

# **Measurement for success**

## **The role of indicators**

**ICT solutions for innovative economic and social development**

**Renaissance for eGovernance & SEE**

**Professor Pavle Sicherl**

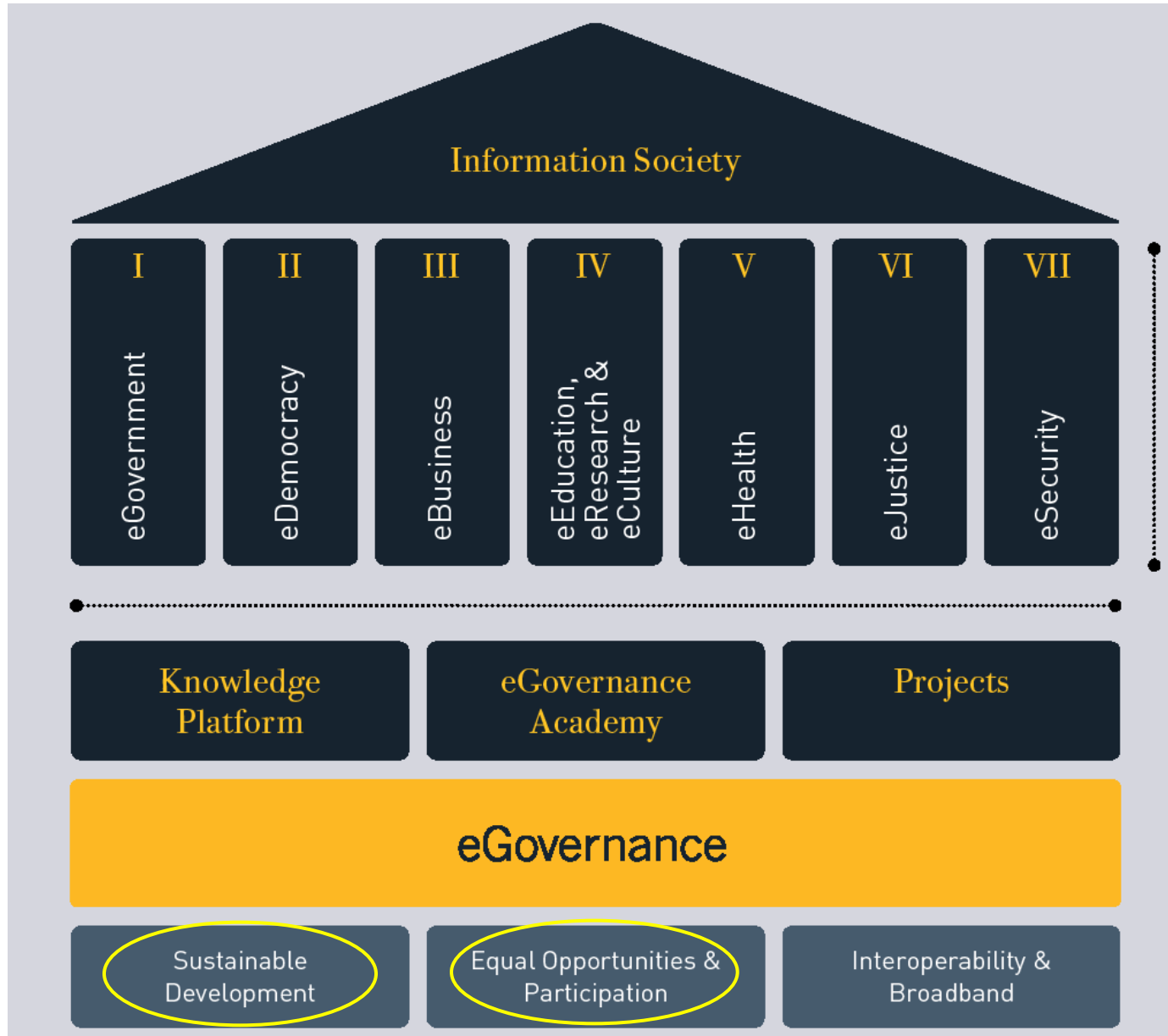
**SICENTER and University of Ljubljana**  
**Member of Millennium Project Node South East Europe**

**[pavle.sicherl@sicenter.si](mailto:pavle.sicherl@sicenter.si), [www.gaptimer.eu](http://www.gaptimer.eu)**

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# 7 ePillars of eGovernance



# Governance

**to direct and control, governing,  
exercise of administrative powers**

**The role of indicators in the knowledge-based governance**

is to increase capacity of the government to effectively manage its resources and implement sound policies

Indicators are tools that can aggregate, quantify, visualise and **simplify information for more effective decision making and participation in different phases**

## **Better governance needs many things but also better tools for fact based decision making**

- The goal is to increase social welfare.
- Social welfare is a complex multi-dimensional phenomena
- Since it cannot be measured directly, we measure it with a **set of indicators from numerous fields of concern**
- It gives an overview about the **state of sustainable development and relate it to policies and budgets**
- Such process of decision making has two major elements:
  1. the **knowledge aspect** to ensure high professional standards in setting up such system of indicators
  2. the **political aspect** which needs to assure transparency in establishing the priorities and in the evaluation of results

# Innovative economic and social development

'Beyond GDP' means towards sustainable development, welfare, cohesion, knowledge society and freedom

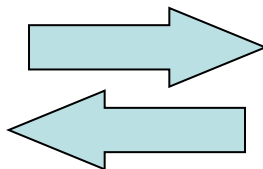
Measuring societal progress has to deal with categories, measurement, and data availability as well as with interpersonal, intergroup and intertemporal comparisons

The perception of well-being and progress is subjective

1. PERCEPTION ABOUT WHAT (elements of well-being and societal progress and the corresponding indicators)
2. WHICH MEASURES TO USE TO BUILD PERCEPTION ABOUT THEM (measures to present and to communicate the topics also for decision making and broader participation).

# Balancing between desirability and feasibility

Desirability



Feasibility

Two elements of the 7 ePillars CeGD model for IS and eGovernance:  
sustainable development and equal opportunities & participation

CeGD concept for eGovernance: Governance, Good governance, ICT solutions.  
We shall follow the presentation in that order: from general to specific

There are many international and national actions involving the role of indicators in the decision making process, including ICT sector

World project on measuring progress of societies initiated by OECD:  
**Statistics, Knowledge, Policy**

Integration of headline indicators and the accounting system in the  
German Strategy on Sustainable Development

## In conclusion, the Project aims to:

- **Change culture**, helping citizens and policy makers to pay attention to all dimensions of progress
- **Develop new statistics** in emerging domains
- **Improve citizens' numeracy**, strengthening people's capacity of understanding the reality in which they live
- **Improve citizens' knowledge**, becoming more aware of risks and challenges of today world
- **Improve national policy making**, through a better measurement of policy and societal outcomes
- **Improve international policy making**, through the a world progress monitoring system, covering all countries
- **Improve statistical capacity** in each and every country
- **Strengthen democracy** respecting historical and cultural differences
- **Foster a global and open conversation** about the state and the progress of the world

**IMPROVE WELFARE**

Source: Enrico Giovannini, Seminar on Innovative Approaches to Turning Statistics into Knowledge, Stockholm, May 2008



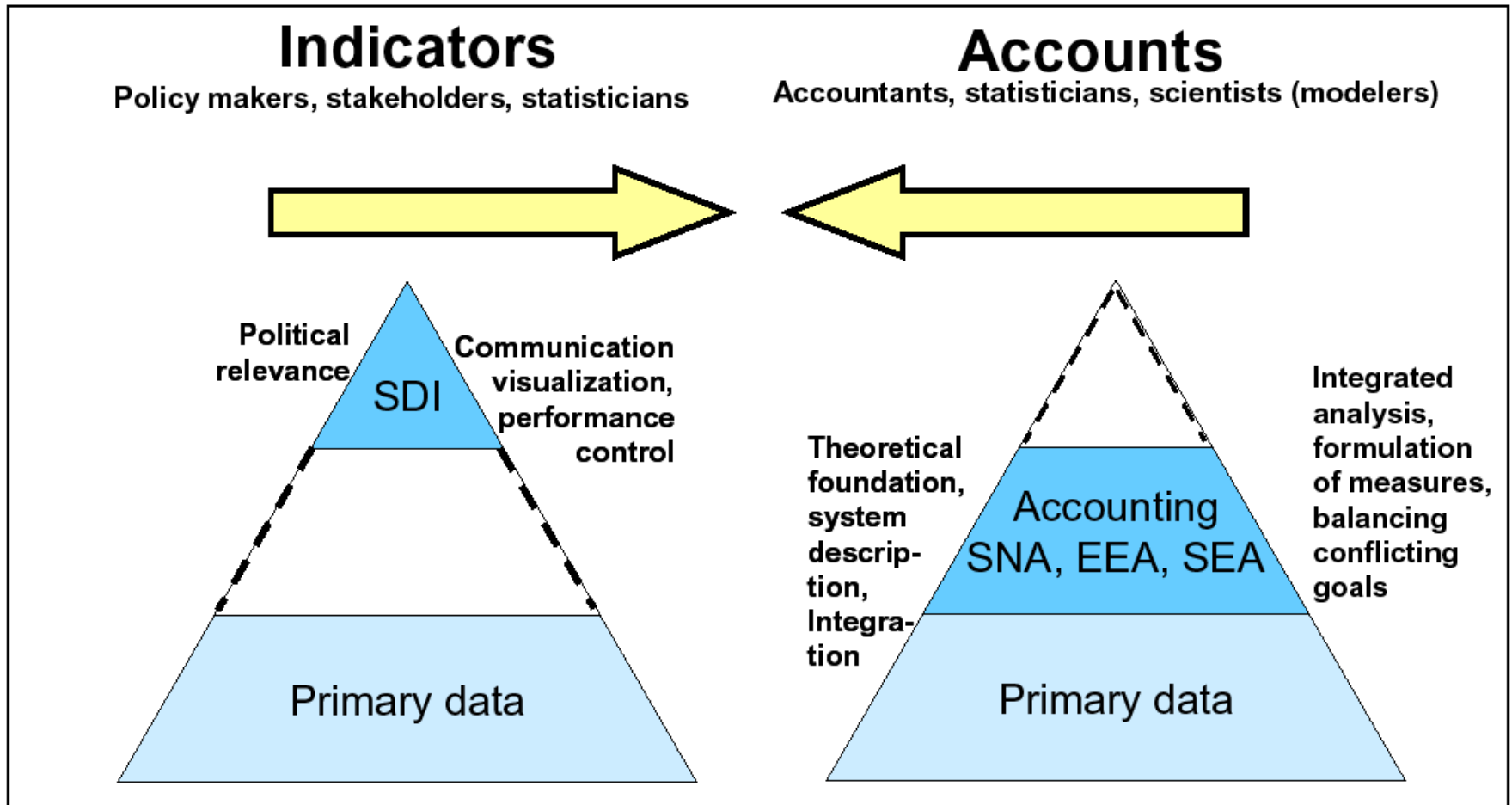
# The Istanbul Declaration (1)

- A **culture of evidence-based decision making** has to be promoted at all levels of government, to increase the welfare of societies.
- We affirm **our commitment to measuring and fostering the progress of societies** in all their dimensions and to supporting initiatives at the country level.
- We **urge statistical offices, public and private organisations, and academic experts** to work alongside representatives of their communities to produce high-quality, facts-based information that can be used by all of society to form a shared view of societal well-being and its evolution over time.

# Some general characteristics of indicators

- System of indicators are used at many levels, for different purposes and with different degree of details
- An indicator is designed to represent and provide quantitative information about a construct of interest which itself cannot be directly measured, with a significance extending beyond that directly associated with a parameter value
- The objective is to be able to compare elements of a set of categories with each other – for instance country with country, sector with sector, or small with large enterprises, and to be able to follow trends in the construct over time

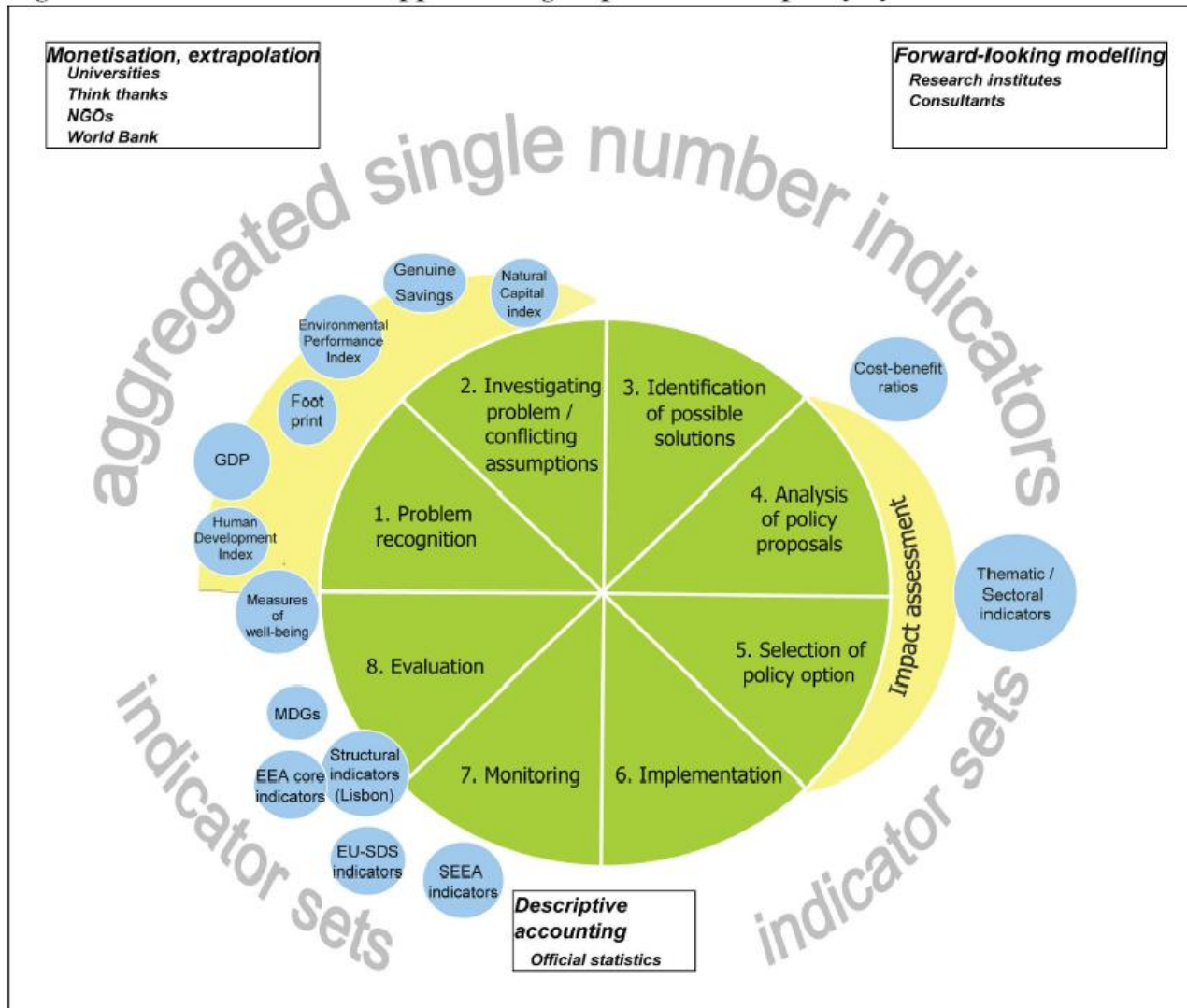
# Merging two separate worlds



Source: Karl Schoer and Walter Radermacher, The Use of the Expanded Accounting System for the German National Strategy on Sustainable Development, Paper Prepared for the 30th General Conference of The International Association for Research in Income and Wealth, Portoroz, Slovenia, August 24-30, 2008

# Indicators are important in decision making in all phases of the policy cycle

Figure 2. Different indicator approaches grouped around a policy cycle



Policy cycle adapted from De Ridder et al. (Ridder W. de, 2006). Original source: Brewer and DeLeon, 1983.

# Selected international undertakings on ICT indicators

## 1. United Nations, E-government Survey 2010

Provides a comparative global picture of ICT in the public sector. Ongoing cooperation in performance measurement could take many forms.

## 2. ITU and Partnership on Measuring ICT for Development

The work of the Partnership on Measuring ICT for Development is directed towards achieving internationally comparable and reliable core list of ICT indicators. Other activities include the compilation and dissemination of ICT data.

## 3. World Summit on the Information Society (WSIS)

A key objective of the 2010 report Monitoring the WSIS Targets was to review the WSIS targets, revise them where necessary for measurement purposes, and identify a limited set of measurable indicators that could be used by national, regional and international stakeholders to monitor progress until 2015 — and beyond.

## 4. European Commission and Eurostat

Eurostat enterprise, households and individuals surveys are conducted according to a common questionnaire and a harmonised methodology. i2010 High Level Group in Benchmarking Digital Europe 2011-2015 sets out the benchmarking framework for developments in the information society for the period 2011-15. PARADISO initiative addresses the role of ICT in future development.

## 5. OECD

OECD prepares 15 ICT indicators and discusses the situation in the sector

# Summary list of the proposed indicators

## Benchmarking Digital Europe 2011-2015, EC

- The ICT Sector  
(9 indicators)
- Broadband and Connectivity  
(13 indicators)
- ICT usage by Households and Individuals  
(33 indicators)
- ICT usage by Enterprises  
(12 indicators)
- e-Public Services  
(3 indicators)

## ITU, ICT Indicators 2010, Partnership on Measuring ICT for Development

- ICT infrastructure and access  
(10 indicators)
- Access to, and use of, ICT by households and individuals  
(13 indicators)
- Use of ICT by businesses  
(12 indicators)
- The ICT (producing) sector  
(2 indicators)
- International trade in ICT goods  
(2 indicators)
- ICT in education  
(9 indicators)

# How to measure “progress”?

- Three main approaches:
  - Extension of national accounts
  - Composite indicator
  - Key indicators
- Objective vs. subjective (happiness?)
- The OECD supports the development of key indicators, but measuring progress is not enough if:
  - The measures are not shared
  - They are not communicated to the whole society
  - Citizens do not understand them
- From “statistique” to “sociestique”?

# Composite indicator – ITU ICT Development Index (IDI)

ICT access	Ref. Value	(%)
1. Fixed telephone lines per 100 inhabitants	60	20
2. Mobile cellular telephone subscriptions per 100 inhabitants	170	20
3. International Internet bandwidth (bit/s) per Internet user	100'000*	20
4. Proportion of households with a computer	100	20
5. Proportion of households with Internet access at home	100	20

40

ICT use	Ref. Value	(%)
6. Internet users per 100 inhabitants	100	33
7. Fixed broadband Internet subscribers per 100 inhabitants	60	33
8. Mobile broadband subscriptions per 100 inhabitants	100	33

40

ICT skills	Ref. Value	(%)
9. Adult literacy rate	100	33
10. Secondary gross enrolment ratio	100	33
11. Tertiary gross enrolment ratio	100	33

20

ICT  
Development  
Index

Note: \* This corresponds to a log value of 5, which was used in the normalization step.

Source: ITU.

## E-government development index (UN) and ICT Development Index (ITU)

Country	E-government development					IDI
	Rank 2010	Index value	Online service	Telecommunication infrastructure	Human capital	Rank 2008
Sweden	12	0.75	0.18	0.25	0.32	1
Slovenia	29	0.62	0.14	0.17	0.32	26
Croatia	35	0.59	0.14	0.14	0.30	36
Greece	41	0.57	0.12	0.13	0.32	30
Bulgaria	44	0.56	0.14	0.11	0.31	43
Romania	47	0.55	0.14	0.10	0.30	44
TFYR Macedonia	52	0.53	0.11	0.13	0.29	51
Montenegro	60	0.51	0.11	0.11	0.29	47
Turkey	69	0.48	0.12	0.09	0.28	57
Bosnia and Herzegovina	74	0.47	0.09	0.08	0.29	64
Moldova	80	0.46	0.10	0.06	0.30	73
Serbia	81	0.46	0.08	0.09	0.29	53
Albania	85	0.45	0.11	0.05	0.29	83
Europe		0.62	0.15	0.16	0.31	

Source: United Nations, E-government Survey 2010 and ITU, Measuring the Information Society 2010

## Indicators, statistical measures and perceptions

Better decision making will depend critically on human interface (Sicherl, 2004): understanding of the information and communication in a multidimensional framework

The perceptions formed and the decisions, behaviour and actions undertaken are also influenced by the quantitative indicators and measures used in the semantics of discussing the issues, in setting the targets and in the implementation

This is not increased only by quantity and/or quality of empirical information. At least equally important are the concepts and tools of analysis that systematise and transform information into perceptions relevant for decision making and influencing human behaviour



The real voyage of discovery consists  
not in seeking new lands  
but in seeing with new eyes.

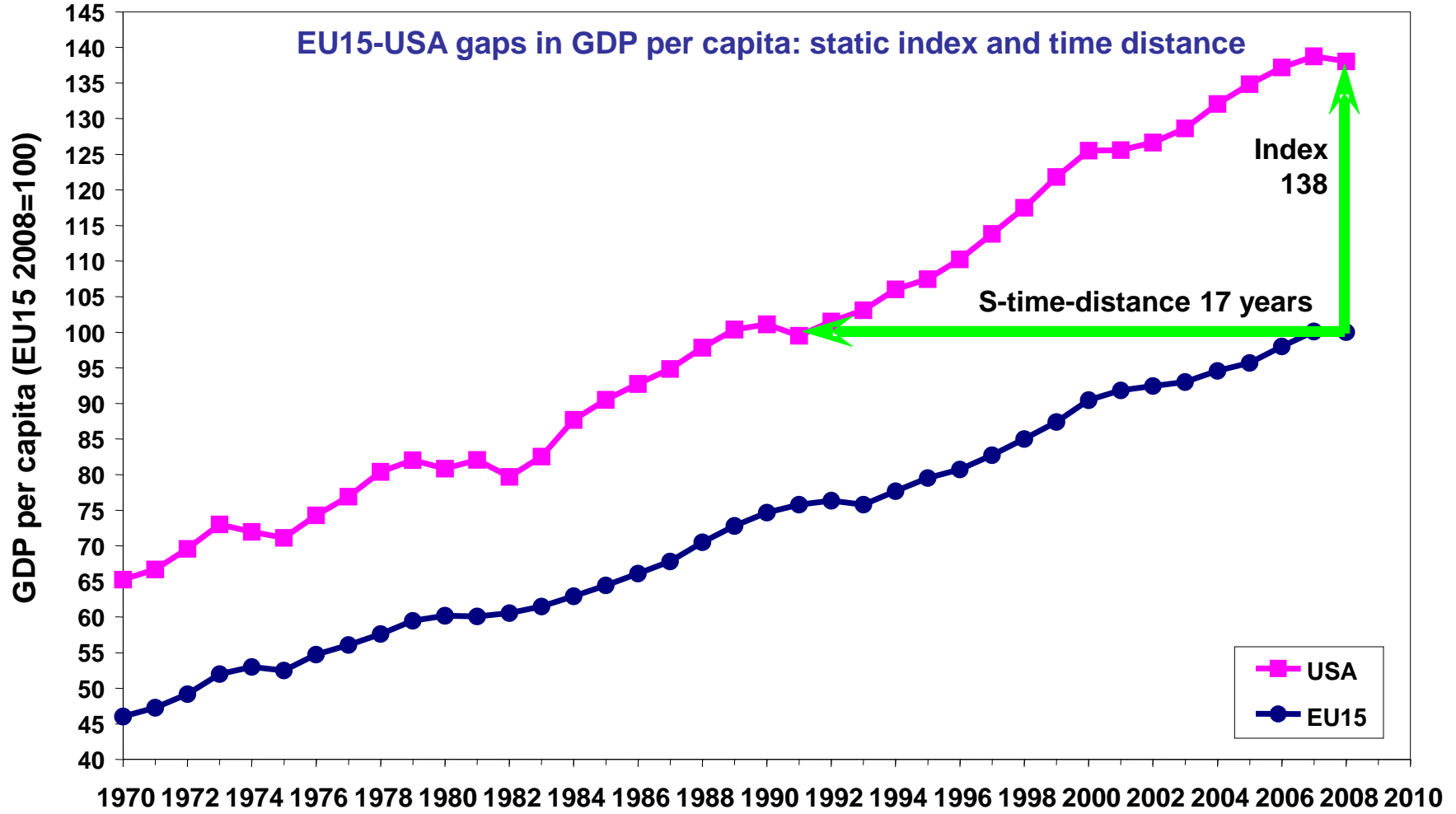
*Marcel Proust*

## **S-time-distance - a novel statistical measure: seeing with new eyes and telling new stories**

- 1. Time distance is an innovative concept of looking at data  
to enhance knowledge and understanding  
to facilitate stakeholders to build their perceptions and decisions  
to offer a new perspective hidden in existing data**
- 2. Expressed in time units it is intuitively understandable  
to policy makers, managers, media and the general public**
- 3. Excellent analytical, presentation and communication tool  
complementing existing methods; comparable across variables, fields and units**

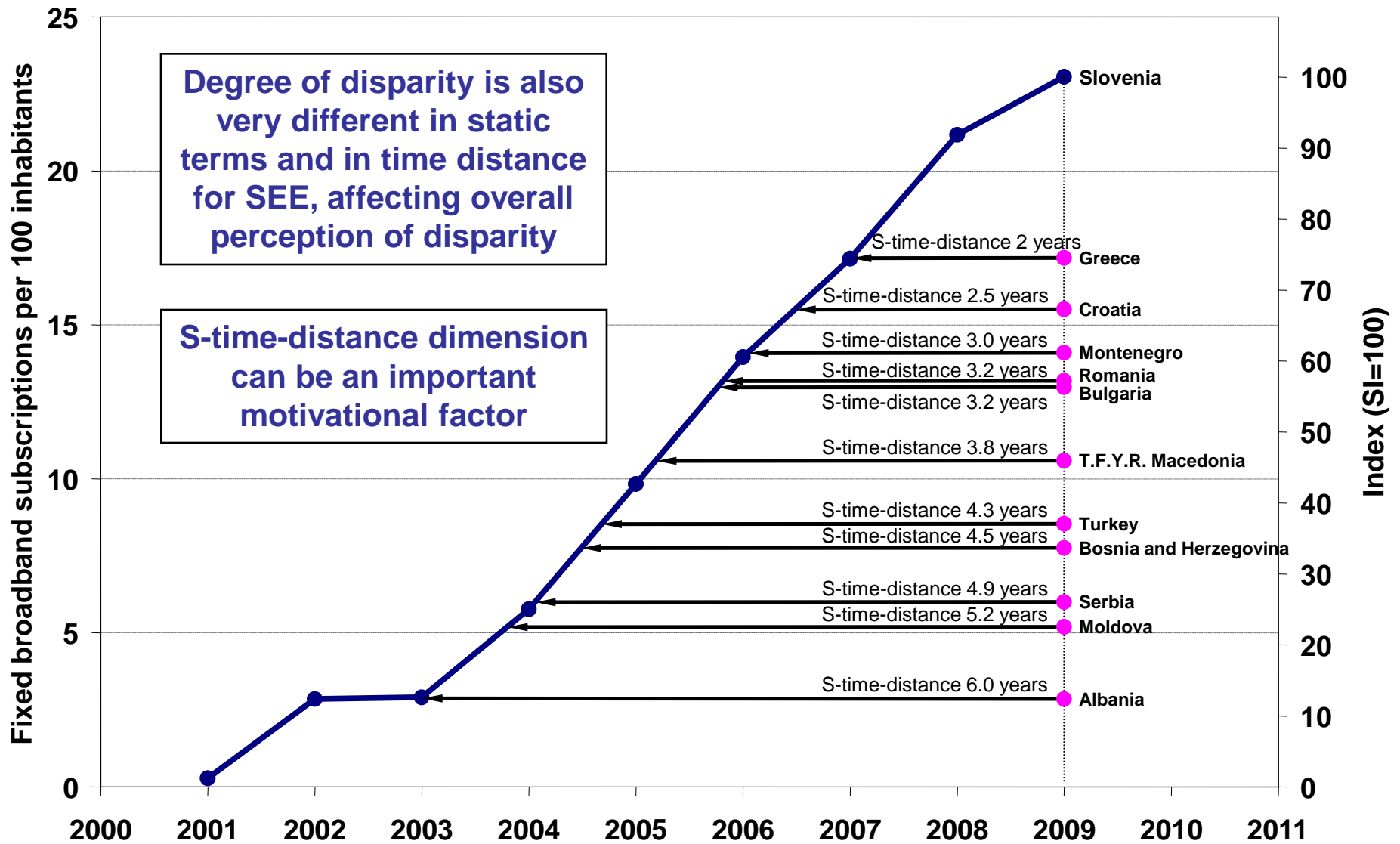
# Time series can be compared in two dimensions:

1. static gap for a given point in time
2. gap in time for a given level of the variable



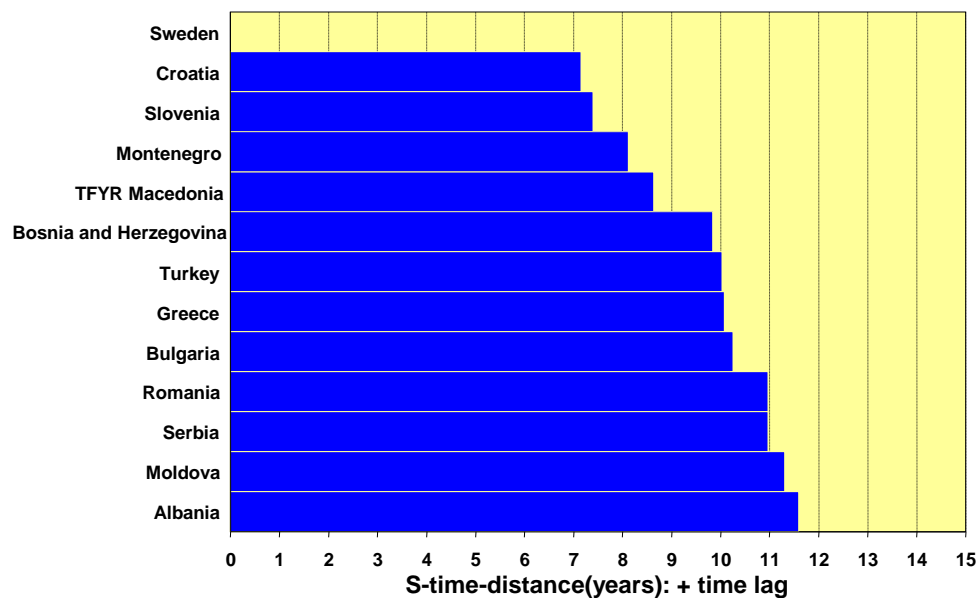
Index 138 shows the static gap, the time gap of 17 years gives a different additional perception of reality. For a broader more realistic picture we need both.

## Two measures of digital divide for SEE countries for fixed broadband against Slovenia

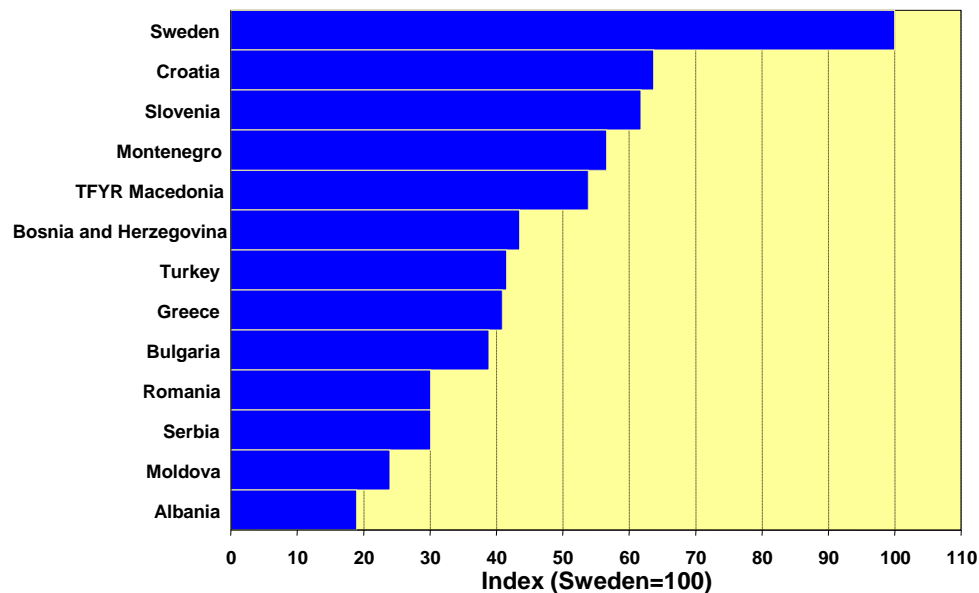


# Two measures of digital divide for SEE countries for Internet users against Sweden

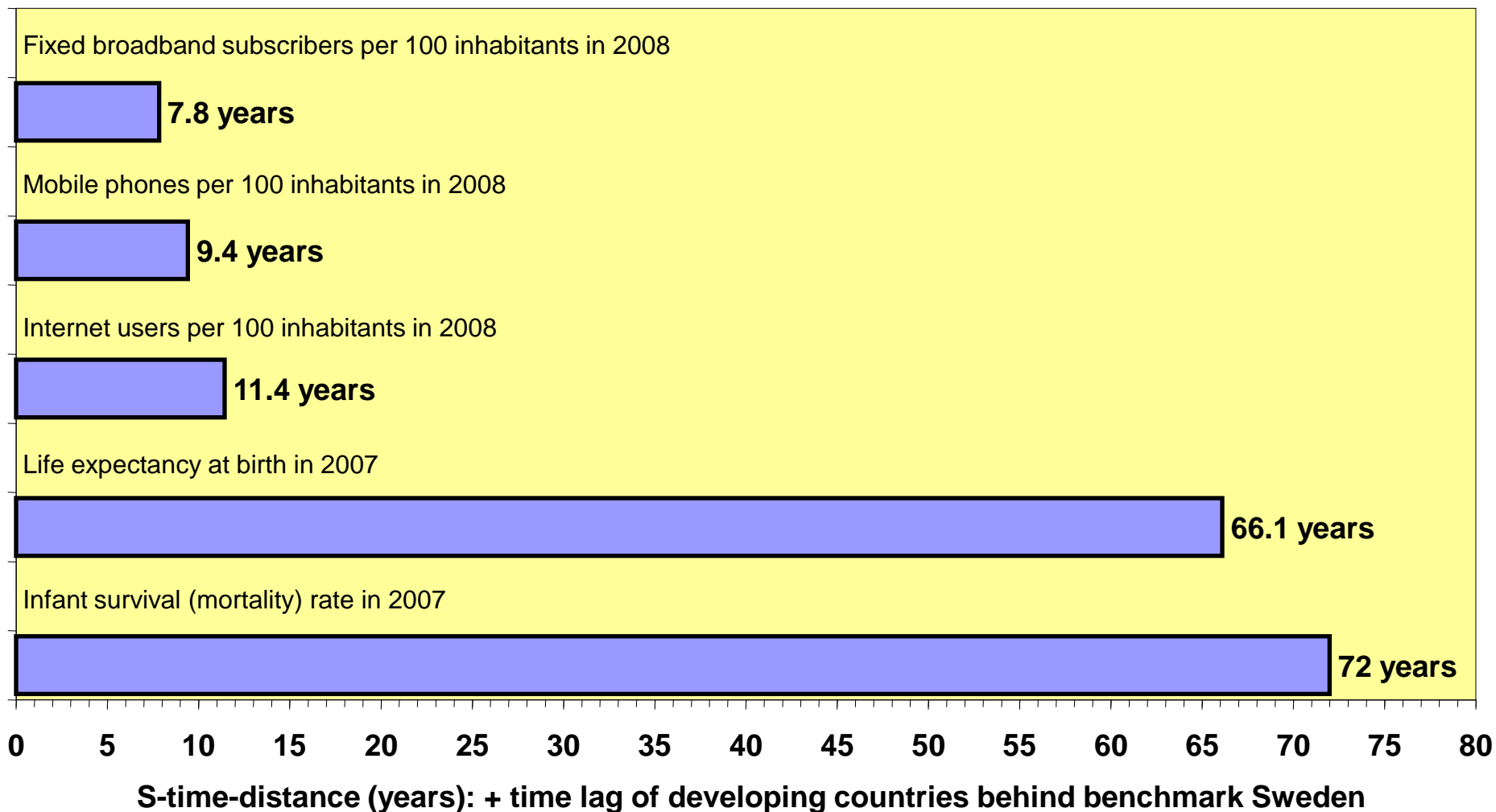
## S-time-distances from Sweden for Internet users per 100 inhabitants in 2008



## Index for Internet users per 100 inhabitants in 2008 (Sweden=100)



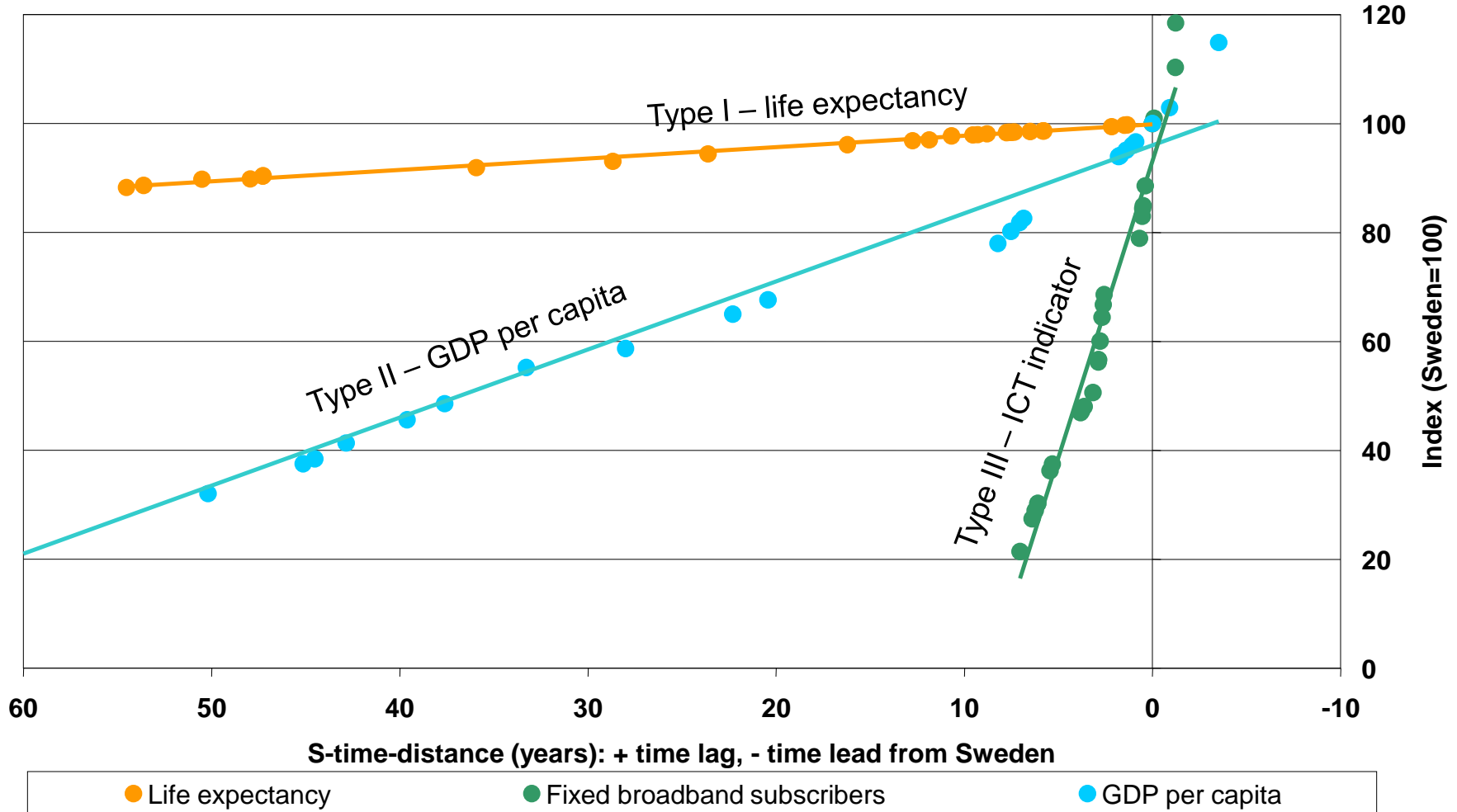
**The speed of diffusion of ICT sector indicates its much greater potential for catching up and becoming an important instrument to reduce world disparities**



Source: ITU and SICENTER based on ITU and UNICEF data

# EU27 disparities in two dimensions for three types of indicators:

type I (life expectancy), type II (GDP per capita) and type III (ICT indicator)

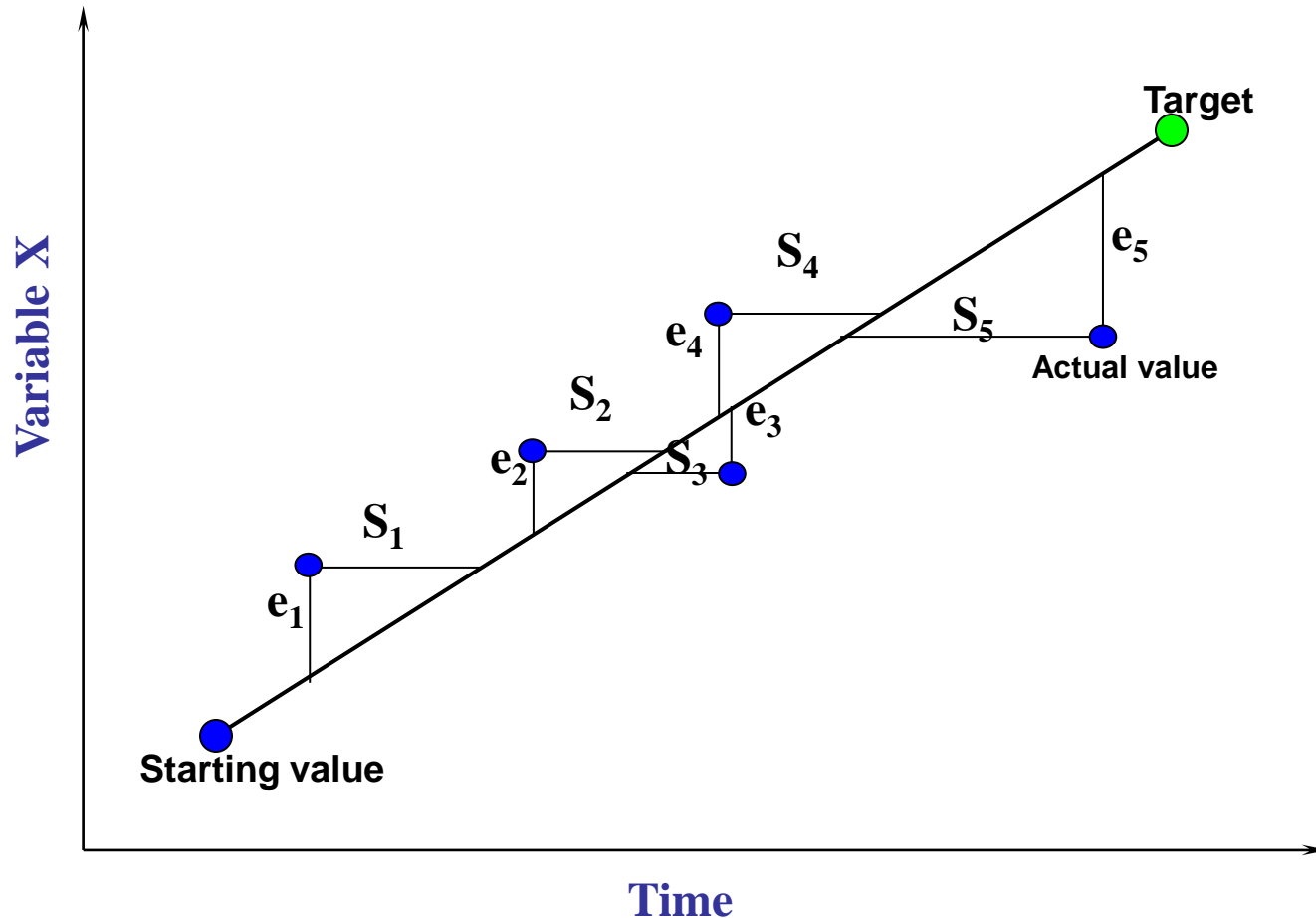


**Degree of disparity may be very different in static terms and in time distance.**

**This is not a question of statistics, it profoundly effects the perception for a better evaluation of policy and business alternatives.**

# MONITORING: time distance deviations from the line to target

S-time-distance adds a second dimension to comparing actual values with target values, forecast, budget, plan, etc.



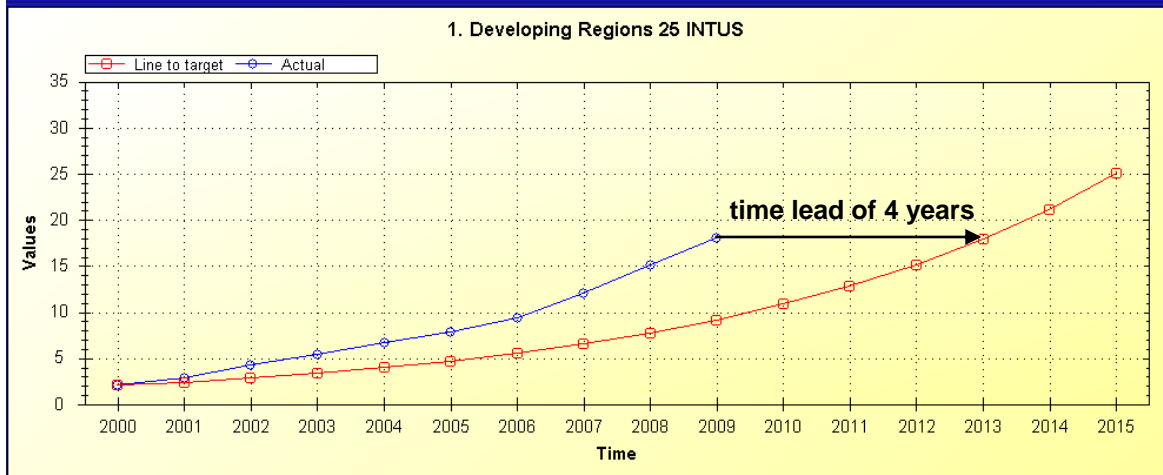
and actual to estimated values thus evaluating goodness-of-fit in regressions, models, forecasting and monitoring

# Free web time distance monitoring tool is available at

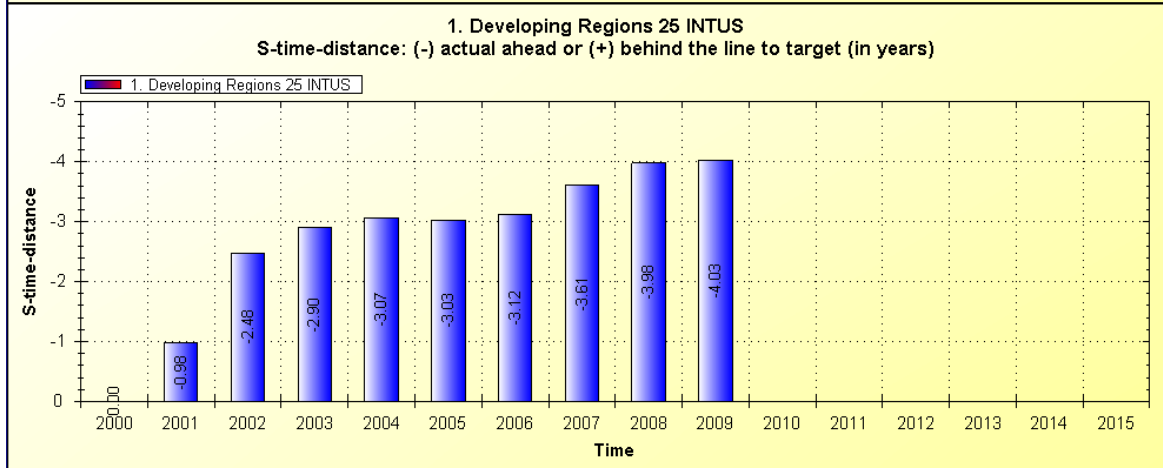
[www.gaptimer.eu](http://www.gaptimer.eu)

## The results and the visual outlook for any individual unit

1. Developing Regions 25 INTUS																
1. Developing Regions 25 INTUS	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Line to target	2.04	2.41	2.85	3.37	3.98	4.70	5.56	6.57	7.76	9.18	10.84	12.82	15.15	17.90	21.15	25
Actual value	2.04	2.84	4.33	5.47	6.65	7.81	9.38	12.04	15.11	18						
S-time-distance	0	-0.98	-2.48	-2.90	-3.07	-3.03	-3.12	-3.61	-3.98	-4.03						
Time on LT	2000	2001.98	2004.48	2005.90	2007.07	2008.03	2009.12	2010.61	2011.98	2013.03						
Deviation in [%]	0	17.80	51.97	62.44	67.10	66.05	68.75	83.28	94.63	96.18						



Example of output of the web tool for one unit, Internet users for Developing Regions: in 2009 the value was 4 years ahead of the line to target



Same output and graphs were made for 2008 for 194 countries: for 149 countries (close to 90% of world population) were ahead of line to target

Legend	Description
TA	Target achieved
WTS	Actual value is worse than the starting value

[www.gaptimer.eu/s-t-d\\_monitoring\\_tool.html](http://www.gaptimer.eu/s-t-d_monitoring_tool.html)

# **FINDING AND TELLING NEW DEVELOPMENT STORIES:**

## **Benefits of immediate operational uses of S-time-distance**

- 1. **A new view in competitiveness issues, benchmarking, target setting and monitoring for economic, employment, social, R&D and environment indicators at the world, EU, country, regional, city, project, socio-economic groups, company, household and individual levels**
- 2. **A broader dynamic framework for interrelating strategy issues of growth, efficiency, inequality and convergence**
- 3. **Enhanced semantics for policy analysis and public debate**
- 4. **Additional exploitation of databases and indicator systems**
- 5. **An excellent presentation and communication tool**
  - among different levels of decision makers and interest groups
  - for describing of the situations, challenges and scenarios
  - for proactive discussion and presentation of policy alternatives to policy makers, media, the general public and mobilizing those participating in or being affected by the programs
  - for communicating the urgent need for change and reforms

# ICT solutions for successful Society Development

- Input into production of goods and services, education, research, knowledge, management
- Enabling communication in the society, social networks
- Building knowledge and perceptions to understand reality and increase cohesion
- The speed of diffusion makes ICT an important instrument to reduce world disparities
- Foster democracy and participation in decision making
- **MEASURE ANALYSE COMMUNICATE**

*'Statistical thinking will one day be as necessary a qualification for efficient citizenship as the ability to read and write.'*

*H.G. Wells*