A MAJOR SHAKE-UP FOR SHIPPING INDUSTRY

- Sulphur limit; stimulate innovation and enhance efforts to energy efficiency
- Bumps ahead for maritime transportation
- Maritime transport systems and the 4th industrial revolution in the third millennium
CONTENTS

003  A new era in shipping industry has dawn
004  Sulphur limit; stimulate innovation and enhance efforts to energy efficiency
008  IMO 2020 regulation and its impact on the shipping
018  New headwinds in meeting emissions rules
022  Unclear future for marine fuels
030  Maritime transport systems and the 4th industrial revolution in the third millennium
034  Iran to cooperate with IMO for strengthening the role of women in maritime industry
036  Fleet growth need to be handled with the utmost care
038  Bumps ahead for maritime transportation
042  Ports will continue to deliver prosperity in the world
046  Container throughput in 2019
052  Engage in continuous risk assessment
054  Connectivity, a particular problem for seafarers and their families
058  Seas and oceans; global heritage
064  Autonomous shipping; promoting sustainability, lowering costs, improving environmental footprints and safety
068  Joint cooperation for eco-friendly design
072  Autonomy; a new set of opportunities and challenges for maritime players
075  Bulletin
The 4th industrial revolution is an emerging transformative paradigm that will change the entirety of human life on planet Earth in the coming years. This basic paradigm shift is induced by the rapid pace of evolutions in a number of science and technology fields including ICT, genetics and biotechnology, material science and nanotechnology, energy supply and consumption and many others. We have entered into a new era: we can render nearly everything into smart items, and the progress towards developing higher levels of artificial intelligence in these smart items enables them to interact and learn. We are developing big data as a new resource for economic value production. We are achieving renewable, clean and nearly free energy supplies that will replace the fossil fuels throughout the world in a short time. Also our achievements in genetics and biotechnology are transforming the concepts of health, life expectancy, food and energy supply and many more. Many scientists and technologists believe that the developments of human societies in the coming two decades will be much further than all developments which have taken place through the past 300 years.

This is happening in a context where humankind is also challenged by several other issues in the beginning of the third millennium. We are on the verge of experiencing the extreme consequences of climate
change in the coming years. The human population has explosively grown within the past century and this has exacerbated the imbalanced development of human societies on the planet, and led to escalate conflicts over vital resources. Pollution and excessive use of natural resources have damaged to the environment. Sustaining the life of the human population by the current means will be impossible soon. Some believe that the 4th industrial revolution as well as the multitudes of solutions developed and offered within this new paradigm, can be used to address these challenges effectively.

Maritime transport will be undoubtedly impacted by both the 4th industrial revolution and the crushing forces of the third millennium challenges. As the main vessel of international trade, maritime transport is an underpinning component in the global economy system. As once said by E. Mitropoulos, if shipping stops, half of the world will starve in hunger and the other half will freeze in gloom. In this sense, the world demands effective, cost-efficient, and clean services from the shipping industry in order to tackle the third millennium challenges. But in this context, the shipping industry is also involved in its own set of challenges. For years, the industry has been involved in the trough-side of an estimated 25-year cycle in its revenue making. Due to the size of the global fleet, the industry’s supply is much further than the market’s demand. Moreover, the industry is encountering a new series of environmental requirements that incur very heavy costs and generate operational and technical constraints in it. Among these requirements, one can point to ballast water management, the global sulphur cap, the coming greenhouse gas control requirements, and so on. In this sense, we can say that in the advent of the 4th industrial revolution and in the upfront of encountering the global challenges of the 3rd millennium, the shipping industry is itself in an uneasy state.

The 4th industrial revolution can have critical effects on the global maritime transport system. The patterns and amount of demand for shipping may be impacted dramatically by the surging rise of new trends like 3D printing. Having the blueprint for manufacturing nearly everything with 3D printers will lead to a serious fall on the trade of finished and semi-finished goods throughout the world, and a rise in the demand for the trade of raw materials instead. This can have determining effects on the container and bulk shipping segments. Moreover, other segments of shipping will be affected by the changes in the energy sector. Currently, about 87% of produced oil is processed and consumed as fuel products. Crude oil, petroleum products and other main fossil fuels (including coal, LNG, and LPG) constituted 40.5% of total international maritime trade in 2018.

By widespread use of new energy supplies in the coming years (e.g. in cars, power plants, lighting industry, etc.), the demand for fossil fuels is expected to decline sharply and this can lead to a fall in the demand of the tanker and dry bulk segments. Another major trend that can alter the supply and demand in the shipping market is the development of competing modes of transport. This includes the development of rail transport networks, and more markedly the development of international Hyperloop grids in different regions of the world. This can erode the demand for merchant shipping especially by making land-bridges between countries in Asia and Europe. The level of decrease in demand will depend on the level of grid development and its effectiveness.

But on the other side, the 4th industrial revolution can also provide the maritime transport systems with major technological advantages to tackle the issues ahead. In order to sustain itself in the outburst of radical changes, the maritime transport systems are most in need of innovation, and mainly discontinuous innovation. We shall notice that after ‘containerization’ in 1960s, there has been no marked discontinuous innovation in the shipping industry,
and the improvements have been pursued by continuous innovations specifically in terms of developing more economy of scale and lowering the fuel costs. These innovation trends have proved to reach their utmost limits in recent years, and the industry needs breakthrough innovations to alter the architecture of its markets and its components (i.e. the competitive structure, the corporate capabilities, the production platforms, and the products of the industry). The 4th industrial revolution can provide the industry with significant opportunities in terms of technological improvements.

One major impediment to join to the mainstream of 4th industrial revolution is the commercial value and economic life of assets in the industry level. In 2019, the age of 79.25% of the capacity of the world shipping fleet was under 14 years, and this reveals that ship-owners concern any major changes that may incur enormous costs and/or postpone the utilization of the fleet. The other major obstacle will come from the labor force who will consider the technological developments of the 4th industrial revolution as a serious risk to their employment. This idea will be strengthened within the coming years and by actual deployment of new technologies in the maritime transport system. Although for some years, the machines will depend on human workforce to overcome their teething problems, soon a day will come that these systems can operate autonomously and with the least possible need to manning. In such days, the social resistance buildup among the labor force will be much stronger as they will have a clearer understanding of the new technologies and its impact on their work system.

In spite of all possible resistances, the signs of paradigm shifts indicate that change is inevitable: the challenging enforcement of new environmental requirements (e.g. the global sulphur cap, the Ballast Water Management Convention, the emerging ship efficiency requirements, etc.), and the irrelevance between supply and demand, as well as costs and revenues in shipping markets indicate the need for instant change. Within the coming years, the conditions will grow much harder in the maritime transport systems as the volatility, uncertainty, complexity, and ambiguity (VUCA) conditions will be strengthened under the synergies of 4th industrial revolution trends and the 3rd millennium challenges. On one hand in the coming two or three decades, the 4th industrial revolution is moving us toward a horizon of technological singularity where no
one can perceive the future afterwards it; and on the other hand the 3rd millennium challenges provide a gloomy perspective in which we can be the last generation to take the corrective measures to sustain human life on the planet. These forthcoming phenomena can have dramatic positive or negative synergies in terms of consequences like human’s understanding of ethics, disruption of supply chains by natural disasters (or their protection), transforming patterns of labor and employment, famine or plenty of food supplies, pollution issues, and etc.

It seems that the best choice for shipping industry is to surf on the waves of opportunity that are generated by the 4th industrial revolution in order to pass over the 3rd millennium challenges. These waves can provide the momentum to learn, innovate, improvise, and improve solutions in heading towards the vague and complicated future. Nevertheless, we should understand that such waves are temporary, unstable, transitional, and uncontrollable in their very nature. This means that you may invest your time, money and energy in developing a solution, and you may find it useless or obsolete within few years or even months. In this sense the shipping industry is in need of major developments and improvements in its organization and resources.

Maritime transport systems are in ample need to learning and innovation in the coming years. This means that the industry should organize effectively to manage the knowledge work in the system level. The needed knowledge work can be organized in terms of Research and Development (R&D), Knowledge Management (KM), Technology Management, Strategic Management, and so on. This means that the maritime firms shall plan to invest on developing gold collar jobs for specialists and other learning knowledge workers. Moreover, in order to attract the needed knowledge work to their maritime transport systems, many developed countries are already developing maritime clusters and boosting knowledge-based startups in their maritime communities. These communities are endeavoring to support technological entrepreneurship within them, as well as attracting useful technological entrepreneurship from the exterior. Among them one can point to Maritime Startup Germany, Pier71 scheme in Singapore, PortXL in Europe, and New York Maritime Innovation Center (NYMIC) in United States.

The Knowledge work in the industry can provide the maritime industry with many needed solutions in the coming years. The industry may source ideas, technological solutions, managerial solutions, and innovations from the insourced and outsourced knowledge work. These ideas, solutions and innovations can be used to shed some light into the pitch dark VUCA conditions that the maritime transport system shall enter into within the coming years. It is almost certain that those firms that refuse to ignite and use such light, no matter how big in size, will fall and annihilate somewhere in the nearing future.