Istat quality policy: Preconditions of quality assessment

EU Twinning Project JO/13/ENP/ST/23

23 -27 November 2014

Component 3: Quality and metadata

Activity 3.9: Quality Audit – I

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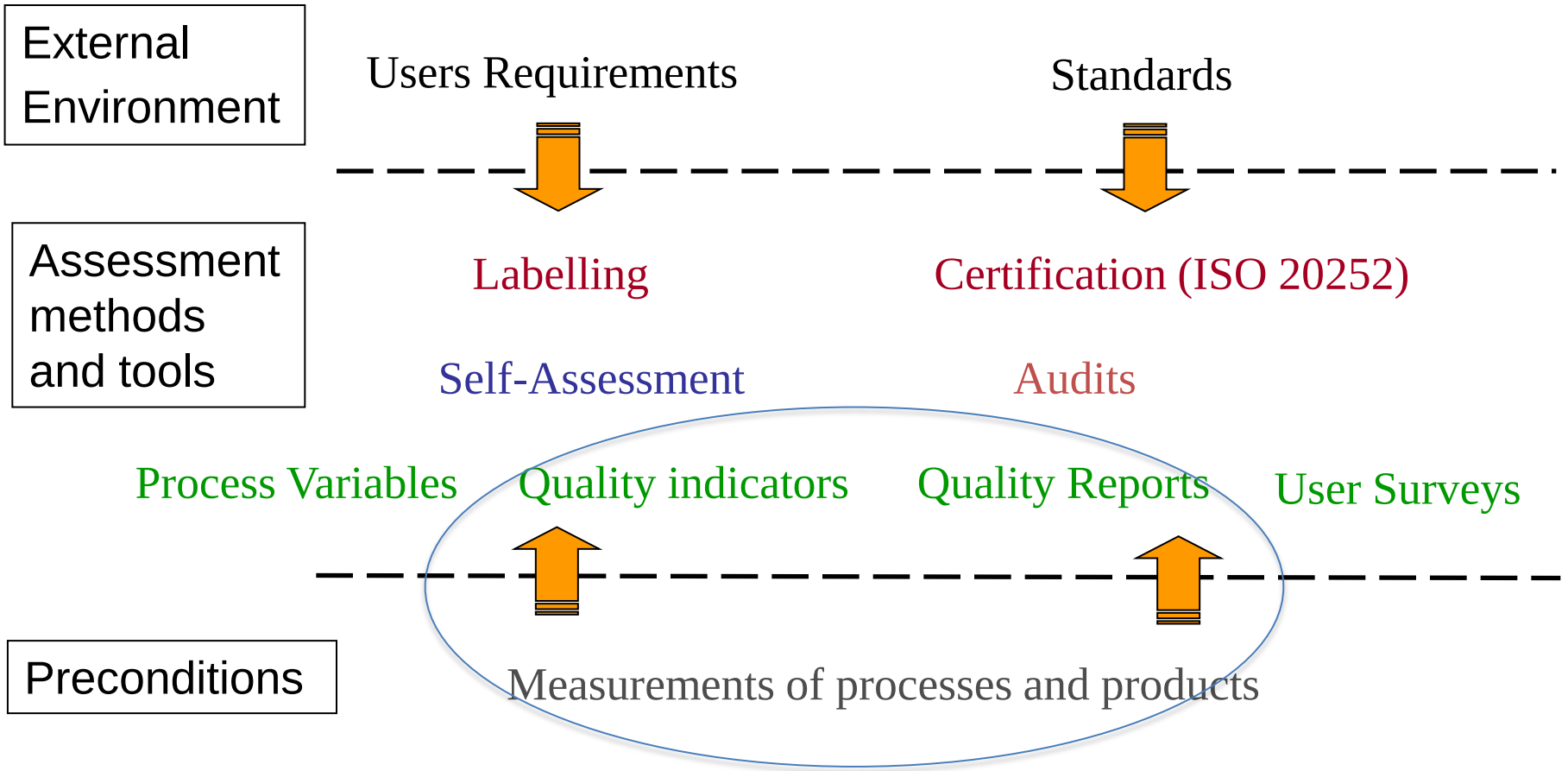
Data quality assessment map*



*Bergdahl et al. (2007) Handbook on DatQAM

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Preconditions measurement and documentation

- Measurements of process and product quality are harmonised, computed and stored in a centralised system: SIDI/SIQual
- The system documents also metadata
- The system allows for producing Quality Reports

SIDI/SIQual:
Information System for Survey documentation

Main objectives of the system

The SIDI/SIQual system is a tool for the documentation of the **quality** of Istat production processes and products

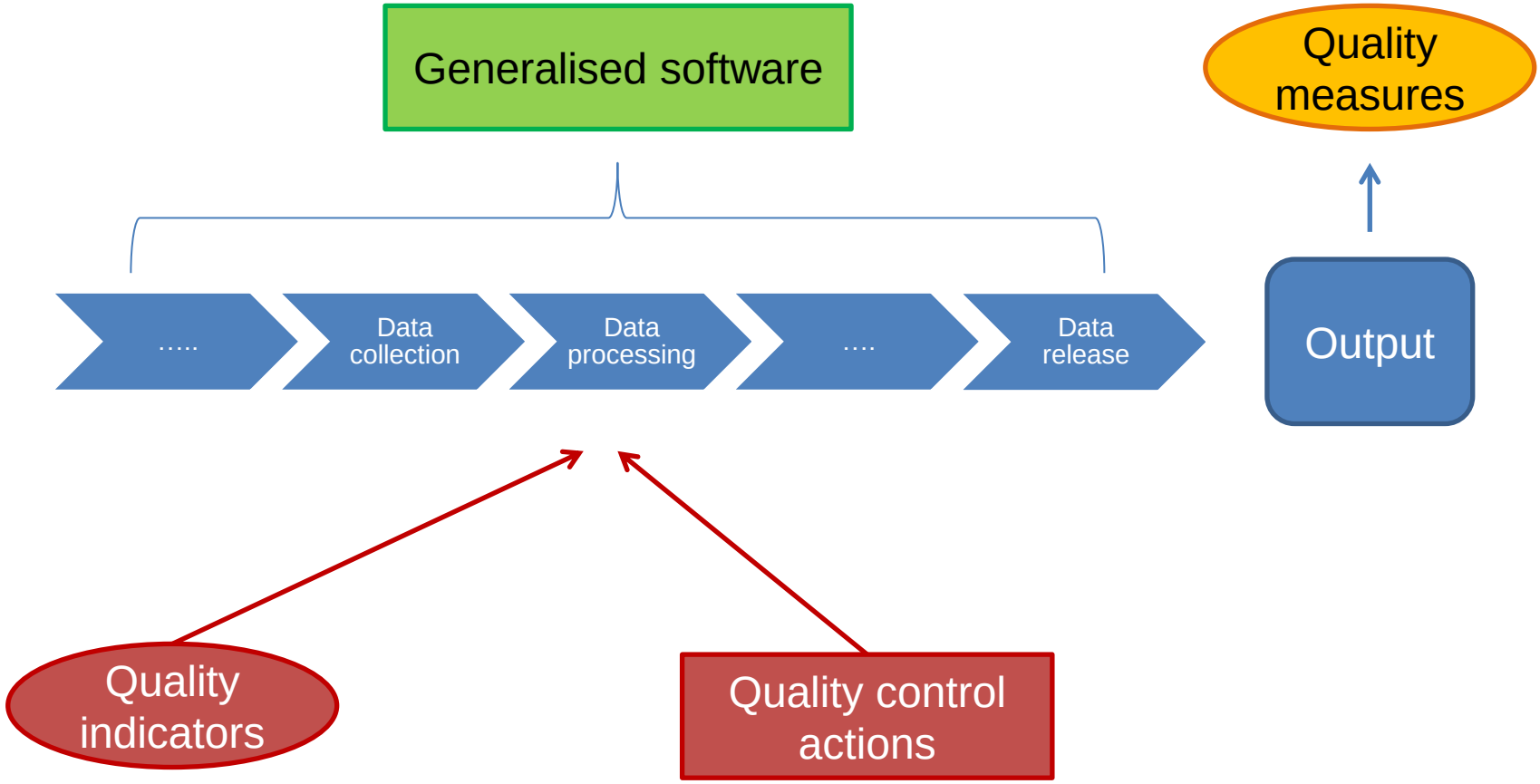
Assumptions

1. The quality is a multidimensional complex concept
   - Product quality
   - Process quality

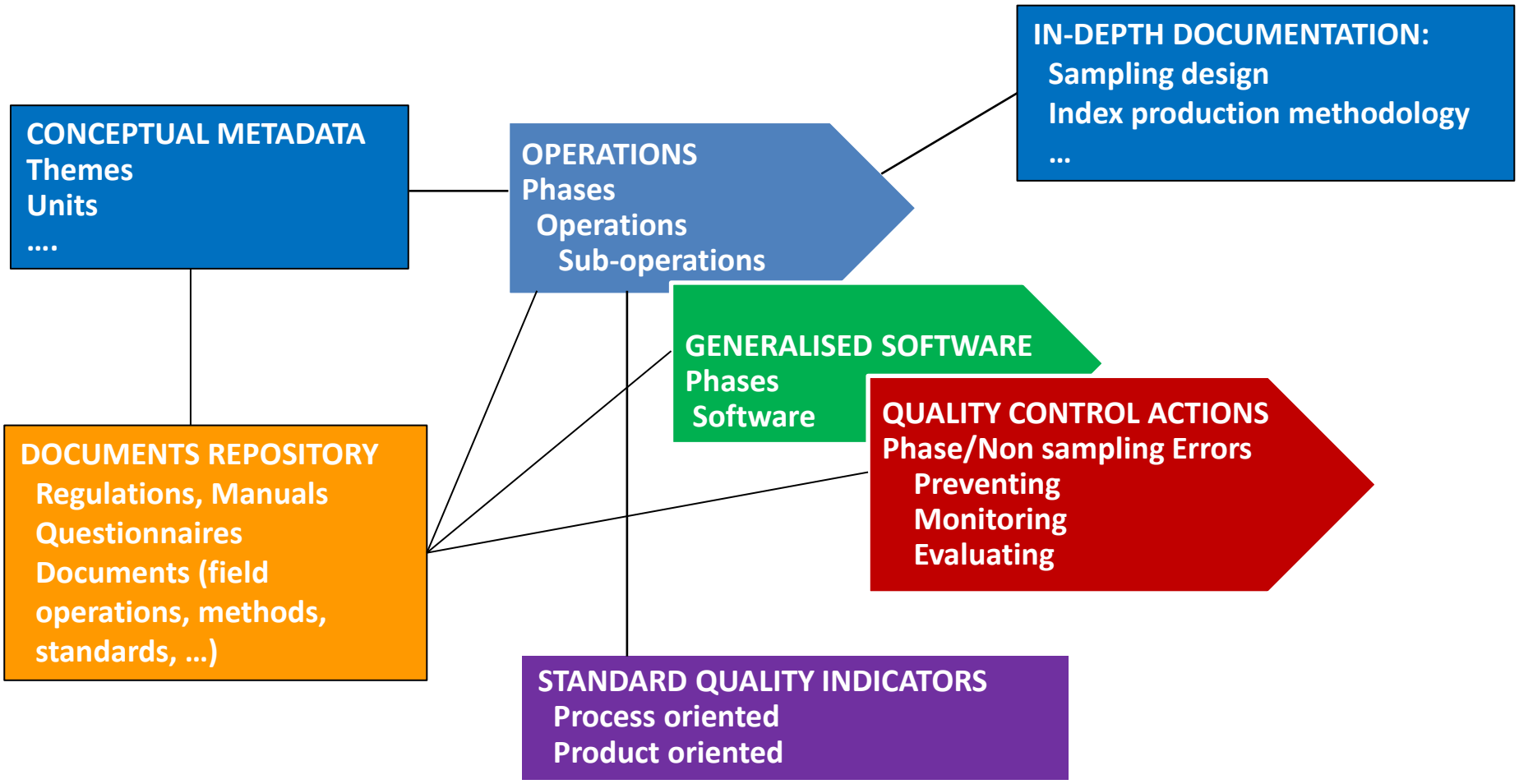
2. Quality
   - quantitative measures and indicators
   - activities for the prevention, control and evaluation of the error
   - documentation

3. The interpretation of the quality of a process requires supporting meta-information

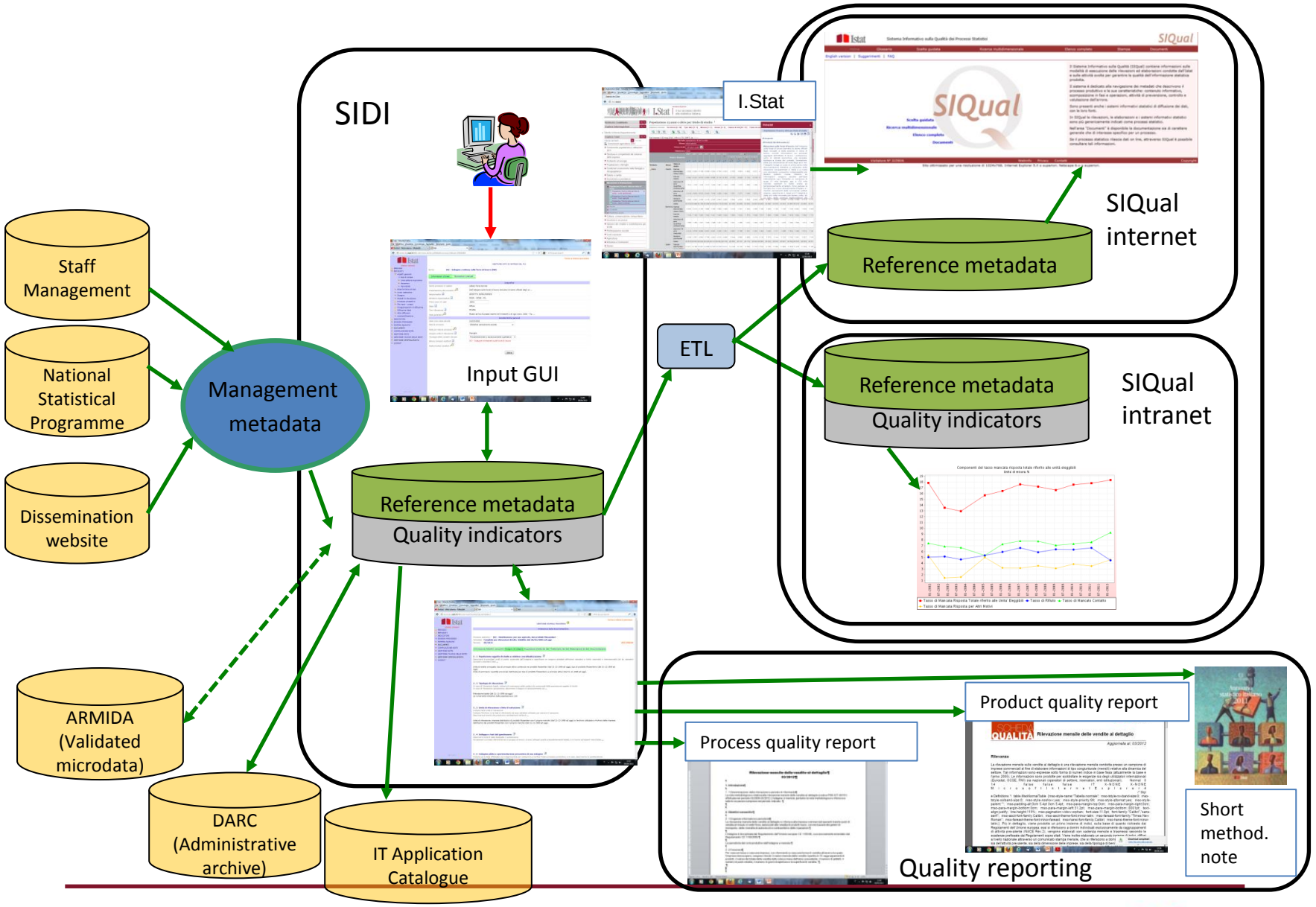
Main elements of the system



SIDI Reference metadata model



SIDI/SIQual Architecture



Main features of SIDI/SIQual system

- Centralized management and control
- High level of integration with other information systems
- High level of standardization
  - Thesaura
  - Standard quality indicators
- Free-text areas for descriptions
- Limited burden for survey managers
- Supported by an articulate quality pilots' net

SIDI Standard Quality Indicators

Groups of indicators

- Coverage
- Unit nonresponse
- Revision
- Coding
- Editing and Imputation (overall and for variable)
- Timeliness and Punctuality
- Costs
- Coherence (between sources, provisional vs. definitive)
- Comparability (length of the series of data)

SIDI Standard Quality Indicators

Process-oriented SQI

- Indirect measures of Accuracy
  - frame errors
  - nonresponse
  - coding
  - editing and imputation
- Information on survey costs

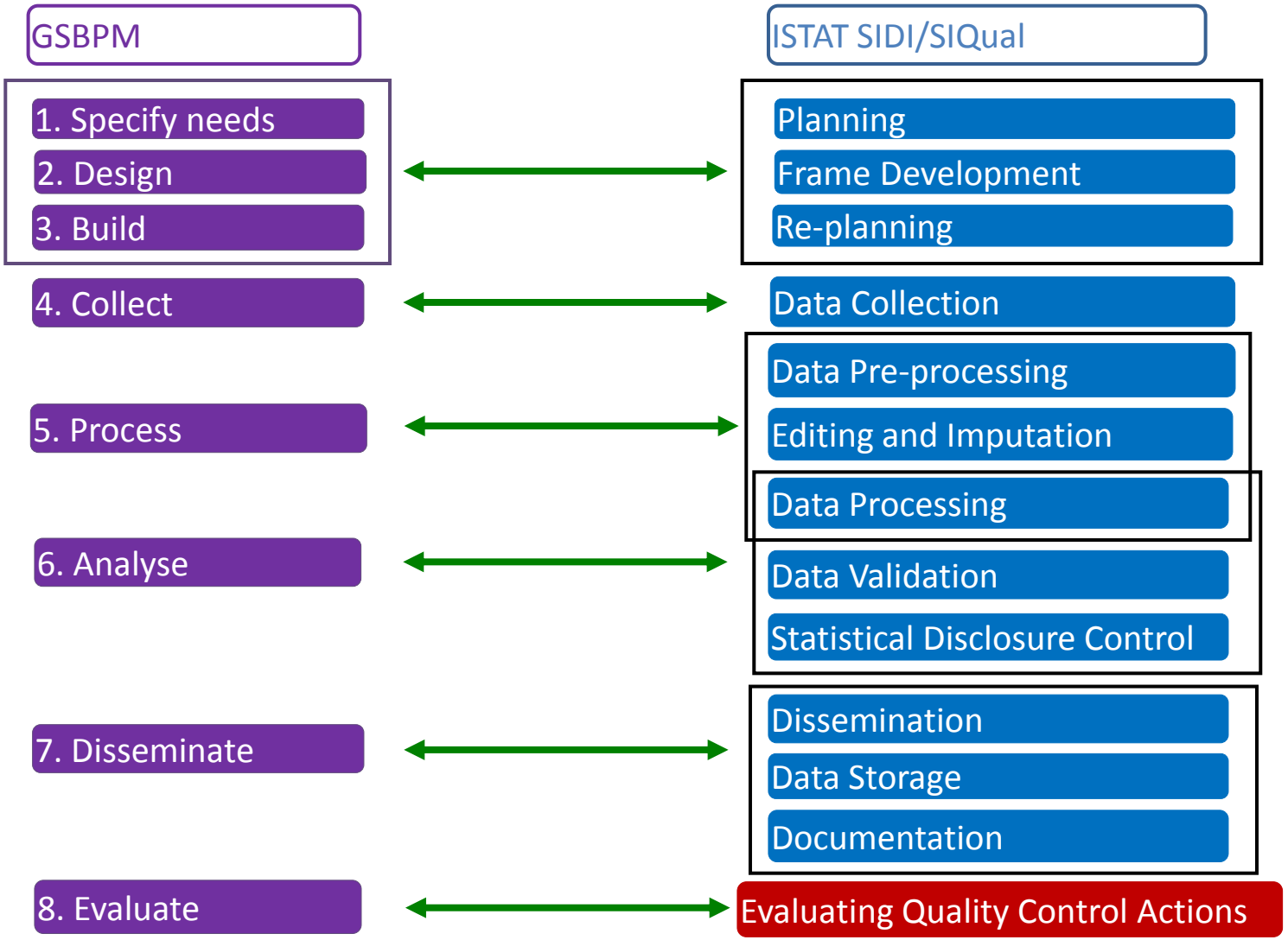
A set of SQI for each sub-component
Harmonised with Eurostat SQI

Product-oriented SQI

- Revision
- Timeliness and punctuality
- Comparability
- Coherence

A set of SQI for each sub-component
Harmonised with Eurostat SQI

GSBPM and SIDI/SIQual



SIDI/SIQual: Main development **steps**

- ✓ Metadata management system release (direct surveys): November 2001
- ✓ Indicators management release, first navigation system (SIDI-Top) and definition of a strategy for implementation: June 2002
- ✓ Use of the system to produce Methodological Notes of the Statistical Yearbook and generalization to statistical compilations: 2003-2004
- ✓ Systematic storing of quality indicators: since 2005
- ✓ First release of SIQual: January 2006 (Intranet and Internet)
- ✓ Translation into English: 2008
- ✓ External evaluation from colleagues of other NSIs: 2009
- ✓ Support to data wharehouse of dissemination (I.Stat): 2010
- ✓ Project on quality reporting, production of quality reports: 2014-2015

Main users and uses of SIDI/SIQual

Survey manager

- process and quality monitoring
- standard quality documentation

External users

- documentation for supporting data dissemination

Top management & Quality Structure

- aggregated quality reporting
- support for statistical auditing and self-assessment procedures
- targeted analyses, e.g. evaluations of innovation effects, quality comparisons among processes sharing similar characteristics, ….
- queries to respond to ESS consultations

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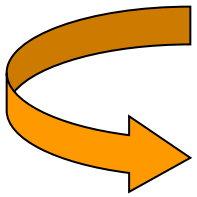
The SIDI system: organisation

Net of quality pilots at survey level

- quality pilots are trained on quality and documentation of metadata and evaluation of SQI
- formally appointed
- one edition of training course every year
- more than 150 quality pilots trained so far

Referee at directorate/division level

- working group coordinated centrally
- collect internal users' needs
- coordinate the work of the quality pilots



Increased awareness of quality problems

Increased quality culture

SIDI/SIQual: State of the art (06/2014)

Metadata

- 248 direct surveys, out of them 165 are «active»
- 126 statistical compilations, out of them 94 are «active»
- 5 active statistical information systems
- 14 other types of statistical processes (ad hoc modules, pilot surveys …)

http://siqual.istat.it/SIQual/lang.do?language=UK → online

Quality Indicators: % of completeness for group

Timeliness	100 %
Coverage and nonresponse	≈ 92 %
Comparability	≈ 76 %
Editing and imputation	≈ 67 %
Coherence provisional/final	≈ 19 %
Coherence with other sources	≈ 17 %
Revision	≈ 7 %

SIDI/SIQual: Quality indicators

Istat — Information system on quality of statistical production processes

Home | Glossary | Helped Search | Multidimensional search | Complete list | Report | Documents

Versione italiana | Comments | FAQ | User's guide

Quality indicators

> home > Complete list > Quality indicators

Process description
Insights
Summary metadata
Legislation
Observed phenomena
Reporting and observational units
Process Design
Phases of production process
Generalised software
Input output files
Questionnaires

Quality indicators

Documents
Documents about quality

Data dissemination
Classifications
Publications
Online data

Report

[S] - Multipurpose survey on households: trips, holidays and daily life

All weighted and unweighted indicator groups are listed together with number of available editions and date of first

Group name	Number of editions with available indicators				
	Unweighted		Weighted		
Coverage	52	since 31/03/2001	0		Yes
Unit Nonresponse	52	since 31/03/2001	0		Yes
Coding	0		n.a.		No
Editing and Imputation	48	since 31/03/2001	20	since 31/03/2008	Yes
Editing and Imputation for Single Variables	0		0		No
Revision policy	0		n.a.		No
Timeliness and Punctuality	52	since 31/03/2001	n.a.		Yes
Comparability	1		n.a.		Yes
Coherence between Provisional and Final Data	0		n.a.		No
Coherence with external sources	0		n.a.		No
Resources	10	since 31/03/2001	n.a.		Yes

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SIDI/SIQual: Indicators on Coverage

[S] - Multipurpose survey on households: trips, holidays and daily life

INDICATORS ON COVERAGE

Edition: 31/12/2013

Italy | Geographical detail | Time series - data | Time series - charts

Relevant metadata	
Reference unit	Households
Archive	List of fixed-line telephone private subscribers
Data collection mode	Computer Assisted Telephone Interviewing (CATI)
Periodicity of data collection	Quarterly
Eligibility criteria	-
Note	-

Indicator	Value	U.M.
Total Units	5626	
Resolved Rate	76,48	%
Frame Error Rate	3,09	%
Out of Scope Rate	3,09	%
Non Existent Rate	0	%
Change in Status Rate	0	%
Out of Target Rate	3,09	%
No Contact Rate Due to Frame Errors (Referred to Resolved Units)	0	%

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SIDI/SIQual: Trend over time of Unit Response Rate

[S] - Multipurpose survey on households: trips, holidays and daily life

INDICATORS ON UNIT NON RESPONSE

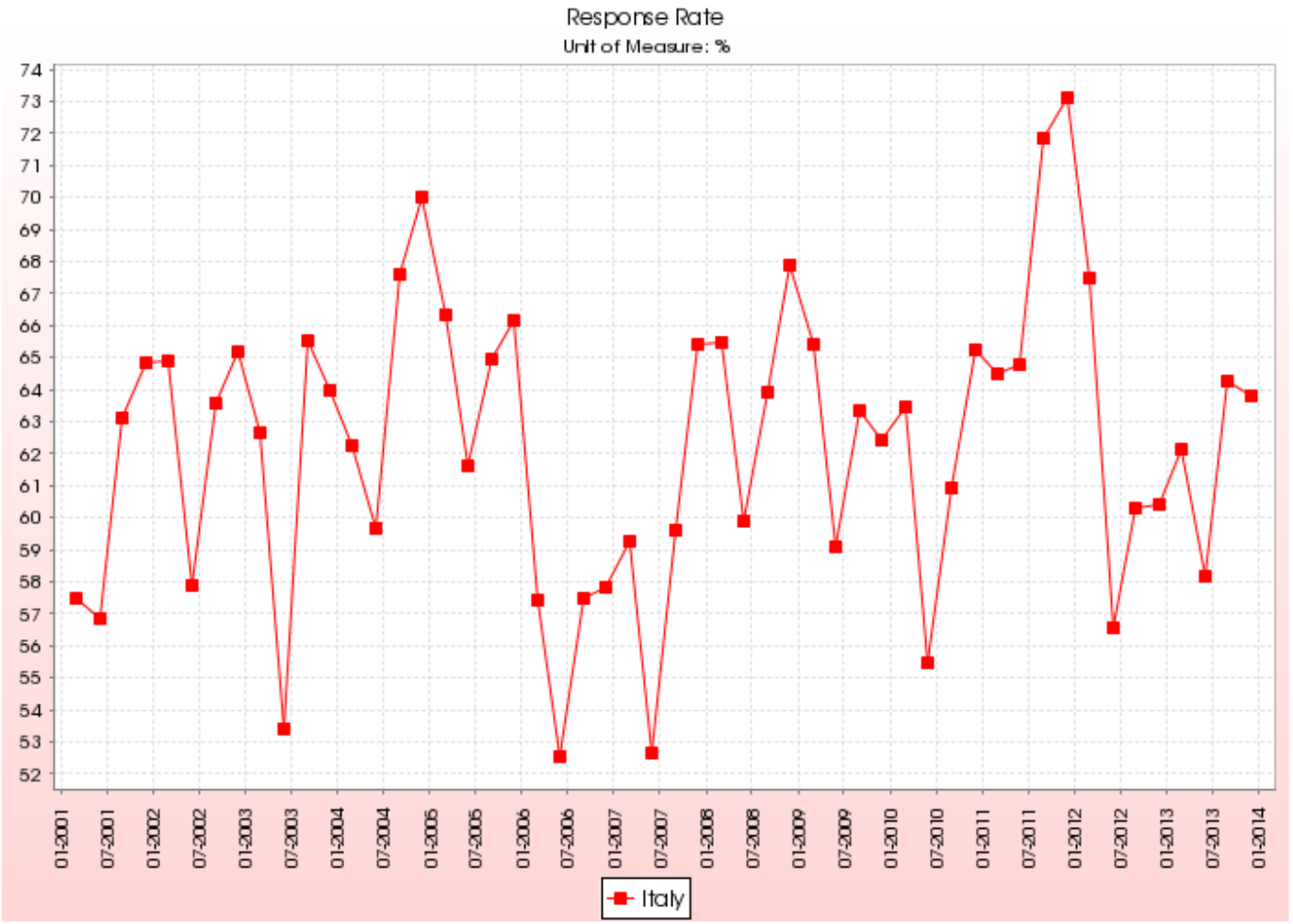
From 31/03/2001 to 31/12/2013

Italy | Geographical detail | Time series - data | Time series - charts

Comparison with averages

Table

Geographical detail



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SIDI/SIQual: Editing and imputation indicators

[S] - Multipurpose survey on households: trips, holidays and daily life

QUALITY INDICATORS ON EDITING AND IMPUTATION

Edition: 31/12/2012

Italy | Geographical detail | Time series - data | Time series - charts | Additional indicators

Relevant metadata	
Reference unit	Business trips, Holidays
Editing and imputation procedures	Deterministic error and outlier detection and imputation based on stochastic modelling
Periodicity of the production process	Quarterly
Data collection mode	Computer Assisted Telephone Interviewing (CATI)
Note	-

Indicator	Value	U.M.
Total Records	1345	
Total Variables	148	
Total Imputable Variables	136	
Imputation Rate	2,55	%
Modification Rate	0,93	%
Net Imputation Rate	1,23	%
Cancellation Rate	0,39	%
Non Imputation Rate	97,45	%
Non Blank Unmodified Values Rate	40,67	%
Blank Unmodified Values Rate	56,78	%
First Quartile of Imputation Rate Distribution by Variable	0	%
Third Quartile of Imputation Rate Distribution by Variable	0	%
Number of Variables with an imputation Rate greater than 5%	12	
Number of Variables with an imputation Rate greater than 2%	15	
First Quartile of Imputation Rate Distribution by Record	0	%
Third Quartile of Imputation Rate Distribution by Record	0,04	%
Number of Records with an imputation Rate greater than 5%	228	
Number of Records with an imputation Rate greater than 2%	867	

SIDI/SIQual: Trend over time of Timeliness

[S] - Multipurpose survey on households: trips, holidays and daily life

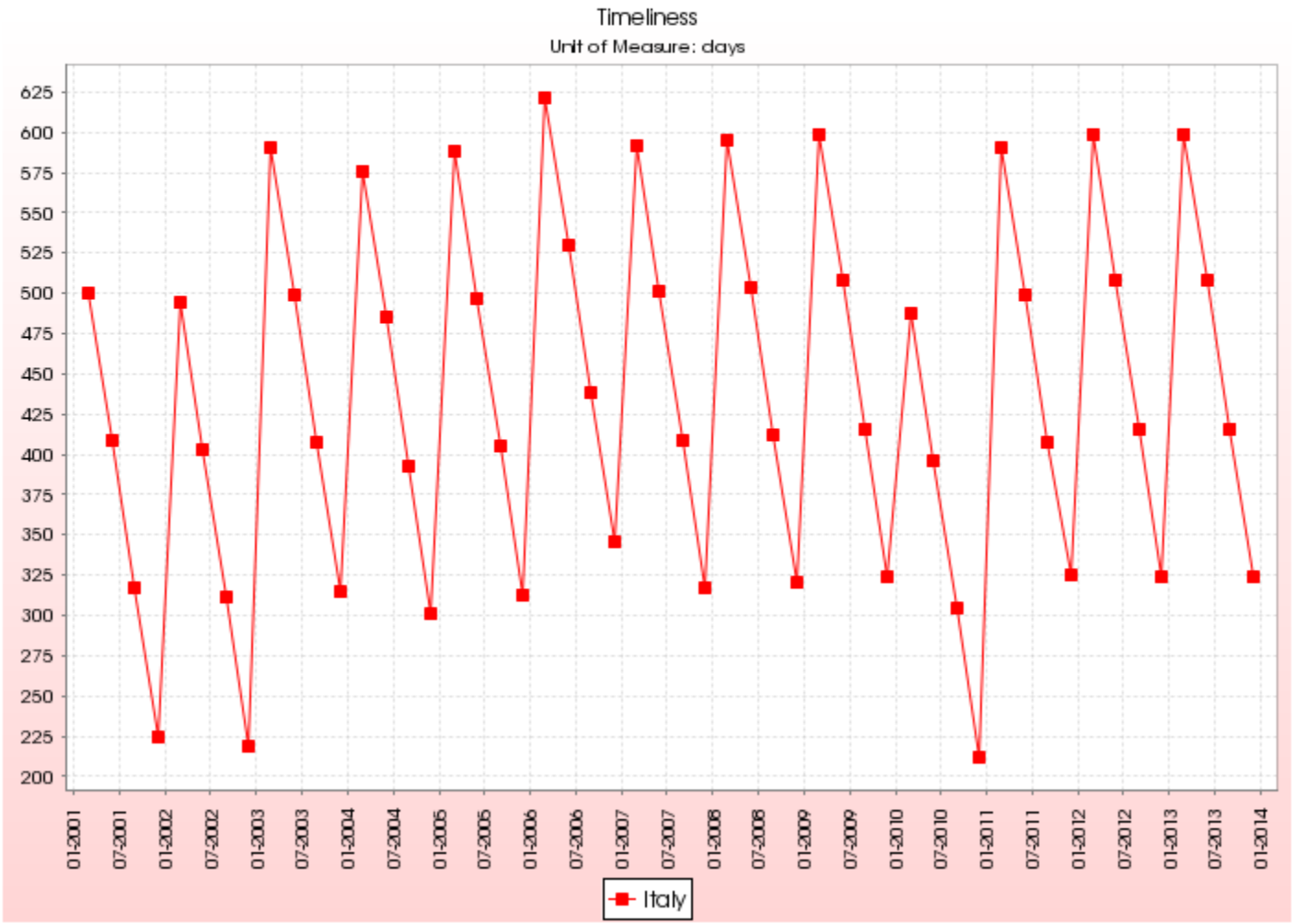
INDICATORS ON TIMELINESS AND PUNCTUALITY

From 31/03/2001 to 31/12/2013

Italy | Time series - data

Comparison with averages

Table



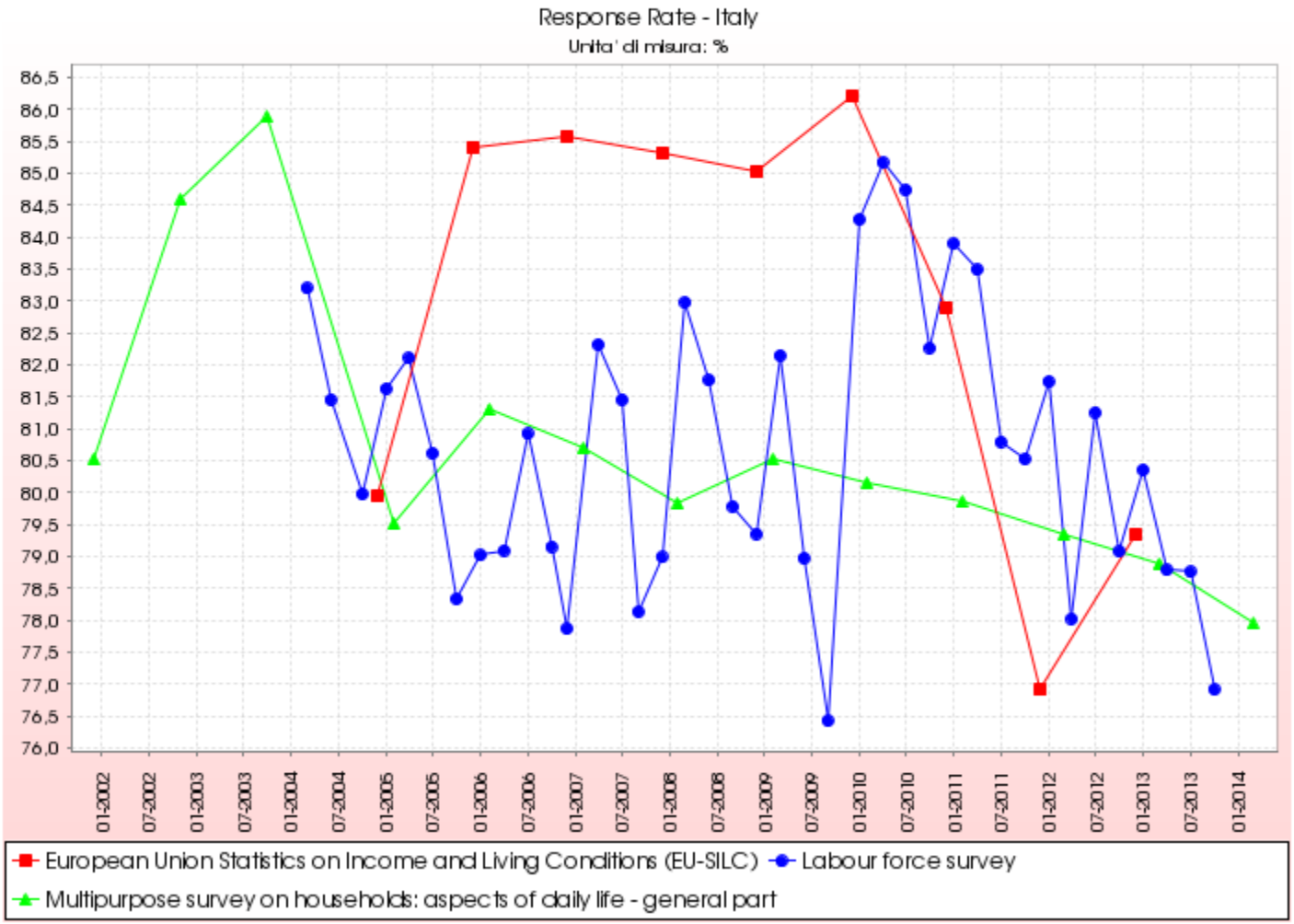
SIDI/SIQual: Comparing indicators across surveys

INDICATORS ON UNIT NON RESPONSE From 15/12/2001 to 15/03/2014

Number of selected processes: 3 Show list

Comparison with averages | Summary

Table | Geographical detail



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SIDI/SIQual: Quality reporting (survey level)

- ✓ Process quality reports derived from standard documentation
- ✓ Product quality reports, developed according to Eurostat quality dimensions

Ongoing and next SIDI/SIQual developments

- Development of ESS harmonised and technically compliant quality reporting based on SIDI/SIQual
- Fully integration with the structural metadata component (SUM)
- Development of short methodological notes for users (Quality at a glance)
- Increase of the level of integration of methodology documentation with process activity
- Increase of flexibility for documenting processes combining different sources and methods