



DANISH ICT CLUSTER

Denmark has one of the most advanced ICT infrastructures in Europe, and the network is fully digitalized. Denmark's penetration of mobile telephone subscriptions is ahead of the average European level. Denmark is ranked on top in regard to penetration rates for PCs and household Internet (broadband) access. Denmark is in the global Top 3 when counting computers per capita, Internet users and broadband subscribers (IMD 2007).

The Danish ICT cluster holds unparalleled business value proposition viz. some of the world's highest ICT penetration rates –

mobile, broadband, PCs, etc; Government dedication for Denmark to be among the world's leading ICT nations; International orientation and holistic mindset of staff; Cross-disciplinary research providing leading solutions within integrated hardware/software design, object oriented programming, user involvement, system design and mobile communication; Excellent cluster collaboration and value chain presence; world-class IP protection regulations; and the competitive cost/quality proposition – the ability to create synergies and convergence by a profound system understanding and integration ability.

Cluster highlights

Google	R&D centre located in Denmark
IBM	Denmark's largest IT company (7,400 people)
Microsoft	Largest development centre outside the USA is located in Denmark
Motorola	Recently acquired 300 development engineers in North Denmark in addition to their existing set-up
Nokia	Largest development centre within mobile communications outside Finland is located in Denmark
VMware	R&D centre located in Denmark

Denmark holds a strong position in software development and in addition, the Danish mentality has a unique focus on functionality and design. Danish researchers are renowned for their aesthetic sensitivity and ability to design appealing models and particularly for thinking in totalities. Software companies located in Denmark are not only able to profit from the high level of education in Denmark, but also the close relationship with customers. Customers often play an active part in developing new technology, thus enabling developers to create highly

user-friendly products. Combined with other factors, this makes Denmark the world's best test market.

Denmark has a favourable tax climate thanks to a corporate tax rate of 25%, an extensive network of tax treaties and attractive rules for expatriates. Taxation obligations for physical goods ordered via the Internet, as with any other transaction, require payment of VAT (25%) and, if the goods are imported into the EU, import duties.

Danish workforce is among the most productive in Europe, and no restrictions apply regarding overtime work which allow companies to operate 24 hours a day, 365 days a year. Contrary to most European countries, basic practices in the Danish labour market are mainly founded on collective agreements between the employers' and the employees' representative organisations, thus ensuring a high degree of consensus in the labour

market. Most of the rules for working conditions are negotiated at company level in accordance with each company's specific needs. Together, employers and employees reach mutually binding agreements on labour issues, and as a result, Denmark has a low frequency of strikes. In Denmark, most people are insured against unemployment and thereby guaranteed a high level of social security, which results in a relatively high degree of labour market flexibility.

A unique framework for ICT clustered within 300 km

- 95,000 employees within the sector
- 8 universities
- 7 science parks
- A fast-track scheme for issuing work and residence permits to foreign IT specialists. 668 job-cards were issued to such specialists in 2006.

The Nordic countries have carved out a niche for themselves as pioneers in the application of IT to the health sector, and this has been duly noted in the US. A newly released report from US think-tank The Information Technology and Innovation Foundation concludes: "Denmark, Finland and Sweden are without doubt ahead of the USA and most other countries regarding the development of their healthcare IT systems." The report praises Denmark for its introduction of electronic patient journals, and the widening use of electronic communication between GPs, hospitals and local authorities.

Danish and international collaboration partners have recently launched a DKK 90m (USD 18m) research project in 4G mobile communication technology in Aalborg. The Danish National Advanced Technology Foundation is granting DKK 45m (USD 9m) for the 4GMCT (4th Generation Mobile Communication and Test Platform) project, while Infineon Technologies, Agilent Technologies and Aalborg University are providing the remaining sum. 4GMCT is a four-year project and the plan is to develop a chipset for the next generation mobile telephony as well as to create design processes that can shorten time to market by up to six months.

A research team at the Technical University of Denmark has, of late, set a new world record for high speed communication – 5.1 terabits per second. Having been the first to break through the 'terabit barrier' earlier this year, the DTU team has now managed to ramp up the bit rate to 5.1 terabits per second, thus overtaking the previous record of 3.56 terabits per second set by the Fraunhofer Heinrich Hertz Institute in Berlin. 5.1 terabits per second (5.1 million million bits per second) is an awesome data transmission speed, which DTU has achieved using extremely high frequency light pulses fired down optical cables. By modulating the signal and employing optical multiplexing techniques, it is possible to gain a fourfold increase in the bit rate in relation to the pulse frequency, and that is exactly what DTU has demonstrated. It is likely that DTU's breakthrough will have significant implications for the future of the internet, where data volumes are increasing at the rate of 60% annually. Faster data transmission speeds also have environmental benefits, since less electricity consumption equates to less CO2. At present, the internet is responsible for 1% of the world's entire CO2 emissions.

Denmark has a well-developed network of motorways. This high-quality network means swift and easy access to all markets in the North-European region. Through the opening of the Oresund bridge in July 2000, the only bridge in the world connecting two countries, Denmark is now the gateway to the Scandinavian countries, and the Baltic area. There is direct access from Copenhagen to the city of Malmo in Sweden, either by train or car via the Oresund bridge. The train ride takes only 20 minutes.

Copenhagen Airport is the main hub in Northern Europe. It is the Scandinavian

Airline System's principal airport and it has been retained by DHL as its Northern European hub. In 2005, the Air Transport Research Society named Copenhagen Airport the best airport in Europe. The airport is located only 8 km from the city centre, and Copenhagen Central Station can be reached in 15 minutes. 57 airlines operate from the airport and serve altogether 132 destinations. Besides Copenhagen, Denmark has three other international airports, Aarhus, Aalborg and Billund - all located in the peninsula of Jutland.

Denmark & ICT – from a global perspective

- No. 1 in the world on E-readiness (EIU Global Technology Forum 2007)
- No. 1 in the world on laws relating to ICT (WEF Global Information Technology Report 2007-2008)
- No. 1 in the world on eGovernment in terms of best national practice – (World Summit Awards 2007)
- No. 1 in the world on network readiness (WEF Global Information Technology Report 2006-2007)
- No. 1 in the world on IDC's Information Society Index (IDC 2006)
- No. 3 in the world on Communications Technology that meets business requirements (The World Competitiveness Yearbook, IMD 2007)
- No. 3 in the world on development and application of technology (The World Competitiveness Yearbook, IMD 2007)
- No. 3 in the world on no. of internet users per 100 people (IMD World Competitiveness Yearbook 2006)
- No. 3 in the world on computers per capita (IMD World Competitiveness Yearbook 2006)
- Top 5 in the world on extent of business internet use (World Economic Forum 2005/06)
- Top league availability of information technology skills (The World Competitiveness Yearbook, IMD 2007)
- Top 3 in the world on number of broadband subscribers per thousand inhabitants (The World Competitiveness Yearbook, IMD 2007)
- No. 5 in the world on availability of latest technologies (WEF, The Global Competitiveness Report 2007-2008)

DNP Denmark: A Case Study

DNP Denmark is a world leading developer and manufacturer of Optical Screen Technology.

Flexible regulatory infrastructure and an efficient, service minded workforce were key decision factors in the Japanese projection screen company's choice of Denmark for its European development and production facility.

Denmark is a great location for its worldwide professional screen production centre. DNP Denmark has managed to stay ahead in the optical screen market for a number of reasons, not least due to the solid core of expertise within optical screen technology originally developed in Denmark. Furthermore, Denmark is a great location for the development, manufacturing and marketing of its large optical screens due to

the solid core of expertise within the optical screen market supported by the flexibility and high level of education of the Danish workforce in general. Being located in Denmark is also cost efficient as the actual manufacturing of optical screens takes up a lot of space and compared to Japan the cost of space is much lower in Denmark.

With a solid core of expertise within optical screen technology DNP Denmark, formerly a Danish-owned business, was established in 1989 as the worldwide screen production center of Dai Nippon Printing Co. Ltd, Japan. One of DNP's principal business areas is the graphical display industry with DNP Denmark being responsible for the development, manufacturing and marketing of DNP's large optical screens (60" to 200").

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