



# AUTONOMOUS e-MOBILITY FORUM

## The Evolution of Mobility Part 1: Navigating the Ancient Era By Aditya Pathak

The technological progress in the mobility ecosystem driven by a convergence of simultaneous advances in electrification, connectivity, sensors, batteries, and other factors, has been nothing short of magical. All indicators still point to these transformations only accelerating. With electrification, exponential increases in computing power, advancements in sensors, and radical developments in Artificial Intelligence, all coming together, we head into a future that will open tremendous opportunities, and present true human potential.

As we look forward to contemplating the future of mobility at the upcoming [Autonomous e-Mobility Forum in Qatar](#), we step back and reflect on the trajectory of mobility over the last millennia. From the simplicity of footways to the complexity of electric mobility and interconnected transportation systems, each era has left its mark on where we stand today.

A look back reveals the dynamic interplay between mobility, infrastructure, and the economic vitality of societies. Each phase has led to steep changes in the mode and speed of travel, accompanied by consistent reduction in the time and cost of travel. This has come with increased human interconnection, overall development of societies, and a better quality of life.

This is the first of a three-part series, which sheds light on the evolution of mobility through distinct periods: ancient history, the industrial era, leading up to current technologies, and the era of AI and driverless e-Mobility.

### From Early Pedestrians to Horse Riders

Once Humans set foot beyond caves, the first era of mobility was born. The earliest mode of mobility was, quite literally, taking one step at a time, where humans purely relied on their own physical abilities for mobility. Some 275,000 years ago, the migration of the earliest humans out from the southeastern tip of Africa, northwards to the Eurasian region, and eastwards towards Mesopotamia and Persia happened on foot.

Not surprisingly, it took these first pedestrians more than 100,000 years to cover a distance of about 8,000 kms to the northern tip of Africa. As this period continued, it led to the establishment of trails, foundations for the first-ever mobility networks. These primitive routes indeed connected communities, enabling the exchange of goods and setting the stage for local economic growth.

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Around 4000 BC marked a significant leap to increase the pace of movement. Horses and camels became indispensable for merchants and traders, thereby enhancing the efficacy of economic activity. The domestication of animals to enhance transport can indeed be seen as the very first mobility innovation.

## Conquering Waterways and Expanding Empires

As civilizations advanced, maritime exploration became a key driver. The development of watercraft, such as rafts, boats, or first ships, allowed for navigation along natural corridors, rivers and seas opening new avenues for trade and cultural exchange. The development of early ports provided infrastructure to serve as hubs further spurring economic growth and exchange.

The invention of the wheel around 3500 BC is one of the first inflection points in the history of a mechanized mobility ecosystem, as it revolutionized transport with the development of carts and chariots, along with road networks enabling movement of traders, travelers, and entire armies.

The Roman Empire, founded around 625 BC that lasted for about 1,000 years, gives testimony to the power of an efficient mobility ecosystem in shaping societal development and prosperity. From the vast road networks, spanning over 250,000 miles to a sophisticated ecosystem of waterways and ports, Rome engineered a mobility infrastructure that fostered faster trade, communication, and information exchange. This also explains why the GDP per capita across the Roman Empire, was the highest in the world at that time. Without these investments, Rome could never have expanded at the pace and scale it did.

Another example of the fundamental rise of systematic mobility infrastructures is the Age of Exploration, spanning the 15<sup>th</sup> to 17<sup>th</sup> centuries, a period of unparalleled maritime expansion leaning on then highly modern ships, navigational instruments, ports, and trade routes. This led to the discovery of America, thereby opening new avenues for trade and other advancements. It enabled Spain and greater Europe to exercise its dominance worldwide. In consequence, the GDP per capita in Europe rose by more than 50% between the 15<sup>th</sup> and 17<sup>th</sup> centuries.

From our perspective in 2024, mobility has indeed been perhaps the most central driver in the ebb and flow of economic power already throughout ancient times. Each advancement has left an indelible mark on economies and people. The various turning points along this journey prove the importance of collaboration between a diversity of actors to facilitate effective policy-making, government support, and technological innovation. All of these factors are still relevant today.

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The next pieces in this series will discuss how mobility saw a seismic shift during the Industrial Revolution of the 19<sup>th</sup> century through to the current period. The last piece will attempt a look into the future and explore the possibilities that the most forward-facing mobility visions hold.

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## About the author:

**Aditya Pathak** is the head of Automotive, Transportation and Logistics at Cognizant, a multinational information technology and consulting company, headquartered in Teaneck, New Jersey. He is passionate about helping Cognizant's clients bring exceptional vehicle experiences, autonomous mobility and sustainable transportation to life.

## About AEMOB:

The Autonomous e-Mobility Forum, taking place in Doha, Qatar from 30 April – 02 May 2024, hosted and strategically partnered by the Ministry of Transport of the State of Qatar and held under the patronage of His Excellency, Jassim Saif Ahmed Al Sulaiti, Minister of Transport, is set to become the pioneering multilateral platform focusing on driverless e-Mobility, a topic of global significance and urgency

Organized by Just us & Otto Marketing & Event Services in collaboration with InStrat, a department of 4th Dimension, the three-day event will provide a timely occasion for international stakeholders to further know-how and develop recommendations toward the implementation of autonomous e-Mobility in a real-world setting.

The AEMOB Forum is set to assemble a global network of senior officials, policy and technology experts, including speakers and representatives from government, industry, academia, the media, and hundreds of attendees. Tickets are on sale now and can be purchased through the AEMOB Forum website [www.aemobforum.com](http://www.aemobforum.com).

For inquiries, please contact:

Autonomous e-Mobility Forum - General Inquiry

Email: [info@aemobforum.com](mailto:info@aemobforum.com)

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