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The New Challenge in Information Technology

**International Historical and Actual Inside Situation of IT
Research, Technology and Industry**

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1 State of the Art in Information Technology

Information technology, IT, remains the top subject of technological domination in the U.S.A. and over the rest of the world. Its significance is pragmatically linked to possibilities of modeling the human consciousness, its evolution, its system of experience and, lastly, with the generating of the meaningful in language and otherwise, on the highest possible level. Information with meaning requires understanding as a property of the consciousness system using the circularly perplexed mechanism, characterized by the triplet syntagma *the informational–the meaningful–the conscious*. Out of such philosophical substance, the subject called *informational consciousness*, IC, was on the way of development already in the company *Iskra Delta Computers*, IDC, since 1986. In the strategic, developmental and engineering oriented environment of such an undertaking seemed to be extremely reasonable when looking into the IT future advancement. In 1991, with appearing of Kurzweil’s *Spiritual Machines* [2], the technological trends of *Iskra Delta* have been confirmed as a possibility in the framework of company’s engineering and top IT strategy.

2 IT Development in IDC

In the time before 1991, the IDC’s development and engineering was intensively engaged in microprocessor and multiprocessor equipment, in a conceptually and developmentally original way, for instance, in the *multiprocessor interconnection network* and some basic *multiprocessing operating systems*. Some details of concepts, integrated hardware and software have been lectured and demonstrated in IT strategically concerned and leading institutes and universities in Japan and the U.S.A., through 1985–87, as presented in the book [5], pp. 69–79¹. In the future, such a sort of technology was meant and prepared with a wide-reaching strategy to be used in implementations concerning various machines, possessing the property of informational con-

¹The title of the section in the book is “Presentation of the Multiprocessor Computer Trident in London and the Parsys Project at the Significant Development Institutes in the U.S.A. and Japan.”.

sciousness, IC. The IC concept and its possible implementation were newly published under the title Informational Recursiveness against Singularity².

3 Reality of Silicon Valley

The concept of Silicon Valley is still relevant in Russia, China and some European Countries, however, not understanding at all the business and human environment being necessary for a similar implementation outside of the U.S.A. To the technological and business development the so-called evolution of the human mind is necessary, which was choked and politically hold down in the area of communism and European socialism. Staying behind in mind evolution makes nearly impossible the repeating of the American technological phenomenon ensuring the development and evolution domination of the then Silicon Valley Story stretching into today global environment. The U.S.A. protects this advantage with the consistent and precise legislation, being under government and parliament supervision. There isn't experience or tradition in establishing and constituting technological elites with essential impact to government and parliament in Russia, China and European Union. The commissar administration in EU is founded on negatively selected political and technological preferences of individuals and represents, in fact, a political and party-bureaucratic supremacy in decision-making of the EU. Authoritarianism, in the European sight of the subject, of similar or even worse kind of decision making is understood to be observed in Russia and China.

4 Challenge Concerning Informational Consciousness

Still, the concept of informational consciousness gives opportunities for a new beginning of the Silicon Valley or similar philosophy and its

²A.P. ŽELEZNIKAR. 2011. Informational Recursiveness against Singularity. *Electrotechnical Review* 78:3:85-90. Ljubljana. Available on <http://www.artifico.com> or simply searching "Anton Zeleznikar".

implementation especially to Russia and China. This could perform as a warning to the EU administration and parliament that the technological strategy doesn't follow at all the trends and new possibilities of IT technology. The warning addresses even the U.S.A. where the blinded doctrinaire view of artificial intelligence, AI, dominates in IT research and industry. The traditional algorithmic (computer programming) concept directs the orthodoxy of academy and agency circles under government financial support. And, right in this position, Russia and China could overtake the initiative and begin the yet unreachable implementation of Silicon Valley with the IC technological subject. In both, there is at least available and no well utilized and moveable public, the state concerning and private capital, being necessary for Silicon-Valley-like dynamics, that is, establishing the technological development and the mind evolution becoming actual and inner attributes of the state strategies.

5 New IT Design Based on Informational and Human Consciousness

On the other hand, all relevant, technologically developed countries must be considered being on the half-way to the modern IT industrial producers. Let us list the entire conglomerate: the U.S.A., Japan, Singapore, South Korea, Taiwan, Hong Kong, are in a slight advantage to India, China, Russia, Indonesia, Australia, New Zealand, and EU. While the E.U. is still IT-disoriented, e.g., being primarily looking into CERN's divine particle universality and being actually commissioner-governed and strategically blocked, India, China and Russia could make a breakthrough in the direction of Silicon Valley using the philosophy and methodologies of informational consciousness (look at Fig. 1). Such a new platform would represent also the common starting position in respect to the advanced AI in America. Remaining countries of the list don't support explicitly this sort of the concept. Since, IC attacks philosophically and information-likely the entire field of human consciousness together with the newest evolutionary changes and possibilities, being aware that the human mind is a natural object on which everyday evolution can unexpectedly hap-

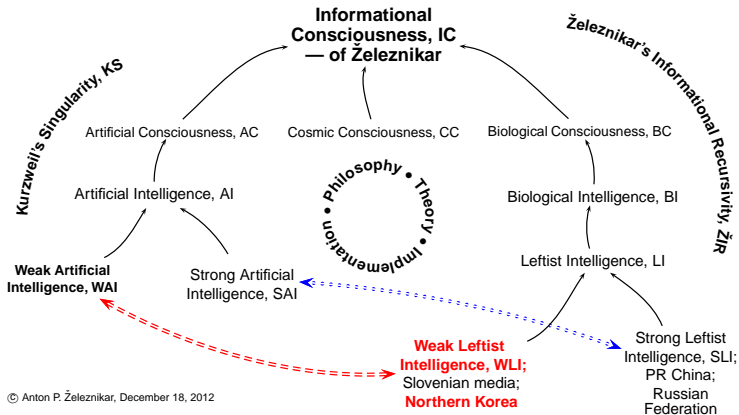


Figure 1: Informational consciousness, IC, covers the philosophy of the artificial as well as of the biological, so, even the actual phenomena of mentality, like the **weak leftist intelligence (WLI)**, can be researched and compared, e.g., with weak artificial intelligence as an algorithmic, entirely foreseen approach. Look for the articles *Informational Recursiveness Against Singularity* and *Künstliche Intelligenz wider informationelles Bewusstsein* at <http://www.artifico.org>.

pen. The human mind is the only “organism” with possibilities of a short-term or immediate evolution in every moment; this doesn’t hold for the brain as a biological substance.

6 Overview of Country Candidates for New IT and IC Technology

The situation in IT technology changes rapidly, however, in the development and production, the U.S.A. remains on the unreachable top of state of the art. American style of life, it seems, delivers unique and unrepeatable circumstances for such a priority in top high technology, genial development, and imagination, highest abilities and experience in industrial production.

Fig. 2 sketches the nowadays and future IT development and production over the world, challenging new candidates to enter in the national nature of Silicon Valleys. In USA, Intel and AMD (Advanced Micro Devices) represent the domination in of CPU development and

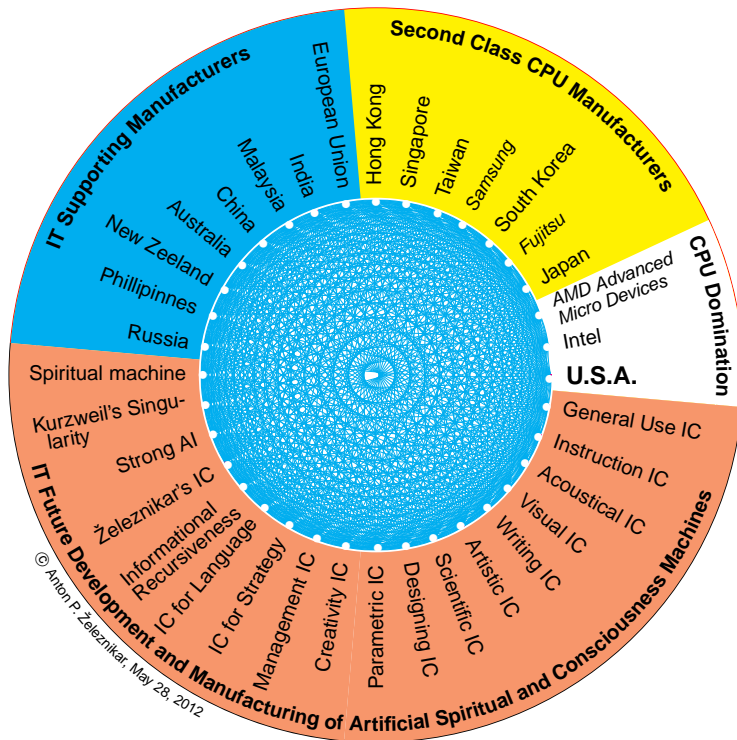


Figure 2: Sketch of the nowadays and future IT development and production over the world, challenging new candidates to enter in the national nature of Silicon Valleys.

production technology.

7 Critical Conclusion to the IT and IC Development

In European IT research, development and production a strategic perspective doesn't exist. Personalities heading the European Science and Technology Commission are just administrators being not involved in

the innovative spirit and development of the field. The consequence of this situation is that on the national level of European countries there isn't a tendency to foster science and technology in innovative and developmental ways, however, even national governments proclaim how such an orientation could be necessary or even be a must. Commissars of the fields are chiefly administrators without a necessary IT industrial and research experience, delegated from the European countries automatically without a critical judge of their professional abilities³.

8 IT Strategy

Information technology, IT, is the most important development possibility of the modern society. As an industry it should represent the today and future welfare for any society and, simultaneously, assure a safe and prosperous survival. In Fig. 3 some key indicators constituting the IT strategy are listed, depending mutually upon the named connections within the complete graph.

The analysis of the structure and organisation of strategy components in Fig. 3 can now be performed into more details.

IT Tradition, if it exists, is a precious experience how to proceed in the future development and industrialisation of IT today⁴. Professionals of such an experience could help to shape the steps for a possible IT orientation in a country.

Certainly, *IT Economics* must be clarified in details stating that in international environment IT industry is the main development impetus of economics for the nation welfare.

IT Development concerns the computer hardware, programming and application of IT as a wide range of possibilities for IT industries and services.

IT Design concerns the highly professional skills in several fields of work, for instance, in production of computer processors and other

³Such a commissar for science and technology was the Slovenian Janez Potočnik, who even in his country was never more than a relatively unknown economist, educated locally and getting his position solely by a political support.

⁴An example of the Slovenian IT tradition is given by the recently published book [6] in the U.S.A.

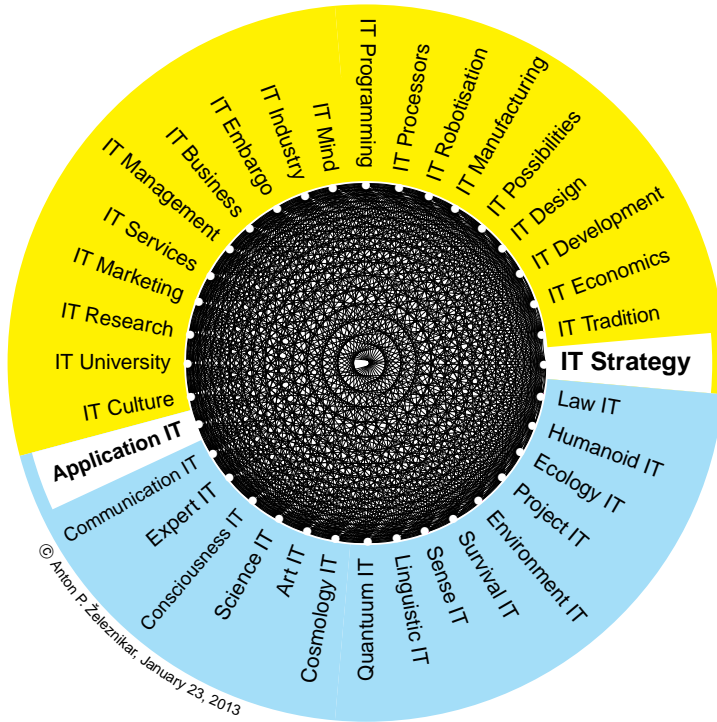


Figure 3: IT strategy must not be absent in any strategy decision making of a country on the governmental level, especially when it intends to step decidedly on the way to forced high technological development of the industry, research and science. IT means an impetus for human mind development and activity in different fields of labour and culture.

highly integrated and the fastest components, also with the new basic technological innovations.

Thus, *IT Possibilities* emerge in any of the presented components in the graph in Fig. 3.

A market relevant *IT Manufacturing* can only take place after the mastering of technological skills, design and product robotisation.

On the other side, *IT Robotisation* is by itself a sophisticated, highly automated and intelligently shaped system for manufacturing not only the most complex digital processors but simultaneously producing au-

tomated design, proving, testing and verifying the manufactured components.

IT Processors belong to the most sophisticated products ever developed and manufactured by human enabling in the coming future to implement together with the machine complexity the so-called spiritual machines (Kurzweil) and even more powerful devices of informational consciousness. IT processors belong to the strategically most relevant highly integrated digital components of today and future computer systems. Only few corporations in America can produce such a sort of devices and have also prepared the more sophisticated IT technology of tomorrow.

IT Programming belongs to the extensive programming projects with a great number, also several thousands of programmers being equipped with intelligent tools for complex program development and their implementation on computer systems.

IT Mind is the term uniting spiritual machines in the sense of Kurzweil's singularity and more complex informational consciousness machines in the sense of Železnikar's informational recursivity, introducing informational spaces with informons and entropions, extending in the areas of subconscious and superconscious strata or clouds, respectively. By this, the mentioned recursivity and complete graph landscape of the consciousness, informational consciousness can exceed the natural consciousness in many respects.

IT Industry today can root solely on advanced research, development and manufacturing of IT, exploring the highest ranks of programmed computer robotisation, enlarging the density of elements, speed and compactness of components, making them independent for malfunctioning and being in this sense highly reliable.

By *IT Embargo*, the United states strategically and selectively protect the advantage in IT development and and IT industry with the aim to preserve the dominance in the high-tech domain in IT and from IT dependent high-tech products and production.

IT Business is being one of the most profitable activity directing the marketing and investment domestically and internationally. Of course, it demands a high skilled engineering, servicing, professional support and delivering of orders.

IT Management is a strategically oriented professional group of

leading, educated and trained people within IT activities in a corporation, company, university, research and development institutes and other kinds of IT possibilities. This group is closely connected by special communication links for daily and prompt discussion on strategy and other relevant matters to follow the newest IT achievements and results, analysing the consequences happening on the group business, position in the world and possible changes in the field.

IT Services within an IT industry is performed systematically, servicing equipment, software and offering schooling not only in servicing but also in the use of computers and IT application.

IT Marketing consists in permanent advertising of existing and coming products, their advantages in comparison with the competitors, explicating the results achieved in business and performance on the IT world scene.

IT Research embraces new products, methodologies and basic technologies intended for IT development, marketing and manufacturing with the aim to strengthen the market and performance competition in the local and global arena. High professional, skilled, educated, experienced and application oriented scientists and engineers must be employed, following of the most demanding and creative labour and objectives.

Today, the *IT University* becomes a must, teaching and researching several kinds of disciplines and new fields, introducing new fields in the area of IT teaching and IT research. In Europe, still Technological Universities are commonplace, however IT becomes a general and basic discipline for the rest of teaching programmes on the university.

IT Culture becomes the dominating subject in the history of mankind. It changes the use of tools, opens completely new understanding of human mind and tends to produce something called spiritual machines (Kurzweil [1, 2, 3] and, especially, informational consciousness (Železnikar [7, 8, 9, 10, 11, 12])).

In the lower part of the graph in Fig. 3 the application area of IT is shown being potentially as much as possible graphically connected with the top area of the graph.

Application IT concerns now all the subareas following at its right side in the graph, thus introducing a couple of fields where IT application

is of essential importance in achieving the modern professional standards, that is, the required quality, certainty and reliability.

Communication IT advances practically in all communicational physical and other complex devices and services, coming up in the form of the most sophisticated computer systems. In telephony communication IT became indispensable making it universally usable.

Expert IT is widely used in management, medicine, engineering, linguistic, business, household and elsewhere where methods of artificial intelligence come into the foreground. Future expert system will be founded predominantly on informational consciousness philosophy and implementation.

Consciousness IT today doesn't use so much the consciousness as the main and intelligence embracing reference, but tries to authorise the weak or the so-called strong artificial intelligence as a sufficient feature to reach the entire field of consciousness. Kurzweil's singularity, [1], is on the way in this direction, waiting just for the enormous complexity of computer technology. Complexity is certainly being the condition sine qua non for a conscious system, however some methods for the informational decomposition (Železnikar [12]) of all kinds of meaning (video, audio, tactile etc.) have to be considered.

Science cannot advance without *Science IT*. An example of this sort is the large CERN accelerator and hadron collider as a gigantic scientific instrument in which various IT is built in and, by which, the so-called God particle (the Higgs boson) could be observed. On the other side, scientific instruments in space are rather digital instruments delivering the results of measurement via sophisticated digital signal transfer. Science needs IT as a basic substance in its instrumentation, theoretic and experimental research.

Art IT is the domain of video and audio enthusiasts for the shaping of scene, producing artistic performances in the form of make-up artistic kind, making artificial movies and illustration and, may be, also computer programming as a kind of art, etc.

Cosmology IT is engaged in observing, measurement, video, robotisation and other events in space and the digital mediation of data to the Earth instrumentation and vice versa to the cosmological devices. Science and technology for cosmic research is important also for global development because they usually exceed the needs customary under

global circumstances. Building space vehicles requires the top IT in design and cosmological equipment, at the shooting and guiding space vehicles.

Quantuum IT is still being in development and experimental equipment of this sort is already in use, for instance in managing large data bases. Quantum computer is one of the next innovative products which probably will create the future IT.

Linguistic IT is widely used in different tools for spelling, grammar and style correction (e.g. Duden Korrektor online in German and in more primitive form in Word) and, certainly, in L^AT_EX for spelling correction in a lot of languages. Google has also its own online, still most primitive and deficient tool in the form of Google Translate, applicable among plenty of natural languages for words, phrases and longer text units. However, all these methodologies are insufficient and widely out-of-the way belonging to a perfect translation⁵.

Sense IT

Survival IT

Environment IT

Project IT

Ecology IT

Humanoid IT

Law IT

9 The Concept of a Developing Tiger

In the beginning, let's clear the understanding of a developing tiger as it appeared in the previous century in Asia and intermediately in the U.S.A. It is not possible to implement such a concept by the destructive revolutionary doctrines being in the foreground of today political movements, insurrections and gatherings, coming up particularly in some European countries. What is missing at the front of these dis-oriented movements is a distinctive *high-tech* elite orientation, being

⁵Maybe, the hiring of Raymond Kurzweil by Google for linguistic engineering will help to improve substantially the translating situation. Probably, strong national language groups will be formed on a freelance level being as amateurs and professionals interested to make better the currently chaotic state of the art.

tightly connected with the economic elite and, both, with a democratic qualified political elite. The power of a country tiger development arrives from the strong and unique conviction of all elites, spread to the people, practically to the each individual loud and clear. The belief that a solely political will is sufficient for such an undertaking is false and leads solely to the confused and inefficacious political decision making.

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