KEI

Quality Aspects of Knowledge Economy Indicators

Nicole Thees

University of Trier

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An advanced quality understanding

- globalisation

  → stable and reliable results

  → comparability, timeliness, accuracy

    - benchmarking

    - performance

- appropriate use

- users burden reduction

- shrinking budget

> **extension of the definition and necessity of measurement**

> **quadrature of the circle**

Quality areas

- suppliers side

  → interrelated process of statistic recovery

  → Total Quality Management

    - continuously monitoring and improvement

    - Leadership Group on Quality

- user side

  → quality reporting for the adequate use of statistical results

➤ **necessity of a common language**

Quality efforts in the ESS

- Leadership Group on Quality in statistics

  → common set of values

  → quality declaration

  → quality reports

- Working Group on the Assessment of Quality in statistics

  → technical aspects of quality implementation

  → results

    - quality definition and harmonization

    - standardisation of quality reports

    - glossary and methodology of quality

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Quality framework (I)

- quality declaration of the ESS

  → *"… provide the European Union and the world with high quality information on the economy and society at the European, national and regional levels and make the information available to everyone for decision-making purposes, research and debate …"*

  → improve a program of harmonised European statistics

  → principals (among other)

    - user focus

    - accessibility of information

Quality framework (II)

- harmonisation of the quality definition into s*ix [seven]* dimensions by *three* aspects

  → institutional and organisational arrangements

    - relevance

  → core statistical process

    - accuracy + accessibility and clarity

  → statistical product

    - timeliness and punctuality + comparability + coherence + completeness

Quality framework (III)

DQAF (incl. elements)

Eurostat

0 Prerequisites
- 0.1 Legal environment
- 0.2 Resources
- 0.3 Relevance
- 0.4 Other quality management

1.Assurance of integrity
- 1.1 Professionalism
- 1.2 Ethical standards
- 1.3 Transparence

2.Methodological soundness
- 2.1 Concepts and definitions
- 2.2 Scope
- 2.3 Classificatin/Sectorization
- 2.4 Recording basis

3. Accuracy and reliability
- 3.1 Source data
- 3.2 Assessment of source data
- 3.3 Statistical techniques
- 3.4 Assessment and validation of intermediate data and statistical outputs
- 3.5 Revision studies

4. Serviceability
- 4.1 Periodicity and timeliness
- 4.2 Consistency
- 4.3 Revision policy and practice

5. Accessibility
- 5.1 Data Accessibility
- 5.2 Metadata accessibility
- 5.3 Assistance to users

Institutional and organizational arrangements
- Relevance

Core statistical processes
- Comparability across countries
- Accuracy

Statistical products
- Timeliness and punctuality
- Coherence
- Accessibility and clarity

Laliberté, Grünewald, Probst (2003)
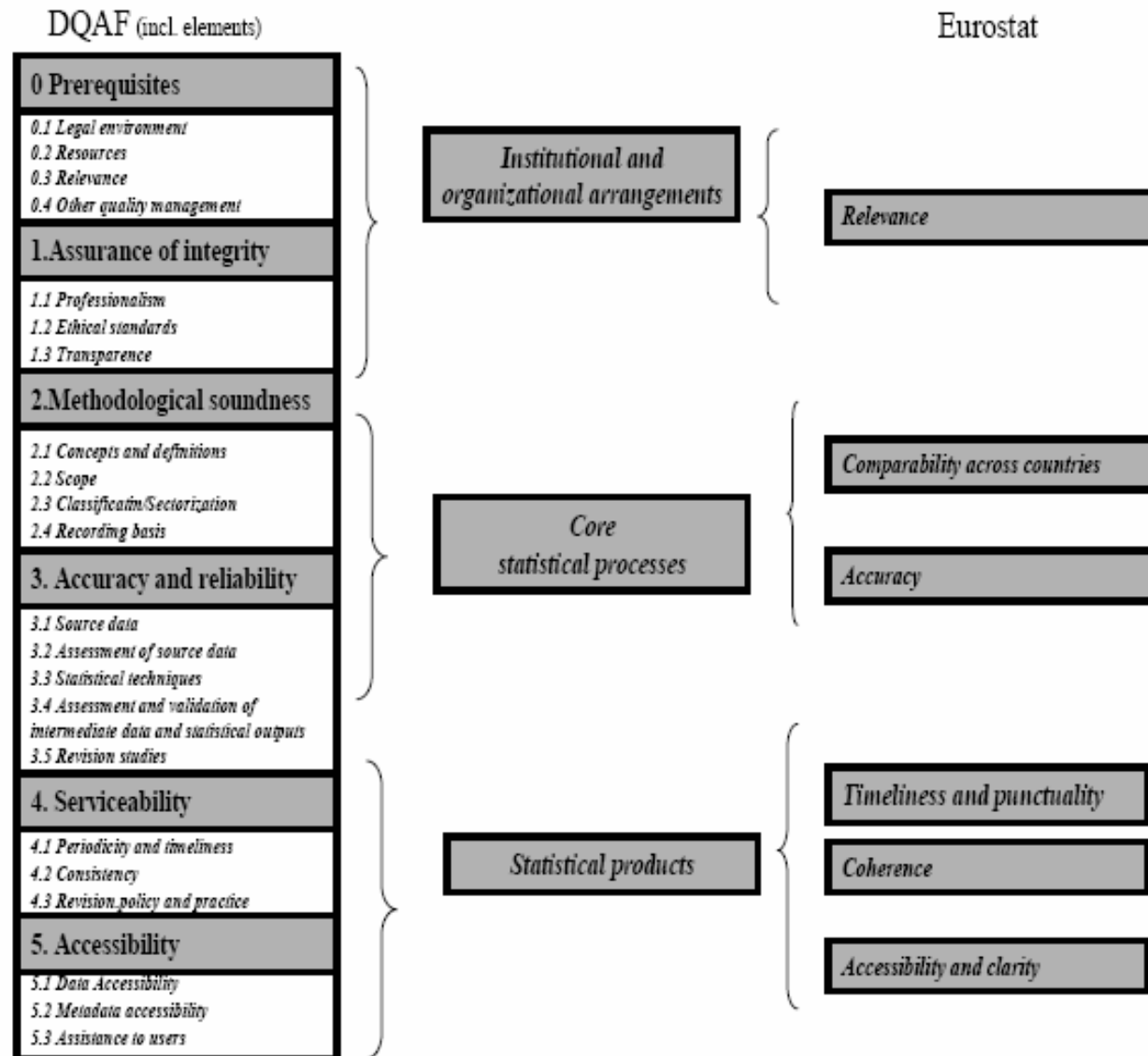
Quality framework (IV)

- Eurostat - Code of Practice

  → commitment to high quality statistics

    - build upon the ESS quality declaration

    - institutional implementation of user and supplier aspects

    - general framework for measuring quality

  → target

    - institutional environment

    - the statistical production processes

    - statistical output

Quality framework (V)

- Eurostat - Code of Practice
  → 15 key principles

1: Professional Independence

2: Mandate for Data Collection

2: Mandate for Data Collection

4: Quality Commitment -

5: Statistical Confidentiality

6: Impartiality and Objectivity

7: Sound Methodology

8: Appropriate Statistical Procedures

9: Non-Excessive Burden on Respondents

10: Cost Effectiveness

11: Relevance

12: Accuracy and Reliability

13: Timeliness and Punctuality

14: Coherence and Comparability

15: Accessibility and Clarity

Quality implementation - Quality reporting (I)

- *"The standard quality report aims at covering general topics for the assessment of the quality."*

  → normally produced for internal use

  → internal performance measurement

- quality profiles

  → detailed description of an indicator considering ideally all quality dimensions

Quality implementation - Quality reporting (II)

2. Accuracy

2.1 Sampling errors

   2.1.1 Probability sampling

   Standard error of total and growth rates

   2.1.2 Non probability sampling

   Estimates of the effects

   or

   The yearly coverage rate,

   An accuracy indicator,

   The methods used to obtain these indicators

2.2 Non sampling errors

   2.2.1 Coverage errors

   The effects of under coverage, over coverage, and misclassification on the main characteristics.

   The yearly rate of under coverage, over coverage, and misclassification broken-down according to the main characteristics of the population

   The methods used to obtain these figures.

   Methodological notes on the processing of misclassifications.

   2.2.2 Measurement errors

   The variance and bias due to the reporting unit, questionnaire design, interviewer, model used to correct measurement errors.
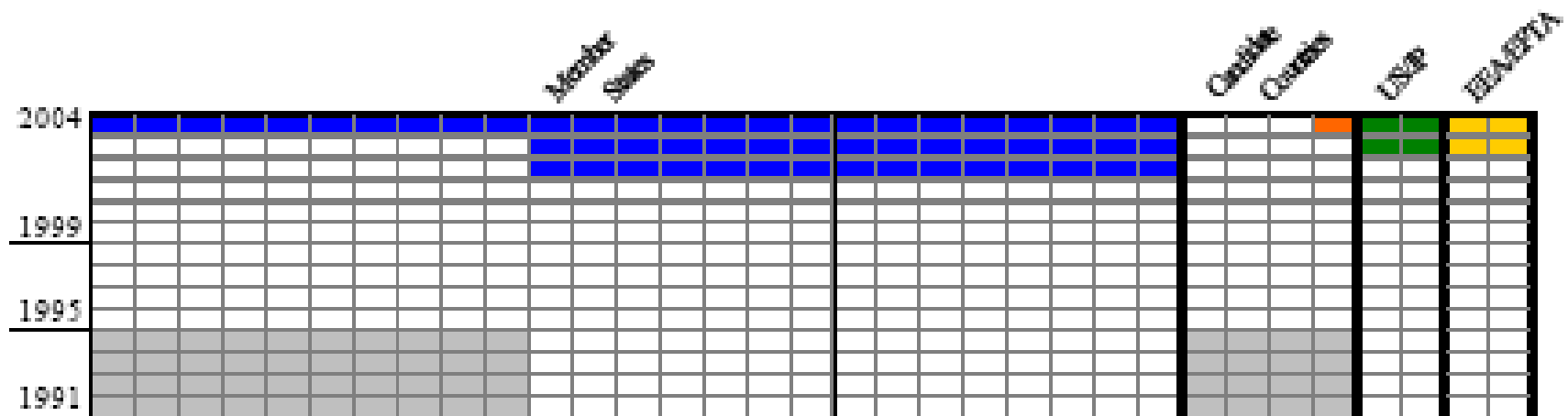
   or

   Specific studies done by Member States on these errors;

   Methods used to reduce this kind of error;

Quality implementation - Quality reporting (III)

2a. Data availability: overview

In general, data availability prior to 1995 cannot be expected for the new Member States and Candidate Countries

Quality implementation - Quality reporting (IV)

2b. Data availability: details

(t_1: earliest reference year available; t_2: latest reference year avail. in Dec. 2004)

	Member States	Candidate Countries	US and Japan	EEA-EFTA[1]
t_1	2002– EU-15	-	2003	2003
t_2	2004 - EU-25	2004 – TR	2004	2004

Comments (including information on time series): As broadband is a very recent phenomenon, it is *de facto* impossible to produce longer time series.

Quality implementation - Quality reporting (V)

3. Overall assessment of accuracy and comparability

☒ A   ☐ B   ☐ C   ☐ Indicator to be developed

short summary explanation : Reliable indicator based on administrative data.

4. Overall accuracy

High   ☒   Broadband lines are defined as those with a capacity equal to or higher than 144 Kbit/s. The data on the number of broadband connection/population is collected by the National Regulatory Authorities (through COCOM – Committee on Telecommunication) by means of a specific questionnaire as a part of monitoring market and competition. The accuracy of the data can be considered high as the whole market is being covered.

Restricted   ☐
(sources, errors,
methodology etc.)

Quality implementation - Quality reporting (VI)

5. Comparability across countries

High	☒	The National Regulatory Authorities (NRA) use common concepts that ensure the comparability. Six new Member States (HU, PL, CZ, EE, LV and LT) collect data from telecoms and other sources but use the same definitions as COCOM that ensures the comparability with the data from the NRA.
Restricted	☐	

6. Comparability over time

High	☒	Comparability over time is ensured by the use of the same definition and the same questionnaire over time.
Restricted	☐	

Quality implementation - Quality reporting (VII)

- quality profiles

  → primary user

    - managers of the statistical agency

    - users inside the producing agency

    - users of the statistics outside the producing agency

  → existence: for 35 structural indicators and
    huge number of Euro-Indicators

Quality implementation - Quality reporting (VIII)

- quality metadata

  → origin: Special Data Dissemination Standard (SDDS)

    - comprehensive view of the dissemination of economic and financial data

    - four dimensions

      - the data: coverage, periodicity, timeliness
      - access by the public
      - integrity of the disseminated data
      - quality of the disseminated data

Quality implementation - Quality reporting (IX)

Base Page (SDDS)

General information
Geographic area
Statistical domain
Contact information

Dissemination formats
(news releases, publications, on-line, databases, CD-Rom,…)

Data
Data description
Time coverage
Periodicity
Timeliness

Access
Dissemination of release calendar
Release procedures

Integrity (practices and procedures)
Rules on compilation and confidentiality
Access to data before release
Commentaries on the occasion of data release
Revision and changes in methodologies

Quality
References to detailed methodology and sources
Related data bases and information
Quality framework and quality reports

Summary Methodology

Concepts, definitions and classifications
Statistical concept
Definition of indicators
Classification system used

Scope/coverage of the data
Geographical coverage
Statistical units
Statistical population

Accounting conventions
Reference period
Base period
Recording of transactions

Nature of the basic data
Data sources used
Type of survey
Techniques of data collection

Compilation practices
Compilation of European aggregates
Adjustments
Data validation
Revision policy

Other aspects
Special warnings

Quality implementation - Quality reporting (X)

- general survey information

    → Continuing Vocational Training Survey (2000)

    → European Community Household Panel (1999)

    → EU-SILC Commission Regulation (2004)

    → transition between ECHP and EU-SILC (2005)

    → Labour Costs Statistics - Commission Regulation (2000)

    → …

Quality implementation - Quality reporting (XI)

- quality measure

Relevance	R1. User satisfaction index
	R2. Rate of available statistics
Accuracy	A1. Coefficient of variation
	A2. Unit response rate (un-weighted/weighted)
	A3. Item response rate (un-weighted/weighted)
	A4. Imputation rate and ratio
	A5. Over-coverage and misclassification rates
	A6. Geographical under-coverage ratio
	A7. Average size of revisions
Timeliness and Punctuality	T1. Punctuality of time schedule of effective publication
	T2. Time lag between the end of reference period and the date of first results
	T3. Time lag between the end of reference period and the date of the final results
Accessibility and Clarity	AC1. Number of publications disseminated and/ or sold
	AC2. Number of accesses to databases
	AC3. Rate of completeness of metadata information for released statistics.
Comparability	C1. Length of comparable time-series
	C2. Number of comparable time-series
	C3. Rate of differences in concepts and measurement from European norms
	C4. Asymmetries for statistics mirror flows
Coherence	CH1. Rate of statistics that satisfies the requirements for the main secondary use

Quality implementation - Quality reporting (XII)

- quality measurement

  → actually: dimension and sub dimension set with quantitative and qualitative components

  → no general quality measure

  → assessment of adherence the criteria

> ➤ **rate of availability of metadata information**

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Quality Reporting of KEI (I)

- quality profiles: 19 out of 35

General Economic Background
  GDP per capita in PPS - **A**
  Real GDP growth rate - **A**
  Labour productivity per hour worked - **A**

Employment
  Employment rate - **A**
  Employment rate of older workers - **A**
  Serious accidents at work - **B**, c.o.c.

Environment
  Greenhouse gas emissions - **A**
  Share of renewable energy - **A**

Innovation and Research
  Gross domestic expenditure on R&D - **A**
  Youth education attainment level - **B**, c.o.t.
  E-gov on-line availability - **A**
  E-gov usage by individuals - **B**, c.o.t.
  E-gov usage by enterprises - **B**, c.o.t.
  Broadband penetration rate - **A**
  High-tech exports - **A**
  Gross domestic expenditure on R&D by source of funds - **A**

Social Cohesion
  At risk of poverty before social transfers - **C**, c.o.t. & c.o.c.
  Long term unemployment rate - **B**, c.o.c.

c.o.c. – comparability over countries; c.o.t. – comparability over time

I   General Quality Aspects
II Quality Framework and Reporting
III Quality of Knowledge Economy Indicators

Quality Reporting of KEI (II)

- metadata: 120 out of 145

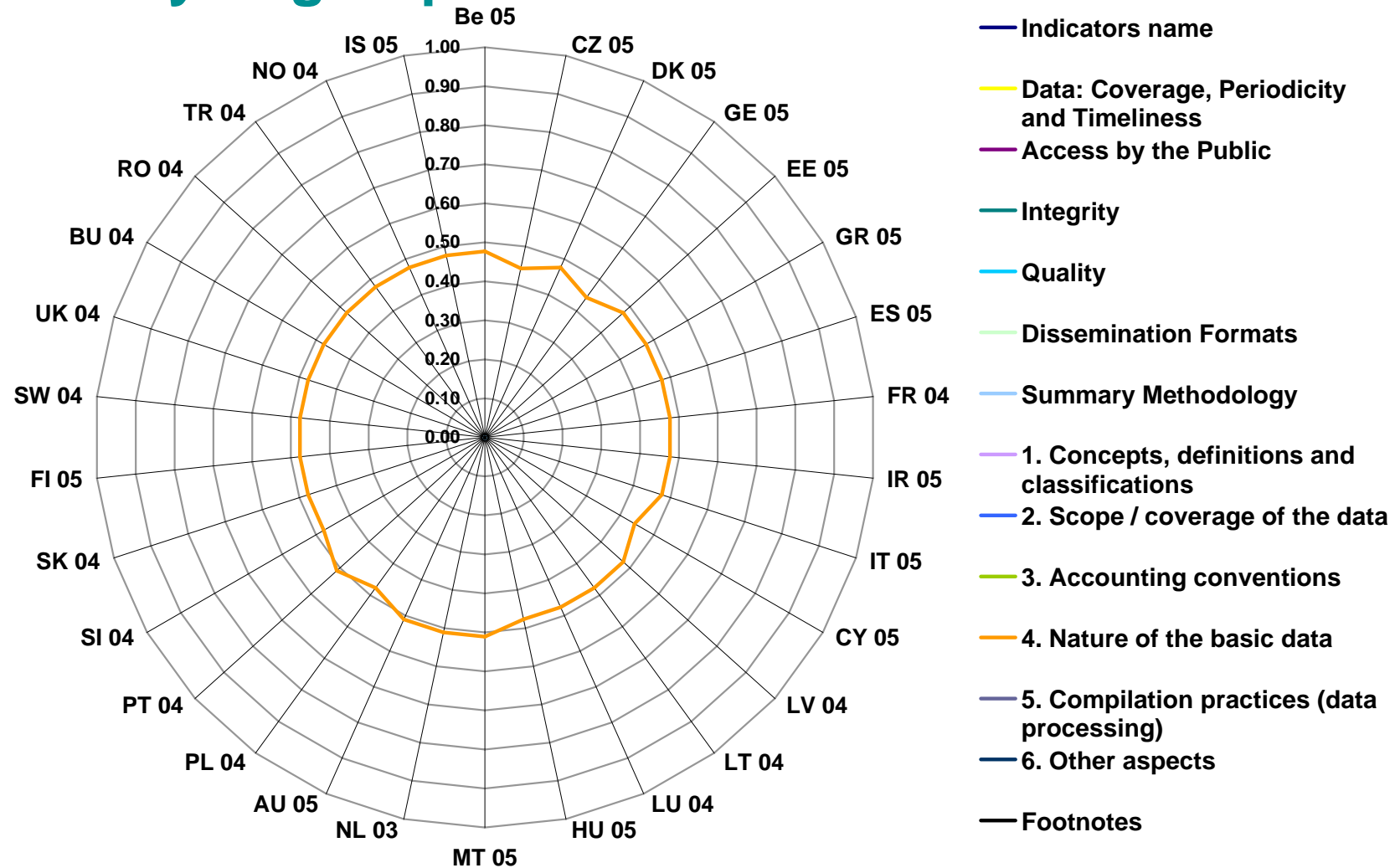| group	No. of indicators			No. of *green* indicators		
	proposed	*investigated*	*metadata*	*proposed*	*investigated*	*metadata*
A1	20	16	18	8	7	7
A2	20	18	18	8	8	8
A3	26	23	18	17	17	17
A4	20	13	12	11	8	7
B1	7	7	7	6	6	6
B2	21	21	21	4	4	4
C1	8	8	8	/	/	/
C2	5	3	2	/	/	/
C3	22	16	16	7	4	7

Quality Reporting of KEI (III)

- measurement

    → rate of availability - quality scores

        - metadata mapping against quality dimensions

Quality definitions main level	sub dimensions first level	corresponding SDDS Metadata
Relevance	Reference of specific documents where the description of more comprehensive needs could be found, if any	Dissemination of component detail, reconciliations with related data, and statistical frameworks that support cross-checks and provide assurance of reasonableness

    → assumption

        - each kind of information is valuable for the user
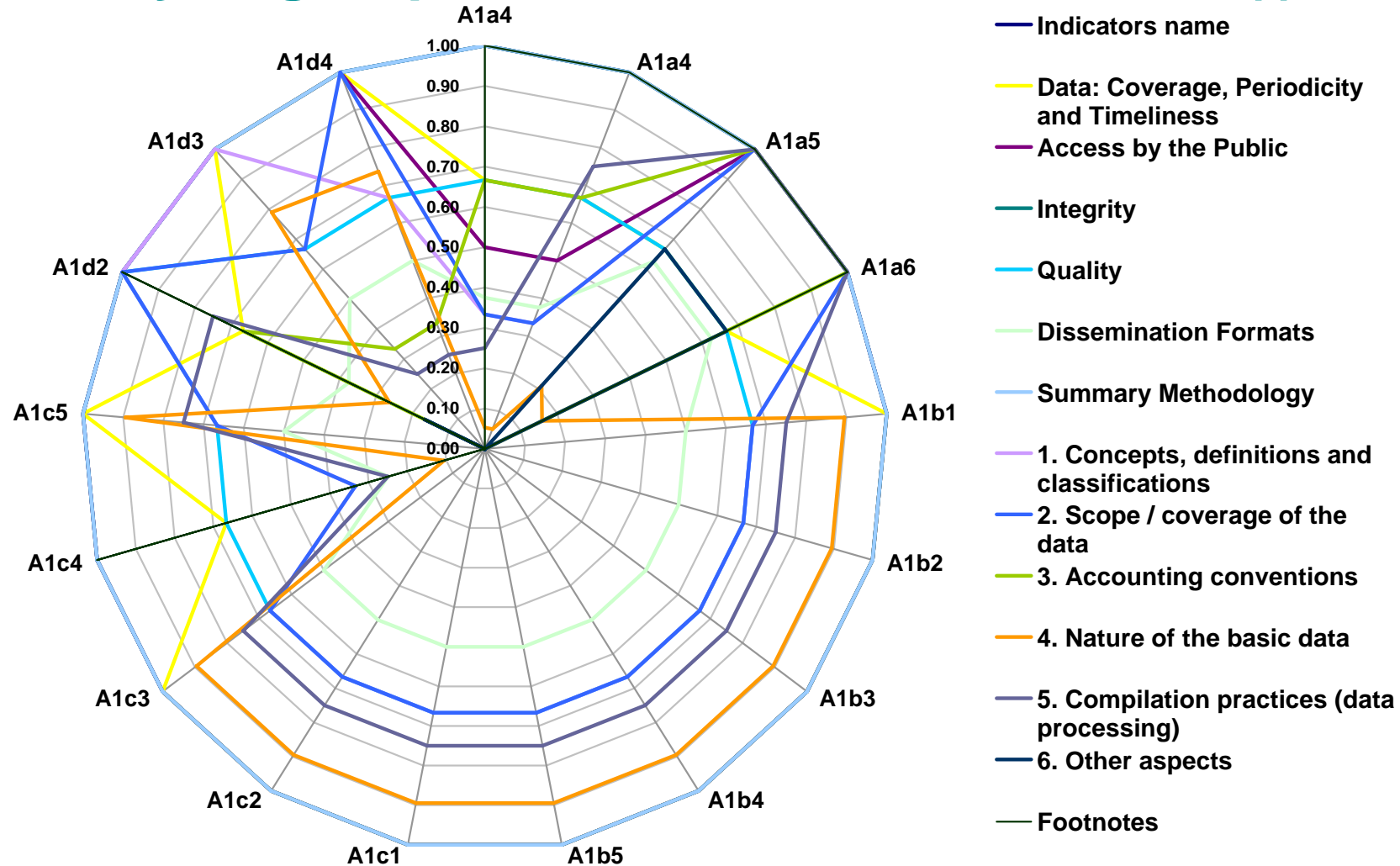
        - the use of a quality information is neglected

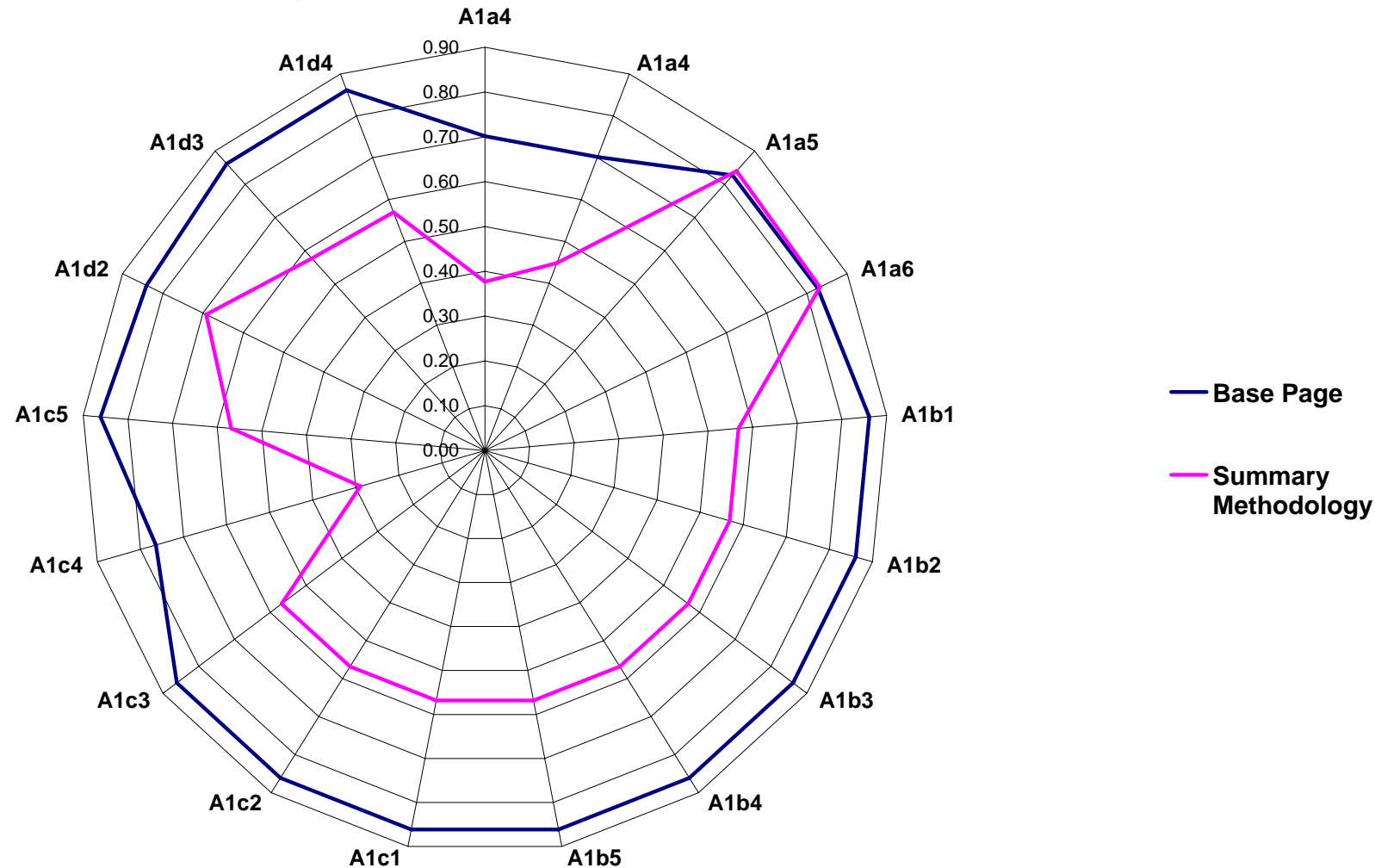# Quality of group A-indicators over EU-25
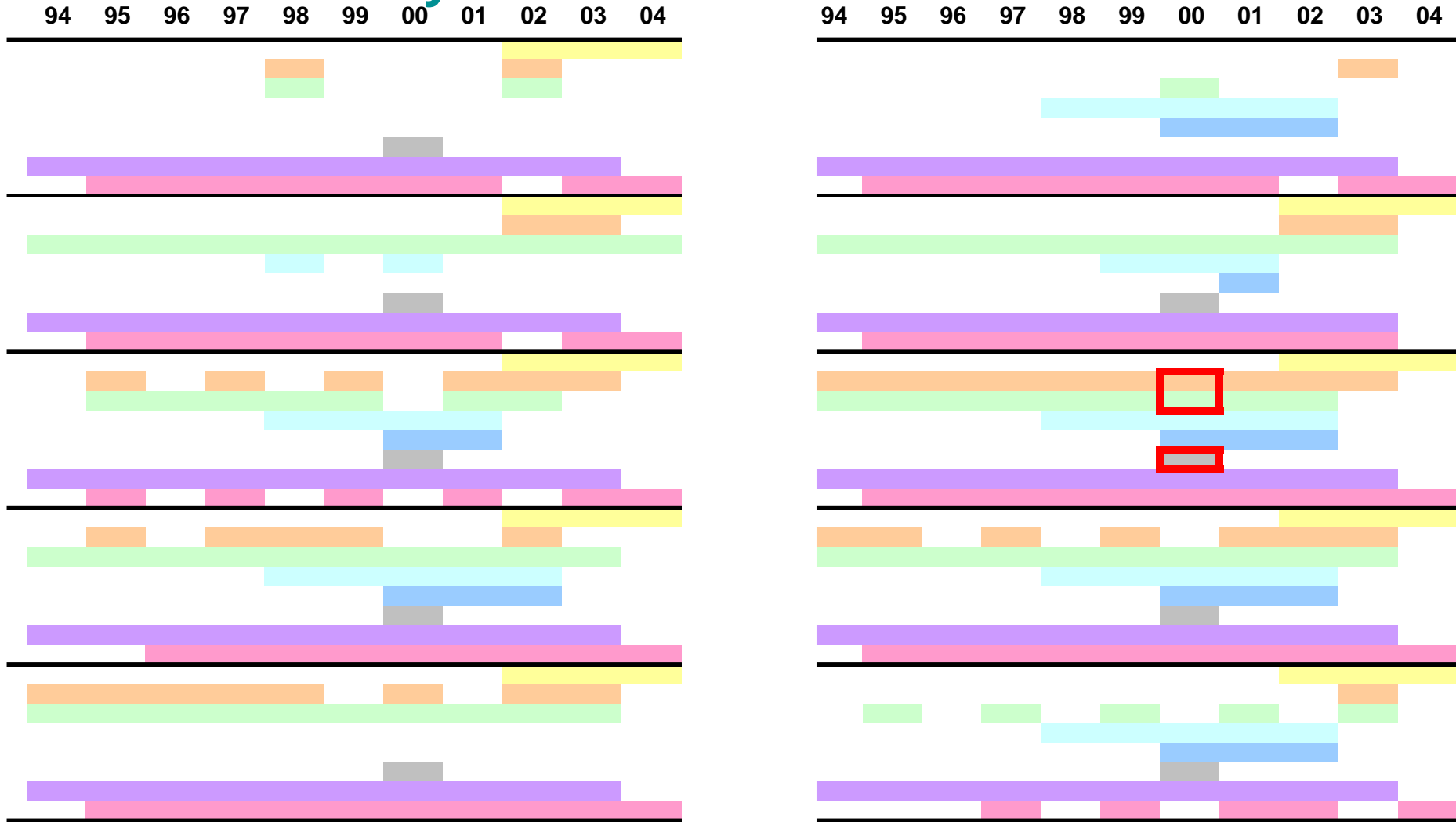
Quality of group A-indicators on EU-25 level (I)

Legend:
- Indicators name
- Data: Coverage, Periodicity and Timeliness
- Access by the Public
- Integrity
- Quality
- Dissemination Formats
- Summary Methodology
- 1. Concepts, definitions and classifications
- 2. Scope / coverage of the data
- 3. Accounting conventions
- 4. Nature of the basic data
- 5. Compilation practices (data processing)
- 6. Other aspects
- Footnotes

Quality of group A-indicators on EU-25 level (II)

Base Page

Summary Methodology

I   General Quality Aspects
II   Quality Framework and Reporting
III   Quality of Knowledge Economy Indicators

Data availability

Conclusion

- quality profiles

- for all indicators

- with quantative information

- published for the user

  → integration in the metadata