11th World Telecommunication/ICT Indicators Symposium (Mexico City, 2013)

Presentations – Part I

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11th World Telecommunication/ICT
Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/3-E
5 December 2013

English

SOURCE: ITU

TITLE: Launch of the 2014 Manual for Measuring ICT Access and Use by Households and Individuals

11th World Telecommunication/ICT Indicators Symposium (WTIS)

Mexico City, 4-6 December 2013

Launch of the

2014 Manual for Measuring ICT Access and Use by Households and Individuals

Susan Teltscher
Head, ICT Data and Statistics Division
International Telecommunication Union

2009 and 2014 editions: 5 years is a long time in the ICT age

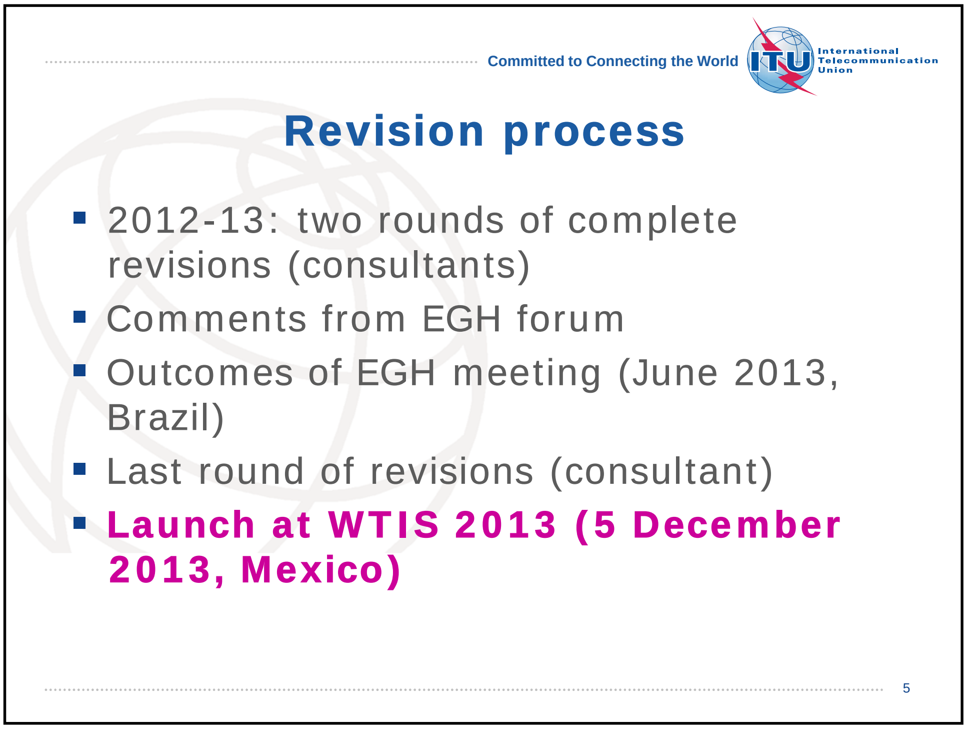
International Telecommunication Union
MANUAL
for Measuring ICT Access and Use by Households and Individuals
2009 EDITION
International Telecommunication Union
MANUAL
for Measuring ICT Access and Use by Households and Individuals
2014 EDITION

Why revised Manual?

- Changes in technologies, devices, use of ICTs; emergence of smartphones and tablets
  - **Revisions of the Partnership core ICT household indicators**
- Feedback from NSOs and other users of the ITU *Manual* and the Partnership core ICT indicators publication
  - Inputs received during delivery of training courses and from EGH members
- Revisions made in the indicators included in the ITU *Handbook for the collection of administrative data on telecommunication/ ICT (2011)*

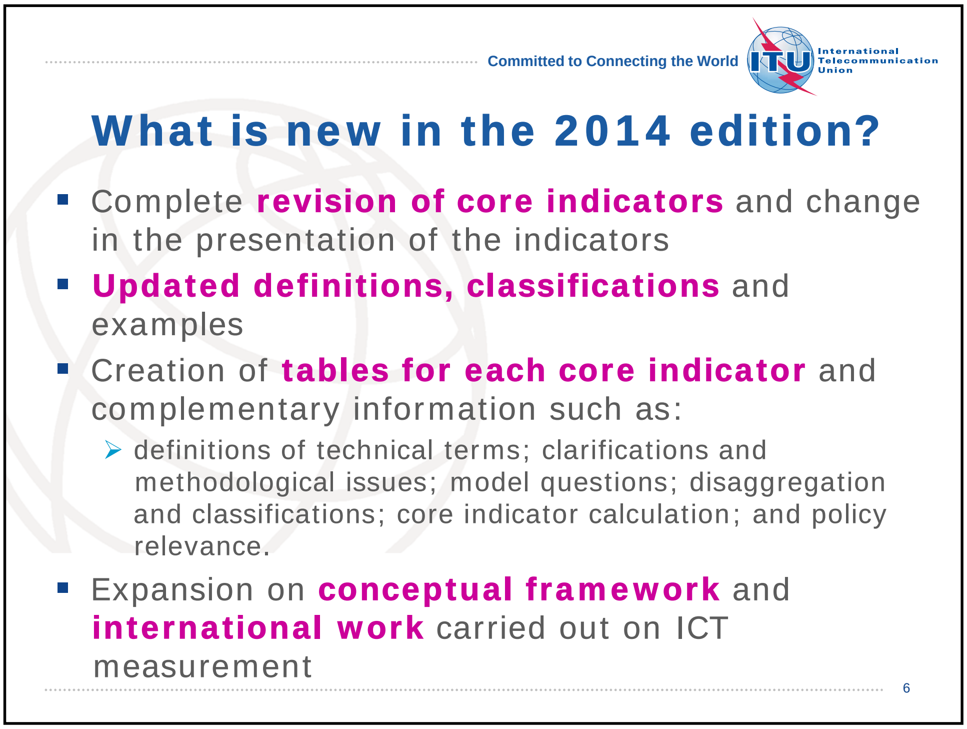
Main purpose of the Manual

- To assist countries to measure ICT access and use by households and individuals
- To ensure the production of high quality and internationally comparable data
- For the collection of ICT statistics through household surveys (standalone ICT surveys or ICT questions or modules added to existing surveys) or censuses
- Target audience: Official ICT data producers, statisticians, National Statistical Offices



Revision process

- 2012-13: two rounds of complete revisions (consultants)
- Comments from EGH forum
- Outcomes of EGH meeting (June 2013, Brazil)
- Last round of revisions (consultant)
- **Launch at WTIS 2013 (5 December 2013, Mexico)**



What is new in the 2014 edition?

- Complete **revision of core indicators** and change in the presentation of the indicators
- **Updated definitions, classifications** and examples
- Creation of **tables for each core indicator** and complementary information such as:
  - definitions of technical terms; clarifications and methodological issues; model questions; disaggregation and classifications; core indicator calculation; and policy relevance.
- Expansion on **conceptual framework** and **international work** carried out on ICT measurement

What is new in the 2014 edition?

- More emphasis on **national coordination of ICT statistics** (new Chapter 2)
- More emphasis on collection of ICT statistics through **existing household surveys** (rather than stand-alone ICT surveys)
- Revision and updates to better reflect **data collection practices**
- Revisions in the areas of **survey methodology, sampling design,** data collection standards specific to the core indicators

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Content – 10 Chapters

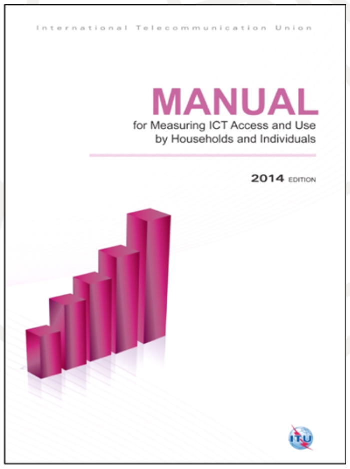
1. Introduction
2. Coordination among national stakeholders in ICT measurement
3. Planning and preparation for ICT household surveys
4. Statistical standards (core ICT household indicators)
5. Data sources and collection techniques
6. Question and questionnaire design
7. Sampling

Content – 10 Chapters

8. Data processing
9. Data quality and evaluation
10. Dissemination of ICT household data and metadata

- Annexes
  - Core list of ICT indicators
  - Model questionnaire
  - Examples of imputation and weighting
  - ITU Questionnaire
  - Glossary

How to get it?



International Telecommunication Union

MANUAL
for Measuring ICT Access and Use
by Households and Individuals

2014 EDITION

- USB key will be disseminated tomorrow (final draft)
- Final version:
  - ITU Statistics website
  - Printed copies will be sent to all NSOs in early 2014
  - 6 languages available during first quarter of 2014

Thank you

e-mail: indicators@itu.int

www.itu.int/ict

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/4-E
5 December 2013

English

SOURCE:	ITU
TITLE:	Data quality assessment framework for ICT Statistics

11th World Telecommunication/ICT Indicators Symposium

4-6 December 2013

Mexico City

Data quality assessment framework for ICT Statistics

Esperanza Magpantay
Senior Statistician
ICT Data and Statistics Division
BDT/ITU

Background

- Mandate to collect telecommunication/ICT statistics
- Data are collected regularly using online questionnaires
- Telecom access indicators (subscriptions); ICT households statistics
- Collected from regulators/ministries; national statistics offices
- Annual data referring to previous year
- Validation of the data is included in the online questionnaires
- Micro/Macro edits performed
- Tracking and metadata of data points included in the database
- Verification with data providers
- Notes explaining deviations

Methodology

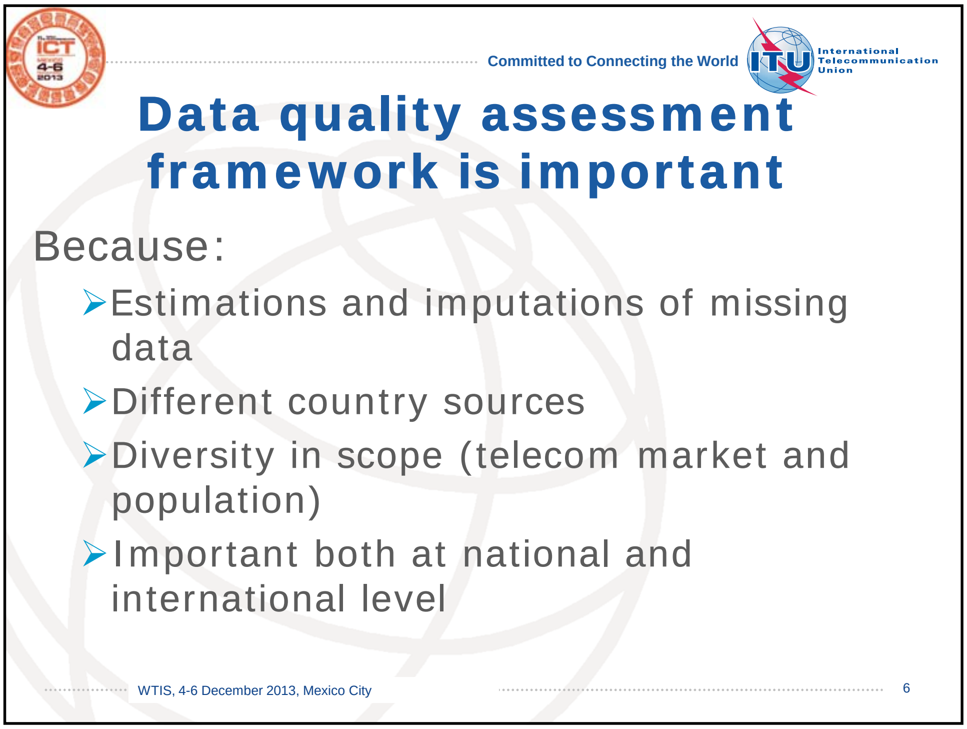
- **Manuals**
  - ITU Manual on ICT Household Statistics
  - ITU Handbook of Telecommunication/ICT Indicators
- **Expert Groups**
  - Expert Group on Telecommunication/ICT indicators
  - Expert Group on ICT Household statistics

Dissemination

- WTI database
  - 2 updates per year
  - Latest release: December 2013
- Online
  - ICT Eye
  - ITU Statistics website
- Requests from data users
- Analytical reports
  - Measuring the Information Society 2013
- Yearbook of Statistics
  - Latest release: December 2013

But is this enough?

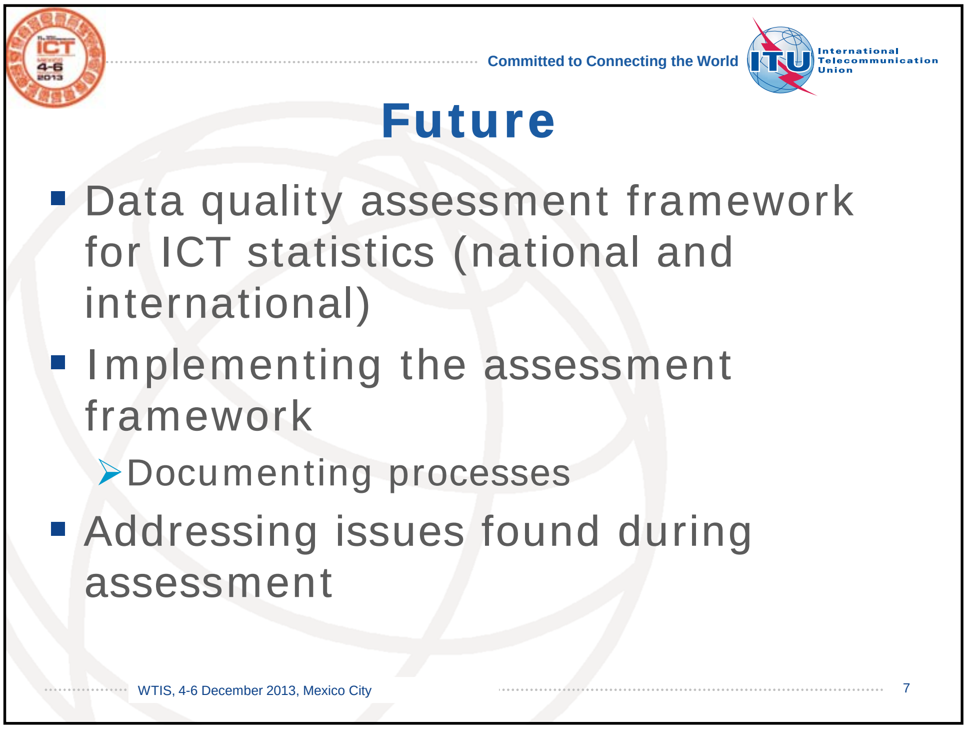
- Are the indicators we produce relevant and timely?
- Are they made available to whoever needs them?
- Are they documented enough to be understood by data users?



Data quality assessment framework is important

Because:

- Estimations and imputations of missing data
- Different country sources
- Diversity in scope (telecom market and population)
- Important both at national and international level



Future

- Data quality assessment framework for ICT statistics (national and international)
- Implementing the assessment framework
  - Documenting processes
- Addressing issues found during assessment

Thank you!

indicators@itu.int

11th World Telecommunication / ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/5-E
5 December 2013

English

SOURCE: United Nations Statistics Division

TITLE: National Quality Assurance Frameworks

National Quality Assurance Frameworks

Ralf Becker
United Nations Statistics Division
Dec. 2013

OUTLINE

- Quality and Dimensions of Quality
- Quality Assurance
- NQAF
- Available tools

What is QUALITY?

- A rather vague concept, has different meanings depending upon the context

- In the NSO context, QUALITY is defined as FITNESS FOR USE, in terms of user needs
  - how well do the agencies' products meet user needs?
  - are they "fit for use" or fit for the purpose for which they are to be used?

- The NSO's product is the INFORMATION it disseminates (facts to be used for decision-making by governments, businesses, institutions, the public)
  - the focus here is on Information Quality.

What is QUALITY?

FITNESS FOR USE

This definition is broader than in the past when quality was equated with **accuracy !**

Now it is recognized that there are other important dimensions.

Can data be said to be of good quality when:

ACCURATE – but produced too late to be used?
ACCURATE – but can't be found, accessed, or totally understood?
ACCURATE – but conflict with other data?
ACCURATE – but from unknown or unverifiable sources?
ACCURATE – but not provided on a regular basis?
ACCURATE – but not really shows what is needed?

Thus QUALITY needs to be looked at as a multi-faceted, multi-dimensional concept

Some models/frameworks existed already that addressed these concerns

Intermission:

A (very) short history of the

National Quality Assurance Frameworks (NQAF)

Expert Group

- UN Statistical Commission 2010
  - QUALITY - was the programme review (discussed for the first time)
- Report concludes there can be no single “generic” national quality assurance framework
- Instead, a template for a generic NQAF was proposed (recognizing that a one-size-fits-all framework was not feasible)
- Statistical Commission supported the establishment of an expert group to develop this

Expert Group

- Starting point – 3 proposals for generic template (DQAF, StatCan, CoP)
  - Agreed to develop a 4th variation of these proposals
- EG’s NQAF template basically incorporates all of the elements of the DQAF, the CoP and Statistics Canada’s framework

Important:

- Work was driven by countries for application at the national level

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Expert Group

First outputs of the EG’s work:

- NQAF template
- A “Guideline document” (90+ pages)
  - Check list
- Mapping of the NQAF to other frameworks
- Glossary
- Online inventory of national and int’l quality-related references

All are available on our Website

Dimensions of quality

QUALITY DIMENSIONS (COMPONENTS)

Dimensions or components to be considered when assessing the quality of data outputs (i.e. product quality), according to the NQAF:

•1. Relevance	**(covered in NQAF14)**
•2. Accuracy and reliability	**(covered in NQAF15)**
•3. Timeliness and punctuality	**(covered in NQAF16)**
•4. Accessibility and clarity	**(covered in NQAF17)**
•5. Coherence and comparability	**(covered in NQAF18)**

Quality is not just about outputs

Inputs → Processes → Outputs

- To have high quality outputs we need to consider:
  - inputs and processes
    - we need to consider the quality of these as well
  - quality of the organization responsible for the processes (institutional environment)
  - quality of the NSS

Quality assurance

A system of coordinated methods and tools to ensure a sustainable level of quality of outputs and processes where:

- products/outputs: their quality requirements are explicitly documented
- processes: are defined and made known to all staff and their correct implementation is monitored
- users: are informed about product quality and possible limitations
- improvement measures: procedures are in place to guarantee that the necessary steps are planned, implemented and evaluated

Quality assurance frameworks

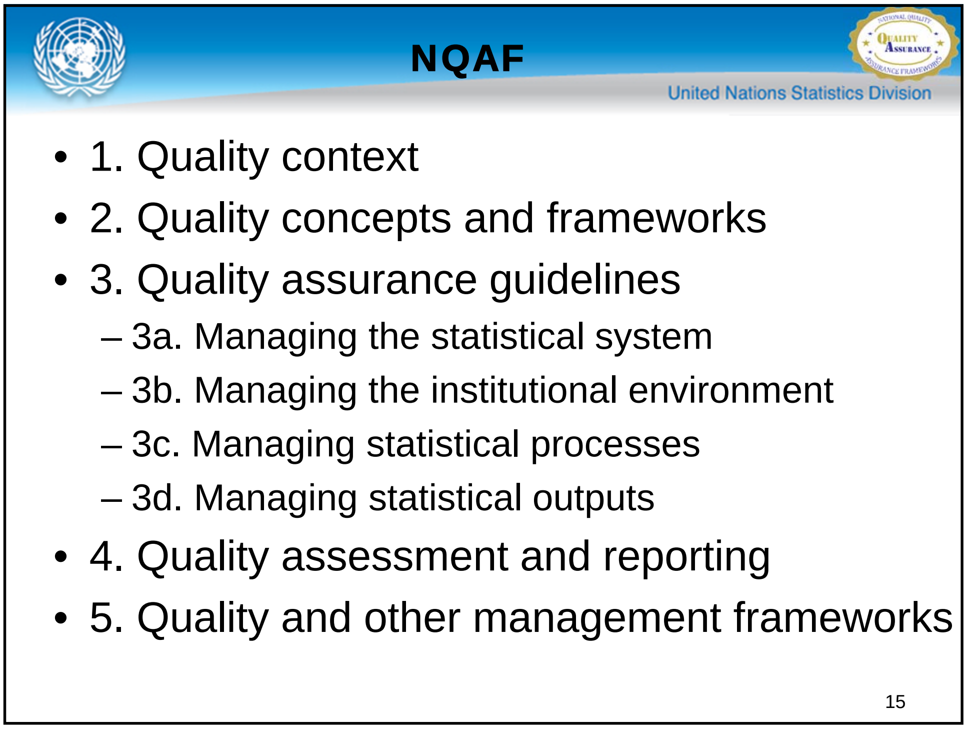
Objective - have in place an overarching framework or structure that will:

- provide context for quality concerns, activities and initiatives
- explain the relationships between the various quality procedures and tools

- Serves as “umbrella” to record, reference and organize the full range of quality concepts, policies, tools and practices

- Forward looking – addresses improvements
    - Not simply an assessment

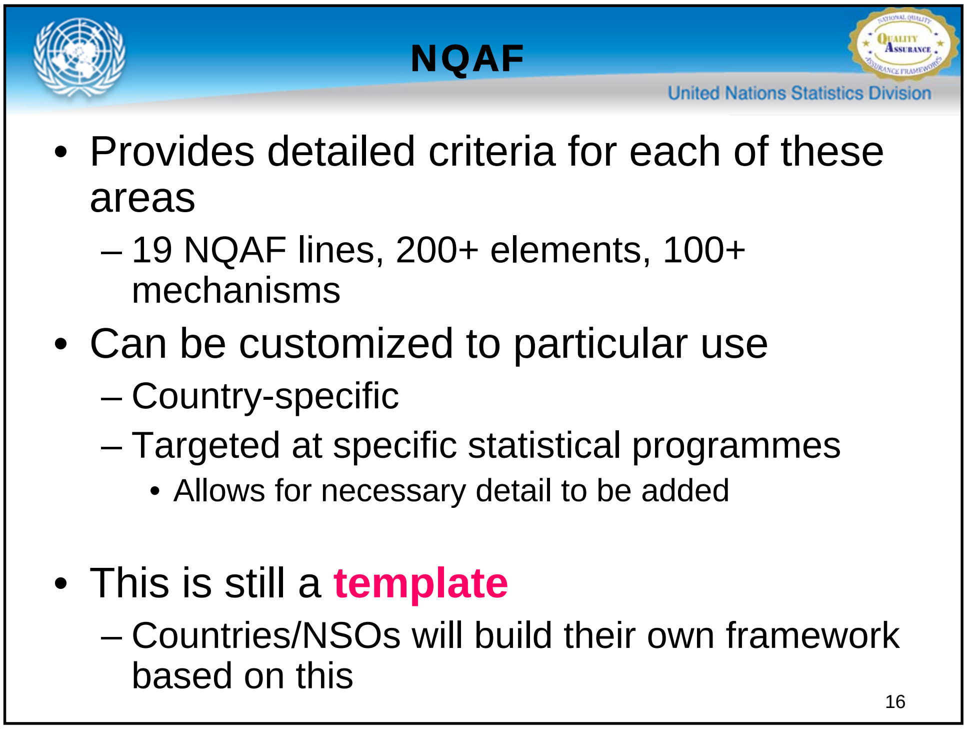
What is included in NQAF ?



NQAF

United Nations Statistics Division

- 1. Quality context
- 2. Quality concepts and frameworks
- 3. Quality assurance guidelines
  - – 3a. Managing the statistical system
  - – 3b. Managing the institutional environment
  - – 3c. Managing statistical processes
  - – 3d. Managing statistical outputs
- 4. Quality assessment and reporting
- 5. Quality and other management frameworks



NQAF

United Nations Statistics Division

- Provides detailed criteria for each of these areas
  - – 19 NQAF lines, 200+ elements, 100+ mechanisms
- Can be customized to particular use
  - – Country-specific
  - – Targeted at specific statistical programmes
    - Allows for necessary detail to be added
- This is still a **template**
  - – Countries/NSOs will build their own framework based on this

What kind of tools are available?

NQAF template

Back

1. Quality context
- 1a. Circumstances and key issues driving the need for quality management
- 1b. Benefits and challenges
- 1c. Relationship to other statistical agency policies, strategies and frameworks and evolution over time

2. Quality concepts and frameworks
- 2a. Concepts and terminology
- 2b. Mapping to existing frameworks

3. Quality assurance guidelines

3a. Managing the statistical system
- [NQAF 1] Coordinating the national statistical system
- [NQAF 2] Managing relationships with data users and data providers
- [NQAF 3] Managing statistical standards

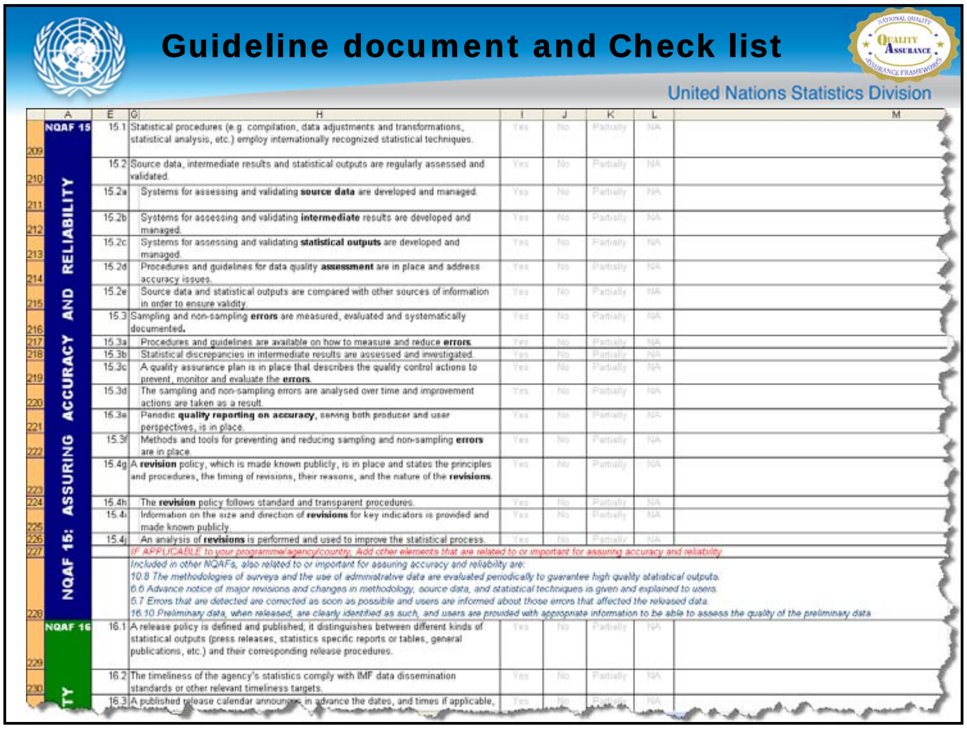
3b. Managing the institutional environment
- [NQAF 4] Assuring professional independence
- [NQAF 5] Assuring impartiality and objectivity
- [NQAF 6] Assuring transparency
- [NQAF 7] Assuring statistical confidentiality and security
- [NQAF 8] Assuring the quality commitment
- [NQAF 9] Assuring adequacy of resources

3c. Managing statistical processes
- [NQAF 10] Assuring methodological soundness
- [NQAF 11] Assuring cost-effectiveness
- [NQAF 12] Assuring soundness of implementation
- [NQAF 13] Managing the respondent burden

3d. Managing statistical outputs
- [NQAF14] Assuring relevance
- [NQAF15] Assuring accuracy and reliability
- [NQAF16] Assuring timeliness and punctuality
- [NQAF17] Assuring accessibility and clarity
- [NQAF18] Assuring coherence and comparability
- [NQAF19] Managing metadata

4. Quality assessment and reporting
- 4a. Measuring product and process quality - use of quality indicators, quality targets and process variables and descriptions
- 4b. Communicating about quality – quality reports
- 4c. Obtaining feedback from users
- 4d. Conducting assessments; labelling and certification
- 4e. Assuring continuous quality improvement

5. Quality and other management frameworks
- 5a. Performance management
- 5b. Resource management
- 5c. Ethical standards
- 5d. Continuous improvement
- 5e. Governance

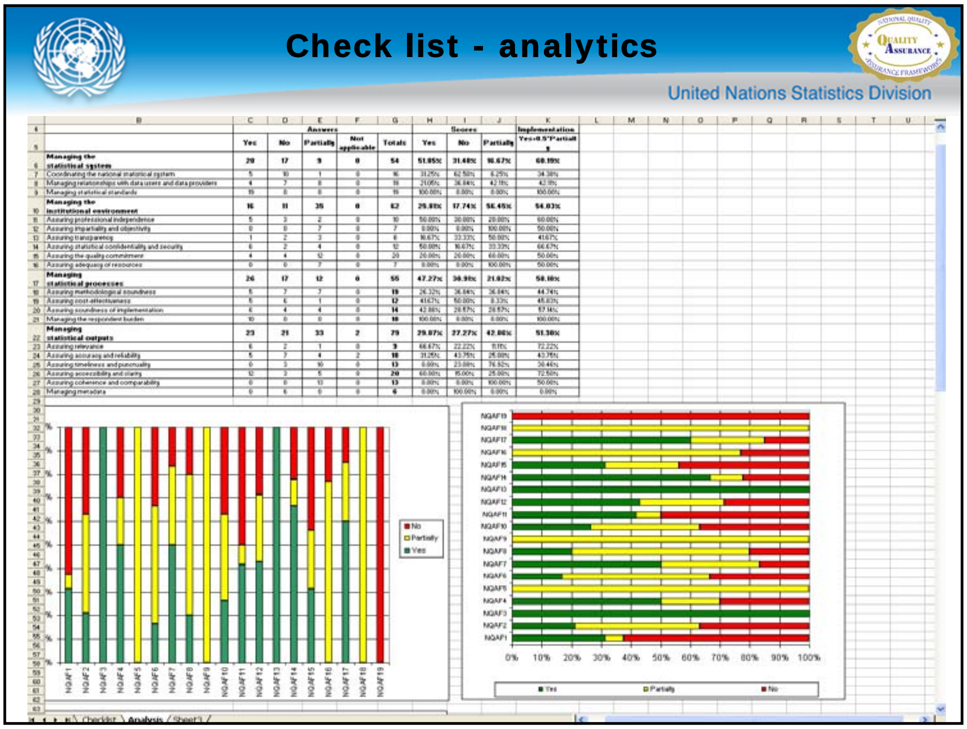


Guideline document and Check list

United Nations Statistics Division

NQAF 15: ASSURING ACCURACY AND RELIABILITY

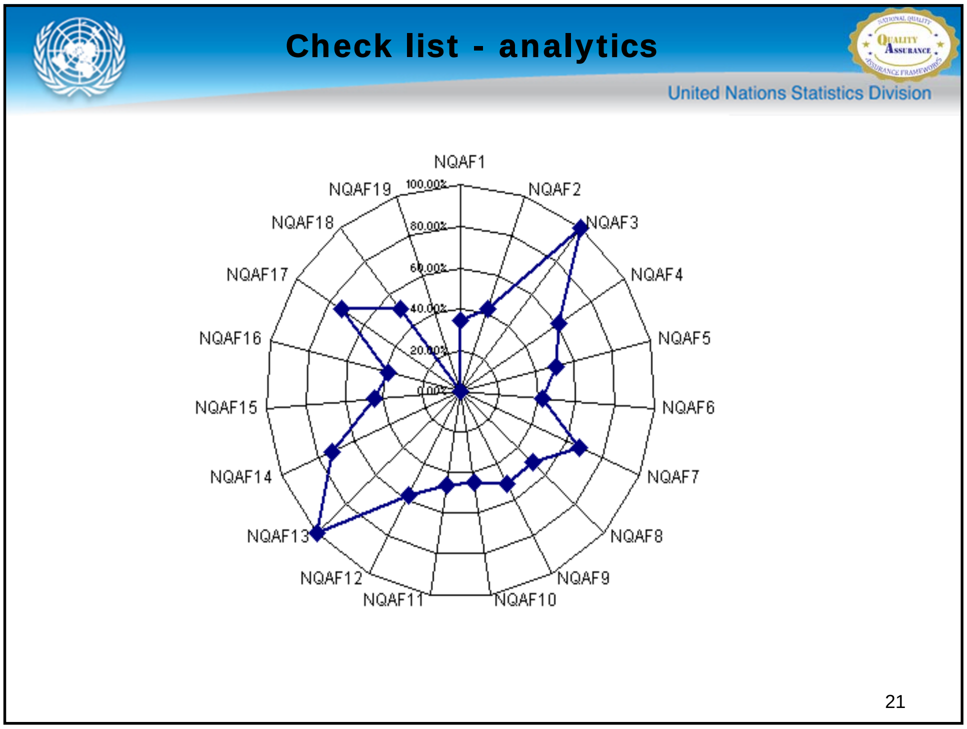
	A	E	H	I	J	K	L	M
209	**NQAF 15**	15.1	Statistical procedures (e.g. compilation, data adjustments and transformations, statistical analysis, etc.) employ internationally recognized statistical techniques.	Yes	No	Partially	NA	
210		15.2	Source data, intermediate results and statistical outputs are regularly assessed and validated.	Yes	No	Partially	NA	
211		15.2a	Systems for assessing and validating **source data** are developed and managed.	Yes	No	Partially	NA	
212		15.2b	Systems for assessing and validating **intermediate** results are developed and managed.	Yes	No	Partially	NA	
213		15.2c	Systems for assessing and validating **statistical outputs** are developed and managed.	Yes	No	Partially	NA	
214		15.2d	Procedures and guidelines for data quality **assessment** are in place and address accuracy issues.	Yes	No	Partially	NA	
215		15.2e	Source data and statistical outputs are compared with other sources of information in order to ensure validity.	Yes	No	Partially	NA	
216		15.3	Sampling and non-sampling **errors** are measured, evaluated and systematically documented.	Yes	No	Partially	NA	
217		15.3a	Procedures and guidelines are available on how to measure and reduce **errors**.	Yes	No	Partially	NA	
218		15.3b	Statistical discrepancies in intermediate results are assessed and investigated.	Yes	No	Partially	NA	
219		15.3c	A quality assurance plan is in place that describes the quality control actions to prevent, monitor and evaluate the **errors**.	Yes	No	Partially	NA	
220		15.3d	The sampling and non-sampling errors are analysed over time and improvement actions are taken as a result.	Yes	No	Partially	NA	
221		15.3e	Periodic **quality reporting on accuracy**, serving both producer and user perspectives, is in place.	Yes	No	Partially	NA	
222		15.3f	Methods and tools for preventing and reducing sampling and non-sampling **errors** are in place.	Yes	No	Partially	NA	
223		15.4g	A **revision** policy, which is made known publicly, is in place and states the principles and procedures, the timing of revisions, their reasons, and the nature of the **revisions**.	Yes	No	Partially	NA	
224		15.4h	The **revision** policy follows standard and transparent procedures.	Yes	No	Partially	NA	
225		15.4i	Information on the size and direction of **revisions** for key indicators is provided and made known publicly.	Yes	No	Partially	NA	
226		15.4j	An analysis of **revisions** is performed and used to improve the statistical process.	Yes	No	Partially	NA	
227			*IF APPLICABLE to your programme/agency/country, Add other elements that are related to or important for assuring accuracy and reliability*					
228			*Included in other NQAFs, also related to or important for assuring accuracy and reliability are:* *10.8 The methodologies of surveys and the use of administrative data are evaluated periodically to guarantee high quality statistical outputs.* *6.6 Advance notice of major revisions and changes in methodology, source data, and statistical techniques is given and explained to users.* *5.7 Errors that are detected are corrected as soon as possible and users are informed about those errors that affected the released data.* *16.10 Preliminary data, when released, are clearly identified as such, and users are provided with appropriate information to be able to assess the quality of the preliminary data.*					
229	**NQAF 16**	16.1	A release policy is defined and published; it distinguishes between different kinds of statistical outputs (press releases, statistics specific reports or tables, general publications, etc.) and their corresponding release procedures.	Yes	No	Partially	NA	
230		16.2	The timeliness of the agency's statistics comply with IMF data dissemination standards or other relevant timeliness targets.	Yes	No	Partially	NA	
		16.3	A published release calendar announces in advance the dates, and times if applicable,	Yes	No	Partially	NA	



Check list - analytics

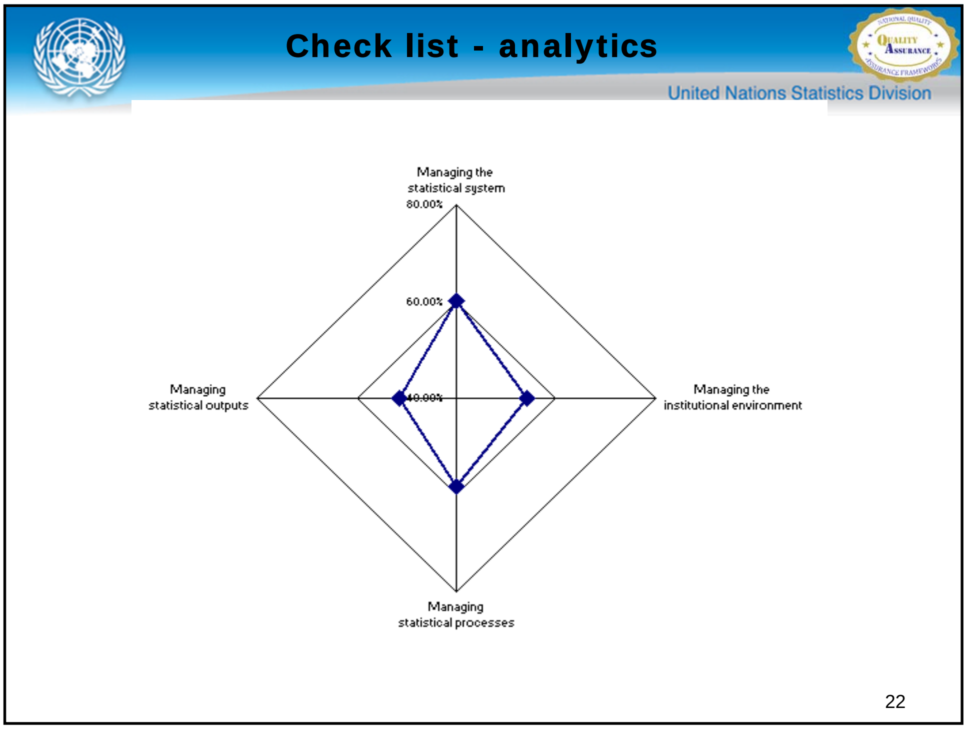
United Nations Statistics Division

	B	C	D	E	F	G	H	I	J	K
4		Answers					Scores			Implementation
5		Yes	No	Partially	Not applicable	Totals	Yes	No	Partially	Yes+0.5*Partially
6	**Managing the statistical system**	**28**	**17**	**9**	**0**	**54**	**51.85%**	**31.48%**	**16.67%**	**60.19%**
7	Coordinating the national statistical system	5	10	1	0	16	31.25%	62.50%	6.25%	34.38%
8	Managing relationships with data users and data providers	4	7	8	0	19	21.05%	36.84%	42.11%	42.11%
9	Managing statistical standards	19	0	0	0	19	100.00%	0.00%	0.00%	100.00%
10	**Managing the institutional environment**	**16**	**11**	**35**	**0**	**62**	**25.81%**	**17.74%**	**56.45%**	**54.03%**
11	Assuring professional independence	5	3	2	0	10	50.00%	30.00%	20.00%	60.00%
12	Assuring impartiality and objectivity	0	0	7	0	7	0.00%	0.00%	100.00%	50.00%
13	Assuring transparency	1	2	3	0	6	16.67%	33.33%	50.00%	41.67%
14	Assuring statistical confidentiality and security	6	2	4	0	12	50.00%	16.67%	33.33%	66.67%
15	Assuring the quality commitment	4	4	12	0	20	20.00%	20.00%	60.00%	50.00%
16	Assuring adequacy of resources	0	0	7	0	7	0.00%	0.00%	100.00%	50.00%
17	**Managing statistical processes**	**26**	**17**	**12**	**0**	**55**	**47.27%**	**30.91%**	**21.82%**	**58.18%**
18	Assuring methodological soundness	5	7	7	0	**19**	26.32%	36.84%	36.84%	44.74%
19	Assuring cost-effectiveness	5	6	1	0	**12**	41.67%	50.00%	8.33%	45.83%
20	Assuring soundness of implementation	6	4	4	0	**14**	42.86%	28.57%	28.57%	57.14%
21	Managing the respondent burden	10	0	0	0	**10**	100.00%	0.00%	0.00%	100.00%
22	**Managing statistical outputs**	**23**	**21**	**33**	**2**	**79**	**29.87%**	**27.27%**	**42.86%**	**51.30%**
23	Assuring relevance	6	2	1	0	**9**	66.67%	22.22%	11.11%	72.22%
24	Assuring accuracy and reliability	5	7	4	2	**18**	31.25%	43.75%	25.00%	43.75%
25	Assuring timeliness and punctuality	0	3	10	0	**13**	0.00%	23.08%	76.92%	38.46%
26	Assuring accessibility and clarity	12	3	5	0	**20**	60.00%	15.00%	25.00%	72.50%
27	Assuring coherence and comparability	0	0	13	0	**13**	0.00%	0.00%	100.00%	50.00%
28	Managing metadata	0	6	0	0	**6**	0.00%	100.00%	0.00%	0.00%



Check list - analytics

United Nations Statistics Division

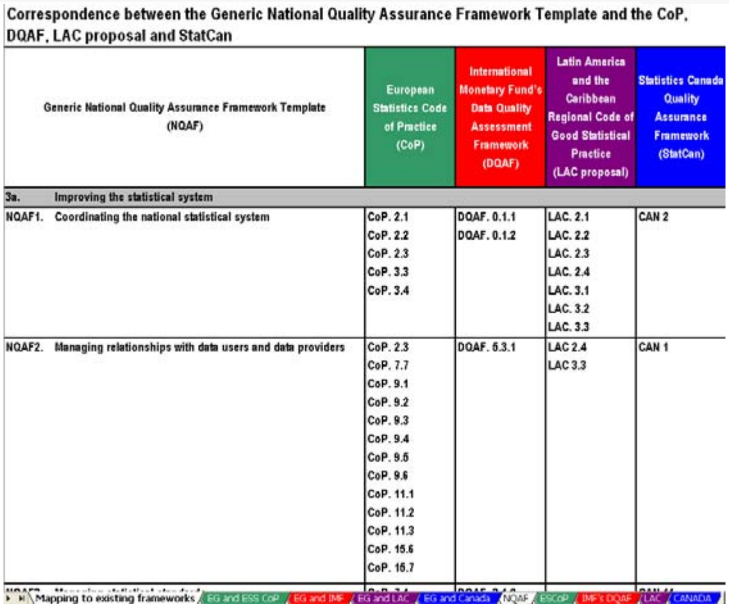


Check list - analytics

United Nations Statistics Division

NQAF - mapping to other frameworks

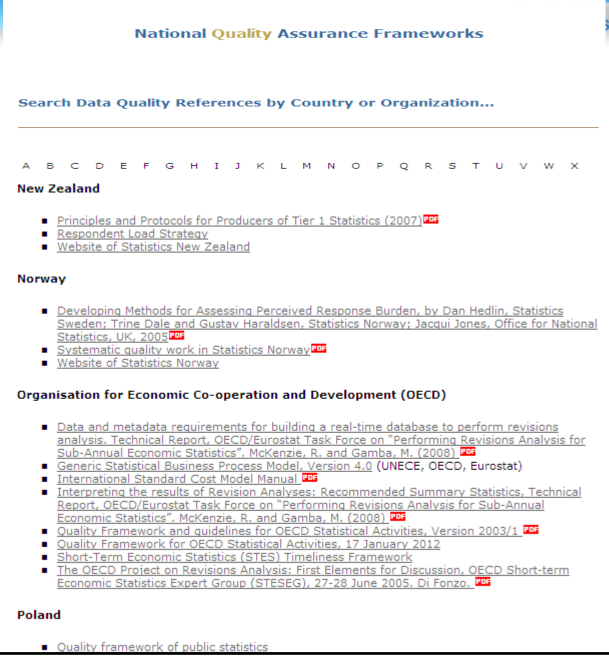
United Nations Statistics Division



Correspondence between the Generic National Quality Assurance Framework Template and the CoP, DQAF, LAC proposal and StatCan

Generic National Quality Assurance Framework Template (NQAF)		European Statistics Code of Practice (CoP)	International Monetary Fund's Data Quality Assessment Framework (DQAF)	Latin America and the Caribbean Regional Code of Good Statistical Practice (LAC proposal)	Statistics Canada Quality Assurance Framework (StatCan)
3a.	Improving the statistical system				
NQAF1.	Coordinating the national statistical system	CoP. 2.1 CoP. 2.2 CoP. 2.3 CoP. 3.3 CoP. 3.4	DQAF. 0.1.1 DQAF. 0.1.2	LAC. 2.1 LAC. 2.2 LAC. 2.3 LAC. 2.4 LAC. 3.1 LAC. 3.2 LAC. 3.3	CAN 2
NQAF2.	Managing relationships with data users and data providers	CoP. 2.3 CoP. 7.7 CoP. 9.1 CoP. 9.2 CoP. 9.3 CoP. 9.4 CoP. 9.5 CoP. 9.6 CoP. 11.1 CoP. 11.2 CoP. 11.3 CoP. 15.6 CoP. 15.7	DQAF. 5.3.1	LAC 2.4 LAC 3.3	CAN 1

NQAF - References



National Quality Assurance Frameworks

Search Data Quality References by Country or Organization...

New Zealand

- Principles and Protocols for Producers of Tier 1 Statistics (2007) PDF
- Respondent Load Strategy
- Website of Statistics New Zealand

Norway

- Developing Methods for Assessing Perceived Response Burden, by Dan Hedlin, Statistics Sweden; Trine Dale and Gustav Haraldsen, Statistics Norway; Jacqui Jones, Office for National Statistics, UK, 2005 PDF
- Systematic quality work in Statistics Norway PDF
- Website of Statistics Norway

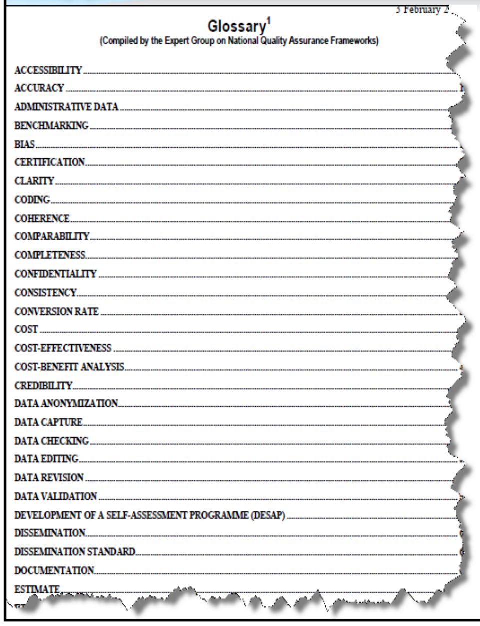
Organisation for Economic Co-operation and Development (OECD)

- Data and metadata requirements for building a real-time database to perform revisions analysis. Technical Report, OECD/Eurostat Task Force on "Performing Revisions Analysis for Sub-Annual Economic Statistics", McKenzie, R. and Gamba, M. (2008) PDF
- Generic Statistical Business Process Model, Version 4.0 (UNECE, OECD, Eurostat)
- International Standard Cost Model Manual PDF
- Interpreting the results of Revision Analyses: Recommended Summary Statistics, Technical Report, OECD/Eurostat Task Force on "Performing Revisions Analysis for Sub-Annual Economic Statistics", McKenzie, R. and Gamba, M. (2008) PDF
- Quality Framework and guidelines for OECD Statistical Activities, Version 2003/1 PDF
- Quality Framework for OECD Statistical Activities, 17 January 2012
- Short-Term Economic Statistics (STES) Timeliness Framework
- The OECD Project on Revisions Analysis: First Elements for Discussion, OECD Short-term Economic Statistics Expert Group (STESEG), 27-28 June 2005, Di Fonzo. PDF

Poland

- Quality framework of public statistics

Terminology: Glossary compiled by the EG

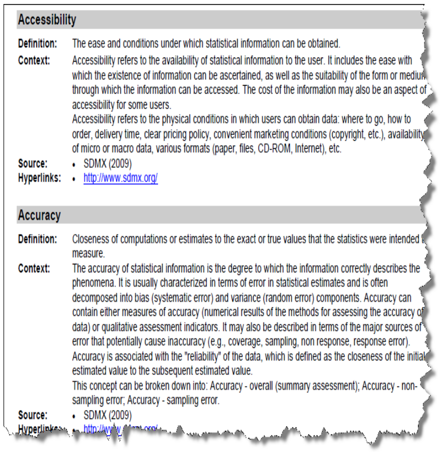


3 February 2

Glossary[1]

(Compiled by the Expert Group on National Quality Assurance Frameworks)

ACCESSIBILITY
ACCURACY
ADMINISTRATIVE DATA
BENCHMARKING
BIAS
CERTIFICATION
CLARITY
CODING
COHERENCE
COMPARABILITY
COMPLETENESS
CONFIDENTIALITY
CONSISTENCY
CONVERSION RATE
COST
COST-EFFECTIVENESS
COST-BENEFIT ANALYSIS
CREDIBILITY
DATA ANONYMIZATION
DATA CAPTURE
DATA CHECKING
DATA EDITING
DATA REVISION
DATA VALIDATION
DEVELOPMENT OF A SELF-ASSESSMENT PROGRAMME (DESAP)
DISSEMINATION
DISSEMINATION STANDARD
DOCUMENTATION
ESTIMATE



Accessibility

Definition: The ease and conditions under which statistical information can be obtained.

Context: Accessibility refers to the availability of statistical information to the user. It includes the ease with which the existence of information can be ascertained, as well as the suitability of the form or mediu through which the information can be accessed. The cost of the information may also be an aspect of accessibility for some users.

Accessibility refers to the physical conditions in which users can obtain data: where to go, how to order, delivery time, clear pricing policy, convenient marketing conditions (copyright, etc.), availability of micro or macro data, various formats (paper, files, CD-ROM, Internet), etc.

Source:
- SDMX (2009)

Hyperlinks:
- http://www.sdmx.org/

Accuracy

Definition: Closeness of computations or estimates to the exact or true values that the statistics were intended measure.

Context: The accuracy of statistical information is the degree to which the information correctly describes the phenomena. It is usually characterized in terms of error in statistical estimates and is often decomposed into bias (systematic error) and variance (random error) components. Accuracy can contain either measures of accuracy (numerical results of the methods for assessing the accuracy o data) or qualitative assessment indicators. It may also be described in terms of the major sources of error that potentially cause inaccuracy (e.g., coverage, sampling, non response, response error). Accuracy is associated with the "reliability" of the data, which is defined as the closeness of the initial estimated value to the subsequent estimated value.

This concept can be broken down into: Accuracy - overall (summary assessment); Accuracy - non-sampling error; Accuracy - sampling error.

Source:
- SDMX (2009)

Hyperlinks:
- http://www.sdmx.org/

The way forward…

The way forward

- Data quality is part of discussions at the international level
  - Coordination among agencies (UNSC, CCSA)
  - Harmonization of quality frameworks
  - Assistance to countries in their implementation is next

- NQAF provides a template
  - Tailoring it to ICT needs is possible and desirable
  - Detailed, quantifiable indicators can help with monitoring and improving quality over time

---

More information:

http://unstats.un.org/unsd/dnss/QualityNQAF/nqaf.aspx

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/6-E
5 December 2013

English

SOURCE: International Monetary Fund

TITLE: Data Quality Assessment Framework

Data Quality Assessment Framework

World Telecommunication/ICT Indicators Symposium

Mexico City, Mexico
December 4-6, 2013

The views expressed herein are those of the author and should not be attributed to the IMF, its Executive Board, or its management

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Outline

- Background
  - Data Transparency and Metadata
  - SDDS/GDDS
- Broader view of Quality
- DQAF Architecture
- Prerequisites of Quality and Dimensions
- Conclusions
  - Applications of DQAF within the Fund
  - Other Applications
  - Importance of applying a DQAF

Data Transparency and Metadata

- The Special Data Dissemination Standard (SDDS)was established in 1996 to guide members in ***providing*** economic and financial data to the public.
    - Data dissemination standard that identifies best practices in the *dissemination* of economic and financial data.
    - For countries having, or seeking, access to international capital markets
- The General Data Dissemination System (GDDS), established in 1997 provides a framework for participating countries to ***develop a strategy*** for strengthening their statistical systems.
    - The GDDS fosters:
        - The application of sound methodology
        - The adoption of good compilation and dissemination practices
        - The observance of procedures ensuring professionalism

Data Transparency and Metadata

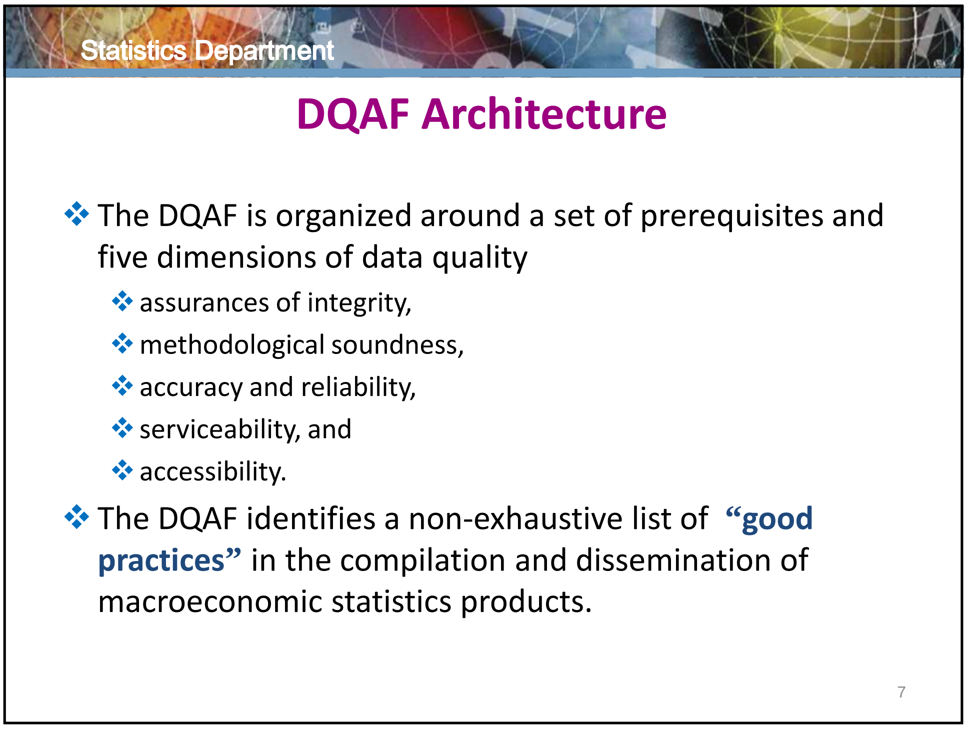
- A ***standard*** (SDDS) is precise
    - Specific requirements for coverage, periodicity, and timelines of data
- A ***system*** (GDDS) is less prescriptive
    - Emphasis on improvement over time and progress toward higher quality, increased periodicity, and more timely data
- How about ***quality*** considerations?

What is Quality?

- ***Accuracy*** is generally the first-mentioned data quality criterion; that is to what extent data portray reality.
- But, what about...
  - Timeliness
  - Periodicity
  - Consistency
  - ……

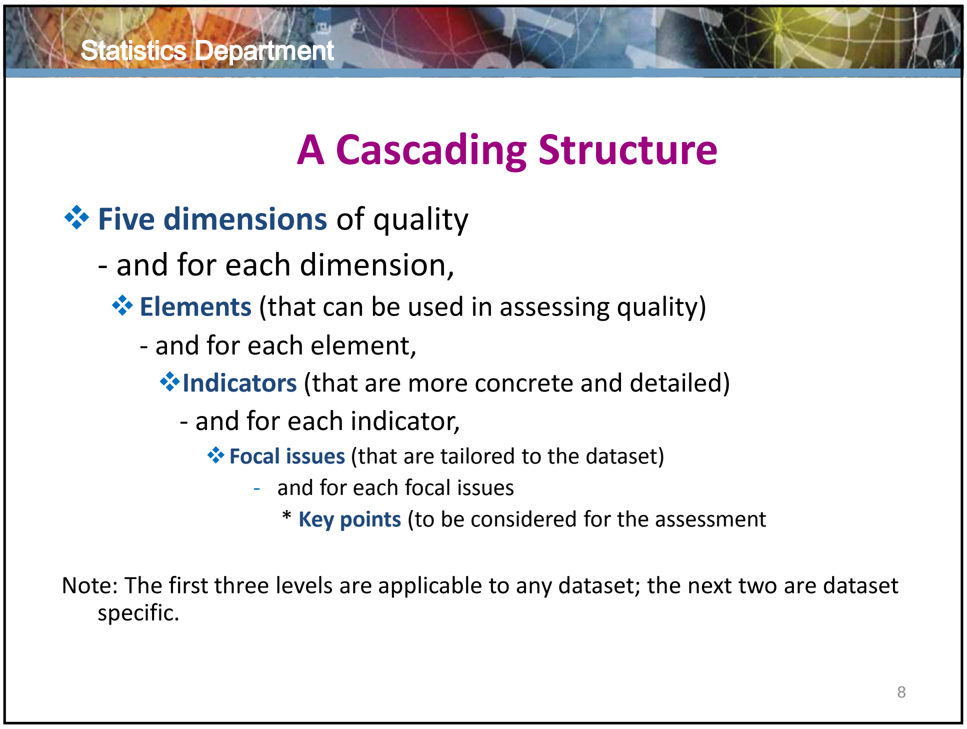
Broader view of Quality

- Broader view of quality looks at:
  - The statistical institutions
  - Statistical processes
  - Statistical output



DQAF Architecture

- The DQAF is organized around a set of prerequisites and five dimensions of data quality
  - assurances of integrity,
  - methodological soundness,
  - accuracy and reliability,
  - serviceability, and
  - accessibility.
- The DQAF identifies a non-exhaustive list of **“good practices”** in the compilation and dissemination of macroeconomic statistics products.



A Cascading Structure

- **Five dimensions** of quality

  - and for each dimension,
  - **Elements** (that can be used in assessing quality)

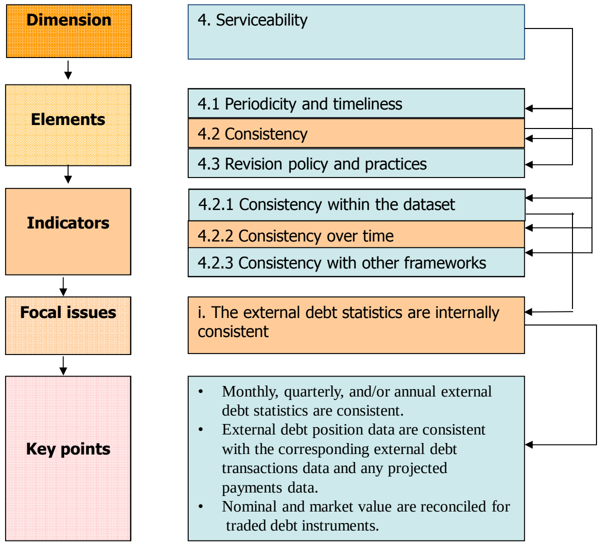
    - and for each element,
    - **Indicators** (that are more concrete and detailed)

      - and for each indicator,
      - **Focal issues** (that are tailored to the dataset)
        - and for each focal issues

          * **Key points** (to be considered for the assessment

Note: The first three levels are applicable to any dataset; the next two are dataset specific.

DQAF Cascading Structure: An example



4. Serviceability

4.1 Periodicity and timeliness

4.2 Consistency

4.3 Revision policy and practices

4.2.1 Consistency within the dataset

4.2.2 Consistency over time

4.2.3 Consistency with other frameworks

i. The external debt statistics are internally consistent

- Monthly, quarterly, and/or annual external debt statistics are consistent.
- External debt position data are consistent with the corresponding external debt transactions data and any projected payments data.
- Nominal and market value are reconciled for traded debt instruments.

DQAF—Prerequisites of Quality

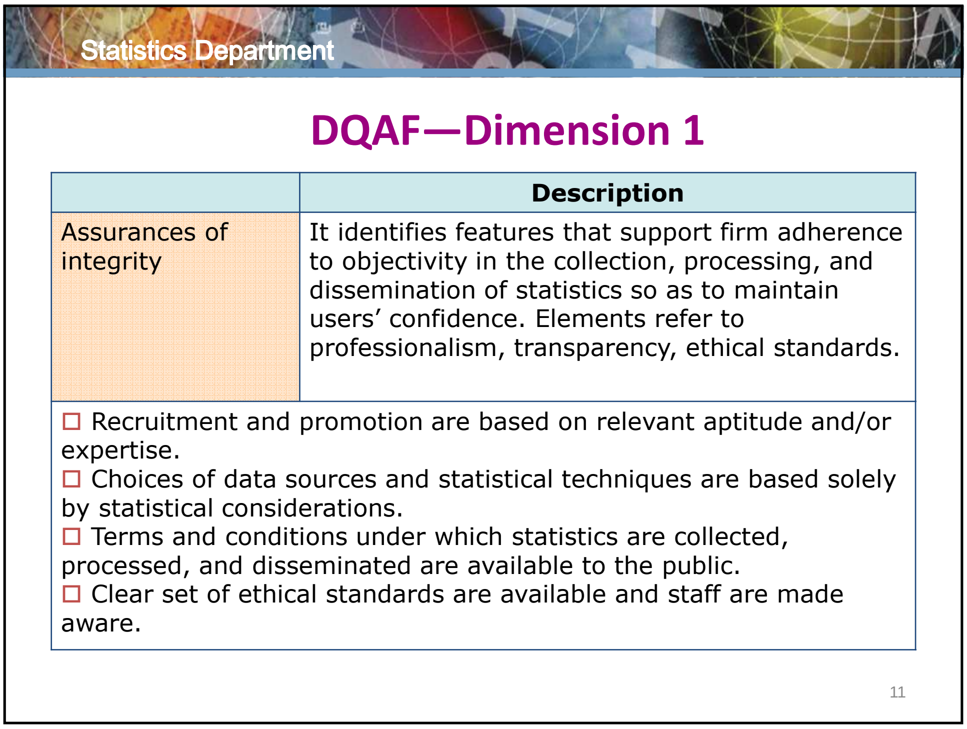
	Description
Prerequisites of quality	This category identifies conditions within the agency in charge of producing statistics that have an impact on data quality (legal and institutional environment, available resources, relevance, and quality awareness).

☐ The primary responsibility for collecting, processing, and disseminating macroeconomic statistics is clearly specified.

☐ Confidentiality of individual reporters' data is guaranteed.

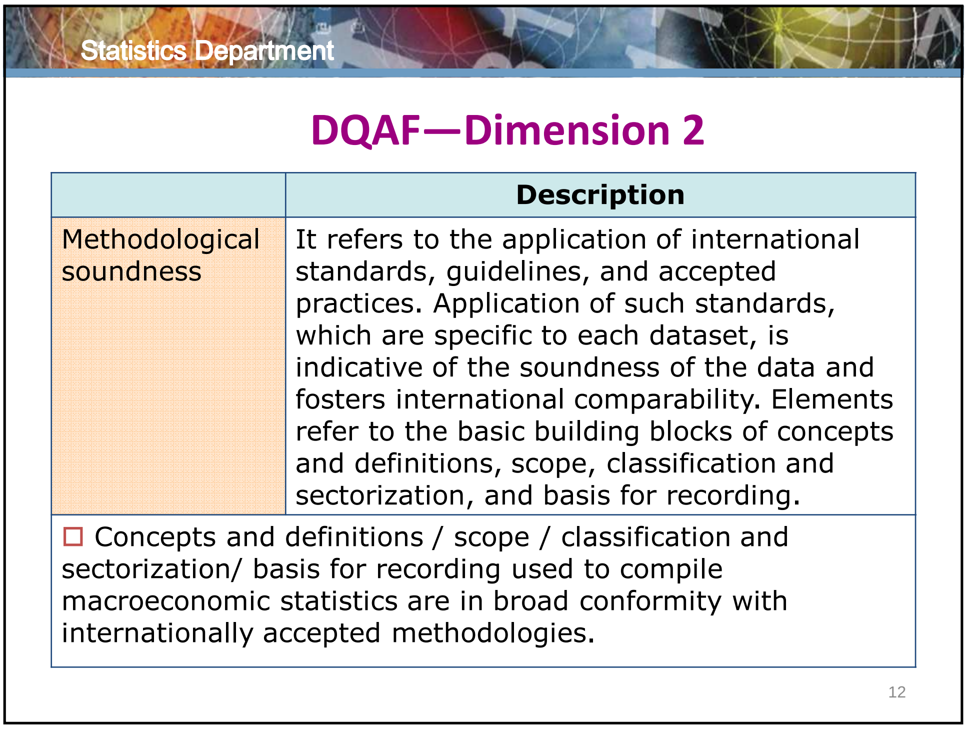
☐ A law or other formal provision provides for the reporting of information needed to compile macroeconomic statistics.

☐ Staff / computing resources / physical facilities / funding for compiling macroeconomic statistics are adequate to performed required tasks.



DQAF—Dimension 1

<table>
<tr><th></th><th>Description</th></tr>
<tr><td>Assurances of integrity</td><td>It identifies features that support firm adherence to objectivity in the collection, processing, and dissemination of statistics so as to maintain users’ confidence. Elements refer to professionalism, transparency, ethical standards.</td></tr>
<tr><td colspan="2">☐ Recruitment and promotion are based on relevant aptitude and/or expertise.
☐ Choices of data sources and statistical techniques are based solely by statistical considerations.
☐ Terms and conditions under which statistics are collected, processed, and disseminated are available to the public.
☐ Clear set of ethical standards are available and staff are made aware.</td></tr>
</table>



DQAF—Dimension 2

<table>
<tr><th></th><th>Description</th></tr>
<tr><td>Methodological soundness</td><td>It refers to the application of international standards, guidelines, and accepted practices. Application of such standards, which are specific to each dataset, is indicative of the soundness of the data and fosters international comparability. Elements refer to the basic building blocks of concepts and definitions, scope, classification and sectorization, and basis for recording.</td></tr>
<tr><td colspan="2">☐ Concepts and definitions / scope / classification and sectorization/ basis for recording used to compile macroeconomic statistics are in broad conformity with internationally accepted methodologies.</td></tr>
</table>

DQAF—Dimension 3

<table>
<tr><th></th><th>Description</th></tr>
<tr><td>Accuracy and reliability</td><td>It identifies features that contribute to the goal that data portray reality. Elements refer to features of the source data, statistical techniques, and data validation.</td></tr>
<tr><td colspan="2">☐ The data collection programs employed to compile macroeconomic statistics are adequate.
☐ Source data are consistent with the definitions, scope, classifications, and time of recording adopted by the data producing agency.
☐Statistical techniques employed conform to sound statistical procedures.
☐ Appropriate measures are taken to adjust source data.
☐ Bilateral comparisons/ reconciliations are conducted with data of other countries and international organizations.</td></tr>
</table>

DQAF—Dimension 4

<table>
<tr><th></th><th>Description</th></tr>
<tr><td>Serviceability</td><td>It focuses on practical aspects of how well a data set meets user’s need. Elements refer to the extent to which data are disseminated with an appropriate periodicity and timeliness, are consistent internally and with other datasets, and follow a known revision policy.</td></tr>
<tr><td colspan="2">☐ Periodicity and timeliness follows dissemination standards (Fund’s SDDS / GDDS).
☐ Statistics are consistent over time
☐ Macroeconomic statistics are consistent / reconcilable among national accounts, balance of payments, IIP, monetary and financial, and government finance statistics.
☐ Revisions follow a regular an transparent schedule.</td></tr>
</table>

DQAF—Dimension 5

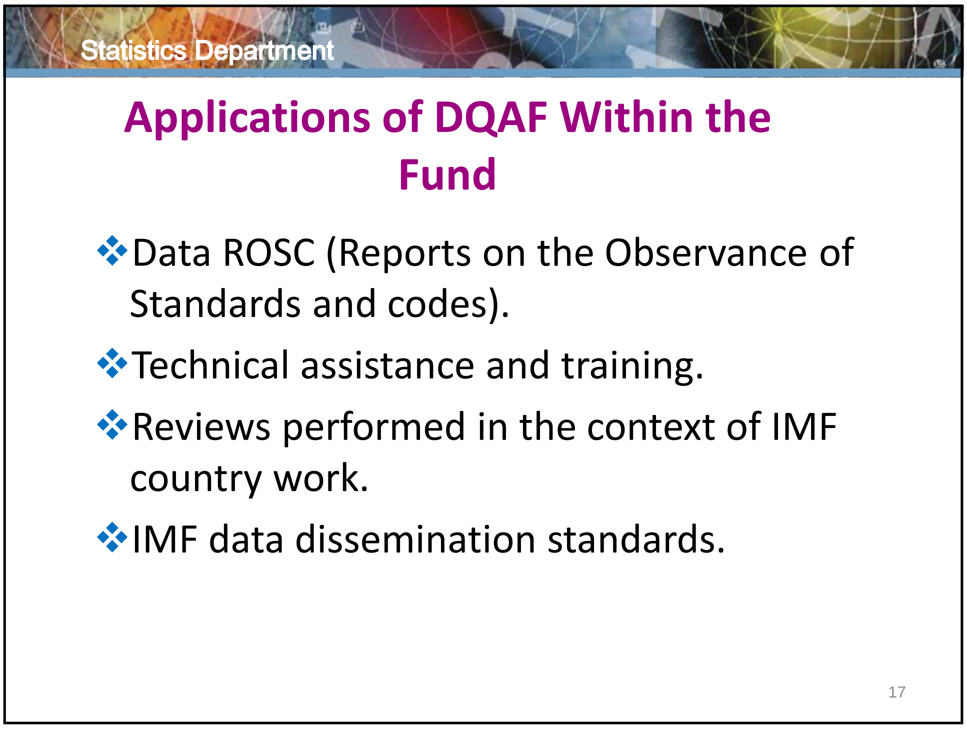
	Description
Accessibility	It deals with the need for data and metadata to be presented in a clear manner, are easily available, that metadata are up-to-date and pertinent, and that knowledgeable support service is available to users.

☐ Supplementary statistical sets encouraged by the SDDS/GDDS are provided to users.
☐ Statistics are released on the preannounced schedule.
☐ Statistics are made available to all users at the same time.
☐ Metadata give adequate information about the meaning of the data and about the methodology used to collect and process them.
☐ Prompt and knowledgeable support service to users of macroeconomic statistics is available.

Ratings[1/]

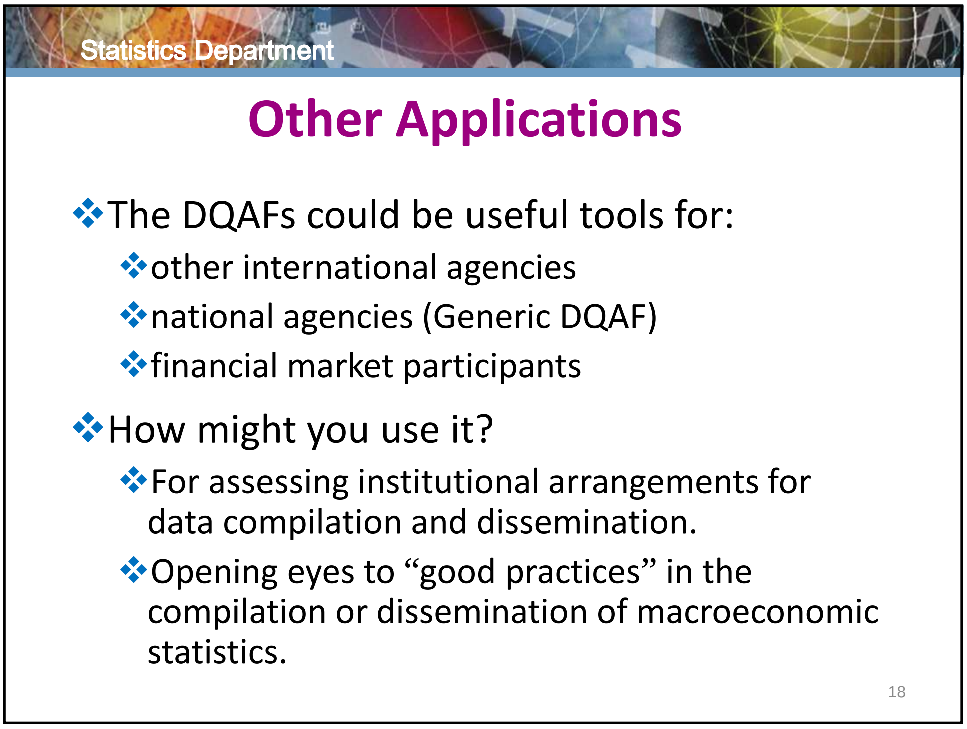
O	Fully observed
LO	Largely observed
LNO	Largely non-observed
NO	Non-observed

1/ Ratings used in data ROSC missions.



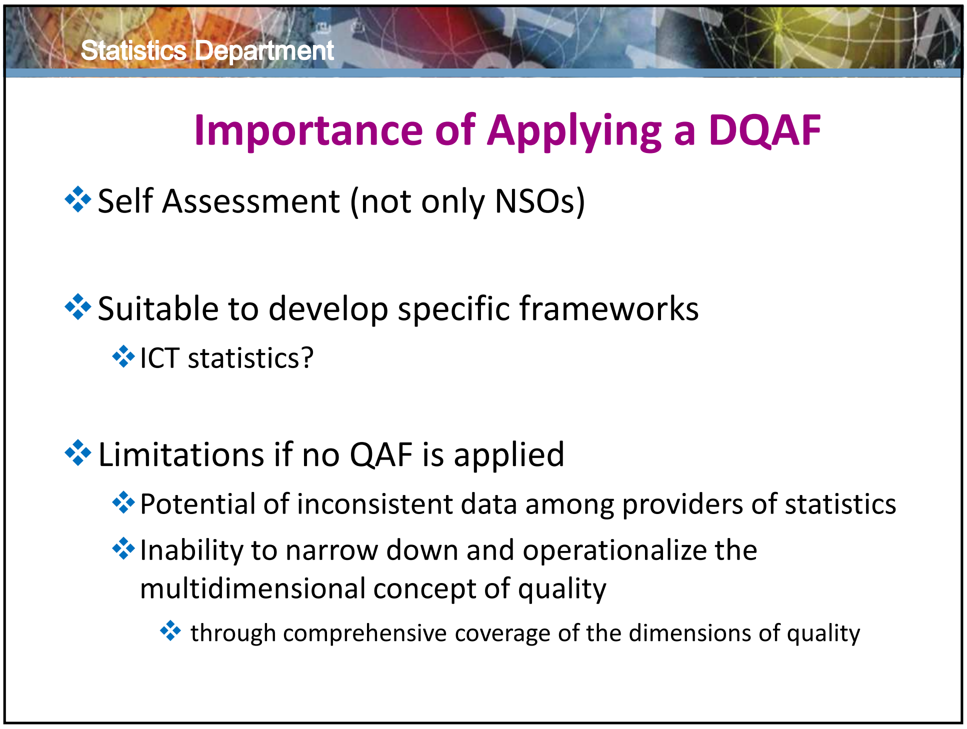
Applications of DQAF Within the Fund

- Data ROSC (Reports on the Observance of Standards and codes).
- Technical assistance and training.
- Reviews performed in the context of IMF country work.
- IMF data dissemination standards.



Other Applications

- The DQAFs could be useful tools for:
  - other international agencies
  - national agencies (Generic DQAF)
  - financial market participants
- How might you use it?
  - For assessing institutional arrangements for data compilation and dissemination.
  - Opening eyes to “good practices” in the compilation or dissemination of macroeconomic statistics.



Importance of Applying a DQAF

- Self Assessment (not only NSOs)

- Suitable to develop specific frameworks
  - ICT statistics?

- Limitations if no QAF is applied
  - Potential of inconsistent data among providers of statistics
  - Inability to narrow down and operationalize the multidimensional concept of quality
    - through comprehensive coverage of the dimensions of quality

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/7-E
5 December 2013

English

SOURCE: National Institute of Statistics and Geography, Mexico

TITLE: Module on Availability and Use of Information and Communication Technologies in Households

Module on Availability and Use of Information and Communication Technologies in Households

(MODUTIH by its acronym in Spanish)

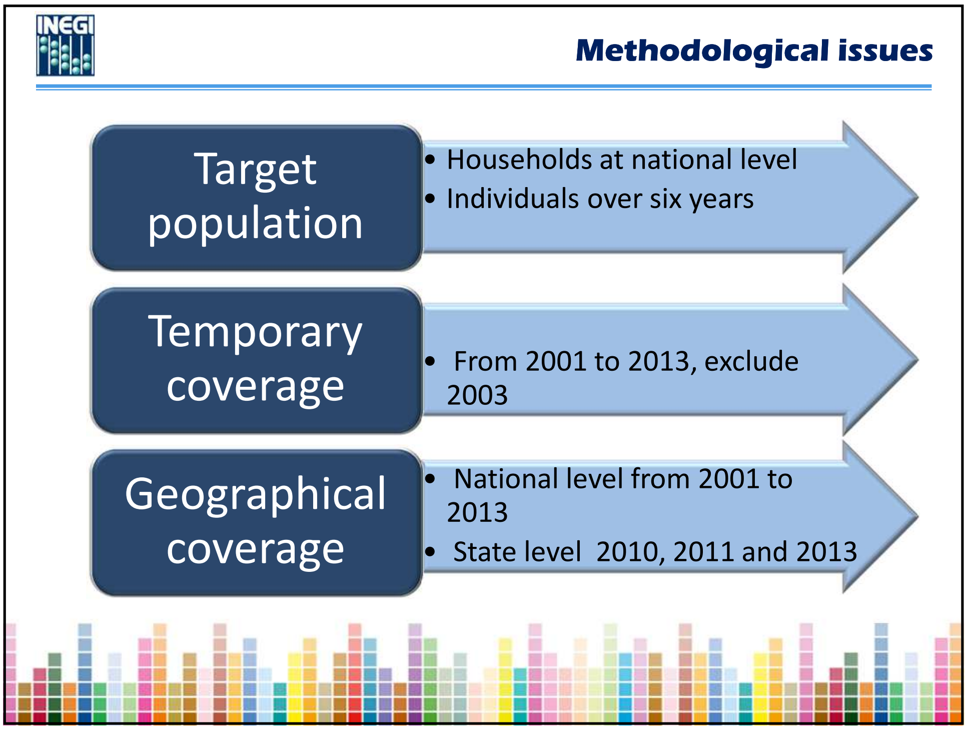
December , 2013

INSTITUTO NACIONAL DE ESTADÍSTICA Y GEOGRAFÍA

Methodological issues

Objective: To get basic data about the availability of ICT in households, as well as its use by individuals, that allows to generate key indicators of access to ICT usage by individuals and households according to the best international outlined practices.

Date of the last survey	April – May, 2013
Periodicity	Annually base since 2001, with the exception of 2003.



Methodological issues

Target population

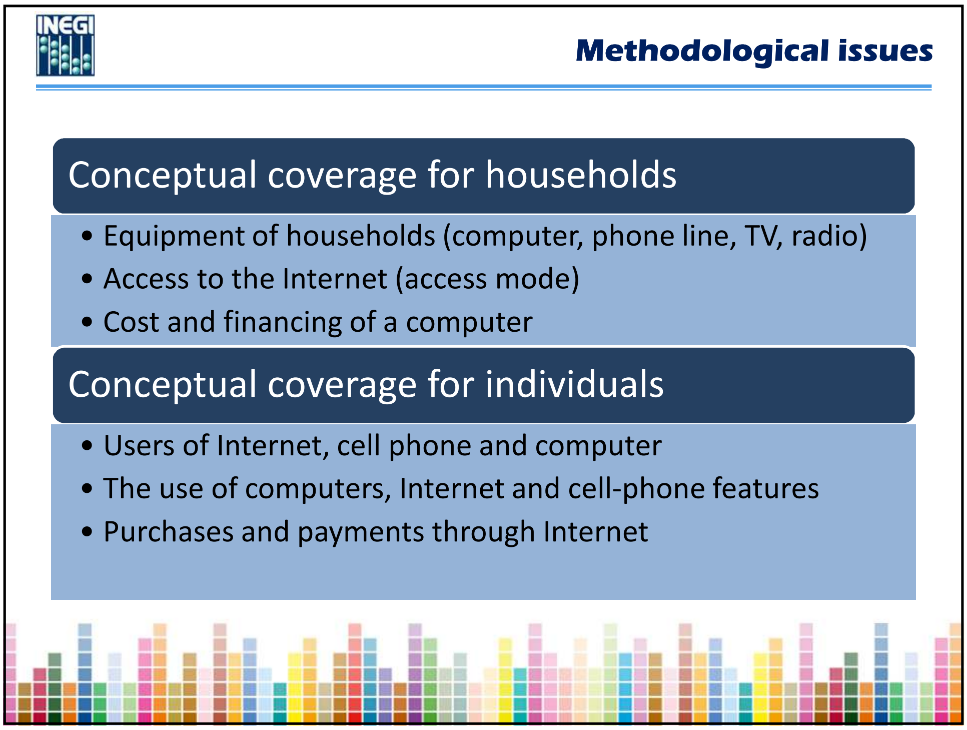
- Households at national level
- Individuals over six years

Temporary coverage

- From 2001 to 2013, exclude 2003

Geographical coverage

- National level from 2001 to 2013
- State level 2010, 2011 and 2013



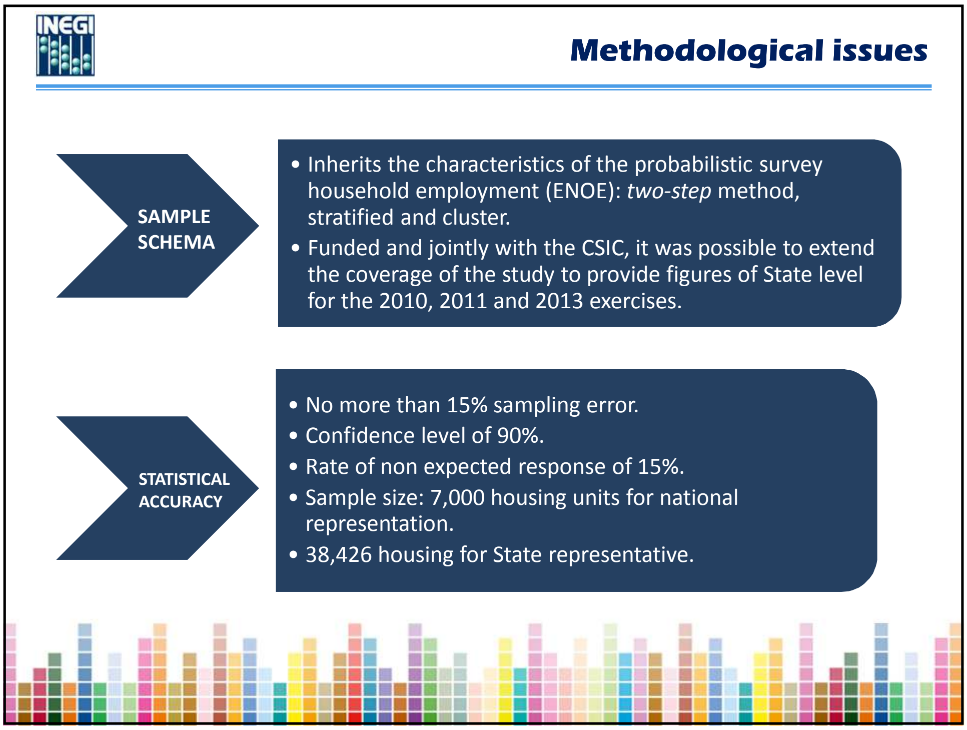
Methodological issues

Conceptual coverage for households

- Equipment of households (computer, phone line, TV, radio)
- Access to the Internet (access mode)
- Cost and financing of a computer

Conceptual coverage for individuals

- Users of Internet, cell phone and computer
- The use of computers, Internet and cell-phone features
- Purchases and payments through Internet



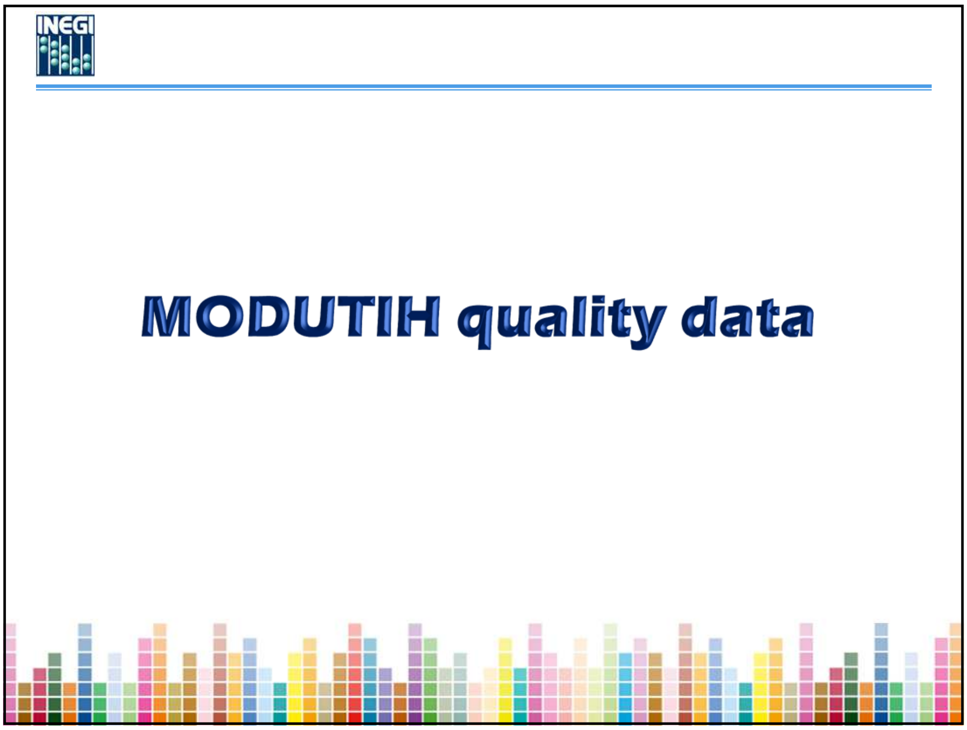
Methodological issues

SAMPLE SCHEMA

- Inherits the characteristics of the probabilistic survey household employment (ENOE): *two-step* method, stratified and cluster.
- Funded and jointly with the CSIC, it was possible to extend the coverage of the study to provide figures of State level for the 2010, 2011 and 2013 exercises.

STATISTICAL ACCURACY

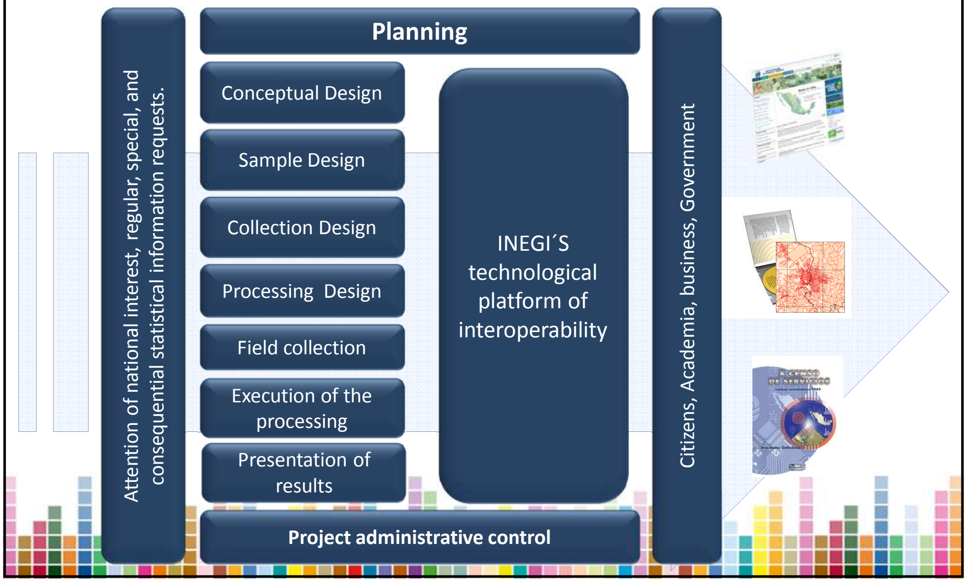
- No more than 15% sampling error.
- Confidence level of 90%.
- Rate of non expected response of 15%.
- Sample size: 7,000 housing units for national representation.
- 38,426 housing for State representative.



MODUTIH quality data

Basic statistics production

Process for the generation of basic statistics



Attention of national interest, regular, special, and consequential statistical information requests.

Planning

Conceptual Design

Sample Design

Collection Design

Processing Design

Field collection

Execution of the processing

Presentation of results

INEGI´S technological platform of interoperability

Project administrative control

Citizens, Academia, business, Government

Conceptual design

The comparability requirements and the recommendations of international organizations;

Concepts justification, using criteria of relevance based on needs analysis and definition of priorities of information, and

The adoption, when they exist, and appropriate use of standards on the definition of concepts, catalogs and classifications.

Conceptual design

To ensure the quality of statistical measurements, during the "**conceptual design**" gets attention in:

- Identification of the objectives or purposes that guide the statistical project.
- Definition and justification of the concepts of interest aligned to the objectives.
- Questionnaire design, whereas reliable information.
- Conducting field tests to ensure the suitability of questionnaires designed.
- Design coding criteria, validation and presentation of results, considering the objectives and needs initially raised.

Statistical Design

The sampling frame is the infrastructure for sample selection of the survey. It consists of a set of housing listing and mapping associated with them for its location.

The MODUTIH sample is obtained from the sample that rises for the ENOE. This is because the MODUTIH is an annex module to the ENOE questionnaire. That is way, the statistical design of the MODUTIH is aimed at the measurement of the rate of open unemployment (TDA).

How do we care the quality process of the statistical design?

Ensuring a quality frame

- Delivering mapping and support elements to the interviewer.
- Taking care that the listings are exhaustive in coverage.
- Carrying out a continuous updating of listings of homes.
- With an automated operation.
- Supervision.
- Construction and monitoring of indicators.

Statistical Design / Ensuring Quality Design

Review process guide:

For calculating the sample size

- Is the magnitude of the error suited to the indicators of interest?
- Was considered the effect of design?
- Is the average number of inhabitants per house of the study population scope?
- Do was chosen the correct rate of anticipated non-response?
- Is the total sample size the sum of the sample in the domains?

Statistical Design / Ensuring Quality Design

Review process guide:

Distribution

- Sample was allocated to all strata?
- In case of collapses, the collapsed stratum contains the sum of selection units strata?

Selecction

- The sum of selected units per stratum, corresponding to the distribution?
- The total sum of units is fixed?
- In case of substitutions, there are all identified?
- The identification data of the selected units are complete?

Statistical Design / Ensuring Quality Design

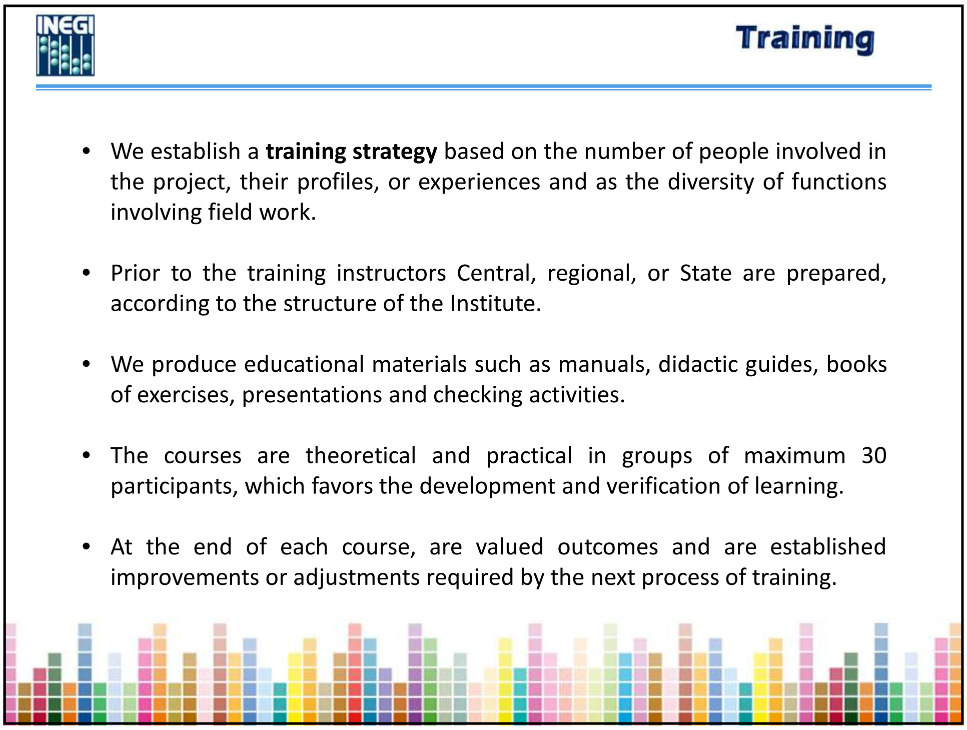
Review process guide:

Calculation of expansion factors

- The sum of natural expansion factors, does the total units level stratum and total level?
- The sum of factors assigned to individuals or economic units, is consistent with the sum of population or employed personnel totals, respectively?
- Were reviewed and atypical adjusted factors were adjusted where appropriate?

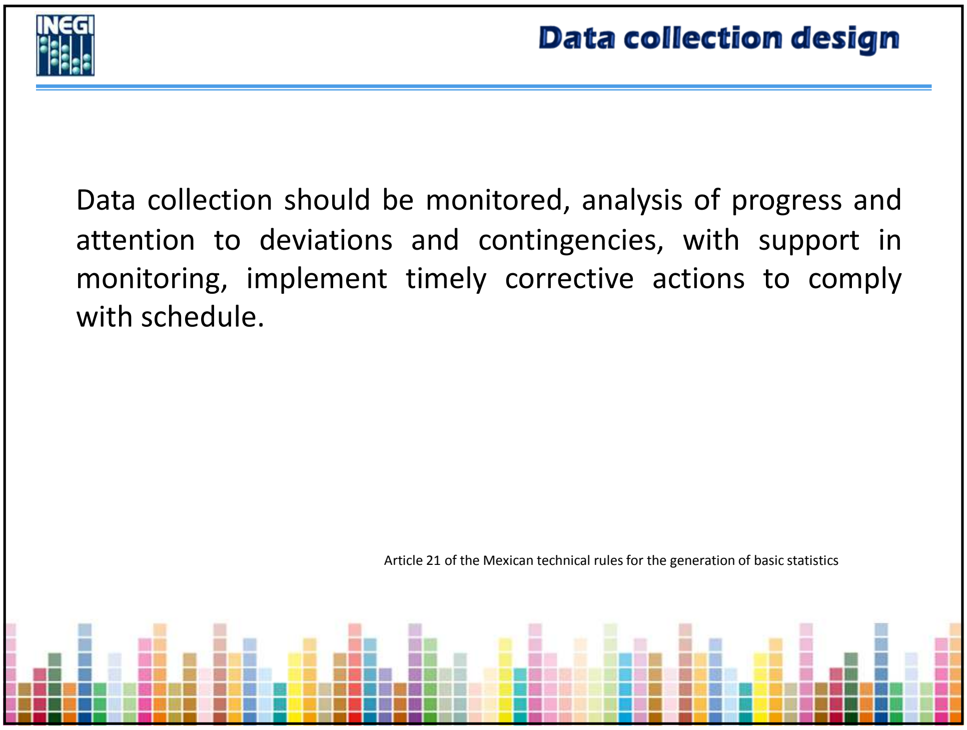
Statistical accuracy calculation

- There are no inconsistencies in the allocation of strata to the PSU (Primary Sampling Units)?
- We checked the associations in the case of collapse of strata?
- Does the value of the indicator obtained by the calculation of precise details, match with the one obtained in the area of processing?
- Does the method of calculation to be used correspond to the design?



Training

- We establish a **training strategy** based on the number of people involved in the project, their profiles, or experiences and as the diversity of functions involving field work.
- Prior to the training instructors Central, regional, or State are prepared, according to the structure of the Institute.
- We produce educational materials such as manuals, didactic guides, books of exercises, presentations and checking activities.
- The courses are theoretical and practical in groups of maximum 30 participants, which favors the development and verification of learning.
- At the end of each course, are valued outcomes and are established improvements or adjustments required by the next process of training.



Data collection design

Data collection should be monitored, analysis of progress and attention to deviations and contingencies, with support in monitoring, implement timely corrective actions to comply with schedule.

Article 21 of the Mexican technical rules for the generation of basic statistics

Data collection design

Quality control at field work

Control, monitoring and supervision in the data collection contributes to improve the quality of the statistics to be provided:

- Ensures that the sample selected is equal to the currently sample collected.
- Ensures that the concepts set out in the conceptual design are understood correctly by the respondent and well captured by the survey.
- The number of visits is reduced to the respondent, as well as the consultations on a possible inconsistency of data.

Processing design

Enter-data quality/data capture

- Acceptance of valid codes for each of the variables.
- Verification of the sequences of the questions set out in the questionnaire.
- Integrity check to the inside of a questionnaire, housing, formation of households, population inside homes and the modules up to the target population of the survey.
- Verification of the integrity of the unit of processing, questionnaire, package, batch, municipality, entity, etc.
- Verification of integrity of the captured, caught against the selected sample.

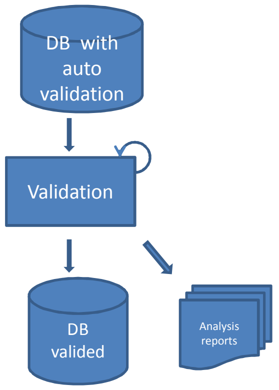
Processing design

Validation / Edition.

- Ensures **consistency and logical coherence of the questionnaire questions** and the interrelationship between them through a discovery process in data inconsistency.

- It consists of the verification of certain fields in each record to see if they are **consistent**, in the judgment of experts and **automatic debugging process**, consisting of a set of tasks for the **treatment of errors** and to provide information to measure the **quality data.**

Validation process



DB with auto validation

Validation

DB valided

Analysis reports

Processing design

Results presentation.

Generate information that ensures the geographic coverage, ensure the consistency of the data for their release and final results.

Generated products:

- Microdata.
- Consultation Systems:
- Interactive queries
- Sociodemographic indicators.
- Basic Tabulated.

Lessons learned

The MODUTIH has taught us that investing time and financial resources in the process of design, collecting, monitoring and control of all and each one of the stages of the process for the generation of basic statistics, is the best investment that can be made to ensure the quality of the information.

This teaching is valid both for surveys related to economic issues, as for demographic issues and otherwise.

Apply this strategy to all exercises of the collection of information through surveys, necessarily gives us more solid National Information System.

Recommendations

Our experience in the survey for more than one decade of the MODUTIH allows us to make some recommendations:

- The institutional arrangements that are given with the ministries and institutions users of information on this subject, in the framework of the functioning of the specialized technical Committee on Statistics of the Information Society (CTEESI), ensures that the information generated have the quality required by the users.
- The selection of a suitable respondent in the home, and therefore the abandonment of the universal respondent, has direct impact on the quality of the data obtained. How much more, on this subject as dynamic and changing, and so associated with the individual use of the technologies involved.

Recommendations

- The definition of the collection instrument (questionnaire) clearly and solidly supported within a conceptual framework and international recommendations, is a relevant element to take into account to ensure the quality of the information.

- Control, monitoring and supervision of the operation of field involved in the capture of the MODUTIH information contributes substantially to the statistical quality of the information.

Challenges

What are the challenges posed by the MODUTIH for the future?

- The use of electronic means (CAPI) for data collection.
- That the MODUTIH not be anymore a module of the ENOE, to become a unique survey .
- Apply the survey to a direct respondent.

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/8-E
5 December 2013

English

SOURCE:	National Markets and Competition Commission (CNMC), Spain
TITLE:	Report of the Expert Group on Telecommunication/ICT indicators

11th World Telecommunication/ICT Indicators Symposium (WTIS)

Mexico City, 4-6 December 2013

Report of the Expert Group on Telecommunication/ICT indicators

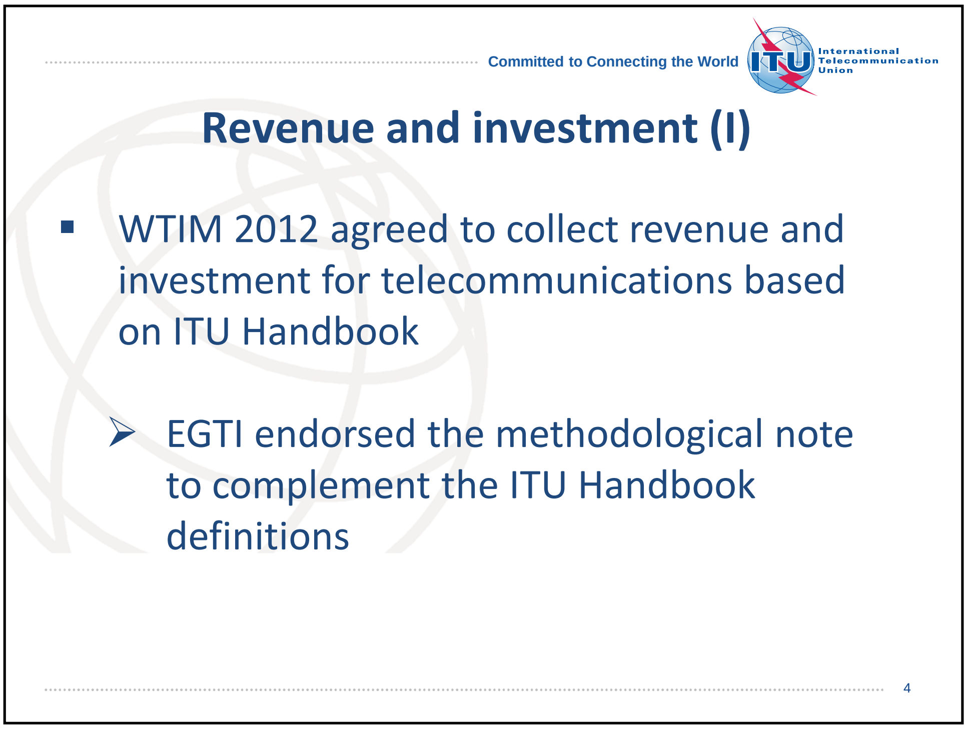
Iñigo Herguera
EGTI Chair
Statistics Department, CNMC Spain

4th EGTI meeting

- 2-3 December 2013, Mexico City
- 67 participants from 35 countries, including regulators, ministries, national statistical offices and operators
- Discussions on inputs received through online forum and presentations

List of topics

- Revenue and investment indicators
- Backbone transmission maps
- Indicators on mobile broadband prices
- Revision of the Partnership’s Core Indicators
- TV broadcasting indicators
- Other revisions and future work



Revenue and investment (I)

- WTIM 2012 agreed to collect revenue and investment for telecommunications based on ITU Handbook
  - ➢ EGTI endorsed the methodological note to complement the ITU Handbook definitions

Revenue and investment (II)

- WTIM 2012 proposed two topics for discussion:
  - ➢ Revenue and investment for the entire ICT sector
  - ➢ Foreign direct investment (FDI)

EGTI Conclusions:

- Data are collected by very heterogeneous sources
- Continue discussions in the framework of the Partnership on Measuring ICT for Development

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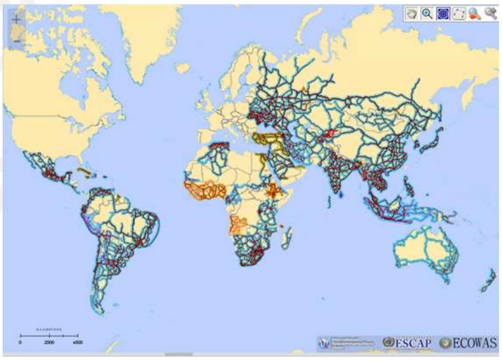
Backbone transmission maps

- ITU presented the Interactive Online Transmission maps
- Data collected for most regions
- Countries are encouraged to submit and validate the data

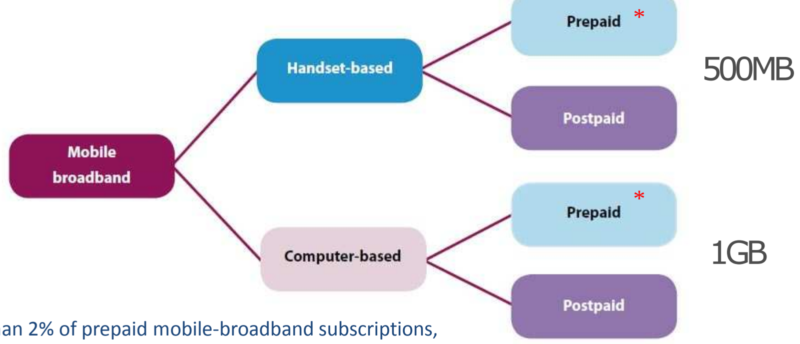


Indicators on mobile broadband prices

- Mobile broadband usage increasing sharply

=> adjust the patterns for comparison of prices

- EGTI agreed to collect:


Mobile broadband
Handset-based
Computer-based
Prepaid *
Postpaid
Prepaid *
Postpaid
500MB
1GB

* If less than 2% of prepaid mobile-broadband subscriptions, postpaid prices will be considered

---

Revision of the Partnership's Core Indicators (I)

Core Indicators on ICT infrastructure and access:

- Update the definitions to match those of the ITU Handbook
- Agreement on the following list:

1. Fixed telephone subscriptions per 100 inhabitants
2. Mobile-cellular telephone subscriptions per 100 inhabitants
3. Fixed (wired)-broadband Internet subscriptions per 100 inhabitants, broken down by speed

Revision of the Partnership's Core Indicators (II)

4. Wireless-broadband subscriptions per 100 inhabitants
5. International Internet bandwidth per inhabitant (bits/second/inhabitant)
6. Percentage of the population covered by a at least a 3G mobile network
7. Fixed broadband Internet prices per month
8. Mobile cellular telephone prepaid prices per month
9. Mobile broadband Internet prices per month (new)
10. TV broadcasting subscriptions per 100 inhabitants (new)

TV broadcasting

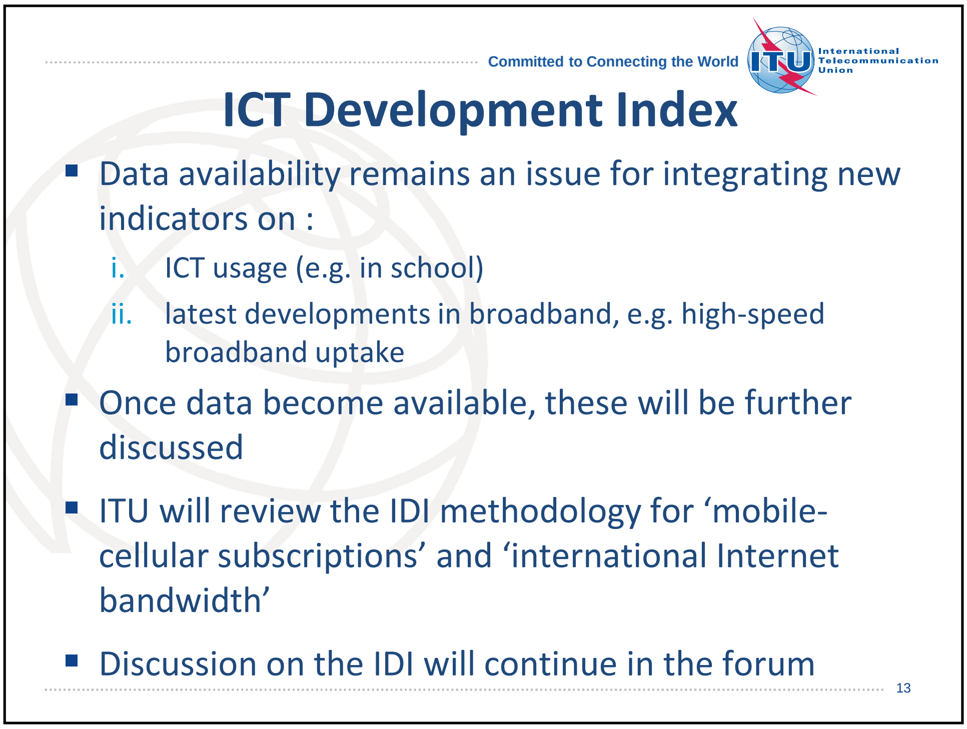
- WTIM 2012 decided to define new TV broadcasting indicators, such as IPTV
- EGTI agreed the following breakdown of pay-TV subscriptions:
  - IPTV subscriptions
  - Cable TV subscriptions
  - Satellite TV subscriptions
  - Other (MMDS, pay DTT, etc.)

Future work (I)

- Wireless-broadband indicators
- Revision of the indicators included in the ITU World Telecommunication/ICT Indicators Long Questionnaire
- Discussion of possible indicators on bundled services

Future work (II)

- Discussion on data on subscriptions and whether to separate data on:
  i. individuals
  ii. public and private organizations
- Emerging technologies in telecommunication infrastructure (WTIS 2013 session)



ICT Development Index

- Data availability remains an issue for integrating new indicators on :
  i. ICT usage (e.g. in school)
  ii. latest developments in broadband, e.g. high-speed broadband uptake
- Once data become available, these will be further discussed
- ITU will review the IDI methodology for ‘mobile-cellular subscriptions’ and ‘international Internet bandwidth’
- Discussion on the IDI will continue in the forum

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/9-E
5 December 2013

English

SOURCE: National Communications Commission, Georgia

TITLE: Revenue and investment in telecommunications/ICT

11th World Telecommunication/ICT Indicators
Symposium (WTIS)
Mexico City, 4-6 December 2013

Revenue and investment in telecommunications/ICT

RATI SKHIRTLADZE
Head of Information and Analysis Department

Georgian National Communications Commission

www.gncc.ge

Outline

- Foreign direct investment (FDI) in telecommunications/ICT sectors
- Revenue and investment for the whole ICT sectors
- Revenue and investment in telecommunications
- Experience in Georgia

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FDI in telecommunications/ICT

- Data collected by heterogeneous sources:
    - Central banks (balance of payment statistics)
    - National statistical offices
    - Specific investment authorities
    - Telecom ministries and regulators (usually limited to telecommunications)

The subject should be addressed with all relevant stakeholders

- Data are not often disaggregated/complete enough to produce figures for the ICT sector

Revenue and investment for the whole ICT sector

- Most telecom ministries and regulators collect data **only** from telecommunication operators and service providers
- Other sources:
    - National statistical offices
    - Central banks
    - Sector associations (e.g. IT, software)

The subject should be addressed with all relevant stakeholders

Revenue and investment in telecommunications

www.gncc.ge

- Data are widely available
  - ➢ since 1960's ITU collects these data
  - ➢ 125+ countries report data

… but important harmonization issues remain in view of international comparisons

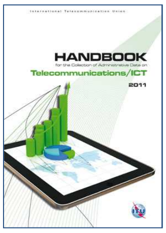
---

Revenue and investment in telecommunications

www.gncc.ge

- Methodology

1. ITU Handbook →



HANDBOOK
for the Collection of Administrative Data on
Telecommunications/ICT
2011

+

Methodological note

2. EGTI agreed on a methodological note to supplement the definitions

Objective: improve international data comparability

Revenue and investment in telecommunications

www.gncc.ge

1. Definition of the sector

The sector includes businesses that operate, maintain and provide access to telecommunication networks.

- Resellers are included
- Transmission of TV signals is also included

But … *activities related to the creation of content are excluded*

Revenue in telecommunications

www.gncc.ge

2. ITU revenue indicators

- Breakdowns: Total / mobile
- Main issues:

Retail revenues from residential customers	YES
Retail revenues from business customers	YES
Wholesale revenues, e.g. interconnection revenues	NO
Revenues from resellers and mobile virtual operators	YES
VAT and excise taxes	NO
Corporate taxes and administrative fees, e.g. numbering fees	YES (not to be deducted from total revenues)
Revenues from device sales and rents	NO
Revenues from added value services, e.g. premium SMS	YES

Investment in telecommunications

3. ITU investment indicators

- Definition of investment

≈ gross fixed capital formation (as in SNA)

Additions less disposals of tangible fixed assets	YES
Additions less disposals of intangible fixed assets	YES
Investment from national-owned operators in the country	YES
Investment from foreign-owned operators in the country	YES
Investment from national-owned operators outside the country	NO
License fees	NO
R&D expenditures	YES

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Georgian National Communications Commission (GNCC)

- GNCC is in charge of regulation of electronic communications and broadcasting
- In 2011 definitions which were used in collecting statistical data were aligned ITU standards
- GNCC collects statistical data from ALL telecom operators and broadcasters on monthly basis
- Investment data is collected annually.

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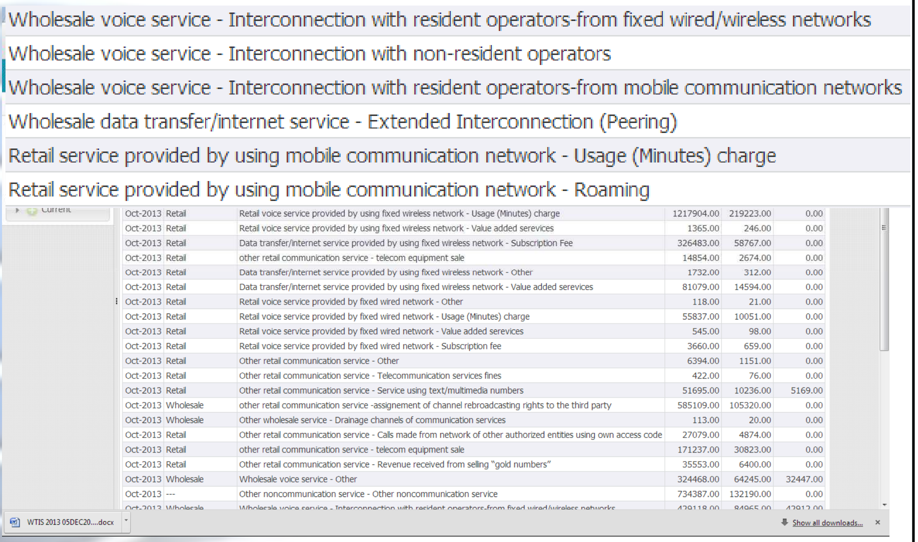
Online Statistical form Screenshot for Revenue (Retail/Wholesale)



Wholesale voice service - Interconnection with resident operators-from fixed wired/wireless networks
Wholesale voice service - Interconnection with non-resident operators
Wholesale voice service - Interconnection with resident operators-from mobile communication networks
Wholesale data transfer/internet service - Extended Interconnection (Peering)
Retail service provided by using mobile communication network - Usage (Minutes) charge
Retail service provided by using mobile communication network - Roaming

Oct-2013	Retail	Retail voice service provided by using fixed wireless network - Usage (Minutes) charge	1217904.00	219223.00	0.00
Oct-2013	Retail	Retail voice service provided by using fixed wireless network - Value added serevices	1365.00	246.00	0.00
Oct-2013	Retail	Data transfer/internet service provided by using fixed wireless network - Subscription Fee	326483.00	58767.00	0.00
Oct-2013	Retail	other retail communication service - telecom equipment sale	14854.00	2674.00	0.00
Oct-2013	Retail	Data transfer/internet service provided by using fixed wireless network - Other	1732.00	312.00	0.00
Oct-2013	Retail	Data transfer/internet service provided by using fixed wireless network - Value added serevices	81079.00	14594.00	0.00
Oct-2013	Retail	Retail voice service provided by fixed wired network - Other	118.00	21.00	0.00
Oct-2013	Retail	Retail voice service provided by fixed wired network - Usage (Minutes) charge	55837.00	10051.00	0.00
Oct-2013	Retail	Retail voice service provided by fixed wired network - Value added serevices	545.00	98.00	0.00
Oct-2013	Retail	Retail voice service provided by fixed wired network - Subscription fee	3660.00	659.00	0.00
Oct-2013	Retail	Other retail communication service - Other	6394.00	1151.00	0.00
Oct-2013	Retail	Other retail communication service - Telecommunication services fines	422.00	76.00	0.00
Oct-2013	Retail	Other retail communication service - Service using text/multimedia numbers	51695.00	10236.00	5169.00
Oct-2013	Wholesale	other retail communication service -assignement of channel rebroadcasting rights to the third party	585109.00	105320.00	0.00
Oct-2013	Wholesale	Other wholesale service - Drainage channels of communication services	113.00	20.00	0.00
Oct-2013	Retail	Other retail communication service - Calls made from network of other authorized entities using own access code	27079.00	4874.00	0.00
Oct-2013	Retail	other retail communication service - telecom equipment sale	171237.00	30823.00	0.00
Oct-2013	Retail	Other retail communication service - Revenue received from selling "gold numbers"	35553.00	6400.00	0.00
Oct-2013	Wholesale	Wholesale voice service - Other	324468.00	64245.00	32447.00
Oct-2013	---	Other noncommunication service - Other noncommunication service	734387.00	132190.00	0.00
Oct-2013	Wholesale	Wholesale voice service - Interconnection with resident operators-from fixed wired/wireless networks	429118.00	84965.00	42912.00

Current
WTIS 2013 05DEC20....docx
Show all downloads...

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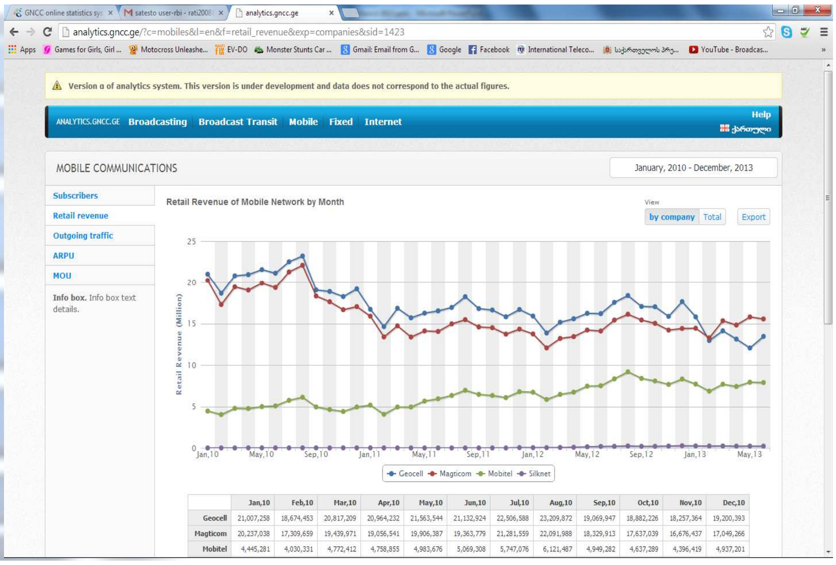
Analytical Portal



GNCC online statistics sys
satesto user-rbi - rati2008
analytics.gncc.ge
analytics.gncc.ge/?c=mobiles&l=en&f=retail_revenue&exp=companies&sid=1423
Apps
Games for Girls, Girl ...
Motocross Unleashe...
EV-DO
Monster Stunts Car ...
Gmail: Email from G...
Google
Facebook
International Teleco...
საქართველოს პრე...
YouTube - Broadcas...

Version α of analytics system. This version is under development and data does not correspond to the actual figures.

ANALYTICS.GNCC.GE
Broadcasting
Broadcast Transit
Mobile
Fixed
Internet
Help
ქართული

MOBILE COMMUNICATIONS

January, 2010 - December, 2013

Subscribers
Retail revenue
Outgoing traffic
ARPU
MOU

Info box. Info box text details.

Retail Revenue of Mobile Network by Month

View
by company
Total
Export
25
20
15
10
5
0
Retail Revenue (Million)
Jan,10
May,10
Sep,10
Jan,11
May,11
Sep,11
Jan,12
May,12
Sep,12
Jan,13
May,13
Geocell
Magticom
Mobitel
Silknet

	Jan,10	Feb,10	Mar,10	Apr,10	May,10	Jun,10	Jul,10	Aug,10	Sep,10	Oct,10	Nov,10	Dec,10
Geocell	21,007,258	18,674,453	20,817,209	20,964,232	21,563,544	21,132,924	22,506,588	23,209,872	19,069,947	18,882,226	18,257,364	19,200,393
Magticom	20,237,038	17,309,659	19,439,971	19,056,541	19,906,387	19,363,779	21,281,559	22,091,988	18,329,913	17,637,039	16,676,437	17,049,266
Mobitel	4,445,281	4,030,331	4,772,412	4,758,855	4,983,676	5,069,308	5,747,076	6,121,487	4,949,282	4,637,289	4,396,419	4,937,201

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THANK YOU FOR YOUR ATTENTION!

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rati@gncc.ge

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/10-E
5 December 2013

English

SOURCE: ITU

TITLE: TV broadcasting indicators

11th World Telecommunication/ICT Indicators Symposium (WTIS)

Mexico City, 4-6 December 2013

TV broadcasting indicators

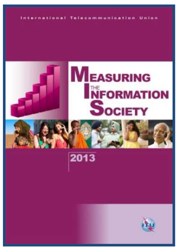
Ivan Vallejo
Market analyst, ICT Data and Statistics Division
International Telecommunication Union

TV broadcasting

- International Standard Industrial Classification of All Economic Activities (Rev 4) includes under telecommunications the "*transmission of television signals*"
- Since 1960, ITU collects data to measure TV uptake
- WSIS, Target 8: "Ensure that all of the world's population has access to television and radio services"

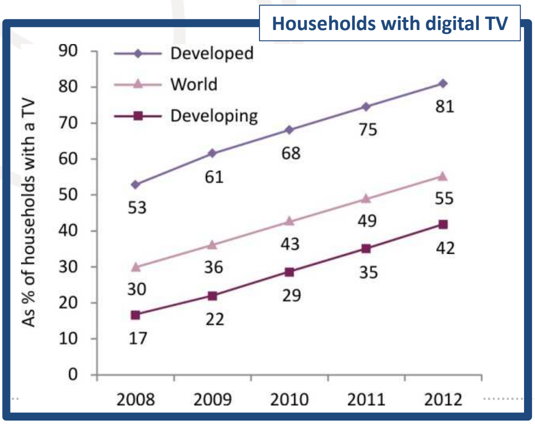
Background – recent ITU work

- WTIM 2012 held in Bangkok in September 2012
  - o Session on digital broadcasting
  - o EGTI mandated to define indicators for new TV services, such as IPTV
- EGTI reviewed ITU indicators on TV broadcasting in 2013
- MIS 2013, launched in October 2013
  Ch. 5: Digital Broadcasting Trends ⟶


International Telecommunication Union
Measuring the Information Society
2013

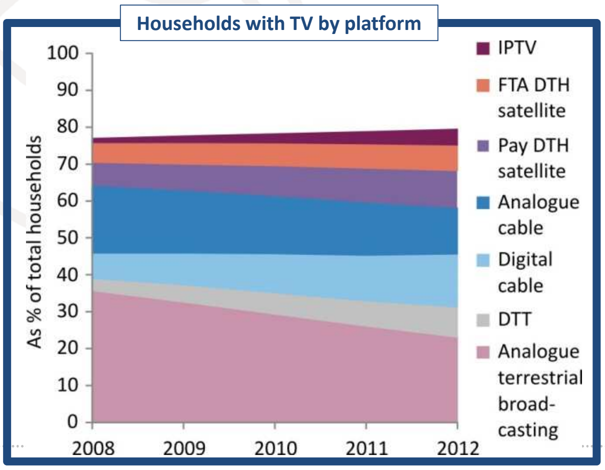
MIS 2013 – Findings digital broadcasting

1. Globally, almost 80% of households with a TV
2. Digital transition passed the halfway mark



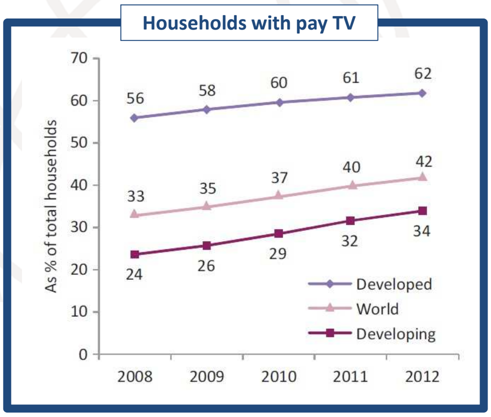
MIS 2013 – Findings digital broadcasting

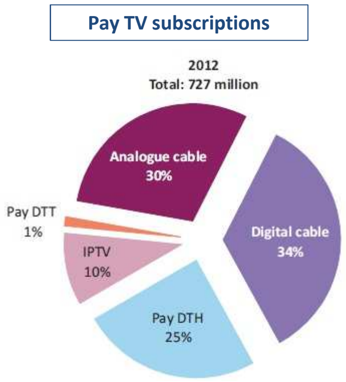
3. Increasing cross-platform competition


Households with TV by platform

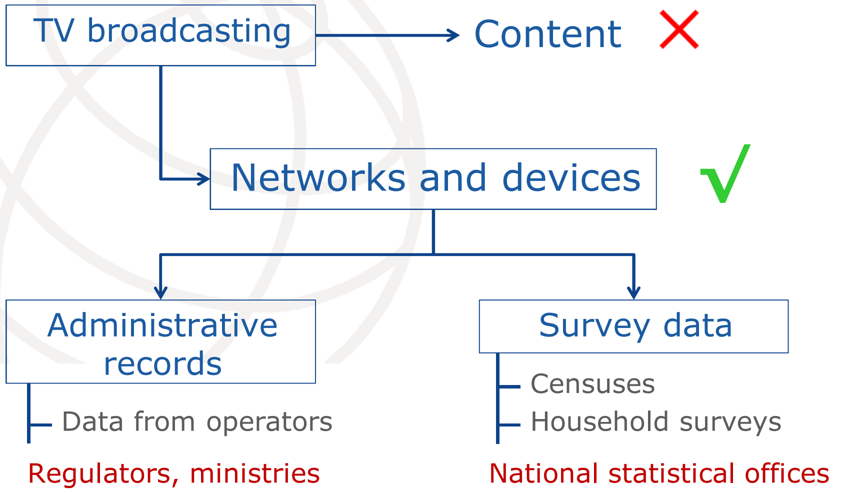
MIS 2013 – Findings digital broadcasting

4. Growth of pay TV


Households with pay TV


Pay TV subscriptions

ITU data on TV broadcasting



TV broadcasting → Content ✗

Networks and devices ✓

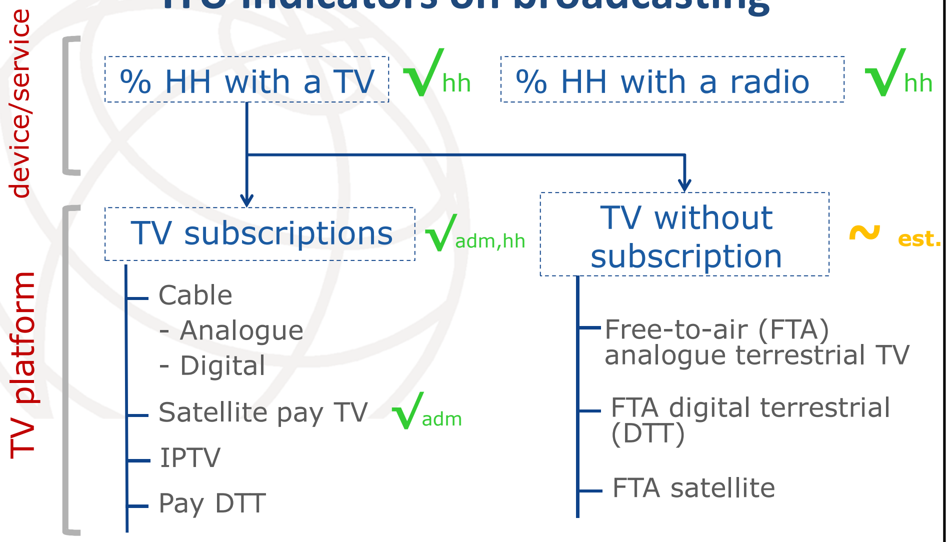
Administrative records
- Data from operators

Regulators, ministries

Survey data
- Censuses
- Household surveys

National statistical offices

ITU indicators on broadcasting



device/service

% HH with a TV ✓hh

% HH with a radio ✓hh

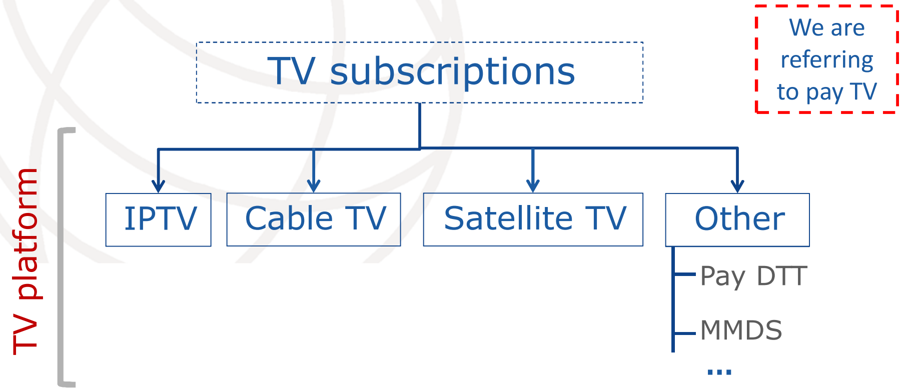
TV platform

TV subscriptions ✓adm,hh
- Cable
  - Analogue
  - Digital
- Satellite pay TV ✓adm
- IPTV
- Pay DTT

TV without subscription ~ est.
- Free-to-air (FTA) analogue terrestrial TV
- FTA digital terrestrial (DTT)
- FTA satellite

ITU indicators on TV broadcasting

- EGTI proposed changes to administrative indicators on TV broadcasting:



TV subscriptions

We are referring to pay TV

TV platform

IPTV

Cable TV

Satellite TV

Other

Pay DTT

MMDS

…

ITU indicators on TV broadcasting

Not covered by the proposed administrative indicators:

- Free-to-air TV ✓household surveys
- TV coverage
- Over-the-top (OTT) Internet TV and video, e.g. YouTube or Netflix
- Mobile TV

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/11-E
5 December 2013

English

SOURCE: CETIC Brazil

TITLE: Report of the work of the Expert Group on ICT Household Indicators (EGH)

Report of the work of the Expert Group on ICT Household Indicators (EGH)

World Telecommunication/ICT Indicators Symposium (WTIS)

5 December, 2013 / Mexico City, Mexico

Alexandre Barbosa

Chair of the Expert Group on ICT Household Indicators

Agenda

- ❑ **The ITU Expert Group on ICT Household Indicators (EGH)**
  - o *Overview*
- ❑ **1st Meeting of the ITU Expert Group on ICT Household Indicators (EGH) - São Paulo, Brazil, 4-6 June 2013**
- ❑ **Outcomes of online and face-to-face discussions**
  - o *Revision of existing indicators*
  - o *New indicators*
  - o *Cross-cutting issues*
- ❑ **ITU Manual for Measuring ICT Access and Use by Households and Individuals**

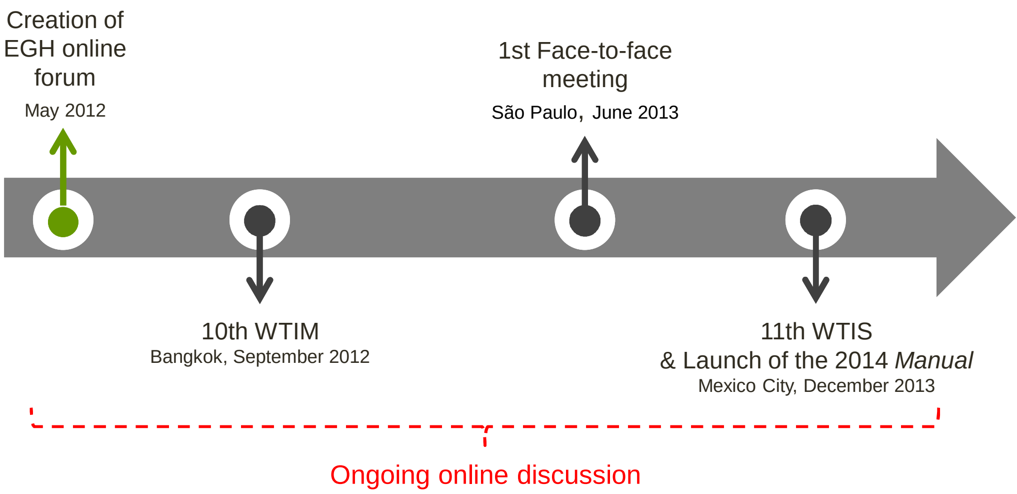
ITU Expert Group on ICT Household Indicators (EGH)

Overview

- ❑ Launched in May 2012, following a decision by the 9th World Telecommunication/ICT Indicators Meeting (Mauritus, Dec/ 2011);
- ❑ **Main objectives**: revision of the Partnership core indicators on ICT access in Households and use by individuals and the ITU Manual for Measuring ICT Access and Use by Households and Individuals, in collaboration with ITU Member States.
- ❑ Work methodology: online and face-to-face discussion.

Timeline of the EGH

Activities of the EGH



Creation of EGH online forum
May 2012

10th WTIM
Bangkok, September 2012

1st Face-to-face meeting
São Paulo, June 2013

11th WTIS
& Launch of the 2014 *Manual*
Mexico City, December 2013

Ongoing online discussion

EGH Online Forum

Online Activity

September 2012	**November 2013**
97 registered members from 45 countries	178 registered members from 76 countries
143 posts	264 posts in 99 topics in 36 forums

1st Meeting of the ITU Expert Group on ICT Household Indicators (EGH)

ITU
Expert Group on ICT Household Indicators (EGH)
1st meeting
Welcome
São Paulo | June 4-6, 2013
cetic.br nic.br cgi.br

1st Meeting of the ITU Expert Group on ICT Household Indicators (EGH)

Objectives

- To examine the contributions received from members of the EGH Online Forum over the past year;
- To finalize the revision of the core list of indicators on ICT household access and individual ICT use;
- To finalize the related revision of the *ITU Manual for Measuring ICT Access and Use by Households and Individuals.*

Details

- Held in São Paulo, Brazil, on 4-6 June 2013;
- Organized by ITU and hosted by the Brazilian Network Information Center (NIC.br);
- Attended by 38 participants (NSOs, ministries, regulators and other organizations officially in charge of monitoring the information society from 18 countries) as well as UNECLAC.

EGH Online Forum and Face-to-face Meeting

Discussion and Outcomes

Revision of existing core indicators

Proposal for new indicators

Cross-cutting issues

Expert Group
on ICT Household
Indicators (EGH)

Revision of Existing Core Indicators

Indicators revised by the EGH

- ☐ **HH1** – Proportion of households with a radio
- ☐ **HH2** – Proportion of households with a TV
- ☐ **HH3** – Proportion of households with telephone
- ☐ **HH4** – Proportion of households with a computer
- ☐ **HH5** – Proportion of individuals using a computer
- ☐ **HH6** – Proportion of households with Internet access
- ☐ **HH7** – Proportion of individuals who use the Internet in the last 12 months
- ☐ **HH8** – Location of individual use of the Internet in the last 12 months
- ☐ **HH9** – Internet activities undertaken by individuals in the last 12 months
- ☐ **HH10** – Proportion of individuals who used a mobile cellular telephone in the last 12 months
- ☐ **HH11** – Proportion of households with access to the Internet by type of access
- ☐ **HH12** – Frequency of individual use of the Internet in the last 12 months

---

Revision of Existing Core Indicators

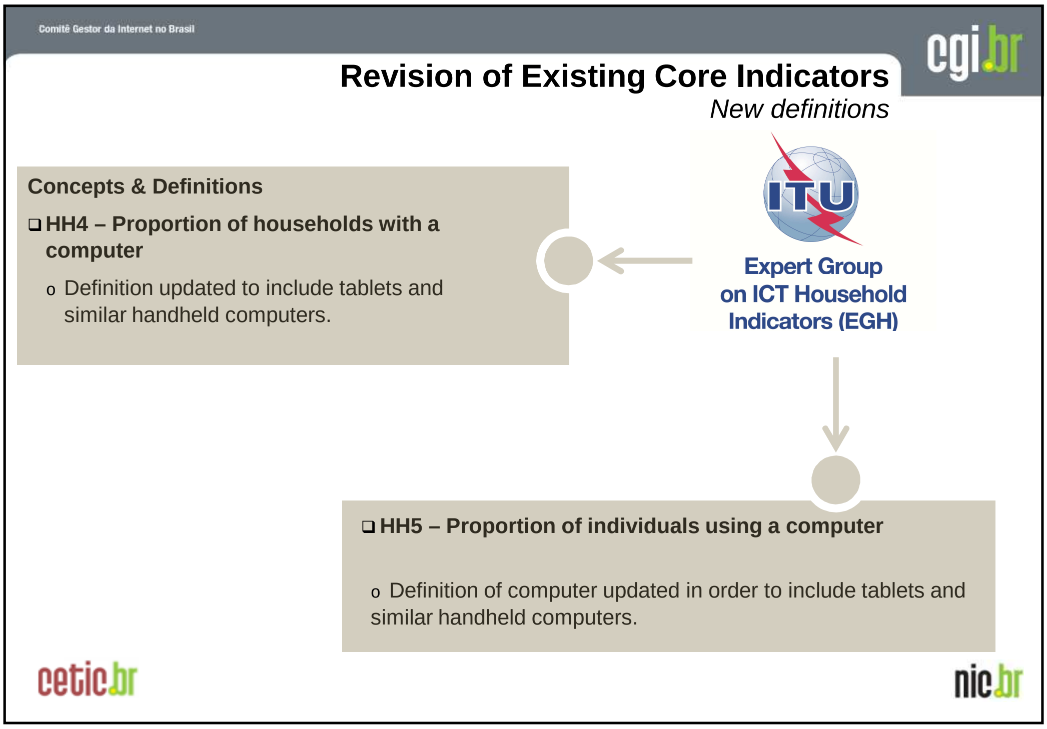
New definitions

Concepts & Definitions

- ☐ **HH1** – **Proportion of households with a radio**
  - Definition updated to include other devices where radios can be integrated.
- ☐ **HH2 – Proportion of households with a TV**
  - Definition updated in order to include other devices where TV can be integrated.

Expert Group on ICT Household Indicators (EGH)

- ☐ **HH3** – **Proportion of households with a telephone**
  - Clarifications on the availability of the signal were added to the sub-indicator on mobile telephone.



Comitê Gestor da Internet no Brasil

cgi.br

Revision of Existing Core Indicators

New definitions

Concepts & Definitions

- **HH4 – Proportion of households with a computer**
  - Definition updated to include tablets and similar handheld computers.

Expert Group on ICT Household Indicators (EGH)

- **HH5 – Proportion of individuals using a computer**
  - Definition of computer updated in order to include tablets and similar handheld computers.

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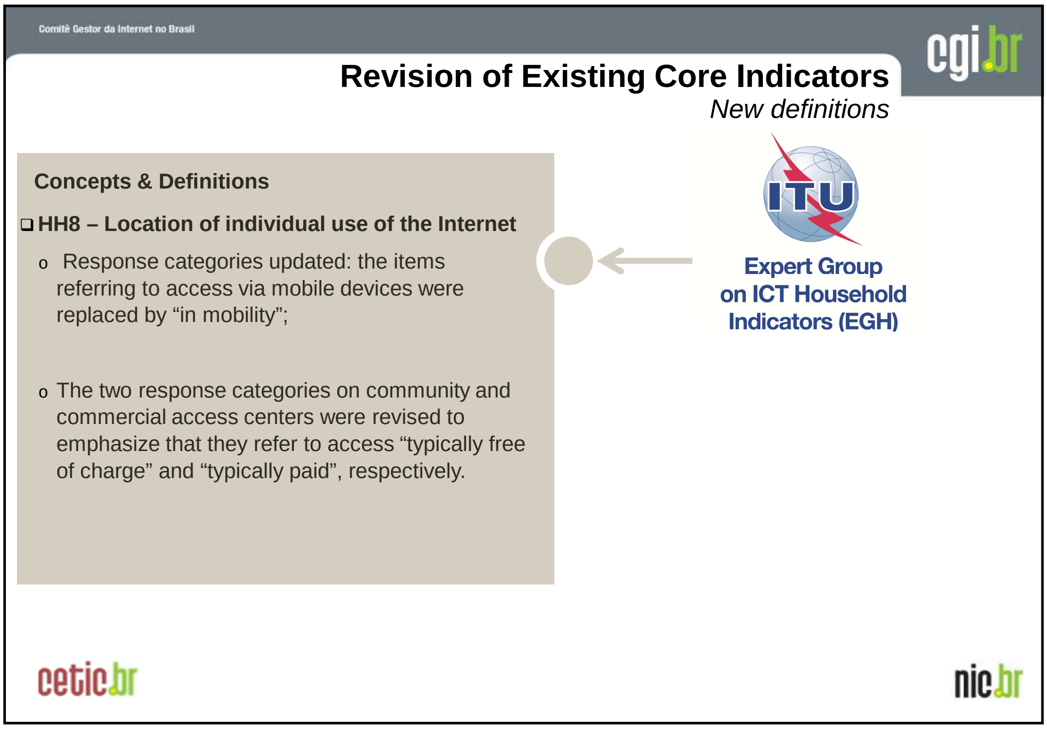

Comitê Gestor da Internet no Brasil

cgi.br

Revision of Existing Core Indicators

New definitions

Concepts & Definitions

- **HH8 – Location of individual use of the Internet**
  - Response categories updated: the items referring to access via mobile devices were replaced by “in mobility”;
  - The two response categories on community and commercial access centers were revised to emphasize that they refer to access “typically free of charge” and “typically paid”, respectively.

Expert Group on ICT Household Indicators (EGH)

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Revision of Existing Core Indicators

New definitions

Concepts & Definitions

- ❑ **HH9 – Internet activities undertaken by individuals**
  - o List of activities was updated;

Expert Group on ICT Household Indicators (EGH)

- ❑ **HH11 – Proportion of households with access to the Internet by type of access**
  - o Response categories updated to adjust to the ITU/OECD definition of broadband and to clearly distinguish between [fixed (wired) and wireless] broadband and [fixed (wired) and mobile] narrowband.

New core indicators

- ❑ **HH13 – Proportion of households with multichannel television, by type;**

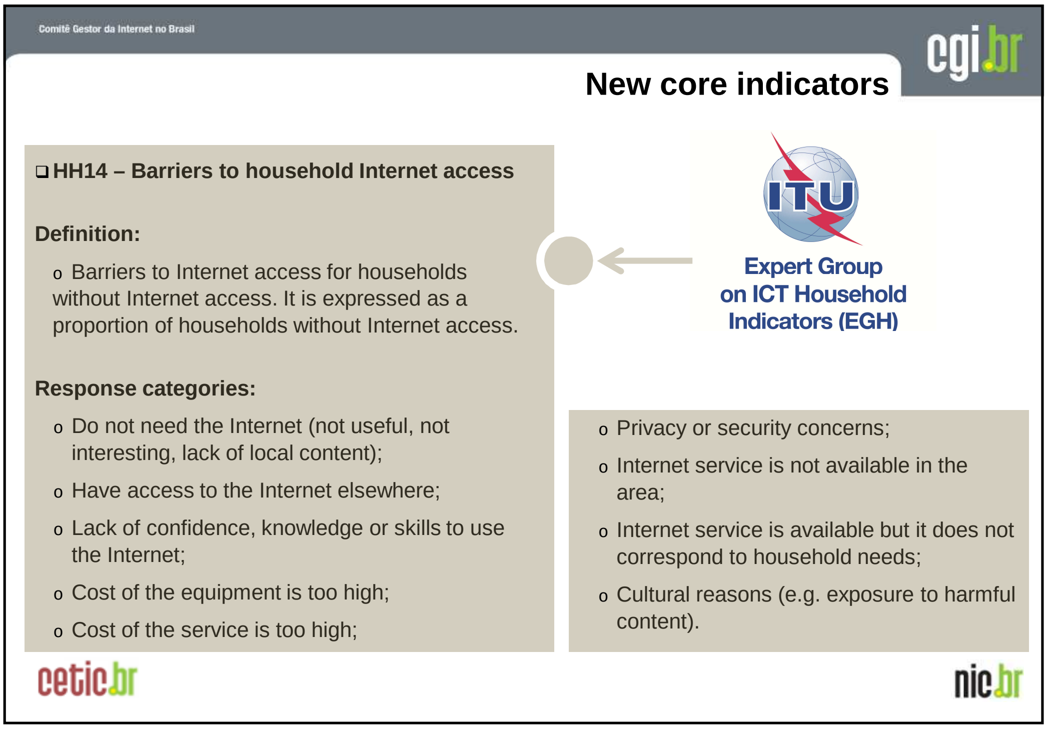
Definition:

- o Proportion of households with multichannel television (TV) and by type of multichannel service.

Data should be collected on:

- o Cable TV (CATV);
- o Direct-to-home (DTH) satellite services;
- o Internet-protocol TV (IPTV);
- o Digital terrestrial TV (DTT).

Expert Group on ICT Household Indicators (EGH)



New core indicators

❑ HH14 – Barriers to household Internet access

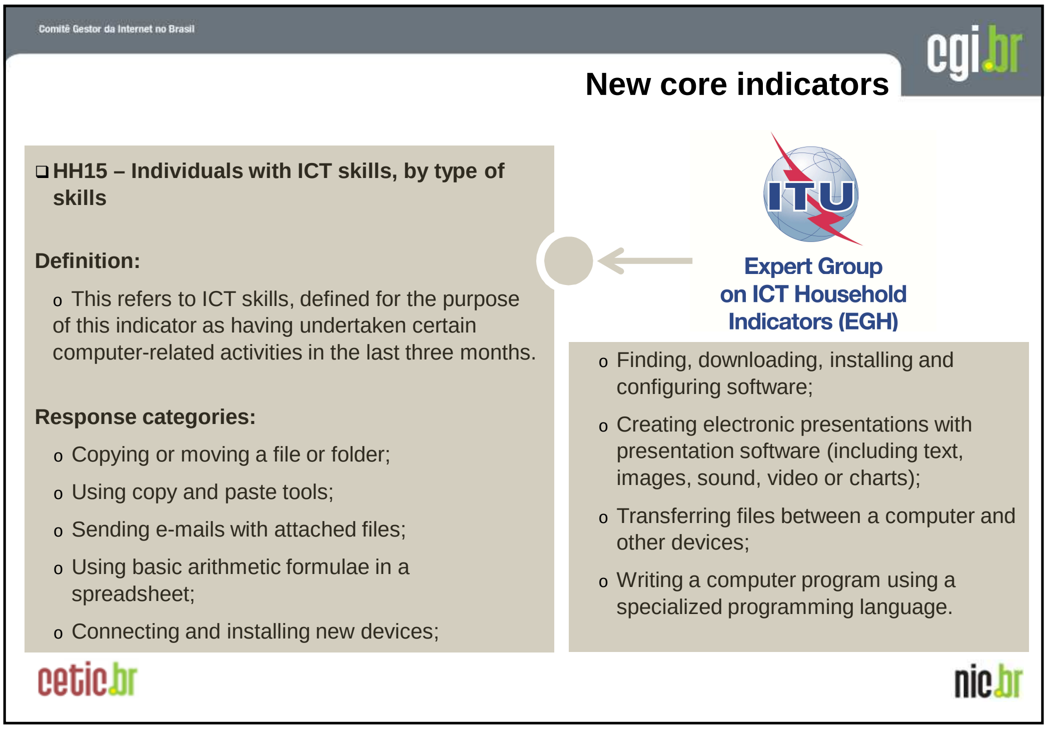
Definition:

- Barriers to Internet access for households without Internet access. It is expressed as a proportion of households without Internet access.

Response categories:

- Do not need the Internet (not useful, not interesting, lack of local content);
- Have access to the Internet elsewhere;
- Lack of confidence, knowledge or skills to use the Internet;
- Cost of the equipment is too high;
- Cost of the service is too high;
- Privacy or security concerns;
- Internet service is not available in the area;
- Internet service is available but it does not correspond to household needs;
- Cultural reasons (e.g. exposure to harmful content).

Expert Group on ICT Household Indicators (EGH)



New core indicators

❑ HH15 – Individuals with ICT skills, by type of skills

Definition:

- This refers to ICT skills, defined for the purpose of this indicator as having undertaken certain computer-related activities in the last three months.

Response categories:

- Copying or moving a file or folder;
- Using copy and paste tools;
- Sending e-mails with attached files;
- Using basic arithmetic formulae in a spreadsheet;
- Connecting and installing new devices;
- Finding, downloading, installing and configuring software;
- Creating electronic presentations with presentation software (including text, images, sound, video or charts);
- Transferring files between a computer and other devices;
- Writing a computer program using a specialized programming language.

Expert Group on ICT Household Indicators (EGH)

New core indicators

- ❑ **HH16 – Household expenditure on ICT**

Definition:

- Percentage of total household expenditure that is expended on ICT goods and services.

Data should be collected on:

- Telephone and telefax equipment;
- Telephone and telefax services;
- Equipment for the reception, recording and reproduction of sound and picture;
- Information processing equipment;
- Repair of audio-visual, photographic and information processing equipment.

Expert Group on ICT Household Indicators (EGH)

Proposal of new core indicators

Open for discussion on the EGH Online Forum

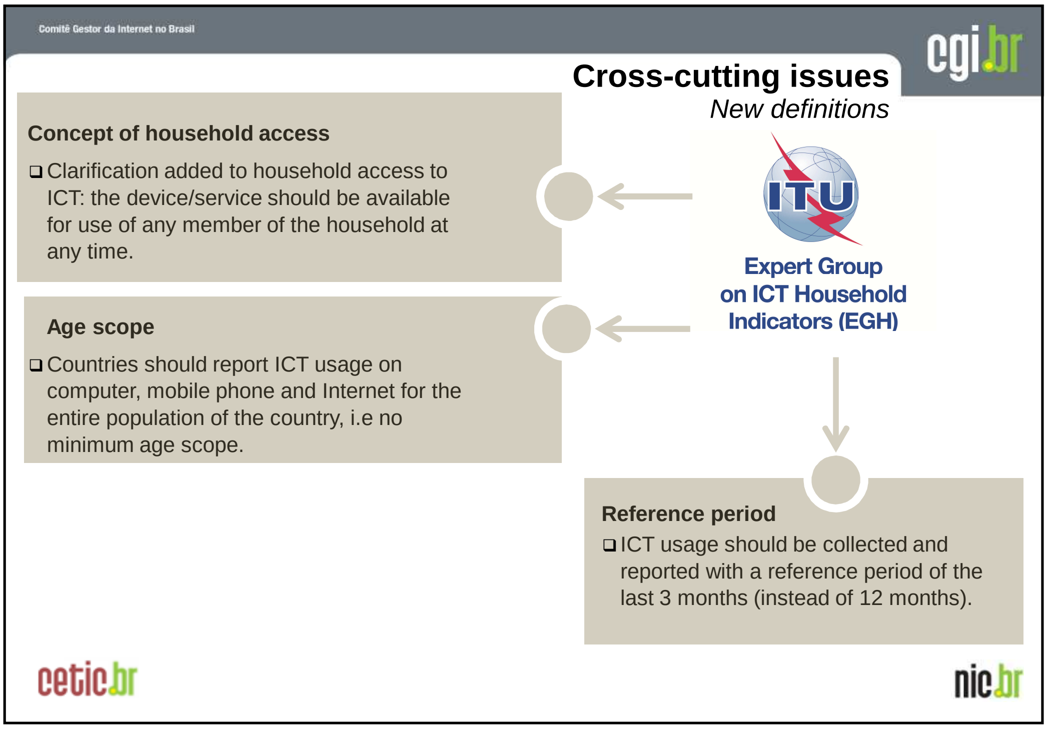
Potential new core indicators open for discussion:

- ❑ Individuals using the Internet by type of portable device and network used to access the Internet;
- ❑ Internet security;
- ❑ Children and youth online protection;

Expert Group on ICT Household Indicators (EGH)

Relevant topics for future discussion

- ❑ Green ICT, mobile phone activities, gender-relevant ICT indicators, revenue and investment for the ICT sector, ICT for people with disabilities.



Cross-cutting issues

New definitions

Expert Group on ICT Household Indicators (EGH)

Concept of household access

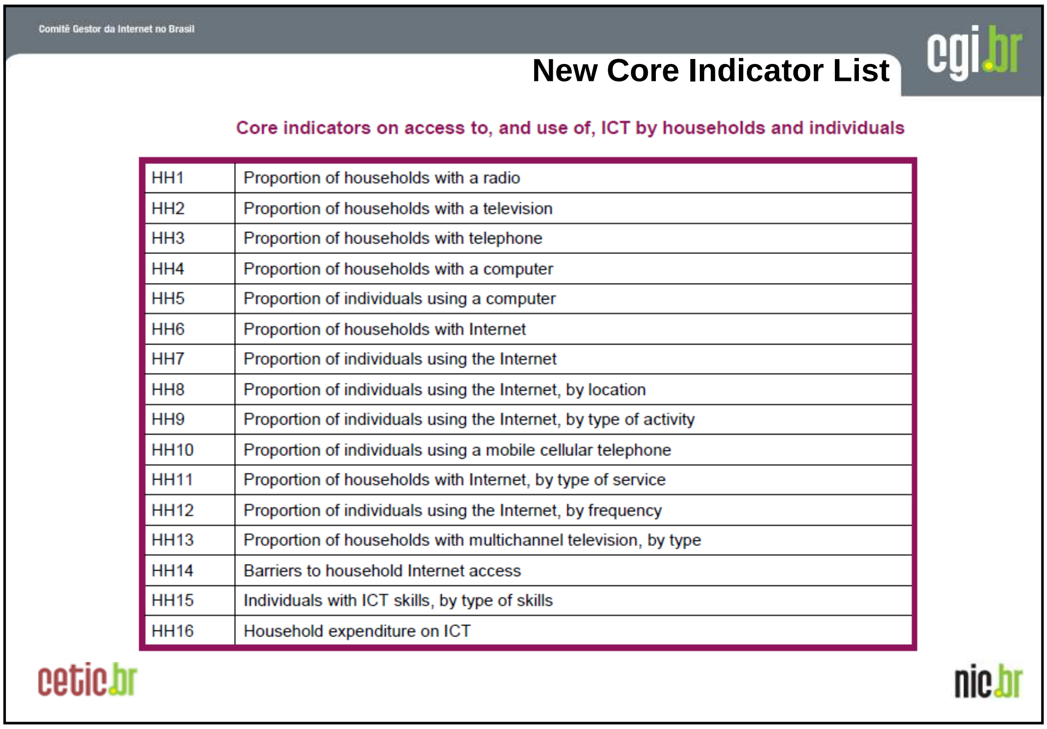
- ❑ Clarification added to household access to ICT: the device/service should be available for use of any member of the household at any time.

Age scope

- ❑ Countries should report ICT usage on computer, mobile phone and Internet for the entire population of the country, i.e no minimum age scope.

Reference period

- ❑ ICT usage should be collected and reported with a reference period of the last 3 months (instead of 12 months).



New Core Indicator List

Core indicators on access to, and use of, ICT by households and individuals

HH1	Proportion of households with a radio
HH2	Proportion of households with a television
HH3	Proportion of households with telephone
HH4	Proportion of households with a computer
HH5	Proportion of individuals using a computer
HH6	Proportion of households with Internet
HH7	Proportion of individuals using the Internet
HH8	Proportion of individuals using the Internet, by location
HH9	Proportion of individuals using the Internet, by type of activity
HH10	Proportion of individuals using a mobile cellular telephone
HH11	Proportion of households with Internet, by type of service
HH12	Proportion of individuals using the Internet, by frequency
HH13	Proportion of households with multichannel television, by type
HH14	Barriers to household Internet access
HH15	Individuals with ICT skills, by type of skills
HH16	Household expenditure on ICT

Final Recommendations

The core indicators list…

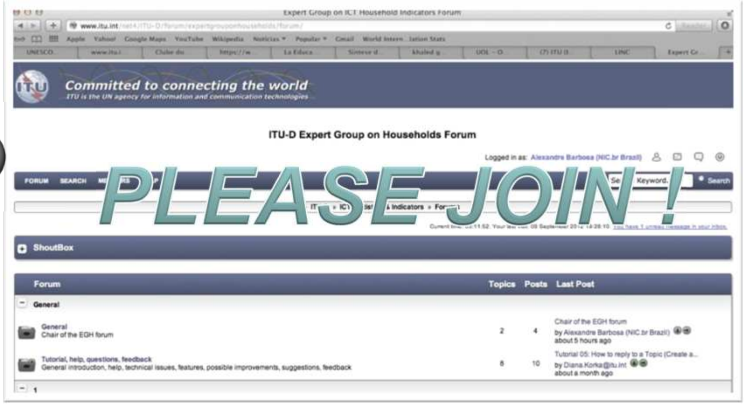
- ❑ …is not exhaustive;
- ❑ …should be used as minimum list when designing or redesigning the data collection;
- ❑ …is aimed at providing a common platform for minimal international comparability;
- ❑ …is reviewed regularly to ensure relevance and usability.

EGH Online Forum

Please join the Online Forum

www.itu.int/net4/ITU-D/forums/EGH/

EGH


Expert Group on ICT Household Indicators Forum
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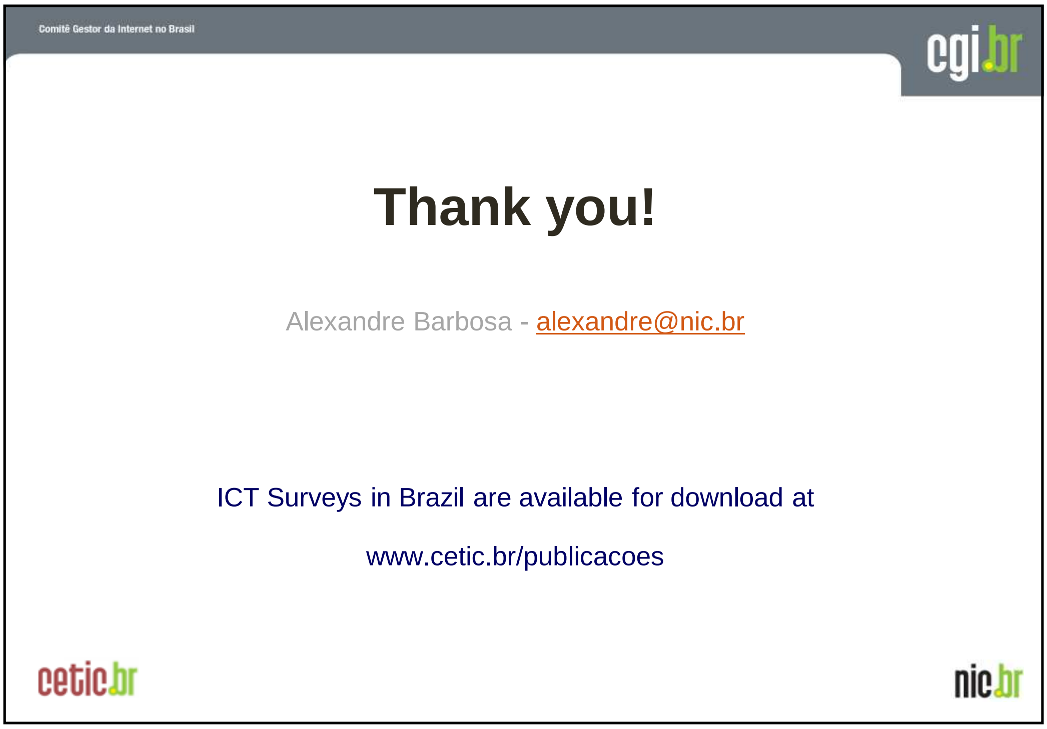
ITU-D Expert Group on Households Forum

Logged in as: Alexandre Barbosa (NIC.br Brazil)

Forum	Topics	Posts	Last Post
General			
General Chair of the EGH forum	2	4	Chair of the EGH forum by Alexandre Barbosa (NIC.br Brazil) about 5 hours ago
Tutorial, help, questions, feedback General introduction, help, technical issues, features, possible improvements, suggestions, feedback	8	10	Tutorial 05: How to reply to a Topic (Create a... by Diana.Korka@itu.int about a month ago



Thank you!

Alexandre Barbosa - alexandre@nic.br

ICT Surveys in Brazil are available for download at

www.cetic.br/publicacoes

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/12-E
5 December 2013

English

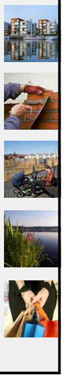
SOURCE:	Statistics Sweden
TITLE:	Measuring ICT skills in Sweden

Statistiska centralbyrån Statistics Sweden

Measuring ICT skills in Sweden

Daniel Ewerdahl
Investments, R&D and IT Unit,
Statistics Sweden

WTIS, Mexico City, 5 December 2013



Statistiska centralbyrån Statistics Sweden

ICT usage in households and by individuals

Background and method

- Surveys carried out in 1984, 1989, 1995, 2000, 2001, 2002-
- Since 2002 EU-harmonized and yearly

- Target population, People living in Sweden age 16-74
  - ~ 7 000 000 individuals (total of 9 600 000)
  - ~ 3 900 000 households
- Frame, The Swedish total population register (TPR)
- Stratified Simple Random Sampling
- 6 age groups and gender, total 12 strata
- ~2 500 individuals are sampled
- 55 % response rate 2013

- Survey Vehicle: Stand-alone
- Data collection method: Telephone interviews

Eurostat model Questionnaire

Statistiska centralbyrån Statistics Sweden

- A. Access to Information and Communication Technologies
- B. Use of computers
- C. Use of the Internet
- D. Use of e-Government
- E. Use of e-Commerce
- F. e-skills
- Socio-demographic background characteristics

- Special topic every year
  - 2011 e-skills
  - 2012 mobile use of internet
  - 2013 e-government
  - 2014 use of Cloud Services

ICT skills indicators

Statistiska centralbyrån Statistics Sweden

- Aim: Every individual should be able to participate in the “Information society”
  - Private (Social aspects, government interaction)
  - Professional (work and education)

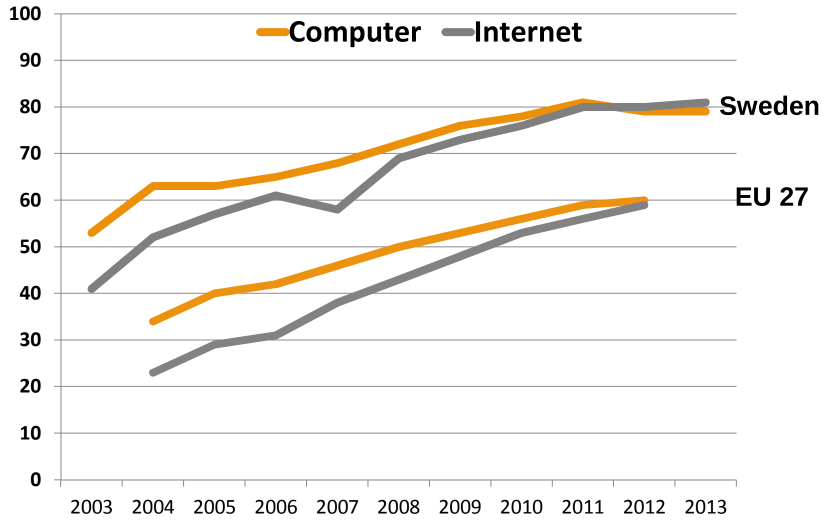
- Access to computer/internet, frequency of use
  - Survey definition of computer: *desktop, laptop, netbook, tablet,* ***excluding smart phone***.

- Main dimensions of skills
  - **Computer skills**
  - **Internet skills**

- Different types of measurement
  - **Activities carried out**
  - Self judged skills
    - Communicate, changing job, protect personal data/ computer from virus
  - Education
    - Formal education, courses, self study, informal assistance

Daily use of computers and internet

Share of individuals age 16-74



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Benchmarking indicators – Computer activities

Share of individuals age 16-74, EU 27:Sweden

Individuals who have **(ever)**…	2003	2005	2006	2007	2009	2011	2012	2014
written a computer program	:14	9:14	9:13	9:11	9:10	10:24	9:22	EU:S
copied or moved a file or folder	:69	53:72	53:73	56:70	59:64	63:73	62:66	EU:S
used copy or cut and paste tools	:69	49:69	51:73	54:70	56:63	61:80	60:75	EU:S
used basic arithmetic formulae in a spreadsheet	:55	35:53	37:55	39:49	40:44	43:61	41:53	EU:S
compressed files	:	26:36	28:36	30:36	33:31	37:51	35:45	EU:S
connected and installed new devices	:	:	37:56	40:50	43:44	43:58	43:60	EU:S
modified configuration parameters in applications	:	:	:	:	:	26:	27:	EU:S
created electronic presentations	:	:	:	:	:	31:51	31:50	EU:S
installed a new or replaced an old operating system	:	:	:	:	:	21:43	20:44	EU:S
transferred files between computer and other devices	:	:	:	:	:	51:75	52:75	EU:S
connected computers to a local area network	:	:	:	19:30	:	:	:	:
detected and solved computer problems	:	:	:	24:37	:	:	:	:
used a mouse to launch programs	:87	64:88	:	:	:	:	:	:

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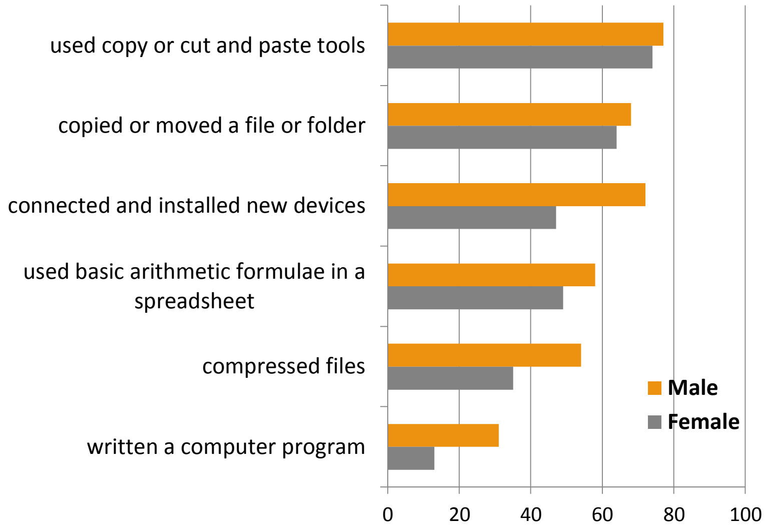
Computer activities 2012

Share of individuals age 16-74, gender



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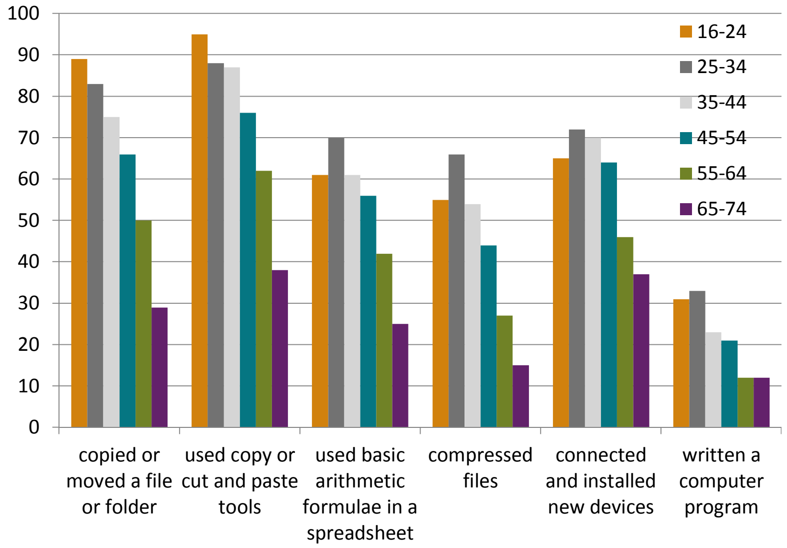
Computer activities 2012

Share of individuals age 16-74, age



Benchmarking indicators – Internet activities

Share of individuals age 16-74, EU 27:Sweden

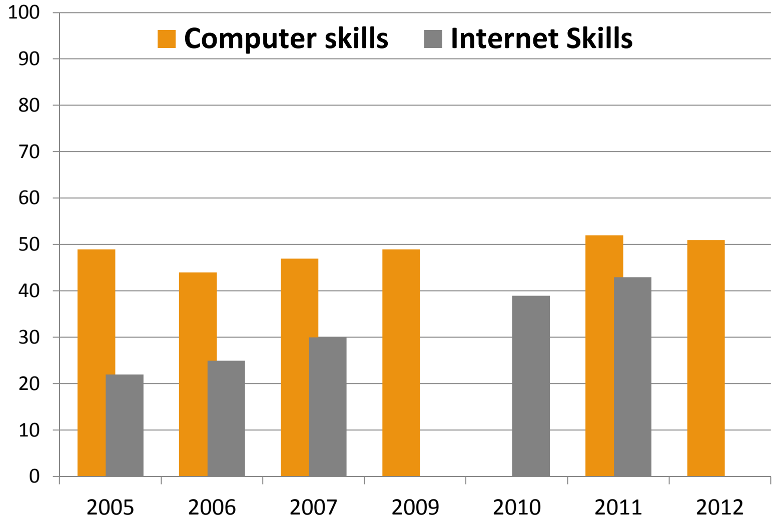
Statistiska centralbyrån Statistics Sweden

Individuals who have (**ever**)…	2003	2005	2006	2007	2010	2011	2013
used a search engine to find information	:	51:76	52:79	57:76	69:88	71:90	EU:S
sent an email with attached files	:	43:65	43:69	50:64	60:77	63:84	EU:S
posted messages to chat rooms, newsgroups	:	18:17	18:20	24:19	32:38	33:48	EU:S
used the Internet to make phone calls	:	7:7	9:11	15:12	23:26	26:40	EU:S
used peer-to-peer file sharing for exchanging movies, music, etc.	:	9:18	11:20	12:19	14:20	15:25	EU:S
created a web page	:18	9:14	9:15	10:13	10:16	11:19	EU:S
uploaded text, games, images, films or music to websites	:	:	:	:	:	27:46	EU:S
have modified the security settings of Internet browsers	:	:	:	:	:	23:42	EU:S
found, downloaded and installed software	:	:	:	26:38	:	:	:
kept viruses, spyware and adware off their computer	:	:	:	30:48	:	:	:

Individuals who carried out 3 or more of the 6 Computer and Internet related activities

Share of individuals age 16-74, European Union (27 countries), 2005-2012

Statistiska centralbyrån Statistics Sweden



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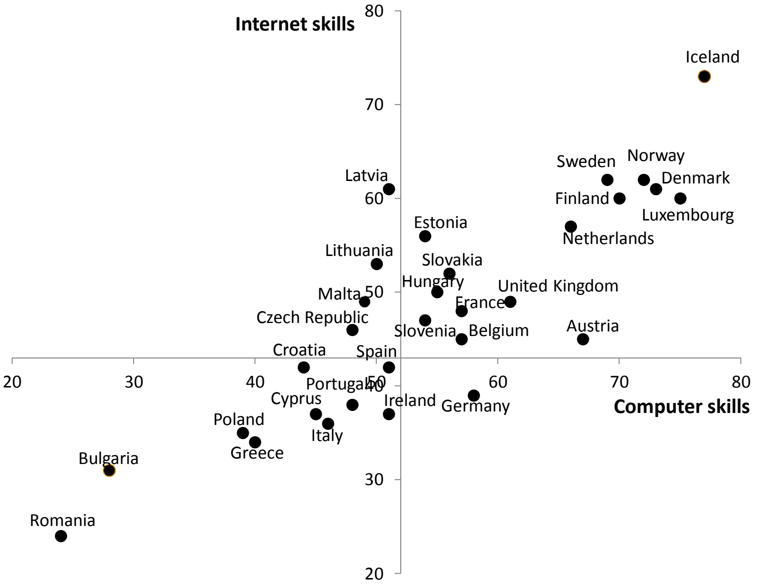
Internet and Computer skills

Share of individuals who carried out 3 or more of the 6 activities, 2011



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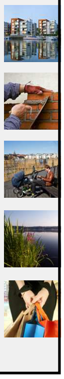
Recommendations and summing up

- What should be included in the definition of computer? Smart phone or not?
- Measuring the performed activities is preferable to self judged skills
- Computer skills indicators are good for measuring skills for employability
- For measuring other parts of participating in society, internet activities might be more useful
- Indicators for consistent benchmarking with EU countries are available from 2005
- Indicators are under development for EU survey 2015 and forward

Statistiska centralbyrån Statistics Sweden

Thank you for your attention!



daniel.ewerdahl@scb.se

Data can be found under:
Sweden: www.scb.se/le0801
Europe: http://epp.eurostat.ec.europa.eu

Statistiska centralbyrån Statistics Sweden

Benchmarking indicators – Self judgment of ICT-skills

Share of individuals age 16-74, 2011

Individuals who judge their current computer or Internet skills to be sufficient	EU 27	Sweden
to communicate with relatives, friends, colleagues over the Internet	66	89
if they were to look for a job or change job within a year	43	78
to protect their personal data	46	61
to protect their private computer from virus or other computer infection	46	71

Benchmarking indicators – ICT education

Share of individuals age 16-74, EU 27:Sweden

Individuals who have obtained IT skills through …	2005	2006	2007	2011
formalised educational institution (school, college, university, etc.)	20:23	21:22	22:32	28:40
training courses and adult education centres, on own initiative	10:15	11:13	11:17	14:18
training courses and adult education centres, on demand of employer	15:34	16:28	17:42	14:44
through self-study using books, cd-roms, etc.	20:21	24:40	25:48	21:35
through self-study (learning by doing)	41:49	40:40	49:80	57:88
through informal assistance from colleagues, relatives in friends and some other ways	41:37	38:34	46:74	51:89

Statistiska centralbyrån Statistics Sweden

Access to computer/internet and frequency of use

- Do you or anyone in your household have access to a **computer** at home?
  - *Any type: desktop, laptop, netbook, tablet,* ***excluding smart phone****.*
  -
- Do you or anyone in your household have access to the **internet** at home
  - **By any device**
- When did you last use a computer/internet (at home, at work, or any other place)?
  - Within last 3 months, 3-12 months, >1 year, never
- How often on average have you used a computer/internet in the last 3 months?
  - Every day/almost every day, once a week, < once a week

Statistiska centralbyrån Statistics Sweden

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/13-E
5 December 2013

English

SOURCE: UNCTAD

TITLE: Expert Meeting on Gender and ICT Indicators: conclusions and next steps

Expert Meeting on Gender and ICT Indicators
3 December 2013, Mexico City

PARTNERSHIP ON
MEASURING ICT
FOR DEVELOPMENT

Conclusions and next steps

- The meeting **acknowledged the work done by the consultant** in assessing the availability of sex-disaggregated and gender-specific ICT indicators and the proposed areas where there is demand for such data
- The meeting highlighted **the importance of collecting sex-disaggregated data** for the Partnership core ICT indicators included in the report.
- The Partnership should build on the report "Stocktaking and Assessment on Measuring ICT and Gender" to further **examine the feasibility** of collecting proposed indicators (methodology and resources)
- For the new proposed indicators, the Partnership could conduct **an inventory of data availability**

Expert Meeting on Gender and ICT Indicators
3 December 2013, Mexico City

PARTNERSHIP ON
MEASURING ICT
FOR DEVELOPMENT

Conclusions and next steps

- **A consultation process** that would include experts and countries would gather more detailed country experiences on ICT gender-related data collection
- The work on the Gender and ICT indicators should serve to **raise awareness on gender-related ICT statistics**, and build a bridge between the ICT statistics and the gender statistics communities
- It was agreed that the **priority areas** where sex-disaggregated data should be collected include: Household access and individual use of ICT , Education and ICT Indicators, ICT Employment, ICT Business and Entrepreneurship, E-Government

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/14-E
6 December 2013

English

SOURCE: Women in Global Science and Technology (WISAT)

TITLE: Measuring Gender and ICT

PARTNERSHIP ON
MEASURING ICT
FOR DEVELOPMENT

Measuring Gender and ICT

Nancy J Hafkin, PhD
UNCTAD consultant on behalf of the
Partnership.

11th World Telecommunications/ICT Symposium
5 December 2013
Mexico City

Why are gender and ICT statistics important?

- ☐ Women are the majority of the unconnected
- ☐ ICTs tend to exacerbate existing divides
  - ✓ Girls and women already on wrong side on income, literacy, scientific education divides
  - ✓ Failure to access and use ICTs will result in further marginalization
  - ✓ Question of equal rights, democracy, social and economic inclusion
- ☐ To ensure economic efficiency and national development
  - ✓ Full utilization of human resources especially important in global knowledge society
  - ✓ Every women added to the information society is an addition to national economic growth

Measurement of gender and ICT

- ☐ Concern of Partnership since 2004
- ☐ Without data, there is no visibility: without visibility, no priority
  - ✓ Lack of statistics often reflected in lack of policy
- ☐ Need for greater awareness of ICT on the part of gender statistics

Purpose of this report

- ☐ Builds on earlier gender-related statistics work of the Partnership
- ☐ Underlines gaps in collection of core access and use indicators
- ☐ Identifies main gaps based on needs and demand for indicators
- ☐ Identifies potential new gender-related ICT indicators

Current gender-related indicators

- ☐ 57 Core ICT indicators
- ☐ 12 gender-related indicators
  - ✓ Seven on individual use
  - ✓ Three on education
  - ✓ Two on e-government
  - ✓ None yet in employment or business

Demand for gender-related indicators

Categories of ICT indicator collection	Topics of demand for gender-related indicators
Household access and individual use	Accessing and using ICTs Gender barriers to the Internet
Education	ICTs and education at all levels
Employment	Employment in ICT occupations ICT in the work force ICT skills
Business	Employment in the ICT sector ICT in entrepreneurship, especially in micro-small businesses (MSEs) Use of mobile phones and Internet
E-government	Gendered access, use of e-government Availability of appropriate e-government content for women

Principles of identifying additional indicators

- ☐ National, regional and international information society policy importance
- ☐ Simple, realistic and measurable
- ☐ High probability of country response
- ☐ Minimal burden of data collection

Existing Household and individual use indicators

ID	Indicator definition	Further work needed
HH5	Proportion of individuals using a computer	No change
HH7	Proportion of individuals using the Internet	No change
HH8	Proportion of individuals using the Internet, by location	No change
HH9	Proportion of individuals using the Internet, by type of activity	No change
HH10	Proportion of individuals using a mobile cellular telephone	No change
HH12	Proportion of individuals using the Internet, by frequency	No change
HH15	Individuals with ICT skills, by type of skills	No change

Need for household/individual data

- ☐ On use of mobile phones—
  - ✓ To know the extent of M/F differentials in ownership, seen as a measure of women's empowerment
  - ✓ To look at differentials in use by M/F
  - ✓ Mobile phone activities more important than Internet in developing countries
- ☐ On individual barriers to Internet use
  - ✓ To see gender differentials and identify problem areas

Household access and Individual Use Additional Indicators

Additional indicator	Further work needed
Proportion of individuals who own a mobile phone	Definition of mobile phone ownership
Proportion of individuals using a mobile phone, by type of activity	Development of responses on mobile phone activities
Proportion of individuals not using the Internet, by type of barriers	Development of list of barriers to Internet access by individuals

Existing Education indicators

Indicator	Definition
ED6	Proportion of learners who have access to Internet at school
ED7	Proportion of learners enrolled at post-secondary level in ICT-related fields
ED8	Proportion of ICT-qualified teachers in schools

Education data needs

❑ Need to assess gender differentials in preparing next generation, at all levels for information society

- Teaching and learning using ICTs
- Global competitiveness advantage for countries that are able to institute this
- *Leaky pipeline* phenomenon with girls and women in scientific and technical fields

Additional education indicators

Indicator definition	Further work needed
Proportion of primary and secondary school teachers trained to teach subjects using ICT facilities (ISCED 1-3) (sex disaggregated)	Based on existing UNESCO (non-Core indicator)
Proportion of pupils enrolled in programmes offering computer-assisted instruction (ISCED levels 1-3) (sex disaggregated)	Based on existing UNESCO (non-Core indicator)
Proportion of pupils enrolled in programmes offering Internet-assisted instruction (ISCED levels 1-3) (sex disaggregated)	Based on existing UNESCO (non-Core indicator)
Proportion of pupils enrolled in programmes offering courses in basic computer skills or computing (ISCED 1-3) (sex disaggregated)	Based on existing UNESCO (non-Core indicator)
Proportion of graduates in ICT-related fields at post-secondary non-tertiary and tertiary levels (sex disaggregated)	Based on existing UNESCO (non-Core indicator)

Employment data needs: ICT occupations

- ❑ Strong demand for data, especially disaggregated by sex, on employment in ICT occupations
- ❑ High policy relevance
- ❑ Work needed on accepted definition of ICT employment
- ❑ Knowledge of gender distribution of ICT employment critical to national economic growth and competitiveness

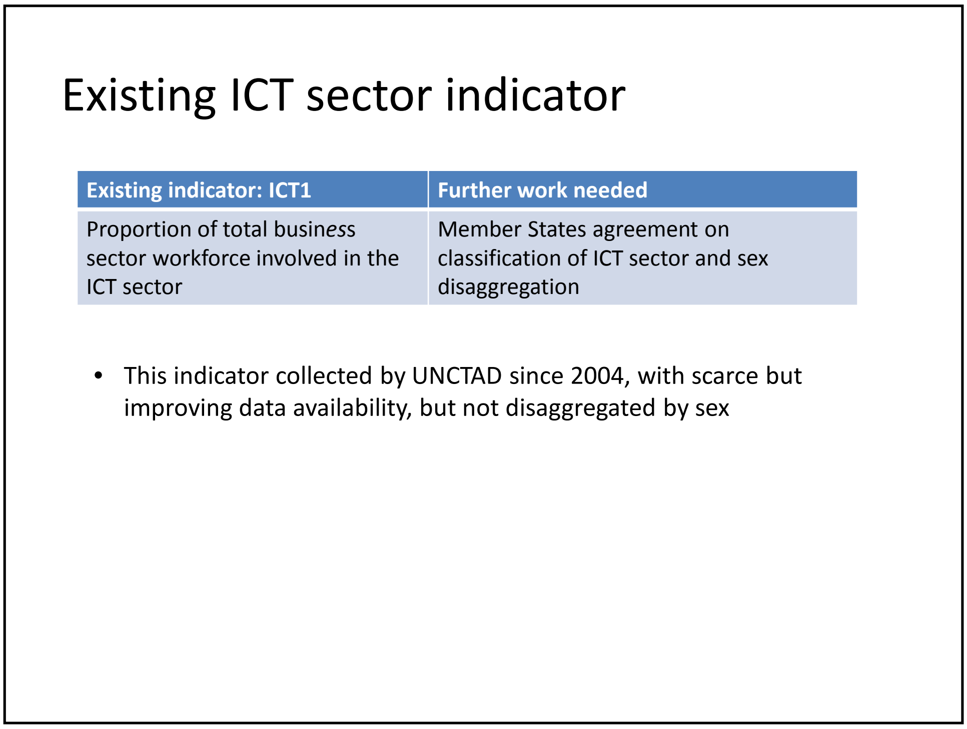
Proposed ICT employment/occupations indicator

Indicator	Methodological work needed
Proportion of employees in ICT occupations (sex disaggregated)	Definitions and measurement of ICT occupations

- No existing indicators on ICT occupations

Data needs on the ICT sector

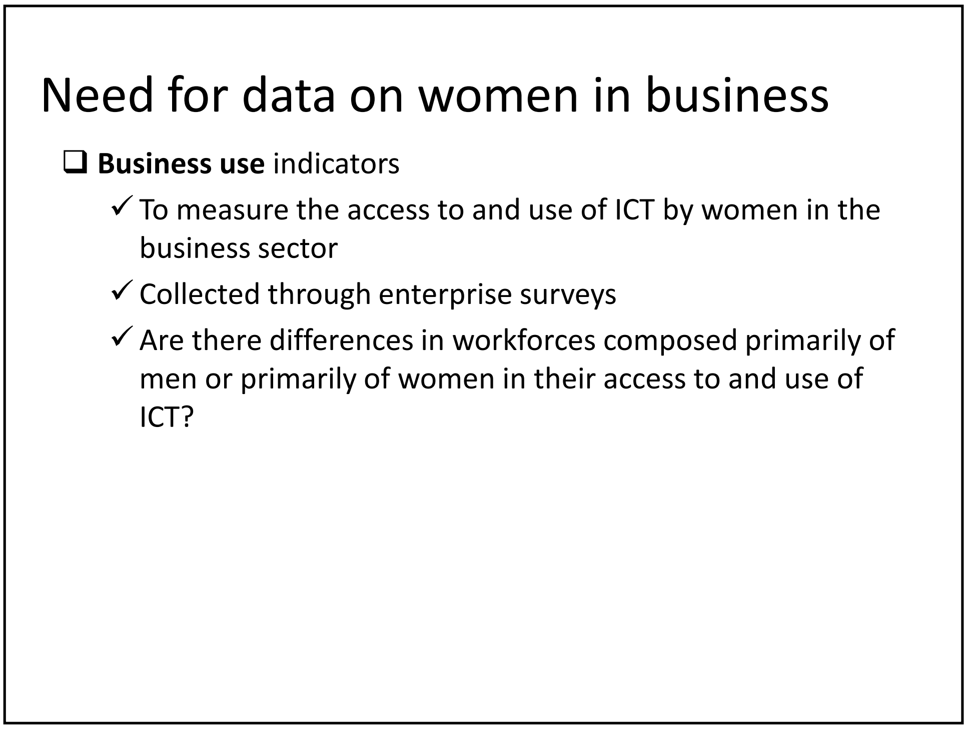
- ❑ The ICT sector comprises the production of ICT goods and services (OECD definition)
- ❑ Disaggregation of data by sex would indicate:
  - ✓ women’s share of employment in this sector



Existing ICT sector indicator

Existing indicator: ICT1	Further work needed
Proportion of total business sector workforce involved in the ICT sector	Member States agreement on classification of ICT sector and sex disaggregation

- This indicator collected by UNCTAD since 2004, with scarce but improving data availability, but not disaggregated by sex



Need for data on women in business

- ☐ **Business use** indicators
  - ✓ To measure the access to and use of ICT by women in the business sector
  - ✓ Collected through enterprise surveys
  - ✓ Are there differences in workforces composed primarily of men or primarily of women in their access to and use of ICT?

Existing business indicators

Proposed revision		
All business access indicators	Addition of filter question on gender composition of business employees	Precise formulation of filter question to be determined: male/female dominated, gender neutral

B1	**Proportion of businesses using computers**	**B7**	**Proportion of businesses receiving orders over the Internet**
B2	Proportion of persons employed routinely using computers	B8	Proportion of businesses placing orders over the Internet
B3	Proportion of businesses using the Internet	B9	Proportion of businesses using the Internet by type of access
B4	Proportion of persons employed routinely using the Internet	B10	Proportion of businesses with a local area network (LAN)
B5	Proportion of businesses with a Web presence	B11	Proportion of businesses with Extranet
B6	Proportion of businesses with an Intranet	B12	Proportion of businesses using the Internet, by type of activity

Need for data on women entrepreneurs

☐ Entrepreneurship

- ✓ Interest from the development community in ICTs and women's entrepreneurship
- ✓ ICTs seen as major catalyst to accelerate women's entrepreneurship
- ✓ Concentration on micro and small enterprises, where women entrepreneurs most prevalent
- ✓ Are women entrepreneurs as likely as men to exploit the capacities of the technology to further their productivity for the success of the enterprise?

Proposed additional indicators on entrepreneurship/small business owners and ICT

Indicator	Further work needed
Proportion of micro, small business owners/entrepreneurs using Internet by sex of owner	Elaboration and implementation of a survey instrument for micro and small businesses with an ICT module
Proportion of micro, small business owners/entrepreneurs using mobile phones by sex of owner	
Proportion of micro, small business owners/entrepreneurs using Internet by type of activity and sex of owner	Development of responses by type of activities
Proportion of micro, small business owners/entrepreneurs using mobile phones by type of activity and sex of owner	Development of responses by type of activities

ICT data availability problems

❑ Few countries, except in Europe, collect core ICT individual-level indicators

❑ Many NSOs in developing countries do not collect ICT indicators, especially on individual use

❑ Those that collect usage data normally can disaggregate them by sex since it is a standard classificatory variable in the household survey

❑ Gap has implications for the paucity of gender and ICT data

Recommendations

- ☐ Countries need to intensify efforts to collect data by sex for current partnership indicators
  - ✓ Especially ICT use by individuals, with sex as classificatory variable
  - ✓ More data needed especially on mobile phones
- ☐ Collecting gendered statistics need not be a burden
- ☐ Training of supervisory and field personnel on sensitivity to gender bias
- ☐ At international, regional and national level, more communication needed between ICT statistics and gender statistics

Going forward

- ☐ Possibilities for future work:
  - ✓ Gender equality in broadband access
  - ✓ ICT-related gender-based violence (impact)
  - ✓ Work force skills by occupational groups
  - ✓ Special attention to ICT employment indicators
- ☐ Work of existing groups, such as Expert Group on Household Indicators, ILO expert groups important
- ☐ Other priority areas to consider?

Thank you!!

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

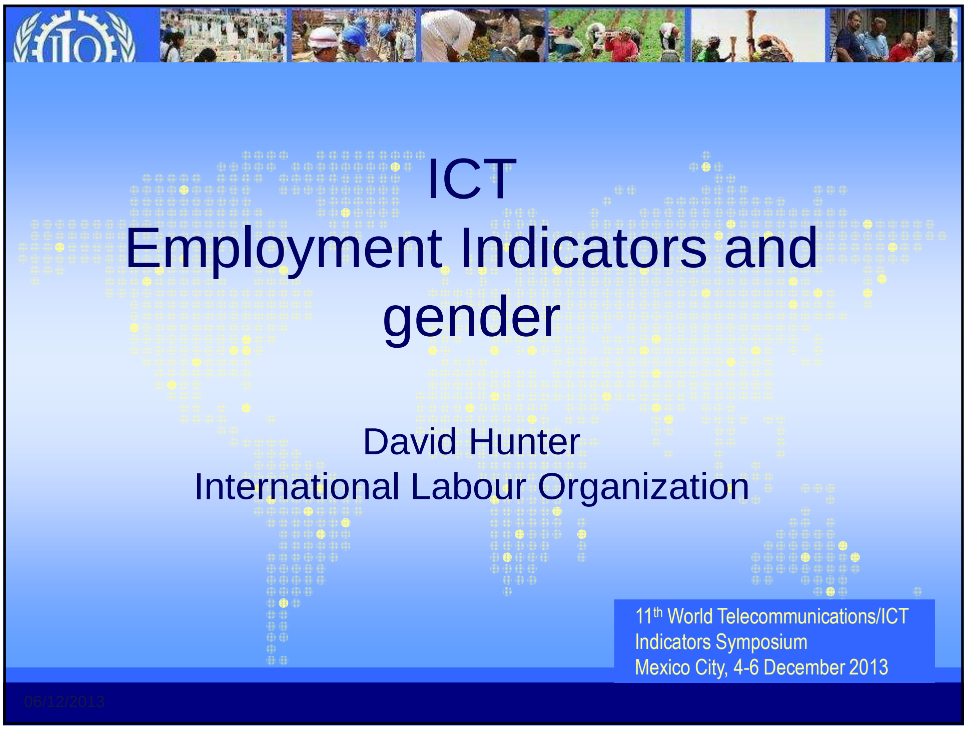
Contribution to WTIS-13

Document C/15-E
6 December 2013

English

SOURCE: International Labour Organisation (ILO)

TITLE: Indicators on Gender and ICT Employment Indicators

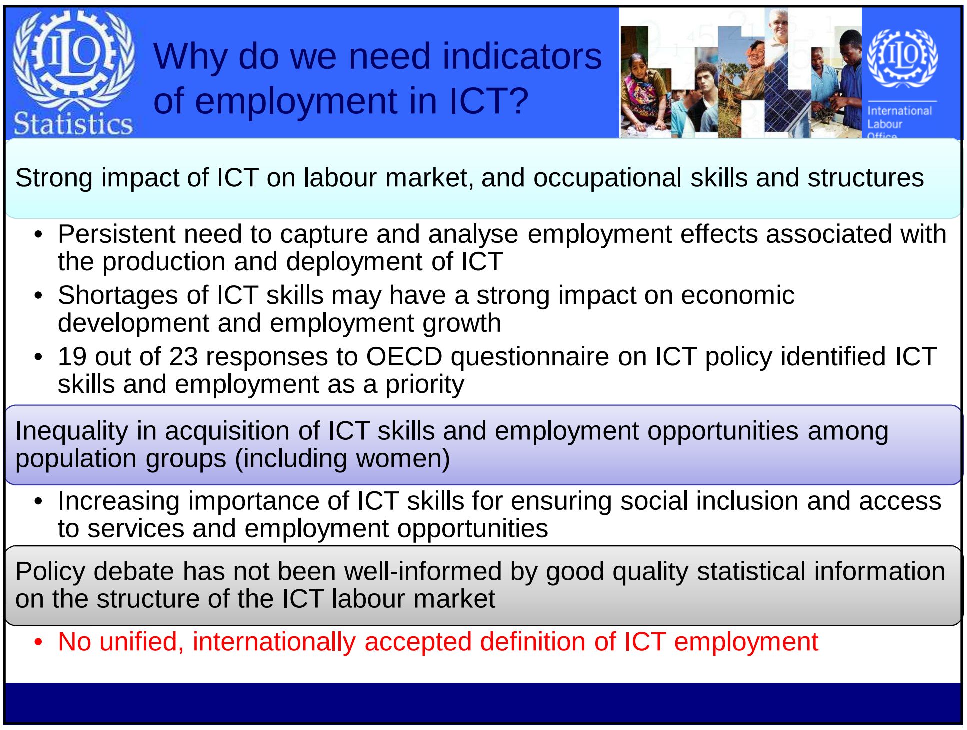


ICT
Employment Indicators and gender

David Hunter
International Labour Organization

11th World Telecommunications/ICT
Indicators Symposium
Mexico City, 4-6 December 2013

06/12/2013



Statistics
International
Labour
Office

Why do we need indicators of employment in ICT?

Strong impact of ICT on labour market, and occupational skills and structures

- Persistent need to capture and analyse employment effects associated with the production and deployment of ICT
- Shortages of ICT skills may have a strong impact on economic development and employment growth
- 19 out of 23 responses to OECD questionnaire on ICT policy identified ICT skills and employment as a priority

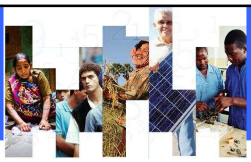
Inequality in acquisition of ICT skills and employment opportunities among population groups (including women)

- Increasing importance of ICT skills for ensuring social inclusion and access to services and employment opportunities

Policy debate has not been well-informed by good quality statistical information on the structure of the ICT labour market

- No unified, internationally accepted definition of ICT employment

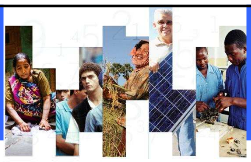
ICT employment and gender

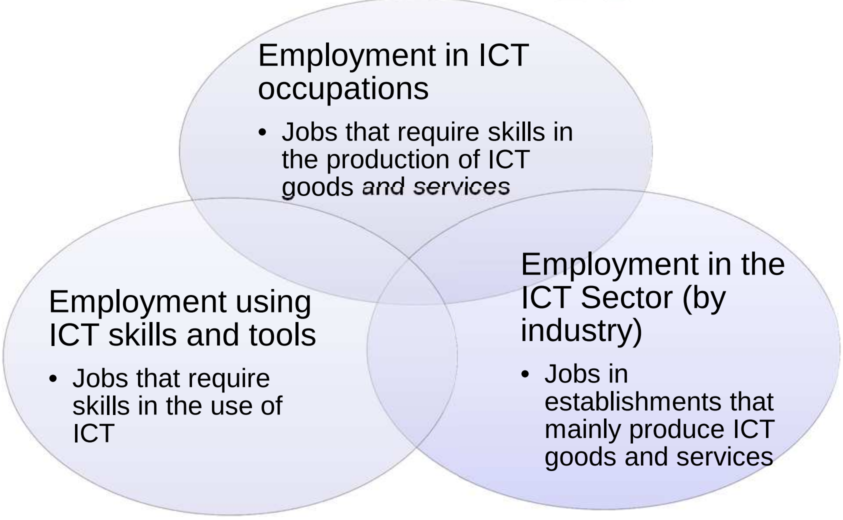


Gender specific issues

- Significantly fewer women than men are employed as ICT specialists and in the ICT sector
  - ➢ Women's share of employment in OECD countries:
    - As ICT specialists = 18%
    - In ICT sector = 30%
  - ❖ Significant variation between countries in women's share of employment as ICT specialists and in the ICT Sector
- Higher proportion of women employed in jobs requiring skill as ICT users?
  - Many of these jobs are in occupations traditionally dominated by women, but detailed analysis by gender has not been done

3 approaches to measuring ICT employment





Employment in ICT occupations

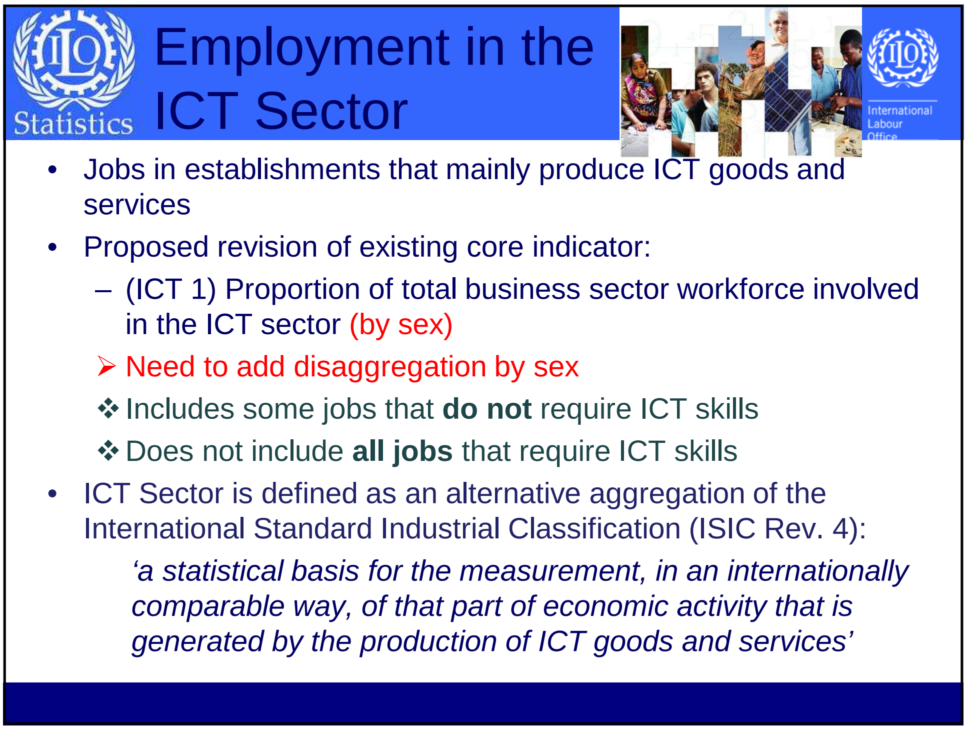
- Jobs that require skills in the production of ICT goods and services

Employment using ICT skills and tools

- Jobs that require skills in the use of ICT

Employment in the ICT Sector (by industry)

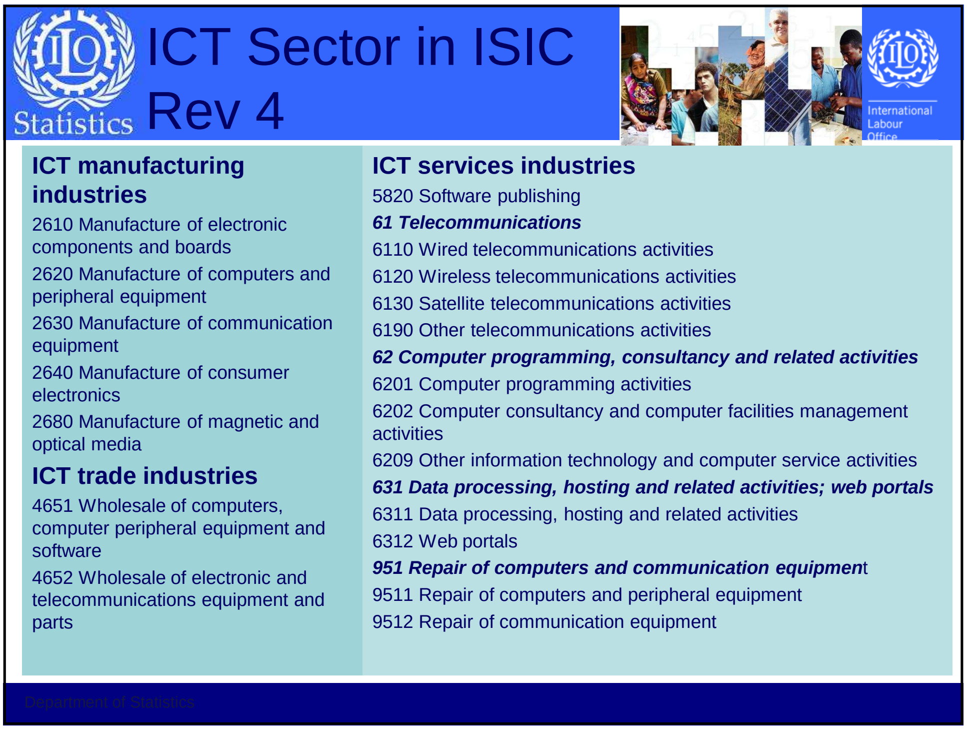
- Jobs in establishments that mainly produce ICT goods and services



Employment in the ICT Sector

- Jobs in establishments that mainly produce ICT goods and services
- Proposed revision of existing core indicator:
  - (ICT 1) Proportion of total business sector workforce involved in the ICT sector (by sex)
  - ➢ Need to add disaggregation by sex
  - ❖ Includes some jobs that **do not** require ICT skills
  - ❖ Does not include **all jobs** that require ICT skills
- ICT Sector is defined as an alternative aggregation of the International Standard Industrial Classification (ISIC Rev. 4):

  ‘a statistical basis for the measurement, in an internationally comparable way, of that part of economic activity that is generated by the production of ICT goods and services’



ICT Sector in ISIC Rev 4

ICT manufacturing industries

2610 Manufacture of electronic components and boards

2620 Manufacture of computers and peripheral equipment

2630 Manufacture of communication equipment

2640 Manufacture of consumer electronics

2680 Manufacture of magnetic and optical media

ICT trade industries

4651 Wholesale of computers, computer peripheral equipment and software

4652 Wholesale of electronic and telecommunications equipment and parts

ICT services industries

5820 Software publishing

61 Telecommunications

6110 Wired telecommunications activities

6120 Wireless telecommunications activities

6130 Satellite telecommunications activities

6190 Other telecommunications activities

62 Computer programming, consultancy and related activities

6201 Computer programming activities

6202 Computer consultancy and computer facilities management activities

6209 Other information technology and computer service activities

631 Data processing, hosting and related activities; web portals

6311 Data processing, hosting and related activities

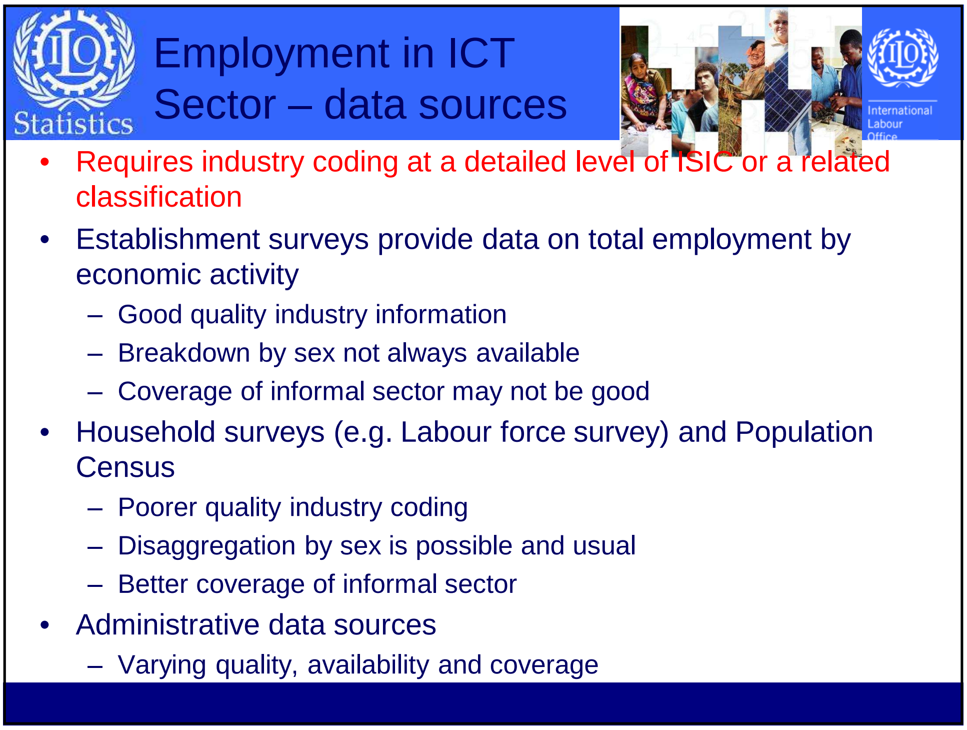
6312 Web portals

951 Repair of computers and communication equipment

9511 Repair of computers and peripheral equipment

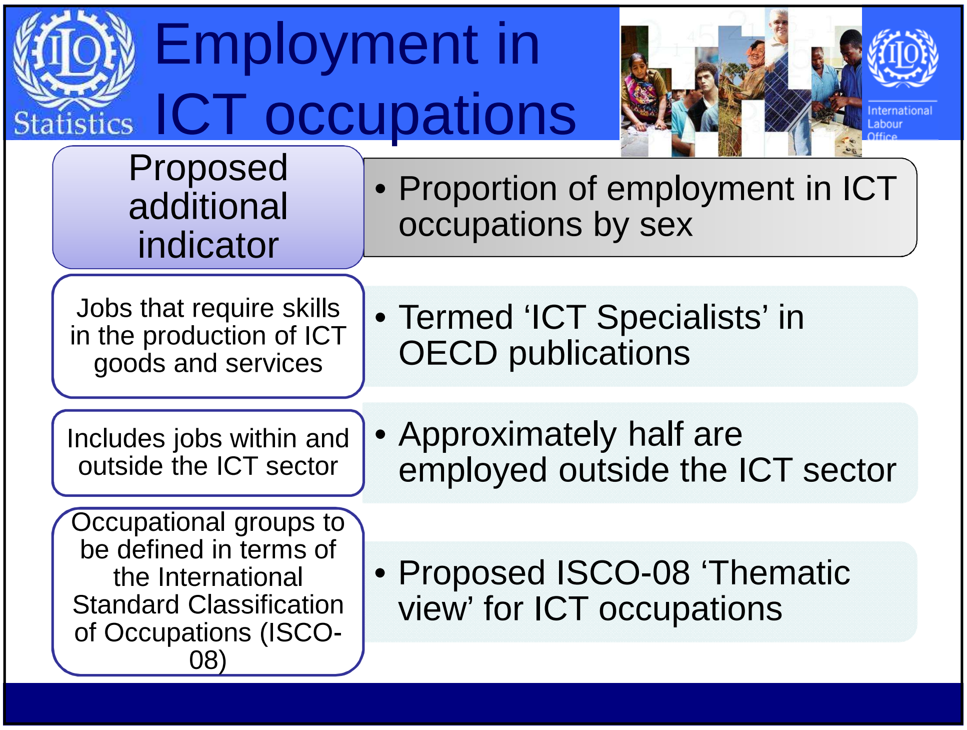
9512 Repair of communication equipment

Department of Statistics



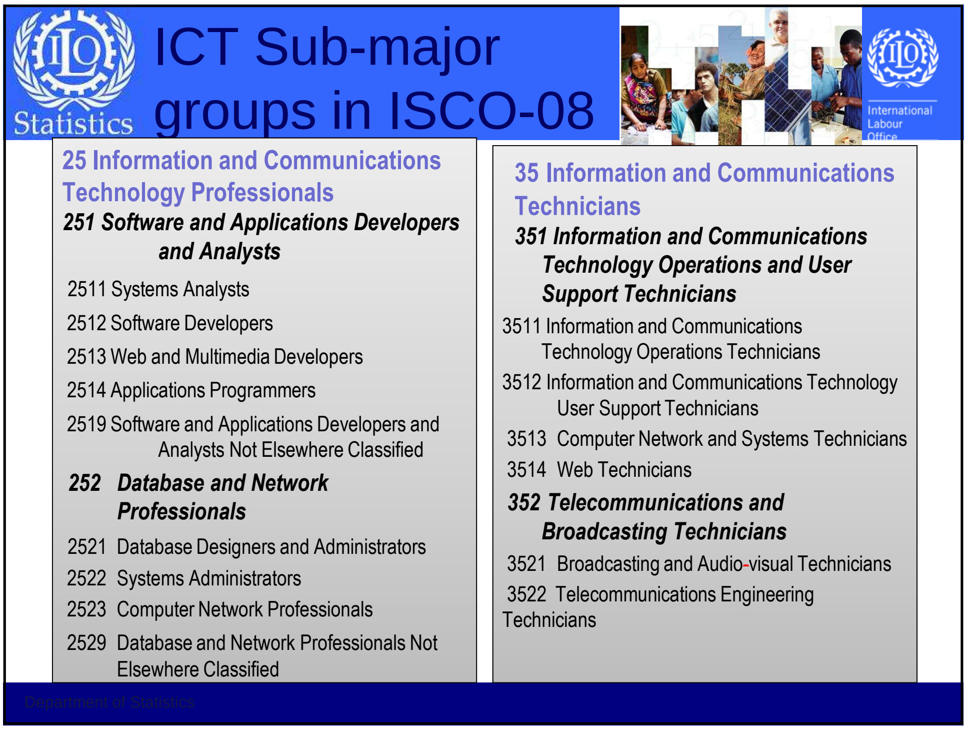
Employment in ICT Sector – data sources

- Requires industry coding at a detailed level of ISIC or a related classification
- Establishment surveys provide data on total employment by economic activity
  - Good quality industry information
  - Breakdown by sex not always available
  - Coverage of informal sector may not be good
- Household surveys (e.g. Labour force survey) and Population Census
  - Poorer quality industry coding
  - Disaggregation by sex is possible and usual
  - Better coverage of informal sector
- Administrative data sources
  - Varying quality, availability and coverage



Employment in ICT occupations

Proposed additional indicator	Proportion of employment in ICT occupations by sex
Jobs that require skills in the production of ICT goods and services	Termed 'ICT Specialists' in OECD publications
Includes jobs within and outside the ICT sector	Approximately half are employed outside the ICT sector
Occupational groups to be defined in terms of the International Standard Classification of Occupations (ISCO-08)	Proposed ISCO-08 'Thematic view' for ICT occupations



ICT Sub-major groups in ISCO-08

25 Information and Communications Technology Professionals

251 Software and Applications Developers and Analysts

2511 Systems Analysts

2512 Software Developers

2513 Web and Multimedia Developers

2514 Applications Programmers

2519 Software and Applications Developers and Analysts Not Elsewhere Classified

252 Database and Network Professionals

2521 Database Designers and Administrators

2522 Systems Administrators

2523 Computer Network Professionals

2529 Database and Network Professionals Not Elsewhere Classified

35 Information and Communications Technicians

351 Information and Communications Technology Operations and User Support Technicians

3511 Information and Communications Technology Operations Technicians

3512 Information and Communications Technology User Support Technicians

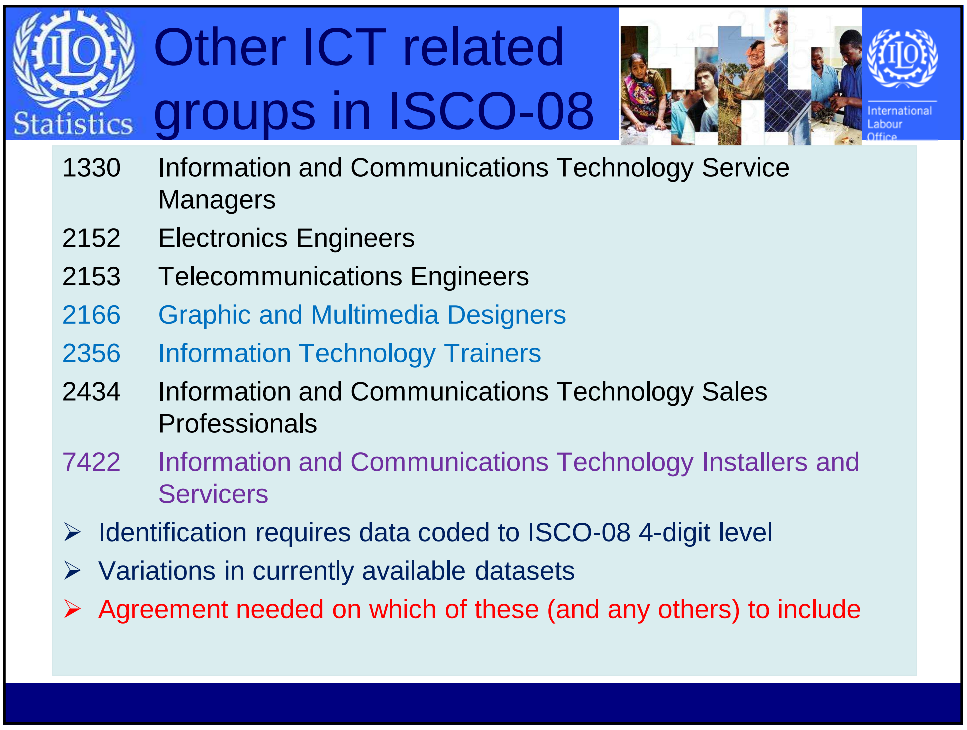
3513 Computer Network and Systems Technicians

3514 Web Technicians

352 Telecommunications and Broadcasting Technicians

3521 Broadcasting and Audio-visual Technicians

3522 Telecommunications Engineering Technicians

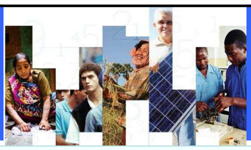


Other ICT related groups in ISCO-08

1330	Information and Communications Technology Service Managers
2152	Electronics Engineers
2153	Telecommunications Engineers
2166	Graphic and Multimedia Designers
2356	Information Technology Trainers
2434	Information and Communications Technology Sales Professionals
7422	Information and Communications Technology Installers and Servicers

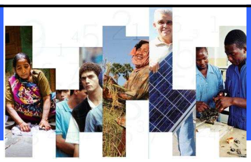
- Identification requires data coded to ISCO-08 4-digit level
- Variations in currently available datasets
- Agreement needed on which of these (and any others) to include

Employment in ICT Occupations – data sources



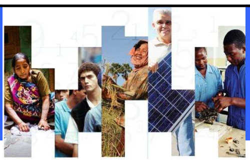
- ✓ For complete information occupation coding is needed at the most detailed 4-digit level of ISCO-08 or a related national classification
  - ➢ Partial information can be obtained from data at 2-digit level
- Establishment surveys frequently do not identify occupations
  - – Breakdown by sex not always available
  - – Coverage of informal sector may not be good
- Household surveys (e.g. Labour Force Survey) and Population Census
  - – The most common and reliable source
  - – Occupation commonly available (almost always in LFS and Census)
  - – Not always coded to 4-digit level
  - – Disaggregation by sex is possible and usual
- Administrative data sources
  - – Varying quality, availability and coverage

Employment using ICT skills and tools



- Jobs that require skills in the use of ICT
- Defined in terms of occupational categories
- Approximately 30% of total employment (OECD average)
- No globally agreed list
  - – OECD has developed a list for ISCO-88 and for several national classifications
    - ICT Specialists
    - ICT Advanced Users
    - ICT Basic users
  - ➢ Many of these occupations have a high women’s share of employment
- ▪ A moving target!
  - ➢ An increasing number of occupations require ICT skills
  - ➢ Difficult to measure over time
  - ➢ Likely to require data at ISCO 4-digit level
- ▪ More development work needed

Currently available data



- Some international data are compiled in OECD and Eurostat publications and outputs
  - – Limited coverage for non OECD countries
- National publications and databases
  - – Mainly OECD countries
- ILO collects annual data disaggregated by sex for ISCO-08 Sub-major Group 25: Information and Communications Technology Professionals

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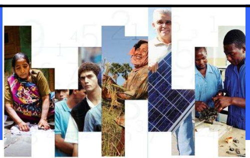
Next steps



- Need to endorse disaggregation by sex for core indicator on employment in the ICT Sector
- Agreement needed on occupations to be included in proposed new core indicator ‘Employment in ICT Occupations’
  - ➢ ILO proposes to circulate a discussion paper among practitioners in ICT statistics and national experts in occupation classification
- Further investigation of viability of an indicator of ‘Employment using ICT Skills and Tools’

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/16-E
5 December 2013

English

SOURCE: Ghana Statistical Service

TITLE: Measuring ICT and Gender Indicator in Ghana

MEASURING ICT AND GENDER INDICATOR IN GHANA

GHANA STATISTICAL SERVICE,

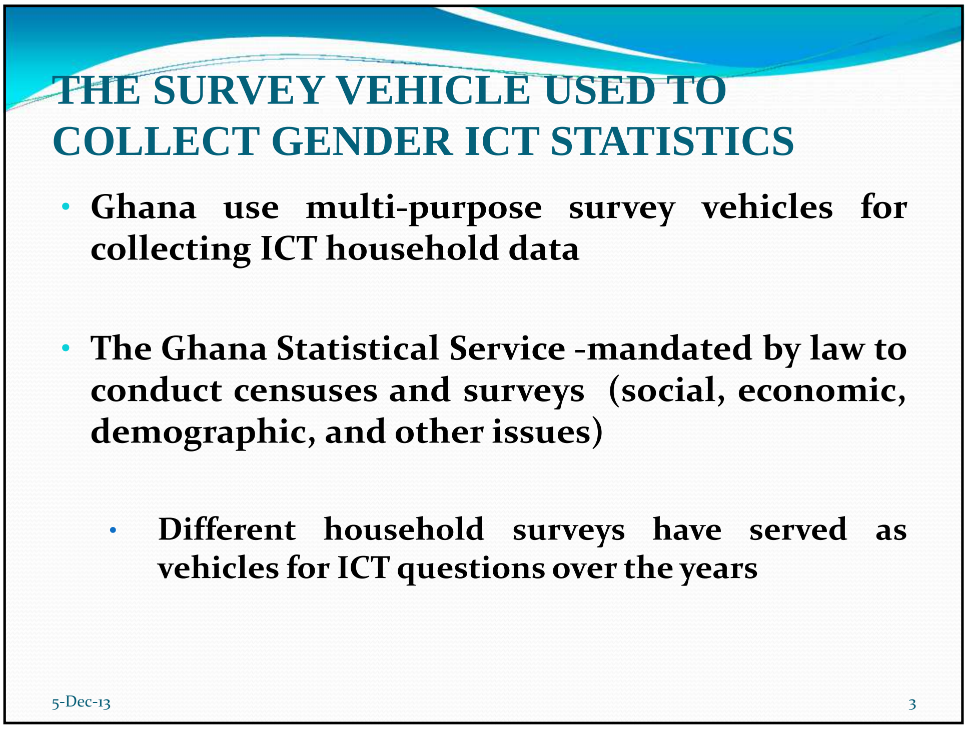
11th WTIS, MEXICO

4-6 DECEMBER, 2013

ERNESTINA HOPE TURKSON

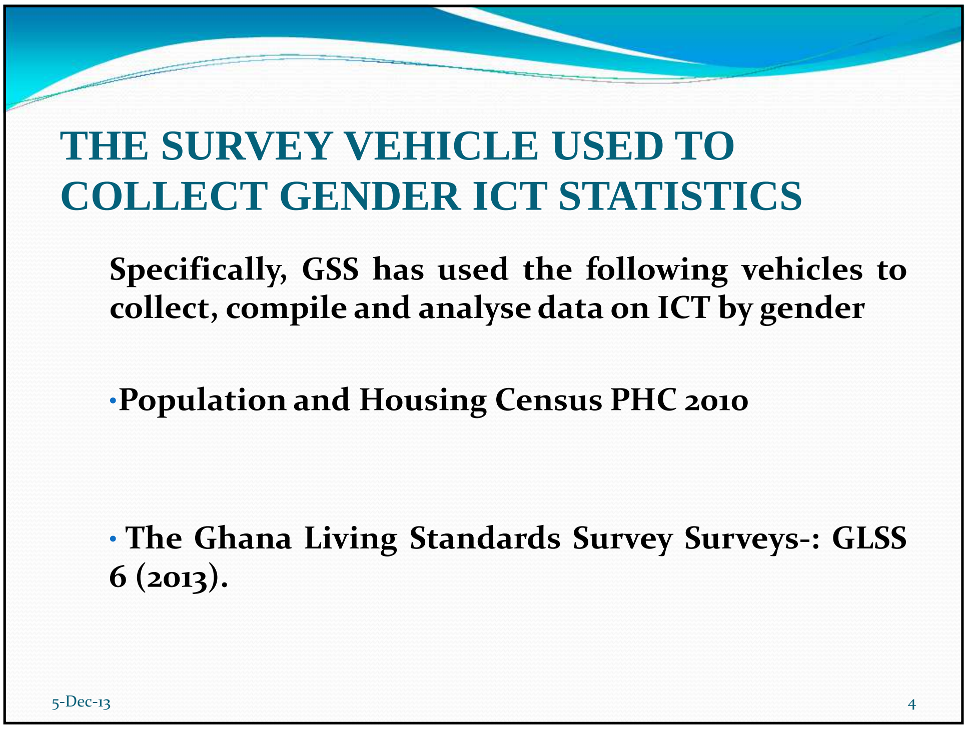
OUTLINE

- Background
- Survey vehicle used to collect gender ICT statistics
- Indicators
- Analysis and Dissemination of gender ICT statistics
- Recommendation and Conclusion



THE SURVEY VEHICLE USED TO COLLECT GENDER ICT STATISTICS

- Ghana use multi-purpose survey vehicles for collecting ICT household data
- The Ghana Statistical Service -mandated by law to conduct censuses and surveys (social, economic, demographic, and other issues)
  - Different household surveys have served as vehicles for ICT questions over the years



THE SURVEY VEHICLE USED TO COLLECT GENDER ICT STATISTICS

Specifically, GSS has used the following vehicles to collect, compile and analyse data on ICT by gender

- Population and Housing Census PHC 2010
- The Ghana Living Standards Survey Surveys-: GLSS 6 (2013).

2010 CENSUS
Module are created to compile ICT data (This is individual-level indicator)

- Questions asked:
  - Does the [name] own mobile phone?

  - Does the [name] use internet facility

    Items include:
    - At home
    - Internet cafe
    - On phone
    - Other mobile device

Ghana Living Standards Survey (round 5) 2005 - 2006

- Questions asked:
  - Does the household have access to
  - Items include:
    - Fixed line phone
    - Mobile phone network
    - Personal computers
    - Internet (other use)
    - E-commerce
    - Paid cable network

GLSS6 2013
Special module are created to compile ICT data

- Business
  - Percentage of businesses with computers by sex of owners
  - Percentage of businesses with internet access
  - Percentage of businesses with a web site

Education

- Percentage of students enrolled in tertiary education having internet access for students for study purposes by sex
- Enrolled student-to-personal computer ratio (in primary and secondary schools and tertiary education) by sex
- Percentage of ICT qualified teachers in primary and secondary schools (of total number of teachers) by sex

MOBILE PHONE

Out of these question the following indicators were developed to determine the status of ICT in the country

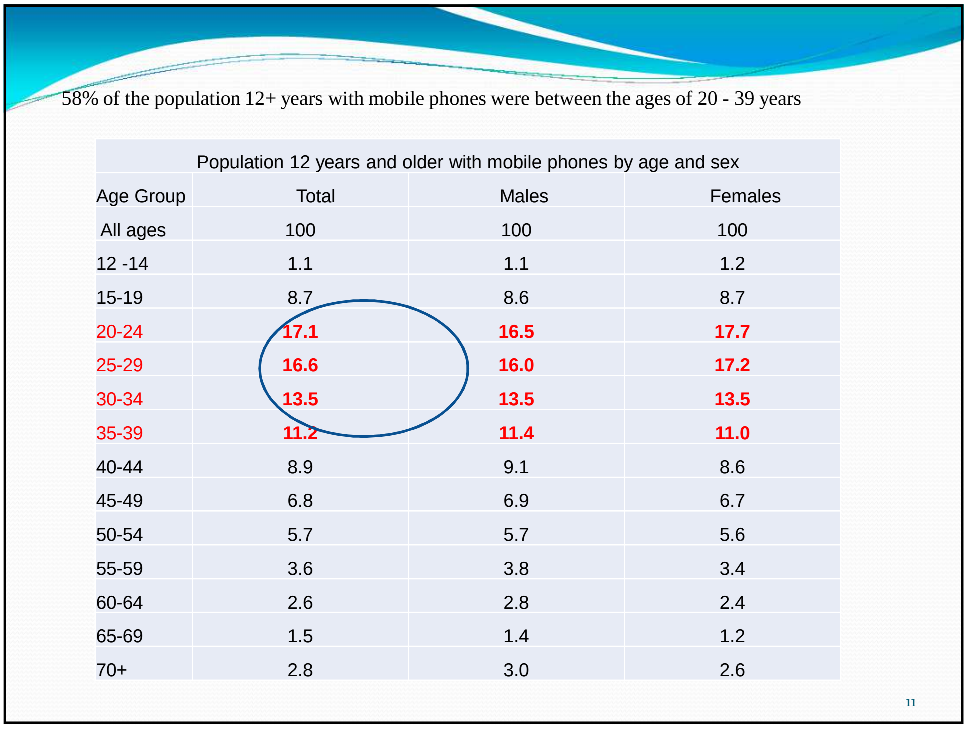
Indicators	Both Sexes	Men	Women
Population 12 years and older owning mobile phone within economic activity status			
All economic activity status	47.7%	53.1%	46.9%
Employed	55.5%	62.3%	48.9%
Unemployed	55.8%	58.6%	53.6%
Not active	32.4%	34%	31.1%

INTERNET USEAGE

Indicators	Both Sexes	Men	Women
Distribution of the population 12 years and older using internet facilities			
All Regions	1,312,971	832,789	480,182
Population 12 years and older using internet by level of education			
Level of Education	7.8%	10.30%	5.40%
No education	13.9%	11.4%	16.6%
Primary	8.8%	7.4%	10.40%
Middle/JHS	40.7%	40.7%	40.7%
Secondary	18.9%	20.5%	17.10~~%~~
Voc./Tech.	4%	3.9%	4%
Post-Sec.	8.4%	9.3%	7.4%
Tertiary	5.3	6.8%	3.7%

HOW DATA ARE ANALYZED

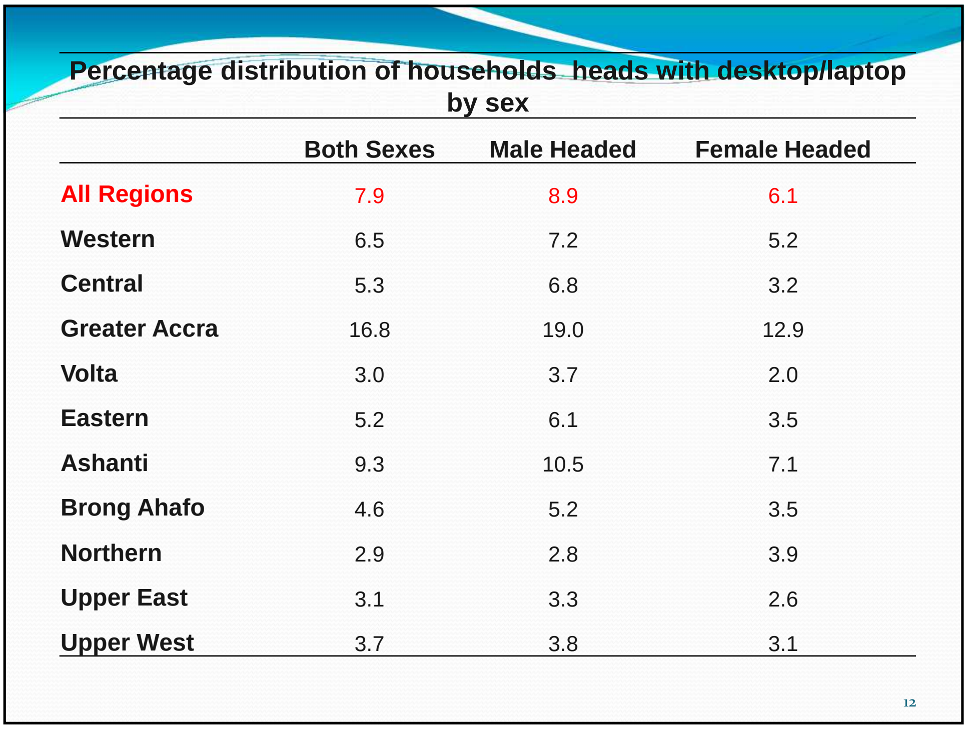
- By sex, age, relationship to head of household, education, region, localities and marital status.



58% of the population 12+ years with mobile phones were between the ages of 20 - 39 years

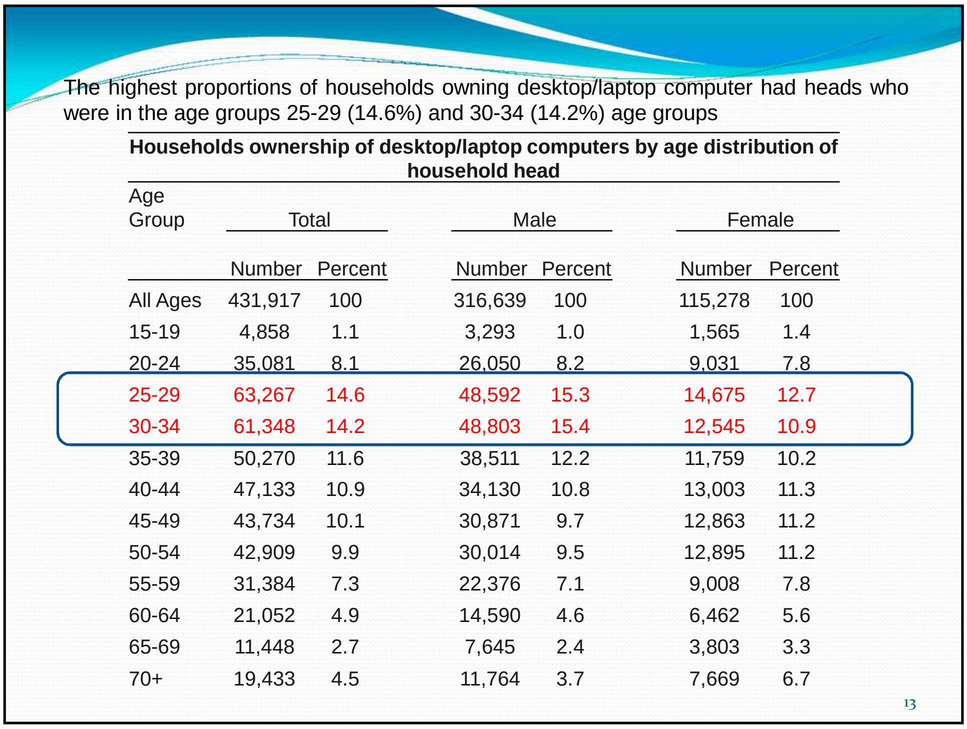
Population 12 years and older with mobile phones by age and sex

Age Group	Total	Males	Females
All ages	100	100	100
12 -14	1.1	1.1	1.2
15-19	8.7	8.6	8.7
20-24	**17.1**	**16.5**	**17.7**
25-29	**16.6**	**16.0**	**17.2**
30-34	**13.5**	**13.5**	**13.5**
35-39	**11.2**	**11.4**	**11.0**
40-44	8.9	9.1	8.6
45-49	6.8	6.9	6.7
50-54	5.7	5.7	5.6
55-59	3.6	3.8	3.4
60-64	2.6	2.8	2.4
65-69	1.5	1.4	1.2
70+	2.8	3.0	2.6



Percentage distribution of households heads with desktop/laptop by sex

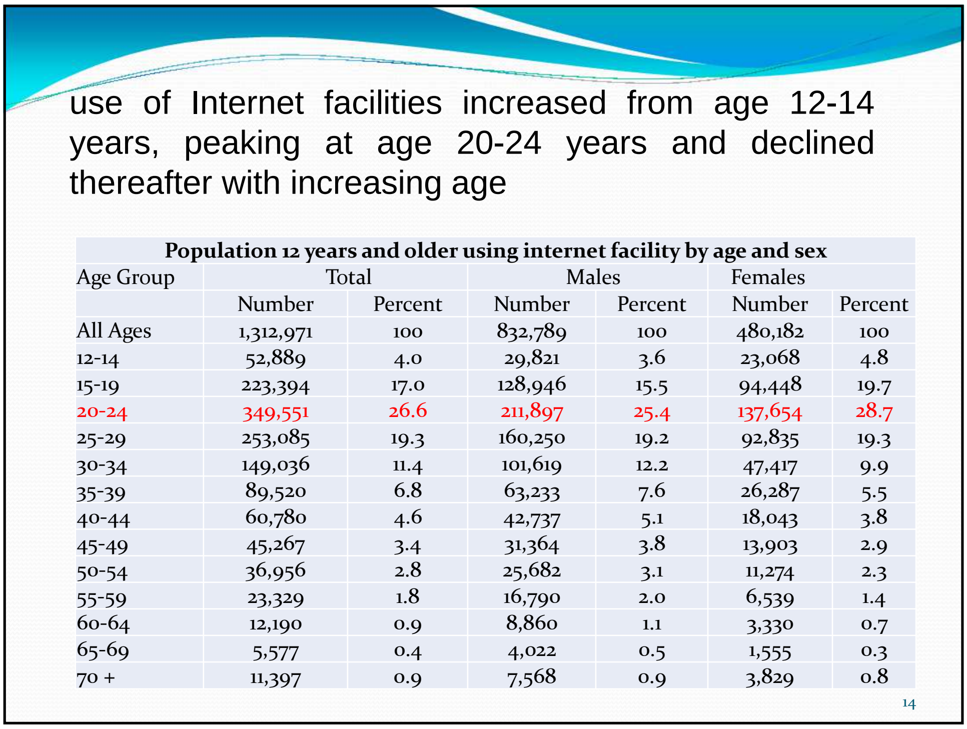
	Both Sexes	Male Headed	Female Headed
All Regions	7.9	8.9	6.1
Western	6.5	7.2	5.2
Central	5.3	6.8	3.2
Greater Accra	16.8	19.0	12.9
Volta	3.0	3.7	2.0
Eastern	5.2	6.1	3.5
Ashanti	9.3	10.5	7.1
Brong Ahafo	4.6	5.2	3.5
Northern	2.9	2.8	3.9
Upper East	3.1	3.3	2.6
Upper West	3.7	3.8	3.1



The highest proportions of households owning desktop/laptop computer had heads who were in the age groups 25-29 (14.6%) and 30-34 (14.2%) age groups

Households ownership of desktop/laptop computers by age distribution of household head

Age Group	Total		Male		Female	
	Number	Percent	Number	Percent	Number	Percent
All Ages	431,917	100	316,639	100	115,278	100
15-19	4,858	1.1	3,293	1.0	1,565	1.4
20-24	35,081	8.1	26,050	8.2	9,031	7.8
25-29	63,267	14.6	48,592	15.3	14,675	12.7
30-34	61,348	14.2	48,803	15.4	12,545	10.9
35-39	50,270	11.6	38,511	12.2	11,759	10.2
40-44	47,133	10.9	34,130	10.8	13,003	11.3
45-49	43,734	10.1	30,871	9.7	12,863	11.2
50-54	42,909	9.9	30,014	9.5	12,895	11.2
55-59	31,384	7.3	22,376	7.1	9,008	7.8
60-64	21,052	4.9	14,590	4.6	6,462	5.6
65-69	11,448	2.7	7,645	2.4	3,803	3.3
70+	19,433	4.5	11,764	3.7	7,669	6.7

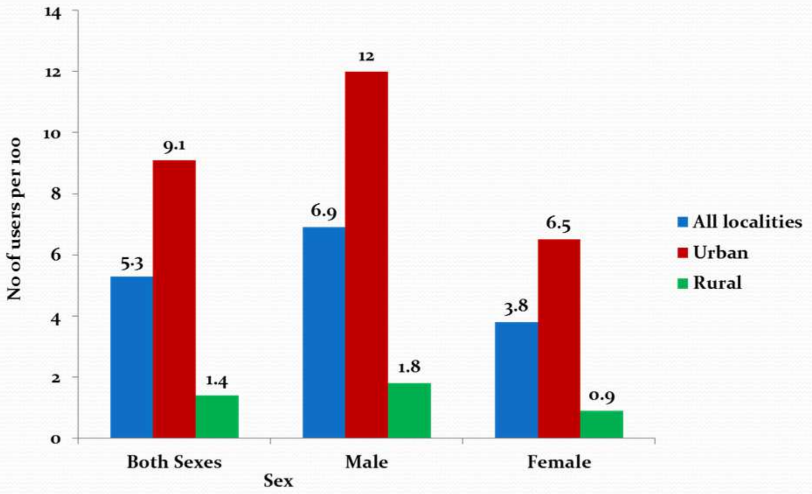


use of Internet facilities increased from age 12-14 years, peaking at age 20-24 years and declined thereafter with increasing age

Population 12 years and older using internet facility by age and sex

Age Group	Total		Males		Females	
	Number	Percent	Number	Percent	Number	Percent
All Ages	1,312,971	100	832,789	100	480,182	100
12-14	52,889	4.0	29,821	3.6	23,068	4.8
15-19	223,394	17.0	128,946	15.5	94,448	19.7
20-24	349,551	26.6	211,897	25.4	137,654	28.7
25-29	253,085	19.3	160,250	19.2	92,835	19.3
30-34	149,036	11.4	101,619	12.2	47,417	9.9
35-39	89,520	6.8	63,233	7.6	26,287	5.5
40-44	60,780	4.6	42,737	5.1	18,043	3.8
45-49	45,267	3.4	31,364	3.8	13,903	2.9
50-54	36,956	2.8	25,682	3.1	11,274	2.3
55-59	23,329	1.8	16,790	2.0	6,539	1.4
60-64	12,190	0.9	8,860	1.1	3,330	0.7
65-69	5,577	0.4	4,022	0.5	1,555	0.3
70 +	11,397	0.9	7,568	0.9	3,829	0.8

Internet usage per 100 population



Source PHC 2010

RECOMMENDATIONS AND CONCLUSION

- It is very important to collect ICT statistics using household surveys and census, to make informed decisions on specific areas that need policy attention such as underserved areas, rural areas, to set-up Internet centers in public places, etc
- Mobile phone use is extensive but it is important to measure mobile ownership
- More regular data collection is necessary to monitor the evolution of ICT adoption and monitor the divides (urban-rural, gender, etc)

End of Presentation

Thank you

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/17-E
6 December 2013

English

SOURCE: The Earth Institute, Columbia University

TITLE: Keynote: Sustainable Development and Information and Communications Technology

Sustainable Development and Information and Communications Technology

Prof. Jeffrey D. Sachs

11th WTIS Symposium
Mexico City
December 4, 2013

Why SDGs?

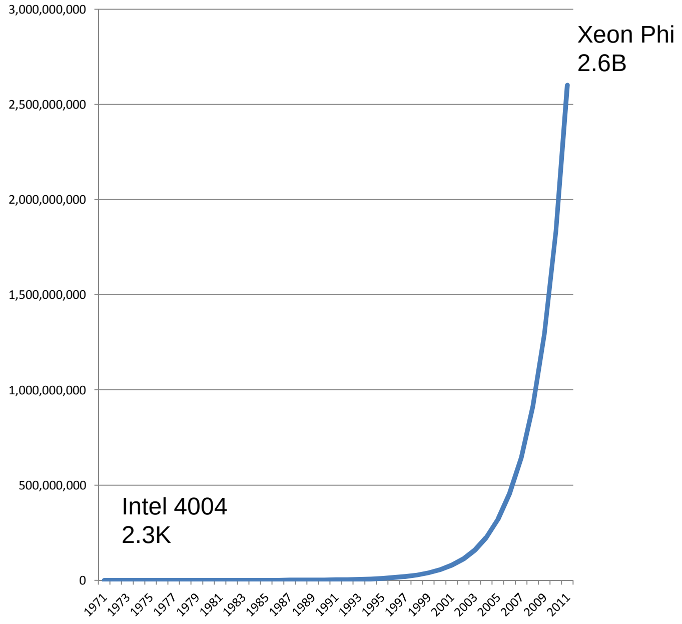
Humanity Has Entered A New Era

"For man holds in his mortal hands
the power to abolish all forms of human
poverty and all forms of human life."

-JFK Inaugural Address
January 20, 1963

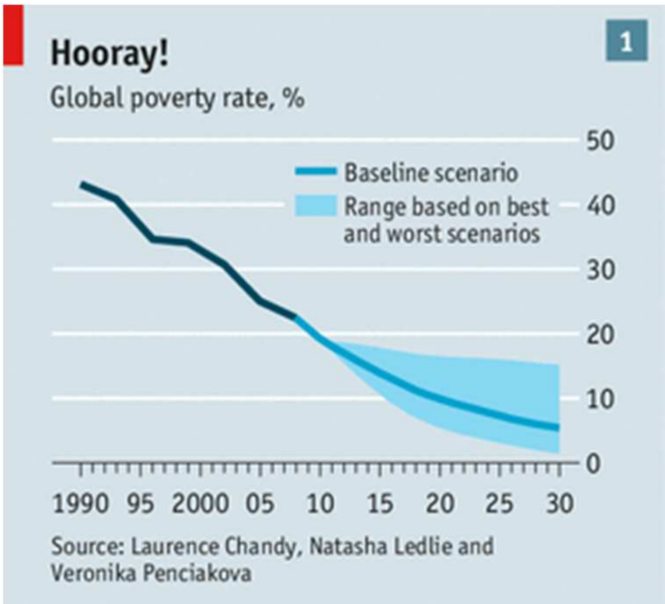
The IT Revolution:

Microprocessor Transistor Count



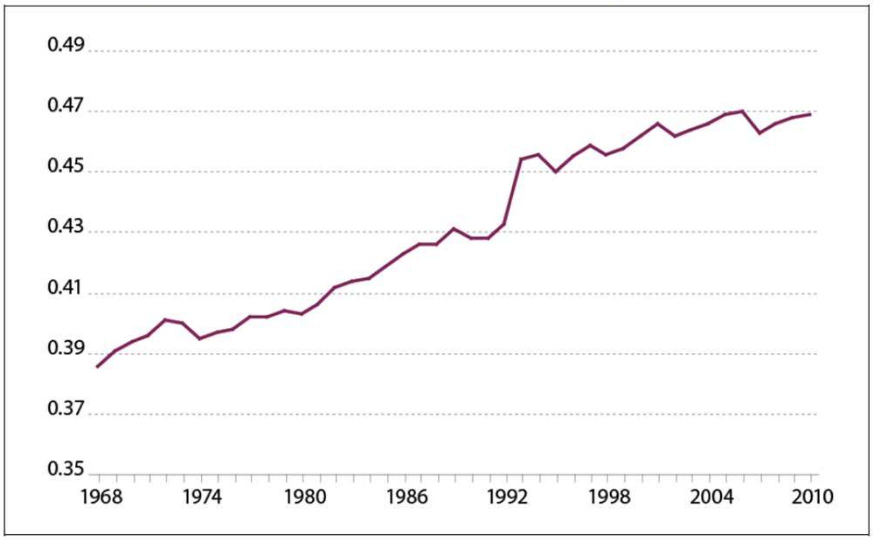
Xeon Phi
2.6B

Intel 4004
2.3K



Source: Laurence Chandy, Natasha Ledlie and Veronika Penciakova

Figure 1. Gini Coefficients for U.S. Households, 1968-2010



Source: Created by CRS from data from the U.S. Census Bureau's Annual Social and Economic Supplements to the Current Population Survey (CPS).

Tunis, January 2011

Cairo, January 2011

Athens July 2011

Tel Aviv, August 2011

Chile, August 2011

New York City, November 2011

Madrid, September 2012

Istanbul, June 2013

Rio de Janeiro, June 2013

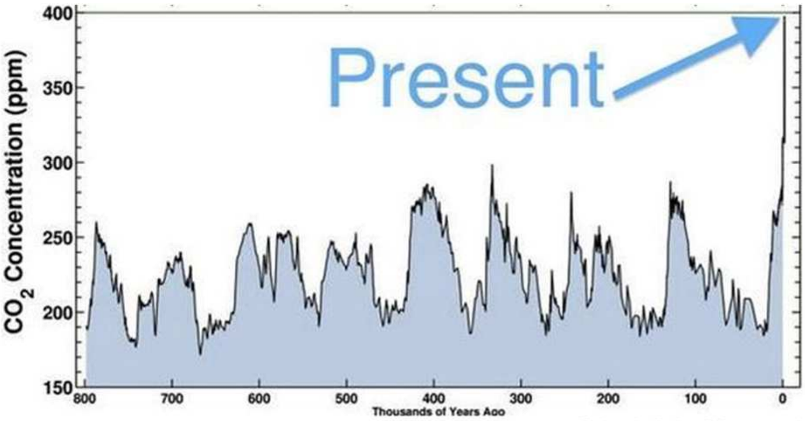
TYPHOON HAIYAN, Village of Mariboth, November 14, 2013

BEICHUAN, SICHUAN PROVINCE, JULY 2013

MANHATTAN, HURRICANE SANDY, OCTOBER 29, 2012

Algal Bloom, Qindao, Shandong Province, 2013

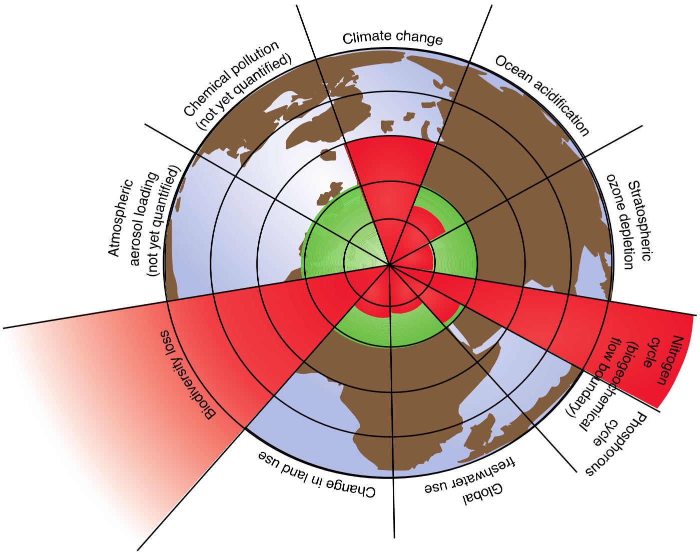
IN APRIL, 2013, CO2 CONCENTRATION REACHES 400 PPM FOR FIRST TIME IN 3 MILLION YEARS



Scripps Institution of Oceanography

Ice core data before 1958

“PLANETARY BOUNDARIES”


Climate change
Ocean acidification
Stratospheric ozone depletion
Nitrogen cycle (biogeochemical flow boundary)
Phosphorous cycle
Global freshwater use
Change in land use
Biodiversity loss
Atmospheric aerosol loading (not yet quantified)
Chemical pollution (not yet quantified)

Source: Rockström et al 2009a)

Motivations for the SDGs:

Public Awareness
Activism
Knowledge Communities
Political and Corporate Accountability

PROPOSED SDGs:

1. END EXTREME POVERTY
2. JOBS AND GROWTH
3. SOCIAL INCLUSION FOR WOMEN, MINORITIES, YOUTH
4. EDUCATION FOR ALL
5. HEALTH FOR ALL
6. FOOD SECURITY FOR ALL
7. FIGHT CLIMATE CHANGE WITH SUSTAINABLE ENERGY
8. BIODIVERSITY CONSERVATION
9. RESILIENT CITIES
10. GOOD GOVERNANCE FOR SUSTAINABLE DEVELOPMENT

KEY ROLES FOR ICT:

ICT FOR HEALTH
ICT FOR EDUCATION
ICT FOR SUSTAINABLE AGRICULTURE
ICT FOR SMART ENERGY SYSTEMS
ICT FOR SMART URBAN NETWORKS
ICT FOR IMPLEMENTING THE SDGS

THE NEED FOR TRUE PUBLIC-PRIVATE PARTNERSHIPS

TIMELINE TO THE SDGS

SPRING 2014, OPEN WORKING GROUP REPORT

SEPTEMBER 2014, CLIMATE SUMMIT AT UN

FALL 2014, SECRETARY-GENERAL'S RECOMMENDATIONS

FIRST-HALF 2015, INTERGOVERNMENTAL NEGOTIATIONS

SEPTEMBER 2015, SDG SUMMIT AT UN

NOVEMBER 2015, CLIMATE NEGOTIATIONS IN PARIS

We choose to go to the moon. We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win, and the others, too.

President John F. Kennedy, Rice University,
September 12, 1962

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013

Contribution to WTIS-13

Document C/18-E
6 December 2013

English

SOURCE: ITU

TITLE: Emerging issues in measuring telecommunication infrastructure

Emerging issues in measuring telecommunication infrastructure

Joaquin RESTREPO
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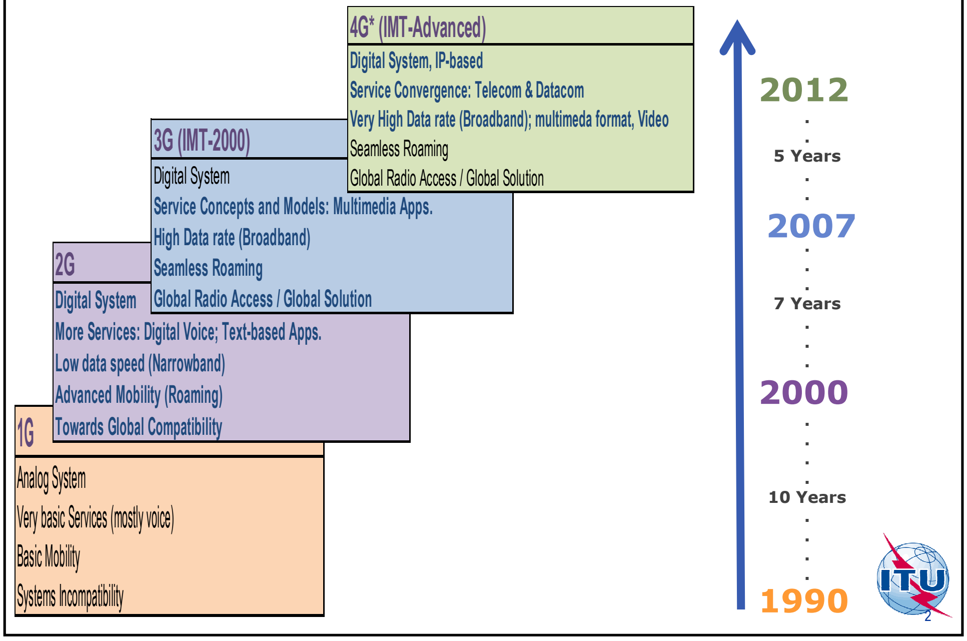
Mobile Technologies Evolution



4G* (IMT-Advanced)
- Digital System, IP-based
- Service Convergence: Telecom & Datacom
- Very High Data rate (Broadband); multimeda format, Video
- Seamless Roaming
- Global Radio Access / Global Solution

3G (IMT-2000)
- Digital System
- Service Concepts and Models: Multimedia Apps.
- High Data rate (Broadband)
- Seamless Roaming
- Global Radio Access / Global Solution

2G
- Digital System
- More Services: Digital Voice; Text-based Apps.
- Low data speed (Narrowband)
- Advanced Mobility (Roaming)
- Towards Global Compatibility

1G
- Analog System
- Very basic Services (mostly voice)
- Basic Mobility
- Systems Incompatibility

IMT Concept*

From: Recommendation ITU-R M.1224-1

International Mobile Telecommunications (IMT) systems are mobile systems that provide access to a wide range of telecommunication services including advanced mobile services, supported by mobile and fixed networks, which are increasingly packet-based

IMT systems support low to high mobility applications and a wide range of data rates in accordance with user and service demands in multiple user environments. IMT also has capabilities for high quality multimedia applications within a wide range of services and platforms, providing a significant improvement in performance and quality of service.

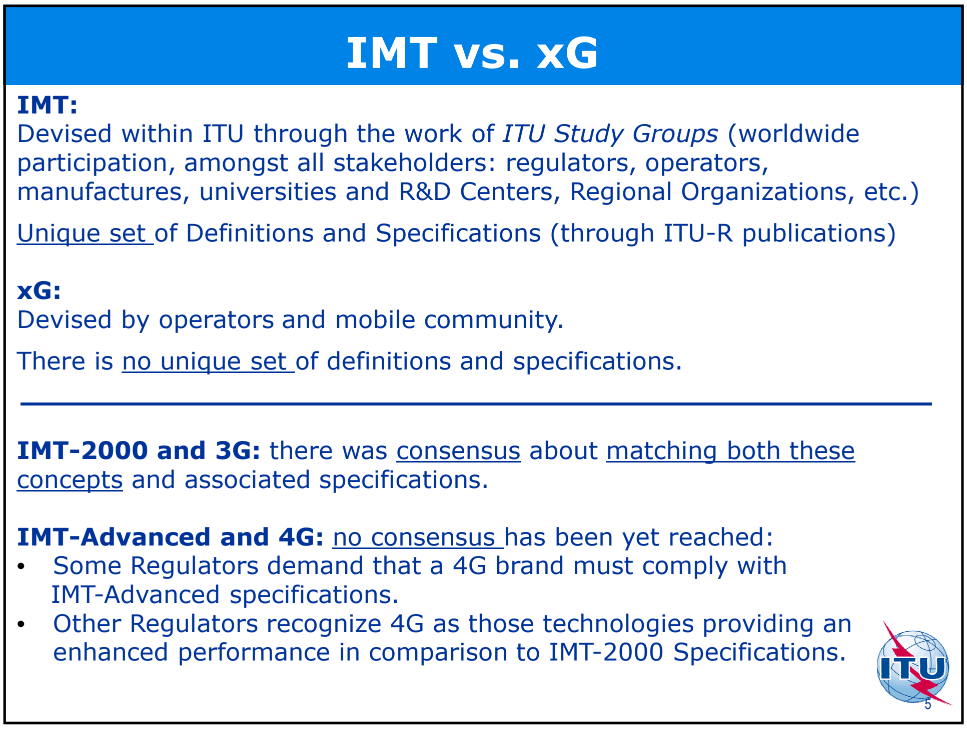
* ***IMT encompasses both IMT-2000 & IMT-Advanced***

IMT Key Features

From: Recommendation ITU-R M.1224-1

1. A high degree of commonality of functionality worldwide while retaining the flexibility to support a wide range of services and applications in a cost efficient manner;
2. Compatibility of services within IMT and with fixed networks;
3. Capability of interworking with other radio access systems;
4. High quality mobile services;
5. User equipment suitable for worldwide use;
6. User-friendly applications, services and equipment;
7. Worldwide roaming capability;
8. Enhanced peak data rates to support advanced services and applications.

These features enable IMT to address evolving user needs and the capabilities of IMT systems are being continuously enhanced in line with user trends and technology developments



IMT vs. xG

IMT:
Devised within ITU through the work of *ITU Study Groups* (worldwide participation, amongst all stakeholders: regulators, operators, manufactures, universities and R&D Centers, Regional Organizations, etc.)

Unique set of Definitions and Specifications (through ITU-R publications)

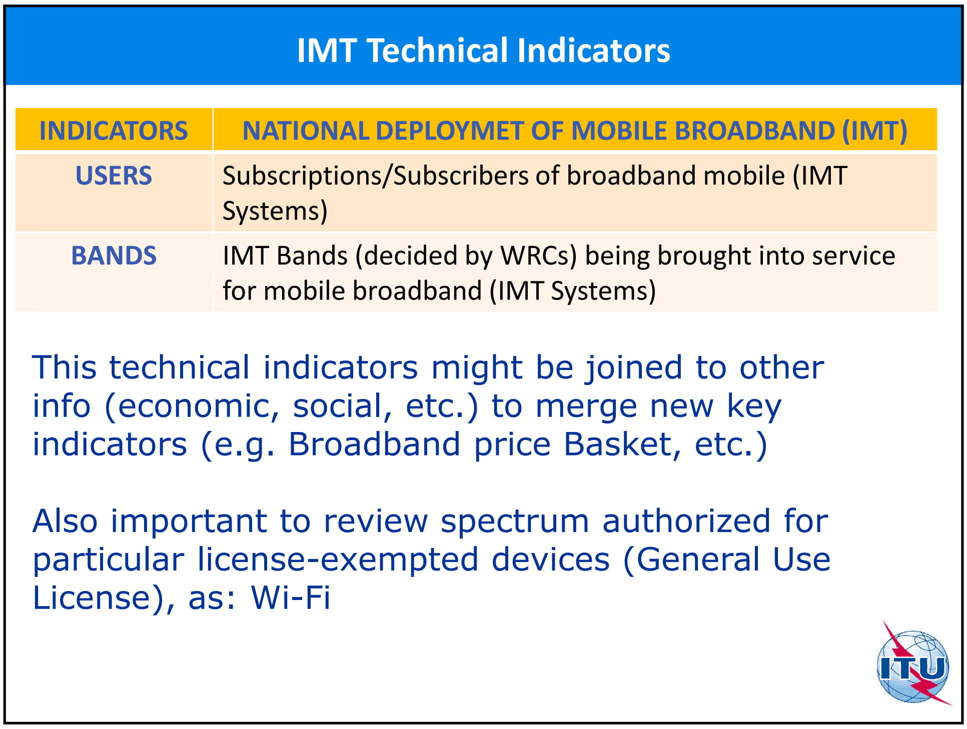
xG:
Devised by operators and mobile community.

There is no unique set of definitions and specifications.

IMT-2000 and 3G: there was consensus about matching both these concepts and associated specifications.

IMT-Advanced and 4G: no consensus has been yet reached:

- Some Regulators demand that a 4G brand must comply with IMT-Advanced specifications.
- Other Regulators recognize 4G as those technologies providing an enhanced performance in comparison to IMT-2000 Specifications.



IMT Technical Indicators

INDICATORS	NATIONAL DEPLOYMET OF MOBILE BROADBAND (IMT)
USERS	Subscriptions/Subscribers of broadband mobile (IMT Systems)
BANDS	IMT Bands (decided by WRCs) being brought into service for mobile broadband (IMT Systems)

This technical indicators might be joined to other info (economic, social, etc.) to merge new key indicators (e.g. Broadband price Basket, etc.)

Also important to review spectrum authorized for particular license-exempted devices (General Use License), as: Wi-Fi

IMT INDICATORS: Info to Collect

		Implemented or Planned? (yes/ no)	Commercially available (yes/no)	Subcribers/ subcriptions	Frequency Bands (and Bandwidth)
From Rec. ITU-R M.1457-11 (02/2013) (IMT-2000; also known as 3G)					
1- IMT-2000 CDMA Direct Spread	*W-CDMA UMTS* *UTRA FDD, E-UTRA FDD*				
2– IMT-2000 CDMA Multi-Carrier	*CDMA 2000 1xRTT, EV-DO, EV-DV; UMB*				
3– IMT-2000 CDMA TDD	*TD-CDMA UMTS* *UTRA TDD, E-UTRA TDD*				
4– IMT-2000 TDMA Single-Carrier	*UWC 136 (ATIS/TIA); EDGE*				
5– IMT-2000 FDMA/TDMA	*DECT*				
6– IMT-2000 OFDMA TDD WMAN	*WiMAX* *IEEE Standard 802.16e*				
From Rec. ITU-R M.2012 (01/2012) IMT-Advanced					
1- LTE-Advanced	*LTE Release 10 and Beyond*				
2- WirelessMAN-Advanced	*IEEE Standard 802.16m*				
Other (please specify)					

	Mobile Broadband (IMT) Licensing				
Band (MHz)	Lincensed BW (MHz)	coverage obligations included in the licence? (geographic/ population/both)	Price paid for the licence*	year of licensing	License term (years)
450-470					
698-960					
1710-2025					
2110-2200					
2300-2400					
2500-2690					
3400-3600					

* Local Currency; excluding common sector annual fees as: USO, Spectrum, Licensing, etc.

License-Exempted (General use License)		
Band (GHz)	**Frequency Range (Fmin, Fmax), GHz**	**Year**
2.4 - 2.5		
5.1 - 5.9		
Other Bands (Please specify)		

ITU Radio Regulations and ITU-R Rec. are available free of charge for general public:

http://www.itu.int/en/ITU-R/Documents/BD_Flyer_A4_E.pdf

THANKS

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