The impact of Artificial Intelligence on Financial Services & Implications for Business Strategy

Table of Contents

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Executive Summary

The financial services industry is at the forefront of the worldwide deployment of Artificial Intelligence (AI). Today, AI is exerting a major impact on financial services - from algorithmic stock trading applications to the detection of credit card fraud and so-called "robo-advisors" providing investment advice. In recent years, robo-advisors have seen an increase in popularity, especially among smaller retail investors. The ease of using digital applications to get quick, customized investment advice compliments the hectic lives of many consumers. AI is also being used in financial services for a more complex range of enterprise functions. While most trades are settled automatically, some require individual attention, for example, due to a market anomaly.

Such technology, however, holds the potential to be either a transformative and beneficial force, or a destabilizing, even existential, threat to the global financial system. Financial institutions' operating models are being fundamentally reshaped, making financial institutions more specialized, leaner, highly networked and dependent on technology players' capabilities. At the same time, the financial ecosystem's competitive dynamics are being pushed up, driving the creation of bifurcated markets where size and agility benefit at the cost of conventional mid-scale players that makeup a large part of the industry.

In financial services, the first movers in the deployment of AI will be able to increase their lead, accelerating early data advantages for both front and back offices, which will have a profound impact on firms' strategic approach to alliances infrastructure and talent. But shared prosperity is far from assured in this rapidly evolving future and demands greater cross-industry cooperation than is currently being demonstrated. In fact, organizations will need to balance their market strength against new opportunities for collaboration. AI provides financial institutions with the ability to solve a variety of common issues that plague both the industry and its customers, but only when they work together to create shared solutions that benefit all.

Given the inherent interconnectivity of the financial system, there is also a strong international dimension to the rise of AI. Corporate players tend to see AI as a business opportunity, rather than a technology challenge. To do this, they need a comprehensive strategy that identifies concrete barriers and opportunities where AI technologies would be able to create new value for business. Equally crucial is that financial institutions must ensure that they employ responsible, ethical AI applications that customers, employees and the general public can trust. In this context, the aim of this e-book is to examine and to provide an in-depth analysis regarding the impact of Artificial Intelligence on the financial services sector.

Key Findings

From the research presented, we highlight the most important findings regarding the implementation of Artificial Intelligence in financial services over forthcoming years:

- Financial Institutions will turn AI-enabled operations into external services, both speeding up the rate at which these capabilities improve and forcing others to become consumers of those capabilities so that they do not fall behind.

- Future customer experience will be centered on AI, which automates a large part of its customers' financial lives and improves their financial performance.

- Regulations governing the confidentiality and portability of data will form the relative ability of financial institutions to deploy AI and thus become as important to the competitive positioning of companies as conventional regulations.

- Collaborative solutions based on shared data sets will radically increase the accuracy, timeliness and performance of non-competitive functions, creating mutual operational efficiencies and improving the financial system's security.

- Talent transformation will provide the most challenging obstacle for the widespread application of AI, putting the competitive positioning of firms and geographic areas that fail to effectively transition through talent alongside technology at risk.

- Another key to getting AI right is engaging the C-suite in defining data governance and strategy.

- The decision to use AI should be compared alongside the performance of traditional techniques. Firms should determine whether the potential alpha capture is worth the additional cost and complexity of applying AI.

- Increasing numbers of hedge funds are using complex AI-based systems to produce thousands or even millions of businesses every day. By analyzing a wide range of market factors in real time, these systems, based on machine learning and deep learning, facilitating high-frequency trading.

- Many have virtual assistants, chat bots and NLP as a powerful way to get started with building emotional intelligence into AI solutions.

Structure of the E-book

The remainder of the e-book is organized as follow:

The first chapter examines the rise of AI in financial services. To begin with, we analyze the types and technologies of AI. We continue with the lifecycle phases and the key drivers of AI. Moving to the economic landscape of AI, we provide an in-depth analysis regarding the market size, forecasts, investments and AI start-ups.

Moving on to the second chapter, we examine the implementation of AI in financial services. More precisely, we analyze the use cases, benefits and challenges of AI in the sector.

The third chapter provides a comprehensive analysis of AI within the banking sector. Especially, we examine the applications, opportunities and threats for banks with regards to this development.

The fourth chapter analyzes the effect of AI on insurance, taking into consideration subjects such as insurance innovations and challenges, among others. Furthermore, we present the best digital insurance companies active in the development of AI-based solutions.

In the fifth chapter, a discussion around the usage-based approaches to AI is presented. In addition, we examine fleet insurance and the effect of digitization on fleet insurance management and flow.

The sixth chapter discusses the effect of AI on asset and wealth management. More precisely, we examine how AI is transforming such considerations on the wider scale. Moreover, we present the most important AI platforms for smarter trading and analyze its impact on pensions.

Finally, in the sixth chapter, certain predictions are made about the impact of AI on the economy, companies, employees and countries; as well as an analysis of the best practices to scale AI.

Objectives of Market Research E-book

This study has assimilated knowledge and insight from business and subject-matter experts, and from a broad spectrum of market initiatives. Building on this research, the objectives of this market research report is to provide actionable information concerning the impact of AI on financial services, as well as fact-based information about specific challenges, opportunities and other critical issues in terms of detailed analysis and impact.

The e-book in its entirety provides a comprehensive overview of the current global condition, as well as notable opportunities and challenges. The analysis reflects latest trends in financial services, changes, threats and opportunities. In addition, it provides an in-depth analysis regarding the rise of AI and its impact on the financial services industry. Issues concerning the implementation of AI on banking, insurance and asset management are also examined in detail. Moreover, the study addresses the potential of AI and concludes with guidance and suggestions that financial analysts, bankers and insurers should take into consideration.

Study Scope

Providing an industry overview

The landscape of financial services is rapidly changing with the implementation of AI. This technological solution is creating new differentiators, driven by access to unique datasets and virtuous cycles of data; institutions must use emerging technologies and secular trends to remain competitive.

Understanding market trends

The financial services sector is spending an increasing amount on artificial intelligence and in data analytics for personalized and faster customer experiences to garner the interests of the tech-savvy and the millennial class. Artificial intelligence has reached a stage where it has become affordable and efficient enough for implementation in financial services. The challenge now lies is in exploring more ways where the potential presented by artificial intelligence can be harnessed to streamline internal processes and improve customer experiences.

Explaining the key market factors

The customer, the key driver of any service industry, is also at the forefront of any sector. AI can be used to gain a better understanding of customer spending patterns that will help financial services customize products by adding personalized features. As a result, firms in the financial services sector need to develop long-term strategies for how best to take advantage of the technology's emerging capabilities.

Note on Research Process & Methodology

Our clients use our insights, critical analysis, statistics and forecasts to help make strategic business decisions and grow their organizations. Our research collection offers unique industry perspective, qualitative and quantitative focus. The quantitative analysis is strengthened by a qualitative assessment, based on a literature review, as a means of exploring and illustrating the present scenario and the growth prospects of the insurance industry.

We draw on available data sources and methods to profile developments. We use computerized data mining methods and analytical techniques to identify patterns from publicly available online information on enterprise web sites. Historical, qualitative and quantitative information is obtained principally from confidential and proprietary sources, professional network, annual reports, investor relationship presentations, and expert interviews, about key factors, such as recent trends in industry performance and identify factors underlying those trends-drivers, restraints, opportunities, and challenges influencing the growth of the market, for both, the supply and demand sides. In addition to our own desk research, various secondary sources, such as World Bank, Statista, are referred to identify the investments and market size, percentage shares, splits, and breakdowns into segments and subsegments with respect to individual growth trends, prospects, and contribution to the total market.

CHAPTER
ONE

The market of Artificial Intelligence
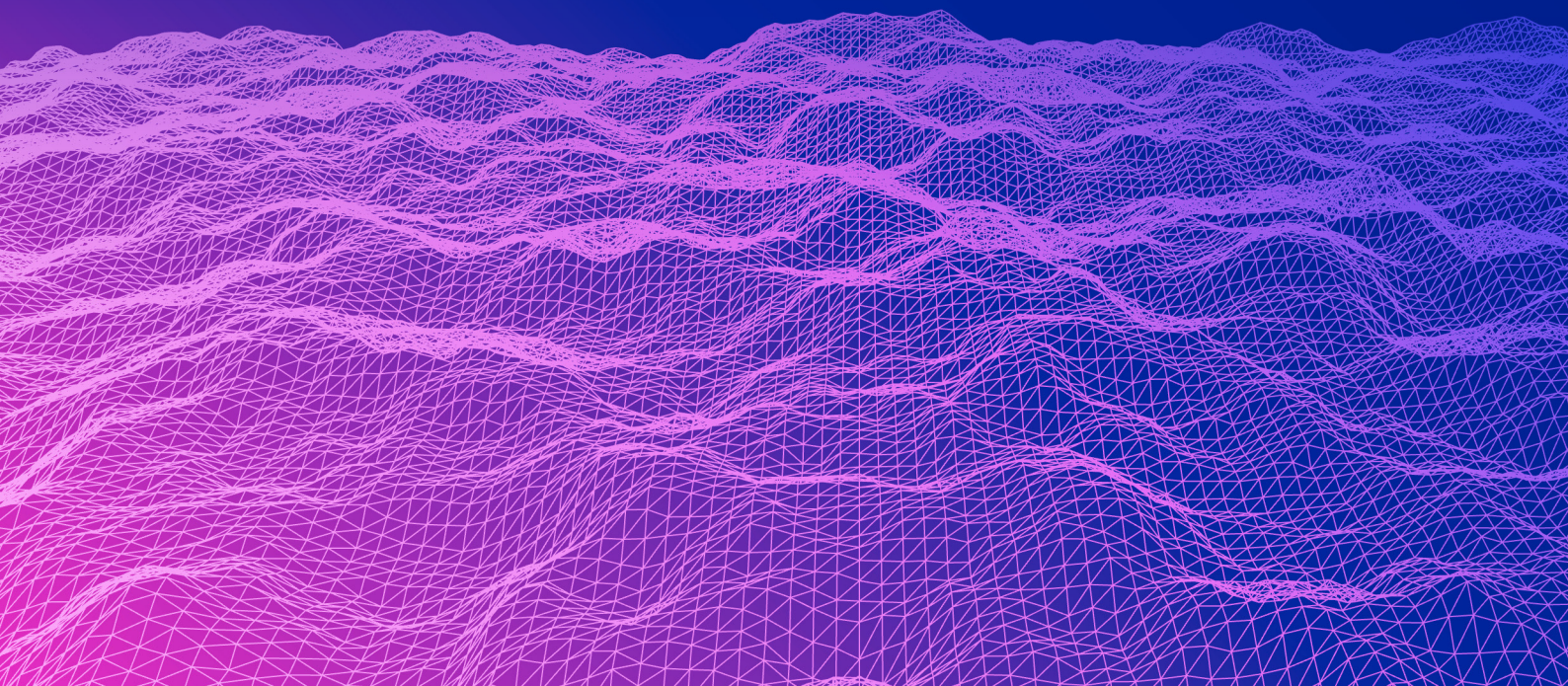
1.1 Evolution and rise of Artificial Intelligence in Financial Services

1.1.1 | Evolution of Artificial Intelligence

Artificial Intelligence (AI) has evolved over the past few years into a powerful tool that allows robots to think and act in a reflective and reactive manner through machine learning. It has also attracted interest from tech companies around the world and is deemed the next major technological transition since smartphone and cloud platform development. These profound technological shifts have had such a widespread effect that they have come to be referred to as the Fourth Industrial Revolution. Businesses that utilize AI and related technologies such as machine learning and deep learning to uncover new business insights are expected to receive USD 1.2 trillion each year over competitors who do not use similar technologies by 2020. Until only very recently, the concept of AI was the stuff of myths, fiction, and speculation. The industrial AI surge in earnest began with six major design objectives as follows: [2]

• Teaching machines to reason in order to perform sophisticated cognitive tasks, such as playing chess, proving mathematical theorems and other similar functions.
• Representation of knowledge for machines to interact with the real world as humans, providing the ability to identify objects, individuals and languages.
• Enabling planning and navigation devices in to further augment the ways we live and travel around the world. This would also allow machines to move around autonomously through self-navigation.
• Make it possible for machines to interpret natural language in order to understand human communication, interactions and the meaning of speech.
• Train machines in perceiving the world around them in a similar way to that in which humans can touch, feel, see, hear and taste.
• Fostering the growth of general intelligence among machines, involving emotional intelligence, intuition and creativity.
All of these aims set the foundation for the creation of a human resource machine. Millions of dollars have been spent on bringing this vision to life. In the current context, the heavy processing power that tiny silicon chips hold today has made AI feasible, thus allowing improved algorithms to be developed. There are four successive catalysts involved in the rebirth and transition of AI: [3]

1. Talari, S. (2018). 6 AI Subscriptions to keep you informed. Medium.

2. Leapfrog. (2019). Evolution of AI.   3. Leapfrog. (2019). Evolution of AI.

1. The democratization of AI knowledge was initiated alongside the widespread accessible to world-class research material.

2. Data and computing power have rendered AI available to the masses without massive upfront investment or backing from a mega-corporation.

Figure 1.1 | Evolution of AI. Leapfrog (2019). Evolution of AI.
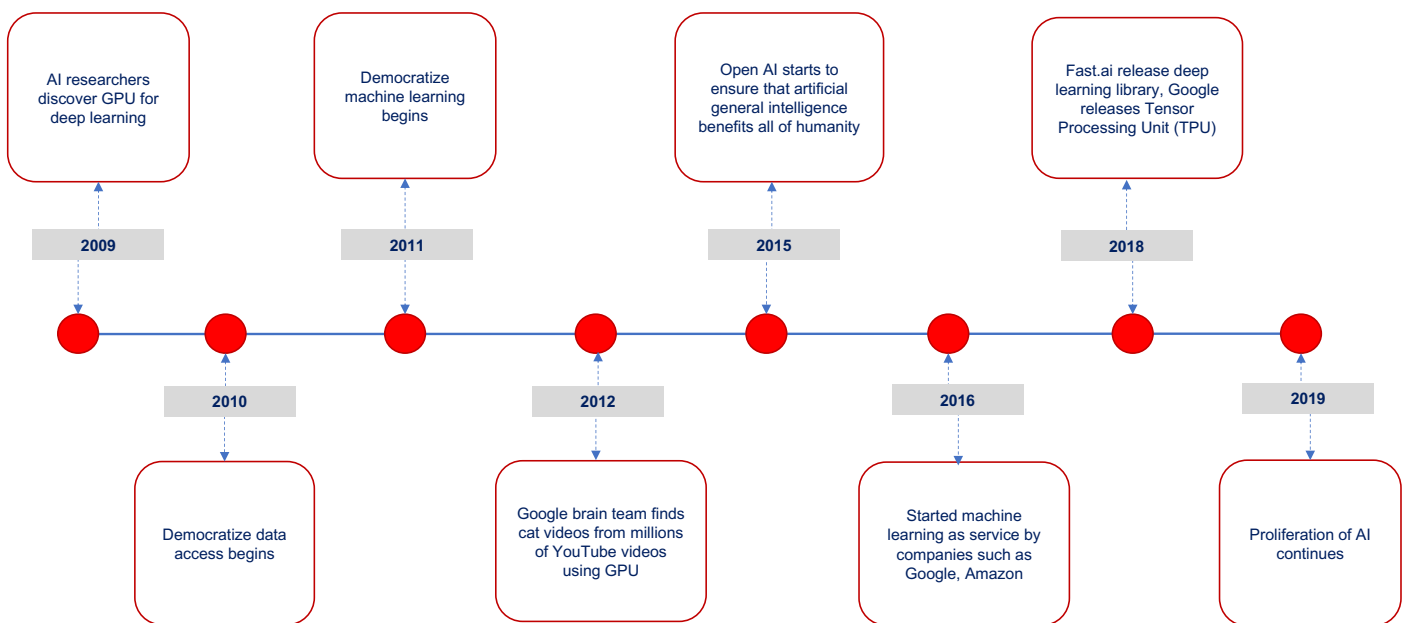
3. Nevertheless, there was a proliferation of new tools and frameworks in 2015 which made it possible for the masses to explore and operationalize AI at the production level.

4. AI as a service has taken this a step further over the past two years, enabling easier prototyping, exploration and even building of sophisticated and smart use-case-specific AIs in the product line. There are platforms such as Google Cloud AI, IBM Cloud AI and many more that provide AI development as a service.

The invention of self-driving cars was precedented by a number of breakthroughs in AI abilities over the past decade or so, including the ability of a machine identifying cat videos from millions of files through an algorithmic form of thinking. An increasing amount of companies today are attempting to solve problems by developing AI strategies throughout their organization. Today, the AI journey, which started with six primary goals, is gradually being realized. With further technological advances, it seems possible to have a future with people and machines living together. Now, businesses can either follow the trend or start planning their AI strategy to create an impact in a technology-driven world.

However, AI is arguably humanity's most complex creations. And that is not taking into account the fact that the field remains largely unexplored, suggesting that every impressive application we see in the field today, as it were, represents merely the tip of the AI iceberg. While this argument may have been begun and restarted numerous times, the potential impact of AI in the future is still difficult to gain a comprehensive perspective. The explanation for this is the revolutionary influence that AI has exerted on society, even in its development at such a relatively early point. AI's rapid growth and strong capabilities have made people concerned with the inevitability and proximity of AI implementation among wider society. The transformation brought about by AI across various industries has also made business leaders think that we are close to reaching a plateau in the capabilities of AI. [4]

1.1.2 | The rise of Artificial Intelligence in Financial Services

There have been many innovations within financial services that have changed traditional banking over time, reimagining the way the industry operates as well as the potential it is able to provide in employment. The financial services industry has developed a tradition of using quantitative methods and algorithms to help decision making. These provide a foundation for continued advances in AI systems readying the industry for AI implementation, putting it at the forefront of embracing and benefiting from AI technologies. AI can build on human intelligence by recognizing patterns and anomalies in large amounts of data, an important function in applications. AI can also more reliably scale and automate repetitive tasks such as composing complex calculations, for example, to determine risks and anticipate outcomes of business activities.

Machine Learning (ML) provides an algorithmic system that can recognize patterns and learn without explicit programming, proving to be one of the most important types of AI in terms of industry-wide applications. Because of its ability to leverage existing algorithms to boost ever-increasing quantities of data, ML has become one of the primary AI technologies used by the financial services industry, creating new capabilities and opportunities. [5]

4. Forbes. (2019). 7 Types of Artificial Intelligence.

5. UK Finance. (2019). Artificial Intelligence in Financial Services.

More precisely, AI is one of a number of technologies that disrupt the finance and banking sector. But AI's potential in finance is just beginning to reach its true potential. AI is just one of several technologies that banks and other financial institutions use to improve internal processes and provide their customers with new experiences and services. This is borne out of necessity, since there is a real chance of change if traditional industries do not adopt advanced technology in the appropriate use cases. Both the financial industry's major and emerging players are opening their doors to AI. For instance, AI-based chatbots are increasingly being used as the customer's first point of contact. It is better for the disruptors as they don't have data silos and they're mostly cloud-based, but the incumbents also have their resources to rely on and continue providing competition in the sector.

Moreover, financial services use AI to create and target specific customer segments with highly personalized pricing, deals and offers. In financial services, targeting important life events is nothing new. AI, however, can improve this marketing's simplicity, speed and accuracy. The technology then uses generated data to ' learn' important aspects about their customer base, further improving targeting and thus deepening customer relationships over time. There is no question that the financial industry is undergoing a transformation, primarily due to technological advances and increased competition. AI in finance is gaining further importance as it represents an essential opportunity to improving online customer experience; with less effort, and more personal and faster resolutions. As the data that we create continues to grow, AI will become ever more crucial. This will lead to a situation in which processes that did not require such functions previously will soon no longer be able to function without AI. [6]

1.2 Definition and Types of Artificial Intelligence

1.2.1 What is Artificial Intelligence?

Artificial intelligence has evolved over decades as one of the most revolutionary technologies; as an artificial simulation of human intelligence. AI is usually incorporated in machines capable of processing huge volumes of data, such as computers. These machines are designed to program and think like people.

6. Information Age. (2019). The beginning of the road for AI in finance, the best is yet to come.

The term AI is also used for machines which can display human-like characteristics. Such traits can be solving problems, learning, memorising information and so on. These intelligent machines have become a major part of our technology industry. Research in AI technology is highly specialized and technical. The AI processes are as follows: [7]

Learning:
Acquiring data and managing the use of information acquired

Reasoning:
Use the rules to reach a definite conclusion or at least an approximation

Self-correction

This technology is rapidly being adopted by global industries and exploring its vast potential. AI could be found everywhere today. Industries use it from data analytics to virtual assistants in a variety of ways. Speech recognition, face detection, learning, planning, problem solving, reasoning, recording, data and object manipulation are some of the other applications in industries around the world. [8] Moreover, artificial intelligence is the practice of using advanced analytical techniques and algorithms to train computers to use data from a wide range of sources and formats to improve, automate and increase decision-making which drives growth and profitability. AI extends the spectrum of human ability and cognition. [9] *Using these technologies, computers can be trained to perform specific tasks by processing large amounts of data and recognizing patterns in the data. Below we analyze the reasons that explain the importance of artificial intelligence:* [10]

ARTIFICIAL INTELLIGENCE REPETITIVE LEARNING AND DISCOVERY THROUGH DATA
Artificial intelligence is distinct from robotic automation powered by hardware. Instead of automating manual tasks, artificial intelligence performs high-volume computerized tasks efficiently and without exhaustion on a constant basis. Human inquiry is still necessary for this form of automation to establish an appropriate system and ask the right questions.

ARTIFICIAL INTELLIGENCE ADDS INTELLIGENCE TO EXISTING PRODUCTS
Artificial intelligence is not being marketed as an individual application in most cases. Automation, conversational platforms, bots and intelligent machines can be combined with large amounts of data to enhance multiple innovations, from security intelligence to investment analysis, at home and in the workplace.

7. BuiltIn (n.d.). Artificial Intelligence. What is Artificial Intelligence? How Does AI Work?.

8. Enterprise edges. (2019). How AI helps banks and financial service in improving their ROI.

9. KPMG. (2018). Unlocking the value of artificial intelligence.

10. SAS. (2019). Artificial Intelligence

6.5 The road to Artificial Intelligence success

» Select a step-by-step approach to familiarize your institution with AI

It is important to start by identifying what problems to solve and what opportunities to pursue given the wide scope of AI and the variations in use cases. High-level prioritization between engaging customers, optimizing operations, empowering employees and/or transforming products and services adds clarity, helps structure the discussion at a strategic level, and ensures a step-changing approach to bringing the company to the next level of AI. Identify the problems that you want AI to solve, prioritize the value with business owners, and recognize the gaps in ability to get there. AI should serve your business plan, not the other way around.

» Show executive leadership and take AI from a strong position

Leadership comes from above, in the case of AI as well. To do this, executives need to understand the essential AI and strategic perspectives, and they need to communicate to the organization a clear AI ambition. AI leaders should actively sponsor and mobilize AI adoption through management and operational staff at all levels, from the board and executive levels. Staying ahead in the accelerating AI race requires leaders to make informed decisions about where and how to use AI in their business. Look at the strongholds before implementing AI solutions, to determine existing strengths of the company and catalyze motivation and support internally.

» Hire new skills ahead of the curve – or focus on training existing talent without ceasing

The war for new skills and talent is a key challenge for putting AI into productive use and speeding up intended outcomes. This relates not only to data scientists and software engineers, but also to human and behavioral science skills sets and experience. It can be risky to opt for a follower strategy and to be late in the game as talent seeks to go where talent is already. If it is difficult to embrace aggressive poaching for insourcing talent, then work bottom-up by training the engineers you already have on the new AI paradigm and ride collaboratively on the others' backs. Regardless of strategy, the key to staying ahead and progressing along the learning curve is to focus relentlessly on building the required skills and talent.

» Build an AI-fitting data strategy and technology stack

Training your AI products requires substantial data, so setting up a solid data strategy and practice in your organization to acquire data skillfully, identify data, clean data, measure data, and manage data will ultimately make your organization thrive with AI. Build your AI resources around data engineers organizing the data, data scientists researching the data, software engineers developing algorithms and implementing applications. Make sure that your data power is harnessed by your structure and governance and that your technology stacks across products, solutions and applications softly that your AI priorities are enabled.

» Beyond everything else, build confidence and enable human ingenuity

AI can expand the capabilities of companies when designed with people at the center, free up creative and strategic efforts, and help achieve increased and better customer interactions. Humans are the true heroes of AI, designing experiences that increase and unlock human potential. By choosing a 'People First, Technology Second' approach, organizations can further implement AI technologies to enhance the ways in which people live and interact, bridging emotional and cognitive intelligence, tailoring interactions to the use of technology by people, acknowledging differences and embracing the diversity of ways in which people engage with each other.

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