

## **Where are we in the digital revolution?**

For the past thirty years, the world has been absorbed in a new Industrial Revolution with IT as its main technology and microelectronics as technical support. In simple terms, this is a New IT Industrial Revolution, which can be referred to as NIIR. In the same way previous industrial revolutions based on steam and electricity transformed industry, the meaning of the word changes again with the NIIR: all processes based on standardised and computerised processes can be considered industrial. This includes banking, insurance, logistics and Internet advertising.

NIIR has come of age. In the 2020s, and perhaps even before 2025, a number of new technologies will have played a part in changing the economic and social world:

- NBICs;
- 5G (new generation of mobile telephony, a thousand times faster than 4G, due to be trialled from 2018). 5G will allow the rapid expansion of the industry of the future, the Internet of Things (IoT), virtual reality, smart homes, telehealth and self-driving cars;
- Advanced robotics, from agriculture to surgery;
- Exoskeleton (the first exoskeletons for people with reduced mobility will be marketed in 2019);
- 'Industrial' batteries for cars and homes;
- Civilian and military drones;
- Robots and cobots (robots that physically interact with humans);
- New materials that are lighter, stronger, recyclable and adaptable (self-repairing and self-cleaning materials, shape memory materials, ceramics or crystals that convert pressure into energy, etc.);
- Etc.

### *The informational-economic rivalry between China and the United States*

Up against the American GAFAM (Google, Apple, Facebook, Amazon and Microsoft) and the Chinese BATHX (Baidu, Alibaba, Tencent, Huawei and Xiaomi), Europe is lagging behind both in the informational-economic revolution. Anyone who wants to surf social networks (Facebook, Instagram, Twitter or LinkedIn), search for information on the Internet (Google, Bing, Yahoo), buy online (Amazon, eBay, PayPal) or turn on a computer (Apple and Microsoft), cannot escape the American giants of the web. At least not in Europe! Whereas in China, this is not the case.

In the beginning, the Chinese authorities strongly protected the digital economy for predominantly political reasons, rather than industrial ones. But the positive industrial implications are numerous. Created in 2000, Baidu, the Chinese Google which was first listed on Nasdaq in 2005, is the most used search engine in mainland China, making it the 4th most visited website in the world. Baidu is a copy of Google (which withdrew from the Chinese market in 2010 because of political censorship) and offers film and music downloads, data storage and online payment, etc.

Alibaba is a global e-commerce giant which was listed on the New York Stock Exchange in 2014. The group has its own payment system (see next paragraph) and holds shares in the Chinese equivalents of YouTube and Twitter. Tencent manages the WeChat instant messaging application, which boasts 980 million users, auction sites, online games and the QQ.com portal (there are more than 900 million active QQ accounts). Huawei develops software and digital services, 5G and smartphones for which it was one of the three major global producers in 2017. Huawei has stolen a march on two other major telephone equipment manufacturers (Ericsson and Nokia) in Europe (in France, all operators, except Free, have equipment manufactured by Huawei, including SFR and Bouygues). Xiaomi is the equivalent of a Chinese Apple that makes smartphones, televisions and connected objects.

We should also mention JD.com, which competes with Alibaba in the sale of branded products, and Didi Chuxing which is the Chinese equivalent of Uber, etc. Didi Chuxing has ousted Uber from the Chinese market. On 1st August 2016, due to losing a lot of money in China, Uber transferred its Chinese chauffeur-driven passenger car rental business to Didi Chuxing, in exchange for a 17.7% stake in the combined business. Didi Chuxing is also a major shareholder of Grab which, in direct competition with Uber, wants to become the digital leader in Southeast Asia due to its strong position in the chauffeur driven passenger vehicle and motorcycle taxi market (Malaysia, Indonesia, Thailand, etc.).

China is also at the forefront of the FinTech sector, i.e. technology companies active in the financial services sector.<sup>1</sup> These payment services work with e-commerce platforms. More than 900 million Chinese surf the Internet from their 4G mobile phones. This is more than the combined population of the United States, the euro area and Japan (795 million). The fact that personal data is easily accessible in China promotes the development of artificial intelligence in finance, as well as in other sectors. More than ever, China is imperial at home and offensive everywhere else....

The Chinese-US informational-economic rivalry is played out in three areas: artificial intelligence, 5G and the self-drive car. When the United States imposed sanctions against the telecoms equipment manufacturer ZTE for historical transactions with Iran, and against Huawei for security reasons, they were mainly aimed at weakening their future 5G development activities which is already at the heart of accelerating innovation in the *informational-economy*. Indeed, 5G will facilitate the development of self-driving cars and lorries, as well as connected robots and cobots and allow hundreds of billions of connected objects that will punctuate our future lives and boost the growth of virtual reality techniques to enter the world. Artificial intelligence is at the heart of the development of all these technologies. In less than ten years, all these transformations will open up annual markets to a value larger than the sum of GDP for Germany and France.

Questions to participants:

Q1 - Can NIIR accelerate even faster, with the effect of 'leaving behind' companies and countries that do not adapt quickly enough?

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<sup>1</sup> Chinese Fintechs made over \$3 trillion worth of transactions in 2016, bypassing the payment cards system. More than 60% of transactions are made on mobile phones, including transactions with small street vendors. Not only are traditional banks losing commissions on transactions, they are also missing out on data related to their customers' behaviour. Alipay, a subsidiary of Alibaba, controls 70% of electronic payments made in China and has created investment products directly accessible via mobile phone (\$165 billion under management at the end of 2016, the world leader in its field).

Q2 - Are new dimensions of NIIR reaching maturity?

Q3 - Do we have any idea of the scale of new markets that are emerging?

Q4 - How can the European Union withstand US and Chinese domination in the NIIR?