

# Quality Management System in the Czech Statistical Office

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## 1. Introduction, history

Inspiration for establishment of the Quality Management System (QMS) in the Czech Statistical Office (CZSO) was the expertise of Eurostat and other advanced statistical offices that began to address quality management issues in the 1990's. The Eurostat definitions of characteristics (dimensions) of quality in statistics, recommendations of the Leadership Expert Group (LEG) of 2001, standardization of Quality Reports and then the Code of Practice introduced in 2005 were the main drives why the QMS was started in the CZSO.

In 2003, the Czech Statistical Office started to build the Quality Management System systematically. The TQM Committee<sup>1</sup> was set up as early as summer 2002, as the first constituent. As a result of devastating floods, which destroyed the CZSO office building in August 2002, all TQM activities were interrupted. During the rest of a year 2002 and the whole year 2003 employees of the CZSO were scattered to a dozen localities all over the city. In May 2003 after coming the new management to the CZSO, the TQM Committee activities were restored. Then Methodological audits of individual statistical segments commenced in Q4 2003 and became the second TQM constituent.

At the beginning of 2005 two new projects started, as follows: Reform of Statistical Survey System (RSSS) and Statistical Metainformation System (SMS). In spring 2007 a supervision of both projects was merged with the Steering Committee for Redesign of Statistical Information System (SIS). However, Redesign SIS and SMS significantly exceed the framework of QMS, due to an impact on the quality improvement have to be included into the QMS. In February 2005 started the Steering Committee for improvement Consistency, Coherence and Comparability of statistical indicators (COCOCO abbreviation for COnsistence, COherence, COmparability is widely used).

Quality Reports are also a part of QMS; the first one (a Pilot Report) was oriented on the 1998 Structural Business Survey. Number of such reports has gradually been growing; also Phare projects significantly contributed to the implementation and development of Quality Reports.

The Top Management Meeting, the Collegium (Board) of the President, and the General Methodology Branch are key line management participants in the Quality Management System in the CZSO. The quality is also being monitored in all subject-matter (statistical, processing, collecting) departments.

## 2. Structure of QMS in the CZSO

There are two basic broad quality dimensions that can be distinguished:

- Quality of management, leadership, processes...(addressed mainly within the TQM activities)
- Quality of statistics, statistical data, outputs...(addressed mainly within the COCOCO activities)

Quality Management System in the Czech Statistical Office consists of following bodies (institutions):

- TQM Committee
- COCOCO Steering Committee
- Redesign SIS Steering Committee
- Top Management Meeting of the CZSO
- The CZSO President's Board
- General Methodology Branch

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<sup>1</sup> TQM – Total Quality Management

- TQM Unit

The first three bodies (institutions) concern project management, the other four ones are of line management.

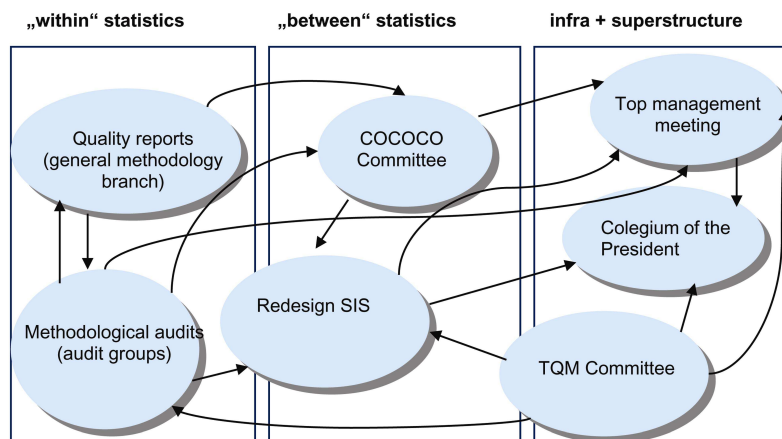
The CZSO QMS comprises namely (but not solely) following activities:

- TQM related activities
- COCOCO related activities
- Methodology audits
- Quality Reports
- Activities related to the Redesign SIS and SMS projects

Some activities are temporary (temporary project teams), some are permanent (especially in operating management).

Figure 1 describes the QMS in the CZSO:

### Quality management system in CZSO



## 3. Description of individual components of the QMS in the CZSO

### 3.1 Quality reports

**Quality reports** – are being elaborated always for a specific statistical survey or a group of surveys. The first pilot report referred to the structural business survey for 1998. To date, reports on more than 16 statistics<sup>2</sup> of different size were completed. As a rule, their first versions are available while their regular (usually annual) repetitions and revisions are envisaged. Reports are usually structured by individual components of quality<sup>3</sup> of the ESS (European Statistical System). They provide both qualitative and quantitative<sup>4</sup> information. Some of them, e.g. short-term statistics or statistics of external trade are issued in Eurostat standardized questionnaire.

Structure and contents of quality reports are based namely on legislative requirements and related methodological documents. The amount of compulsory quality reports in individual statistics within the European Statistical System increased gradually. Eurostat makes arrangements for a regulation summarizing requirements on quality reports generally applicable to more than one statistics.

<sup>2</sup> For the national income statistics, Labour Force Sample Survey, costs of labour, R&D, statistics on waste, living standard and household consumption, structural survey in agriculture, etc.

<sup>3</sup> Relevance, accuracy, timeliness and punctuality, availability and comprehensibility, comparability, coherence

<sup>4</sup> Namely in form of standard quality indicators

A newly designed Statistical Metainformation System of the CZSO should further the development of quality reports. One of its sub-systems will be focused on the quality of statistical surveys (down to the level of statistical variables). Its upcoming content is based also on quality reports requirements. A part of the information will be available for publishing for external users.

### 3.2 Methodology audits

**Methodology audits** – all segments of statistics are gradually subject to audits – altogether 23 segments<sup>5</sup> were identified for the needs of methodological audits. The purpose of audits is to verify if the methods, principles, tools and procedures applied are reasonable and in compliance with standards and practice of the EC statistical service and other international organizations or, as the case may be, with other relevant rules applicable to statistical activity including the internal ones. Approaching “best practices” is also examined. An audit should also reveal whether the methodology and procedures of respective segments of statistics are sufficiently documented in written form. Methodological audits are based on Principles of Methodology Audits adopted by the Top Management Meeting in May 2003.

Methodology audits have been carried out in compliance with a five-year rolling time schedule. The first round of audits was commenced in Q4 2003; the last audit of the first round was completed in accordance with the schedule in Q4 2008. Then the second round of audits will be started in accordance with slightly amended principles. Thus, each segment of statistics shall be audited once in five years. The period of duration of an audit is 3 months. A typical team performing an audit consists of five members; external auditors are in majority (at least three of them).

Quality reports and methodological audits belong to the group of the QMS activities which are indicated in the Figure 1 (see above) as “individual statistics” or “within statistics”, respectively, as they are oriented on quality of individual statistics and not on its coherence with other statistics.

### 3.3 COCOCO activities

Coherence of different statistics, i.e. compliance “between statistics” is the aim namely of **COCOCO activities** organised by the Steering Committee for Coherence and Comparability of Statistical Indicators. The future improvement (guaranteed by a system) of different statistics compliance is also supported by many activities linked with the Redesign SIS project.

The below mentioned list of COCOCO related activities is not complete, it is only a sample:

- Coherence and comparability of indicators in industry and construction and gross value added indicators in industry and construction in the national accounts system – it has been examined, among others, whether the industrial production index and construction output index from short-term statistics should approximate the value added development in these branches (and to which extent the VA development is actually approximated by indicators)
- Coherence of data obtained from household budgets and retail sales statistics – the causes of discrepancies were examined as well as whether they can be removed
- Differences among data published by the CZSO and data published by Eurostat – the aim of examination was to reveal the causes of difference, if due to different definitions, methodology, different ways of seasonal adjustment, time difference, errors, etc.
- Impact of globalisation on data quality and their reporting ability – especially the impact of (multinational) groups of companies, organisation changes in large corporations, businesses with the Tax Identification Number but without the Company Registration Number; to set up an individual communication with key, large-sized and difficult respondents has been decided
- Price indices and their use for deflation – resulted in a clear instruction how to use price indices for deflation
- Coherence of data source of the CZSO – to be solved on a long-term basis and systematically within the Redesign SIS project

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<sup>5</sup> On 1 July 2003, the Czech Statistical Council recommended the implementation of a system of methodological audits.

- Revisions Policy – was initiated by the COCOCO Steering Committee and after having been discussed and commented on in the Committee its final wording was presented to the Top Management Meeting

### 3.4 TQM activities

**TQM activities** are numerous and manifold. Below see only a brief list – detailed description is available in related publications<sup>6</sup>.

**User Satisfaction Surveys** are taken in standardised form annually since 2003<sup>7</sup>. Its aim is to collect users' opinions on quality of services provided by the CZSO especially in the field of statistical dissemination. A synthetic satisfaction indicator stands for an "overall satisfaction with statistical information and services provided". In 2008, the CZSO was assigned an average mark<sup>8</sup> 2.10 (compared to 2.24 in 2006). The number of responses in standard questionnaire fluctuates between 300 and 400 (229 in 2008). Since 2006 a specialized single survey is taken, focused on the CZSO website assessment.

Two **Respondent Satisfaction Surveys** were organised so far, the first one in 2004, the second one in 2006, the third one in 2009. In 2009, total number of 4944 respondents were directly addressed, response rate was 23,32 %. In 2006, total number of 22 050 respondents were addressed directly; the response rate was 29.5%. To a question: "Which mark do you indicate for the relationship of the CZSO to respondents?" respondents reacted with the mark 2.00 on average (2.17 in 2006, 2.12 in 2004). In addition to these regular satisfaction surveys in 2005 a survey on possible development of Electronic Data Collection (EDC) was taken. From March to June 2006 a poll survey "Potential and barriers of the EDC use in large companies" was taken in cooperation with an external company. In September – October 2006 the same company surveyed "Sociological profile and knowledge level of a CZSO respondent". Results of both surveys are used in the preparation and implementation of Redesign SIS in the area of policies related to respondents.

**Staff Satisfaction Surveys** are in standardised form organised annually beginning from 2003. Employees may comment anonymously on the whole range of issues from overall satisfaction with work in the CZSO or career growth to satisfaction with meals in the canteen, cleaning services etc. They can express their opinion also on such sensitive issues as sexual harassment or mobbing in the workplace. In 2008, the response rate was 47.86 % (in 2007 it was 48.14 %; in 2006 it was 47,50 %), mark assigned to overall satisfaction with the work in the CZSO was 2.13 (in 2007 reached 2.07; in 2006 it was 2.06).

The **CZSO Partner Opinion Survey** was organised for the first time in 2006. Respondents formed two groups: contractual respondents (business, commercial) and respondents within the state statistical service. Altogether 127 respondents from business sphere were addressed, the response rate was 22.8% and to the question "Which mark do you overall indicate for contractual relationship to CZSO partners?" respondents put the average mark 1.37. Partner survey questionnaires within the state statistical service were filled in by 16 out of 26 addressed respondents (61.5%). To the question "Which mark do you overall indicate for the co-operation within the state statistical services?" respondents put the average mark 1.75.

**Self-assessment using the EFQM model** takes place annually since 2005. It has been carried out by nine groups (in compliance with nine criteria of the model); each group consists of four members-employees, i.e. total 36 employees actively participate in self-assessment procedure. Starting with self-assessment for 2006 the CZSO takes part in the Quality Prize Award of the CR competition organised by the Association for the Quality Prize Award of the CR.

**Interlink between the EFQM self-assessment model results and strategic goals and sub-goals of the CZSO.** The purpose was to find links between strategic goals and sub-goals of the basic

<sup>6</sup> In detail they are described in articles: Jiří Křovák et al.: TQM activities in the CZSO in 2003 and 2004, Statistika, 2005, issue 3, p. 240-253, Jiří Křovák et al.: TQM activities in the CZSO in 2005, Statistika, 2006, issue 4, p. 327-340, Jiří Křovák et al., TQM activities in the CZSO in 2006, Statistika, 2007, issue 4, p.327-343, Alena Bokvajová et al., TQM activities in the CZSO in 2008, Statistika, 2009, issue 2, p. 168-182

<sup>7</sup> Method used: survey on the CZSO website and direct mailing

<sup>8</sup> For all satisfaction surveys a 5-level school classification is used: 1= the best, 5 = the worst

strategic document Mission, Vision, Strategic Goals and Sub-goals of the CZSO<sup>9</sup> and the EFQM criteria. The result of this work is a clearly arranged table designed separately for each strategic goal and its sub-goals. The table shows links between an individual strategy and respective EFQM approach and result criteria and proposals how to measure the fulfilment (performance indicator) of strategic goal and its sub-goals. A set of tables has become a useful source material for further activities within TQM – e.g. for the selection of performance indicators of the CZSO.

**The CZSO Key performance indicators.** In 2004, a system of strategic sub-goals whose performance has to be measured by suitable indicators was in the CZSO designed and approved. In the course of year 2006 an open set of indicators for the measurement of these sub-goals taking in account also the EFQM model criteria was created. Each of 22 designed Key performance indicators<sup>10</sup> (KPI) is described in a standard table providing following information: which strategic sub-goal the indicator refers to, definition of respective indicator, which subject it reports on, calculation formula, person responsible for attainment of its target value (“indicator owner”), person responsible for its measurement and calculation (“data owner”), frequency of observation, frequency of assessment, interpretation, i.e. attainment/non-attainment of its value, which of the EFQM criteria the given indicator follows, its last three measurement values, its value designed for the next period and its target value. Since 2009 the set of KPI was included into the motivation strategy of human resources management.

**Process management and cost controlling.** Among priorities in the dimension of “quality management processes“ belong gradual implementation of process management and cost controlling. In 2006, an “Implementation study and pilot project in process management and cost controlling” was carried out. The CZSO staff cooperated on this task with an external management consulting company. Basic outputs of the project are as follows: methodology of process management, cost controlling methodology, description of process model, description of cost model, description of a group of tasks of performance processes, validation tables describing relationship between processes, tasks and centres, study of information systems use, recommendation of further procedure including the implementation plan. Cost controlling implementation is scheduled for the latter half of 2007 and especially for the year 2008 (its first part – monitoring of the time consumption on centres, projects, grants, etc.) along with the implementation study of a new SIS, including SMS.

**New Strategic Planning System** replaced effectively from 2007 an “old“ system operating on a routine basis from 2005. Managerial staff gradually expressed their dissatisfaction with the old System since it was proved that it is a) administratively demanding, b) too complicated, c) providing not enough information for management and d) contains few subject-matter statistical themes. Due to the TQM Committee initiated in autumn 2006, upon numerous discussions with managerial staff, the Top Management Meeting approved a new „System of Strategic Task Planning from 2007 onwards“ in January 2007. The System comprises three basic documents:

- „Mission, Vision, Strategic Goals and Sub-goals“ as key strategic material designed and structured in compliance with the TQM areas which is not a factual statistical programme and is of a long-term character. It is updated every 3 years upon an agreement with the coordinators of strategic goals in compliance with the stage of its fulfilment.
- “Medium-term Program“ is prepared for the period of three years and is updated annually. It consists of main tasks of CZSO branches (plus main cross-cutting tasks), which may not directly follow strategic goals and sub-goals. It is primarily managed by subject-matter branches, and, secondary, it is related to the document “Mission, Vision,...” where the links to strategic goals and sub-goal are identified.
- “Priorities of the CZSO” for the respective calendar year represent a group of all-year main tasks of an extraordinary importance. They are of primary statistical character with precisely defined time-schedule and a system of progress measurement. They can be of a more long-term character and have a secondary link to respective strategic sub-goals.

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<sup>9</sup> Document Mission, Vision, Strategic Goal and Sub-goals of the CZSO was approved by the Top Management Meeting in June 2004

<sup>10</sup> Set of performance indicators was approved by the Top Management Meeting in May 2007

**The Top Management Meeting approved the System of Analytical Works** in June 2003. It supplements the COCOCO activities (analyses “inside” the CZSO designed primarily for internal use) by analyses for external users.

### **Other TQM activities**

Among other activities of the TQM Committee belong the following (the list is not complete):

- Preparation of the document “General Quality Policy of the CZSO” (approved in December 2006)
- Annual staff and managers assessment interviews
- Training and seminars for (managerial) staff
- Electronic message board – Internet query system
- Regular meetings of the Top management with representatives of main groups of users

### **3.5 Top Management Meeting of the CZSO**

The Top Management Meeting is (in compliance with the Rules of Procedure of advisory bodies to the CZSO President) an organizational instrument of the CZSO operational line management which discusses draft decisions designed to affect decisively activity, external relations, management or structure of the CZSO as well as serious topical issues; debates concrete tasks, procedures and coordination of activities resulting from these decisions, for individual departments of the CZSO.

Documents discussed by the TQM Committee, the COCOCO Steering Committee or by the Steering Committee of Redesign SIS are presented to the Top Management Meeting unless their authority to adopt a decision independently are insufficient. The Top Management Meeting receives quarterly progress reports on the Redesign SIS project while reports on activities of the TQM Committee and the COCOCO Steering Committee are presented annually.

### **3.6 The CZSO President’s Board**

The President’s Board represents an advisory body to the CZSO President which (according to the Rules of Procedure of advisory bodies to the CZSO President) discusses especially documents relating to the conception of the state statistical service, Programme of Statistical Surveys, draft State budget – chapter of the CZSO – and other areas and tasks of the office –wide importance in compliance with the CZSO President’s decision.

The President’s Board discussed e.g. documents on the System of Analytical Work in the CZSO in the area of quality management and, especially documents related to the Redesign SIS project – approved Model 2008 (as a basic conception of architecture of statistical tasks) and Global Architecture of the Statistical Information System – GA-SIS). These are basic conceptual documents determining the future redesigned image of the SIS as a whole.

### **3.7 Redesign of the Statistical Information System, Statistical Metainformation System**

This project by its subject (it is focused implicitly and explicitly on the improvement of quality in both dimensions, i.e. quality of management, processes etc. and quality of statistics) belongs to the Quality Management System in a longer perspective. However, in terms of its significance and scope it markedly goes behind the borders of the QMS. Description of the Redesign SIS project is the subject for an independent paper; here we present only brief characteristics.

Within the original project of Reform of the Statistical Surveys System following five goals were set up:

- Optimising production of statistical information in the CZSO
- Creating conceptual model of the SIS in CZSO

- Defining architecture of statistical tasks<sup>11</sup>
- Improving quality of statistical information
- Reduce respondents' burden and increasing respondents motivation

The redesign of the statistical information system<sup>12</sup> integrates all present and new-built information systems in the CZSO. It provides definitions of new SIS tools and their interlink, processing systems and integration systems (e.g. registers), statistical metainformation systems, information and communication technologies and structure of data warehouses. The aim is to ensure effective operation of all processes in the area of data processing simultaneously with optimising of statistical data collection and processing and production of statistical information including integration of requirements of international organisations especially in compliance with approved international statistical standards.

The implementation of the new SIS will result in significantly higher quality in both dimensions (management and statistical outputs). The period of implementation depends to a great extent on possibility to use extra-budgetary resources, especially from the EU.

Within the project of the Statistical Metainformation System the sub-project QUALITY was solved with the purpose to create a tool for monitoring data quality. The sub-system QUALITY comes from the General Quality Policy of the CZSO, conception of quality of the European Statistical System (quality dimensions and indicators) and the Code of Practice.

### 3.8 General Methodology and Registers Branch

In the QMS the General Methodology and Registers Branch plays an important role. Within this branch, the agenda comprises as follows:

- Creation of methodology of comparability analyses and statistical data consistence based on data quality assessment
- Cooperation in conception, maintenance and creation of metainformation system in the area of estimations, quality assessment, confidentiality protection, seasonal adjustments and data revision policy
- Quality assessment of data from administrative sources for filling databases

General Methodology and Registers Branch is a line guarantor of quality (methodology) in the CZSO. Nevertheless, all CZSO departments, especially those responsible for statistics and processing, participate in the QMS.

## 4. Conclusion

The above-described QMS in the CZSO is structured as an open system prospectively to be modified and adjusted in accordance with current needs. A substantial part of CZSO departments contributes to the QMS, either in line or project management. Current QMS is functional, however a considerable enhancement of the quality role at all stages of statistical tasks with gradual implementation and completion of the Redesign SIS and SMS development projects is expected.

Managerial positions in these development projects were assigned, with some exceptions, to promising young and middle-aged employees who are granted a chance to build statistics according to their future needs. A bet on youth was a gamble that paid off for us. A modern, progressive statistical information system comparable to top European statistical institutions is being built. Putting new SIS and SMS into full operation will be a matter of a couple of years; what entails substantial changes of QMS should become an integral part of these systems.

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<sup>11</sup> **Statistical task** - is a set of statistical activities needed to fulfil a users' request for statistical information. The statistical task can be composed of one or more statistical surveys.

**Statistical survey** - is a set of activities connected with the proposal of statistical questionnaire, preparing a sample, printing and distributing questionnaires, collecting completed questionnaires, data entry (including electronic collection of data) and data validation. Statistical surveys are always a part of statistical task.

<sup>12</sup> Discussed and approved in June 2007 by the CZSO President's Board

