’High-speed Society’ Denmark
- the Danish strategy for broadband

Report from a committee commisioned by the Minister
for Science, Technology and Development, Januar 2010

center for Communication, Media and Information technologies

CWMC: Copenhagen Wireless and Mobile Consortium

- funded by the Capital Region of Denmark and European Social Fund/European Regional Fund.
- Will promote and organize cooperation between universities and enterprises in Scandinavia and the Baltic regions.
- The purpose of this activity is to enhance and strengthen the Capital Region of Denmark/ Øresund regions position as an innovative center for Wireless and Mobile Technologies.
- The Center for Communication, Media and Information Technologies (CMI) at the Aalborg University Copenhagen / Denmark (AAU) hosts the secretariat of the network.

Overview

- Background
  - Previous policy initiatives
  - Status
- The Report
  - Basic Assumptions
  - General/ specific recommendations
- Observations

Previous Policy documents

- 1994: Info 2000
- 1995: Best and cheapest – through real competition
- 1999: Political agreement
- 2001: Broadband strategy – from facilities to content
- 2001-2009 Almost complete silence
- 2010: The High speed committee

Phases in the Danish telecom policy

- 1987-94 Reluctant attitude towards liberalisation
  - Gradual liberalisation
  - Presure from EU and users
  - Creation of Tele Danmark
- 1994 – Wants to be in the forefront
  - Attract investments and advanced services
  - New Ministry of Research and Telecommunication
  - Info 2000 published
  - Free competition from mid 1996
  - Tele Danmark sold in 1997
  - Unbundling of local loop 1998
- 2001- More liberal approach?
  - LRAIC replaces best practise
  - Next generation networks
  - More focus on facility based competition
  - Auctions and spectrum trading

Info 2000

- IT is important:
  "Applied successfully, information technology is a source of economic development, improved quality of life and better service, both public and private."
- Denmark in the forefront:
  "Therefore there is a need for a strategy that places Denmark in the forefront of the development towards an Information Society."
- Universal Access
  "The strategy must rely upon the extensive use of information technology, and it must be based upon values such as openness, democracy and responsibility for all people in society in order to avoid a division among Danes into an "A-team" and a "B-team" with regard to information technology."
- Public sector involvement
  "The public sector shall be actively involved with the private one and be the leading force in the efficient use of information technology."

Background – the point of departure

The Networked Readiness Index 2008–2009 rankings

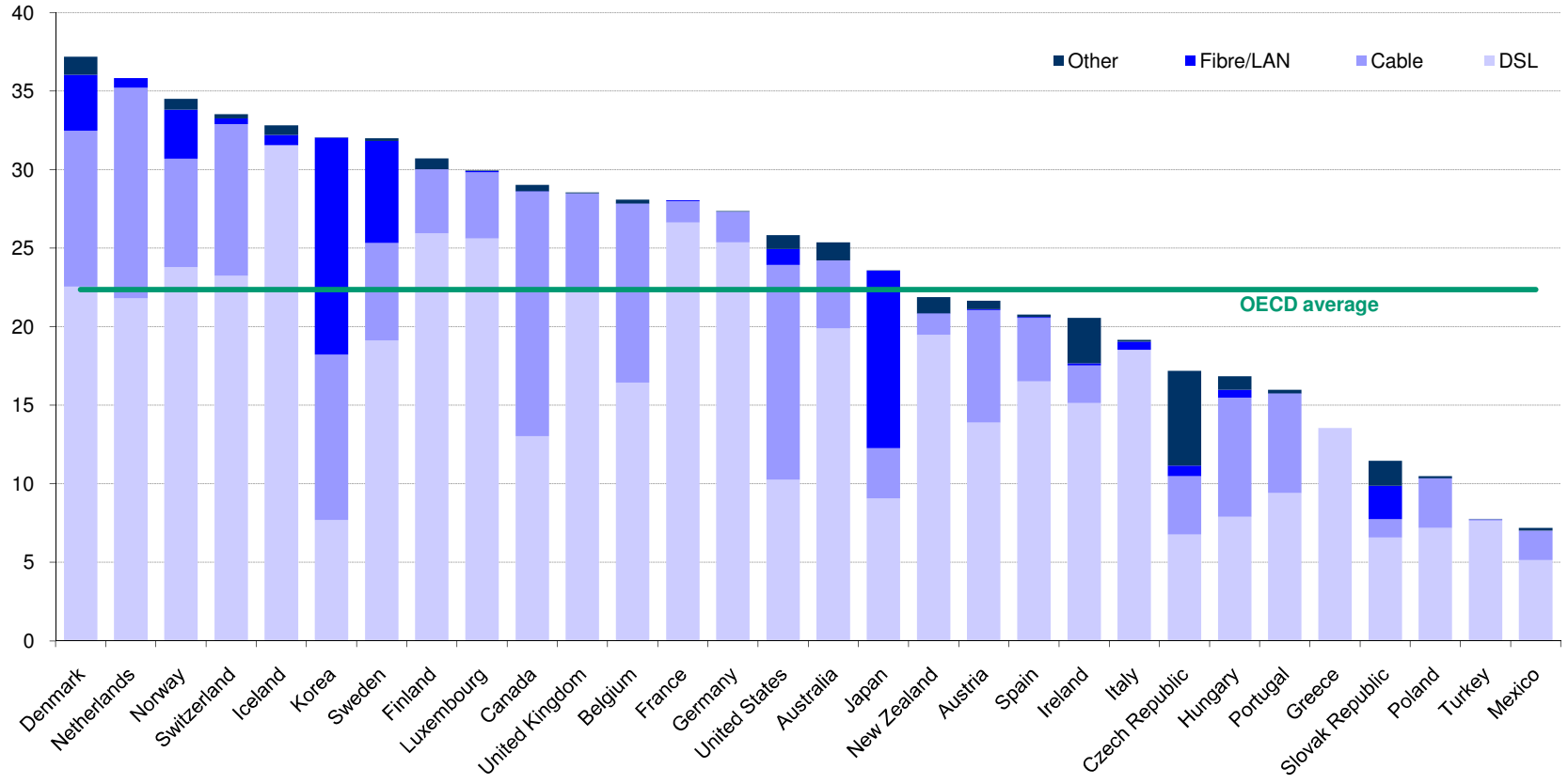
2008–2009 rank	Country/Economy	Score
1	Denmark	5.85
2	Sweden	5.84
3	United States	5.68
4	Singapore	5.67
5	Switzerland	5.58
6	Finland	5.53
7	Iceland	5.50
8	Norway	5.49
9	Netherlands	5.48
10	Canada	5.41

Background – the point of departure II

Economist Intelligence Unit e-readiness rankings, 2008
Category scores

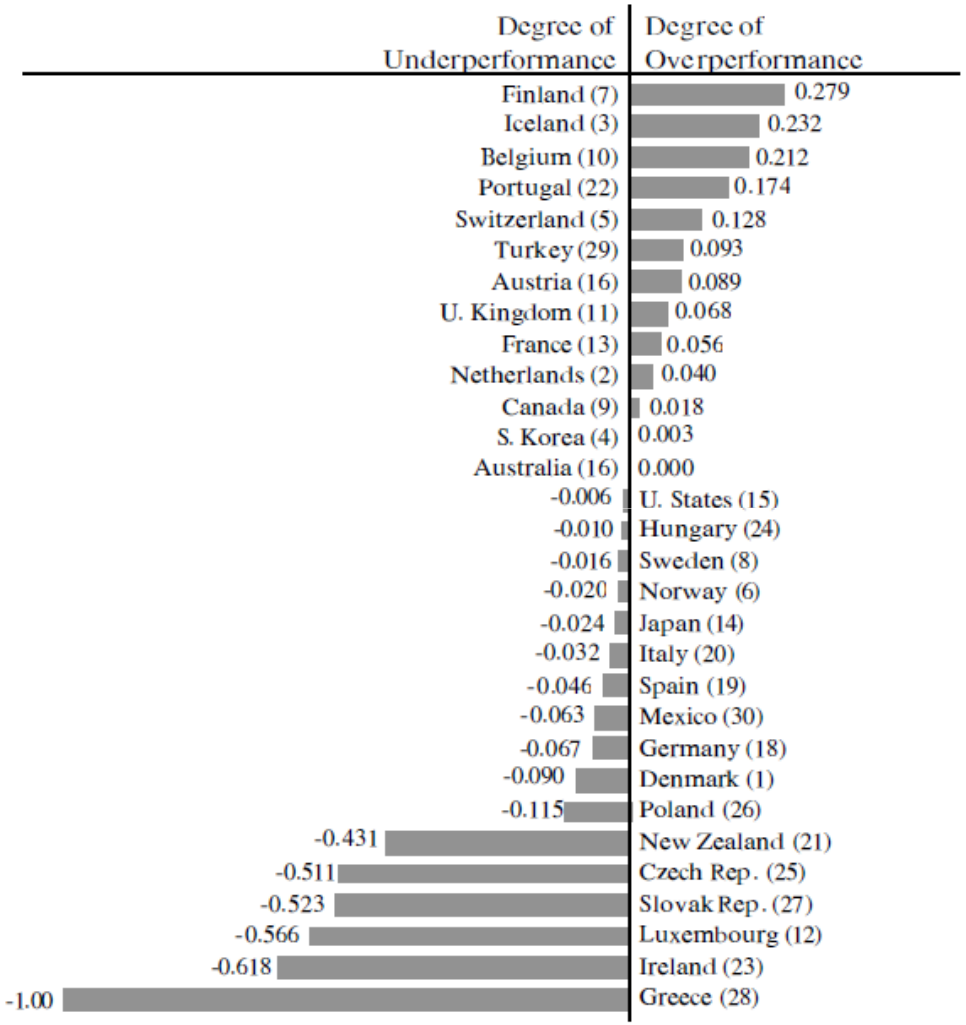
	Overall score	Connectivity	Business enviroment	Social and cultural environment	Legal environment	Government policy and vision	Consumer and business adoptior
Category weight		*20%*	*15%*	*15%*	*10%*	*15%*	*25%*
United States	8.95	8.50	8.53	9.00	9.00	9.00	9.50
Hong Kong	8.91	9.00	8.64	7.47	9.80	8.95	9.50
Sweden	8.85	8.80	8.52	8.60	8.60	9.35	9.05
Australia	8.83	8.60	8.59	9.13	9.50	8.85	8.70
Denmark	8.83	8.70	8.65	8.67	8.60	9.85	8.60

OECD Broadband subscribers per 100 inhabitants, by technology, December 2008



Source: OECD

Broadband Performance Index (December 2



The supply site – Manufacturing Industry

- Two industry clusters:
  - Northern Jutland
  - Copenhagen area
- A mixture of small start ups and foreign affiliates
- Strongest in wireless
- The crisis has hit employment
  - Motorola and Ericsson has closed their affilates
  - Only Nokia is still there
- Very little public funded R&D

The supply site – operators
The Nordic Incumbents

	Revenue 2008	Revenue in € (mill.)
TDC	38,819 (mill.) DKK	5,214
Telia	103,585 (mill.) SEK	10,043
Telenor	97,194 (mill.) NOK	11,635

The Assignment and the Report

Vision:

Denmark shall over the coming years develop into a true high-speed society, where citizens and private and public companies anywhere, anytime access to internet speeds, which can handle the most advanced broadband services

The High speed Committee is on the basis of the government's vision expected to propose an action plan with concrete initiatives.

- www.højhastighedskomiteen.dk

Status

	Available	Ratio of Broadband sold
> 512 kbit/s	> 99 pct.	
> 2 Mbit/s	98 pct.	91 pct.
> 10 Mbit/s	77 pct.	27 pct.
> 50 Mbit/s	~	1 pct.
Fiber	28 pct.	
Mobile broadband	97 pct. Coverage (geographically)	

Growth in

- High(er) speed
- up-stream speed
- mobile broadband

The Challenges: Burning Platforms

- Competitiveness and economic growth
  - Productivity, efficiency and innovation are shrinking - and there is a shortage of highly skilled IT specialists
- Welfare
  - Higher demands for service – and fewer hands to solve the tasks
- Democracy, culture and participation for all
  - 40 per cent. have low / no ICT skills
- Climate and environmental challenge
  - There is a need to reduce energy consumption and CO2 load

Basic assumptions

- The Infrastructure is a precondition
- The essential driver – the use of technology to promote
  - Efficiency
  - Innovation
  - Creation of 'useful' content
  - Higher quality in services

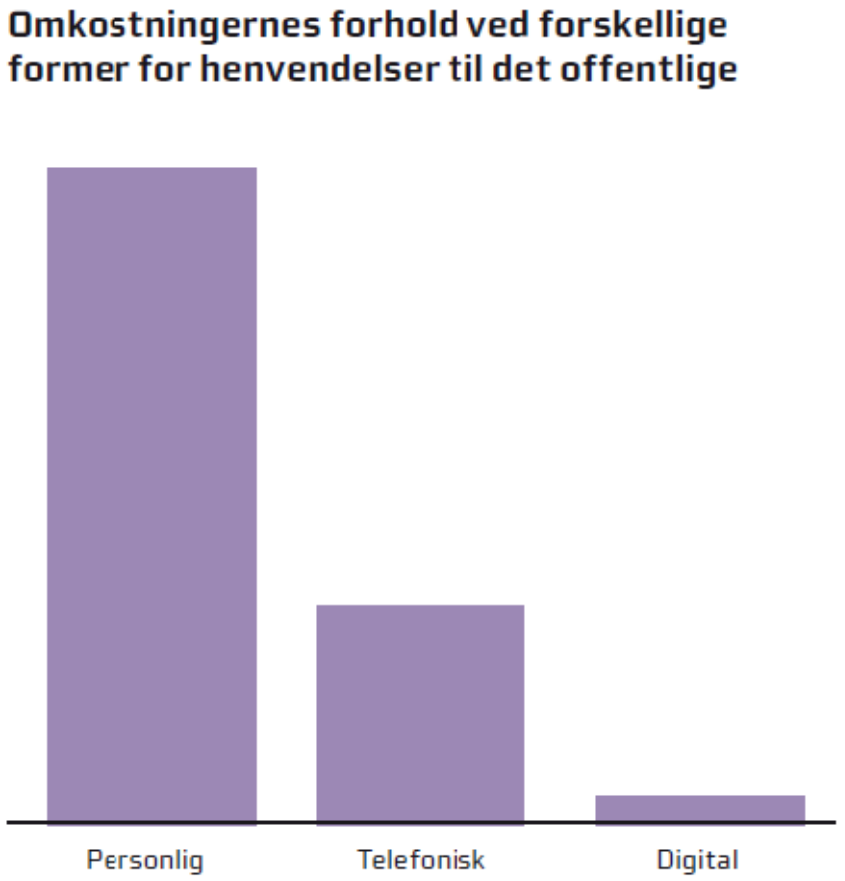
General recommendations

- The government as front runner in use of/ demand for ICT
- Better framework conditions for ICT business
- The Danish ICT capabilities must be strengthened significantly
- Increased investments in ICT research and development
- The use of IT and broadband should be promoted and prioritized in a way that contributes to a better environment and climate
- Incentives to invest in new and modern broadband infrastructure, so bandwidth and mobility is not a limitation

Market-led development

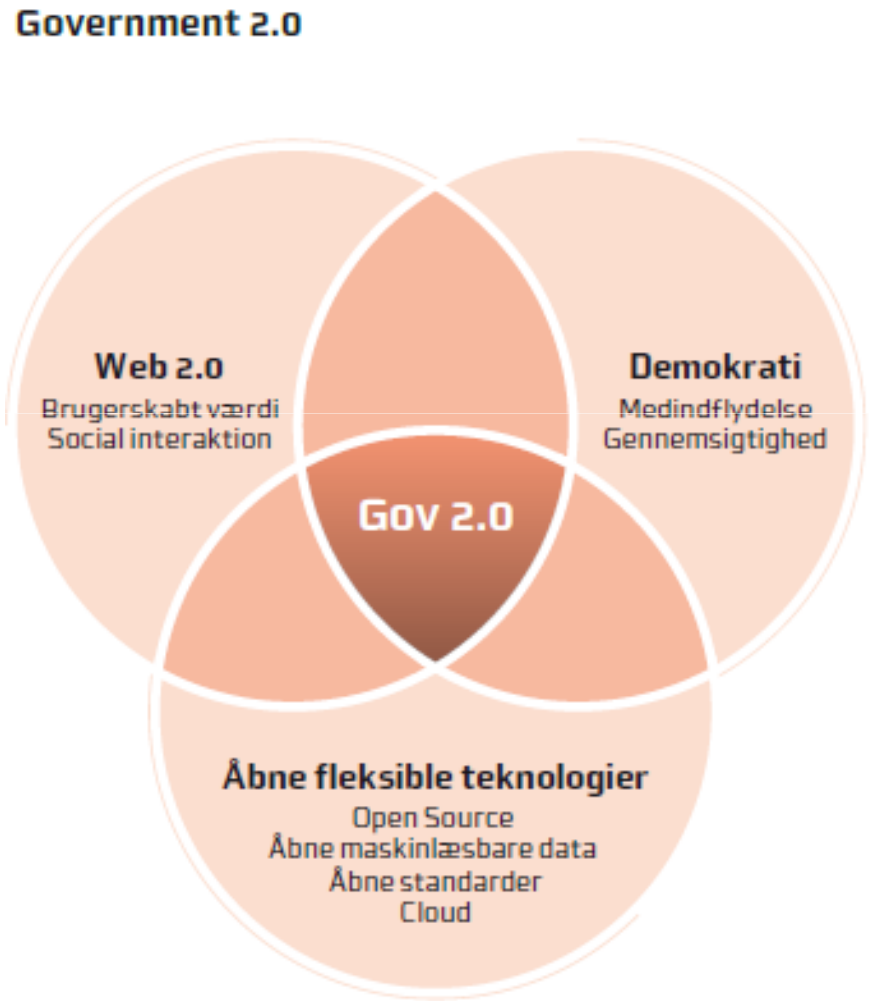
Digitalisation of the Public sector

- Coherent IT use and cross public coordination
- Development of common standards
- Strengthened incentives to use digital solutions
- Channel Strategy
- Focus on major service areas (social, health and education)



Platform for Innovation

- 'Exhibition' of public data
- Open, flexible technologies
- Private actors as developers and providers of public services
- Support of the digitization of private business



Cloud computing

- Government should invest heavily in cloud computing
- Challenges in relation to privacy, data security etc.
  Initiating projects, gather experience and publish guides should be solved
- Great potential for rationalization, cost savings and lower power consumption (up to 55 per cent.)

Information and ICT competencies

- Promotion of the general public's ICT capabilities
- Focus on ICT in primary and secondary schools
- Setting concrete goals for IT skills
- Strengthen teacher skills – didactics
- Development of teaching materials
- Infrastructure - professional service/ management
- Strengthened specialized ICT skills

Environment, climate and green ICT

- Reduce energy consumption and reduce CO2 impact
- Intelligent traffic systems
- Intelligent electricity system
- Virtualization: Video conferencing, TelePresence, telemedicine etc.

Research and Development

- Increased Danish ICT research and strengthening the research community
- Increased share of EU funds
- Strengthened public-private collaboration and focus on the
- Danish ICT strongholds
- Clustering
- Development of the University ICT and broadband

Future Broadband Infrastructure in Denmark

- Market-based and technology neutral approach
- New targets – 2013
  - 10 Mbit/ s downstream and 5 Mbit/ s upstream for all or nearly all
  - 50 Mbit/ s downstream and 10 Mbit/ s upstream to at least 80 per cent.
- A minority of the Committee believes that this goal should apply to all
- The majority: This can be achieved with a market-driven development in combination with government investment in the use of ICT and broadband in all parts of the country
- The minority: ??

International Goals

		Mbit/s		
Finland	**2015**	**100**	**99 pct.**	
France	**2019**	**100**	**70 pct.**	2 km from household
Norway	**2015**	**50**	**All**	
UK	**2017**	**[NGN]**	**90 pct.**	Not adopted
Sweden	**2015**	**100**	**40 pct.**	
	2020	**100**	**90 pct.**	
Korea	**2012**	**1000**	**Major part**	
Germany	**2014**	**50**	**75 pct.**	
Austria	**2013**	**25**	**90 pct.**	Not adopted

'Other' Government Actions

- Mobile Broadband - 800 MHz frequencies, network sharing, international roaming
- Formulation of new telecommunications policy objectives / long term strategy
  - Explicit industrial policy objectives
  - Ensure good opportunities for service-based competition
- New/improved ICT statistics – 'explicitation' of the social value
- The proceeds from the auction back in the sector
- Depreciation rules - to be examined
- Longer 'binding periods' should be allowed
- Transparency – product information for broadband

Issues not adressed

- Only focus on the demand site
- No clear strategy for stimulating the ICT industry
  - Interaction supply - demand
- Very little discussion of public funding of infrastructure
- No analysis of regional differences in infrastructure access
- No discussion of wired vs. wireless i infrastructures
- No discussion of taxation as a remedy
  - Multimedia tax

Observations

- Market based – government actions essential??
  - Policy led market development
    - Danish tradition
- One minority statement
- Very well received –blowing in the wind?/ too polished?/