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Governance

Empowering AI Leadership

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Introduction

Artificial intelligence (AI) is a high-stakes technology. Analysts project AI will generate trillions of dollars of value via new business models and processes, and through innovative products and services.¹ But the unintended consequences of AI can have reputation-damaging outcomes, reducing brand equity and causing tension with shareholders and the increasingly ethically conscious and informed consumer. Additionally, underperforming AI systems lead to costly delays as they need to be re-examined and corrected. According to a July 2018 survey by SAS, Accenture Applied Intelligence, Intel and Forbes Insights, 24% of respondents completely overhauled an AI system due to inconsistent outcomes, a lack of transparency and/or biased results.²

The question then becomes: How do boards oversee the leaders who make major decisions about AI? The answer must clarify who has accountability for oversight and decision-making, and what those responsibilities are. The oversight process should result in AI that has been through a rigorous ethical review without stifling innovation, and that is effective, efficient and inclusive.

This is the province of board-level AI governance. AI governance requires attention because:

- **Artificial intelligence creates new technology governance challenges and amplifies existing ones.** AI introduces a new issue to the world of governance: How to oversee systems that can learn and independently make complex decisions but are vulnerable to human weaknesses such as bias and to criminality. Apart from setting ethics standards (see Ethics module), leaders must decide how to select the decision-making models at the heart of machine-learning systems and make decisions about transparency and human control. At the same time, AI raises the importance of data governance because training machine-learning

systems requires enormous datasets, and workforce governance, since many employees will see their work changed or eliminated by AI systems. Boards must also consider whether today's governance processes and accountabilities are able to address the questions AI brings to strategy, risk and other control issues.

- **To meet a changing regulatory landscape.** Laws are moving quickly to protect the privacy and liberty of individuals against misuse of data. Given the wide scope of artificial intelligence and machine-learning technology, organizations will benefit from taking a proactive approach to the ethical governance of artificial intelligence, as opposed to redesigning and developing technologies to comply with legal standards at a later date. (See next page on regulations in Europe and North America below.)
- **To align AI with values and ethics.** Explicability, transparency, accountability, fairness, handling data responsibly, guarding against criminal misuse, aligning AI with values and being mindful of the societal implications of AI are all essential pillars of ensuring responsible use of data and AI.

To enable AI systems to be best used while remaining anchored to a company's core values, companies must create the right framework to ethically govern artificial intelligence technology. The framework should set out decision-making rights and accountability for the board and the management team in regard to how ethics standards are set and by whom they are enforced. The framework should also extend governance to the design and operation of AI systems.

This module is intended to help corporate boards decide what governance responsibilities need to be assigned for AI, which board committees, executives and ethics boards participate in the governance process and how accountability will be shared.



In Europe

- The General Data Protection (GDPR) is a regulatory framework that set forth legal protections regarding use of the data of all EU subjects regardless of the country in which they reside or the platform on which their data resides.
- The EU AI High Level Expert Group (AI HLEG) was formed to advise the European Commission and make recommendations on AI ethics guidelines as well as policies for funding and infrastructures for AI in Europe.
- In the UK, the government released an "AI Sector Deal", which includes the establishment of a government-wide Office for AI to oversee governance. In addition, the House of Lords Select Committee on Artificial Intelligence produced a comprehensive report on artificial intelligence.



In North America

- The California Consumer Privacy Act (CCPA) will take effect in 2020. Because there is no federal privacy standard, California may become the de facto privacy law for the US unless Congress passes its own standard.
- On 16 May 2018, Mayor Bill de Blasio of New York City announced the creation of the Automated Decision Systems Task Force. The task force will recommend criteria and procedures for reviewing and assessing algorithmic tools purchased and deployed by the city. These recommendations may include procedures for explaining algorithmic decisions, public appeals of such decisions, ensuring algorithms are not biased against certain highly sensitive groups and how to make technical information about the algorithm being deployed publicly available.

Responsibilities

Boards have a responsibility to ensure their organization has a robust governance structure for setting objectives and monitoring performance. That structure must provide for how the board, management, shareholders and other stakeholders participate in decision-making, and ensure the board has the information required to provide oversight, and that shareholders have information about the strategy, risks and performance of the company. Boards are also responsible for making sure management's plans, actions and policies involving the use of AI are responsible and consistent with the company's ethical standards and legal obligations.

According to the G20/OECD Principles of Corporate Governance:

- Corporate governance... provides the structure through which the objectives of the company are set and the means of attaining those objectives and monitoring performance are determined. (About the Principles, p. 9)
- The board has a key role in setting the ethical tone of a company, not only by its own actions, but also in appointing and overseeing key executives and consequently the management in general. (Principle VI:C)
- The board should fulfil certain key functions, including reviewing and guiding corporate strategy, major plans of action, [and] risk management policies and procedures. (Principle VI.D.1)
- Basic shareholder rights should include the right to... obtain relevant and material information on the corporation on a timely and regular basis... [and] elect and remove members of the board. (Principle II.A)

There are a few key areas that a corporate board can examine to determine if adequate governance structures are in place for AI:

- Board oversight – clarifying which board committee(s) provide oversight, which AI activities they oversee, and whether AI necessitates establishing a new board committee.
- Ethics board – deciding on the responsibilities of the ethics board overseeing AI, how it will maintain its independence and selecting and confirming its members.
- Risk assessment – identifying AI-specific risks that should be considered while providing AI governance.
- Monitoring, audit and response – evaluating the effectiveness of compliance and ethics assurance programmes, and the response to allegations of violations.
- Training – providing education for employees, contractors and other third parties about compliance risk and programmes.
- Reporting to shareholders – as required by law, ensuring reports to shareholders and filings to regulators include information about the risks of AI. They should also report on the use of AI in financial reporting and auditing, as part of verification of the accuracy of financial statements.

The analysis in this section is based on general principles of corporate governance, including the G20/OECD Principles of Corporate Governance, 2015. It does not constitute legal advice and is not intended to address the specific legal requirements of any jurisdiction or regulatory regime. Boards are encouraged to consult with their legal advisers in determining how best to apply the principles discussed in this module to their company.

Oversight

This section includes a single tool:

The AI governance responsibilities tool helps boards of directors create a governance structure for AI. It lists AI activities that may require governance, helps directors decide whether to keep or reassign governance responsibilities and provides a worksheet to assign specific oversight responsibilities to board committees and senior management. The tool also includes setting the responsibilities and qualifications for an independent ethics board.

While using the tool, consider these questions:

Does the governance-setting process:

- Capture a diverse range of views?
- Provide opportunities for people outside of leadership to provide input?
- Follow the organization's ethics principles?
- Protect innovation as well as ethics?
- Include people with the expertise to advise on governance policy?
- Consider motivations for complying with governance processes?

Does the resulting governance structure:

- Support the organization's ethical principles?
- Follow the organizational structure?
- Keep pace with rapid technological change?
- Support innovation?
- Provide oversight of applications?
- Provide guidelines on how frequently governance is updated?

View the tool in Appendix 1.



Agenda

Before the first meeting

Before setting the agenda for the first board meeting on AI governance, the individual who leads the discussion can prepare by:

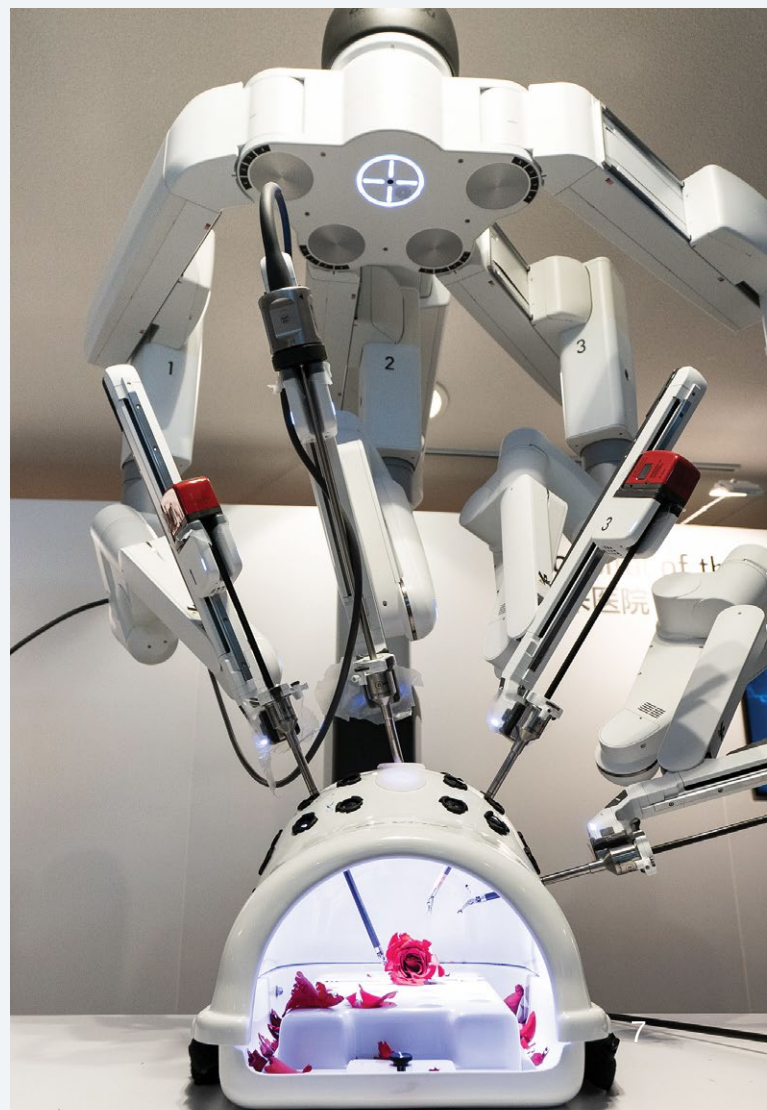
- **Studying the issues:** Become familiar with the governance and ethics issues created by AI, and the most urgent issues for the board to address. The Resources section provides sources on AI and technology standards and ethics codes, examples of ethics boards and other helpful materials. Speak to executives – in particular the senior IT executive, the chief operating officer and the senior executives responsible for data management and ethics – about the governance issues that are on their minds.
- **Gauging board-member interest in AI governance:** Talk to other board members. Learn what importance they place on developing an AI governance framework and what concerns they have. Identify the board members who are most interested in rapidly moving forward on addressing AI governance and ethics issues, and those who have concerns or lack interest.
- **Setting goals:** Identify the desired outcomes from the board discussion.

Topics to consider for the initial agenda include:

- **The need for governance:** Discuss why establishing ethics principles for AI, ensuring they are followed and providing oversight of AI decisions require a governance mechanism at your company.
- **Gap analysis:** Review existing compliance, ethics and technology governance programmes. Are they adequate to govern AI and manage its ethics and risk challenges?
- **Principles and frameworks:** Launch the process of establishing guiding ethical principles and updating governance structures. The Oversight section provides questions to ask.

Other suggested topics for discussions include:

- **Employee attitudes:** Employees have a personal, prevailing sense of right and wrong, honed and adjusted by experience. How do the ethics and governance guidelines square with employees' moral sense?
- **Employee safeguards:** Review whether there are appropriate forums and channels that enable employees to identify and raise issues or concerns around ethical questions.
- **Governance and ethics tools:** Review ways to make it easier for employees to obtain ethics and governance guidance, such as chatbots and hotlines.
- **Frameworks vs. realities:** Does the way AI decisions are made in reality match the framework? Are management incentives aligned with the framework? Is the framework solving the problems it is designed to solve?



Resources

(All references as of 3/8/19)

Articles and reports

- “AI Governance and Its Future,” The Aspen Institute.
- “A Proposed Model Artificial Intelligence Governance Framework”, Personal Data Protection Commission, Singapore, January 2019.
- “Perspectives on Issues in AI Governance,” Google.
- Rumman Chowdhury, “An AI Governance Approach to Support Innovation”, 1776.vc, 5 April 2019.
- Urs Gasser and Virgilio A.F. Almeida, “A Layered Model for AI Governance”, IEEE Internet Computing, 2017.
- “Wresting with AI Governance around the World,” Forbes.com.

Research centres

- Center for the Governance of AI, Future of Humanity Institute and the University of Oxford.
- Ethics and Governance of Artificial Intelligence Initiative, Berkman Klein Center for Internet & Society at Harvard University and the MIT Media Lab.

Ethics and data governance assessment tools

- “Ethics Guidelines for Trustworthy AI”, European Commission – Independent High-Level Expert Group on Artificial Intelligence, April 2019.

- NYU Governance Lab, “Introducing Contracts for Data Collaboration”.
- “The Ethics of Data Sharing: A Guide to Best Practices and Governance”, Accenture, 2016.
- “Universal Principles of Data Ethics: 12 Guidelines for Developing Ethics Codes”, Accenture, 2016.

Risk and privacy assessment

- Centre for Information Policy Leadership, “A Risk-Based Approach to Privacy: Improving Effectiveness in Practice”, 2014 (contains a draft risk matrix for data).
- Data Protection Impact Assessment (DPIA) by UK Information Commissioner’s Office.
- Privacy Impact Assessment (PIA) by US Federal Trade Commission.

Examples of AI ethics board and panels

- Australian Computer Society’s AI Ethics Committee.
- Axon’s AI Ethics Board.
- DeepMind’s Ethics & Society fellows (AI research arm of Alphabet).
- DeepMind’s Health Advisory Board, Clinical Advisers and Patient Advisers.
- Lucid’s Ethics Advisory Board.

Endnotes

(All references as of 3/8/19)

1. McKinsey Global Institute, “Notes from the AI Frontier: Applications and Value of Deep Learning”, April 2018; PwC, “Sizing the Prize: What’s the Real Value of AI for Your Business and How Can You Capitalise?”, 2017.
2. SAS, Accenture Applied Intelligence and Intel with Forbes Insight, “AI Momentum, Maturity & Models for Success”, 2018.

World Economic Forum
91-93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland
Phone: +41 (0) 22 869 1212

San Francisco Centre for the Fourth Industrial Revolution
1201 Ralston Ave, San Francisco, CA 94129,
Phone: (415) 704-8848

contact@weforum.org | www.weforum.org

For more information, contact Kay Firth-Butterfield,
Head of AI and Machine Learning,
Centre for the Fourth Industrial Revolution.

kay.firth-butterfield@weforum.org

Appendix: AI governance responsibilities tool

This tool can be used as an aid to gain familiarity with AI governance issues, as a governance framework to identify governance needs and as a tool to assign governance responsibilities to the board of directors, management and ethics boards.

The list of potential governance contained below builds on governance guides for artificial intelligence and data management.

How to use this tool

Step 1: Decide which activities require governance. Review the first two columns of the list below. Ask the following questions:

- Which activities do not require governance at your organization? Remove them from the list. These are activities that are not performed at your company or risks you are not facing. However, the items on this list apply to almost any company that is using AI.
- What other organizational activities require oversight? Consider other activities, decisions and processes involving artificial intelligence at your company. Add them to the list.

Step 2: Decide whether to keep, reassign or set up new governance responsibilities. If the answer to any of the following questions is no, the governance structure is likely to require changes. Enter the decision in the chart below.

- Are all AI activities overseen under the current governance structure?
- Does the governance structure clearly assign responsibilities for AI decisions?
- Are the committees now providing oversight able to:
 - Effectively set, promote and enforce standards of ethical behaviour?
 - Provide independent, unbiased and well-informed oversight of decisions involving AI?
 - If they are not, would replacing or educating current committee members provide a better solution than establishing a new committee, or assigning responsibility to a different committee?
- If governance mechanisms have proven inadequate in the past, were the causes discovered and addressed?

Step 3: Establish a governance structure for AI. This step has two parts: establishing the structure of the ethics board and amending the board committee structure.

3A. AI ethics: decide whether to establish an AI ethics board, add responsibility for ethics to the existing AI board or establish a new ethics board

- If there is already a corporate ethics board or technology ethics board, decide whether to create a separate board for AI.
 - Does it have the independence required to make ethics decisions unimpeded by commercial interests?
 - Are there limitations that make it difficult to provide adequate oversight of AI? (Unable to give enough time to AI ethics oversight, lack of knowledge about AI and related technology and data ethics issues, urgency of AI ethics issues.)
 - Will a separate AI ethics committee help the organization meet legal requirements, address public concerns, improve the company's reputation and trust?
- If no ethics board now exists, decide whether to establish a board.
 - How are ethics standards set and monitored now?
 - How would an ethics board help your organization address pain points? What business issues would an ethics board help address?
 - What are the objections to an ethics board at your organization? How can they be addressed?

3B. Board committees: decide whether to keep, amend or create new board committees

- Decide which existing board committee(s) should be responsible for AI oversight.
 - Which AI activities are the highest priority for oversight?
 - Which board committees have the expertise to provide informed, efficient oversight of AI?
 - Which committees' current responsibilities are the best match for AI oversight responsibility?
- If more than one board committee is suitable, is there a coordinating mechanism for dividing oversight responsibilities and aiding collaboration between the committees? If not, consider having AI addressed by just one committee or by the entire board.

- Decide whether to create a new board committee with AI oversight.
 - If no board committee is currently suitable for AI oversight, should a new board committee be established, a task force be set up or an existing committee's responsibilities, members or skills be changed? Consider whether current committees have the interest, skills and time to provide AI oversight, and whether there are any deadlines for establishing AI governance, as well as any local or business unit requirements that must be addressed.
 - Should the new committee have oversight of other technology activities?
- If your organization has a dual board structure (supervisory and management board), does AI governance require the independence that only the supervisory can provide?

Step 4: Assign governance responsibilities. For each AI activity, decide which board committee and executives are responsible for oversight and execution of the AI activity. As you do so, consider the “Additional Step 4 questions for governance decisions” contained in the table below. Enter the kind of responsibility using the key below.

O: Oversight	Reviews approved decisions
A: Approve	Approves decisions
D: Decide	Makes decisions
R: Recommend	Recommends course of action
C: Counsel	Provides non-binding advice
E: Execute	Carries out decisions
I: Informed	Is informed of decisions and execution of decisions

Step 1		Step 2	Step 4	
Select activities requiring governance: <ul style="list-style-type: none"> • Ethics • Risk/reward (Strategy, Risk, Innovation) • Technology (Models, Data, Operations) • People (Customers, Employees, Public) 		Evaluate governance	Assign governance responsibilities	
			Ethics board	Board of directors
		Choose one: 1. Not currently governed 2. Requires no change – keep current committee assignment 3. Assign to different committee, board or executive 4. Assign to new committee	Enter which ethics board has responsibility and the kind of responsibility: AI ethics board, technology ethics board, research review board or ethics issues	Enter which board committee has responsibility and the kind of responsibility (if your company has a two-level board, enter supervisory or management board)
Ethics	Establishing an ethics board <ul style="list-style-type: none"> • Establishing and defining scope and responsibilities of ethics board responsible for overseeing AI • Appointing members of ethics board responsible for overseeing AI 			
	Creating a code of ethics for AI <ul style="list-style-type: none"> • Developing ethics principles for AI • Rolling out the ethics code for AI • Periodically reviewing and revising the ethics code 			
	Educating leaders, employees and contractors on ethics <ul style="list-style-type: none"> • Providing ethics training 			
	Advising on ethics principles and codes <ul style="list-style-type: none"> • Advising and supporting the board of directors • Advising and supporting the senior management team • Advising employees, including legal, human resources, people who develop AI systems and people who use AI • Advising external partners, suppliers and contractors 			
	Enforcing ethics principles <ul style="list-style-type: none"> • Monitoring and reporting violations • Providing support and channels for whistleblowers • Holding violators accountable 			
	Additional Step 4 questions for governance decisions <ul style="list-style-type: none"> • Who has responsibility for managing conflicts over ethics principles and enforcement? • How will those affected by the ethics code be represented in its creation? • If the ethics board does not have responsibility for enforcing the code of ethics, who should? 			
Strategy	Identifying strategic opportunities, needs and risks <ul style="list-style-type: none"> • Identifying potential value from AI innovations and applications • Evaluating business risks of AI systems • Evaluating ethical and legal risks of AI systems • Setting strategy goals and plans to use AI 			
	Investing in strategic AI systems <ul style="list-style-type: none"> • Selecting major vendors and consultants • Approving spending on major systems 			
	Implementing AI strategy <ul style="list-style-type: none"> • Executing AI strategy • Adhering to ethics standards • Monitoring performance • Evaluating success of strategy 			

Step 1		Step 2	Step 4	
Select activities requiring governance: <ul style="list-style-type: none"> • Ethics • Risk/reward (Strategy, Risk, Innovation) • Technology (Models, Data, Operations) • People (Customers, Employees, Public) 		Evaluate governance	Assign governance responsibilities	
			Ethics board	Board of directors
		Choose one: 1. Not currently governed 2. Requires no change – keep current committee assignment 3. Assign to different committee, board or executive 4. Assign to new committee	Enter which ethics board has responsibility and the kind of responsibility: AI ethics board, technology ethics board, research review board or ethics issues	Enter which board committee has responsibility and the kind of responsibility (if your company has a two-level board, enter supervisory or management board)
Strategy	Revising AI strategy <ul style="list-style-type: none"> • Deciding to revisit AI strategy • Deciding to retain or change AI strategy 			
	Additional Step 4 questions for governance decisions <ul style="list-style-type: none"> • Does AI require different strategy governance from other technologies? Consider AI's new capabilities, ways of making decisions, the processes it makes possible and the knowledge it creates. 			
Risk	Setting and enforcing policies for mitigating data quality risks (e.g. inaccurate, incomplete data) <ul style="list-style-type: none"> • Setting data provenance tracking practices (where the data originates, the trustworthiness of the source) and lineage (how it was stored and changed over time) • Deciding who is qualified and granting permissions to access data and under what circumstances • Tracking permissions (the permitted uses and users of data, especially personal data) • Setting data quality practices for collecting, storing and processing and using data • Maintaining different datasets for training, testing and validating AI models • Periodically reviewing and updating datasets 			
	Setting and enforcing policies for avoiding data bias <ul style="list-style-type: none"> • Preventing bias due to using data that is unrepresentative of the reality it is used to model (selection bias) • Preventing bias caused by using systematically skewed data (measurement bias) 			
	Setting and enforcing policies for corporate cybersecurity, privacy and safety risks <ul style="list-style-type: none"> • Preventing and recovering from IP, data and algorithm theft, destruction or corruption • Preventing criminal use of AI systems • Preventing the endangerment of people and property (e.g. AI in robotics, vehicles, factories and plants) 			
	Setting and enforcing policies for assuring audit integrity <ul style="list-style-type: none"> • Assuring integrity of financial statements • Using AI within the audit function • Obtaining visibility into how external auditors use AI for audit work 			
	Setting policies for fairness risks to customers, employees and the public <ul style="list-style-type: none"> • Bias in AI systems by gender, ethnicity, physical features, sexual orientation or political and religious views • Unfairly limiting opportunities to work, own property, receive education or care, or access products, services and public spaces 			

Step 1		Step 2	Step 4	
Select activities requiring governance: <ul style="list-style-type: none"> • Ethics • Risk/reward (Strategy, Risk, Innovation) • Technology (Models, Data, Operations) • People (Customers, Employees, Public) 		Evaluate governance	Assign governance responsibilities	
			Ethics board	Board of directors
		Choose one: 1. Not currently governed 2. Requires no change – keep current committee assignment 3. Assign to different committee, board or executive 4. Assign to new committee	Enter which ethics board has responsibility and the kind of responsibility: AI ethics board, technology ethics board, research review board or ethics issues	Enter which board committee has responsibility and the kind of responsibility (if your company has a two-level board, enter supervisory or management board)
Risk	Managing governance process risks <ul style="list-style-type: none"> • Governance process breakdowns when organization or personnel changes • Irrelevant or ineffective governance structures 			
	Managing crises caused by AI failures <ul style="list-style-type: none"> • Inadequate technology response planning • Inadequate public relations planning 			
	Managing human resource risks <ul style="list-style-type: none"> • Knowledge not transferred from consultants and contractors to employees • Difficulty recruiting people with necessary technical skills 			
	Additional Step 4 questions for governance decisions <ul style="list-style-type: none"> • What other technology risks are applicable to artificial intelligence? • Could risks from AI trigger major lawsuits, fines or other legal punishments, or significant declines in profitability or share value? From customers or employees? 			
Innovation	Encouraging innovation <ul style="list-style-type: none"> • Creating new AI technologies and applications • Identifying AI innovations and their potential use • Developing innovative new processes that use AI • Establishing and supporting processes for exposing management to new opportunities to use AI • Establishing and supporting processes for adopting AI • Establishing a culture that supports AI innovation 			
	Establishing governance processes for AI teams <ul style="list-style-type: none"> • Providing avenues for AI teams to escalate issues with AI systems under development • Connecting AI teams with legal and compliance teams 			
	Ensuring rigorous, ethical AI research <ul style="list-style-type: none"> • Reviewing rigour of research process and techniques • Reviewing accuracy of research • Adherence to ethical research guidelines 			
	Additional Step 4 questions for governance decisions <ul style="list-style-type: none"> • What are the long-term strategic goals of the organization as it pertains to innovation? Can you work backwards to identify guiding principles for AI governance? • How is setting and enforcing rules best balanced with supporting a culture of innovation? • Is your organization required to work with institutional review boards or other research ethics oversight procedures? • What governance structure can support both ethical AI and innovation? 			

Step 1		Step 2	Step 4	
Select activities requiring governance: <ul style="list-style-type: none"> • Ethics • Risk/reward (Strategy, Risk, Innovation) • Technology (Models, Data, Operations) • People (Customers, Employees, Public) 		Evaluate governance	Assign governance responsibilities	
			Ethics board	Board of directors
		Choose one: 1. Not currently governed 2. Requires no change – keep current committee assignment 3. Assign to different committee, board or executive 4. Assign to new committee	Enter which ethics board has responsibility and the kind of responsibility: AI ethics board, technology ethics board, research review board or ethics issues	Enter which board committee has responsibility and the kind of responsibility (if your company has a two-level board, enter supervisory or management board)
Models	Selecting the algorithmic decision-making model in an AI system <ul style="list-style-type: none"> • Adhering to risk management policies (see <i>Risk section</i>) • Setting the objective for the system that contains the algorithmic model, with guidance from ethics and corporate values • Weighing objectives against probability and severity of risks, legal requirements, reliance on sensitive data and possible unintended impacts • Considering whether augmenting people instead of automating work could provide greater benefits • Deciding whether humans should be in the decision-making loop, entirely out of the loop or over the loop (able to override the system or make adjustments while the algorithmic model is operating) • Deciding trade-offs between the algorithm's performance requirements (accuracy, capabilities) and responsibility requirements (fairness, transparency) 			
	Additional questions for Step 4 governance decisions <ul style="list-style-type: none"> • Should AI systems run by a central IT organization be governed in the same way as AI systems obtained and run without their direct involvement? 			
Data	Ensuring data used for training and operating an AI system is trustworthy and unbiased <ul style="list-style-type: none"> • Adhering to policies for data quality (see Risk section) • Adhering to policies for data bias (see Risk section) • Periodically reviewing and updating datasets 			
	Sharing data with outsiders <ul style="list-style-type: none"> • Achieving mutual accountability between partners • Sharing information about the context and interpretation of data that is shared • Following common, standardized procedures for sharing data • Following common ethical review procedures • Mutually identifying potential risks of sharing data 			
	Additional questions for Step 4 governance decisions <ul style="list-style-type: none"> • How will governance of sensitive personal data differ from other kinds of data? • How will contextual information – information about permissions and consent, and resources for interpreting raw data – be governed? • Will the governance meet the requirements of Europe's GDPR and other local data and privacy protection laws? • How will your organization balance compliance with requests for data from local governments and protecting personal data and IP? • How does the company receive legal advice on data protection requirements? • What data governance is required by the partners with whom your organization shares data? 			

Step 1		Step 2	Step 4	
Select activities requiring governance:		Evaluate governance	Assign governance responsibilities	
			Ethics board	Board of directors
		Choose one: 1. Not currently governed 2. Requires no change – keep current committee assignment 3. Assign to different committee, board or executive 4. Assign to new committee	Enter which ethics board has responsibility and the kind of responsibility: AI ethics board, technology ethics board, research review board or ethics issues	Enter which board committee has responsibility and the kind of responsibility (if your company has a two-level board, enter supervisory or management board)
Operations	Achieving AI system transparency (explainability, repeatability, traceability) <ul style="list-style-type: none">Establishing ways to explain how algorithms function to technical and non-technical peopleIf explanations are not possible, then documenting repeatability of resultsEnabling AI decisions and actions to be audited by third partiesEnabling tracing decisions via audit trails, black box recorders, etc.Documenting decisions (e.g. how model training and selection was conducted, reasons for choice of model, measures taken to address risks)			
	Maintaining AI systems <ul style="list-style-type: none">Ensuring models are regularly tuned and refreshedEnsuring that testing reflects changes and fluctuations in production environmentsEnsuring improvements and fixes to AI systems regularly take place			
	Guiding locally run AI systems <ul style="list-style-type: none">Keeping track of AI systems not operated by the central information technology departmentSetting rules for individuals or groups who wish to operate their own AI systems			
	Defining and responding to AI system failures <ul style="list-style-type: none">Defining performance levels considered unacceptableSetting alternative or fallback plans when systems fail			
Customers	Establishing policies on disclosing information about AI to the public, including: <ul style="list-style-type: none">Whether and how AI is used in products and services (e.g. to make decisions about individuals)How an AI system's decision may affect individualsWhether AI decisions are reversibleSummaries of internal ethical evaluationsWhen interacting with chatbots instead of humansWhen replies to chatbots are used to train systemsMaking disclosures easy to understandKeeping a history of chatbot conversations			
	Establishing policies on receiving customer permission, including: <ul style="list-style-type: none">Opting out by default, or upon requestMaking permission requests easy to understand and answer			
	Providing recourse. Ensuring there are: <ul style="list-style-type: none">Mechanisms to report privacy, data protection and bias problemsChannels to provide feedback or raise queriesChannels to review decisions made by AI systemsAvenues to request a review of AI decisions that have affected them			
	Additional questions for Step 4 governance decisions <ul style="list-style-type: none">What customer protections and oversight are required by law in the countries where you operate?			

Step 1		Step 2	Step 4	
Select activities requiring governance: • Ethics • Risk/reward (Strategy, Risk, Innovation) • Technology (Models, Data, Operations) • People (Customers, Employees, Public)		Evaluate governance	Assign governance responsibilities	
			Ethics board	Board of directors
		Choose one: 1. Not currently governed 2. Requires no change – keep current committee assignment 3. Assign to different committee, board or executive 4. Assign to new committee		Enter which ethics board has responsibility and the kind of responsibility: AI ethics board, technology ethics board, research review board or ethics issues
Employees	Establishing policies on disclosing information about AI to employees, including: <ul style="list-style-type: none">• Whether and how AI is used in human resource systems (e.g. to evaluate employees)• How an AI system’s decision may affect individuals• Whether AI decisions are reversible• Providing summaries of internal ethical evaluations• When an employee is interacting with chatbots instead of humans• When replies to chatbots are used to train systems• Making disclosures easy to understand• Keeping a history of chatbot conversations			
	Establishing policies on receiving employee permission <ul style="list-style-type: none">• Which human resource systems require employee permission• Opting out by default, or upon request			
	Establishing policies on training employees <ul style="list-style-type: none">• Anticipating how AI will change the future of work within the company• Ensuring training programmes are in place to develop needed skills• Providing programmes to assist and retrain employees whose jobs are eliminated or whose job descriptions are changed• Reducing barriers to entering these programmes for individuals affected by AI			
	Establishing policies on training AI systems <ul style="list-style-type: none">• Protecting the mental health of employees who review emotionally disturbing images and text in the course of training AI systems			
	Providing recourse to employees <ul style="list-style-type: none">• Establishing mechanisms to report privacy, data protection and bias problems with AI systems• Providing channels to give feedback and raise queries• Providing channels to review decisions made by AI systems they use• Providing avenues to request a review of AI decisions that have affected them• Providing avenues to access and correct data on employees• Providing assistance to workers displaced by AI systems			

Step 1		Step 2	Step 4	
Select activities requiring governance: <ul style="list-style-type: none"> • Ethics • Risk/reward (Strategy, Risk, Innovation) • Technology (Models, Data, Operations) • People (Customers, Employees, Public) 		Evaluate governance	Assign governance responsibilities	
			Ethics board	Board of directors
		Choose one: 1. Not currently governed 2. Requires no change – keep current committee assignment 3. Assign to different committee, board or executive 4. Assign to new committee	Enter which ethics board has responsibility and the kind of responsibility: AI ethics board, technology ethics board, research review board or ethics issues	Enter which board committee has responsibility and the kind of responsibility (if your company has a two-level board, enter supervisory or management board)
Public	Influencing public policy <ul style="list-style-type: none"> • Influencing government actions that weaken privacy protections (e.g. installing backdoors, limiting encryption, public surveillance) • Influencing government actions to strengthen privacy protections (e.g. GDPR, CCPA HIPAA) • Lobbying for or against legislation on AI • Making campaign donations in countries where permitted by law 			
	Promoting the public good <ul style="list-style-type: none"> • Participating in efforts to use AI for public well-being (public health, inclusive economic growth, education, civic improvements, combating hate etc.) • Participating in efforts to prevent harmful uses of AI (spreading disinformation, fake videos etc.) 			