1 INTRODUCTION

1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work programme with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the benefits expected from the availability of International Standards, and to ensure adequate resources for projects throughout their development.

1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: ISO (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of IEC (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of ITU (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 140 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the International Standard.

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its Technical Committees are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.

2 BUSINESS ENVIRONMENT OF THE ISO/TC

2.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal and social dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this ISO/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:
ISO/TC 159 deals with products, work systems and work equipment, which are used all over the world in a wide range of different areas.

Standardization in the field of ergonomics resulted from requirements to design work systems, work equipment, and products according to human characteristics in order to enhance the usability of these products and thus the productivity, health, safety and well-being of the operator or user. As a matter of fact, ISO standards, when dealing with health and safety aspects, mostly do so in order to improve products in a market oriented perspective. Nevertheless, items such as noise, vibrations, cold and heat stresses have been the subject matter of ISO standards aiming at health and safety benefits.

Ergonomic design, based on ergonomics knowledge, represented in ergonomics standards, can undoubtedly be considered to essentially contribute to enhancing the quality of life, i.e. the quality of working life in the case of the design of work systems or work equipment, and more generally to total quality of life, of which quality of working life is a part. Since ergonomic principles, data and design are not only relevant to the design of work equipment, work systems or work environments, but also to consumer products for private use, equipment for leisure activities and non-work environments, ergonomic design following ergonomics standards can at the same time be regarded as a contribution to a more general approach to human engineering for the general quality of life. Standardisation in the field of ergonomics thus has quite clear implications for the general and the work related level of quality of life.

Apart from the fact that ergonomically designed products are more efficient, resulting in better marketing, the use of ISO/TC 159 standards has further positive economic effects. The application of the ISO/TC 159 standards increases the operating safety while dealing with devices respectively products (e.g. control actuators or design of control centres) resulting in lower times of failure and less faulty products. In many countries, aspects concerning the design of the work environment (e.g. light, climate) are regulated in national provisions. Due to ergonomic design of work environments (for example lighting and climatic conditions) the motivation of the workers will be increased and the occurrence of fatigue will be decreased for all parties involved in the production process.

An example of topical interest for the business management is the use of information technology in the field of administration and production. Due to the rapidly increased application of software in all fields of life, the software ergonomics is becoming of major importance also for the cost-benefit analysis. Ergonomically designed tools, as for example software, which have been adjusted to human capabilities and competences, increase the efficiency of the users and reduce the process times for several tasks.

Furthermore, the efforts and expenditure for training can be obviously reduced by ergonomic design (i.e. qualified user guidance), especially in this highly innovative area, which is often characterized by rapid changes or adjustments of the systems. Thus, the staff can be employed more flexibly. As shown by these examples, it is impossible to quantify the economical benefits resulting from the application of the ISO/TC 159 standards in exact figures.

In the European Union there already exists a set of well accepted European standards for the implementation of ergonomic knowledge into the machines already in the design phases. They could be transformed to International standards to get a reliable set of global guidelines for ergonomics, which is desirable in times of globalization.

2.2 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the ISO/TC:
It is impossible to quantify the total market served by the products of ISO/TC 159 because of the wide range of applicability of these mainly general horizontal documents. One very important area for the application of ISO ergonomic standards is the whole machinery sector. The increased use of machinery and equipment (visual display terminals) is one of the key stages in the development of any country and there is now a wide spectrum of use from the mature societies in the developed world to those in the emerging nations. Today machines are used for both professional use in such key sectors as metal and wood working, plastics and paper, construction, agriculture and forestry as well as non-professional use in the home and garden. Indeed, a growing trend is the migration of machines intended for professional use into the non-professional sector.

The trade in both new and used machinery can be described as truly global with an increasing trend for multinational companies to manufacture in one continent for use around the world. In contrast, there is also a continuing growth in the manufacture and repair of machines in small and medium enterprises (SMEs) and it has been estimated that 90% of employed persons work in SMEs.

It is impossible to quantify in any accurate way the total value of the global trade in machinery/equipment because the products of ISO/TC 159 influence the design and the usage of machinery produced for both professional and non-professional use including domestic and leisure purposes. These quantifications should be left to the various machinery sectors. However, as an example the annual world-wide trade in machine tools is estimated to be in the order of $100 million.

3 BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC

Apart from the efficient usage of ergonomically designed products and work systems the application of ISO/TC 159 standards contributes directly to the reduction of machinery accidents respectively hazards. The direct result of this work is that if the methodology is followed by the designer of machinery there will be a related reduction in machinery accidents and hence the consequential reduction in pain and suffering to the individual and overall costs to society.

It is not possible to calculate the total cost of every machinery accident in the world but recent studies have shown that for a single accident, the total cost to the individual and to the society can be up to $1 million. Clearly any measure that can reduce the number of accidents will result in a saving in pain and injury to the individual and the overall costs to society.

Furthermore, when considering ergonomics positive effects occur in various areas. The hazards will be reduced e.g. in the field of work with visual display terminals or the design of control centres and the economic benefit will be achieved since e.g. the costs for workplace absence due to sickness are reduced and a higher efficiency is reached.

4 REPRESENTATION AND PARTICIPATION IN THE ISO/TC

4.1 Countries/ISO members bodies that are P and O members of the ISO committee

In total ISO/TC 159 comprises 53 members divided in 24 P-members (participating) and 29 O-members (observing). Additionally, 1 country is corresponding member.

4.2 Analysis of the participation

All the ISO national members are entitled to participate in the work of ISO/TC 159 as P- or O-member. To participate in the activities of this ISO/TC, please contact the national standards organization in your country.

Our P- and O-members nominate delegates for the TC and SC meetings and participate actively in meetings and ballot votings.
Except the ISO national members as mentioned in 4.1 the following parties are interested in the standardization process:

Category A-Liaison has been established with:
- European Commission (EC);
- European Computer Manufacturers Association (ECMA);
- International Ergonomics Association (IEA);
- International Labour Organization (ILO);
- World Health Organization (WHO).

NOTE: Category A: Organizations which make an effective contribution to the work of the technical committee or subcommittee for questions dealt with by this technical committee or subcommittee. Such organizations are sent copies of all relevant documentation and are invited to meetings by the office of the Chief Executive Officer.

Category B-Liaison has been established with:
- International Council for Building Research, Studies and Documentation (CIB);
- International Federation of Commercial, Clerical, Professional and Technical Employees (FIET);
- International Council of Societies of Industrial Design (ICSID);
- International Commission on Technology and Accessibility (ICTA);
- International Union of Food, Agricultural, Hotel, Restaurant, Catering, Tobacco and Allied Workers’ Associations (IUF);
- Union Network International (UNI Network).

NOTE: Category B: Organizations which have indicated a wish to be kept informed of the work of the technical committee or subcommittee. Such organizations are sent reports on the work of a technical committee or subcommittee by the office of the Chief Executive Officer.

There is an imbalance of participation:
- between developed countries, developing countries and countries with economies in transition, and
- there is also an uneven geographical distribution of participating countries with few members from Africa, South- and Central-America.

5 OBJECTIVES OF THE ISO/TC AND STRATEGIES FOR THEIR ACHIEVEMENT

5.1 Defined objectives of the ISO/TC

ISO/TC 159, through standardization and co-ordination of related activities, promotes the creation of working and living conditions which fit the anatomical, physiological and psychological characteristics of human beings taking into account the physical, social and technical environment.

The main objectives are safety, health, well-being and effectiveness. This work includes:
- basic standards related to fundamental characteristics of humans;
- functional standards related to human factors in the operation or use of equipment, processes, products or systems (preferably classified as standards for product groups, work systems and products);
- environmental standards related to the effects of physical factors of the environment on humans;
- standards for ergonomic test procedures and for processing ergonomic data;
- to establish general guidelines for ergonomics which are internationally agreed.
5.2 Identified strategies to achieve the ISO/TC's defined objectives

In order to reach these objectives ISO/TC 159 realizes the following strategy:

- the technical work is managed by the TC, the four Sub-Committees (SC 1, SC 3, SC 4 and SC 5) and their Working Groups;
- the work programme and its extent are adjusted to the available resources, for example to the number and competences of the experts available;
- a project leader is appointed for the development of each project;
- a joint planning function of ISO/TC 159 and CEN/TC 122 Ergonomics is established in accordance with the Vienna Agreement.
- the revision of European standards, mandated according to the EU machine directive, in parallel processing following the Vienna agreement to establish that knowledge internationally;
- a balance between those experts with scientific competence and those experienced in practice ensures that the contents of its standards are valid and usable;
- those branches of industry, services and trade where ergonomics needs will expand or arise or identified;
- the committee makes use of electronic means of communication to an increasing degree. The document circulation system is in progress of being changed from ordinary paper mailing to electronic document circulation using the ISO/TC server and the Sub-committees servers;
- the committee collects and critically reviews ergonomics data relevant for standardization and pertinent to the design and manufacturing of machinery, the design and organization of work. processes and the layout of equipment as well as the control of the physical environment in the work premises;
- ISO/TC 159 effectively uses its liaisons with other committees which also develop or developed standards with ergonomics specifications – sometimes in the past with insufficient consideration of accepted ergonomics data and/or principles. Therefore, basic standards in the field of ergonomics should be drafted by TC 159 only which should also provide guidelines for their use;
- the committee elaborates and implements an appropriate structure for standardization in ergonomics and its applications;
- the consequences of ergonomics standards for existing laws, regulations and codes of practice are considered.

6 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE ISO/TC WORK PROGRAMME

Depending on the tasks, manufacturers and users are often underrepresented in the SCs or WGs. Due to an decreased interest on the part of the experts a future problem could be the lack of representatives from the industry.

The principal reason for this development could be that ISO/TC 159 standards are mainly general guidance documents without direct requirements for individual products. Therefore, it is difficult to win new experts for the development of these horizontal standards from all parties which have a direct interest in the production, marketing and usage of products.

Against this background further problems could arise in assuring the necessary financial support for continuing the work of the secretariats of the TC , the SCs and the WGs on the required level to manage the current work programme.
7 STRUCTURE, CURRENT PROJECTS AND PUBLICATIONS OF THE ISO/TC

This section gives an overview of the ISO/TC’s structure, scopes of the ISO/TCs and any existing subcommittees and information on existing and planned standardization projects, publication of the ISO/TC and its subcommittees.

7.1 Structure of the ISO committee

7.2 Current projects of the ISO technical committee and its subcommittees

7.3 Publications of the ISO technical committee and its subcommittees

Reference information

Glossary of terms and abbreviations used in ISO/TC Business Plans

General information on the principles of ISO’s technical work