

Indran Ratnathicam, *Harvard University*  
with Tomas Krag, *Mostly Harmless, Denmark*

“ The IT industry hasn’t been as tied up in the dot-com bubble as the IT industries in some of Europe’s other nations, and therefore hasn’t suffered quite as much in the recent downturn.”

—*Danish Internet executive*

“ The international strength of the Danish IT industry is largely fueled by a very broad-based education system, as well as the early development of the mobile telecoms sector.”

—*IT executive, Denmark*

Denmark’s early preparations to enable its population to take advantage of information and communication technologies are paying off in a high level of Networked Readiness, as reflected by the country’s seventh overall ranking in the Networked Readiness Index.

Denmark’s telecommunication infrastructure is highly sophisticated (Ranking in Network Access subindex: 5). Telecommunications deregulation began in 1996, two years before Denmark needed to comply with the EU liberalization mandate, giving all subsectors a competitive boost. Mobile and Internet penetration rates are among the highest in the world. Currently, more than 13 percent of Danes are connected to the Internet via broadband (Ranking in Availability of Broadband: 14), primarily using DSL.<sup>1</sup>

To maximize the benefits of the infrastructure advantage built by the private sector, the public sector in Denmark, with NGO participation, recently introduced innovative programs designed to extend a network benefits to all Danes. Solicom, a pilot joint effort between Denmark and the European Commission, gives underrepresented minority groups a chance to participate in their own ICT-inclusion strategies by submitting project proposals online. In another example of public access ingenuity, a toll-free voice portal offers callers the same information that is found on public information websites.<sup>2</sup> In addition, public libraries are required by law to offer free Internet access and digital media to their patrons.

In education, the government is pushing ICT beyond ample Internet access, into content and ICT training. More than 80 percent of all schools in Denmark have access to the Internet (Ranking in Internet Access in Schools: 6), and resources have been allocated to connect the remaining schools.<sup>3</sup> The IT Driver’s License, a teaching certification program, is being developed for primary, secondary,

and continuing education teachers. In addition, a partnership with Radio Denmark is developing digital teaching media for teachers and students.<sup>4</sup>

The Danish electronics and hardware design and manufacturing industry is well regarded worldwide, and exports over 85 percent of its total production.<sup>5</sup> This industry is composed primarily of hundreds of small and medium enterprises, many of which have partnered successfully with academic researchers to produce diverse leading-edge products, ranging from optical networking infrastructure to medical devices. More than one-fourth of these and other Danish companies have incorporated B2B e-commerce systems into both sales and procurement.<sup>6</sup> It is hoped that as the government moves more of its large annual procurement spending online, B2B e-commerce will become even more popular. While such an initiative has received widespread endorsement, it is still in the formative stage.

Consumers have yet to shop online with the regularity of similarly networked countries. Digital signature laws and security technology facilitate transactions, but B2C e-commerce does not represent the same opportunity for convenience in densely populated Denmark as it does in areas with more sparsely located retail outlets. However, online banking is highly popular, through both PCs and mobile telephones. An industry-government partnership has cooperated to develop e-commerce guidelines and standards for sales and marketing that, it is hoped, will increase consumer uptake.

## Key Facts

Population	5,330,020
Rural population (% of total population) 1999	14.74 %
GDP per capita (PPP)	US\$27,120
Global Competitiveness Index Ranking, 2001–2002	14
UNDP Human Development Index Ranking, 2001 (adjusted to GTR sample)	14
Main telephone lines per 100 inhabitants	75.25
Telephone faults per 100 main telephone lines	NA
Internet hosts per 10,000 inhabitants	626.60
Personal computers per 100 inhabitants	43.15
Piracy rate	26.00 %
Percent of PCs connected to Internet	14.52 %
Internet users per host	7.73
Internet users per 100 inhabitants	48.41
Cell phone subscribers per 100 inhabitants	60.99
Average monthly cost for 20 hours of Internet access	US\$18.07

## RANK

## Networked Readiness Index 7

### Network Use component index 7

### Enabling Factors component index 6

#### ■ Network Access 5

Information Infrastructure 3

Hardware, Software, and Support 6

#### ■ Network Policy 13

Business and Economic Environment 10

ICT Policy 15

#### ■ Networked Society 8

Networked Learning 8

ICT Opportunities 10

Social Capital 5

#### ■ Networked Economy 9

e-Commerce 12

e-Government 9

General Infrastructure 7