

# Subjective and objective metrics for self-evaluation of public administration organization

Stanislava Simonova, and Hana Skopeckova

**Abstract**— Application of methods for monitoring organization output and for production quality assessment is considered a necessity, if an organization wants to reach good output in a long-term. However, public administration organizations have certain delay in application of these methods of monitoring and assessment of quality. There is an effort to increase the quality of services provided, but it lacks financial stimulus, which is apparent in production sphere. Process approach and application of measuring processes is supported mainly by decision of superior authorities. That is the reason why first-time usage of quality measuring methods is very often formal. Methods recommend using subjective and objective indicators, of course with accent on objective indicators and objective evaluation processes. Nevertheless public administration organizations rather start with application of subjective processes and they use objective indicators and approaches less often. The article is engaged in meaning and ways to use subjective and objective metrics for self-evaluation of public administration companies; it documents meaning and usability of various evaluation methods.

**Keywords**— CAF, evaluation of organization output, Six Sigma, subjective and objective metrics

## I. INTRODUCTION

Successful functioning of a company, but also a non-profit organization, is connected to additional financial resources, modern technologies, competent workers; a significant cementing element is management or more precisely operations of management in sense of manner of managing the organization [1]. Management of organization (organization of enterprise, public administration organization or another organization) must be concerned about quality of their production, since there are various effects / circumstances / risks such as competition pressure, reflection of technical development to more sophisticated products or services, pressure of well-informed customer, risk of dangerousness or health wrongfulness arising from products complexity, thread of sanctions, necessity of economical production and so on [2][3][4]. Management of an organization is efficient integration and coordination of resources in order to reach desired targets [5] [6]. Organization does not have to reach targets during period of time in both long-term horizon (design and production of products / services, which serves potential customer needs)

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and in short-term horizon (comparison of inputs and outputs, costs and earnings). Management has interdisciplinary character. There are various approaches to management, but nowadays the most stressed one is the process conception of management [6]. The process conception of management is comprehended as a cyclic connection of causality activities and functions - forecasting, organizing, coordination and controlling. The goal of process management is to develop and optimize organization operations so that it could efficiently, rationally and economically react on customers' needs [7]. The base for process management is process modeling. Modeling business processes is necessary for an enterprise that desires to evaluate, improve, migrate to a different technological platform, automate, and/or document its business processes [8] [9]. Process models are essential information base for monitoring processes output.

Organization pursues higher outputs of its processes and consequently it has to be able to react on both external and internal effects. Internal effects result from adaptation on given business process which means that workers have fully adopted the process and they are finding ways to, for instance, speed-up activities; reduce delays between consecutive activities or another process improvement. Outer effects are caused by changes in requirements from customers' side, changes in suppliers' attitude, changes in legislative and others. All of these changes have to lead to improvement of the process, thus to change in process as a reaction to requirements and effects stated. Methods and processes of process improvement are supported by approved methods or standards. The original application of these methods was in production organizations, but they have started asserting even in non-production organizations. It is obvious that all organizations have their customer (whether it is financial customer or for instance citizen); all organizations seek to fully satisfy needs of their customer and all organizations have to have high quality and constantly improving processes. The evaluation of process output needs to be monitored and interpreted by means of suitable metrics.

## II. METRICS FOR ORGANIZATION OUTPUT EVALUATION

Methods of improving quality and efficiency have found their place in both private and public sector. It is often such time sequence when certain management method is used first in a production organization and then it is used in a non-production organization as method approved in practice.

Similar management methods are applied in the private and public sector, even though there are differences between managements of both sectors. These differences include [10]:

- Public organizations acting upon needs designated politically, not upon needs designated by market.
- Profit motive, which exists in the private sector, is a base for measuring output, which cannot be applied in public organizations.
- Management in public and private sectors operates in different legal environment.

Nevertheless, current trend leads to reducing the gap between management of private and public sectors, because there are more similarities than differences. Basic elements of management activities are the same in both sectors. That is why the same or very similar models can be used for process management and for evaluation of processes output in both sectors.

#### A. Methods and standards

Models of successfulness and models of exceptionality belong among frequently used methods. They are based on evaluation according to determined criteria and are often connected to awarding the best organizations is given branch. Individual criteria of models should represent important areas which lead to prosperity of organizations. One of these models is Excellence Model (EFQM) [11] (software for quality evaluation based on EFQM are proposed [12]) and self-evaluation model CAF (Common Assessment Framework – Improving an organization through self-assessment) [13].

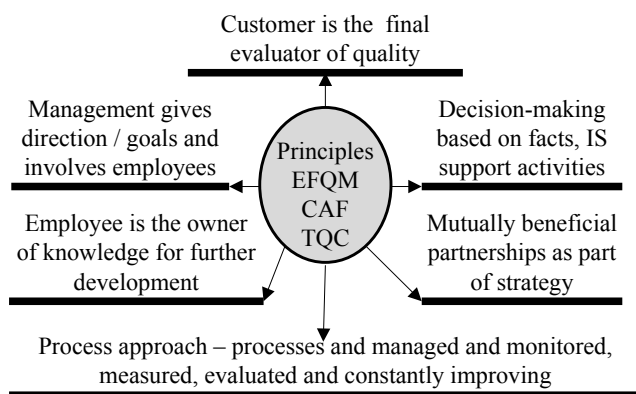


Fig. 1 principles of quality approaches EFQM and CAF

CAF model is derived from model EFQM and is transformed to public administration needs; both models continue on principles of quality assessment concept TQM (Total Quality Management). They have the basic principles in common [1] (see figure 1).

- Focus on customer: organization wants to fulfill customers' expectations; customer is an end-evaluator of quality of products and services.
- Leading and managing: top management gives direction (formulates strategic intentions of organization development), determines goals (transforms strategic

intentions into concrete goals), determines way of achieving goals (decides about organization structure and resources necessary to achieve the goal), involves employees (introduces base of the problem to employees), ensures transparency (everyone knows their competence), is the leader (is role-model to the others).

- Involvement of employees: employee is the owner of knowledge necessary for further development.
- Process and system approach: process approach is considered to be base of successfulness, because all organization activities are realized in processes; and in processes the added value is created (economic added value with financial effects and also material added value bringing higher outcome for customer). Processes proceed in mutual bonds and are connected to each other by means of results achieved. Process management is not only about measuring and monitoring of certain measurable parameters; it also includes constant evaluation of processes and their improvement.
- Decision-making based on facts: in order for decision-making to be efficient it is necessary to have needed information which has to be found, verified for validity, analyzed and then solutions have to be designed with the help of the information. Fundamental roles in this process have information technologies and corporate information systems.
- Continuous improvement: by means of improving activities changes we are trying to make changes which are induced by need for internal changes and also by effects from outer surroundings of the organization.
- Mutually beneficial partnerships: partnership should be a part of corporate strategy. It is about creating partnership of contract relations (for example outsourcing), then also merging companies into greater units and others.

Among other methods of managing and improving quality we can name methods Six Sigma and Kaizen. Both these methods are focused mainly on economic organizations and again they follow the principles of TQM, or EFQM. Kaizen is approach of constant improvements; it is about continuous flow of little / partial improvements at all organization levels [14]. Kaizen approach has following basic principles [15]:

- Personal kaizen; self-improvement:
  - self-consciousness, critical view of self, respect of cognition and to people around us,
  - to learn, to teach people around us, ability to transfer information to knowledge, ability to plan and manage activities in time, ability to keep balance in our lives and to achieve high individual output by that.
- Creating confidence and mutual cooperation:
  - confidence and open communication are the basics for quick identification of real problems and their causes and also for improving (without needles bureaucracy),
  - improvement is team cooperation and in order to have team cooperation it is necessary to create culture of solving problems and conflicts by means of consensus and to learn from actions in the past.

- System of problem solving in company:
  - interception of problem, its instant analysis and identification of causes,
  - measurements and suggestions for solving within process team, improvement suggestions,
  - system of workshops which deals with more complex inter-process problems and improve processes with regards to annual targets of corporate performance increasing,
  - system of project management which solves very difficult problems and serves mainly as a tool for achieving strategic targets of organization.

The Six Sigma method is focused on improvement of quality with emphasis on elimination of defects. Fundamental idea of this method is effort to perfect production [16], i.e. avoid mistakes. Mistake is comprehended as any discrepancy with customer's wish; or simply any case when the customer is dissatisfied (external or internal customer). Based on his requests on product and organization requests we can define quality criteria Critical to Quality (CTP). Six Sigma can be defined as a methodology to manage process variations that cause defects, defined as unacceptable deviation from the mean or target; and to systematically work towards managing variation to eliminate those defects [16]. The method uses mathematical apparatus of F. Gauss; his normal distribution curve describes how probability is distributed. Sigma is determined as standard deviation. Principle of the method is illustrated in figure 2. Base of it are limits which are determined based on customer's requests – upper specification limit and lower specification limit; specifications or tolerances are derived according to customer's behavior.

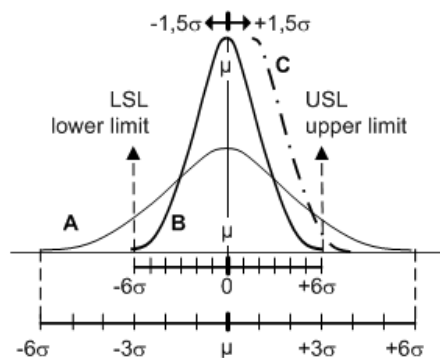


Fig. 2 principles of Six Sigma approach

In figure 2, organization is in initial situation A. In situation A performance of process and compliance of limits proceeds in such a way that USL (upper specification limit) and LSL (lower specification limit) have distance of 3 sigma from mean value  $\mu$ . The area inside limits represents suitable production / output and area outside limits represent unsuitable (defective) outputs. If there is „ideal“ improvement in the organization, then the organization transforms production conditions to situation B. Situation B means that output of process and limit compliance proceeds in such way that USL and LSL have a distance of 6 sigma (thus „six

sigma“) from mean value. Situation B represents ideal (not possible in real) state, when 100 % production is suitable (or in other words there were 0,002 errors from a total number of million potential errors). Model Six Sigma considers circumstance when mean value  $\mu$  is in real situation shifted by  $\pm 1,5$  sigma. In the picture it is represented by situation C. For sigma equal 6 we can state that production is in 99,99966 % cases of high quality, or that 3,4 error occur from a total number of million potential errors (from a million of possibilities). It was stressed earlier that the six sigma state is a perfect state. Industrial „usual“ quality is designated by level 3.8 sigma, which represents 99% of production without any defects, or 10724 defects per million opportunities. Vital issues are suitability of measured indicators, or how properly are the discrepancies monitored and evaluated. Methods include output evaluation which are based on mathematical statistical apparatus. Significant part of methods for improving processes is therefore measures for measuring and evaluating process output. These metrics are subjective or objective.

### B. Subjective and objective metrics

Metrics are used for evaluation and measuring of performance, whether the area is corporate-wide or concrete partial. Metrics is a measurable indicator used for determination of quality, quantity and financial category; it is an indicator of quality in the light of set goals [17][18][19]. Typical tool for setting accurate results are metrics that measure performance of developing product such as method testing for solving optimization problems (e.g. number of iterations, number of changes of the best found solution etc.) [20].

Objectively measured measures (hard measures) are characterized as objectively and easily measurable indicators. They monitor for example development of corporate goals and they are focused on the output of corporate processes, key activities, or they are focused directly on customer [18][21].

Subjective measures (soft measures) cannot be measured directly objectively, but they lean on subjective evaluation for example in form of questionnaires.

Determination of set indicators is both a significant and a difficult task in each model creating process. It is a complex task – to find suitable indicators, monitor them and evaluate them. There are two aspects:

- Correct structure of indicators: it is vital to find as many indicators as possible and such indicators, so that their evaluation would have predicative ability – so that the evaluation would really quality or defectiveness of production.
- Objective and subjective indicators: the main question is when and to what extend is it suitable to use subjective indicators, or whether is it more suitable to focus on objective indicators.

### III. METHODS OF QUALITY IN NON-PRODUCTION ORGANIZATIONS

Methods of improving quality and performance are

generally used for the production sector and they are subsequently asserted to the non-production sector. Then there are approaches created directly for public administration sphere. In all types of organizations it is necessary to increase quality of production, whether it is products, services or for instance education.

#### A. CAF

Self-evaluation method CAF (Common Assessment Framework) is determined directly for public administration organizations. Process of self-evaluation stems from the methodology, as shown in figure No. 3.

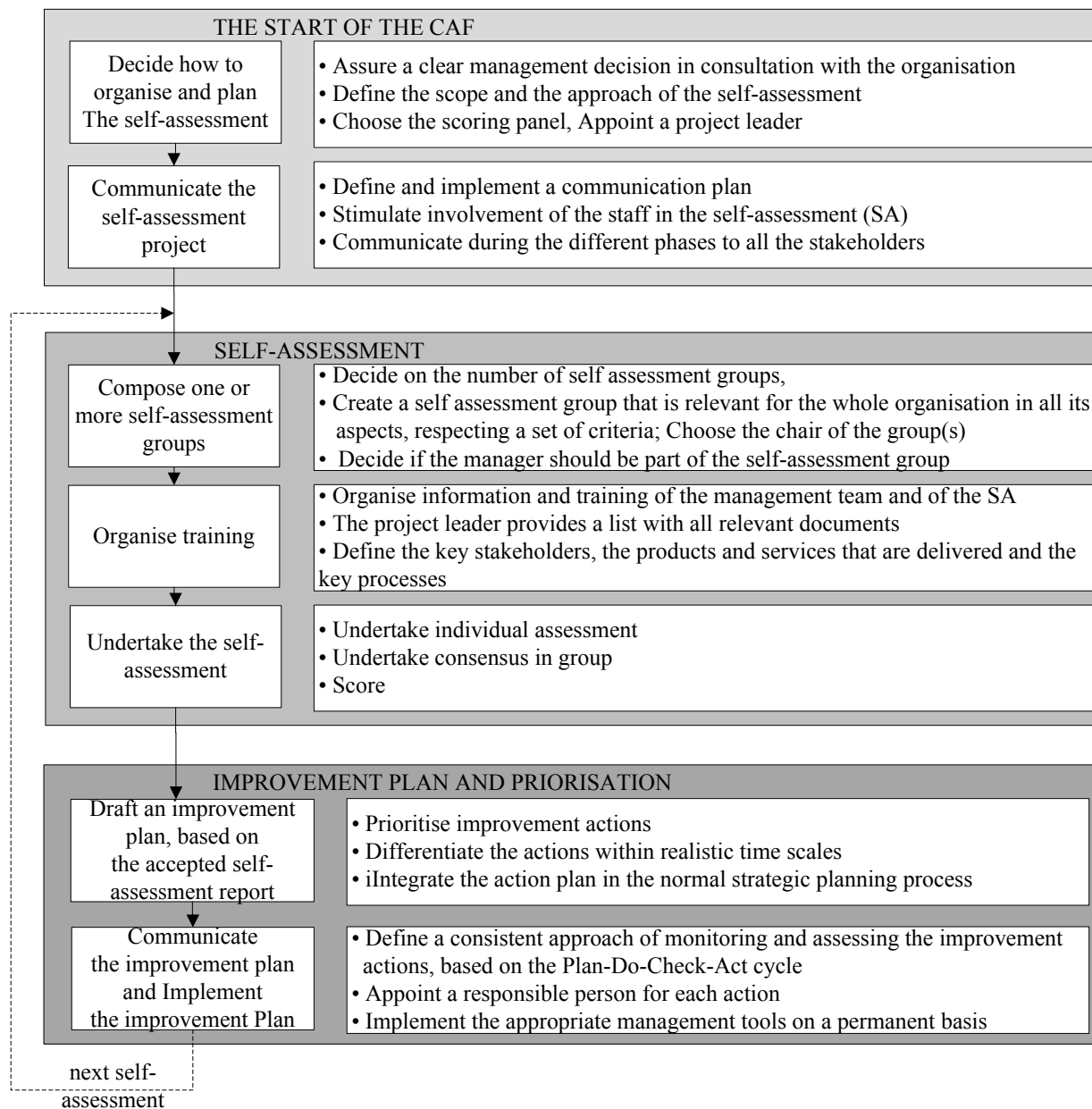


Fig. 3 cycle of assertion of the CAF model in organization

Evaluation of individual criteria is performed based on improving cycle PDCA (abbreviation from: plan – do – control – act); see figure No. 4; we ask and we evaluate which, within given organization (our organization), phase the evaluated criterion reached:

- phase P: that means that criterion is planned,
- phase D: that means that criterion was planned and is performed,
- phase C: that means that criterion was planned and is

performed and then the result was verified to be compliant with the target,

- phase A: that means that criterion was performed, verified and fully implemented to new process performance.

Based on the CAF methodology, the evaluation criteria are determined and consequently evaluation aspects are assessed of each criterion. For example criterion “steady identification,

design, management and improvement of processes“ has evaluation criteria – “steady identification and documentation of key processes, assessment of resources to processes based on their contribution to fulfillment of corporate strategic goals“, “identification of process owners and assessment of responsibilities“, and others.

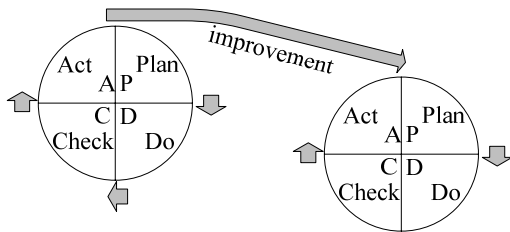


Fig. 4 improving the PDCA cycle

Evaluation committee then gathers maximum number of pieces of evidence on results, based on which the given criterion will be evaluated. Evidence can have following forms:

- absolute values: number of complaints, financial donation range,
- indicators: number of tasks per worker,
- index: number of satisfaction index, index of workplaces audit,
- target fulfillment statement, statement about conformity of statements “system is efficient” and “target was reached”,
- fulfillment percentage: process of fulfillment of target in %.

Principle of evaluation of individual criterion according CAF is in figure 5.

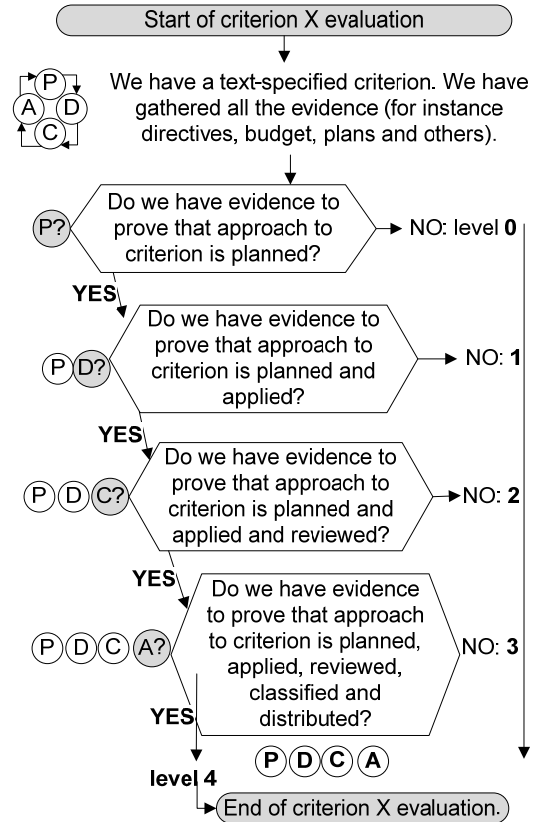


Fig. 5 evaluation of criteria by the CAF model

Results of evaluation are most often recorded in an overview table, where criteria, references to evidence and achieved values are stated for individual criteria. Example of result table – please see table No. 1.

TABLE 1  
EXAMPLE OF EVALUATION AND RECORDING OF EVALUATION ACCORDING TO CAF

<b>Office XY: CAF criterion 5 Processes / 5.1. Identification, management and improvement of processes</b>		
<b>Comment:</b> Key and secondary processes related to selected branches were defined; structure of processes was illustrated by diagrams. Elaboration of description will continue so that it reflects basic activities of branches. Ongoing process and data analysis within the office can help with identification and optimization of processes so that duplicate and redundant activities within individual processes would be erased. We have the first outputs which were verified by top management.		
	<b>Question wording and references to the question including evidence</b>	<b>Valuation</b>
5.1.1	Identification, description and documentation of key processes (directives, development diagrams, descriptions of activities): Partially done, key processes are determined by law. Processes will be continuously adjusted. Organization directives and process description on branch of education can be used as evidence.	2,2
5.1.2	Identification of process owners and assignment of responsibilities to these owners: Process owner = enforcer and person responsible for certain activity. It is rational to delegate activities and responsibility to referents. In areas where process description is performed, owners are identified and responsibility is delegated to them.	3
5.1.3	Ensuring that key processes support strategic long-term goals: Everyday office activity (and thus realization of key processes) is focused on support of long-term goals. Rate of support is checked on management meetings, Council or Corporation meetings.	2,1
5.1.4	Continuous optimization of processes based on their measurable efficiency and effectiveness: Some processes are hard to measure, but theoretically each project can be measured and improved. We are just beginning with process approach.	1,5
<b>Total score for sub-criterion 5.1</b>		<b>2,2</b>

The problem points in course of self-evaluation by means of CAF within public administration organizations are:

- Insufficient financial stimulation: organization performs self-evaluation due to resolution of superior authority; there is no financial motivation, unlike in production organizations.
- Formal approach: organization often does not perceive necessity of self-evaluation and therefore self-evaluation is performed superficially and formally without deeper analysis and evaluation.
- Subjective evaluation of criteria: often subjective indicators and subjective evaluation of indicators is used; for instance committee from several workers will gather and the workers perform self-evaluation of organization.

Application of CAF for self-evaluation of organization can appear as a formal task, which does not result in deeper impact and actual results. But the opposite is true. In the Pardubice region (the Czech Republic) public administration institutions performed self-evaluation according to CAF model continuously 3 years in a row. This self-evaluation was a part of a national project. Self-evaluation in given organization was performed by a committee consisting of several workers and evaluation was performed once a year. After each round of evaluation an action plan was compiled. This action plan defined actual steps to improvement of individual criteria. Each task was assigned with responsible resolver and a deadline. In the next round of self-evaluation they reviewed whether previously identified imperfections were eliminated or improved.

Self-evaluation had these input characteristics:

- Project was voluntary, but initiated by a superior representative.
- Self-evaluation was performed rather by subjective evaluation of individual criteria.
- Project was not comprehended negatively, but neither the project had positive support among employees and management.
- Project was comprehended as a new task, which needs to be done.

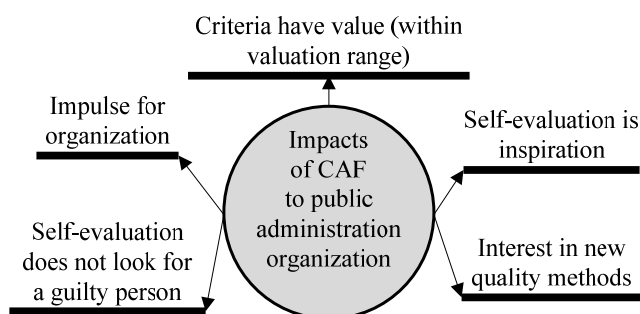


Fig. 6 improving the PDCA cycle

Self-evaluation brought these positive outputs (fig. 6):

- Criteria can be expressed by actual value (within evaluation scale): employees / management realized that

their activities can be classified (expressed by certain value). Organization realized its current status / level of individual criteria. Even if it was generally by subjective indicators, the value of reached level brought new information. This information was comprehended as interesting, even though evaluation was not that high (that means that status of evaluated criterion was not optimal).

- Organization was given an impulse: workers had an effort (gained motivation) to make changes in their work activities and approaches; they wanted to get better result of evaluation in the following year.
- Self-evaluation does not mean searching for guilty people; workers gained an idea about mission of self-evaluation, as it is not about seeking errors at any rate; it is rather about inspiration for improvement.
- Interest in further methods of quality: workers realized the meaning of self-evaluating method and they displayed interest in other methods of quality and therefore started to look for information about possibilities and impacts of other quality methods.

Employees of the organization stated in the beginning of self-evaluation process comprehended evaluation of criteria formally and they used mainly subjective criteria and subjective evaluation. But their attitude changed rapidly during the evaluation. They came to realize the sense of self-evaluation; organization realized levels of individual criteria and gained impulse to their improvement. Employees of the organization displayed interest in gaining more information about further methods of quality. Even though subjective measuring and subjective evaluation was used, the greatest contribution of self-evaluation according to CAF is that organization made the first steps to managing quality of their performance and that they engaged this problem and that they consider self-evaluation a positive contribution.

#### B. Application of Six Sigma in a non-production organization

The Six Sigma method is originally meant for production organizations. Sources of defects could be – violation of technical parameters of product, imperfections of parts of monitored product, incorrect sequence of intermediates and such. Nevertheless, rate of defects / variances can be measured for any product or activity. Variance in non-production organization can be defined as, for instance – mistakes in process of filling in a form, number of incorrect switchovers of telephone calls, number of cases of outstanding contracts in time and so on. In non-production organizations a process audit was realized. It was an education organization with aim to gain experience of process audit and objective evaluation of quality within organization. Two sub-processes were selected, while each of them referred to one work role. Therefore, two employees (representatives of the two roles) and one executor of process audit participated in the project.

The process was following:

- Preparation: model of roles of given working place (see fig. 7), determination of schedule for each participant.

- Analysis: interviews, description of activities in form of process card (see table 2), modeling of process context (see fig. 8), modeling of process activities in form of process map (see fig. 9).
- Measuring: identification of indicators, introduction of monitoring protocol, application of Six Sigma; measuring of indicators proceeded for a 6 months' period.
- Evaluation: application of Six Sigma, finding of deviances and their causes.

TABLE 2  
PROCESS CARD

Attribute	Process activity characteristics
Name	Processing of Publication editing process
Definition	Editing activities is a whole-year process which begins with obtaining requests for inclusion of publication into Editing plan, and ends with issuing all publications. Publication can be either in paper or in electronic form. One of editing referent activities is also finding financial resources for editing itself (for instance sponsors).
Purpose	<ul style="list-style-type: none"> <li>• Delimitation of individual activities within process</li> <li>• Job description of Editing referent</li> <li>• Creation of similar structure and chronology of process</li> <li>• Increase efficiency of all activities leading to issuing of publication</li> </ul>
Owner	Organization secretary
Customer	Academic worker, rarely student in a role of author or coauthor of the publication
Regulators	<ul style="list-style-type: none"> <li>• LawNo. 121/2000 Sb., Copyright Law</li> <li>• Directive 19/2007 Administration of Publishing Activities</li> <li>• Directive 1/2008 Administration of Publishing Activities</li> <li>• Authors handbook: Methodology of Distant Footholds</li> <li>• Instructions on Standard Text Arrangements</li> <li>• Instructions on Basic Text Arrangements</li> </ul>
Risks	Risks lie in poor cooperation and communication of academic workers and even individual departments participating in publication issuing. Risk can be for instance illegal publishing among students, thus physical spread of publication.

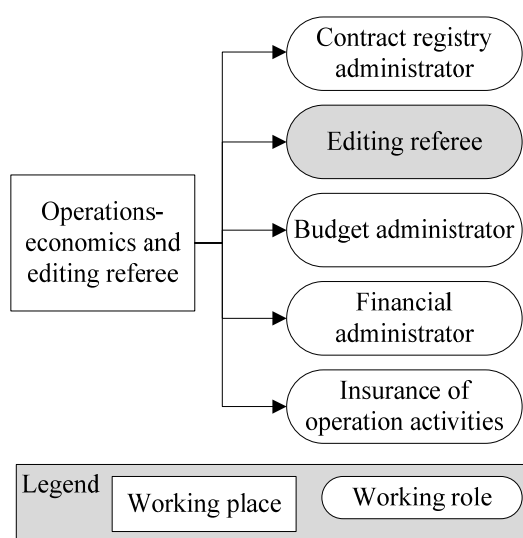


Fig. 7 model of working roles of an employee, or working place

During deeper analysis of delimited sub-process a trend to analyze process within whole organization emerged. But it was necessary to focus on the sole role of editing referee and on whether he is efficient and whether he/she introduces added value and whether he/she corresponds with corporate

goals. Corporate goals regarding editing activities are: to simplify access of students to basis for studying and to simplify academic workers the process of publishing their present results of their scientific activity. The information gathering about individual activities was quite difficult, or more precisely it was difficult to find suitable form of communication with representatives of delimited roles. As a result we repeatedly held consulting sessions during which we tried – in relatively short time period – to find out as much information as possible.

In order to determine metrics it is necessary to result from processes described and from knowledge of their activities. Indicator “defect” was determined as any change or fix or addition which was necessary to do after preliminary publication check. A significant indicator was also time frame of each activity within process, while there is understandable effort to make the process efficient. Identified metrics were processed to monitoring form. It was necessary to attach text explanation to each monitoring form. If that was omitted, it is necessary to count with differing explanation of metrics naming by people who are recording data into form and those, who are subsequently evaluating it. Such discrepancy could naturally lead to difficult process evaluation.

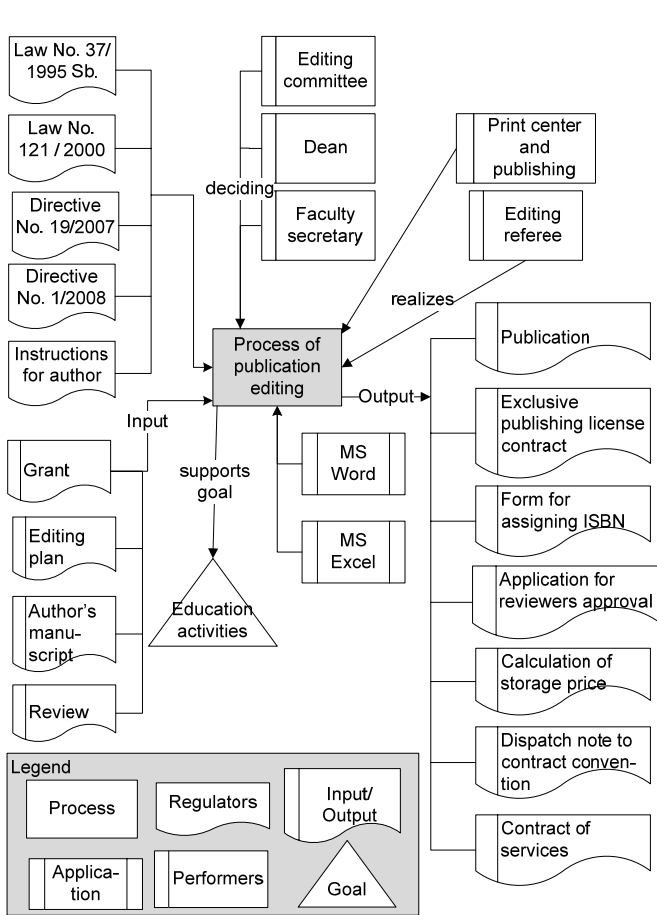


Fig. 8 model of process context

Processing of indicators and evaluation of sub-process was performed generally according to calculations of the Six Sigma method:

- MN discrepancies rate:

$$MN = \frac{\text{number of defects}}{\text{total number of executions}} \quad (1)$$

- Number of DPO discrepancies:

$$DPO = \frac{\text{number of defects}}{\text{total number of defect opportunities}} \quad (2)$$

where *DPO* means Defects Per Opportunities.

- Number of discrepancies per million opportunities DPMO (Defects Per Million Opportunities):

$$DPMO = DPO * 1.000.000 \quad (3)$$

where *DPO* means Defects Per Opportunities.

- Sigma level determined by means of conversion tables (see table 3 and table 4).

- Competence index CP:

$$CP = \frac{USL - LSL}{6 * \sigma} \quad (4)$$

where *USL* means upper specification limit, *LSL* means lower specification limit,  $\sigma$  means number of sigma level.

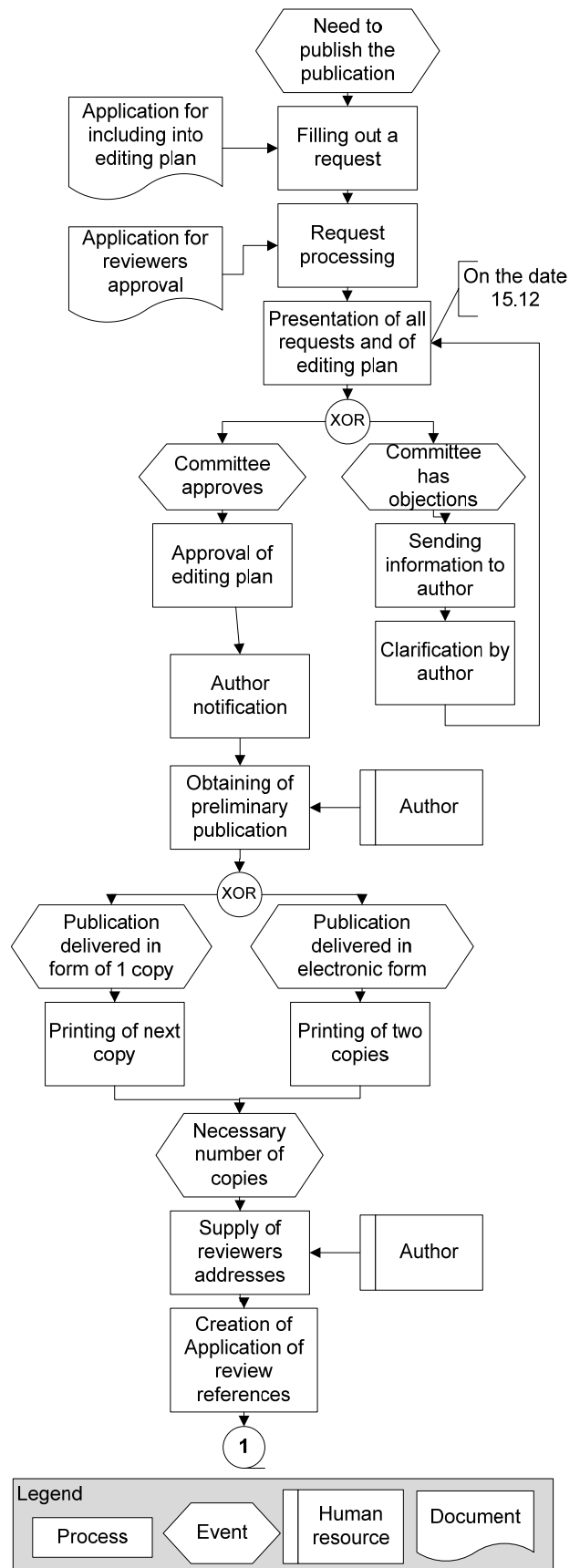


Fig. 9 Process workflow (part of model)



TABLE 3  
CONVERSION TABLE SIX SIGMA WITHOUT SHIFT (SOURCE: [22])

Sigma level	Revenues	DPMO	CP
0	0%	million	0
1,8	92,8%	71 861	0,6
1,9	94,3%	57 433	0,63
2	95,4%	45 500	0,67
2,1	96,4%	35 729	0,7
6	100 %	0,002	1

TABLE 4  
CONVERSION TABLE SIX SIGMA WITH +1.5 SIGMA SHIFT (SOURCE: [22])

Sigma level	Revenues	DPMO	CP
0	0%	million	0
3,1	94,5%	54 801	1,03
3,2	96,4%	35 931	1,07
6	99,9966 %	3,4	1,5

Next we calculated with human resource utilization. The base of the formula for calculation of utilization is FTE (Full Time Equivalent) value, which represents working hours of employee refined from his/her absence from workplace. If we count all time units allocated for given activity ( $c_{ij}$ ) and divide by FTE value, we will obtain information about utilization of employee by given process.

$$V_i = \sum_{j=1}^n \frac{c_{ij}}{FTE_i} \quad (5)$$

where  $c_{ij}$  means time units allocated for given activity,  $FTE$  means Full Time Equivalent.

Meaning of trial process audit performance was to:

- Try out objective method of measuring and performance evaluation.
- Try out methods of information gathering.
- Try out the Six Sigma method utilization.
- Try out creation of suitable methodology of process audit within organization.
- Try out predicative ability of measuring output interpretation.

The measuring itself was performed during several months' time and measured indicators were evaluated into outputs (for some outputs see table 5).

TABLE 5  
EVALUATION RESULTS

	1.work role	2.work role
DPMO	62 500	42 105
Sigma level w/o shift	1,85	2
Sigma with +1,5 shift	3,1	3,15
Evaluation	below average	below average
Human resource utilization	9%	23%

Reached level sigma 3,1 is a result which indicates substandard performance. This value is not entirely relevant,

because it is necessary to take into account goal and meaning of the project. Tryout process audit in non-production sphere had following goals – to try out suitable process, to try out objective way of activities performance, to find out reactions of employees and management and so on.

Within the individual phases of process and after evaluation it became apparent that unified process shows certain variants:

- Form of communication and data collection about sub-process: Each worker had different way of communication and different way of “thinking”; which seriously affected data collection in sense of both content of information and time period necessary to gather the data. One employee clarified his activities in a structured manner, briefly and sufficiently, while another employee explained his activities in wide context, which was in the light of modeling inadequate and more time consuming. It is necessary to consider various forms of communication in order to achieve the goal, which is: gathering of relevant information in shortest possible time period and with minimal burdening of executor of modeled/surveyed activity.
- Variability among sub-process instances: several instances within one process proceeded in usual way, but some instances had unusual course, which occurs rarely. These seldom instances then distorted total results.
- Various methods of monitoring: monitoring protocol, or form of monitoring protocol, unreels from given (sub)process. That is why we determine method of monitoring itself after the classification of activities of given (sub)process.
- Various periodicities in repeating of instances: character of second sub process is such that its instances are performed regularly and distributed across the year. Measuring of length of 6 months then fully describes conditions during the whole year. The instances of the first sub-process are performed unevenly during the year, i.e. in some regular periods of time there is plenty of instances and in another time period there is only a few instances. Measuring within process audit arbitrarily fell into a period with few instances, which – again – distorted the results.

Another interesting condition was precision of recorded values of indicators. In course of test project of process audit we deliberately selected personalized form of indicator values recording. It was not systematically recorded indicators for example from corporate information system. Personal form was selected so that participants could continuously realize character of selected indicators and so that they could conclude corrections of process used in the future. Nonetheless, in course of measuring over several months, the human factor expressed itself. Indicators were not consistently recorded or they were given different meaning by employees.

In the course of the audit performance experience was gained, further knowledge were gained in relation with result interpretation. Gained knowledge follows:

- Application of evaluation form according to Six Sigma

method seems possible. It is possible to monitor defect opportunities and defects themselves and to evaluate them.

- The Six Sigma method can be applied in context with process management processes. It is necessary to gain maximum amount of information about process and its characteristics, such as activities, human resources, inputs, outputs, supporting technological systems, regulators and so on.
- The Six Sigma method can be applied in context with process modeling processes. Mapped processes are expressed by graphical models (context model, workflow model) or models in form of tables (process card, monitoring protocol).
- Selection of appropriate indicators must be emphasized. It is suitable to find maximum number of locations, which could be monitored as defect opportunities.
- Time period chosen for measuring proved suitable for the second work role and unsuitable for the first work role. An important condition was, whether sub-process instances were distributed evenly during the year or whether there are accumulations in certain time periods (for instance by the end of calendar year). The first work role showed uneven distribution of instances and that was why measuring was performed in 12 months time. Interpretation of results would then give us more predicative results.
- During measuring of indicators and measuring of defects, it is necessary to constantly check whether values are recorded according to what has been agreed on.
- After performing the audit, changes in methodology were proposed based on gained experience:
- Preparation phase: more attention to obtaining information about processes, determination of precise time schedule for all participants,
- Analysis phase: emphasis on leading of guided interview, consistent classification of processes, identification of secondary process activities, through consults with process owner
- Measuring phase: to learn requirements of activity executor (worker) for monitoring, through checking of adherence to correct evidence of values measured, designation of more metrics
- Evaluation phase: to respect and evaluate diversity of interpretations of critical places, to respect and evaluate diversity in individual process instances.

#### IV. CONCLUSION

Organization management needs to evaluate company performance; monitoring of performance is therefore significant part of management. In production sphere, methods of measuring and evaluation of performance and quality of production were established, while basic principles are - process approach and orientation purely on customer's

priorities. The same principles can be applied even for public administration organizations, but public administration organizations have a certain delay in application of these methods for monitoring and management of quality. Even if there is an effort to increase quality of services provided, this sphere lacks financial stimulus which is apparent in production organizations. Process approach and application of process measuring are supported mostly by resolution of superior authorities. That is the reason why mainly first-time use of this method is often formal. Methods recommend using subjective and objective indicators, with accent to objective indicators and objective evaluation approaches. But public administration organizations start with application of subjective approaches and objective indicators are used less, which could lead to doubts about evaluation results. Nevertheless, this concrete project disproved these doubts. Self-evaluation project within public administration organization brought following findings. Employees in the beginning of self-evaluation process comprehended self-evaluation in a formal way and used mainly subjective criteria and subjective evaluation. But their approach changed rapidly during the evaluation process. They realized the meaning of self-evaluation and organization realized levels of individual criteria and it gained an impulse to improving them. The employees of the organization exhibited interest in obtaining more information about further quality methods.

Another evaluation project has already applied method of objective measuring and evaluation. It was a method that was generally determined for production sphere, but aim of this project was to use objective measures in non-production organization environment. The findings obtained follows: Application of evaluation form according to the Six Sigma method has proven possible; it is therefore possible to monitor defect possibilities and defects themselves and to evaluate them. Six Sigma method has to be applied in context of operations management processes; it is necessary to gain maximum volume of information about process and its characteristics, such as activities, human resources, inputs, outputs, supporting technological systems, regulators and such. The Six Sigma method has to be applied in context of process modeling processes; mapped processes are expressed by graphical models or by models in table form.

It can be said that objective and subjective metrics and processes have different roles in process of performance evaluation process and process of production quality evaluation within public administration organizations. Application of objective metrics and usage of objective evaluating processes is the "finite goal", because these outputs provide relevant feedback. But usage of subjective measuring and subjective evaluation is significant in the fact that public administration organizations would realize that: performance / activities can be expressed by certain value within evaluation range, that evaluation does not mean searching for guilty person and that evaluation brings impulses for improvements. The greatest contribution of self-evaluation with usage of subjective measures is in the fact that organizations would do

first steps to managing quality of their performance; it would engage this problem and would comprehend self-evaluation as meaningful project. Public administration organizations will gain the first experience with evaluation of quality by means of subjective processes and metrics and then they naturally seek for ways and methods of objective evaluation of performance quality and quality of services provided.

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