

A Roadmap towards a Sustainable World Economy through Computer based Training leading to the Emergence of an Interplanetary Market

(Executive summary of the official International Schumpeter Award entry by Heiko Martens-Scholz, rated “highly commended” by the jury of University of St. Gallen, Switzerland)

1. Introduction

This work intends to show the viability of deliberately creating a global sustainable development strategy leading to an interplanetary market in the second half of the 21st century. It introduces a key technology of computer based learning and training, that is capable of adapting the “human factor” to the requirements of a high-tech society with accelerated growth and technological development and change. Since its initial release in 2000 it has been recognized by thousands of leaders including acknowledgements by UN Secretary General, Kofi Annan and VP Al Gore.

1.1 The current economic system is challenged by several “global issues”:

- a) Limited resources (“Peak Oil”)
- b) Climate Change
- c) Social Imbalance
- d) Terrorism and War

1.2 Globalisation as it is currently implemented did neither improve nor solve these issues.

1.3 To develop and execute a sustainable exit strategy asap it is necessary to change the way of thinking and acting on a global scale within both national and international organisations and companies.

1.4 Using Hi-Tec-Motivation a whole brain computer based training technology it is possible to link daily routine to ethically based goals and values and simultaneously enhance productivity, performance and creative problem solving.

The training technology is provided online as a distant learning technology (DLT) and easy to use with any sound system

1.5 Based on the evaluations of two long-term pilot projects in over a 100 European organisations and companies, applying Hi-Tec-Motivation on a global scale would enable the global community to use HR development for a sustainable transformation that would affect all areas of education, learning and training positively.

2. Macroeconomics

According to Joseph A. Schumpeter, one of the leading European economists of the 20th century, economic cycles are the direct result of entrepreneurial innovation. A lack of innovation creates recession while a basic innovation such as electricity, automobile or computer (microchip) creates a lasting cycle of economic and social development. In consequence basic innovation and economic growth are but the flip sides of one coin..

2.1 20th Century innovations

- a) Electricity/Electric Light
- b) Automobile/Aircraft/Space
- c) Computer/Microchip

Most technical innovations of the 20th century were initiated or invented by individuals, scientists or entrepreneurs or a combination of both with the support of industry and/or governmental programmes.

As an example the largest national space project of the 20th century, Apollo, was the sole civil governmental long term innovation cycle for the US economy introduced by the remarkable innovative political and entrepreneurial leadership of John F. Kennedy. It built the foundation for the economic innovation cycle leading to the computerization of the late 20th century including over 30.000 technological product developments with a return on investment (ROI) of approx. five times the total cost of NASA's Apollo project.

2.2 21st Century Innovations

- a) lifescience/nano technologies
- b) holography
- c) AI/robot/automated industry
- d) Social Engineering/Space settlements

The underlying paradigm of technological changes in the 21st century is that human existence is more and more embedded in and thus transformed by high technology.

2.3 Transforming Global Issues

How can we use the new technologies of this century to transform the threat of the so called "global issues"?

The current situation at the edge of the 21st century confirms the idea, that the market growth is not only depending on econometric factors such as interest rates or the law of supply and demand.

In addition innovative cycles created by military activity during the past (e.g. World War I & II) do not seem to apply in the 21st century since the fragile international world order is highly dependable on a common sense of global balance of market members.

To initiate a sustainable development on a global scale is made possible through aligning and networking the efforts especially of the UN development programmes such as the Millennium Development Goals. Thus we have started an open source download platform with training programmes to support the impact of local NGO and GO development programmes.

3. 2nd Stage of Computerisation

3.1 A new definition of Leadership

Leadership in the 21st century requires to adjust the leadership role to the conditions of an interdepending global network of innovation, productivity and growth. Leadership

responsibility is extended to the entire system of a network and not restricted to the organisation the leader works for.

Awareness of the global issues and the necessity of sustainable development strategies is essential for leaders of the future. Sustainable here means “The performance of my organisation or company is part of the solution or working on developing specific solutions.

3.2 From first to second Stage of Computerisation

The computer age of the late 20th century changed the infrastructure and prepared regional and national organisations for the global markets. This innovative cycle is now followed by a new cycle of innovation in the department of Human Resources. While the main focus of early electronic revolution was to enhance efficiency of office organisation, production and marketing, the next cycle provides electronic learning and training technologies for the human factor to cope with accelerated technological changes. These technologies are provided by virtual networks, so called virtual campuses, complex landscapes like the Internet developed for and adapted to the needs of an organisation's work force to learn and develop.

3.3 Virtual Development through HTM Hi-Tec-Motivation

HTM Hi-Tec-Motivation is one of the key innovations in computer based training for corporate virtual training nets, that allows the user to learn and develop during work without time loss. Digital processing of language information creates an audio-visual virtual training space that allows complex accelerated training and learning in all areas of Human Resources Development. Naturally the human brain processes language information in the left brain intellectually. The brain is able to store and memorize any information intellectually without consequences to performance and behaviour. In order to activate or motivate information has to be processed in the right brain's creative pre-sensomotoric field, a part of the brain that is preparing activity with visual blueprints. Hi-Tec-Motivation is a digital approach to directly stimulate the pre-sensomotoric brainfield with goal-setting. The tool may be used as a follow up to any form of classic training and goal-setting, focussing the user's attention on actualizing her or his goals. Hi-Tec-Motivation supports any form of sensomotoric training and learning through digital sound impulses.

A three year evaluation in over 100 companies that was rated “highly efficient by McKinsey & Co. Germany, revealed that all major HR and corporate development parameters significantly improved. Since the tool can be used multi-lingual it can be applied as a cross-cultural training to reduce racial and cultural conflicts in multi-ethnic societies and organisations.

3.4 HR Development Synergy

Concerning the “global issues”, our planet is on ”red alert”. Thus our company has developed an open source download platform with free Hi-Tec-Motivation downloads in all major languages with a general motivational development content. This download platform is hosted in Germany and well integrated in the European HR development networks. It is promoted by a number of commercial and non-commercial network partners who agree with the company's vision to implement a sustainable development in the global markets.

3.5 From global to orbital markets

To implement sustainable strategies into existing markets and industries our roadmap is focusing on basic industries, e.g. automotive, energy and defense, air and space industries. Key industries have a basic impact on the world economy and are likely to accelerate global change in other industries through their transformation, e.g.

- a) An exit strategy for the automobile industry to promote automobiles with hybrid technologies and alternative fuel to significantly reduce oil demand asap.
- b) A shift in public GO investments from military to civil space projects. Based on the above analysis of the Apollo project, our roadmap suggests that an international space project to settle humans on Mars would be an immediate accelerator for key innovations to solve the global issues. The development of Hi-Tec-Motivation was initially designed for manned space missions in deep space as an on-board astronaut training, since it allows both learning and training of specific skills in a high-tech environment, as well as to gain more control of body functions, e.g heart rate, muscle tension and brain waves to support adaptation to micro- and zero-gravity.
- c) Reinventing solar power: The industrial standard of solar power cells (photovoltaics) was a direct result of the Apollo project research. The bad news about photovoltaic technology is, that its energy efficiency has not increased significantly in the past four decades due to the lack of funding. The good news yet is, that an increased research effort could double the energy efficiency of photovoltaics within less than a decade (industrial standard for mass production). In addition high efficiency solar power could be installed in Earth orbit replacing nuclear and coal operated terrestrial powerplants within the next 50 years. Orbital solar power satellites would serve as a bridging technology towards the development of an orbital and interplanetary market.

The emergence of the interplanetary market after 2020 is depending on certain key innovations that are currently under development. A deliberate extrapolation of the Apollo programme under 21st century conditions would generate a long lasting innovative cycle dominated by international cooperation and by creating new technologies, markets and resources. According to all major space agencies to prepare an interplanetary market it is necessary to invest an equal budget that is currently spent on military and defense in the industrialized countries. Thus it would be necessary to prepare the foundation of the interplanetary market by political means and shift public financial and scientific resources accordingly.

According to the long-term projections of most national and international space agencies, the foundation phase would include a space station capable of assembling interplanetary space ships (e.g. at Earth-Moon Lagrange), a manned Moon base to gain experience in permanent space settlements on extraterrestrial bodies and frequent manned missions to Mars to prepare permanent settlements on our neighbour planet.

4. Summary

The threat of the “global issues” forces the international community to align its efforts to develop and implement sustainable development strategies. Technological innovation is a major key to economic development. Individual and private innovation efforts have to combine with governmental programmes, which provide a framework of sustainable development. NASA’s Apollo project initiated a civil long term innovation cycle which

could be adapted to the requirements of the 21st century, preparing an interplanetary market. Actualizing the foundation of the interplanetary market would focus and align international affairs technically, economically and politically positively during the next decades and minimize the risks of further escalation in international affairs. In addition the global effort of innovation would generate key technologies in every area important for the future of the planet and maintaining environment and supply for a still growing population. Distant learning technologies such as Hi-Tec-Motivation delivered through the world wide web function as an accelerator of a sustainable development in both individuals and organisations to transform the global society and solve the “global issues”today.

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