

# METHODOLOGY FOR THE SELFDEVELOPMENT OF PROFESSIONAL PERSONALITY IN THE INFORMATION ERA

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**Motto :** *Not even the future is what used to be any more*

## 1. INTRODUCTION

Tailoring of education according to information age started before 1990. New structure of our courses included not only new technologies but also some subjects from social sciences, economics. Symbolic has been the business management and the LIS supported by publications, also outside of our profession.

Since about 10 years we can observe an enormous growth of activities: special conferences on Land Surveying (LS) education, special *task forces*, many reforms of courses.

Hundreds of specialists from universities and profession spend thousand of hours to develop LS courses according to needs of information age and published hundreds of papers. Important was the research [Frank 1996] on *Theory of Spaceinformation* – the base (intellectual core of LIS) of geoinformation management. Symbol of trends has been since 1991 biannual workshops *Think Tank* of future LS-Geomatics. According to them the LS comes up to a complex space science - Geo-spatial Engineering.

All that reflects the rapid changes, globalisation (connected with a constant decline of developing countries) as important symptoms of the information age. They create more competitive, wider and changing professional environment with new requirements on professional abilities-qualities (PQ).

With the overflow and aging of information (I), *interaction with nontraditional partners*, qualities of youth increases the role of conceptual, basic principles of education (e. g. formative role of I) enabling the orientation and evaluation of various type of I. Even in professional subjects are needed the impulses for “nonadministrative” factors : change of inertia (binary thinking), motivation, analytical thinking, creativity, feedback student and teacher etc. Longer international experiences also showed that it would be important for the future of our profession to attract the best brains and to foster their selfrealisation.

All this can be realised more effectively when the individual knows the basic methodology of management of his abilities. Therefore we developed a simple methodological system – frame for individual selfdevelopment according to educational level of L.S. and cognate disciplines.

## 2. CONCEPTS AND FEATURES OF METHODOLOGICAL FRAME

They are based on start conditions reflecting the general factors common for professional environment in various countries and for a wide scale of L.S. and cognate fields.

In spite of activities and growth mentioned above there have been still same problems, gaps arising also from different acceleration and *impacts of changes* in different part of the world incl. communication and impact of technology. Great differences exist not only between 3 main socio-economic groups – developed transforming and developing countries – but also within the groups. It is clear in the features, concepts of professional environment incl. education. It reflects the fact that our profession, as compare to engineering depends more on *socio-administrative conditions*, tradition in the country (L.S. – „Ordnungsfaktor” of society)

Therefore there have been very different concepts of profession and education (professional and civil environment) even in the EU incl. neighbouring countries. Even the image of profession among citizens and decision makers is regionally different, inspite the GIS accents are increasing.

Generally the *professional and civil environment* is more complicated, competitive, wider – with cooperation and interaction with nontraditional institutions and industries. In developed and some transforming countries exists an overflow of information about various form of management, new technology, legislative regulations concerning our activity.

The experience showed that in such environment is important not only the management of company but also the selfmanagement of an individual, connected with a pedagogical tool which is not so much influenced by out dating – the methodology.

The professional training (and CPE) can be more effective when the individual knows the basic methodology of management of his abilities. It has to support, to overcome a.o. the 3 great changes : choice and entrance in particular course, first employment and first managerial post (establishment of his firm).

We selected 7 main entrance conditions and 4 main principles.

### ***Entrance conditions :***

- Time limits
- Brain – qualities, development capacity
- Overflow of prof. and medial information – selection, distorse, clichés
- Practical handling esp. in psychological matters
- Role of personal challenge
- Features of modern education – featback, formative aims
- Tailoring of frame according to educational level and behaviour of target groups

### ***Main principles :***

- 1) Longperiodical aims
- 2) Priorities – sequence of importancy

- 3) Selfrealisation by selfcognition
- 4) Interactivity of cognition, thinking and communication

Princip No. 1 includes the will and *joy of cognition* and improvement of PQ. It requires an appropriate analyses. No. 4 – the most important – facilitate a pragmatic selfdevelopment – incl. the ability to educate myself - and also the way of thinking. For adaptation, improvement we have to find out the factors creating the existing standing – information (not just to register it), the most decisive ones, to analyse the process or to estimate the cognitive and formative value of information. Thus we need a simple, general theory of cognition for the basic orientation + estimation of complicated processes.

## 2.1 SIMPLE COGNITIVE ANALYSIS

Development of science is connected with the need to know, to understand, explain the outside and inside world. Decisive role for the objective cognition of the outside world played the measurement with it specific concepts of *comparison and standards*. The evaluation and analysis of measurement enabled later the Theory of errors. All that is familiar to Land Surveyors and partly also to cognate sciences and professions. Most general and simplest mathematical presentation of outside processes gives the Hagen Theorem. According to it the quality Q of a phenomenon or process is created by the interaction of elementary (secondary) factors  $D_i$ .

$$Q = [D_i]$$

and again particular  $D_i$  is created by tertiary factors  $d_j$ . For estimation, evaluation of processes is advantageous to present the analyses in steps, stages:

- Identification of  $D_i$
- Study of interactions between particular  $D_i$
- Classification of  $D_i$  according their importancy, impact on the Q
- Possibilities of changing, reduction of the  $D_i$
- Deeper analyses of particular  $D_i$ , by determination of  $d_j$

Gradual analysis is simple and time saving. Its application was widened also for psychological processes of education. It serves also as a first step for overcoming of binary thinking. For cognition and estimation of interaction and differences in professional and civil environment we introduced s.c. Inner standard. In interaction generally they are involved the material as well as psychological factors.

## 3. ADAPTATION OF FRAME TO DIFFERENT TASK

Such general concept can be adapted for various tasks in education and profession. We present it of ten for s.c. integrated approach to *optimization of university education*. It is a complicated development of abilities – brain quality in a system teacher-student-environment. Personal quality of a graduate  $Q_A$  is determined by an interaction of factors D presented in 4 groups:

$Q_A = [D_E, D_P, D_O, D_M]$ , where

$D_E$  – Entrance conditions – quality of freshmen and teacher.

$D_P$  – Psychological factors (motivation, social climate, biorhythm, interaction student-teacher).

$D_D$  – Organisation, administrative factors (course structure, syllabi, methods of examination, timetable, etc.).

$D_M$  – Material factors (labs, equipment, literature, boarding, etc.).

Decisive are the interactions of *psychologic factors*. They belong to a special scientific field with an overflow of publications. But even same simplest facts of educational psychology when selected and applied in an appropriate manner can have a fast and *formative effect* – to win, motivate the colleagues for the selfcognition, the first step to selfmanagement. An example is the performance, quality of brain  $D_{EM}$  :

$D_{EM} = [ \text{intelligence, emotion, will – moral, motoric} ]$   
                   $d_1$                    $d_2$                    $d_3$                    $d_4$

But the  $d_1$  is not identic with the IQ.

$d_1 = [ \text{memory, thinking-cognition, evaluation,-invention, realisation} ]$

For our aim is important that this factor change with the psycho-physical condition and it is possible to improve them by a appropriate training, conditions.

Great interest of target groups awaked inner standard, regional mentality : factors of brain performance, multiplicative effect of immaterial motivation, biorhythm, departmental “climate”.

Methodological frame is presented as an *orientation tool* and support for management of longperiodical practical activity. Therefore it was completed by a serie of hints for practical improvement of PQ. The selection of hints depends on the target group, the length and type of presentation.

#### 4. CONCLUSIONS

The frame enables a simple *identification and evaluation* of factors creating the standing of processes incl. personal qualities and ways for their improvement. It has been applied for various fields of education and industry firstly for tailoring of standard subjects and of Professional studies and the analysis of standing of profession.

Widest modification enables the core of our methodology – *the cognitive analyses*. It serves for the training of pragmatic thinking, communication (also outside of L.S.), for the attraction of freshmen and establishment of new courses (e.g. UNIDO project in Sri Lanka), as a part of Professional English or special seminar. Most encouraging have been the reaction by top professors and young colleagues in Europe as well as in *Commonwealth countries*. They appreciated the orientation of selfmanagement toward practical activity, cognition and improvement of their abilities, utilisation of qualities of young brain, the influence of *free time industry* and *binary thinking*, multiplicative effect of motivation and biorhythm. Especially impressive were the reactions of colleagues in developing countries where the orientation in a changing world is very important for many departments and even for the representatives of the university.

Our age is characterised by overflow of information, their fast outdateding and changes of professional environment. A simple tool can support the understanding and evaluation of such processes.

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PhD. and PhD. habil, both at STU Bratislava. Started as lecturer in Geodetic Astronomy, later assoc. professor in L. Surveying at the Dept. of Geodesy and Cartography STU. 6 years assoc. professor at Universities in Ghana (Head of Dept.), Uganda, Zimbabwe. In 1988 UN Consultant for the establishment of B. Sc. Surveying course in Sri Lanka. In 1994/95 at the Research Institute for Geodesy in Prague.

Research fields : Instrument testing, atmospheric influences, Large scale metrology, methodology of tertiary education : For 15 years national delegate for the FIG Com. 2 Invited lectures at many universities in Europe (eg. Dresden, Bonn, Karlsruhe, Berlin) and overseas (eg. London, Nairobi, Dar-es-Salaam). Invited papers at many international seminars incl. 6 papers at FIG Congresses. Over 90 papers incl. 29 abroad, 5 textbooks.