

This piece was originally written for a personal finance blog the author ran as a hobby, offering independent commentary on Artificial Intelligence Technology Solutions (AITX) and the broader context of automation history. It was not commissioned by AITX and does not represent an official company communication. It is shared here as a sample of long-form analytical and academic-style writing, not as financial advice.

The evolution of autonomy: the precursors to the ARS Manifesto

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"Artificial intelligence will reach human levels by around 2029. Follow that out further to, say, 2045, we will have multiplied the intelligence, the human biological machine intelligence of our civilization a billion-fold."¹ The twenty-first century has seen explosive technological, medical, and social advances. In the first twenty years of this millennium, mankind has developed inventions such as the 3D printer, the smartphone, social media, cryptocurrency, genetic editing, self-driving cars, and virtual reality headsets. With new technology comes new problems, and new solutions to address them. Every industry has felt the effects of this technological boom, and the security and medical industries are no exception. As security firms and medical institutions continuously strive to maximize productivity and ease the burdens of guards and healthcare workers around the world, new technological gaps need to be filled to provide unmatched solutions. This fact is highlighted in Artificial Intelligence Technology Solutions' ARS Manifesto in its thesis:

"A different approach is clearly needed. 'Autonomous Remote Services,' or ARS, is the next generation of holistic solutions that can, as the name suggests, autonomously and remotely support the full spectrum of technologies needed to provide robust security, facility, concierge and health screening services. Through the use of interactive, cross-functional robotic devices, powered by intelligent, self-learning software, ARS will enable guard companies to restructure their contracts with customers, integrators to expand and repackage their breadth of offerings, and end-users to benefit from superior security services at a lower cost."²

However, it is clear that the ARS Manifesto is not only about providing more effective guarding and medical solutions. In fact, the ARS Manifesto goes further, claiming that every industry can and will be streamlined by autonomous remote services in the near future, referred to as the "Fourth Industrial Revolution":

"For every business sector, including security services, the Fourth Industrial Revolution, with its convergence of IoT, artificial intelligence with machine

¹Ray Kurzweil. Also view his interview about AI: (<https://futurism.com/kurzweil-claims-that-the-singularity-will-happen-by-2045>).

²ARS Manifesto, pg. 4. (<https://roboticassistancedevices.com>).

learning, robotics, high-speed data streaming and a slew of other technologies, is causing mass disruption. Those who are unwilling to aggressively think outside the box, to educate themselves about new technologies and resources, and devise better ways to serve their customers in these changing and demanding times, these organizations and their offerings will soon be white elephants."³

This may seem to be a bold claim to potential investors and business leaders who are skeptical of artificial intelligence. But skepticism is not the only common inclination; many more are suspicious and even fearful of AI solutions. To quote tech columnist Nick Belton: "The upheavals of artificial intelligence can escalate quickly and become scarier and even cataclysmic. Imagine how a medical robot, originally programmed to cure cancer, could conclude that the best way to obliterate cancer is to exterminate humans who are genetically prone to the disease."⁴ Such technophobia, or fear of new technology, has existed since the dawn of time, especially during industrial revolutions. In light of the history of industrial revolutions gone by, one can gain clarity into the context and significance of the ARS Manifesto. This essay intends to briefly summarize the preceding industrial revolutions, thereby contextualizing autonomous remote services in history, as well as observing some instances of technophobia and catalysts of mass adoption of new technology. This, in turn, should prompt potential investors and clients to do further research on artificial intelligence and companies providing ARS solutions (including AITX) before making an investment decision. Finally, this essay should not be taken as financial advice, as its author does not have a qualified license, but is rather an amateur investor. All information provided in this document, including any ideas, opinions, or suggestions herein, are for educational and entertainment purposes, and nothing more.

To begin, the First Industrial Revolution must be considered. One may ask: "Wasn't there only one industrial revolution?" In academia, especially in primary and secondary education, teachers broadly refer to the First Industrial Revolution as the Industrial Revolution. However, historians break this up into three separate periods. The First Industrial Revolution, also known as the Steam Engine Revolution, took place roughly between 1760 and 1870. Before this period, factories and mills used horse, water, wind, or manpower to process and assemble goods. These processes were dangerous and laborious for hired hands, as well as time consuming and expensive for business owners. The First Industrial Revolution was catalyzed by two inventions that combatted these issues: James Hargreaves's "spinning jenny" and James Watt's "steam engine." While not entirely eliminating the need for human and animal labor in factories, these steam contraptions represented the conception of automation technology. With steam engines that could lift heavy objects and spin yarn, factories were able to mass-produce textiles,

³Ibid., pg. 22.

⁴Nick Belton, The New York Times. Quote found here: (<https://www.forbes.com/sites/bernardmarr/2017/07/25/28-best-quotes-about-artificial-intelligence/?sh=1cc2702b4a6f>).

which accelerated the need for Eli Whitney to invent the cotton gin. Factories spent less money on hired hands and produced higher quality products at an exponentially faster rate. Just shy of forty years after the first steam engine was invented, Richard Trevithick patented the first "high pressure engine," an early locomotive. After the initial test run of his invention, Trevithick wrote that he had "carry'd ten tons of Iron, five wagons, and 70 Men, above 9 miles, in 4 hours and 5 Mints."⁵ Other notable inventions during this period included the sewing machine and the power loom, which were created in reaction to the textile industry boom. One might assume that technophobia would not have existed at this early stage of innovation, but there were some people that actively rebelled against the Steam Revolution. Most notoriously, a group called the Luddites actively destroyed textile machines. Many of the Luddites were skilled textile workers, and felt that steam technology threatened their careers and livelihoods. Literature also exemplified the skepticism many felt towards autonomous technology, most notably in the Romantic Movement. Workers and business owners that adapted to the First Industrial Revolution were enabled by the use of fast and efficient technology, and those that refused to adapt quickly became obsolete.

The Second Industrial Revolution, or the Technological Revolution (1870 to 1914), was marked by further mechanical autonomy, a faster speed of production, and inventions that forever shaped the transportation, shipping, power, and telecommunications industries. The catalyst of this progress is often credited to the works of Sir Henry Bessemer, who discovered a method of refining and mass-producing steel. Steel was then used to create extensive railways around the globe. Railways shaped the outcomes of wars, provided accelerated transportation for the civilian population, and enabled a faster mode of freight transportation across land for raw materials. The power of electricity was harnessed through the creative minds of Nikola Tesla and Thomas Edison to turn the cities, once dark at night, into oases of light. Alexander Graham Bell patented the telephone, which eventually enabled long-distance business, military, and civilian communication. Hot metal typesetting in printing presses and mass-production of paper led to the boom in the book and newspaper publishing industries. The Wright Brothers ran a successful test flight of the first motor-operated airplane in 1903. Rubber was manufactured and used to create the "tyre." Henry Ford unveiled his first automobile, "the Quadricycle," in 1896, and began selling the "Model T" in 1908. Steel ships were developed, which led to advanced global warfare and commerce. The world was set ablaze by a plethora of new inventions, many of which are still in use today. While the inventions of the Second Industrial Revolution were widely met with enthusiasm, there were many people who feared the implications of advancing technology. Some expressed disdain that anyone could mass-produce a piece of writing and send a message to strangers, thus "depreciating" the literary importance of the classics and the Bible. In 1876, The New York Times published a piece about the early inventors of the telephone, claiming that the device could be

⁵Richard Trevithick. Quote found here: (<https://railroad.lindahall.org/essays/locomotives.html>).

abused as a tool for conspiring against the government.⁶ Despite this, the telephone and other inventions of the Second Industrial Revolution quickly became mainstream.

Many wars were waged between the Second and Third Industrial Revolutions, including two World Wars. During this wartime era, nuclear power and weaponry, robotics, satellite, radio, television, and the microwave were widely developed. Historians place the starting date of the Third Industrial Revolution at 1969, since this was the year the internet (then referred to as ARPANET) was born. From 1969 to the early 2020s, the internet has transformed the political, social, economic, digital, commercial, and entertainment landscapes. Twenty years ago, the word "phone" meant something completely different than it does today. Computers, once the size of an apartment, are now able to fit in one's pocket. Generation Z (those born between 1995 and 2012, roughly) is also referred to as the "iGen." With the rise of the smartphone, social media and "internet culture" has been promulgated. Today, in 2021, businesses of all industries benefit from IoT devices and cloud storage technologies. It is evident that many companies have begun to favor remote (work from home) models since COVID-19 struck, which has driven software such as Zoom to "fill in" the technological gaps. Even currency and traditional financial norms have been disrupted by digital solutions with the rise of the Ethereum Network and non-fungible tokens. Perhaps the greatest example of "autonomy" that comes from the Third Industrial Revolution is the self-driving car. Currently, there is no automobile on the market that is level 5 (or fully) autonomous. Companies such as Tesla are in the process of developing a level 4 (or "pre-defined" autonomy) vehicle.⁷ It is clear that self-directed hardware and software solutions are the future, and the Fourth Industrial Revolution may later be referred to by historians as "the Autonomous Revolution."

In light of the first three industrial revolutions, the ARS Manifesto by Artificial Intelligence Technology Solutions (AITX) can be considered. If history is cyclical and is "doomed to repeat itself," three things are to be expected. First, there will be a groundbreaking development of fully autonomous hardware and software solutions that will ultimately transform the industrial, commercial, social, and entertainment landscape in the near future. Second, this development will enable newer solutions to arise to "fill the gaps" of the systems and infrastructure of the Autonomous Revolution. Finally, criticism, technophobia, and reluctance to implement these hardware and software solutions will cause those who accept it to flourish, and those who do not to become obsolete. In conclusion, the ARS Manifesto serves as a roadmap, a guide, written for individuals and business owners looking to best prepare for the inevitable. In fact, the Fourth Industrial Revolution is now, and no one can truly comprehend its implications.

⁶The New York Times. Reference found here: (<https://www.mentalfloss.com/article/87288/8-skeptical-early-reactions-revolutionary-inventions>).

⁷<https://www.bbvaopenmind.com/en/technology/innovation/fully-autonomous-cars-how-and-when-will-become-reality/>