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Management Summary

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In this, the ninth year of the "**Monitoring the Information and Communication Economy**" project, its series of factual and ePerformance reports have become indispensable reference works for many decision-makers in the spheres of politics, industry, science and research. The current **"Fourth ePerformance Report – Special review of the Third National IT Summit"** provides a comprehensive and up-to-date assessment by experts of Germany as a competitive ICT location (‘IKT-Standort Deutschland’). Two workshops were held in August 2008 and attended by leading industry insiders, while a survey was conducted among the select panel of experts from the "Monitoring the Information and Communication Economy" project.

The primary goal of the IT summit is to help Germany become a globally competitive leader in ICT. To achieve this, we must first optimise general ICT infrastructure; second, secure competitive location advantages; third, leverage opportunities in growth areas; fourth, improve international competitiveness and fifth, minimise existing weaknesses and future risks posed to Germany as a competitive base for business.

A strategy priming Germany as a competitive ICT location must take account of a globally networked economy consisting of highly complex, interdependent value-added chains and position the country favourably within this economy.

According to the experts surveyed, a strategy based on the concept "ICT made in Germany and applied in a global webciety" would comprise the following steps:

1. Improve general infrastructure: Excellent, high-performance ICT infrastructure is crucial for further innovation within the ICT sector.

2. Build on existing strengths:
Germany must function both as a production location and as a sales market for Information and Communication Technologies. Clusters of Excellence for security and e-government must be established.

3. Leverage the specific opportunities offered by Germany as a competitive ICT location: The seven top growth areas for 2008 and 2013 – Especially high-potential areas of e-energy, Green IT, embedded systems, Internet of Services, Internet of Things, mobile applications – Promote internationalisation of innovative SMEs – Attract business headquarters and headquarter functions to Germany.

4. Improve international competitiveness: Make Germany more attractive as a competitive ICT location by leveraging its superior technical achievements.

5. Conquer challenges: Increase availability of skilled labour – Develop needs-oriented training and further education – Secure excellent research and development – Improve cooperation between suppliers and users – Ensure adequate financing of small and medium-sized companies – Limit the impact of the financial crisis on Germany as a competitive ICT location.

The following section summarises the main conclusions of the survey on Germany's performance as a competitive ICT location ("Current status") for 2008 and 2013. It also outlines the measures discussed in the workshops ("Recommended actions").

1. Improve general infrastructure

Excellent, high-performance ICT infrastructure is crucial for further innovation in the ICT sector

Current status: 33 per cent of all experts (48 per cent of which were from the end-user companies surveyed), consider "Infrastructure conditions" to be a particular strength of Germany as a competitive ICT location. The respondents were positive about competitive location factors such as "Internet access in companies" and "Fixed line and mobile phone penetration". However, only a fifth of all respondents rated the "Blanket network coverage" as a current strength.

Recommended actions: Political and industrial players should work together to provide nationwide broadband infrastructures. Blanket broadband penetration within the Federal Republic of Germany has not yet been achieved. The process must now be completed with public funding and innovative financing plans used to this end.

2. Build on existing strengths

Germany must function both as a production location and as a sales market for ICT.

Current status: "Use and implementation of ICT as a general purpose technology" was named by 41 per cent of respondents as one of Germany's strengths as a competitive ICT location, putting this factor into first place. This result reveals that the German ICT economy is particularly impressive at marrying cross-sectoral applications and sector-specific applications. Half of all suppliers believe ICT's use as a general purpose technology offers specific opportunities in relation to the year 2013.
This view is shared by 40 per cent of trainers and 26 per cent of end users.

Recommended actions: There must be a particular focus on the use of "Embedded systems", especially within automotive engineering, mechanical and plant engineering, control and feedback control systems, public administration, the health system and transport and logistics.

Germany, as a competitive ICT location, possesses specialised expertise on optimizing highly complex ICT systems while ensuring and managing interoperability and connectivity, and simultaneously catering to specific customer requirements. This strength in customizing solutions should be further developed, urge the experts.

Germany plays a major role as an ICT production location. Independent IT research cannot take place in this country without industrial IT production. The concept of "ICT made & applied in Germany" must be preserved as a key guiding principle on the pathway to success. Innovative ICT must be used more widely and intensively. Where possible, innovative ICT should be implemented in German companies first to bolster Germany's position as a leading global exporter.

Establish Clusters of Excellence for security and e-government

Current status: "Data protection and Internet security" and "ICT security in companies" were categorised by 17 and 7 per cent respectively of the experts as particular strengths of Germany as a competitive ICT location. Of the supplier companies surveyed, 29 per cent rated data protection and Internet security as a particular strength. The experts deemed data protection and IT security to be a contributory success factor for e-business and e-commerce. German users have relatively demanding security requirements, thus spurring on specific business opportunities.

Recommended actions: The German ICT economy should establish a Cluster of Excellence within the field of ICT security. After all, Germany is synonymous with security worldwide. Indeed, a number of outsourcing projects have been cancelled because other countries are unable to meet the security requirements. Measures in this area should also focus on enhancing the security features of our products and services. A "Security" cluster should encompass the fields of risk management, compliance, Internet security, IT security and data protection.

A second Cluster of Excellence should be established to promote solutions in the area of e-government. Currently Germany only enjoys an average ranking internationally in this area, due to the country's complex administrative structures. Since much potential remains untapped in this area, Germany lags behind in terms of flexible solutions for multiple administrative systems. There is also room for improvement as regards a public administration system that is citizen-centred and ICT-supported and developing collaborative solutions between industry and public administration.

3. Leverage the specific opportunities offered by Germany as a competitive ICT location

Top growth areas for 2008 and 2013

Current status: The "Strategy for enhancing strengths" for the years 2008 and 2013 highlights seven top growth areas as a priority. "IT services and innovative services" occupies the top position for 2008 and 2013. The greatest gains were made by the factor "Cross-sectoral ICT implementation", which jumps four places from 6th position (2008) to 2nd position (2013). "Sector-specific ICT implementation" moves up two places from 5th position to 3rd position. Other growth areas promising high potential in 2013 are "Internet of Services", "Internet of Things", "Mobile data services" and "Convergence".

Recommended actions: If it is our intention to aim economic and industrial measures at enhancing existing strengths, we must avoid focusing too narrowly on only a few growth areas. According to the survey responses, there is insufficient differentiation between the seven top growth areas listed for either 2008 or 2013. The best opportunities therefore lie in simultaneously developing all of these areas.

High-potential: e-energy, Green IT, Internet of Things and mobile applications

Current status: The following growth areas in particular were identified as high potential, at least within the next few years:

- "E-energy and energy efficiency" was rated by 26 per cent of the respondents as a specific opportunity. Suppliers and end users agree on this point.

- "Green IT" is considered to be a specific opportunity by 25 per cent of the experts (26 per cent of suppliers, 22 per cent of end users).

- "Internet of Things/RFID" was chosen by 10 per cent of suppliers for the year 2008 and 15 per cent of end users as offering particular opportunities. High potential in this area was predicted for the year 2013 by 26 per cent of the respondents.

- "Mobile Applications" was identified by 41 per cent of end users as having high potential. This view was shared by 31 per cent of suppliers and 25 per cent of researchers/trainers.

Recommended actions: These application areas must be developed - some of them are at the start of their innovation cycle and offer significant potential for growth.

Promote internationalisation of innovative SMEs

Current status: 39 per cent of the respondents named "Innovative ICT SMEs" as a particular strength of Germany as a competitive ICT location. However, one third of all suppliers, association representatives and experts from research and education believe that much of the SME potential remains untapped. Only 15 per cent of end users agree with this view however.

Recommended actions: Support, including cross-border initiatives, must be provided to technology-driven start-ups and innovation clusters in association with big businesses.

Current status: "Poor internationalisation among ICT SMEs" was rated as a weakness by 18 per cent of respondents for the year 2008, and by 17 per cent as a risk with regard to the year 2013. Although a multitude of SME support programmes are available in Germany, none of these promotes internationalisation strategies among small and medium-sized ICT companies.

Recommended actions: There are ample business incubation centres, but start-ups and SMEs must be ramped up to handle the global market. We need more measures to expand high-potential small and medium-sized businesses so they can reach a size capable of operating on global markets.

Attract business headquarters and headquarter functions to Germany

Current status: Germany does not play a sufficiently active role in influencing international developments in the ICT economy because German ICT companies lack an international focus. The category "Few German global players present in German ICT base" was identified by 38 per cent of respondents as a current weakness (2008) and by 33 per cent as a future risk (2013). A total of 44 per cent of end users and 31 per cent of suppliers consider this factor to be a current weakness, while 36 per cent of end users and 30 per cent of suppliers believe it is a future risk.

Recommended actions: We need global players with headquarter functions in Germany: first, because the most talented staff in global companies do not want to be limited to working in offices that are purely sales divisions, and second, because the German ICT economy can contribute to international developments through the global players located here. We must encourage companies that operate internationally to migrate their headquarter functions to Germany.

4. Improve international competitiveness

Make Germany more attractive as a competitive ICT location in future

Current status: Almost half of the experts predict that Germany will become more attractive as a competitive ICT location by the year 2013 (49 per cent). However, more than a quarter expect the country's attractiveness to wane (28 per cent). Nearly one out of every four ICT experts believes that Germany's attractiveness as a competitive ICT location will remain stable up to 2013 (23 per cent). Suppliers were notably more optimistic than end users on this subject. Half of the suppliers predicted an improvement in Germany's attractiveness as a competitive ICT location. The end users, on the other hand, were more cautious, with 37 per cent expecting an improvement in attractiveness and 26 per cent expecting no change (the latter figure in comparison to just 12 per cent of suppliers).

Recommended actions and future prospects: The attractiveness of Germany as a competitive ICT location is set to grow, given the positive forecasts for its international competitiveness, particularly in the new growth areas. On the key topic "E-energy, energy efficiency", there were 37 optimistic responses and only one sceptical response, while Green IT elicited ten positive views and one negative view.

In these new growth areas, Germany faces the stiffest competition from the US: e-energy (39 per cent), Green IT (46 per cent). However, overall there has been a decline in US international competitiveness, especially since 2006. In 2000, the US led the field in almost all ICT market sectors. By 2008, according to the experts, it only held a leading position in nine out of twenty sectors analysed.

The German ICT economy will have to face tougher Asian competition in the field of "Embedded systems" (49 per cent). Competing with Asian ICT economies in the fields of e-energy (25 per cent) and Green IT (23 per cent) will also pose particular challenges.

In the public sector areas of e-justice (72 per cent), e-government (67 per cent) and e-health (59 per cent), Germany must benchmark itself against Scandinavia in particular, in addition to the US.

5. Conquer challenges

Increase availability of skilled labour

Current status: 82 per cent of the experts surveyed believe there is a shortage of skilled workers in the ICT sector in Germany. The percentage breaks downs as follows: 79 per cent of suppliers, 78 per cent of end users and 89 per cent of experts from research and education. The shortage of skilled workers and management trainees (including a dearth of technical skills, management qualifications and international experience) is considered to be a weakness of Germany as a competitive ICT location by 42 per cent of the respondents. Overall, 96 per cent of those surveyed assume that this shortage will have a negative impact on Germany as a competitive ICT location.

Recommended actions: 41 per cent of the respondents called for reforms aimed at better quality training. Just under a third (33 per cent) of respondents believe that Germany must transform itself a country that attracts highly qualified migrants. However, some of the workshop participants felt that the first priority was to further develop the existing expertise and capability available within the domestic market. For a realistic prospect of luring the "best and brightest from the global talent pool", the recruitment of foreign skilled workers should be driven by a Green Card promotional campaign. A quarter of the experts urged that 'MINT' subjects (mathematics, information technology, natural sciences and technology) be made more appealing in schools.

Further develop needs-oriented training and further education

Current status: Four out of five experts confirm that ICT training and education is sorely lacking. This is the view of 85 per cent of end users, but only 74 per cent of suppliers. End users and suppliers would appear to have different requirements as regards ICT training. 82 per cent of end users, but only 67 per cent of suppliers agree that investing in education is more important than investing in networks.

Recommended actions: Two-thirds of respondents called for interdisciplinary training with practical relevance. In concrete terms, this would involve closer links between training curricula and live projects in industry, tighter integration of business skills into technical courses, broader rollout of work placements and greater involvement of field practitioners in higher education. A fair proportion (10 per cent) stressed the need for more qualified ICT training staff. Efforts must be redoubled to encourage girls to take up education and careers in ICT. Furthermore, we need to give greater priority to mobilising the untapped potential of our older population through further education and employment. Finally, closer cooperation between industry and educational institutions is required.

In addition to broader education, we need top-calibre educational establishments for high achievers.

Further develop superior research and development

Current status: A third of respondents perceive "Research and development" as a strength of Germany as a business location. Specifically, 40 per cent of suppliers, 36 per cent of trainers and just 22 per cent of end users hold this view. "Failure to transform innovations into marketable products" was cited by 50 per cent of the experts as a weakness. This shortcoming of research was identified by 59 per cent of end users and 29 per cent of suppliers as a negative factor for Germany as a business location. The category "Insufficient targeting of growth areas by R&D" is viewed as a weakness by 33 per cent of end users. Suppliers are slightly more positive on this point.

Recommended actions: 51 per cent of the experts agreed with the statement "Although large amounts of money are spent on research, research does not focus on core issues" However, the two groups of experts were sharply divided. The statement was supported by 69 per cent of suppliers, but rejected by 67 per cent of end users. Publicly funded research was singled out in particular as an area especially lacking in focus and cooperation.

German research, development and research funding must become more international in focus. A greater international focus is partly necessary for cost reasons. Furthermore, it is inventions can often only be commercialised at an international level. However, internationalisation is first and foremost necessary because we need to be active participants wherever core questions relating to ICT development arise and where significant breakthroughs in research are made. The aim must be to focus research on the core issues and growth areas and close the invention to innovation gap.

Improve cooperation between end users and suppliers

Current status: 15 per cent of the respondents identify a lack of cooperation between suppliers and end users. Of the end users, 19 per cent consider this lack of cooperation to be a weakness. However, the experts forecast an improvement in this weaknesses in the future (10 per cent of the respondents cite this factor as a risk for the year 2013).

Recommended actions: Improve cooperation between suppliers and end users. In no other industry besides the ICT industry do so many projects fail. This happens for several reasons: the budding ICT sector is not yet fully in control of its processes; there is an absence of established relationships with suppliers and suppliers; there is insufficient cooperation between suppliers and end users. Suppliers must tailor their offerings more closely to customers' requirements.

Ensure sufficient funding for SMEs in particular

Current status: Company expenditure on R+D is not tax-deductible in Germany. This is pinpointed as one of Germany's weaknesses by 8 per cent of the experts surveyed. Indeed 17 per cent of suppliers cite the inability to deduct research and development expenditure for tax purposes as one of the top 3 weaknesses. End users are not concerned by the problem.

Recommended actions: If, as in other European countries, tax concessions are to be granted for research and development, this would benefit research and development in the mid-sized ICT economy. Tax concessions should be in line with those in other European countries.

Technology-driven start-ups still suffer from a lack of venture capital. Entrepreneurs require access to more comprehensive advice and support, through business angels for example. However, since venture capitalists also require compelling business growth scenarios, companies seeking finance must be helped to communicate their business cases more effectively.

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Limit the impact of the financial crisis as a risk for Germany as competitive ICT location

Current status: 63 per cent of the experts surveyed believe that the German ICT sector is either heavily reliant or very heavily reliant on general economic developments. Only 6 per cent of experts disagree with this view and feel that the sector is only slightly reliant on economic developments as a whole. None of the respondents disputed that this relationship actually exists. A total of 61 per cent of respondents stated that developments within the German ICT sector are either mainly or entirely driven by international factors.

Since, according to the experts, the ICT sector is heavily dependent on the overall economy and the international climate, the information and communication economy can expect to be affected by the current financial crisis in the medium term. A collapse in the short term is less likely, given the high number of long-term ongoing service contracts and supply agreements.

Recommended actions: The discussions held during the workshop indicated that countercyclical financing of small and medium-sized business must be safeguarded, despite the financial crisis.

Prospects

We need a stable and long-term ICT strategy for Germany as a business location. The recommended actions listed may be used as a basis for ongoing dialogue between the decision-makers in politics, industry and science. We must continue to work together consistently for Germany to earn its place as one of the world's leading ICT countries.

My thanks go to all of the experts who took part in this study.

Yours

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