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**ITU Data Quality Assurance Framework**

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- **Underlying statistical principles**
  - From UN standard
- **Quality dimensions**
  - Illustrated by examples from current ITU quality assessment

## Context

- **Statistics within ITU**
  - Production of statistics is a (very important) by-product of ITU's main function
  - Statistical activities are primarily undertaken within ICT Data and Statistics Division (IDS)
- **Problems and Challenges**
  - Keeping up with ever changing data demands due to the fast evolution of ICT sector
  - Erosion of ITU's status as the primary and most authoritative source of ICT statistics
  - Non-responses by data providers
  - Inadequate data processing tools
  - Shortage of resources for statistical work

## Role and Benefits of ITU Data Quality Assurance Framework (DQAF)

- Systematic mechanism for ongoing identification of quality problems and possible actions for their resolution
- Basis for promoting a data quality culture within ITU
- Greater transparency to processes by which statistics produced and their quality assured
- Reinforces ITU's image as trustworthy provider of good quality statistics
- Reference material for training
- Framework for exchange of ideas on quality assurance with other producers and users of statistics

## Components of the DQAF

1. Underlying statistical principles
  - Principles Governing International Statistical Activities
2. Dimensions of quality
  - Highlighting the various aspects of data and process quality
3. Quality guidelines
  - Set of good practices for assuring quality
4. Quality assessment programme
  - Procedures for ensuring quality regularly assessed and quality improvement actions implemented.

## DQAF Component 1: Underlying Statistical Principles

1. High quality international statistics, accessible for all, are a fundamental element of global information systems
2. To maintain trust in international statistics, their production is impartial and strictly based on the highest professional standards
3. The public has a right to be informed about the mandates for the statistical work of the organisations

## **DQAF Component 1 (continued): Underlying Statistical Principles**

4. Concepts, definitions, classifications, sources and methods meet professional scientific standards and are made transparent for the users
5. Sources and methods for data collection are chosen to ensure timeliness and other aspects of quality, to be cost-efficient, and to minimise reporting burden for data providers
6. Individual data about natural persons or legal entities or small aggregates subject to national confidentiality rules, are kept strictly confidential and are used exclusively for statistical purposes or for purposes mandated by legislation

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## **DQAF Component 1 (concluded): Underlying Statistical Principles**

7. Erroneous interpretation and misuse of statistics are immediately appropriately addressed
8. Standards for national and international statistics are developed on the basis of sound professional criteria, while also meeting the test of practical utility and feasibility
9. Coordination of international statistical programmes is essential to strengthen the quality, coherence and governance of international statistics, and avoid duplication of work
10. Bilateral and multilateral cooperation in statistics contribute to professional growth of statisticians and to improvement of statistics in international organizations and countries

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## DQAF Component 2: Dimensions of Quality

### Data Quality

1. Relevance
2. Accuracy
3. Credibility
4. Coherence
5. Timeliness and Punctuality
6. Accessibility
7. Interpretability

### Process Quality

8. Sound Methods and Systems
9. Cost-efficiency

## 1. Relevance

The degree to which the data serve to address the purposes for which they are sought by users

### Remark from ITU Quality Assessment

- Expert Groups and ITU pay great attention to the choice of ICT indicators collected and disseminated
  - Consideration is given to the utility of each indicator and to the corresponding response rate
  - Indicators with little power in discriminating well developed systems from poorly developed systems, or based on poor response rates, are eliminated

## **1. Relevance**

The degree to which the data serve to address the purposes for which they are sought by users

### **Recommendation from ITU Quality Assessment**

- Undertake a review of current statistical products along the following lines:
  - Record and analyse requests received for indicators or datasets that cannot currently be satisfied by statistics produced by ITU;
  - Conduct an analysis of users, and potential users, of ICT statistics, and of the uses they make, or could make, of the statistics;
  - Conduct another satisfaction survey of those users that purchase access to the WTI Database.

## **2. Accuracy**

The degree to which the data correctly estimate or describe the quantities or characteristics they are designed to measure

### **Remark from ITU Quality Assessment**

- The most probable sources of error are operator and household response errors and NRA and NSO data collection and processing errors.
- ITU processing errors may occur but are much less likely.
  - Thus, there are only limited improvements that ITU can make to accuracy by improving its own processing operations.
  - The biggest improvements in accuracy are likely to come from better primary data collection.

## **2. Accuracy**

The degree to which the data correctly estimate or describe the quantities or characteristics they are designed to measure

### **Recommendation from ITU Quality Assessment**

- As the basis for decisions where to target improvements in accuracy and where to invest training resources:
  - Conduct and analyse the types, incidence and impact of errors that occur; and
  - Classify data providers according to their capacity and willingness to collect and report the required data, and the likely accuracy of these data.

## **3. Credibility**

The confidence that users place in the data based primarily on their image of the data producer and the product, i.e., the brand image

### **Remark from ITU Quality Assessment**

- The ITU's credibility gives it a comparative advantage over other sources of ICT statistics
- It depends on the fact that:
  - it is a UN agency, with the reputation for even handedness and professionalism that brings; and
  - it has access to official government ICT statistics in member countries

### **3. Credibility**

The confidence that users place in the data based primarily on their image of the data producer and the product, i.e., the brand image

#### **Recommendation from ITU Quality Assessment**

- Publicise ITU's professional approach to collection, harmonisation, editing and dissemination
  - Refer to the occasional concerns countries express about adjusted values
  - Emphasise that the ITU has the authority to make the final decision.

### **4. Coherence:**

The degree to which data products are logically connected and mutually consistent with other data products (includes comparability across countries and across time)

#### **Remark from ITU Quality Assessment**

- Harmonisation of the data received by ITU is the key to coherence of data across countries and is a major source of value added by the ITU. It is competently done.

#### **Recommendation from ITU Quality Assessment**

- As NSOs are, in principle, responsible for coordination of all statistical activities, ITU should suggest that NRAs inform the NSO in their country about data provided in response to ITU questionnaires.

## **5. Timeliness and Punctuality:**

The length of time between availability of data and the event or phenomenon they describe; and the existence of and adherence to a data dissemination schedule

### **Remark from ITU Quality Assessment**

- Timeliness of supply and demand side data is largely determined by data availability from the primary providers (operators and households).

### **Recommendation from ITU Quality Assessment**

- Based on a review of data availability from primary providers, and assessment of time required for NRA, NSO and ITU processing, and ITU resource implications, consider whether the current schedule can be advanced.

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## **6. Accessibility**

How readily the data can be discovered, located and accessed from within ITU data holdings

### **Remarks from ITU Quality Assessment**

- ITU gives good exposure to the data it produces. The major publications are attractive and professional in appearance and content.
- ICT-Eye provides instant access to selected indicators for any country.
- The external WTI Database, which contains much more data, is available on CD\_ROM and by download from the website, but access requires a subscription.

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## **6. Accessibility:**

How readily the data can be discovered, located and accessed from within ITU data holdings

### **Recommendation from ITU Quality Assessment**

- Consider free distribution of all data, in particular, making the external WTI Database freely accessible.
  - Establish the magnitude of the consequential revenue loss.
  - Compare with the benefits of having more users.

## **7. Interpretability:**

The ease with which users can understand and properly use the data (sometimes called *clarity*)

### **Remark from ITU Quality Assessment**

- There is sufficient metadata available in the publications and on the website to discover the data and to find the definitions of the indicators.

### **Recommendation from ITU Quality Assessment**

- Develop and publish a *sources and methods* document describing the procedures by which the ITU collects, processes and analyses its statistical outputs, thereby conveying an impression of the likely quality of the data.

## **8. Sound Methods and Systems:**

The use of international standards and best practices for all procedures and systems

### **Remark from ITU Quality Assessment**

- ITU is a world leader in terms of developing standards and methods for collecting ICT supply and demand data.

### **Recommendation from ITU Quality Assessment**

- Extend content of regional training workshops to include provision of additional metadata by NRAs and NSOs
- and completion of quality self-assessment template

## **9. Cost-Efficiency**

Minimizing costs incurred relative to benefits of the products  
(Quality cannot be discussed without consideration of costs)

### **Remark from ITU Quality Assessment**

- Any request for additional resources should be part of a business case that describes
  - the additional activities and outputs that will flow from the resources
  - the benefits that will accrue to ITU.

## **9. Cost-Efficiency**

Minimizing costs incurred relative to benefits of the products  
(Quality cannot be discussed without consideration of costs)

### **Recommendation from ITU Quality Assessment**

- In tandem with review of the evolving needs for ICT statistics and possible revision of statistical products
- formulate and analyse the options for re-engineering the current ITU statistical production process
  - with the aim of making it more effective and efficient.

## **DQAF Implementation**

- DQAF has been formulated
  - Includes statistical principles and quality definitions,
  - broad quality guidelines and draft quality self-assessment template
- Quality assessment programme is commencing
  - External assessment – *the current assessment*
  - Periodic ITU self-assessment
- Raise awareness of need for data quality self-assessment of NSO and NRA statistical processes collecting the ICT data

**Thank you for your attention**

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Statistical Activity Groups (Phases)	Data Quality Dimensions							Process Quality Dimensions	
	Relevance	Accuracy	Credibility	Coherence	Timeliness & Punctuality	Accessibility	Interpretability	Sound Methods & Procedures	Cost Efficiency
Specify needs and manage users	√√√	√	√√	√√	√√	√	√		√
Design stat process and infrastructure	√√	√√√	√√	√√√	√√√	√√	√√		√√√
Build statistical procedures & systems		√√			√	√√			√√
Collect data and manage providers		√√			√√				√√
Process data		√√			√				√√
Analyse data		√	√√	√√	√		√		√
Disseminate statistical products		√	√√	√	√	√√√	√√√		√
Assure quality (including evaluation)	√√	√√	√√	√√	√√	√√	√√		√√
Assure methodology impartiality transparency			√√√					√√√	
Manage metadata			√	√		√√√	√√√		
Manage Human Financial Technological Resources								√√	√√√

