

**55<sup>th</sup> EOQ Congress**  
World Quality Congress  
Budapest, Hungary - June 20-23, 2011

*"Navigating Global Quality in a New Era"*



---

**June 22, 2011 (Wednesday)      55th EOQ Congress**

---

**CONCURRENT SESSIONS**  
**KEMPINSKI HOTEL CORVINUS**

**Wednesday 8:30 – 12:30**  
**Erzsébet tér 7-8, Budapest V.**

---

---

**REGINA BALLROOM II.**

**Wednesday 11:00 – 12:30**

---

## **20.1. QM in Transition and Emerging Economies**

**Session Chair:** *Marcos Bertin, Bertin Quality Consulting, Argentina*

### **11.00 From Quality Management Processes to Integrated Technology of Organization's Continuous Improvement**

*Petro Kalyta, Ukrainian Association for Quality, Ukraine*

**Kalyta, Petro (Ukraine)**

President of the Ukrainian Association for Quality, Director of Interbranch Quality Center "PRIROST, President of Quality Leaders Clubs of Ukraine as well as the Central and Eastern European Countries. An Academician of the Russian Academy of Quality Problems and of the Ukrainian Academy of Sciences. He represents Ukraine in the Board and General Assembly of the European Organization for Quality (EOQ). He is a certified EOQ Quality Manager and EOQ Quality Auditor.

He is author and scientific manager of several national and international projects directed to increase the companies' (organizations, institutions) excellence and competitiveness and leads them to professional recognition on European level. He has more than 300 publications. He is rewarded with Diplomas of the Cabinet of Ministers of Ukraine, the Presidium of National Academy of Sciences of Ukraine and the European Organization for Quality (EOQ).

# **FROM QUALITY MANAGEMENT PROCESSES – TO INTEGRATED TECHNOLOGY OF ORGANIZATION’S CONTINUOUS IMPROVEMENT**

**Petro Kalyta**

President of Ukrainian Association for Quality,  
Honorary President of International Guild of Quality Professionals

Homogeneous processes of management in quality systems and possibility of their realization by standard means are considered in this article. Decisions on integration of quality management processes and building of integrated technology of organization’s continuous improvement are offered.

As a rule the development of organizations’ management is carried out by means of management systems’ creations based on planning, monitoring and analysis of the typical for the organization indicators set. The fundamental scheme of such systems is well-known: the index-tree for all levels of management is formed in accordance with organization’s key targets. Monitoring and analysis schemes are developed for each indicator, goals are established and programs of their achievement are developed. On the base of analysis of goals achievement activity’s enables and results the decisions on various changes are taken - from local changes to a redesign of all system. Application of this scheme to various aspects of organization’s activity is provided for in standards ISO series 9000:2000 and 14000.

Such approach to the considered problem is also reflected in the European model of excellence in which key performance results are decomposed on the customers’, people and society results. At the same time the integration of various target subsystems into the entire system of organization’s management which is focused on improvement of all results of its functioning through improvement of approaches to its achievement is provided.

Possibilities of technological realization of this approach at designing of up-to-date professional quality systems for the concrete organizations are investigated in this article.

## **HOMOGENEOUS PROCESSES IN QUALITY SYSTEMS**

A great number of systems, subsystems and complexes destined for solution of a wide range of information-administrative problems of quality insurance have been developed for last years. However the analysis of many of them has shown that they have been developed without due scientific and engineering study and not taken into consideration the necessity of the subsequent development and inclusion (development) into integrated technological organization’s management system.

The analysis also has shown that in quality management there are parallel processes, different in objects of control and management, target and functional orientation, processed data, but having essentially identical algorithms of realization.

Such processes could be called homogeneous and defined as following: two and more management processes are homogeneous if at least one general algorithm (informational-technological scheme) could be selected for their complete and equal effective realizations.

During the analysis homogeneous management processes have been revealed, focused on ensuring (improvement) of quality of various objects: production, resources, technologies, organization, human recourses, labour conditions, social conditions, administrative decisions (Tab. 1). These management processes could be seen practically in any organization of various sector and production. They can be carried out in parallel in the context of:

- management criteria (for example, decrease rate of resources’ expenses for alteration of production which does not meet established requirements; decrease rate of nonconformity of production technological elements; increase rate of customers’ satisfaction, etc.);

- stages of “quality loop” (from marketing to recycling of production after its use);
- levels of management, structural divisions, functional services and official positions;
- functional targets (financial and economic, industrial and technological, social and legal, etc.);
- time features of problems to be solved (from operative to strategic).

Table 1

Objects	Management processes		
	Level of material flow	Levels of organizational management	
		Assessment and diagnostics	Decision making
Product (service)	Diagnostics of quality system by facts of defects' revealing. Decisions on defects' elimination. Corrective and preventive actions.	Assessment of stability of quality-formation processes. Quality system diagnostics on evaluative indicators of stability.	Selection of administrative decisions (preventive actions). Programs of quality-formation processes improvement.
Recourses	Diagnostics of quality system by facts of nonconformity of resources' qualitative characteristics. Decisions on nonconformities' elimination. Corrective and preventive actions.	Assessment of stability of organization's provision with required resources and their maintenance in a proper condition. Quality system diagnostics on evaluative stability indicators.	Selection of administrative decisions. Programs of quality-formation processes provision with required recourses.
Technology	Diagnostics of quality system by facts of nonconformity of technological elements' qualitative characteristics. Decisions on nonconformities' elimination. Corrective and preventive actions.	Assessment of stability of technological elements maintenance in proper condition. Diagnostics of quality system on evaluative indicators of stability.	Selection of administrative decisions. Programs of improvement of technological elements parameters' stability.
	Diagnostics of quality system by facts of nonconformity of technological norms and procedures. Decisions on nonconformities' elimination. Corrective and preventive actions.	Assessment of stability of technological norms and procedures observance. Diagnostics of quality system on evaluative indicators of stability.	Selection of administrative decisions. Programs of technological discipline's improvement.
Organization	Diagnostics of quality system by facts of nonconformity of organizational regulations. Decisions on nonconformities' elimination. Corrective and preventive actions.	Assessment of stability of quality organizational regulations maintenance in proper condition. Diagnostics of quality system on evaluative indicators of stability.	Selection of administrative decisions. Programs of organizational regulations' improvement.
	Diagnostics of quality system by facts of non-observance of organizational regulations. Decisions on nonconformities' elimination. Corrective and preventive actions.	Assessment of stability of observance of quality organizational regulations. Diagnostics of quality system on evaluative indicators of stability.	Selection of administrative decisions. Programs of performing discipline improvement.
Human resources	Diagnostics of quality system by facts of nonconformity of specialists' qualification. Decisions on nonconformities' elimination. Corrective and preventive actions.	Assessment of stability of specialists' qualification maintenance at proper level. Diagnostics of quality system on evaluative indicators of stability.	Selection of administrative decisions. Programs of staff retraining.
Labor conditions	Diagnostics of quality system by facts of nonconformity of labor conditions.	Assessment of stability of proper labor conditions.	Selection of administrative decisions.

	Decisions on nonconformities' elimination. Corrective and preventive actions.	Diagnostics of quality system on evaluative indicators of stability.	Programs of labor conditions' improvement.
Social conditions	Diagnostics of quality system by facts of nonconformity of social conditions. Decisions on nonconformities' elimination. Corrective and preventive actions.	Assessment of stability of proper social conditions maintenance. Diagnostics of quality system on evaluative indicators of stability.	Selection of administrative decisions. Programs of social conditions improvement.
Management decisions	Diagnostics of quality system by facts of failure to carry out accepted decisions on quality maintenance (improvement). Decisions on nonconformities' elimination. Corrective and preventive actions.	Assessment of stability of quality decisions' fulfillment. Diagnostics of quality system on evaluative indicators of stability.	Selection of administrative decisions. Programs of performing discipline improvement.
	Diagnostics of quality system by facts of low efficiency of realized decisions on quality maintenance (improvement). Decisions on nonconformities' elimination. Corrective and preventive actions.	Assessment of stability of effective decisions' acceptance on quality maintenance (improvement). Diagnostics of quality system on evaluative indicators of stability.	Selection of administrative decisions. Programs of improvement of accepted decisions' efficiency.

## STANDARD MEANS OF QUALITY MANAGEMENT PROCESSES

Researches have confirmed possibility of all mentioned homogeneous processes of quality management realization on a basis of limited number of standard informational and technological schemes using standard program tools. These similar processes are structured on following classes:

- quality system diagnostics on primary nonconformities of objects' quality characteristics and formation of local decisions;
- assessment and quality system diagnostics by indicators of quality stability;
- decision-making and formation of programs on quality improvement and reduction of costs.

Complexes of standard management procedures interrelated both in classes and between classes are developed for each class of homogeneous processes. Procedures of different classes are joined within the Basic Procedure Management Macromodule (BPMM).

List of standard processes and main groups of management procedures is presented in Tab. 2 and the structure of their designation is on the Chart 1. The informational and technological scheme of BPMM which is typical for a wide class of objects and which is intended for use as integrating base at designing of quality management systems for any organizations is presented on the Chart 2.

Table 2

Processes' classes (symbols)	Groups of procedures	
	Description	Designation
Quality system diagnostics on primary nonconformities of qualitative objects' characteristics and formation of local decisions. (MP: A.0)	General data's determination and registration (input)	MP:A.1
	Quality system diagnostics on facts of primary nonconformities of objects' qualitative characteristics	MP:A.2
	Formation of corrective and preventive actions.	MP:A.3
	Formation of administrative documents.	MP:A.
	Registration of diagnostic information for the subsequent multi-purpose and frequent use.	MP:A.5
Assessment and diagnostics of quality system on evaluative stability indicators (AESI). (MP:B.0)	Determination of the AESI's actual values and their deviations from standard values.	MP:B.1
	Analysis of the AESI's values dynamics.	MP:B.
	Analysis of AESI's values structure.	MP:B.
	Analysis of primary objects' nonconformities quantitative characteristics' changes and their consequences (AESI's	MP:B.4

	values) within space and time.	
	Analysis of objects' nonconformities distribution on their influence on AESI's values.	MP:B.5
	Analysis of nonconformity objects' characteristics in regard of AESI's values.	MP:B.6
	Determination of forecast AESI's values.	MP:B.
Selection of administrative decisions and formation of dynamic target programs on improvement of quality stability and reduction of costs. (MP:B.0)	Acquaintance with information on current and planned (standard) selected AESI's values fixed to given structural organization's unit and a choice of concrete indicator for improvement of its values.	MP:B.1
	Acquaintance with information on current and planned (standard) selected AESI's values on organization's structure.	MP:B.2
	Selection of objects' for improvement in order of improvement of selected indicator's values.	MP:C.3
	Selection of standard administrative decisions.	MP:C.
	Selection of resources for realization of supposed actions.	MP:C.5
	Selection of ways and special means for situations and decisions modeling.	MP:C.6
	Creation of concrete decisions by selected way.	MP:C.7
	Adopting of concrete decisions and their forming in the form of one-target multilevel programs of quality stability improvement.	MP:C.8
	Creation of administrative documents.	MP:C.
	Creation of multi-purpose programs of quality stability improvement for concrete structural units.	MP:C.10

Each group contains a set of correlated concrete procedures fulfillment of which allows top managers and specialists each time at occurrence of any administrative situation to get information required for the complete and correct analysis of this situation and acceptance of the most effective decisions. For example, group MP:B.5 includes procedures on analysis of nonconformities' distribution: production, quality characteristics of production technological elements, organizational quality regulations and workplaces on which nonconformities have been made, etc.

Realization of BPMM is carried out within the program-instrumental complex developed in the form of basic models of automated workplaces (AWP) of managers and specialists. Each AWP corresponds to one of the above mentioned administrative procedures' classes:

AWP-A. Quality system diagnostics on primary nonconformities of objects' qualitative characteristics and creation of local decisions.

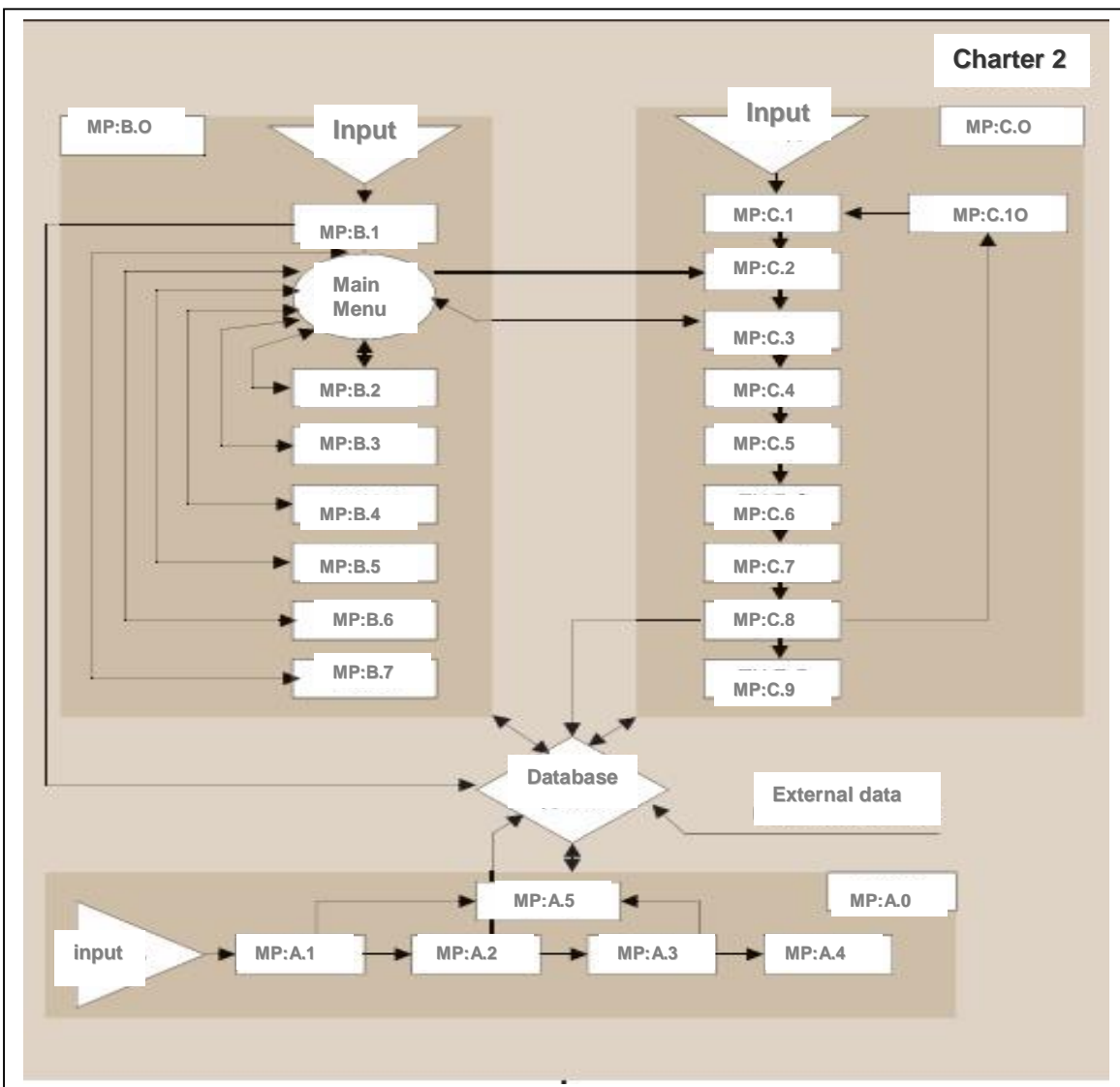
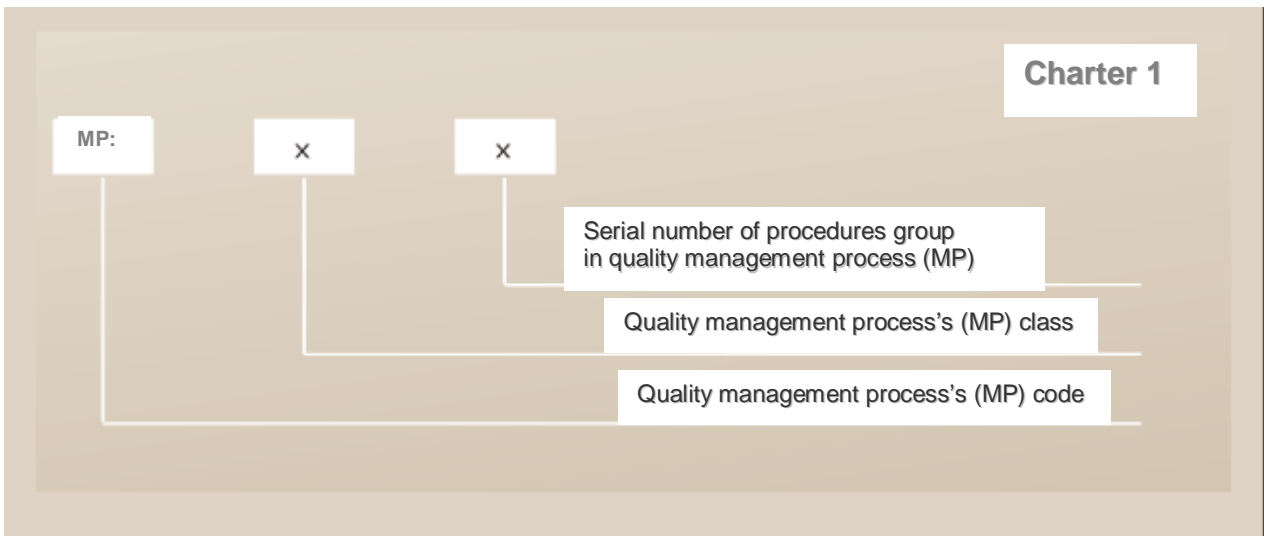
AWP-B. Assessment and diagnostics of quality system on quality stability indicators

AWP-C. Selection of decisions and creation of dynamic target programs of quality stability improvement and reduction of costs.

Each AWP base model has modular structure. It allows forming concrete AWP models of various configurations by connection to system-wide component of proper procedural (program) modules of different functional orientation. So, AWP-A is focused mainly on connection of various software realizing procedures of objects identification; AWP-B is focused on connection of every possible software realizing known data statistical methods; AWP-C can be equipped with software of standard solutions prompting, simulation technique, optimization, assessment etc.

At adjustment of AWP base models to concrete objects procedural modules which are typical only for this class of objects can be additionally included in their structure (along with typical procedural modules). So, the AWP-A focused on production can contain the procedural module "Statistical quality analysis" (realizing method of control charts and other preventive methods) and the procedural module "Technical diagnostics of production on the facts of deterioration of its properties". The same AWP focused on technology can include the procedural module "Statistical regulation of technological processes" providing creation of

corrective actions before dawning of nonconformity of qualitative characteristics of technological production elements.



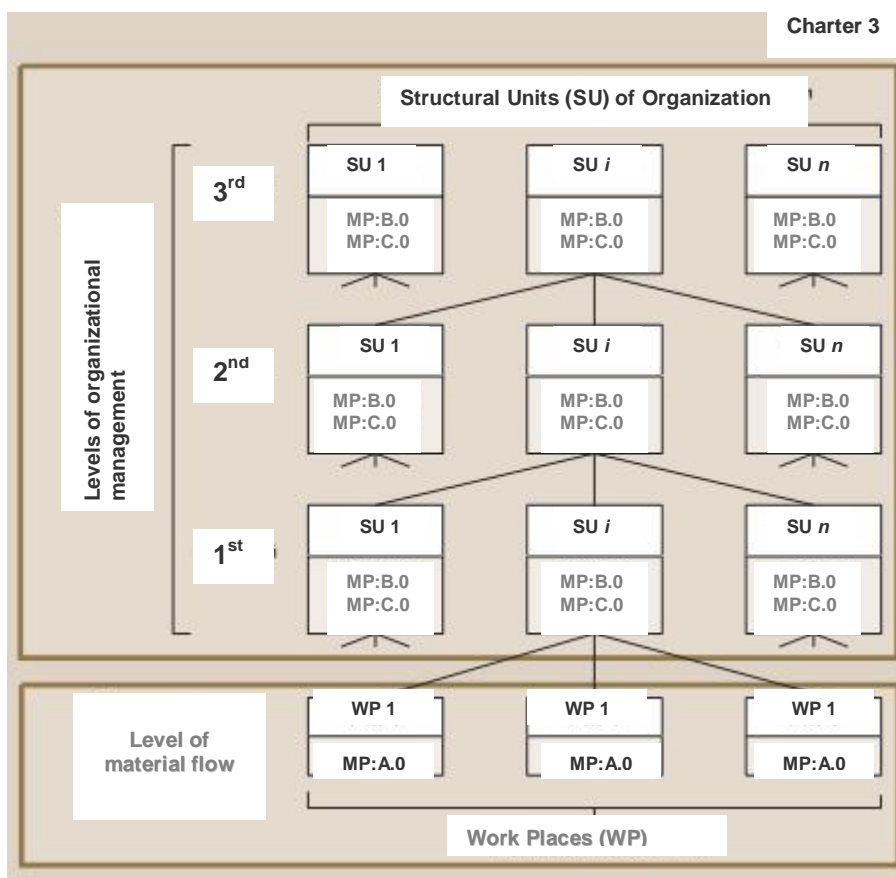
### INTEGRATION OF QUALITY MANAGEMENT PROCESSES

As a result of researches there was possible a development of procedures of quality

management target subsystems' synthesis on the basis of AWP base models as well as consistent, stage-by-stage improvement and development of such subsystems, and finally – their unification to the complete harmonized system of organization's continuous improvement. It allows creating sufficiently quickly a unique technological complexes of quality management which are based on all or separate AWP models (AWP-A and/or AWP-B, and/or AWP-C) and having the declared configuration.

Quality management system development consists of following basic stages:

- development of proper AWP models (their internal structure and functionality);
- AWP adjustment to concrete objects and users (first of all by creation of proper information environment on the basis of standard structure and database);
- joining of separate AWP in a network (physical or simulated on one computer);
- designing of corresponding organizational technology.



At such development the following elements are considered:

- organization structure (Chart 3);
- features of functional departments and official positions of structural units of the organization (Chart 4);
- quality stability indicators (criteria) accepted in the organization;
- desirable frequency of administrative procedures' realization at organizational levels (every day, every ten days, monthly etc.);
- other features.

Organization structural unit			
Director	Deputy Director		Specialist
MP:B.O MP:C.O	MP:B.O MP:C.O	...	MP:B.O MP:C.O
Functional Department	Functional Department		Functional Department
MP:B.O MP:C.O	MP:B.O MP:C.O	...	MP:B.O MP:C.O

The offered approach, standard information and technological schemes and standard means have been approved in a system organizational-technological decision-making complex on optimization and stabilization of quality-formation processes (STC PRIROST-QFP) rewarded by EOQ Diploma. .

STC PRIROST-QFP can be applied also to management of production rhythm and increase of resources' efficiency.

### **CREATION AND IMPLEMENTATION OF TECHNOLOGICAL QUALITY SYSTEMS OUTLOOK**

Research of administrative processes' typology in quality systems, revelation of homogeneous management processes and the developed complex of standard program-instrumental means allow to start a wide implementation of technological management systems focused on organizations' continuous improvement, increase of stability of their functioning and improvement of an economic condition.

Creation of the technological management systems' industry can be promoted by standardization of standard information and technological management schemes (ITMS). First two standards in this area are already developed in Ukraine.

For organizations which improve their quality systems built on the basis of ISO 9000 and 14000 or on the basis of the European excellence model the use of standard ITMS should guarantee validity and perceptivity of selected schemes, presence of standard project solutions developed and compatible among themselves, methodical, program, technical and other means as well as possibility of essential costs and duration of development reduction.