Michael Schwemmle
Input Consulting GmbH

What happens? The characteristics of IT-Economy

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- written version -

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1.

The question ”What happens?” is basically very easy to answer. The answer is: Everything –almost everything – is changing. We are witnessing and participating in a fundamental **transformation** of the economy. This transformation is made possible, driven and shaped by innovations of the Information and Communications Technologies (IT), represented symbolically by the Internet. This has been said so often and by so many people that it is almost embarrassing to state again. And yet these findings are correct. They have to be, for even Alan Greenspan views it this way. I am quoting him: ”The newest innovations, which we label information technologies, have begun to alter the manner in which we do business and create value, often in ways not readily foreseeable even five years ago.”[1] And they *remain* correct despite the current stock market turbulences. The worldwide drop in prices of TMT shares (Technology-Media-Telecommunications) is – if at all – a sign that the opening party is over, but definitely not of the early demise of the “new economy” as a whole. The actual technological and economic changes are too profound to allow any comparison with the Dutch tulip bulb boom in the early 17th century.

This transformation – to be more exact: the new economic layout resulting from this transformation –has been described by a variety of **concepts**, none of which have a standard definition, sometimes referring to the same idea, yet sometimes to – perhaps only slightly – different ones. I will mention some of these concepts – adding the relevant authors or institutions in brackets who used these concepts, partly being the first ones to do so.

- The first concept is that of the “knowledge economy” (Peter Drucker 1968),
- and then the empirically more underpinned concept of he ”information economy” (Marc Porat 1976) – both point out the increasing significance of knowledge and information for the gross national product and the composition of the workforce,
- the term “digital economy” (Don Tapscott 1996) already focuses on the crucial importance of IT as ”engine of the transformation” and on goods and services whose development, production, sale, or provision is critically dependent upon digital technologies,
- the analytical approach behind the terms “Internet economy” (European Communication Council 1999) or “net economy” (Carl Shapiro / Hal Varian 1999) particularly emphasizes the implications of global networking and
- the term “e-economy” (European Commission 2000) basically seems to be a general buzzword for the approaches mentioned above.

These terms can of course not be distinguished incisively, they overlap at least partially and are based on one another. They are arched over by the concept of the so-called **”new economy”**, which unites the mentioned aspects – the increasing

[1] Alan Greenspan on May 6th, 1999, quoted from the U.S. Department of Commerce: The emerging digital economy II, Washington 1999, p. 1

significance of knowledge and information and the enormous effects of IT and the Internet – and which, in a broader sense, refers to the historically excellent macroeconomic constellation of strong economic growth, low inflation and a low rate of unemployment, as has been characteristic especially of the US economy in recent years.

There are wonderful definitions of this „new economy“ – some are actually close to lyrical. I would like to mention two of them:

- One was given by Progressive Policy Institute, a think tank of the New Democrats: “The term New Economy refers to a set of qualitative and quantitative changes that, in the last 15 years, have transformed the structure, functioning, and rules of the economy. The New Economy is a knowledge- and idea-based economy where the keys to job creation and higher standards of living are innovative ideas and technology embedded in services and manufactured products. It is an economy where risk, uncertainty, and constant change are the rule, rather than the exception.” (PPI 1998, p. 8).

- A more flowery definition was given in the magazine “Wired”, which published an “Encyclopaedia of the ‚new economy‘: “When we talk about the new economy, we're talking about a world in which people work with their brains instead of their hands. A world in which communications technology creates global competition ... A world in which innovation is more important than mass production. A world in which investment buys new concepts or the means to create them, rather than new machines. A world in which rapid change is a constant. A world at least as different from what came before it as the industrial age was from its agricultural predecessor. A world so different its emergence can only be described as a revolution.” (Wired 6.03 - 1998).

2.

I am quite pleased that the organizers of this seminar relieved me of the difficult task of choosing one of the mentioned concepts. They have created another – truly comprehensive – term: ”the new IT-economy”. Now what are the **characteristics** of this ”new IT-economy”? I will mention the facets that I believe are the most important ones – and, keeping in mind the limited time, restrict myself to giving you just a few tag lines.

We are observing fundamental **transformations** in

- the overall economic value creation,

- the markets and

- the sphere of labour and employment.

2.1.

With respect to the overall economic **value creation** we see that

- the amount of knowledge contained in products and services is rising strongly;[2]
- more and more goods and services are “immaterialized” by digitalization and can thus be produced and traded by means of electronic networks;
- the IT industries are contributing a more and more significant percentage to economic growth;[3]
- the massive investments in IT are finally paying off in relevant parts of the economy – primarily in the sector of the IT industries itself – through the long-awaited productivity increases[4] You all know the astonishing and hardly explicable paradox stated by Solow: ”You can see the computer age everywhere but in the productivity statistics.” It does not seem to apply any longer;
- the price decline in IT products and services, not least a result of these productivity boosts, has in recent years contributed decisively to keeping inflation in check.[5]

2.2.

Within the **markets** and the companies we are detecting among others,

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[2] ”The increased importance of knowledge means that the net stock of intangible capital (e.g., education and research and development) has grown faster than tangible capital (e.g., buildings, transportation, roads , and machinery). ... In the New Economy, intangible capital has become at least as important as tangible capital, and a greater share of the value of tangible capital is based on intangible inputs. ... This trend is demonstrated by the fact that the economic output of the U.S. economy, as measured in tons, is roughly the same as it was a century ago, yet its real economic value is 20 times greater. In other words, we have added intangible attributes to goods and services , the most important being knowledge. One example is anti-lock brakes, which are the product of a generation of research and development, and are loaded with electronics.” (Robert D. Atkinson / Randolph H. Court (Progressive Policy Institute - PPI): The New Economy Index. Understanding America’s Economic Transformation, Washington 1998 , p. 13 (PPI 1998))

[3] Taking the US economy as an example: ”While the share of the economy attributable to IT-producing industries grew from 6 percent in 1993 to 8 percent in 1998 in current dollar terms, this increase understates the importance of these industries because their prices are falling. A better way to gauge the importance of IT-producing industries is to look at their contribution to real growth. Over the last four years, IT industries‘ output has contributed more than one-third to the growth of real output for the over all economy.” (U.S. Department of Commerce 1999, p. 19)

[4] Based on another example from the US: ”IT industries have achieved extraordinary gains in GPO/W (gross product originating per worker). During 1990 to 1997, IT-producing industries experienced robust 10,4 percent average annual growth in GPO/W. In the goods-producing subgroup of the IT-producing sector, GPO/W grew at the extraordinary rate of 23.9 percent.” (U.S. Department of Commerce 1999, p. 28).

[5] The relevant figures for the US economy are as follows: ”During both 1996 and 1997 (the last years for which detailed data are available), prices in the IT sector fell by 7 percent. As a result, overall inflation was 1.9 percent compared with the 2.6 percent inflation in the non-IT producing sector of the economy, a difference of 0.7 percentage points.” (U.S. Department of Commerce 1999, p. 17).

- that national borders are becoming more and more open, that the scope of competition is becoming global and that even small enterprises can expand their geographical range considerably by means of electronic networks;

- that the thresholds to enter the market are lowered drastically and a large number of new companies - frequently start-ups and/or spin-offs – are appearing on the scene, which were able to arouse much enthusiasm on the capital markets with their Internet-related business plans[6];

- that the intensity of competition is increasing – caused by globalisation, new companies entering the market, also the growing expectations of the shareholders – and that capability of innovation, flexibility and speed are becoming decisive factors for competitiveness – nevertheless the current view that no longer the big ones swallow up the small ones but rather the quick ones the slow ones needs to be slightly modified, considering hectic M&A activities: It seems to be especially convenient being quick and big ...;

- that the mass production typical of the industrial age is becoming less significant, that strategies of product differentiation, customizing and "on demand" production are becoming more important and may redefine the role of the customer, partly involved in the process as "prosumer";

- that especially on the markets for information goods[7] the relevance of network effects is increasing – the most important term in this respect being "critical mass" – and that new marketing strategies are evolving: concepts such as "versioning" and "one-to-one-marketing", the inclusion of "collaborative filters" or pricing strategies on a "follow the free!" basis, by which the suppliers compete for the scarcest good which is in highest demand on these markets: the *attention* of a customer swamped with an abundance of information;

- that companies are changing their structures and their processes: on the one hand, they are increasingly split up into modules – they are being "deconstructed"[8] -, operate on a project basis and hierarchies are levelling out, and that on the other, they make increased use of electronic networks, both on an intraorganizational level and with business partners, suppliers and customers – frequent and well-known terms in this context are among others "virtualisation", "business webs", "B2B" and "B2C".

What are the impacts of these transformations of markets? Especially the increase in networking "has a major effect: It reduces the costs of coordination. Drastically.

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[6] This can be shown by the drastic increase in IPOs in Germany: While between 1983 and 1996 there was an average of 16 initial public offerings on the stock exchange, there were already 36 IPOs in 1997, 71 in 1998, 168 in 1999 and more than 200 are announced for the current year 2000 (Figures taken from manager magazin 04/2000, p 204).

[7] Shapiro / Varian define these in a broader sense as those products and services which can be "encoded as a stream of bits" and distributed through the Internet: "... baseball scores, books, databases, magazines, movies, music, stock-quotes and webpages." (Carl Shapiro / Hal Varian: Online zum Erfolg, München 1999, p.13 – English original version: Information Rules. A strategic guide to the Network Economy").

[8] Philip Evans / Thomas S. Wurster: Web Att@ck, München / Wien 2000 (English original version: Blown to Bits - How the New Economics of Information Transforms Strategy)

Everywhere."[9] The decline in the costs of transactions boosts the efficiency, the convenient exchange of information makes markets more transparent and effective. "The internet makes it easier for buyers and sellers to compare prices. It cuts out the middlemen between firms and customers. ... In all these ways the internet cuts costs, increases competition and improves the functioning of the price mechanism. It moves the economy closer to the text-book model of perfect competition, which assumes abundant information, zero transaction costs and no barriers to entry." – this is the – as I would say, reasonable – analysis given in the Economist (01/04/2000, p. 70). Now that we have the Net, it seems that we are getting a little closer to the smooth and frictionless capitalism, about which Bill Gates already went into raptures in his book "The way ahead" in 1995. From this viewpoint, a diagrammatic differentiation between the "old" and "new economy" is not very revealing: "The most important effect of the ‚new' economy ... may be to make the ‚old' economy more efficient" (Economist 01/04/2000, p. 70).

2.3.

Of course these changes, which are nothing less than drastic, are not without effect on the **sphere of labour and employment**, where the following trends can be observed:

- First of all, a fundamental occupational change, which had been occurring even decades before the "Age of the Internet" but is now taking place at increased speed: The number of people working more or less directly in the manufacturing of goods is declining, whereas that of "information workers" and service providers is rising strongly. Concerning the US, the Progressive Policy Institute states the following in a collection of indicators on the "new economy": "that 80 percent of the workforce do not spend their days making things - instead, they work in jobs that require them to move things, process or generate information, or provide services to people." (PPI 1998, p. 9).

- This change is accompanied by a permanent "churning" effect on the labour markets: While a variety of new occupational opportunities – especially in the IT sector itself - are created, the demand for adequately qualified workers is growing drastically and an extreme lack of workers is noted with regret, a large number of jobs is lost in other sectors. Take the example of e-commerce: "Workers that provide shipping and delivery services, online content, desktop publishing, etc. will be in demand. At the same time, demand for some occupations including travel agents, stock brokers, bank tellers and communications equipment operators, may decline as consumers make more purchases and other transactions online and bypass traditional delivery methods or as they just choose the direct route to gathering information."[10]

- At the same time, however, the labour markets are characterised by increasing inequality: the number and share of well-paid, highly-qualified jobs is on the rise, yet the same applies to low-paid and low-skilled jobs.[11] The wage gap between

[9] Uwe Jean Heuser: Das Unbehagen im Kapitalismus, Berlin 2000, p. 22
[10] U.S. Department of Commerce 1999, p. 42
[11] "This bifurcating trend of growth in both high- and low-skilled jobs is expected to continue. Jobs requiring an associates degree or above are expected to increase from 31 percent of all jobs in 1996

those employed in the IT industries and those working in other sectors is expanding[12], and there is mounting evidence that there also is an ”underside of the new economy”.[13]

- All in all, the labour markets are becoming less stable, and jobs are becoming less safe. The type of position classified as “normal employment” in Germany – a permanent full-time job for which one is trained and qualified – is less and less the norm. Flexible and short-term agreements – ”contingent working” - and types of occupation which used to be considered as ”untypical” are now increasing, and so are different forms of self-employment - Tom Malone of MIT is already speaking of the ”e-lance economy”. Yet at the same time many employees are under increasing pressure to think and act like “entrepreneurs in the enterprise”.

So much for my - unavoidably rather simplistic overview - of some characteristics of the ”new IT-economy”, which of course is a moving target. For this reason, inaccuracies in the forecasts can by no means be excluded, rather they are quite likely. But one thing is crucial: From a historical viewpoint we are only just at the point of entering the new stage of development of the ”digital capitalism”. As Frank Sinatra put it: ”The best is yet to come!”

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to 32.4 percent in 2006. And while the share of jobs requiring moderate-term training is expected to decline by 1.1 percent, the share of jobs requiring only short - term training is expected to decline only 0.3 percent. Low-skilled jobs are not going away any time soon. The occupations with the largest predicted numerical increases are cashiers, janitors, retail salespersons, waiters, and waitresses. Together, they a re expected to account for 13 percent of all new job growth.” (PPI 1998, p. 10).

[12] Vgl. U.S. Department of Commerce 1999, p. 39

[13] This is the headline of a report in Wired (dated 2000-03-24) on a hearing of the Californian Senate on the topic ”Economic Insecurity in Silicon Valley” (www.wired.com/news/print/0,1294,35177,00.html).

3.

It is absolutely inconceivable that such radical changes should occur smoothly. Of course there are barriers and huge challenges which have to be tackled and which are tackled by governments around the world, with more or less intensity and with more or less success. To conclude, five questions in this respect:

1. How does one gauge the ”new economy”? If ”the worth of companies is increasingly related to intangible assets (R&D, brands, employee talent and knowledge) ... traditional accounting fails to measure.”[14] If brainwork is more important than manual work [”reeling minds are more important than reeling machines”], then there is a need for new, adequate measuring methods. On the one hand, concerning the individual assessment of companies – in this respect, the Boston Consulting Group has recently ventured an apparently interesting new approach with its ”workonomics” system of indicative figures and the key figure ”value added per person”.[15] And on the other hand, these are needed for the government statistics on the overall economy, which frequently still do not seem capable of supplying political decision-makers with the precise information needed on critical trends in the development of the new IT economy.

2. How can the obvious skill mismatches be quickly and lastingly eliminated which currently seem to be a main factor preventing full utilization of the potential of the new IT economy? How can we put in place the human resource policies necessary for the digital economy? How can we solve the so-called ”digital dilemma: building infotech skills at the speed of innovation”?

3. What should and could be the part of the government in overcoming the technical limitations of the Internet still existing? The fundamental issue regarding the architecture of the ”new IT-economy” and the information society is availability of and access to broadband network connections. Does competition solve the task ”broadband for all”? Or does this require government initiatives – such as that of the Swedish government to establish a high-speed net for all[16]?

4. How can we succeed in bridging the ”digital divide” on a global scale? As a threat to intrasocietal cohesion, this topic has rightly been taking an important position on the political agenda – but its global dimension, the actual dissociation of the developing countries who are threatened to become ”outcasts of Cyberspace”, however, seems to arouse little concern by comparison. According to the latest UNDP Human Development Report “the global gap between haves and have-nots, between know and know-nots, is widening”[17] - and it is widening despite the huge potential IT and the Internet can offer for a better and sustainable development. Couldn’t the governments of our two countries – especially in view of the German and Swedish social democratic traditions connected to the names of Olof Palme and Willy Brandt – take the initiative for a really ambitious large-

[14] PPI 1998, p. 13
[15] Ref. to manager magazin 04/2000, p. 154 ff. (“Werttreiber Mensch”); Financial Times Deutschland of 2000-04-11 (”Rauchende Köpfe sind wichtiger als qualmende Schlote”).
[16] Ref. to Financial Times Deutschland of 2000-03-30 (”Schweden plant staatliches Netz für das Internet”)
[17] United Nations Development Programm (UNDP): The 1999 Human Development Report, p. 57

scale European project in this field?

5. And, finally, a rather well-worn question: What about the *people* in the ”new IT economy”? Are they overtaxed by its rate of change, its instability, its uncertainties, its abundance of opportunities to choose from and requirements of decision-making, its characteristic dominance of the economic principle? Do people who were socialised within industrialism simply have to adapt, is this a transitional phenomenon and a problem of adaptation – just as it had to be solved in the industrial revolution? Or will it always be a hopelessly romantic undertaking to want to make economy itself more ”human”? How would this work? In the US, the ”Cluetrain Manifesto” has been causing a stir for some time now, 95 critical/optimistic theses on the New Economy, developed by four noted Internet and marketing experts around Christopher Locke.[18] It is definitely worth reading. A key statement it contains is: ”Markets consist of human beings”.

[18] www.cluetrain.com

Agenda for the Swedish-German High Tech Seminar on Information Technology
Stockholm, 19th of April 2000

8:00 am **Opening remarks**
Lars Rekke, State Secretary
Siegmar Mosdorf, Parliamentary State Secretary

8:30 am **1. Challenges of the "New IT-Economy"**
1.1 What happens? The characteristics of the IT-Economy
Michael Schwemmle, Input Consulting
Jonas Ridderstråle, Stockholm School of Economics

9:15 am *1.2 Opportunities and consequences for private, public and home sector*
Dr. Stephan Klein, Media@Kom
Jöran Hoff, Ericsson Radio Systems AB

10:15 **Coffee break**

10:30 am **2. Requirements for Political Action**
2.1 General legal framework
Bernd-Wolfgang Weismann, Federal Ministry of Economics and Technology
Olof Sandberg, Ministry of Industry, Employment and Communications

11:15 am *2.2 Innovative environments for technology transfer*
Dr. Alfred Hoffmann, Infineon
Kenneth Olausson, The Interactive Institute

12:00 am **Lunch**

1:00 pm *2.3 Entrepreneurship and growth*
Dr. Herwig Leins, Deutsche Bank AG
Klaus Zuber, DCI - Database for Commerce and Industry AG
Leif Åkesson, AppGate

2:00 pm **Closing remarks**
Siegmar Mosdorf
Lars Rekke

2:30 pm **Presentation of the Interactive Institute´s studios**