INTEGRATED MANAGEMENT SYSTEM

This paper contains the description of a project proposal for an integrated management system based on TQM (Total Quality Management) principles.

The project proposal was prepared by the UNECE ad hoc Team of Specialists on Quality Management System (QMS Team), which is a joint activity of UNECE working parties 6 and 8 (on industry and enterprise development). This paper will be debated at the QMS Team meeting on 13 and 14 November 2003 in Geneva.

The paper is presented for discussion and possible comments by delegations. It is presented in the form in which it was received by the secretariat.
REVIEW OF METHODS FOR DESIGNING INTEGRATED MANAGEMENT SYSTEMS BASED ON TOTAL QUALITY MANAGEMENT (TQM) PRINCIPLES

I. DRAFTING OF THE MAIN PROVISIONS OF A CONCEPT FOR THE TOTAL QUALITY MANAGEMENT OF A COMPANY

1.1 Model of an integrated management system based on total quality management (TQM) principles - basis of a concept for the total quality management of an enterprise

1. As experts point out, in spite of almost a century of thinking about, and gaining practical experience in, quality management, a general (classical) theory of quality management has yet to be developed that would describe and, more importantly, explain the essence of this phenomenon and all the real forms that it assumes. Such a theory is needed, first of all, because today quality management is dealt with by tens of thousands of specialists, consultants and quality systems auditors, consulting firms and certification authorities, and hundreds of thousands of companies that have introduced quality systems on the basis of ISO 9000; secondly, because of the existence of the concepts of total quality management (TQM) and self-assessment; and, finally, because of the development of the European Excellence Model (EFQM Excellence Model).

2. The existence of some very substantial differences between the proposed quality management models, and the absence of intelligible explanations both of the differences between such models and of the particular way in which each model is applied, make the current situation rather critical for further progress in the field of quality management. This situation is complicated by another danger which, in our view, has been brought about by real business’ loss of interest in quality management because of the difficulty of assessing its efficiency and effectiveness. As a rule, this is a consequence of managers’ lack of an in-depth understanding of quality management.

3. The new generation of management system standards - ISO 9000, ISO 14000, OHSAS 18001 and Social Accountability (SA) 8000 - go a long way in clarifying problems of modern management, that is, TQM. The possibility of integrating such standards is based on their compatibility, which depends on:

   - The way in which management develops (transition from the introduction of individual elements to the implementation of a systemic and situational approach);
   - The shift from technical to organizational decisions;
   - The need to ensure cooperation among the various links in the technological chain;
   - The strengthening of the impact of the external environment on an enterprise;
   - The need to develop a culture of production;
– The identity of the structure of the standards (policy, organization, process management, corrective action, internal audits, management review, cyclical nature of management processes, organizational opportunities, continual improvement requirements). Moreover, the various sectoral systems of certification that are currently being developed, particularly the International Safety Management (ISM) Code for the Safe Operation of Ships and for Pollution Prevention, are also compatible with the aforementioned standards.

4. Table 1 contains information on the contents of a set of integrated management standards.

**Table 1**

**Correspondence between ISO 14001, ISO 9001 (1994 and 2000 versions) and OHSAS 18001**

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5. Today it is generally accepted that systems can be integrated at various levels: policy; individual measures; procedures; instructions; documentation; unified management guidance manual (regulations); management of the whole company (integrated management system). The methods of integration can also be varied: integration either begins from the very beginning or systems first develop independently of one another and are later integrated; it is also possible to introduce new aspects into an existing management system. Any management system that conforms to the principles of the aforementioned standards and meets the enterprise’s requirements can serve as the basis for integrating systems. While the integration process may be parallel or consecutive, it must have a clearly defined time frame for the introduction of the various stages and clearly defined results requirements; this makes it possible to carry out checking and corrective action. The process may be conducted by an enterprise independently or with consultants.

6. The integrated management system model is a synthesis of a set of management standards (ISO 9001:2000, ISO 14001, OHSAS 18001 and SA 8000) and TQM criteria. In other words, the TQM integrated management system model (IMSM) is a model of an integrated management system of a company, which implements standards through nine modified TQM criteria: role of management in the organization of work; environmental and quality management planning; use of employee potential; rational use of resources; management of technological processes and operations; customer satisfaction; employee satisfaction; impact of the organization on the environment and society; and results of the organization’s work.

7. A combination of the requirements of the various management standards (ISO 9001:2000, ISO 14001, OHSAS 18001 and SA 8000) with TQM criteria and subcriteria makes it possible to:

   − Establish systemic and complete guidelines for a company’s management system based on the three main sustainable development factors: economic, environmental and social;

   − Clearly and fully explain the TQM criteria using the approach of the aforementioned standards and the experience of best business practices;
8. The proposed differentiated evaluation system can be used not only to confirm whether or not a management system that is being certified meets the necessary requirements but also to assess (at the applicant’s request) the quality (effectiveness) of the management system on the basis of relative units (points) and to indicate the results of the evaluation in the relevant certificate.

9. The proposed integrated management system model and the system of voluntary certification using the differentiated evaluation system are the natural development of the widely used national quality awards schemes.

10. The proposed approach makes it possible to:

   (1) Develop a company’s management system using preset variables (compliance with ISO 9001:2000, ISO 14001, OHSAS 18001, SA 8000 or their different forms or combinations) while ensuring compliance with all the basic modern requirements for a management system;

   (2) Conduct a quantitative evaluation of the quality of a management system with regard to compliance with individual standards or their elements (in basis points relating to specific standards) and for compliance of the system as a whole with the best management systems of leading enterprises (in basis points relating to the TQM of the whole system); conduct a quantitative evaluation of the quality of a management system through both self-assessment and assessment by interested parties (consumers, suppliers, shareholders and so on), contest committees and certification authorities;

   (3) Facilitate goal-oriented planning for management system improvement with a view to strengthening integration and ensuring greater conformity with TQM criteria;

   (4) Conduct a quantitative evaluation of the quality of a management system at both the department and company level;

   (5) Develop a management system with a preset quality and ensure its participation in national and/or regional (for example, European) quality contests;

   (6) Simplify preparation for participation in a quality contest, combining, if necessary, such activity with measures to prepare the management system for certification by a second and/or third party;

   (7) Avoid introducing a management system for the purpose of show;

   − Conduct a quantitative evaluation of management quality using the unified methodological basis compatible with the national and regional quality awards system;

   − Conduct a differentiated evaluation of management quality while carrying out self-assessment and contest assessment (as is currently the practice in many countries), as well as certification audit process (the new approach to management systems).
(8) Use the differentiated evaluation system for quality management in quality contests;

(9) Participate in the international benchmarking process in accordance with the established procedure and become a part of the international management environment.

11. In the proposed model, the quality management system standards (ISO 9000) in the set of management standards are considered to be basic and system-forming. This standard establishes the basic requirements for management systems in the field of quality; the requirements can be used to achieve a company’s internal objectives, prepare for and conduct certification, and establish business cooperation. However, this standard does not include requirements that are specific to other management systems, such as environmental management, environmental and public safety, or funding. This makes it necessary, when creating integrated (comprehensive) management systems, to use the ISO 9000 standard together with other standards.

12. More recent environmental management standards (ISO 14000), which are geared not only to the needs of interested persons and organizations but to society as a whole for several generations to come, have provided the set of management standards with an important social and environmental aspect. Modern companies throughout the world are increasingly combining these standards in real practice. And the Russian Federation is no exception.

13. Currently, the set of these coordinated internationally recognized standards has been expanded by the new, 2000 version of ISO 9000, the occupational health and safety standard (OHSAS 18001) and the social accountability standard (SA 8000).

14. Detailed requirements for the occupational health and safety management system and its implementation are included in standard BSI-OHSAS 18001:1999, which includes the following elements: policy; planning (hazard identification, risk assessment and risk control; legal and other requirements; objectives; management programmes); implementation and operation (structure and responsibility, training, awareness and competence; consultation and communication; documentation; documentation and data control; operational control; emergency preparedness and response); checking and corrective action (performance measurement and monitoring; accidents, incidents, nonconformances and corrective and preventive action; records and records management; audit); and management review. In the preparation of the OHSAS standard, the provisions of a dozen leading documents in the field of industrial safety management, occupational health and safety, including BS 8800 and the BVQI Safety Cert certificate. OHSAS is compatible with ISO 14001, ISO 9001 and supplements the requirements of Russian legislation and accepted practice in the field of occupational health and safety. OHSAS 18001 is used to certify companies’ management systems.

15. In the opinion of specialists, the Social Accountability (SA) 8000 standard successfully supplements the existing ISO 9000 and ISO 14000 standards and has great potential in the International Organization for Standardization. The social aspect of modern management is determined by such factors as the infringement of the rights of national minorities and women, exploitation of child labour, involvement in the formation of local public policy, relations with trade unions, and questions of wages and working conditions, health and safety. The SA 8000 standard, which was introduced in 1997, defines the various ethical criteria for assessing
companies’ activities in the production of goods and services; such criteria can be used in the preparation of ethical and moral guidelines for companies. In 1998, the Council on Economic Priorities and Accreditation Agency (CEPAA) introduced the Guidance Document for Social Accountability 8000 as a means of ensuring that a company’s activities conform to ethical norms. Many companies are developing an ethics policy and procedures for implementing it, and more and more companies are setting up ethical audit departments.

16. In the area of health and safety technology, the SA 8000 standard includes the following basic criteria:

− Measures to ensure a safe and healthy working environment, and the adoption of adequate steps to identify the causes of accidents and to prevent them;

− Appointment of a person responsible for ensuring a safe and healthy working environment and implementing the requirements of the “Health and safety” section of SA 8000;

− Provision of regular and monitored training of all employees in the area of health and safety.

17. It is noteworthy that all these standards contain an element on safety; ISO 9001 includes requirements for identifying the aspects of a project that are critical to safe and adequate production operations (for example, the requirements relating to operation, storage, handling, servicing and utilization). ISO 9001 also provides for the identification, documentation, assessment, division (when this is feasible) and the utilization of nonconforming products.

18. The well-known and widely used TQM criteria have been sufficiently developed and unified and are becoming, upon further analysis in the context of the proposed system, a reliable guide and methodological aid for managers. IMSM-TQM can significantly simplify the routine aspects of management and inspire managers to make creative use of the universal TQM principles.

1.2 Basic provisions of the concept of the total quality management of a company

19. Company managers know that sustainable development cannot be achieved without ensuring the quality of goods and services, environmental and occupational safety and the social accountability of the company’s enterprises, or without their participation, first of all, in goal-oriented and coordinated efforts to reduce the man-made burden on the environment. In current economic conditions, this means that it is necessary to seek and implement economically, socially and environmentally balanced solutions.

20. The concept has been prepared in accordance with the existing environmental legislation of the Russian Federation and takes account of international standards ISO 9000 and ISO 14000, OHSAS 18001 and SA 8000 on the basis of the results of a study of the management system and environmental safety of a company’s subsidiaries and dependent companies.
21. In the concept, environmental safety is defined as the “protection of the vital interests of individuals, society and the environment from man-made and natural threats” in accordance with the Act of the Russian Federation on Occupational Safety of Hazardous Industrial Facilities.

22. The nature of the productive and economic activities of a company’s enterprises may result in unintentional damage to the geological cross-section and the soil cover, the pollution of the air and subterranean and surface water, and the formation of industrial and consumer waste.

23. The concept provides comprehensive solutions of questions of quality management and social and environmental problems at each of the company’s enterprises, taking into account the specific features of the technologies employed and in line with the technical development of basic production.

24. The concept provides for the adoption of a set of practical measures to develop a quality management system and an environmental management system and to ensure the environmental safety of operating enterprises; to establish priorities and adopt immediate measures to reduce the impact of industry on the environment and the social situation in the regions in which the company’s enterprises are situated.

25. The concept is based on the strict observance of the legislation and technical regulations governing economic activity and environmental protection:

   – At all levels of management of a company’s productive and economic activities;
   – At all stages of such activity: planning, construction, operation and dismantling;
   – In all areas: technical planning, industrial operation, finance and economy.

26. The following principles were also used to develop the concept:

   – Optimum solution of existing environmental problems as matter of priority;
   – Use of unified methodological, metrological and technical approaches in programme activities;
   – Timely and full funding of programme activities;
   – Openness and accessibility of information concerning the company’s plans to ensure the environmental safety of its industrial activity;
   – Strict monitoring of programme activities.

27. The concept is based on:

   – The principles of the company’s environmental policy;
   – The company’s innovative strategy;
A wage agreement between the company’s employees and managers for the period 2001-2003;

A collective agreement aimed at improving the company’s performance and extending guarantees, privileges and compensation for employees and management;

The company’s code of corporate management (conduct).

### 1.3 Basic approaches to the design of a company’s integrated management system

28. **General approach.** The consideration of any serious problem of quality must include, as a minimum, two stages (to use Russell Ackoff’s terms): reactive (study of the genesis of the problem) and preactive (attempt to look into the future and from there build, step by step, a bridge to the present).

29. The main conclusion of well-known management gurus (Peter Drucker, Tito Conti, Hans Bajaria, Stephan Garelli and many others) is that, in order to ensure the effectiveness and efficiency of any management system, the design and creation of an organization must take account of the organization’s uniqueness, which includes its mission, vision and, at the same time, specific historical experience, as well as such “soft” elements as culture, values, traditions, leadership, the social status of the staff, the communications system, emotional flows and so on. This approach requires, as a minimum, the adjustment of any standard and rational quality management methods to the specific features of a particular organization.

30. The **methodology of the proposed mechanism for promoting TQM** is based on the modern company management philosophy that includes both horizontal quality management processes (processes that proceed along the line “marketologist - designer - technologist - operative - tester - merchant”) and vertical company management processes. In the TQM concept, examples of horizontal management are cross-functional teamwork, statistical management of processes, building of organizational structures from consumer/supplier chains, quality function deployment and so on; examples of top-to-bottom management include the development of human resources and a corporate culture based on TQM; examples of bottom-to-top management include the renowned quality circles (clubs) and so on.

31. The **basic principles for designing an organization’s quality management system** can be summarized as the effective combination of:

1. Rational - irrational;
2. Process - result;
3. Horizontal organizational structure - vertical organizational structure;
4. Regulation (standardization) - creativity (diversity);
5. Competition - cooperation.
32. **Rational - irrational.** A rather established tradition in quality management is reliance on W. Edwards Deming’s system of profound knowledge. The seventh principle of ISO 9000:2000 - factual approach to decision-making, in accordance with which effective decisions are, as a rule, based on the analysis of data and information - also belongs to this series of methodological values.

33. However, this assertion, which is perceived as absolute truth only at the level of production technologies and material flows, is by no means applicable to management decisions in all situations. Many world-renowned management gurus have, paradoxically, admitted that many (if not the majority) of the most successful business decisions have not been rational but irrational, that is, they were taken by a company’s upper management on the basis of sheer intuition, experience and emotion and in the teeth of the obvious logic of events. In this regard, one of the most - if not the most - important qualities of a manager (leader) is imagination. This is the conclusion after many decades of attempting to come up with optimum economic decisions based on analysis - the use of all kinds of programming, operations research, the “cost-output” system, programme budgeting, methods of the system for optimum economic operation, various statistical approaches and so on.

34. In practice this means that, along with the absolute need to develop and apply statistical techniques and approaches (including the fashionable Six Sigma approach) in modern quality management systems, it is necessary to develop and use brainstorming methods, heuristics and so on, engaging for this purpose the services of qualified “game technicians” and professional psychologists.

35. **Process - result.** In recent years, quality management specialists have traditionally placed emphasis on processes and the horizontal organizational structure that corresponds to this approach. The principle of the process approach is widely used in all modern quality management models: ISO 9000, the quality awards model, self-assessment and so on. One of the consequences of interest in the process approach was the unrestrained impulse to create a great number of interrelated processes and corresponding procedures (documented or not, in the spirit of IDEFO and CALS technologies and/or on paper, and so on).

36. However, overreliance on the process approach can in the end lead to a real loss of results. The question of what sort of results each individual process and the whole system of processes yield, puzzles practically all quality management professionals and specialists. No less difficult are the answers to questions concerning process measurement and the definition of quality goals - strategic, tactical and operational. If the seven quality indicators, coefficients of process reproducibility, and also the characteristics of the Six Sigma approach, can still be used to measure technological processes, they cannot be applied to the measurement of other (including many key) processes.

37. Organizations face difficulties in measuring management processes (planning, organization, documentation, reviews, continual improvement, inspection, audit, motivation and so on). It remains unclear whether the use, in the quality management system, of satisfaction indexes, added-value measurement and economic and financial indicators to evaluate results, is advisable.
38. Today the main questions concerning quality management are: “How does a quality management system effect the basic results of a company’s economic activity, its competitiveness, image, and market position?” “How do the company’s employees relate to the quality system procedures, and how are employees involved in the process of continual improvement?” “What is the level of employee satisfaction?” One gets the impression that it is high time to give serious thought (before it is too late) to the results of a quality management system in the workplace, department (process) and the company as a whole.

39. **Horizontal structure** is another fetish of the contemporary quality management system. Quality specialists parrot W. Edwards Deming’s “break down barriers”, demonstrating that, without overcoming functional barriers (marketing, research and development, purchasing, production, transport and storage and so on to full utilization), it is impossible to think seriously about quality, or coherently implement the process and team approaches. While there is, undoubtedly, reason and truth in such thinking, by placing emphasis on processes and horizontal communication, enterprises have begun to lose the strategy that is basically implemented along the “vertical of power”.

40. In practice, the phenomenon of leadership proceeds *vertically* and the most important questions relating to a company’s competitiveness, as well as many other questions, are solved *vertically*. Basic aspects of management that are resolved mainly in a vertical organizational structure include strategic management, benchmarking and the company’s goal-setting system, development of leadership and improvement of the company as a whole. In a horizontal organizational structure, such aspects include operational management, business process orientation, process owners and teamwork.

41. In the quality system, it is time to focus attention on the vertical hierarchy. Incidentally, another reason for such a focus is the need to study and (perhaps) introduce the most up-to-date quality management methods: balanced scorecards (BSC), the Japanese Hoshin Kanri strategic planning system, benchmarking and others.

42. **Regulation (standardization) - creativity (diversity).** Another problem that is encountered when introducing quality management systems is overreliance on documented procedures to the detriment of informal, softer and less regulated procedures for motivating employees to engage in creative work; such systems have an impact on continual improvement and the amelioration of all processes of activity and foster internal communication and a team spirit.

43. With regard to the correlation between regulation and diversity, the above discussion was based on the new European approach to quality. Since management technologies (or disciplines, to use Peter Senge’s term) involve human relations in the workplace (with so-called “emotional flows”), the socio-psychological aspects of management must be taken into account.

44. **Competition and cooperation.** Specialists who have had an opportunity to familiarize themselves with the experience of organizations in the competition for the European Quality Award, and also with the experience of benchmarking (at least with the efforts of EFQM to establish and train benchmarking groups), could not have failed to notice the fundamental
change in the context and real practice of the so-called “competitive struggle”. The transparency and openness in the exchange of management information and experience of real leaders in the field of quality, who are active in the same economic sector is simply astounding and seems implausible: doors and local web sites are open for visitors, and it is even difficult to define the remaining boundaries of “commercial secrets”. Soon competitors will become partners and, on exactly the same terms as consumers, suppliers and society as a whole, will join the ranks of interested parties.

45. A company’s main strategic principles of environmental policy, which are reflected in this concept, are carried out by enterprises according to their own annual production plans in keeping with directives and instructions from the company’s managers, and also sectoral special-purpose development programmes, regulations, methodological recommendations, instructions, rules, norms and other documents that meet federal and regional requirements in the field of economic activity and environmental protection.

46. The concept is implemented on the basis of economic and legal methods in accordance with the legislation in force in the Russian Federation.

47. Ongoing coordination of the implementation of the concept is carried out by the relevant division of the company. Enterprises, which establish the goals, programme activity costs and the mechanism and time frame for their implementation, bear responsibility for implementing the concept.

48. The forms and methods of managing the implementation of individual elements of the concept are established by the enterprises independently.

49. The enterprises’ programme activities within the framework of the concept are funded in accordance with the regulation on the general procedure for creating investment programmes and the system for financing them in a company.

50. The sources for financing the concept and the programme to implement it should be mainly the enterprise’s internal (own) sources of accumulation: profit, amortization fund, and also:

- Investment, conversion and special-purpose loans from banks;
- Resources from environmental funds and public organizations;
- Resources from foreign investors interested in implementing the concept or some of its activities;
- Provision for the replenishment of the mineral and raw materials base;
- Any other income.
51. The ISO 14000 standards prescribe that the management system should concentrate primarily on facilities that meet the organization’s most important environmental concerns, policy, objectives and resource potential and, first of all, the volume of the company’s consolidated resources that can be allocated to solving the most important and pressing environmental problems.

52. The priority areas of activity of a company in the field of environmental safety are:

- Continual improvement of the company’s environmental management system;
- Assessment, monitoring and planned reduction of the impact of the operation of the company’s production facilities on the environment;
- Sound resource management;
- Wide use by the company’s enterprises of resource-saving, waste-free and low-waste technologies;
- Timely identification of accident-prone facilities through regular inspection and diagnostics of oil and gas pipelines, reservoirs and bore holes; protection of equipment against corrosion, and the adoption of other appropriate preventive measures;
- Preparedness of the company’s enterprises for the effective elimination of the consequences of emergencies; provision of enterprises with modern technical means, equipment and technologies for localizing and eliminating accidental leakage of gas, oil and oil products;
- Careful consideration of environmental factors when the company plans new forms of productive activity;
- Timely provision of the company’s enterprises with the necessary regulations and instructions in the field of environmental safety with a view to ensuring that enterprises strictly observe the provisions of environmental legislation in force in the territory, including any foreign territory, in which they carry out their productive and economic activities;
- Environmental training of the company’s employees.

55. All the above-mentioned areas of a company’s environmental protection activities are reflected in this concept.

Comments on the concept are given in the following table.
### Table 2

**Recommendations on the strategy for enhancing the completeness of a company’s quality management system using basic standards and models**

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Completeness of quality management system (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SPC</td>
<td>ISO 9004.9:2000</td>
</tr>
<tr>
<td>3.</td>
<td>+ QS-9000/ISO/TS 16949</td>
<td>ISO 9004 + SPC + ISO 9001</td>
</tr>
<tr>
<td>4.</td>
<td>+ ISO 14000</td>
<td>ISO 9004 + QS-9000 + TS 16949 (including the requirements of ISO 9000)</td>
</tr>
<tr>
<td>5.</td>
<td>+ QA (award models)</td>
<td>ISO 9000:2000 + QS-9000 + ISO 14000</td>
</tr>
<tr>
<td></td>
<td>(self-assessment)</td>
<td></td>
</tr>
</tbody>
</table>

Result: Business excellence