White Paper Healthcare Industry in Germany.

Structural Change and Consequences for ICT Applications.

Business flexibility **T** · · Systems · · ·

Contents.

Preface.

The German healthcare industry is increasingly becoming a focus of media interest, a trend driven by developments such as statutory liberalization, the mergers of medical service providers, and IT solutions that improve the efficiency of paying authorities and service providers.

The structural change in the industry that gives rise to these developments demands the support of appropriate Information and Communication Technologies (ICT). The present white paper seeks to identify the structural characteristics of the healthcare industry and to present various ICT-related trends for the future as well as to draw attention to the high ICT market potential of this industry.

1. Introduction.
1.1. Characterization of the German Healthcare System.

1.1.1. Definition.

The healthcare system is defined as all institutions and persons that work together on the prevention (prophylaxis), recognition (diagnostics), treatment (therapy) and post-treatment (metaphylaxis) of diseases. Following the example of the USA, there is also an increasing trend in Germany for the healthcare system to carry the cost of services that contribute to the patients' well-being, e.g., fitness, wellness, cosmetics, cosmetic surgery and anti-aging. In everyday language, they are collectively referred to by the term "individual healthcare services" (individuelle Gesundheits-leistungen, IGeL).

The high rate of economic growth in the healthcare industry, which derives from rapid technological progress, provides a boost for the establishment of a new market segment known as Life Science. This can be seen as a conglomerate of various human and natural science disciplines, which, in contrast with basic research, collaborate in a market economics environment. This includes fields such as molecular medicine, biology, biotechnology and bioinformatics as well as pharmaceutical studies, human medicine and genetic engineering.

1.1.2. Participants.

The healthcare system in Germany consists of governmental and non-governmental institutions and individuals. Firstly, this includes the doctors, specialists, psychotherapists and caregivers – the number of which is higher than the inter-national average. In addition, the healthcare system is also seen as including the practitioners other healing profes-sions as well as pharmacists and their staff.

Other participants in the healthcare system include: the federal, state and local governments; health insurance com-panies; accident, nursing care and pension insurance companies; SHI-accredited doctors' associations; employers and employees and their associations; and last but not least, the patients, some of whom are represented by patient associations and self-help organizations. The care offering is provided on a private basis for the most part. Professionals such as doctors and pharmacists are dominant along with large pharmaceutical or medical technology companies in private industry. The government participates as service provider only at a secondary level in the form of healthcare officials, community hospitals or university clinics. Unique to Germany is the fact that outpatient and inpatient treat-ment are separated to a large extent.

Service receivers	Service providers	Paying authorities
▪ Patients	▪ Hospitals	▪ Private HI
	▪ Doctors, dentists	▪ Statutory HI
	▪ Care facilities	▪ Other insurance
	▪ Pharmacies	▪ Patients
	▪ Pharmaceutical industry	
	▪ Other therapists	

Figure 1: Participants in the German healthcare system

1.1.3. Development of the Healthcare Industry.

The healthcare system is primarily financed through insurance contributions, which are mainly collected from employees and employers on a matching basis. Just under 90% of the population is insured in the statutory health insurance system. The contributions are geared to the respective income level of the insured person, whereby family members are co-insured free-of-charge under certain circumstances. Entitlement to benefits is independent of the amount of the contributions paid, but is limited to services that are absolutely necessary. After insurance contributions, shared costs and patient surcharges make up a growing proportion of the financing of the healthcare system. In a few fields, subsidies or cost-sharing programs are funded by the state or non-profit organizations.

The market for the aforementioned individual healthcare services (fitness, wellness, etc.) is a largely private one.

The German healthcare system is subject to the influence a demographic change, the effects of which will become increasingly noticeable between now and 2015. Owing to what has been a continuously low birth rate for many years, the total population of Germany is declining. In parallel with this, the age structure is changing: longer and longer life expectancy has increased the number of older people, which contrasts with a declining number of children and adolescents. As older people file more claims for healthcare services than younger people do on average, the need for healthcare services will rise rapidly in the next ten years.

Figure 2: Population pyramids 2001 and 2050
Source: Federal Statistical Office Germany

1.2. Objectives of the Healthcare System.

The healthcare system pursues five main objectives – the first three relate to healthcare services in general and to their medical quality, while the remaining ones relate to their costs and to the satisfaction of the participants in the health-care system:

1.   Each citizen must be guaranteed access to the healthcare services.

2.   Moreover, the quality of the healthcare services must be ensured.

3.   The services that are available must be effective. That means that the healthcare services received must result in successful treatment within a reasonable period of time.

4.   Further, the healthcare services must be administered in an economic fashion, i.e., when two identical healthcare services are available, the less expensive must be used.

5.   Finally, the achievement of the aforementioned objectives should ensure the satisfaction of both the patient and the personnel working in the healthcare system.

2. Situation analysis:
ICT Applications in the Healthcare Industry.

In the healthcare industry, an increasing number of business administration processes and instruments are being used and adapted, e.g., in the form of a hospital controlling function. This demands a comprehensive flow of information between the actors involved, which directly affects, in turn, the ICT market in the healthcare sector. The flow of information among the various participants of the healthcare system is complex: this means the hospitals not only have to communicate with each other, but also with the doctors in private practice, who must also in turn communicate not only with one another, but also with pharmacies, external laboratories, and of course the paying authorities and the SHI-accredited doctors' associations. The administrative processes such as hospitalization and referral, accounting, sick-leave certification, and issuing prescriptions and orders take a great deal of time, the cost of which has to be charged to the paying authorities, but which contribute nothing to the actual provision of the medical service itself. The exchange of information is often impaired, thereby taking even more time and incurring additional costs.
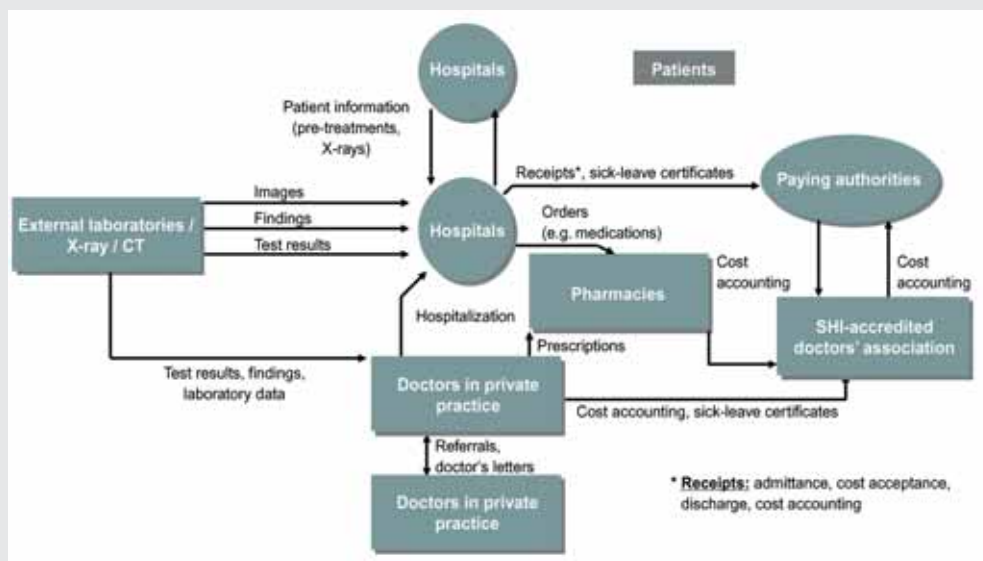

Figure 3: Information flow in the German healthcare system
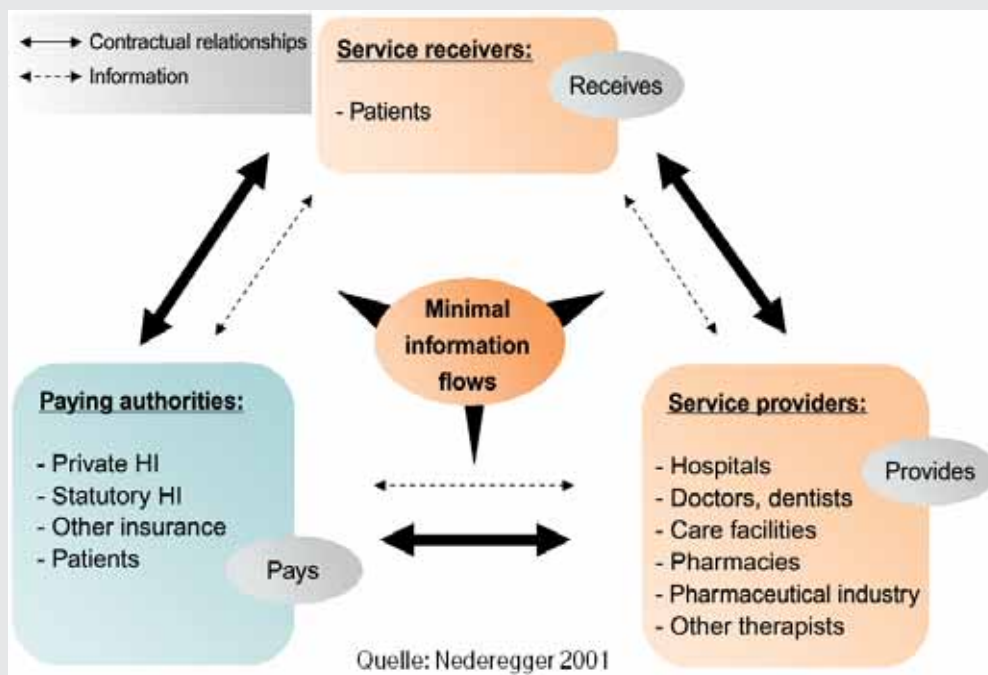Source: Competence Center Healthcare: T-Com 03/2004

Figure 4: Contractual relationships vs. information flow
Source: Competence Center Healthcare: T-Com 03/2004

Statutory regulations that prohibit the establishment of branch pharmacies, for example, or stipulate the business processes of doctors in private practice, have been an obstacle to networking the service providers together within the healthcare system. This has led to a lower degree of ICT utilization in the healthcare sector as compared to other industries. The resulting need to make up for lost time, however, is becoming increasingly apparent to the service providers. For this reason, statutory liberalization can be expected to bring about rapid development of the ICT market in the healthcare industry in the coming years.

3. Future Trends.
3.1. General Trends.

Despite the limited financial resources of the public health insurance funds, the patients' need for healthcare services is growing, in no small part due to an increasingly developed health consciousness among the German people. For this reason, more and more patients are willing to invest in the maintenance of their own health, even on a private basis.

On the other side, the service providers and health insurance funds are facing an cost explosion: hospital costs, for example, have risen nearly ten-fold over the past 30 years. Generally speaking, it is clear that the entire healthcare system has to work and organize itself under extremely high cost pressure.

The days of the hospital as sole service provider sustained by public funding are essentially over: the trend is clearly moving toward hospital groups, even hospital chains, which are run by private operators. This means these institutions should now be viewed as bona fide businesses whose need for ICT solutions and consulting is just as high in proportionate terms as that of a company in the manufacturing or service sector.

As the goal of cost-effectiveness may only be achieved while maintaining the quality of services, cost savings cannot be carried out on the treatment itself. Instead, the greatest cost-savings potential and the highest increases in efficiency are to be found in the administrative area. An improvement in the flow of information between the actors in the healthcare system can simplify the administration of patient data, provide for faster and more efficient accounting methods, and prevent expensive duplicate treatments and wrong referrals. The key to this lies in the relevant ICT solutions, which, having already established themselves in other industries, have seen only isolated utilization in the healthcare system so far.

The administrative cost pressure is not only evident in hospitals. Rather it is the decisive factor behind the trend toward the pooling of doctors' practices into group practices or even into health clinics. Just like the recently legalized formation of pharmacy branches, this pooling of resources creates a high demand for ICT.

3.2. ICT Trends.

In contrast with many other industries – and despite cost pressure – the healthcare system barely suffers from ICT budget cuts. While declining expenditures are likely in some industries, ICT investments are expected to increase in the healthcare system. IDC predicts that the healthcare system will continue to have the highest annual growth rates of any industry in the future as well. Similarly, PAC expects average growth rates of about 9% in the healthcare sector through 2008.
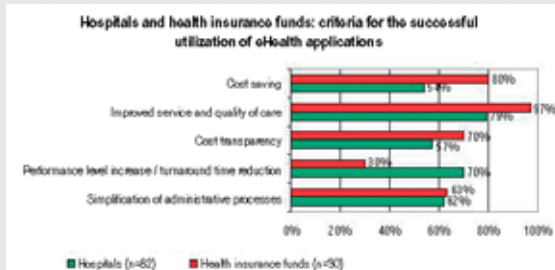
Figure 5: Success criteria for the utilization of eHealth applications
Source: Wegweiser GmbH – eHealth Study

This is a higher rate of growth than in every other public sector. Moreover, it is financially supported through investments in the healthcare IT market by Western European governments. According to Gartner, the volume of this market is expected to grow from €22.06 billion to €25.16 billion by 2008.
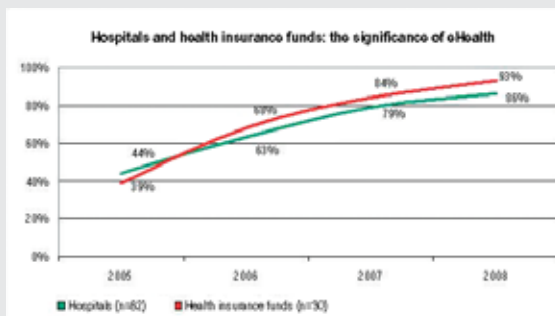
Figure 6: Hospitals and health insurance funds: the significance of eHealth
Source: Wegweiser GmbH – eHealth Study

3.2.1. Health Card

The electronic health card contains a chip that initially stores the insurance status, the authorization to be treated in European countries outside of Germany, and the electronic prescription. The latter function is designed to replace the 700 million paper prescriptions that the doctors issue every year. The ePrescription works in the following way:

At the doctor's office

The doctor generates a prescription on the computer as before. He signs it with his digital signature, which is generated using of his medical professional ID. The ePrescription is stored either directly on the card or on a server via a secure network connection.

Figure 7: Health Card

In the pharmacy

The insured person presents his health card to the pharmacist, who then calls up the prescription. Once the insured person has received the medication, the prescription is deleted. The electronic prescription will initially be restricted to prescription drugs.

According to Minister of Health Ulla Schmidt, the ePrescription system can save 300 million euros per year because the paper document has to be re-scanned in pharmacies and data centers for accounting purposes. The electronic prescription eliminates this breach in the electronic transmission chain, thereby making administration more efficient. In addition, the patients are given the option to set up an emergency data set on their card. This allows them to store data relative to blood type, allergies and heart conditions, for example. In this way, doctors receive treatment-relevant information about the patient rapidly in the event of an emergency. Storage of these emergency data sets is voluntary, however.

Further functions are to be added to the card in successive iterations: in a few years, doctors will be able to use their PC to call up the insured person's digitalized X-ray images, blood analyses and doctors' letters from the card. This will eliminate costly duplicate examinations.
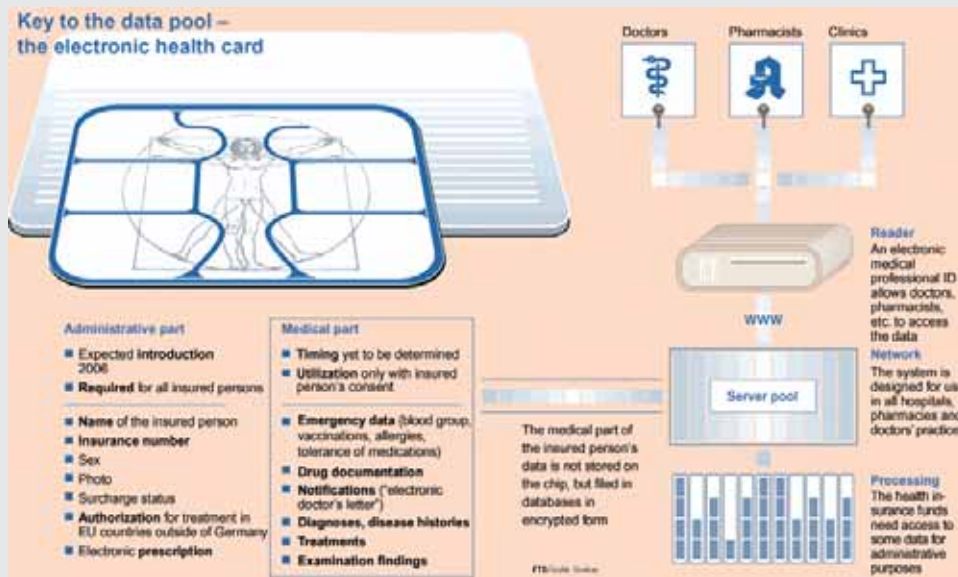
3.2.2. Networking of the Participants

Figure 8: Key to the data pool – the electronic health card
Source: www.ehealth.de/gesundheitskarte/x13.htm

The electronic networking of the service providers as well as the paying authorities is currently proceeding apace within the framework of a series of comprehensive ICT projects. The goal of this networking is to accelerate and improve the information flow relative to disease pictures, treatment documentation, prescriptions, referrals and diagnoses, but also relative to accounting and personal data as well. The integration of patient information beyond the separate systems requires the use of a large number of networks, content management systems and databases. Owing to the productivity and mobility increase it affords, wireless LAN is an interesting topic for the healthcare sector. Mobile solutions in hospitals, for example, contribute to improved workflow.
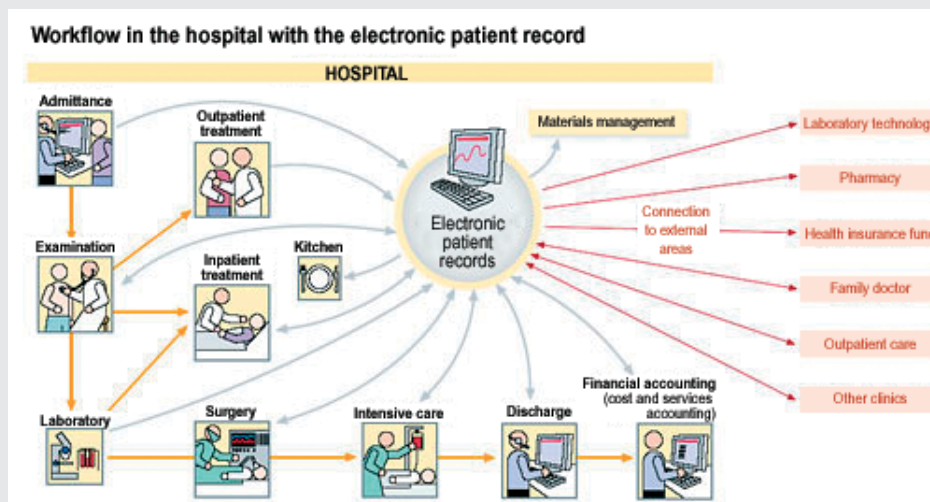

Figure 9: Workflow in the hospital with the electronic patient record
Source: Ministry of Health – the electronic patient card and its benefits

3.2.3. DRGs

Diagnosis Related Groups (DRGs) represent the prerequisite for a service-oriented hospital reimbursement system. A DRG (e.g., appendectomy) represents a paying authority to which the patient will be charged as a flat fee. The flat rate is based on the average treatment cost for the given treatment case. In contrast with conventional invoicing according to the length of the hospital stay, the use of DRGs results in significant cost reductions due to shortened hospital stays. The use of DRGs requires a high performance IT system, which means an increased IT investment volume for a hospital.
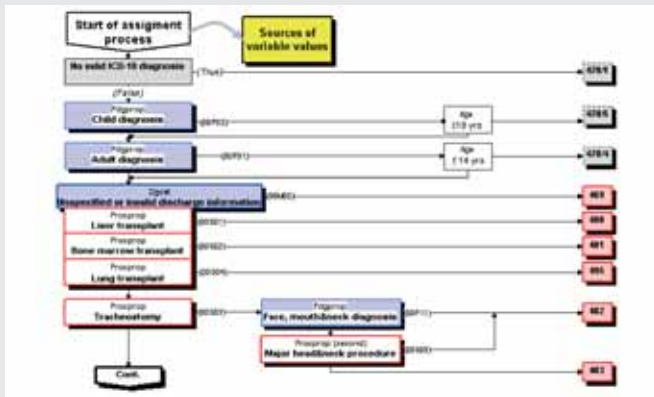

Figure 10: DRGs
Source: SAP: Implementing DRGs successfully

3.2.4. IT Outsourcing/BPO

Many medical institutions start by outsourcing their IT infrastructure or even complete business processes such as the accounting department. Above all, hospitals are involved in this trend. In addition, topics like ERP and Storage Solutions play a major role, just as they do in private industry.
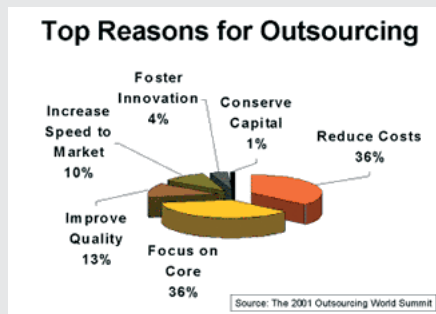

Figure 11: Reasons for IT outsourcing
Source: The 2001 Outsourcing World Summit

3.2.5. Security and Data Protection

Owing to the sensitivity of the patient data, the topics of security and data protection are especially important in this industry. This is also borne out by current market estimates, according to which investments in security products in the healthcare industry are rising by 17% per year. The largest market segment here is that of anti-virus solutions and firewalls. The VPN topic is also becoming increasing important, as reflected by annual growth rates of about 27%.

4. Conclusion.

Generally speaking, it is clear that demographic factors alone are enough to ensure strong growth in the healthcare industry. Further, patients in an increasingly business-oriented healthcare system will be seen as more than mere patients, but rather as customers to whom services are being sold. The growing number of older people, i.e., potential patients, increases the number of potential customers, and therefore the size of the market. It is therefore universally accepted that demographics are a major market driver of the healthcare industry.

Section 2 explained that the healthcare industry will experience more growth that any other public sector industry in the coming years, and that it lags far behind other industries in terms of ICT investment. This by itself already serves to indicate that the ICT providers' medium-term resource allocation should assign a key role to the healthcare area. The trends discussed in Section 3 imply a high investment volume in hardware and software as well as services. If an ICT provider reacts quickly now by developing and delivering industry-specific solutions, competitive advantages can be consolidated in the future. The key, however, lies in the fast reaction of the provider. By 2010, the major portion of the potentials described here will already become fact. Deutsche Telekom is positioned in the healthcare system with Basis TC Services and in selected customer segments (e.g., in hospitals) with IT services.

At the present time, Deutsche Telekom AG supports 184,000 customers in the healthcare system.

T-Systems will pursue three strategic thrusts designed to cover the entire eHealth market:
1. As system supplier
2. As application service provider
3. As enabler of telematic services

T-Systems thereby aims to secure the business with infrastructure services while raising newly emerging ICT potentials in parallel. This occurs above all through the targeted staffing of industry-specific solutions – especially in the "eHealth Processes" area. The long-term strategic objective of T-Systems is to position itself as leading ICT provider in the health-care system.

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