# The green knowledge society

## EU policy questions in the ICT area to 2015

Report for the Ministry of Enterprise, Energy and Communications, Sweden for the “Visby Agenda”

Presentation: COST workshop, Copenhagen, May 2010

Presented by : Erik Bohlin Chalmers University of Technology

*Co-authors:*

*Simon Forge* *SCF Associates Ltd*

*Colin Blackman* *Camford Associates*

*Martin Cave* *University of Warwick*

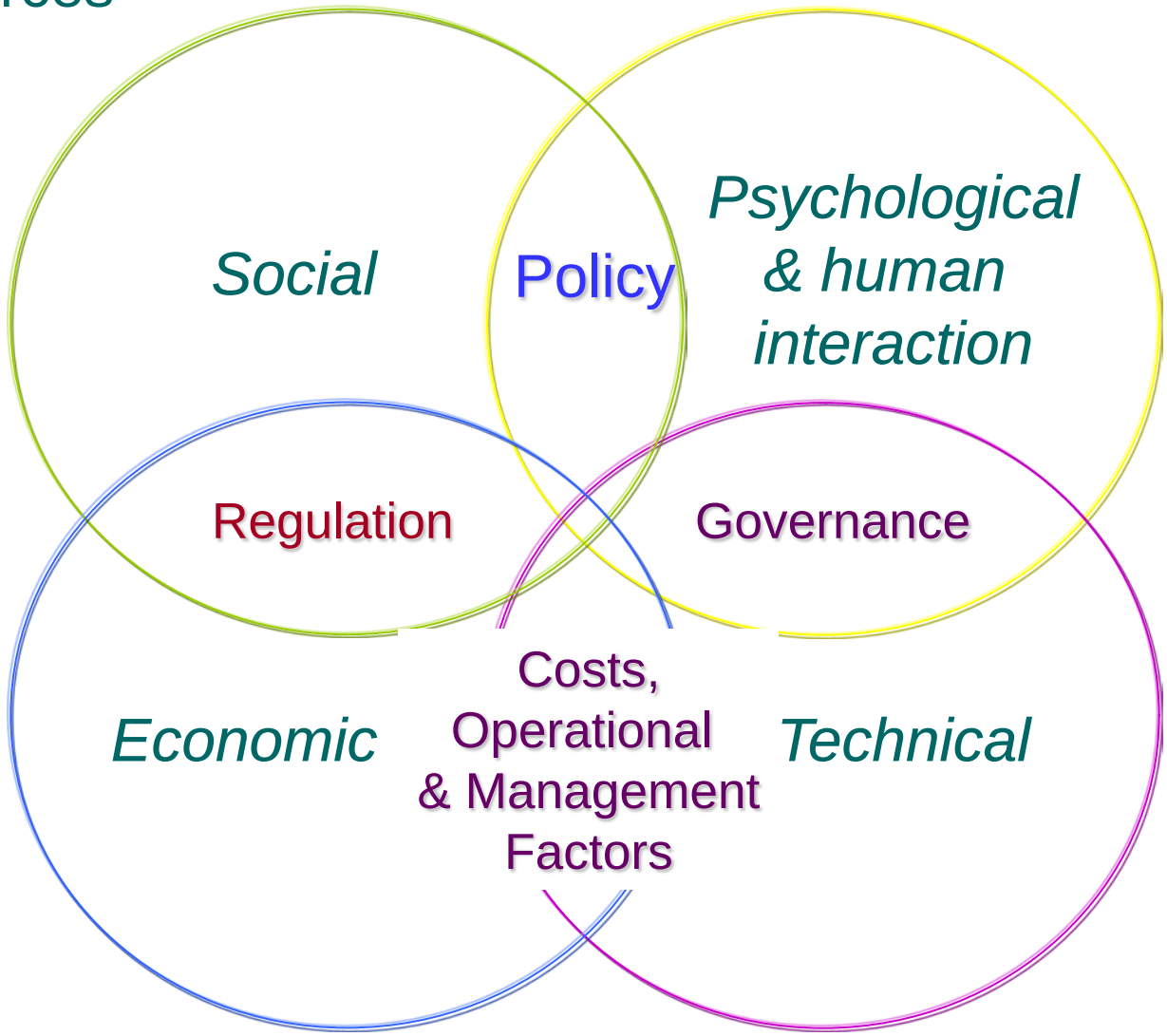
# Background to the report and project

What are the (10) most important policy questions that the EU faces with regard to ICT and the information society to around 2015?

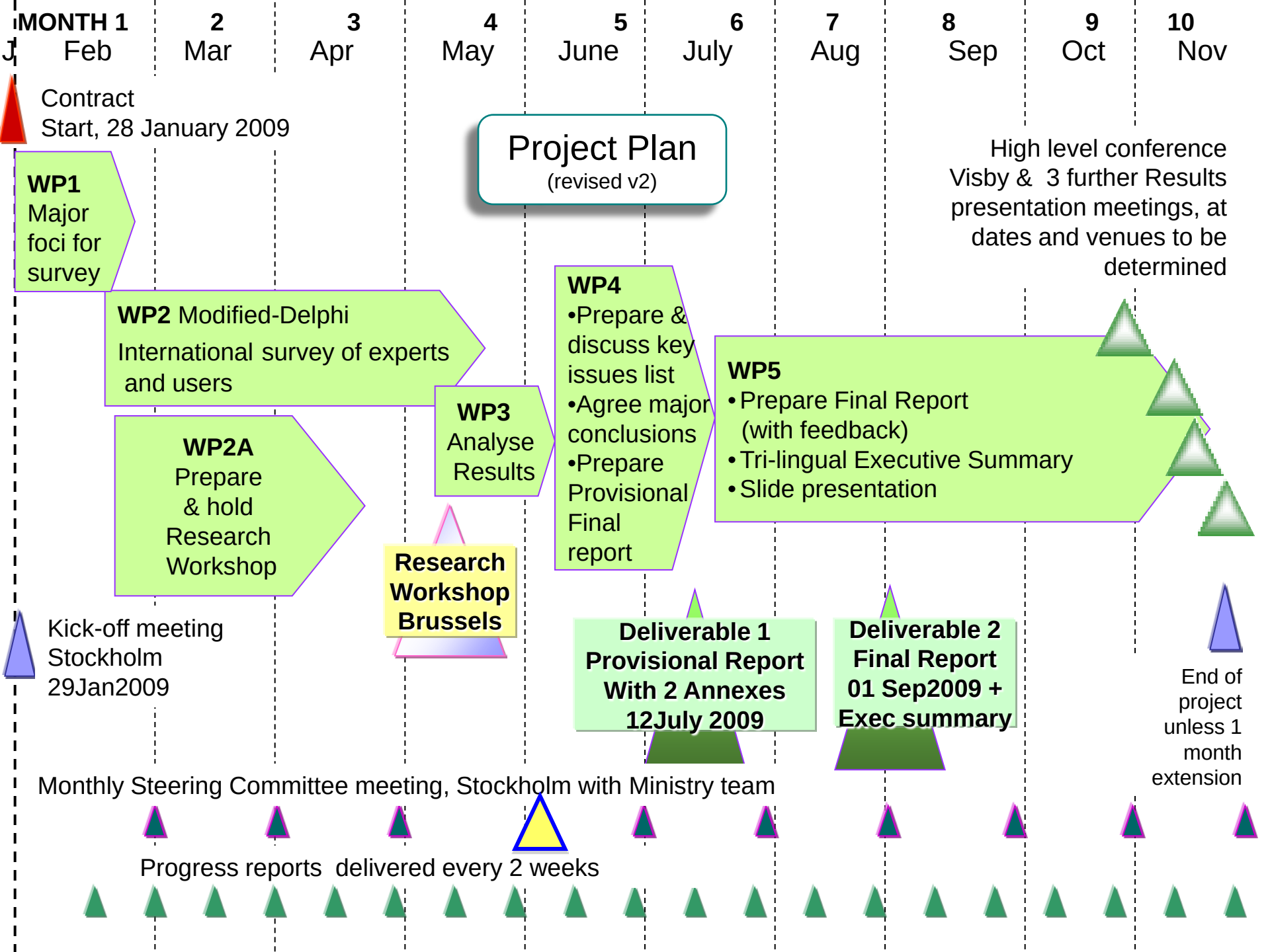
2 key sub-questions:-

- What are the *new* major policy questions now appearing?
- What *trends* underlie or affect these new policy questions?

# The future trajectory to an EU Information Society is governed by 4 key forces




*Each these forces raise questions for ICT policy*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Project Plan
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WP1
Major
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survey
WP2 Modified-Delphi
International survey of experts
and users
WP2A
Prepare
& hold
Research
Workshop
WP3
Analyse
Results
WP4
•Prepare &
discuss key
issues list
•Agree major
conclusions
•Prepare
Provisional
Final
report
WP5
• Prepare Final Report
(with feedback)
• Tri-lingual Executive Summary
• Slide presentation
Research
Workshop
Brussels
Kick-off meeting
Stockholm
29Jan2009
Deliverable 1
Provisional Report
With 2 Annexes
12July 2009
Deliverable 2
Final Report
01 Sep2009 +
Exec summary
End of
project
unless 1
month
extension
Monthly Steering Committee meeting, Stockholm with Ministry team
Progress reports delivered every 2 weeks

# Approach to the study in outline

Form Experts List

Perform Research :-

A survey to gather inputs from a range of stakeholders and experts across Europe and other countries (– specifically the USA, Japan, South Korea, China and Brazil, and perhaps others)

Workshop on key themes with outside experts + desk research

Analysis of the results and preparation of the key policy issues with their influencing parameters and trends

**Report and presentations**

# Interviews – under analysis – contrasting views on what is important

- Some 50 interviews with:-
  - Thought leaders and academics
  - ICT Industry
  - Consumer organisations
  - Governments and regulators
  - European Commission, especially DG InfSo
  - MEPs
  - International bodies – OECD, ITU

***Some early initial views***

On the promise of non-attribution if requested

# The main messages from the report

# Evolution of ICT policy in the EU: A simplified chart

| **Epoch 1**<br>1980's<br>Awareness | **Epoch 2**<br>1990's- 2000's<br>Awakening (to the loss of industry leadership and the value of ICTs) | **Epoch 3**<br>Managing - Beyond 2010 |
|---|---|---|
| | | Policy for working with ICTs in society and the economy as a whole |
| Early programmes<br>Basic ICT research | Lisbon agenda for the Information Society - i2010 policy sets wider scope - | More mature approach akin to policy for any resource – eg energy or agriculture –should it be sectoral or integrated? |
| | Research into applications with FP's 5, 6, 7 - collaborative networks of R&D for applying ICTs | More competition policy considerations |
| | | Appreciation of risks and the dark side<br>Exclusion<br>Critical infrastructure protection<br>Consumer protection |
| | e-Europe Advisory Group, i2010 HLG... | |

Legend:
Impacts on society and the economy as a whole

*The Vision:*

# Towards a Green Knowledge Society

**Innovative & competitive economy**

**Inclusive digital society**

**Environmental sustainability**

**ICT Infrastructure – soft and hard**

# What are the key policy areas to enable the vision?

1. **The knowledge economy: driver of future wealth**
2. **The knowledge society: participation for all**
3. **Green ICT: support for an eco-efficient economy**
4. **Next generation infrastructure: balancing investment with competition**
5. **Soft infrastructure: investing in social capital**
6. **SMEs and ICT: supporting Europe's small enterprises**
7. **A single information market: enabling cohesion and growth**
8. **Revolutionising eGov: rethinking delivery of public services**
9. **Online trust: a safe and secure digital world**
10. **Clear leadership: rethinking the EU's policy making process**

This list emerged from the findings of the survey, the workshop and desk research. Perhaps unsurprisingly it revolves around the themes of the economy, human rights and sustainable development

# The structure & programme to move forward

European ICT Leadership from the EC with the EP and Council

**EU public ICT works programme**

- E-education
- E-health and assisted independent living
- E-literacy
- Cyber infrastructure Protection
- EU emergency services disaster network
- Justice systems

**Green Industrial Stimulation Programme**

- SMEs: ICT training etc, SME Act (50% of funding to SMEs)
- Environmental Innovation programmes for ICT sector & user sectors:-
  - Stimulate substitution mechanisms
  - ICTs for GHG reduction across all sectors
  - ICT energy reduction
  - ICT design for recycling

**Regulatory Enabling Catalysts**

- Single ICT Market
- Competition, for all ICT segments
- Regulation (S/w, H/w, Telecom,Spectrum, NGN etc)
- Internet governance
- Privacy/security of citizen online, etc

# Policy goals and policy actions to 2015

Summary of  recommendations

## 1. Knowledge of economy: driver the future wealth

**Policy goals for 2015**

- Improved ICT training
- New IPR regime for the digital era
- User involvement in innovation

**Policy actions**

- Facilitate new business models
- Build consensus on new IPR approach
- Expand concepts of end user participation and creativity

# The structure of the knowledge economy

**Knowledge based economic activities**

**Education and skills**

**e-Literacy**

**ICT infrastructure**

# The basis of the knowledge economy- creating new knowledge assets

**Existing knowledge assets**

- Education
- Vocational skills
- Through life learning

## Knowledge based enterprises

### Knowledge based economic activities

- Design
- Research
- Innovation

Eg Advanced fusion technologies (ICT/bio)

Eg Green technologies (energy management)

**New knowledge assets**

**Jobs and wealth**

Basic operating principles

- Freedom of entry to knowledge markets
- Support for human rights to build trust
- Sustainable living & working practices
- Sharing knowledge, networking, competition & co-opetition
- People are the key asset generators and holders of assets

**ICT Infrastructure**

## 2. The knowledge society: participation for all

**Policy goals for 2015**

- Inclusion with universal access
- Improve digital literacy
- Better support for older people

**Policy actions**

- Incentives to extend networks and take-up
- Strengthen human rights in a digital world

# Digital rights in the knowledge society

Access to networks

Freedom of speech

Data protection

Privacy

Cyber security

Protection of intellectual property

Protection from malware

Access to knowledge

## 3. Green ICT: support for an eco-efficient economy

**Policy goals for 2015**

- Create green ICT products & services markets
- Understand and exploit substitution mechanisms
- Harness ICT in non-ICT sectors

**Policy actions**

- Explore financial incentives
- Extend/use government procurement
- Research into household and firm behaviour
- R&D support for novel control systems

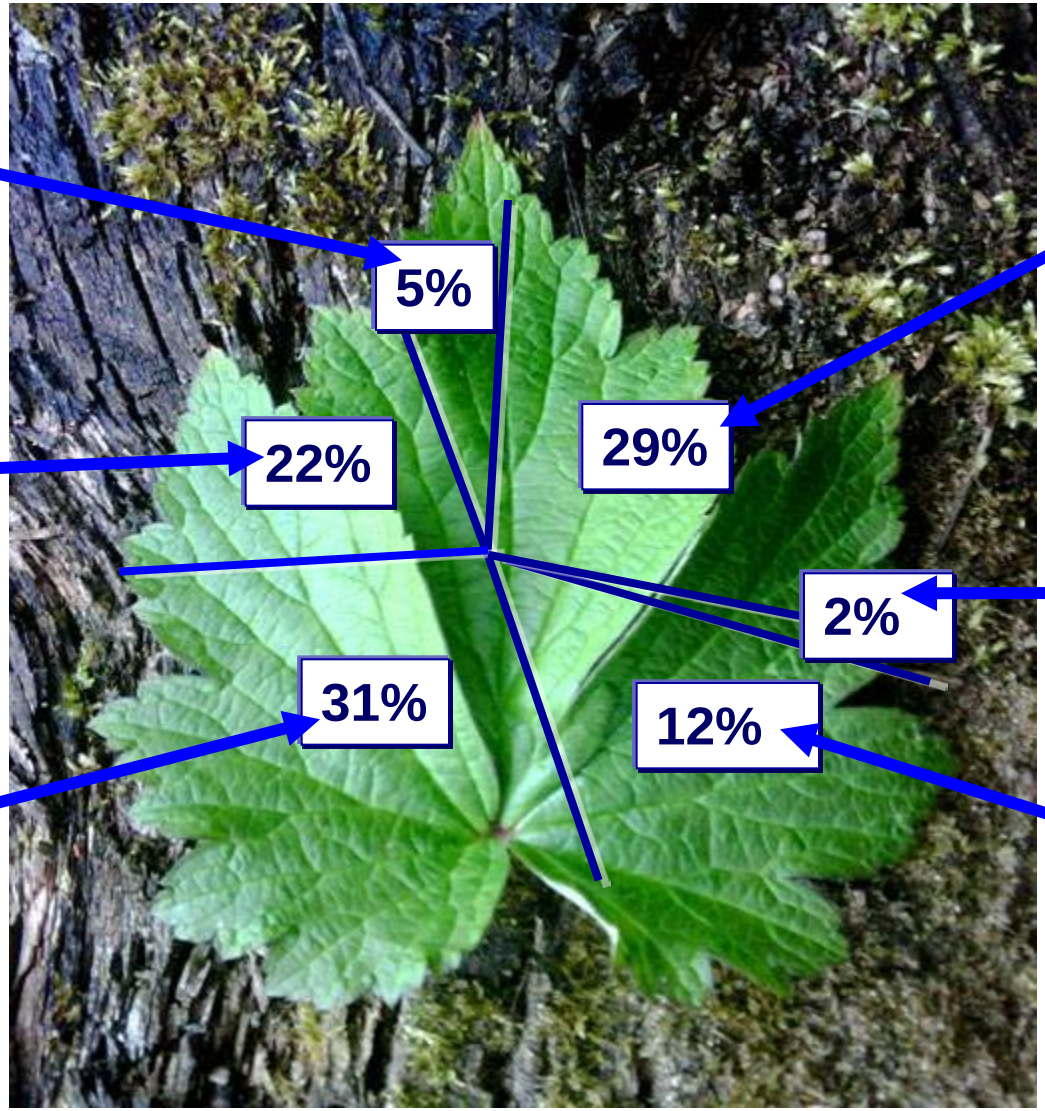
# Immediate impact of green ICTs

For user sectors, develop ICT applications and a service industry to optimise green performance in their production, to push the sustainable envelope to new levels, responding to climate changes, water scarcity and pollution.

For the ICT sector itself, develop a European ICT industry exploiting green techniques in production to design devices and software that push the sustainable envelope in usage to new levels over the lifecycle in energy demands, toxics, recycling, packaging, etc

Longer term, substitution and rebound mechanisms will also have major impacts

# GHG savings using ICTs




Telecommuting/ teleconference 360 Mn tons

Energy efficient buildings 1.7 Bn tons

Smart Grid for energy 2.4 Bn tons

Optimised freight logistics & transport 2.3Bn tons.

Reduced paper 130Mn tons

Process efficiency in manufacture 970 Mn tons

By 2020, GeSI forecasts 15% global reduction in emissions by applying ICTs, some 7.8 Bn tons (Smart 2020 Report, 2008)

# 4. Next generation infrastructure: balancing investment with competition

## Policy goals for 2015

- Maintain competition in all ICT sectors
- Promote open source software and open standards
- Transparent internet governance
- Promote (fixed and wireless) high speed broadband networks

## Policy actions

- Vigorously deploy competition law with accelerated processes
- Consider a wider scope of ex ante, for the whole ICT
- Encourage open ICT, networks and standards
- Inclusive approach to internet governance
- Harmonise EU spectrum policy
- Balance investment incentives and access rights for networks

# Wider and more vigorous competition policy

**Competition policy must act on far more types of ICT player in the future**

**Future Competition Policy**

- Online content and media industry
- ISPs and major players in search engines, social networking and multifunction portals
- Software industry
- Network providers- mobile, fixed line, broadband retail and wholesale carriers
- Semi-conductor, hardware and systems suppliers (microprocessors, displays, RAM etc)

**Major actions & investigations by competition authorities since 1998**

**The largest players in each ICT industry segment, some with over 70% market share, possibly held over decades**

## 5. Soft infrastructure: investing in social capital

**Policy goals for 2015**

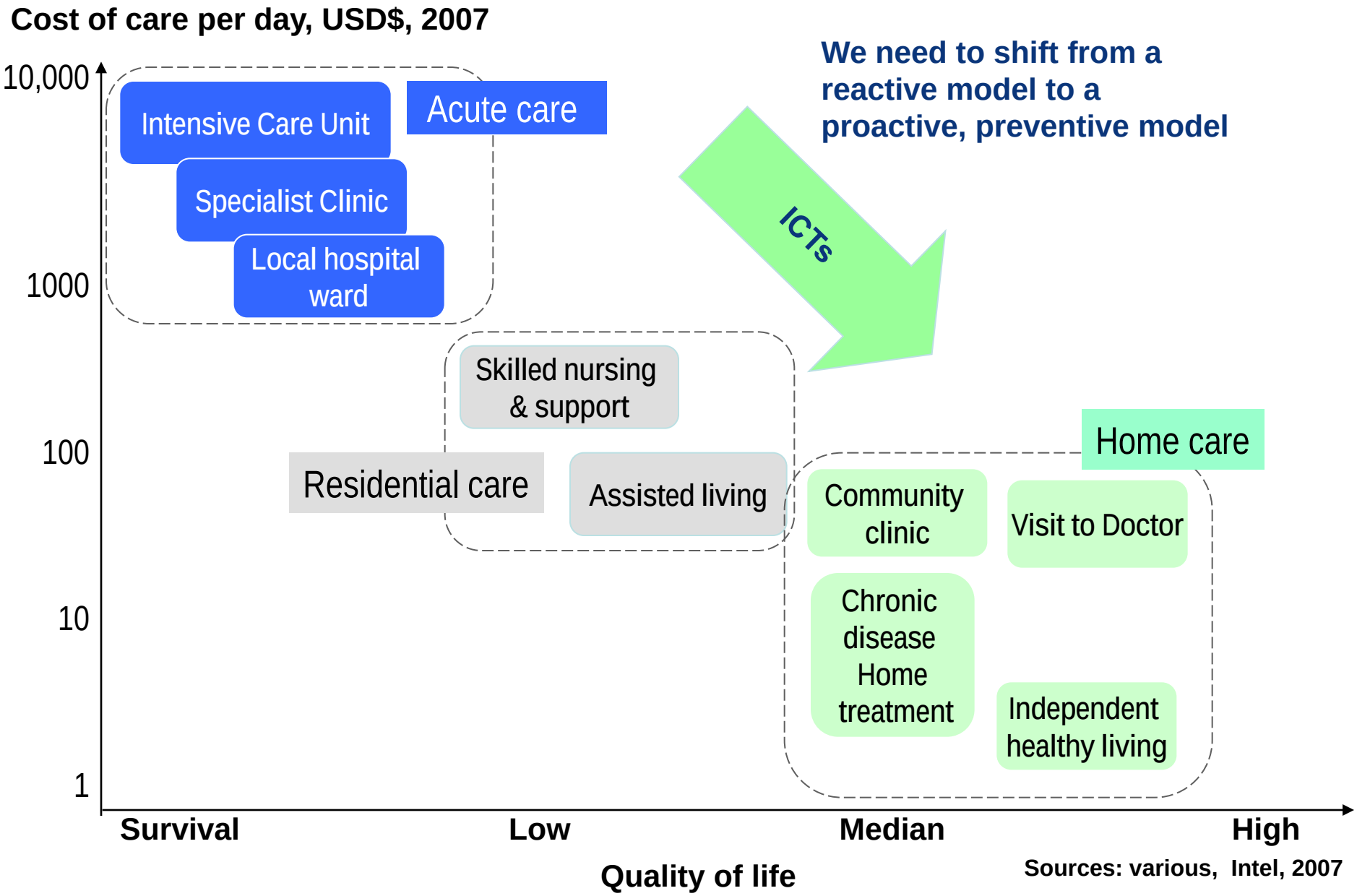
- Set up a build-and-rollout programme for each service (eHealth, eEducation, etc)
- Ensure investments stimulate EU economy
- Use green ICT

**Policy actions**

- Identify key candidates for services and create a vision for the whole soft infrastructure, Europe-wide
- Develop business cases
- Fund design, pilot and roll-out

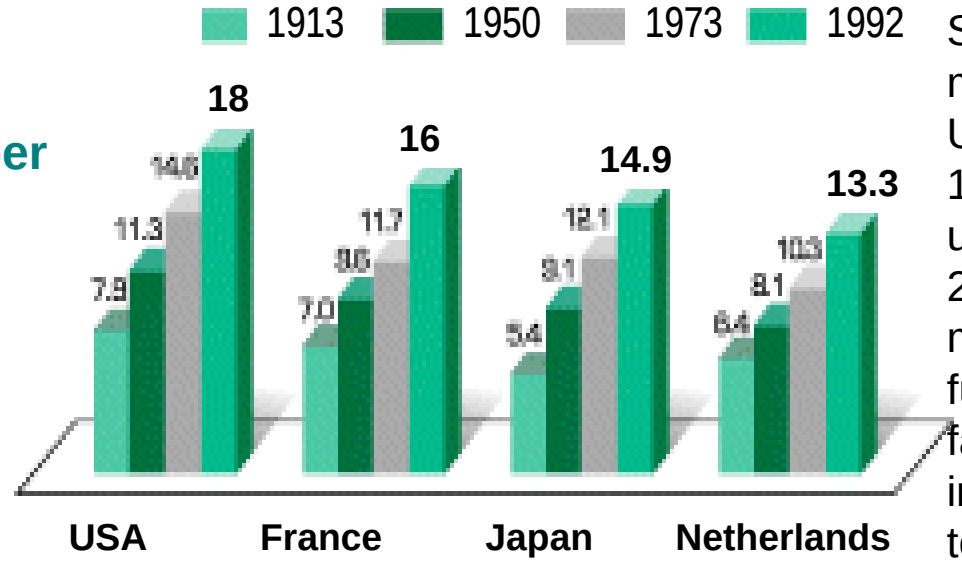
# The costs of care across the continuum of care and treatment

## (following approximate cost model, for USA system, 2007)




Sources: various, Intel, 2007

## Rise in the average number of years of education per adult

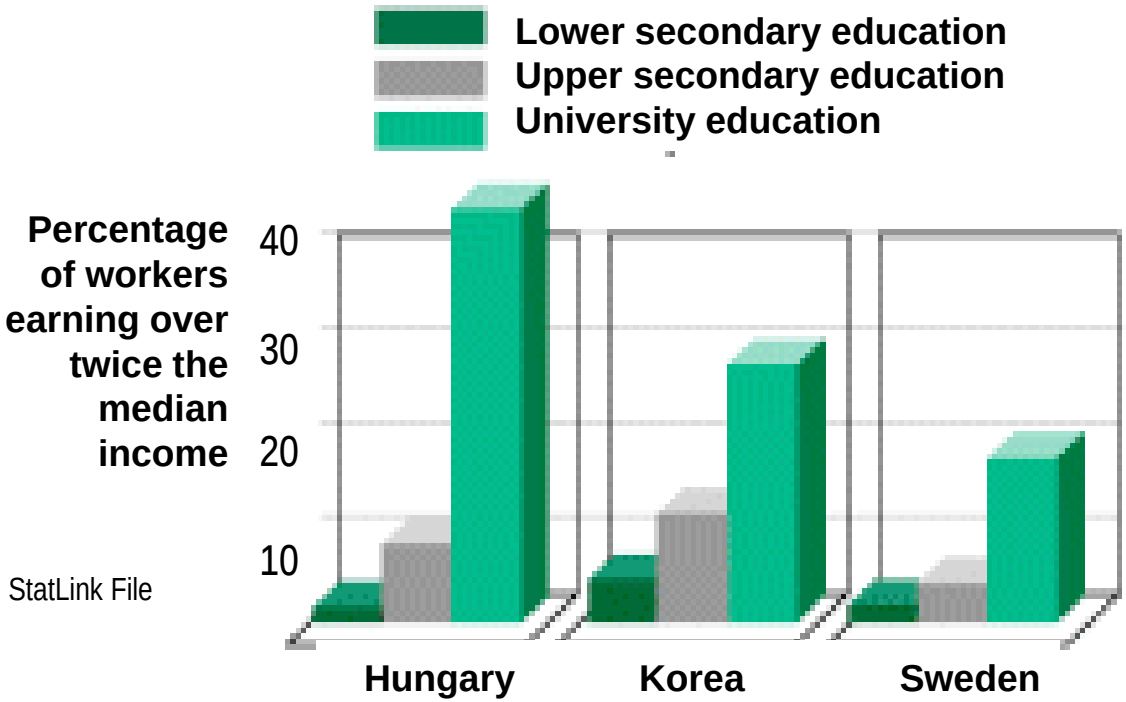



Source: Monitoring the World Economy 1820-1992. OECD and OECD insights - Human Capital, 2006
http://puck.sourceoecd.org/vl=726855/cl=34/nw=1/rpsv/humancapital/index.htm

Student numbers have multiplied with progress - UNESCO estimates that in 1900 there were 0.5Mn university students globally; in 2000 there were 200 times more, some 100 million. In the future, there may need to be far higher numbers qualifying in the EU if we are to move towards a knowledge economy

## Earning power of graduates

Graduates' earnings for a significantly large proportion are over twice the national median income. Those who leave school at 18 also earn more than those who leave school in earlier years (figures for 2004)




Source: Education at a Glance 2006. StatLink Download StatLink File also has information for other OECD countries at:
http://dx.doi.org/10.1787/815010258467

## 6. SMEs and ICT: supporting Europe's small firms

**Policy goals for 2015**

- Expand / deepen ICT use through broadband, cloud computing, etc
- Support small firms with potential for innovation and growth
- More support for rural SMEs

**Policy actions**

- Build competency in small firms with growth potential
- Raise awareness and improve digital literacy
- Grants for expert advice
- Deploy rural development and other funds

## 7. A single information market: enabling cohesion and growth

**Policy goals for 2015**

- Demonstrate the economic gains
- Harness knowledge economy and green ICT
- Simplify regulation

**Policy actions**

- Promote advantages
- Encourage single market in public services
- Prepare deregulation packages appropriate to each segment

## 8. Revolutionising eGovernment: rethinking delivery of public services

**Policy goals for 2015**

- Citizens as participants rather than just tax payers
- Increase participation levels across Member States

**Policy actions**

- Spread best practice in participatory eGov
- Benchmark citizens' participation
- Establish open platforms for developing services

## 9. Online trust: a safe and secure digital world

**Policy goals for 2015**

- Overcome organisational issues
- Improve protection of critical ICT infrastructure
- Protect individuals' rights
- Safety and reliability online for all

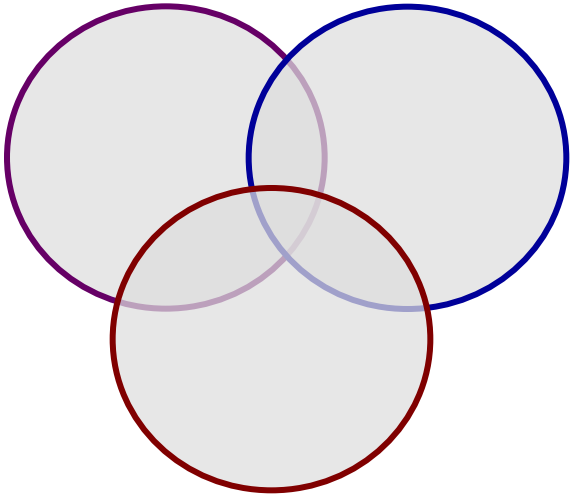
**Policy actions**

- Increase awareness
- Plan for implementation
- Enhance EU co-ordination
- Protect the citizen online

# Threats to society in a digital world consist of three major areas for concern

## Individual

1 Exposure to inappropriate digital media and inappropriate online behaviour – the need for online protection of the child and family, mentally and physically
2 Privacy, identity theft and online fraud



## Single Business

1 Interruption of operations
2 Financial fraud and threats including data theft

## Critical ICT Infrastructure

1 Organised cyber crime
2 Terrorism (and terrorist organisation)
3 Cyber war: inter-state conflict

## 10. Clear leadership: rethinking the EU's policy making process

**Policy goals for 2015**

- European institutions develop clear vision for role of ICT
- Realistic stretch targets for key policy areas

**Policy actions**

- Enhance levels of collaboration
- Review institutional structures
- Stronger links to other policy areas, such as the environment

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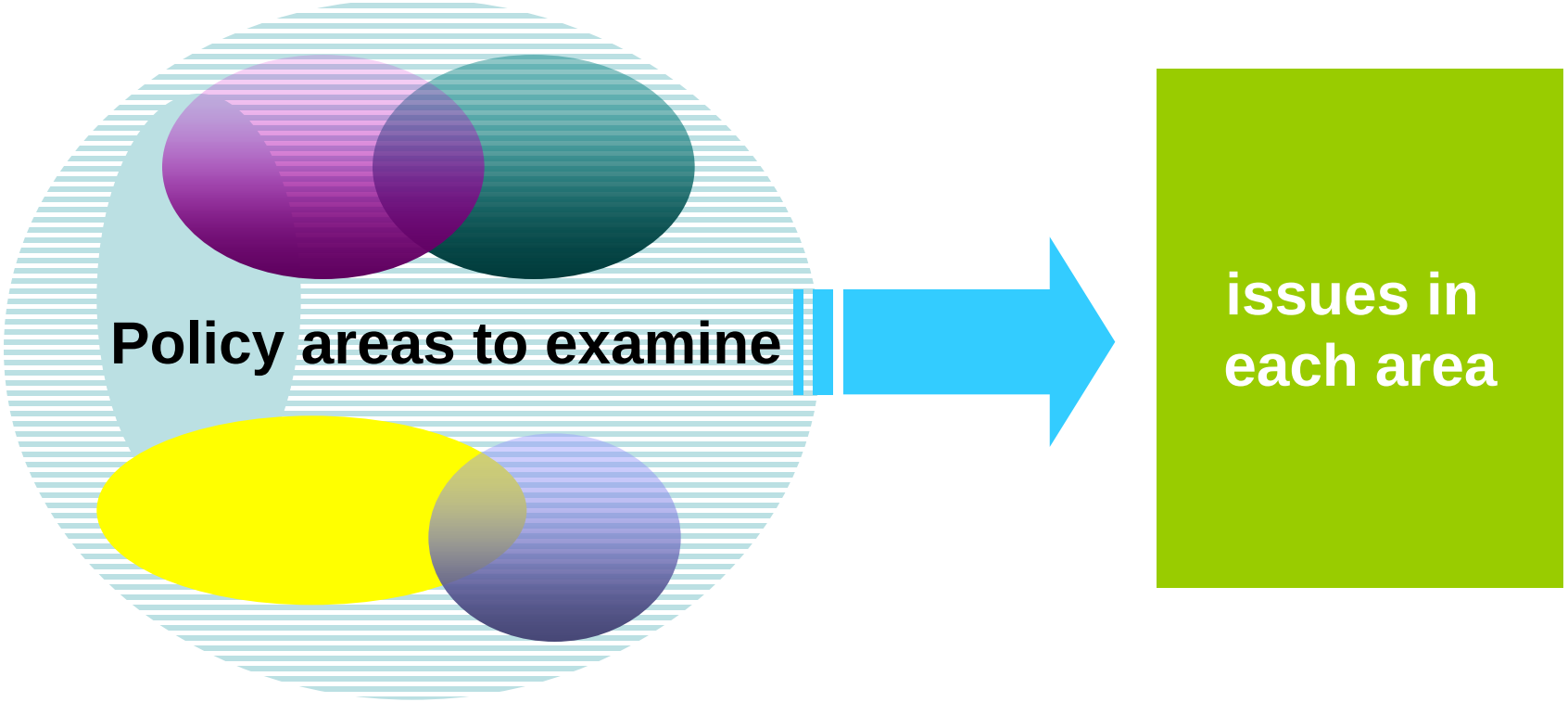
# Additional slides

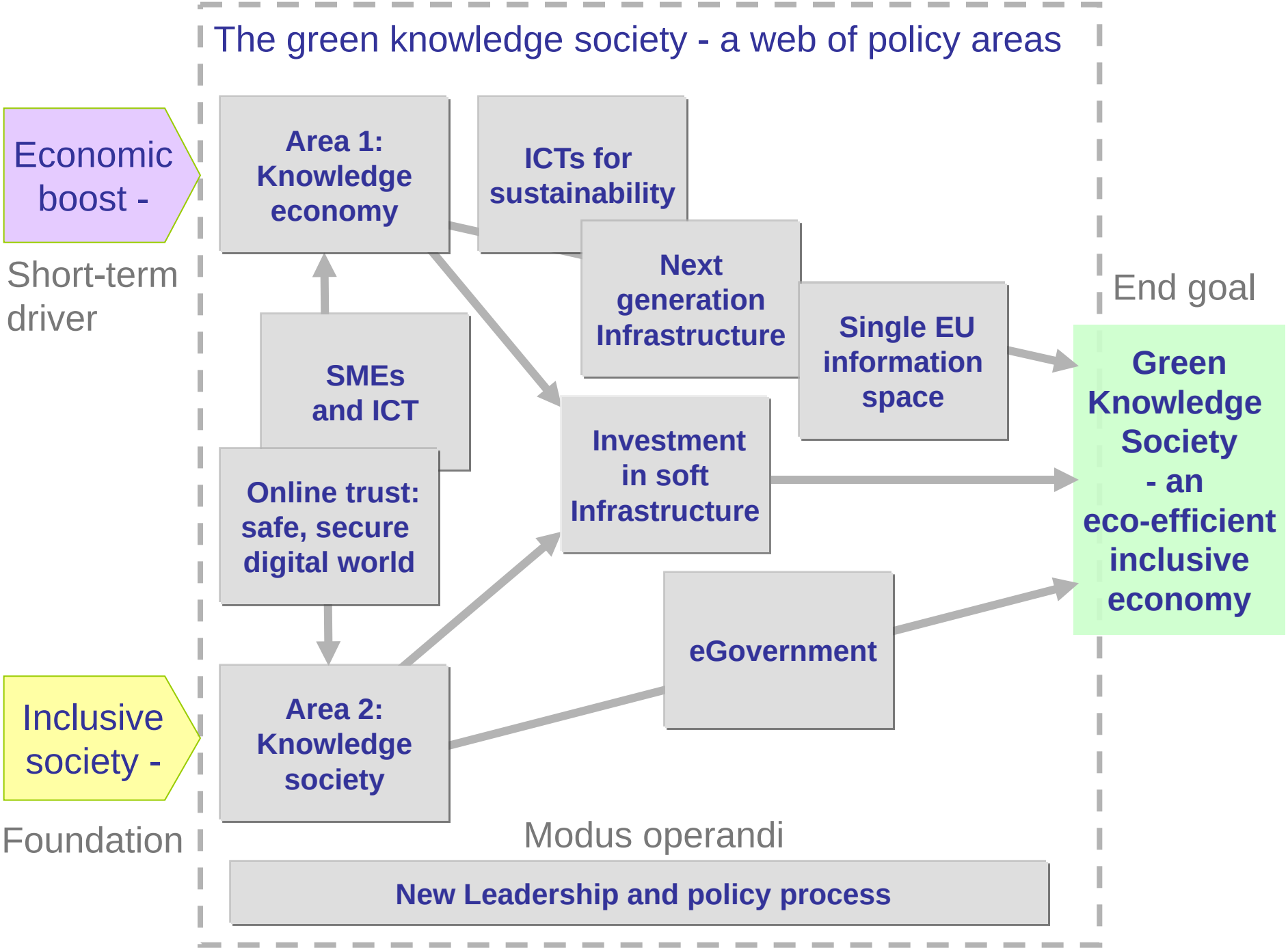
(Back-up)

# Going forward we need a new vision and framework

**The Policy Framework to make the vision happen:**
**Regulation; role of government and EC; human rights/digital rights**
**Governance and regulation processes**

ICT policy to 2015 to implement the new vision


Policy areas to examine
issues in each area


The green knowledge society - a web of policy areas
Economic boost -
Short-term driver
Area 1: Knowledge economy
ICTs for sustainability
Next generation Infrastructure
Single EU information space
End goal
SMEs and ICT
Online trust: safe, secure digital world
Investment in soft Infrastructure
Green Knowledge Society - an eco-efficient inclusive economy
eGovernment
Inclusive society -
Area 2: Knowledge society
Foundation
Modus operandi
New Leadership and policy process