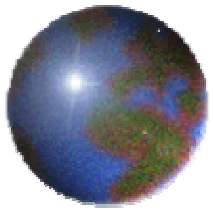

PECULIARITIES OF KNOWLEDGE-BASED ECONOMY ASSESSMENT: THEORETICAL APPROACH

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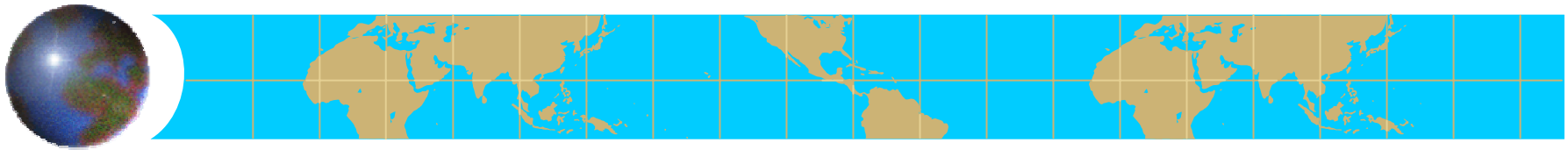
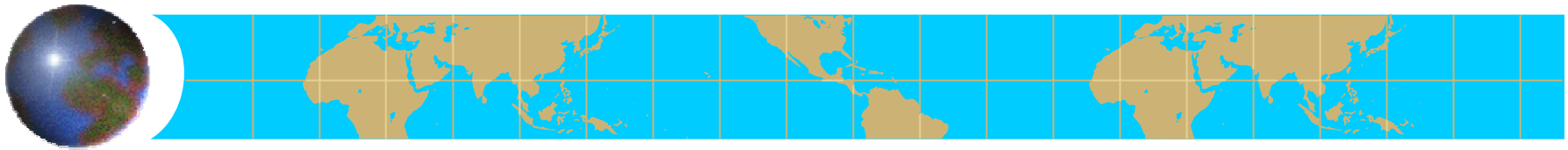
2004 May 17-21, Bergamo



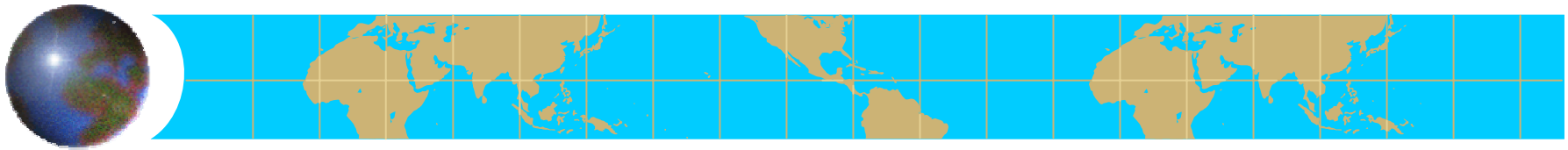
Structure of presentation:

- 1. Knowledge- based economy treats in the Context of Lisbon Convention
- 2. The Basic Treats of Knowledge-Based Economy
- 3. Knowledge-based economy – New economy – Information economy: comparison
- 4. The Key Policy recommendations Concerning the Knowledge-based Economy Creation
- 5. The Validity of Knowledge-based economy Assessment
- 6. Retrospective of Knowledge-based Economy Assessment History
- 7. The main existing Knowledge Economy Assessment Models
- 8. Interrelation of two assessment models groups
- 9. Examples of World Bank Knowledge Assessment as well as UECE assessment model
- 10. Recommendations for the new model creation



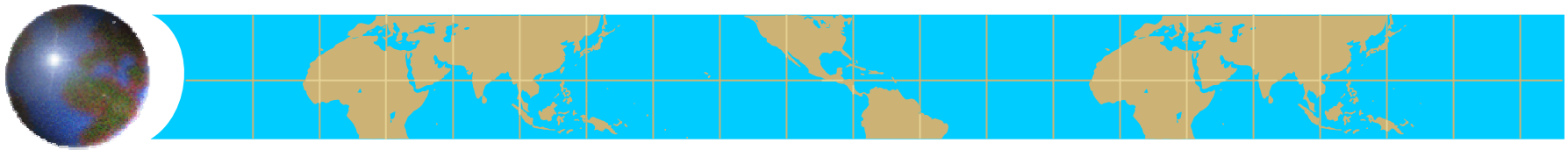
1. Knowledge- based economy treats in the Context of Lisbon Convention

- *The Lisbon Council Meeting* (March 2000): the strategic goal adopted by this European Council consisted of transforming the Union by 2010 into ***"the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion"***



2. The Basic Treats of Knowledge-Based Economy (1)

- Not a branch of economy;
- Compatible system of legal and economical preconditions or managerial and economical mechanisms as well as modern technologies and human recourses;
- Appears in the process of development of the market economy supported by the new technologies, particular information technologies;
- The new growth opportunities can only be seized through a comprehensive strategy based on a policy mix that is suited to each country or circumstances.



The Basic Treats of Knowledge-Based Economy (2)

- Knowledge economy covers economical, social, and cultural spheres of country;
- Macro economical stability, functioning of the free market, institutional functioning is dominating factors;
- The stabile economy (stabile fiscal policy, law inflation, effective money policy and currency policy) is the most important measures of fulfilment of knowledge economy.

3. Knowledge-based economy – New economy – Information economy: comparison (1)

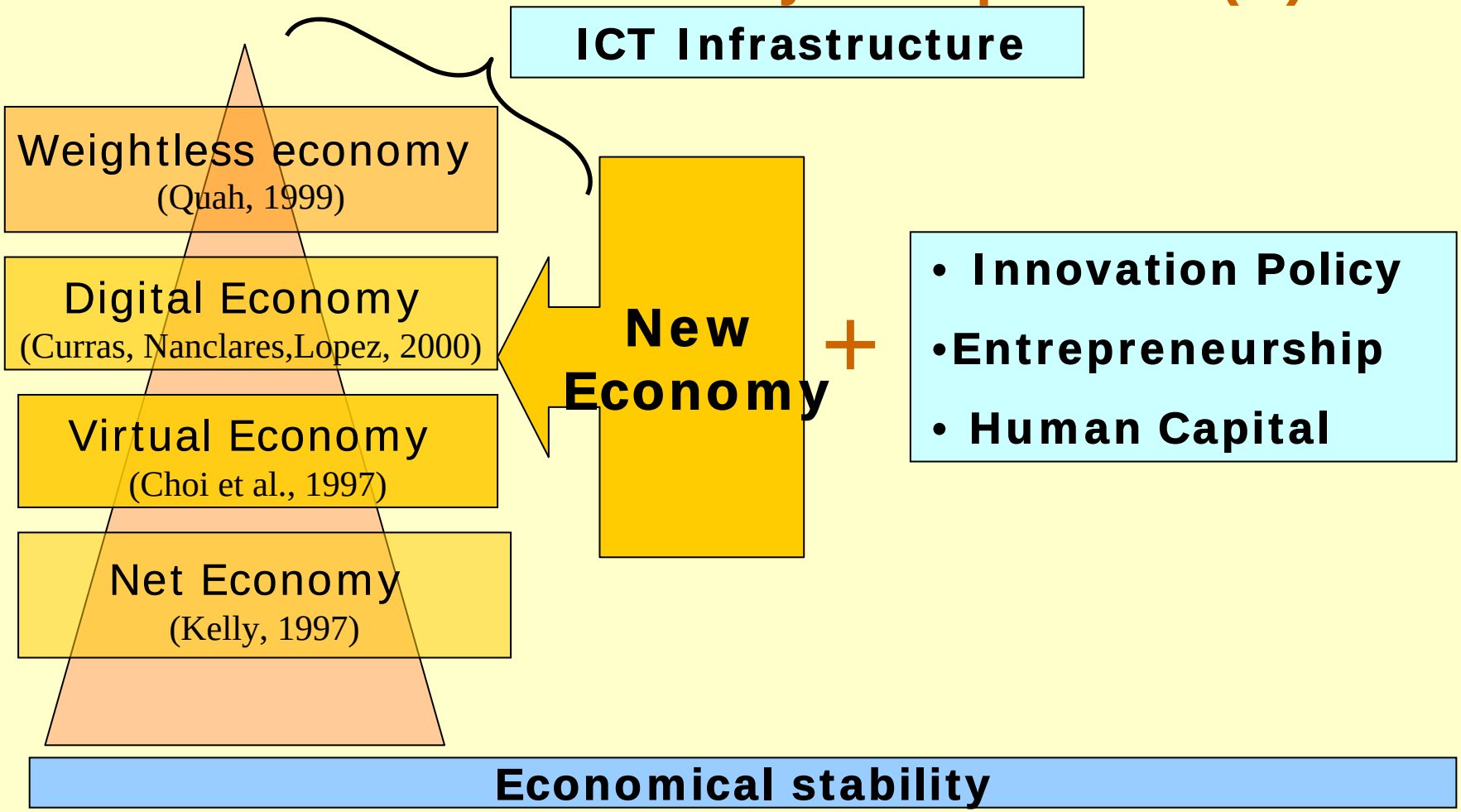
- Digital Economy
- Net Economy
- Weightless Economy
- Virtual Economy
- Information Economy
- Knowledge-based Economy (Knowledge Economy)

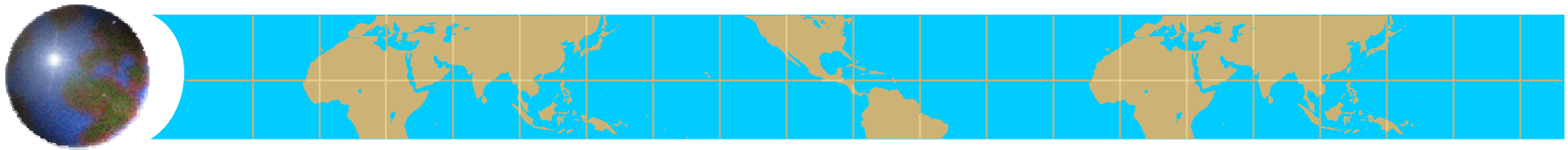
Interpretation

Understanding

Data, information, knowledge, wisdom conceptions

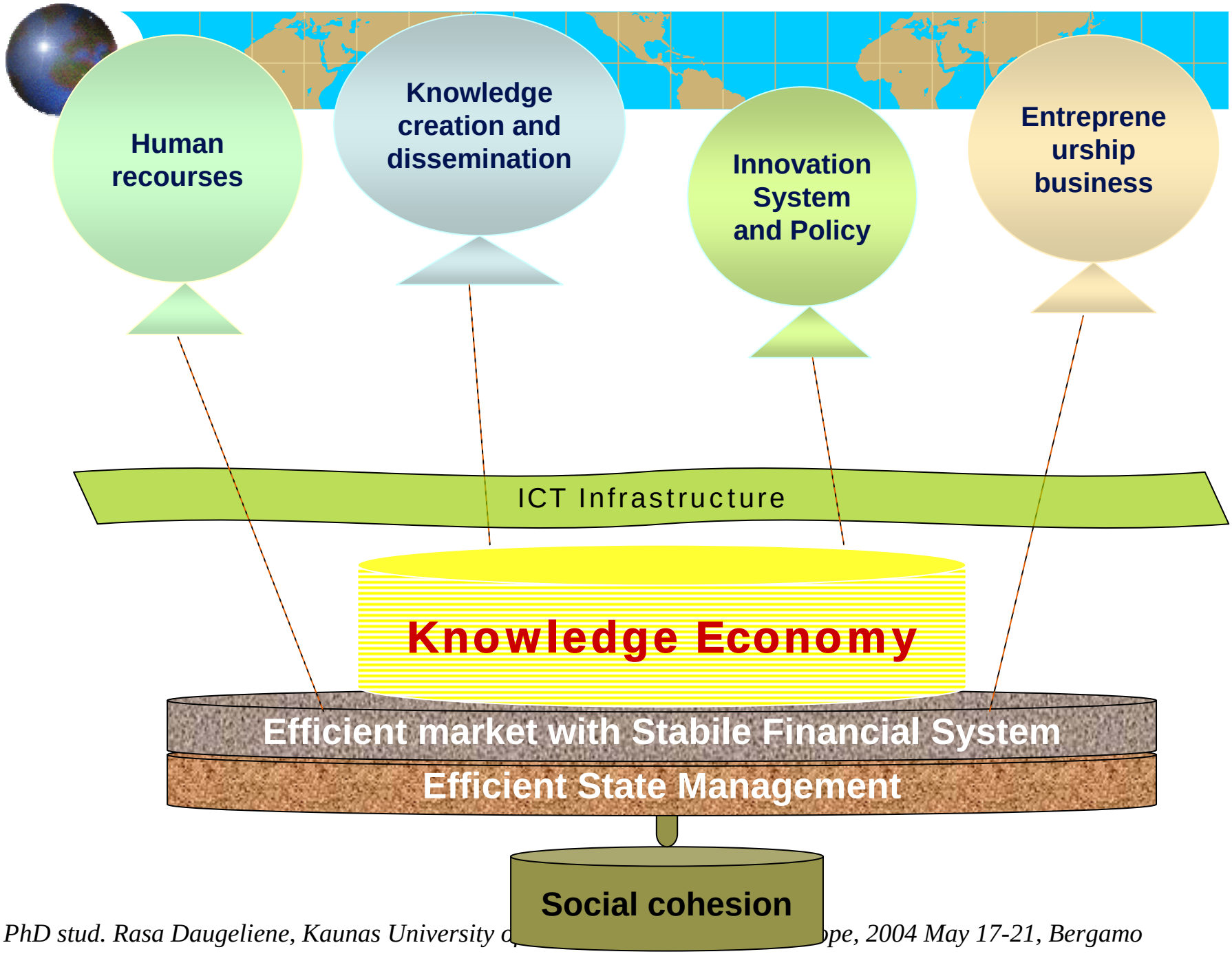
Knowledge-based economy – New economy – Information economy: comparison (2)

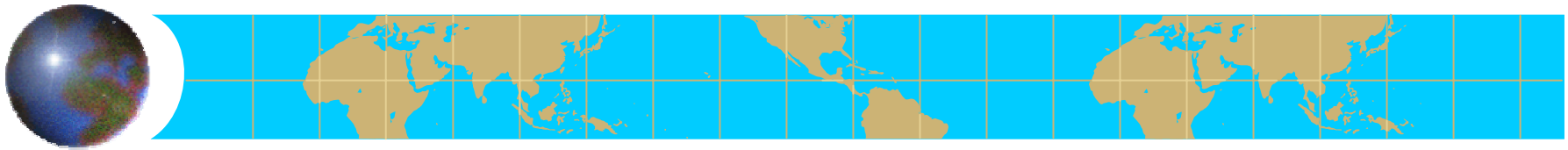




4. The Key Policy recommendations Concerning the Knowledge-based Economy Creation

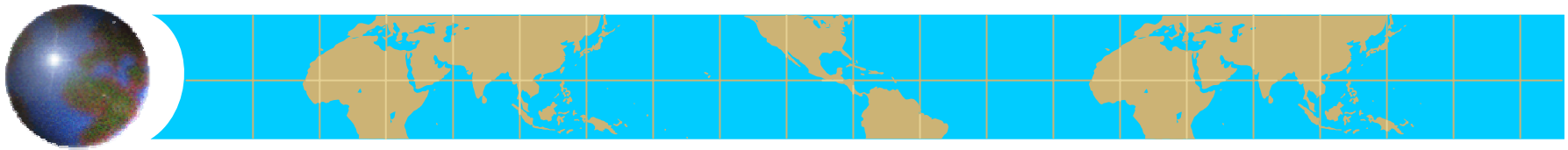
- Strengthen economic and social fundamentals;
- Facilitate the diffusion of ICT;
- Foster innovation*;*
- Invest in human capital*;*
- Stimulate firm creation*.*


Human recourses
Knowledge creation and dissemination
Innovation System and Policy
Entreprene urship business
ICT Infrastructure
Knowledge Economy
Efficient market with Stabile Financial System
Efficient State Management
Social cohesion



5. The Validity of Knowledge-based economy Assessment

- Universal assessment models for measuring knowledge performance for economic growth are missing;
- statistical, mathematical, econometrical models as well as artificial intellect should be used in order to create a “descriptive” framework or model for knowledge-based economy assessment;
- the most important treat of universal knowledge economy assessment model is **time perspective**;
- the knowledge assessment could be defined as the **evaluation of the ability** of an enterprise, an industry, an economic sector, a city, a region, or a nation **to create, access, assimilate, diffuse, and use knowledge;**
- for many indicators that apply to knowledge assessment, there are no accepted international standards that prescribe for a given country or sector whether the present value of the indicator is adequate or too low to achieve its developmental goals.



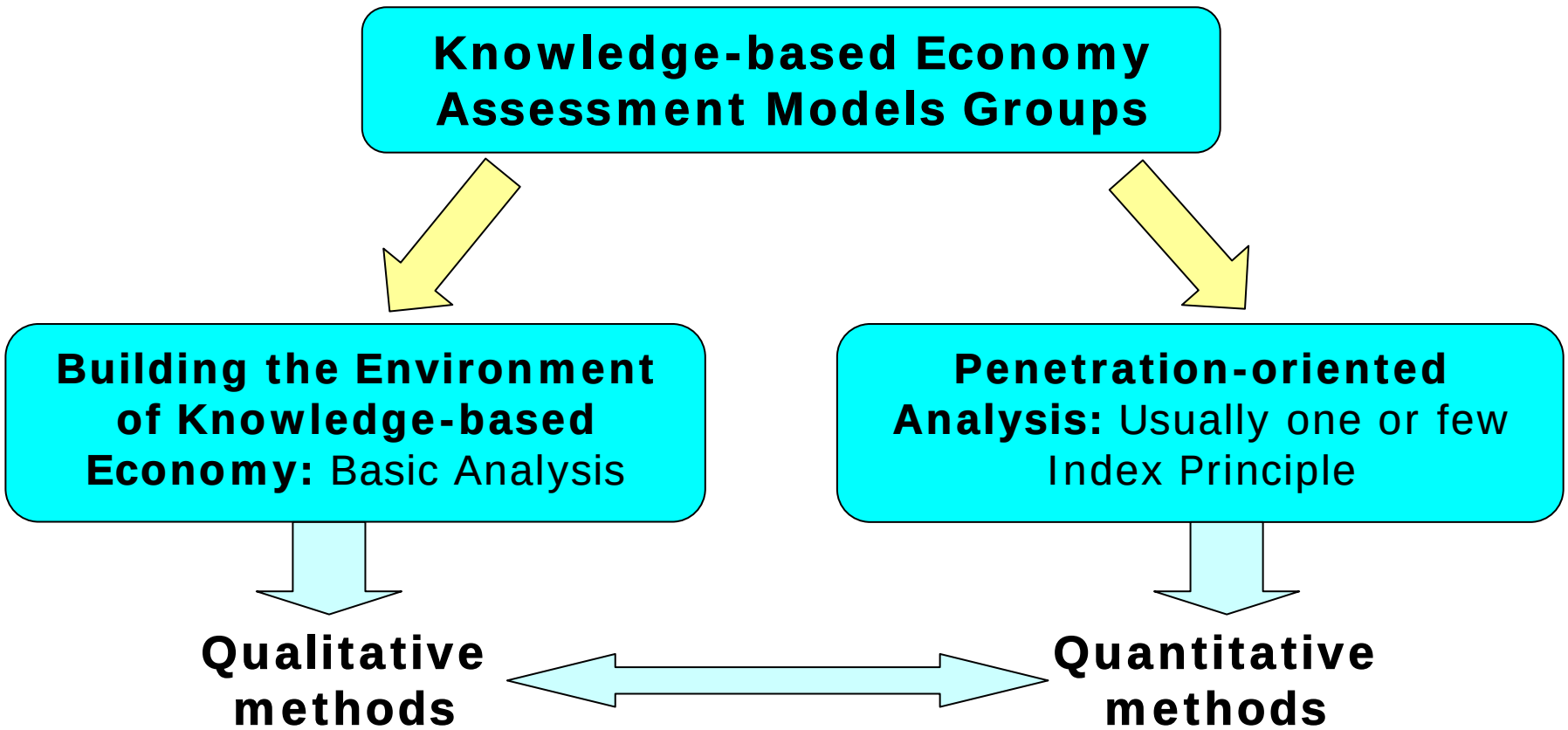
Four principal reasons why knowledge indicators, however carefully constructed, cannot approximate the systematic comprehensiveness of traditional economic indicators:

- there are no stable formulae or “recipes” for translating inputs into knowledge creation into outputs of knowledge;
- inputs into knowledge creation are hard to map because there are no knowledge accounts analogous to the traditional national accounts;
- knowledge lacks a systematic price system that would serve as a basis for aggregating pieces of knowledge that are essentially unique;
- new knowledge creation is not necessarily a net addition to the stock of knowledge, and obsolescence of units of the knowledge stock is not documented.

6. Retrospective of Knowledge-based Economy Assessment History

- **1962 - Fritz Machlup work**
- **1985 - *Science Citation Index*, presented by Small and Gartfield**
- **1994 *- the analysis of legal framework of intellectual property in the state* by Mansfield;**
- **1994 - Professor George Bugliarello and professor Harvey Brooks at a symposium on the topic Marshaling Technology for Development. National Knowledge System;**
- **1996 – OECD model "The Knowledge-based Economy"**
- **1998 - World Bank "Knowledge assessment methodology"**
- **1998 - New Economy Index, (USA, by Robert D. Atkinson and Rick Coduri)**
- **1998 - INEXSK Methodology (Mansell, Wehn)**
- **1999 - Information Society Index (Gifford)**
- **1999 - ABS Knowledge-based Economy Model**
- **1999 - APEC Knowledge-based Economy Model**
- **2000 - Harvard University assessment Model: "Readiness for the Networked World"**
- **2002 - UNECE Model**

7. The main existing Knowledge Economy Assessment Models



Building the Environment of Knowledge-based Economy: Basic Analysis

New Economy Index
- Knowledge Jobs
- Globalization
- Economic Dynamism and Competition
- The Transformation to a Digital Economy
- Technological Innovation Capacity

OECD Model
- Seizing the Benefits of ICT
- Harnessing the Potential of Innovation and Technology Diffusion
- Enhancing Human Capital and Realizing its Potential
- Fostering Firm Creation and Entrepreneurship
- Economic Situation Evaluation

Harvard Model (Readiness for the Networked World)
- Network Access
- Networked Learning
- Networked Society
- Networked Economy

Interactive Internet-based exercise

APEC Model (Framework)
- Innovation System
- Human Resource Development
- ICT Infrastructure
- Business Environment

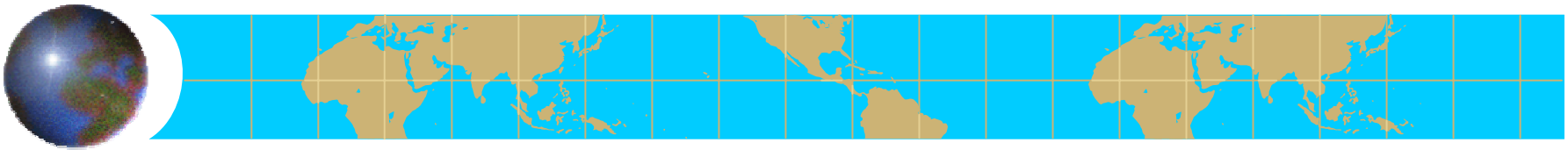
ABS Model (Framework)
- The Context Dimension
- Innovation and Entrepreneurship Dimension
- Human Capital Dimension
- ICT Dimension
- Economic and Social Impacts Dimension

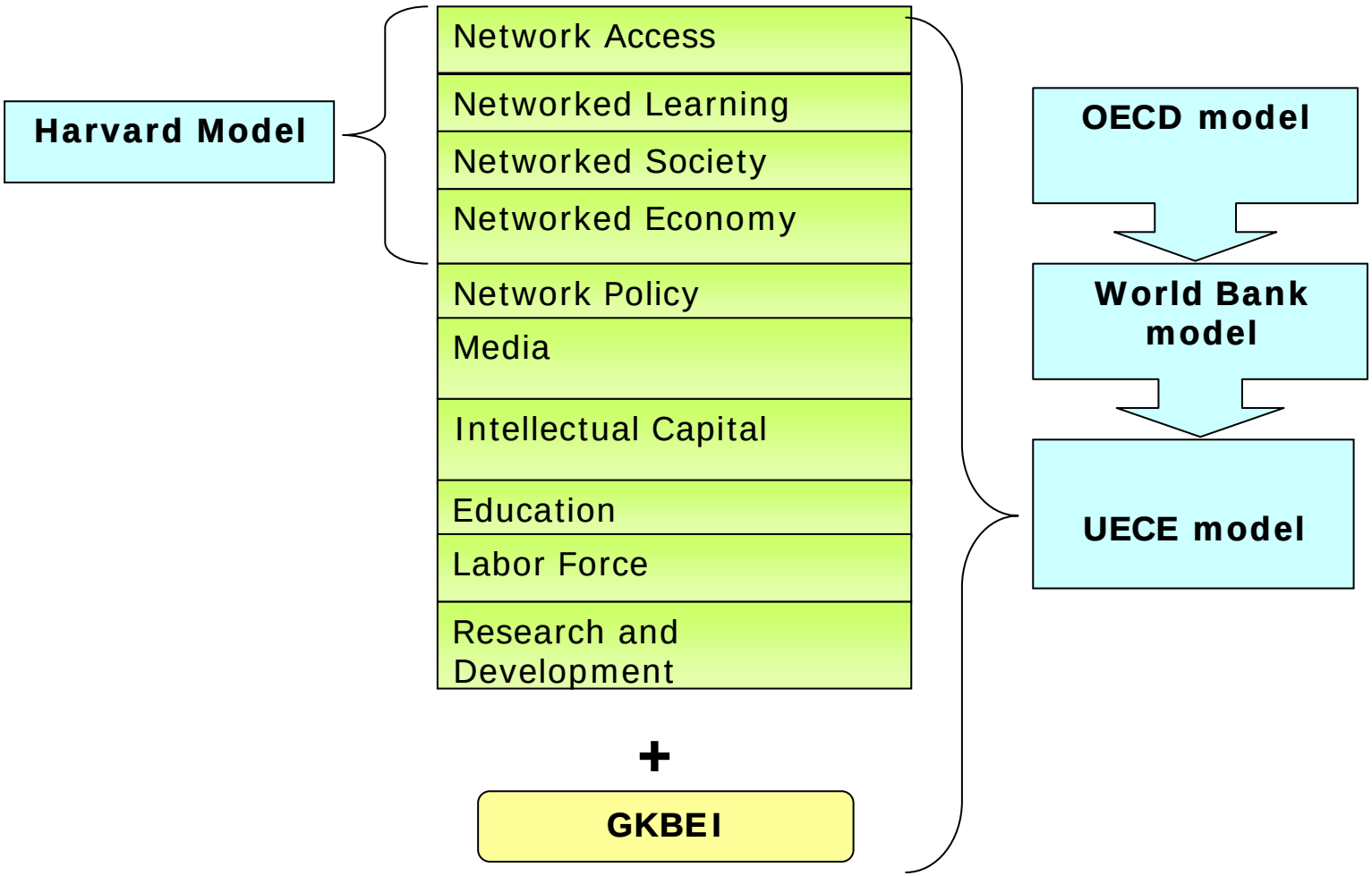
World Bank Model (WB Assessment Methodology)
- Performance Indicators
- Economic Incentive and Institutional Regime
- Education and Human Resources
- Innovation System
- Information Infrastructure

UNECE Model
- Information System
- Innovation System
- Institutional Regime
- Human Resources

Knowledge Assessment Matrix;

Interactive Internet-based exercise

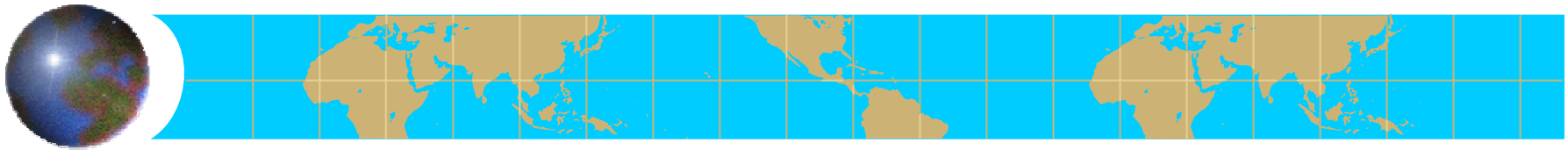



Harvard Model
Network Access
Networked Learning
Networked Society
Networked Economy
Network Policy
Media
Intellectual Capital
Education
Labor Force
Research and Development
+
GKBEI
OECD model
World Bank model
UECE model

Building the environment of Knowledge-based economy: the characteristics of evaluation

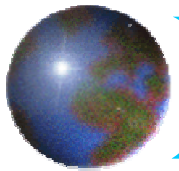
The evaluation of:

- **Context dimension or economic incentive and Institutional regime**
- **Human Capital Dimension**
- **ICT infrastructure**
- **Innovation System**
- **Entrepreneurship dimension**



9. Penetration-oriented Analysis: usually one or few Index Principle

Specific assessment (oriented on subject)	Basic Assessment based on one index (all KBE elements)	Assessment orientated to ICT infrastructure
Growth Competitiveness index (GCI)	**INEXSK Methodology** (Mansell, Wehn, 1998)	**F. Machlup Assessment Methodology** (1962)
Science Citation Index (Small, Garfield, 1985)	**Knowledge Index**	**Information Society Index** (Gifford, 1999)
Regional Economic Architecture (REA)	**Knowledge-based Economy Index** (KDI)	
Human Development Index (HDI)	**Networked Readiness Index** (NRI)	
	Knowledge Assessment Methodology	
	Global Knowledge-based Economy Index (GKEI)	



Knowledge-based Economy Assessment Models Groups

Building the Environment of Knowledge-based Economy: Basic Analysis

Strong Relation

Penetration-oriented Analysis: Usually one or few Index Principle

New Economy Index (1998)

OECD Model (1996)

Harvard Model (2000)

APEC Model (1999)

World Bank Model (1998)

ABS Model (Framework) (1999)

UNECE Model (2002)

- **F. Machlup Assessment Method** (1962)
- **Science Citation Index** (Small, Garfield, 1985)
- **INEXSK Methodology** (Mansell, Wehn, 1998)
- **Information Society Index** (Gifford, 1999)
- **Knowledge Index**
- **Knowledge-based Economy Index** (KDI)
- **Growth Competitiveness index** (GCI)
- **Networked Readiness Index** (NRI)
- **Regional Economic Architecture** (REA)
- **Global Knowledge-based Economy Index** (GKEI)

Knowledge Assessment Methodology

- National Knowledge System
- Virtual case studies of "sentinel enterprises"
- Limited data compilation and interviews with experts and potential actors o stakeholders

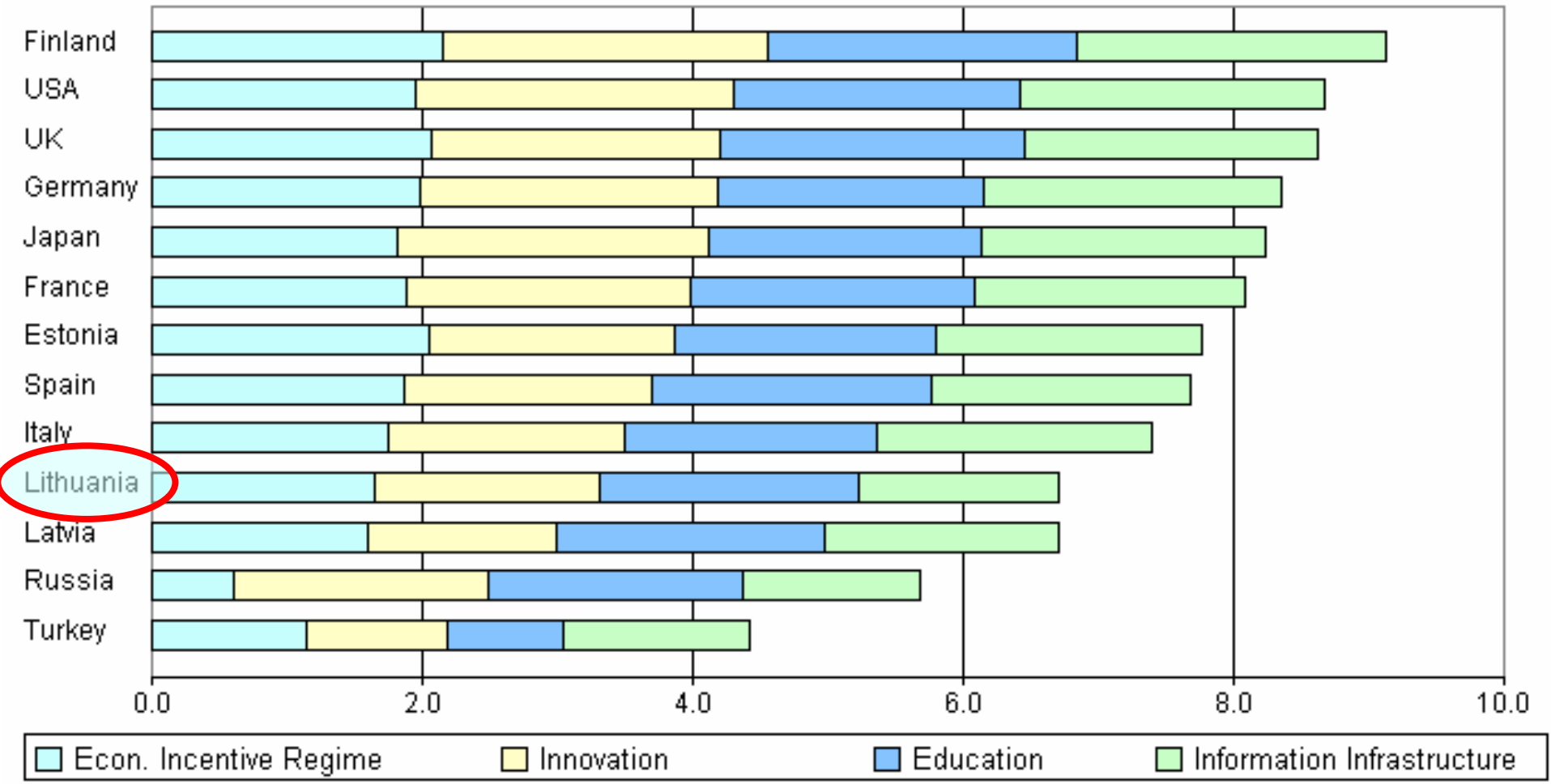
- **Human Development Index** (HDI)

8. Interrelation of two assessment models groups

Building the Environment of Knowledge-based Economy: Basic Analysis	**Penetration-oriented Analysis:** Usually one or few Index Principle
	Knowledge Index
New Economy Index (1998)	**Knowledge-based Economy Index** (KDI)
OECD Model (1996)	**Networked Readiness Index** (NRI)
World Bank Model (1998)	**Knowledge Assessment Methodology**
APEC Model (framework) (1999)	**Global Knowledge-based Economy Index**(GKEI)
ABS Model Framework (1999)	**Regional Economic Architecture** (REA)
UNECE Model (2002)	**Human Development Index** (HDI)
Harvard Model (2000)	**Growth Competitiveness index** (GCI)
	F. Machlup Assessment Methodology (1962)
	Information Society Index (Gifford, 1999)
	Science Citation Index (Small, Garfield, 1985)
	INEXSK Methodology (Mansell, Wehn, 1998)

9. Word Bank Knowledge Assessment Methodology

Knowledge Economy Index



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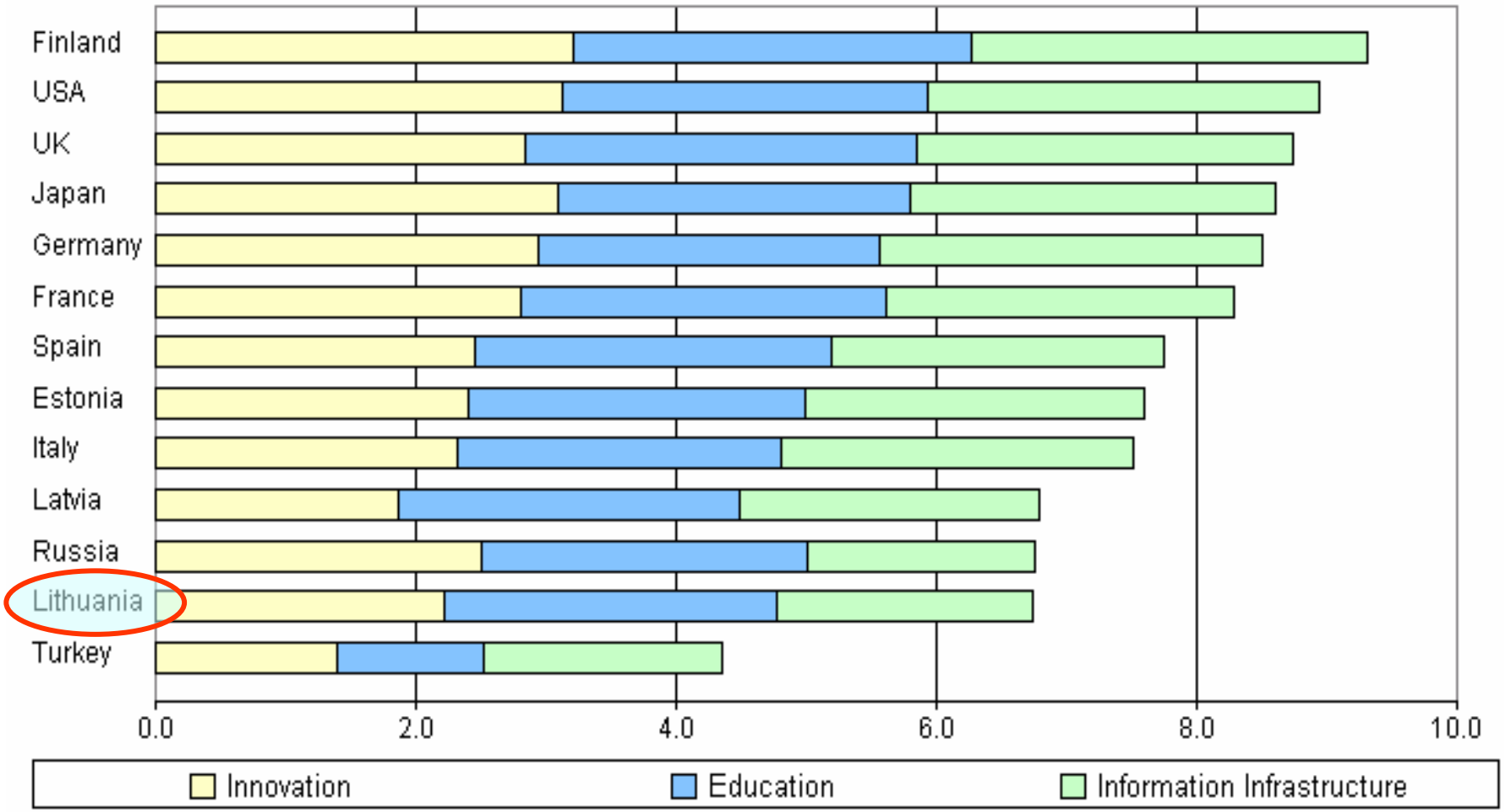
Word Bank Knowledge Assessment Methodology

Knowledge Index



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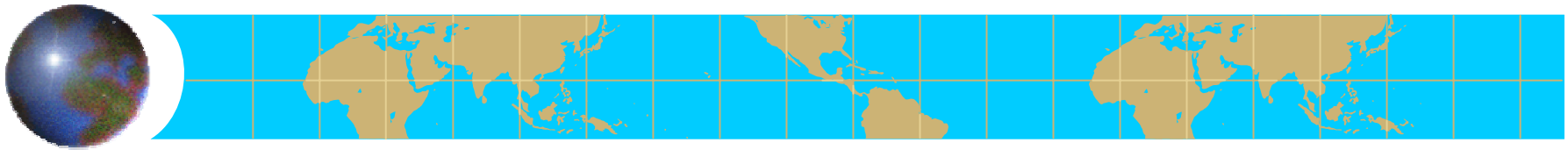
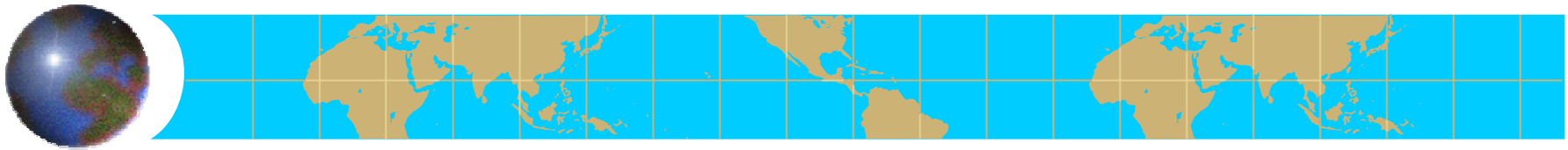


Networked Readiness Index Framework

Country	Score
USA	5.5
Finland	5.23
Germany	4.85
Japan	4.8
UK	4.68
France	4.6
Estonia	4.25
Spain	4.01
Italy	4.07
Latvia	3.74
Lithuania	3.63
Turkey	3.32
Russia	3.19



Recommendations for the Unique KBE Assessment Model Creation

- model should be **systematically unique**…
- embrace the **quantitative** well as **qualitative** analysis methods;
- statistical, mathematical and econometrical models as well as artificial intellect should be used;
- the most important treat of universal knowledge economy assessment model is **time perspective**;
- **combination of models** which evaluates the basic environment of KBE as well as penetration-oriented models usually called as indexes;
- the basic assessment is suitable more for the certain country KBE evaluation as well as one index principle allows to compare different countries.
- the single index should be based on basic KBE elements as well, but the coefficients system should be implemented in calculating total unique index.

Thank You for attention
and patience!