves in accomplishing the organizational mission, explaining its strengths and limitations, providing insight into its "thought processes," and allowing humans to challenge the system's output.  Also, organizational leaders have a responsibility to communicate how the introduction of the AI may affect employee's jobs and provide them sufficient time to adapt to the new reality.
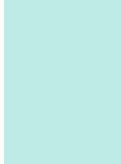
▷ **Design and Engagement.**  The workforce should be engaged in the design/configuration of the AI services and throughout the change process.  Leaders should communicate early and often about the introduction of AI.  Employees with domain expertise can help train expert systems on existing data sets.  Human collaborators with the AI system should be trained how to use the system's output, to learn/focus on different skills than those done by the system, and change work process flows to take advantage of new efficiencies.  Leaders should follow up to ensure employees are changing to take advantage of the technologies and employees should also have opportunity to provide feedback and express concerns.

▷ **Experimentation and Innovation.**  Organizations should promote a culture of experimentation and innovation.  An experimentation cycle may look like: try, fail, learn, repeat.  Companies will need to be open to new ideas and new ways of doing business, including potentially fundamental changes to their business model.  Innovation teams need to be supported by leadership and protected from more entrenched, traditional parts of the business.

▷ **Collaboration and Inclusion.**  Cross-disciplinary teams including business domain experts, technologists, data scientists, and others will likely be required and their different roles valued and respected.  Collaboration with technology providers, research institutions, or potentially competing companies within the same industry may be advisable to leverage new technology and pool resources.
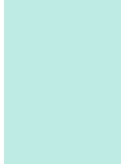
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> *Do all lawyers need to learn to code?*
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## Talent

Talented, committed people are at the heart of every organization.  If executives intend to successfully integrate AI into their organizations, it will require thoughtful assessment and training of their existing workforce and a substantial investment in new talent.  We identified three areas of focus:

▷ **Talent Acquisition.**  Acquire talent to meet the need for the shortage of skills.  Studies indicate that the U.S. currently has 200,000 data scientists.  It is projected that the demand will rise to two to four million to by 2025.  This means that the shortage will increase the competition for talent, and organizations must be prepared.  Also, new roles will be needed that did not exist 10-20 years ago (e.g. Digital Transformation Director).  These roles require an integration of multiple skill sets in technological expertise, business acumen, and leadership capacity.

▷ **Re-skilling Existing Employees.** Research indicates that, of the 60% of jobs that will be affected by artificial intelligence, only 30% of the tasks in those roles can be automated. This means that leaders must encourage their employees to envision the change as a reallocation of their time and energy rather than a full replacement of their role. This reframe can help leaders mitigate anxiety experienced by their employees when implementing this change.

▷ **Agile Teams and Translation skills.** Agile teams are cross-functional groups in which individuals have a variety of roles and skill sets. In order to successfully integrate AI, team members must cultivate 'translation skills,' which allow them to translate mental models and specific jargon from their domain of expertise into a shared language and meaning that the rest of the team can understand.

## *Recommendation Summary*

In our interviews, we asked interviewees to provide leadership tips for business executives implementing AI in their organizations. We encountered several key patterns in the responses. Based on the synthesis of the data, here are our main recommendations for leaders:

**1. Start with the business problem, not the technology.**
Leaders need to identify the business problem first and then consider if AI may play a part in the solution. It's very easy to get seduced by shiny new technology, without considering whether it will really add value to your business.

*"A fool with a tool is still a fool." - Participant*

**2. Don't get sucked in by the hype.**
AI is mentioned with increasing frequency on many media platforms, with stories about current and future applications debates about the ethics of AI and it wider impact on how we live and work. Leaders often feel pressured to jump on the AI bandwagon and 'do AI' to stay competitive. Talk with people facing similar challenges to get a balanced view of what it might do for your business.

*"We overestimate the short term impact of AI and underestimate the long term." - Participant*

**3. Suspend initial critical judgment.**
Knowledge workers have a tendency to make quick judgements, but it may be hard to assess the benefits of AI in the early stages of implementation.  It may take many years for the real benefits to emerge.

*"It's not magic. It's math." - Participant*

**4. Build tolerance for failure in businesses that prioritize getting things right.**
Many professionals have a low tolerance for failure in their own area of expertise, which they then apply to other business issues.  Many of our interviewees mentioned failed AI projects, which provided valuable insights for future initiatives.  The challenge is how to harvest these insights when things don't work out as planned.

*"In science, an experiment that doesn't support the*
*hypotheses is data – not a failure."* **-** *Participant*

**5. Admitting your own ignorance is a sign of strength.**
This can be tough for leaders who value their own professional knowledge.  Build a network of people whom you can learn from, within and outside your sector.

*"Hire people you trust to go out and do things you*
*don't understand." - Participant*

**6. Lead the cultural change.**
Leaders need to think about the cultural shift needed from the outset and plan for it, rather than leave this to chance.  As AI may have a profound effect on some people's jobs, honest conversations are really important.

*"Organizations mistake adaptive challenges, like behavioral,*
*cultural and political issues, for technical challenges, so they*
*hope that AI might revolutionize some of that, but AI might only*
*provide a technical solution to these challenges." - Participant*

**7. Play the long game.**
This can be a challenge for knowledge businesses, either because they don't plan beyond the next couple of years, or because the reporting cycle dominates daily life.

*"Take a long term view, over a decade, which doesn't fit*
*well with quarterly reporting cycles." - Participant*

## *Future Plans*

We are planning additional research to test and expand our findings. In addition to offering consultancy to leaders implementing AI, we will be writing a book regarding the leadership challenges linked to AI integration.

Our current plans include further research with:

▷ **An Organization for a Case Study.** We would like to partner with a business that's about to embark on the implementation of AI, to track the project and leadership challenges from inception to implementation, talking to a variety of stakeholders at different levels.

▷ **C-Suite Leaders.** We want to interview additional C-Suite executives in businesses already using AI.

▷ **Leaders of Professional Associations.** AI is impacting a wide variety of industries and we are interested in interviewing professional association leaders to capture their thoughts on the impact of AI on their members.

▷ **Team Leaders and Members.** Team leaders can provide insights about the challenges in implementing AI at a team level where the human-machine collaboration happens and the work gets done. We are also interested in the "bottom up" perspective to organizational change and what enables professionals to adapt and work in partnership with AI systems.

▷ **Researchers.** Interviewing experts on the human-machine interface and organizational change to help us build a picture of future technology developments and how to maximize their value in the workplace.

We are interested in any recommendations you might have for people we should interview as we expand our research. You can learn more about our work here: www.leadinghumansandmachines.com

Contact our team at: contact@leadinghumansandmachines.com.

Thank you for your interest in our research!

Sincerely,
Liz Baltesz, Taylor Harrell, Sara-Michele Lazarus, Mike Mister, and Michael Seelman