Abstracts

Artificial intelligence (AI) is a transformational technology that is going to infiltrate all human activities, in both society and firms, as it is incorporated in software. AI is not a goal but a means. Strategically and competitively at stake are the degree to which actors in the French ecosystem will control this new technology and the speed at which the knowledge and skills necessary for disseminating the new technology will be acquired. Firms must develop their capacity for implementing this technology by working on their data infrastructures and software environment (which must open to freeware) and by favoring the iterative work of small multidisciplinary teams in short cycles. Drawing from a report by the Academy of Technologies, this article advocates the development of engineering practices in AI: tests, learning protocols, the certification of all processes for using data all along the chain, and the auditing of processes.

After a few years on the outside, artificial intelligence (AI) has once again hit the headlines, raising hopes for a revolution in several businesses. It is benefitting from the combined effects of the exponential growth in computing power and the availability of a wealth of data spawned by the Internet and social media. The financial industry depends on its capacity for capturing and processing information and then using it to add value to its operations. It thus feels the brunt of this revolution on the march that is affecting the foundation of its business model, which could be upended by newcomers, such as the GAFA (Google, Apple, Facebook and Amazon). This would force it to reinvent, through alliances, its jobs and services. This article describes the situation in trading (which has long used algorithms) and asset management (between reality and prospective studies). It then examines business-to-customer (B2C) relations, since these changes are being driven by customers' new needs (ubiquity, availability, rapidity) and their behaviors (posts on the social media). The use of AI is a challenge for industries, customers, citizens and regulators. Regulators should not stymie the expected benefits from AI-based innovations (for example: knowledge about customers or the detection of abuses) but should pay heed to the eventual risks for market operations and with respect to protecting investors.

Even as the digital transition is changing the behavior patterns of its shareholder customers, as its account advisors need assistance in everyday activities in order to provide better ser-

vices to customers, and as the first cognitive computing solutions are being worked out thanks to Watson, the Crédit Mutuel is working with IBM (its partner for 55 years now) to develop, for the first time, AI-based applications in the French language. This project, which started in mid-2015, has come up with three initial solutions (an e-mail analyzer and two virtual assistants) that were deployed during the first semester of 2017 in the 2800 agencies of the Crédit Mutuel and the CIC. The 20,000 account advisors who follow up on relations with shareholder customers will use these tools. After explaining this process, attention is turned toward the initial training and ongoing learning to be dispensed for using this technology, and toward the (current) limits of artificial intelligence and its coming uses. Seven lessons have been learned…

27 Artificial Intelligence and customer protection in the banking and insurance industry
Olivier Fliche

The financial, banking and insurance industries are in the throes of deep changes as a result of the use of artificial intelligence and the explosion of customer data now available for processing. New products, new customer relations… the changes to come will, for sure, bring progress, the first signs already being visible. But these changes are laden with risks for customer relations. The asymmetry of information that characterizes these relations risks increasing to the benefit of professionals who are better equipped to identify the most "profitable" customers and make a better adapted and more persuasive sales pitch. Given these risks, the principles of consumer protection established at the EU level are fully pertinent. The regulations stemming from them should, however, be reexamined in the light of technological progress.

31 Artificial intelligence and insurance
Patrick Dixneuf

Its use as a catchword should not keep us from seeing that artificial intelligence (AI) is attaining the stage of growth for an industrial and commercial rollout. AI is deeply changing many businesses along with their relations with customers and employees. How to cope with these innovations? First of all, like other branches of the economy, insurance firms must assess the impact on their value chain. Secondly, specific to insurance, this industry must focus on the management of risks – and thus on the potential for new activities or things to be insured (as happens in the case of any technological or industrial invention). Finally, with regard to insurance and society, AI raises so many questions about responsibility and ethics that it would be as irresponsible as unrealistic to try to dodge them.

38 The impact of artificial intelligence on jobs: How to make it more human? How to make new jobs emerge?
Reynald Chapuis

Artificial intelligence (AI) is not yet well known or understood; and this holds even more for its impact on jobs. AI is now mostly used by firms, private and public, to automate so-called routine tasks. It is not intended to replace people but, instead, to appeal to their social and creative intelligence and boost the value of advice. In the coming years, firms will have to modify job descriptions to make them fit in with this new technology – they will have to support the learning of new aptitudes across the board to the detriment of the acquirement of technical skills alone. Pôle Emploi (the French Unemployment Office) has

used AI to, for example, help its counselors concentrate on tasks with the most human value. It has equipped them with an interface that recommends the services and training programs to suggest to job-seekers.

44 Artificial intelligence, a new user interface?
Yan Georget

Just as we are beginning to be familiar with it, the Internet is undergoing a revolution owing to the advances made artificial in intelligence (AI). This revolution, though technical, will affect uses (messaging services and vocal assistants). Having started in the 1950s, the automatic processing of natural language has, in the past few years, accelerated thanks to the progress made in artificial intelligence and deep learning. Though lacking a real understanding, computers are now able to see, hear and speak! This is going to deeply and durably alter interactions between people and machines as part of a trend toward increasing "dematerialization".

48 Understanding consumers' habits thanks to artificial intelligence
Charles Ollion

The advances made in artificial intelligence (AI), especially in deep learning, are being used to invent new applications in business and sales. AI can be used to analyze big volumes of disparate data (text, images, information on users' behaviors, time series, etc.). In the era we are now entering, the use of AI for data analysis is going to be of primary importance – a current use is to accurately target recommendations and advertisements. However some of these services are going to fall under restrictions from regulations about personal data. Tomorrow, AI's processing of myriads of data will endow firms and their brands with the capacity for a systematic, data-driven analysis of market trends. This process, which does not imply storing or selling personal data, will underlie each marketing decision. While keeping an eye on ethical issues related to the uses of personal data, businesses and brands are going to have to – if they want to remain competitive – take account of AI when making decisions about procurement, sales and marketing.

53 Artificial intelligence and advertising: Ethical?
Mohamed Mansouri

The modern history of artificial intelligence (AI) started in 1956 during the Dartmouth summer camp in New Hampshire, where scientists were working in the hope making progress fast. In 2018, we still have a long way to go even though the label "artificial intelligence" is now widely touted and misused. Using it in marketing and advertising raises problems both with regard to the public (since it creates a rift between expectations and reality) and between professionals (some of whom use it unduly, to the detriment of other players who are shaping the real market for AI). Concrete applications in marketing and advertising exist, mainly related to the capture of traffic on websites in order to turn visitors into loyal customers. Professionals must now set, at the planetary level, standards of practices oriented around three axes: "clean", exact, unbiased data; the transparency of algorithms; and the respect of the choices made by duly informed consumers. Questions need to be asked about the place for ethics whenever human creativity is replaced with AI inventiveness. In no case should human beings shirk their responsibility by hiding behind their delegation of creativity to AI.

59 Artificial intelligence and advertising
Romain Niccoli and Franck Le Ouay

Artificial intelligence (AI) has played a key role in the growth of digital advertising. Techniques using machine learning and feeding on vast quantities of data about cybernauts' behavior patterns have been used to customize the "advertising experience" for everyone and thus produce huge gains in performance. This holds especially for search engines and the omnipresent banners on the Internet. There is much room for improvement. In advertising, AI is, for the time being, limited to a function of execution and is still far from being able to produce highly developed marketing strategies on its own.

63 The emergence of industrial data platforms
Hubert Tardieu

The digital transition in industry will entail setting up platforms for capturing data from production, on uses and from customer feedback. These industrial data platforms will help create new services and reshape industrial processes. The value of business-to-consumer (B2C) platforms is obvious. In business-to-business (B2B) activities, a turning point has been reached for the creation of industrial data platforms, whence several questions. Strategically, the benefits of sharing industrial data among firms, subcontractors and customers will be assessed with respect to the risks of competitors accessing the data. Technically, these data will be captured in a specific context of meaning, security and quality; and they will have to be shared among various partners on the platform.

69 An interview with Tatsuya Tanaka, president of Fujitsu, and Shingo Kagawa, CEO, head of digital services business, and CTO

The French leg of the Fujitsu World tour 2017 "Human-centric innovation, digital co-creation" was in Paris on 29 June. This event was oriented toward artificial intelligence following Fujitsu's recent announcement of an agreement on cooperation with the French Institute for Research in Computer Science and Automation (INRIA) and of an investment of more than €50 billion in the digital transition in France. The agreement calls for partnerships with start-ups and for opening a "center of excellence" on artificial intelligence (Drahi X-Novation Center at École polytechnique).

72 Artificial intelligence in China
Yifei Fan and Frank Desvignes

China has emerged as a major competitor of the United States in the field of artificial intelligence (AI), even though the total funding in AI startups in China is still lagging behind the US. The application of AI in China is already massive (especially in Fintechs) and has perhaps surpassed every other country in the world. The initiatives of the Chinese tech giants (Baidu, Alibaba and Tecent) are described along with government plans. Attention is drawn to China's competitive advantages in AI and to use cases in insurance. Instead of just being innovative imitators, Chinese players have become leaders in developing and applying AI. In the future, China might show the world how to do AI…

Beyond the excitement in the media, apart from the fears and hopes that it has aroused, most of the recent successes of artificial intelligence rely on scientific concepts formulated several decades ago. This is even more so in the case of machine-learning, a field that, at the interface of mathematics and computer science, seeks to develop techniques for automatically analyzing masses of data usually for predictive purposes. These successes are, however, being presented as the harbingers of a revolution that will spare no field of human activity.

Artificial intelligence is proposing ever more improvements in applications and is upending traditional paradigms. The legal field cannot dodge this revolution. At present, there is no legal or regulatory framework devoted to artificial intelligence (AI), neither at the national, EU nor international levels. Several initiatives in France, in Europe and abroad are trying to determine whether existing laws apply to AI or whether a specific set of laws should be adopted. One of the first legal issues that will crop up in case of the deployment of AI systems is the question of liability whenever an autonomous system causes a tort. Current legal systems have a limited capacity for handling cases of AI-based creations, which risk eluding laws on patents and copyrights, since they are closely linked to the idea of an "author" as a physical person.

We observe a rupture in man/machine relations, as human beings are placed in the position of delegating actions to autonomous machines. This rupture calls for thought about the ethical problems thus posed. What should, and can, be the "right" use of the new possibilities offered by machines? How to fulfil the dreams that some people have of artificial intelligence while avoiding the nightmares that others dread? Autonomous machines that are claimed to be intelligent will have to incorporate, in their very design, ethical rules and restraints so that humans delegate actions to machines but under the conditions to be expected of such a delegation. In parallel, people's capacity to judge and act on their own and with full awareness must be developed so that the machines they have built not become their masters. We cannot abdicate our free will.

MISCELLANY

The "digital barometer", a yearly survey on digital equipment and uses in France, has gradually become the reference source for public authorities, firms and other parties interested in digital technology. French society is a "digital society": 76% of the French use the Internet everyday, whereas only 12% are not cybernauts. The use of smartphones has exploded

in the past few years to the point that they are now the most frequent means (before computers) for Internet connections. Users are cautious and informed. The development of digital technology depends on their confidence in it: the protection of personal data, the quality and reliability of information, the security of payment systems, etc. The Internet has become a condition for social integration: 76% of respondents are ready to adopt new forms of technology or new digital services.