

# Feedback Information of ALUMNI Association in Quality Assurance System for Higher Education

**Žarko Spasić**

Professor

University of Belgrade  
Faculty of Mechanical Engineering

**Petar Pejak**

ENERGOBEOGRAD REMAKS Belgrade

*The Faculty of Mechanical Engineering is one of the 31 faculties of the University of Belgrade, belonging to the group of 9 technical faculties. The most important statement of the Faculty's mission is concern to contribution to the pursuit of education, learning and research at the highest national and international levels of excellence and with European core values of the future common education and research space. The ALUMNI structure was defined in [1] taking into account the great number of mechanical engineers (the popular name in Serbian is "mašinci") all over the world. It is the great interest of the Faculty of Mechanical Engineering to establish the ALUMNI Association ALFaMEB (ALUMNI Faculty of Mechanical Engineering, University of Belgrade) or aMEB. Some of us will find old friends from the Faculty, some of us will be helped to maintain our ties to our academic departments and Faculty. But some of us will define the professional job for the Company or himself through the ALUMNI ALFaMEB virtual enterprise. We are looking forward to seeing all of you as participants of the First ALUMNI Congress in Belgrade, December, 27-28, 2005).*

**Keywords:** ALUMNI, Higher Education, Quality Assurance System).

## 1. INTRODUCTION

ALUMNI Associations are worldwide academic traditions of well known and old universities. Taking into account the actual tradition at the University of Belgrade (one of the biggest universities with complex structure from the past period) with complex relations, distinct individual interests and, in previous time period, already formed insufficient devotedness to the Faculty or University, the right way should have been found out to accept the necessary changes. Some of our faculties already have their ALUMNI associations. We will start with the establishment of the ALUMNI ALFaMEB association with respect to the integration intentions at the University of Belgrade. The main objectives and purposes of the ALUMNI ALFaMEB association are as follows:

- Pursuit, dissemination and application of knowledge in relationship with education-business environment.
- Connection with actual intellectual intensity of the Faculty of Mechanical Engineering, understanding the value of personal exchange of ideas, experience and tasks.
- Support the development of the Faculty of Mechanical Engineering through donations of volunteers to the ALUMNI ALFaMEB Fund.

- Donations to support continual improvement of teaching quality with renovation or replacement of out-dated equipment and buildings.
- Support for students with scholarships and increase the interest of new students and new members.
- Enlarging the library resources (books, journals, teaching materials and other) and borrowing privileges (inter-library exchanges).
- Organising the ALUMNI ALFaMEB Services for students (financial service, health resources, copy service and other).
- Educational travel programmes of ALFaMEB visitors with special offers for travelling costs.
- Publishing of News & Events magazine and other ALUMNI publications and blueprint. Later, the goal will be public information system for daily and future information and radio station.
- ALUMNI ALFaMEB ID Card (bookshops, theatres, museums, concerts, sporting events with special offers).
- Using the sport resources and objects with free admission (swimming pool, halls, grounds, athletic objects, fitness facilities).
- Organising the Interactive leadership Conferences and Forums on actual themes.
- Using the Continual education programmes at the Faculty of Mechanical Engineering (new short online courses with innovative learning and teaching techniques, on-line course materials and with individual tutor support).
- Innovative partnership of members and firms through the ALFaMEB virtual enterprise.

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Correspondence to: Žarko Spasić

Faculty of Mechanical Engineering,  
Kraljice Marije 16, 11120 Belgrade 35, Serbia and Montenegro  
E-mail: zspasic@mas.bg.ac.yu

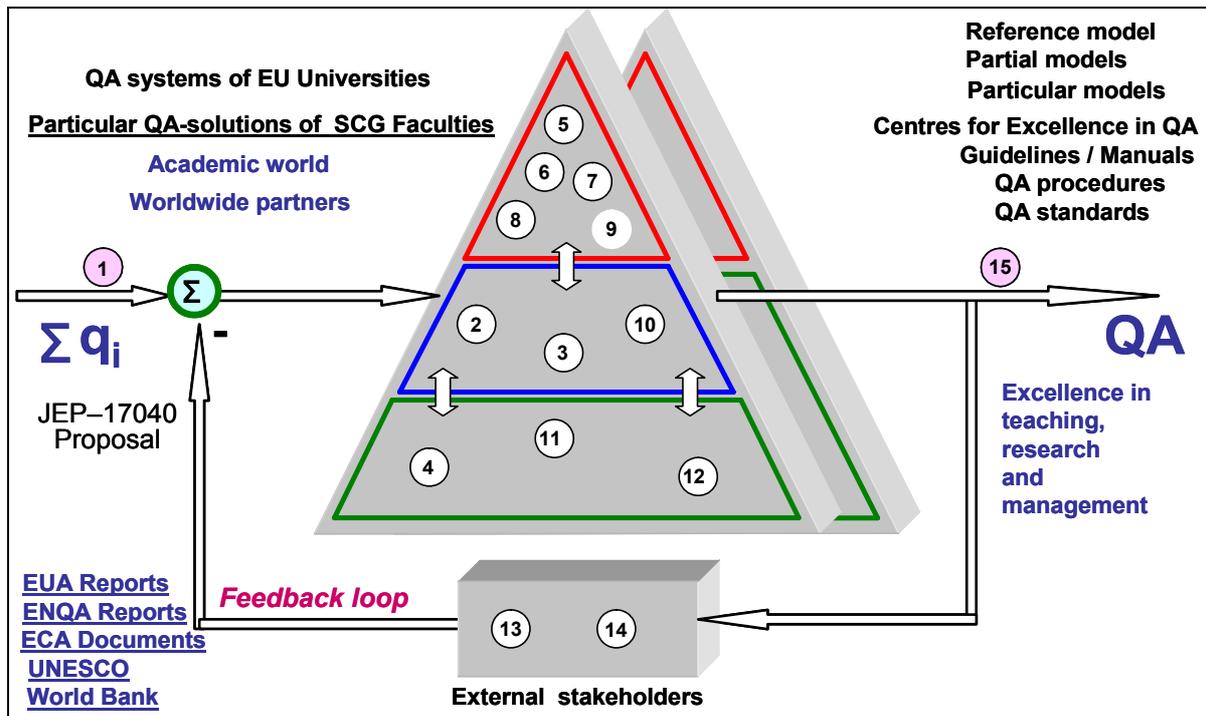


Figure 1. Continual improvement with feedback loop (Alumni ALFaMEB)

- Career network services (for example, job posting information and listings for finding a job) using the networking opportunities or exclusively "by Alumni for Alumni" communication. Industry / Economy are eligible to take advantage with pronouncing the specifically targeted post listings if they are a member of the ALUMNI community (employment by the company seeking).
- Connection and communication with other ALUMNI associations all over the world.
- Contribution to the well-being of the Faculty of Mechanical Engineering and its graduates.
- Historical museum of the Faculty of Mechanical Engineering.
- Other objectives

## 2. ALUMNI ASSOCIATION AND INTEGRAL QUALITY ASSURANCE SYSTEM

Integral **Quality Assurance System (QAS)** is a multi-objective, discrete, dynamic and large-scale system with continuous and gradual improvement characteristics [2,3]. Optimisation of behaviour in spite of continuous changes in the QAS environment is necessary. This is also a system with multiple decision making processes with multi-criteria co-ordination problem and harmonisation among defined complex objectives. In other words, we have wide integration, end-to-end across the University with cross disciplinary expertises and connections with stakeholders (industry, economy, culture, health, students, parents and others).

The national Quality Assurance System should be the optimal integration of good practices of all Universities, taking into account particular successful results of individual faculties. It was the request from the Ministry meeting of European countries (Berlin, 2003) and obligation of the Ministry for education to

report results at the next meeting (Bergen, 2005). After the presentation of Quality Assurance models and systems from EU Universities and relevant training activities, requirements for the national Quality Assurance Systems are specified [2]. On the basis of the specified requirements and design for implementation, fifteen *Working stages* or *Subsystems* were defined as follows :

1. Analysis of QA systems and models at European Universities,
2. Reference and specific (partial and particular) QA systems and models,
3. Quality indicator's development,
4. Data/Knowledge base design,
5. Evaluation of study programmes,
6. Evaluation of academic institutions,
7. Questionnaires with statistical data processing,
8. Accreditation and Quality Assurance,
9. Students activities,
10. Quality procedures and standard specifications,
11. Centres for Excellence in Quality Assurance,
12. Communication infrastructures,
13. **ALUMNI ASSOCIATION**,
14. **BUSINESS ENVIRONMENT** and
15. Testing and implementation.

Quality Assurance *subsystems* are distributed at the three stratum: ICT - infrastructure, Basic QA components and QA domains (sequence numbers are given in the Figure 1). All *subsystems* will be realised [4] by the eleven *Working groups* (WG<sub>i</sub>, i = 1, 2, ..., 11) with well defined tasks. Defined *Working groups* are: Requirements specification and QA models (WG1), Programme approval (WG2), Quality in research (WG3), Evaluation of institutions (WG4), Accreditation and Quality Assurance (WG5), Questionnaires (WG6), Quality indicators (WG7), Quality procedures and

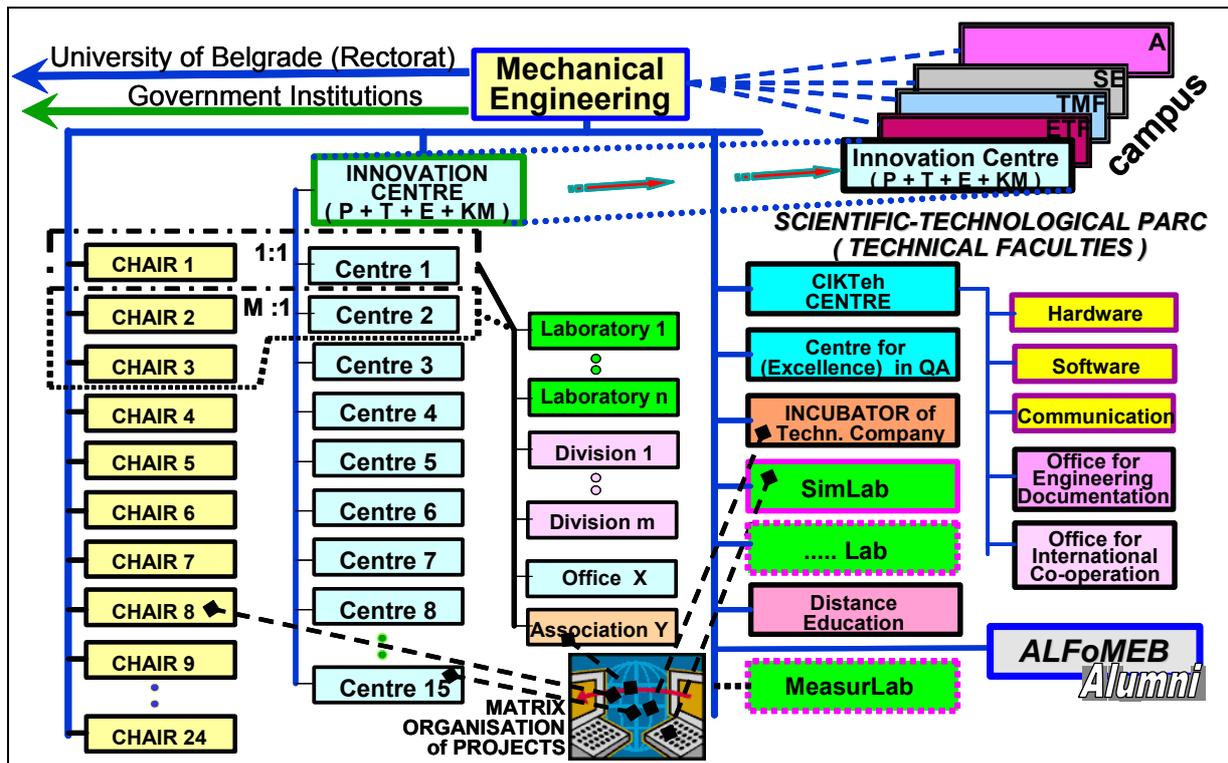


Figure 2. Model of organisation for the Faculty of Mechanical Engineering

standard specifications (WG8), Data/Knowledge base and statistics (WG9), Centres for excellence in Quality Assurance (WG10) and. Students activities (WG11).

External evaluation and accreditation institution and quality assurance procedures will be defined in accordance with new University Law. All procedures, reports and performance values must be comparable. Feedback information from stakeholders (for example, dialog with industry/economy or feedback from virtual ALUMNI ALFaMEB Enterprise) connect different subsystems of the Quality Assurance System. With the numerous activities of the ALFaMEB Virtual Enterprise as well as through the questionnaires about realised expectations concerning to the knowledge obtained at the Faculty of Mechanical Engineering, the continual and gradual improvement of teaching and research activities are achieved.

### 3. WHO IS THE MEMBER OF ALUMNI ALFaMEB ASSOCIATION

Taking into account the experience of a huge number of ALUMNI associations all over the world, members of the ALUMNI ALFaMEB association could be :

- All former students of the Faculty of Mechanical Engineering of the University of Belgrade who have graduated until now,
- All former students of the Faculty of Mechanical Engineering of the University of Belgrade who have finished lessons' obligations.
- All former students of the Faculty of Mechanical Engineering of the University of Belgrade who have finished master of science or specialisation studies.
- All doctors of technical sciences from the Faculty of Mechanical Engineering.

- All professors and teaching assistants who are active in the teaching (including also non-sources chairs).
- All professors and teaching assistants who took part into teaching process at the Faculty.
- All former and actual guest professors from foreign universities.
- All professors from any universities who had the study state at the Faculty longer than three month.
- All professors from any universities who were engaged at the international projects of the Faculty of Mechanical Engineering.
- All former students from the foreign universities who were at the Faculty in the scope of the international exchange programmes (for example, IAESTE exchange, Socrates, Tempus and other).

Students will have three different statuses: OBSERVER (entrance to university), UNITED (after last lessons' obligations) and FULL (after graduating).

Membership in the ALUMNI ALFaMEB is free. Voluntary funds of the members are possible through the foundation rules defined by the Statute of the Association. All voluntary funds and donations will be used as the support for education, learning and research activities within the Faculty of Mechanical Engineering of the University of Belgrade. *Registration Form* for the membership is Internet-oriented or hard copy document with the sentence of acceptance of the Statute of the ALUMNI ALFaMEB association. On the basis of the *Registration form's* contents, on-line database of the Alumni membership will be created. Data/knowledge base of the ALUMNI ALFaMEB will be also created as the repositorium information resources. Special e-mail forwarding service will be used for successful communication between the members.

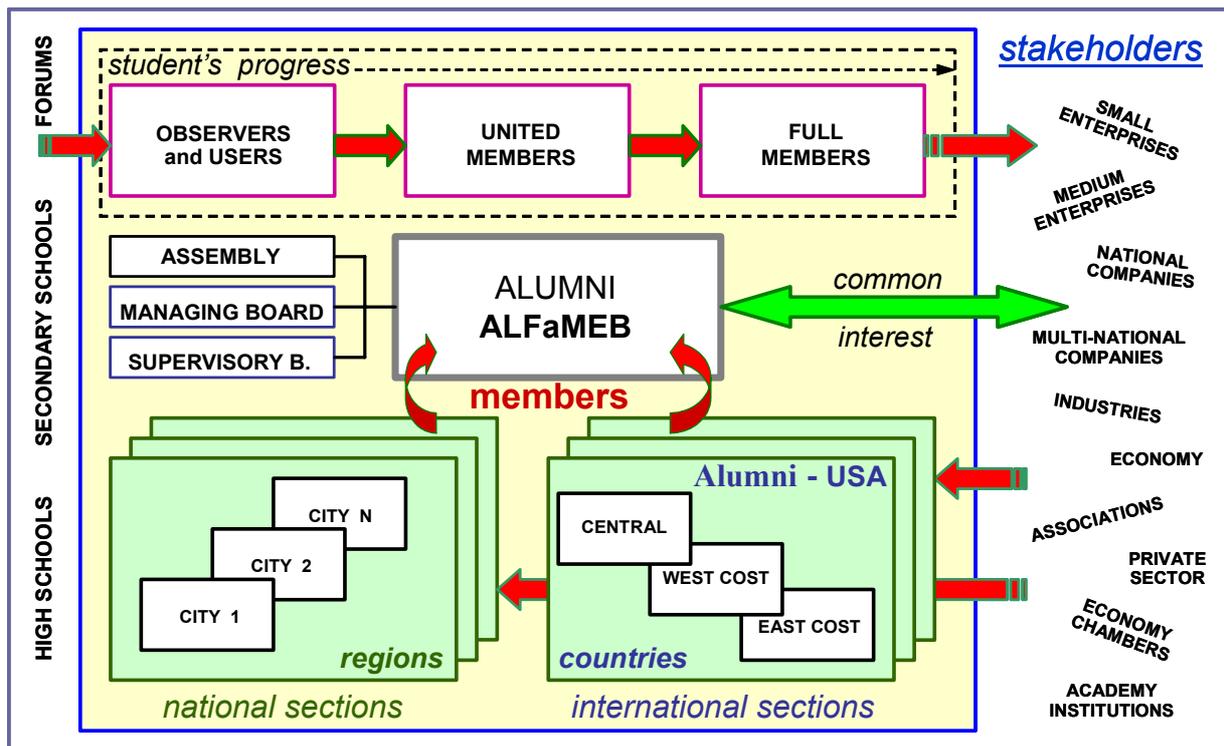


Figure 3. ALFaMEB ( $\alpha$ ME $\beta$ ) membership

#### 4. ORGANISATION, DOCUMENTATION AND INFORMATION FLOWS

Figure 2 shows the model of organisation for the Faculty of Mechanical Engineering of the University of Belgrade, taking into account all necessary changes during the reform process of the Serbian Higher Education System. The ALUMNI ALFaMEB association with all activities is important virtual organisation unit in achieving important principles of the Bologna process (feedback QAS information) of digital and interactive Faculty of Mechanical Engineering.

All individual members of the ALUMNI ALFaMEB are distributed into the national and international sections (Figure 3). Each region in Serbia and Montenegro has one section and co-ordinators in each town with industry and employed mechanical engineers. The membership represents the intellectual connection between the Faculty and educational-business environment or stakeholders (private sector, small and medium enterprises, national companies, multi-national companies, industries, economy, associations, economy chambers, schools, academy institutions and other).

Steering bodies of the ALUMNI ALFaMEB association are Assembly, Managing board and Supervisory board. All industries, enterprises and companies with evident contribution to the development of the Faculty are members of the ALUMNI ALFaMEB Community of industry. The role of the Board of Trustees is to make sensitive decisions of the Alumni Foundation. The members are the eminent ALUMNI public figures and senior academic staff, who lend their skills and expertise to the promotion of work of the Faculty as a whole (former deans and persons of confidants).

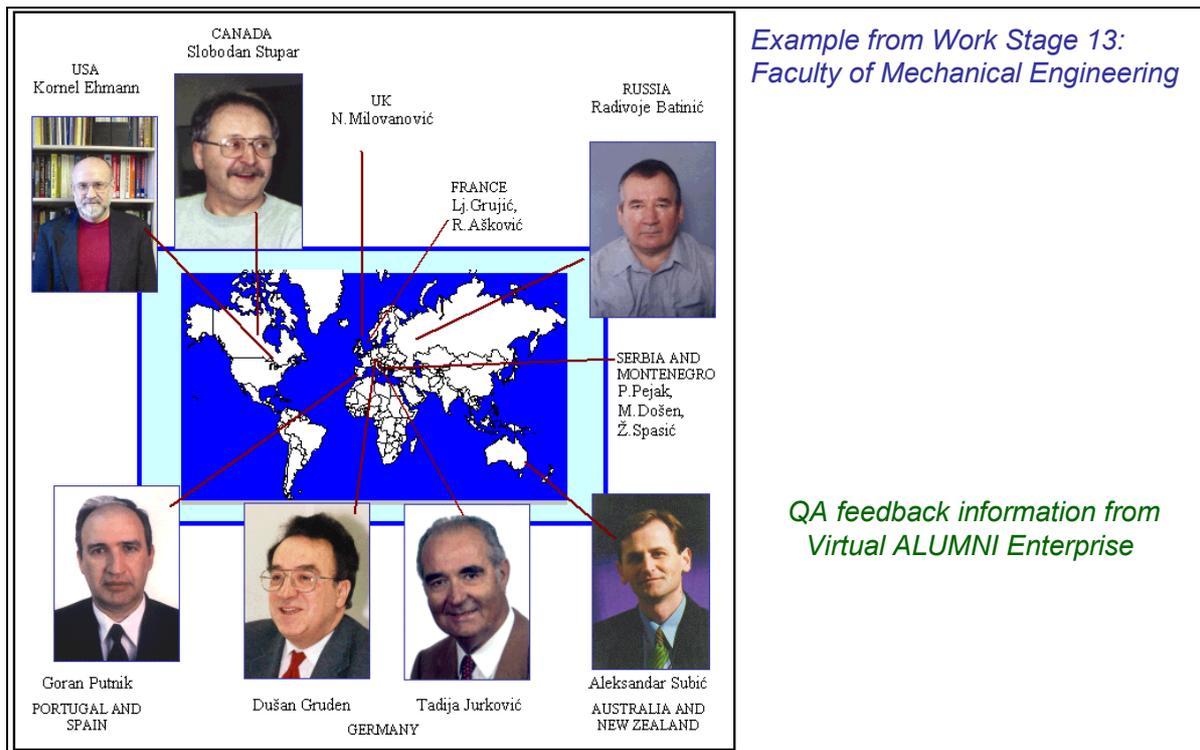
ALUMNI ALFaMEB Community of industry consists.

#### 5. ALUMNI AS VIRTUAL ENTERPRISE OF MECHANICAL ENGINEERS

International sections of the ALUMNI ALFaMEB association will be established (Figure 3) in United States of America, Canada, Germany, France, United Kingdom, Russia, Australia and New Zealand, Greece, Italy, Portugal, Swiss, Libya, Iraq and Syria. Each town in Serbia and Montenegro will have the co-ordinators (the same for former Yugoslav republics), which will help necessary communications during the ALUMNI database creation period.

Ten actual themes were proposed for the debate or joint discussion between the ALUMNI ALFaMEB members and authority experts as representatives of the ALUMNI community of industry. The debate will be in the form of interactive Conference or Forum headed by the competitive expert from university or industry using the ALFaMEB network facilities. All titles or themes will be given to ALUMNI ALFaMEB members to obtain the rank of interest and actual priority. The themes are as follows :

- How to measure lagging and compensating of technological development in Serbia ?
- Transition of industry (economy) in Serbia and Montenegro.
- Reform of HIGHER EDUCATION and stakeholders.
- Activity of VEoME, a virtual enterprise of ALUMNI ALFaMEB.
- Virtual Enterprise - Efficiency and effectiveness in business.



**Figure 4. ALUMNI ALFaMEB International Sections**

- How to avoid the individual interest and how to improve the actual insufficient devotedness to the Faculty (conflict of interests) ?
- Advance technologies and new working contents in integrated manufacturing enterprise.
- Integration of education space and research space at the University.
- The role of students in management activities of Faculty / University.
- Decomposition of large scale business systems to small and medium enterprises.

During the three cycles of education system defined by the Bologna declaration, graduated students are going to work in industry/economy or at academic institution with acquired knowledge and skills and possible competences. The system of questionnaires (Figure 4) gives the information (deepened knowledge, improved skills, extended competences and other) for gradual improvement of the Quality Assurance System. Certain number of subjects or disciplines could be identified for vertical / horizontal / lateral widening, deepening of acquired knowledge at the Faculty of Mechanical Engineering of the University of Belgrade. Vertical widening means specialisation in a narrow sense (deepening of knowledge). Horizontal widening means inter-disciplinary enlargement of knowledge. Lateral wideness is in reference to unrelated subject area, supplying additional areas and diversification.

Selection of the different samples is important to obtain more representative results from statistical analysis of questionnaires. For example, 30 for each profile of expertness, or domain of companies, or taking into account the number of employers in some branch of economy. Anyway, we have to have a good balance of different types of graduates. Where graduates entered the world of work rapidly after graduation (for example

ALUMNI ALFaMEB), the sample could be within the last 3 to 5 years (we will start with  $\Delta = 3$ ). It is also important to connect selected samples with events passed in the industry or society, so dynamical in the past period in our country. Professional destination of the graduates is data with changeable values to be solved automatically with interactive communication and with a letter asking them to their return new address or questionnaires within 10 days.

All study programmes have great importance for sequential of acquiring necessary knowledge, skills and competences during the monitored study process or monitored progress of students. KNOWLEDGE is a set of facts and rules applied in the decision-making process on the basis of rules in a certain situation. The SKILLS must be developed as learning outcomes from the learning process at the university. Being able or capable or skillful are more restricting meanings than that of competence. It is important to indicate the level of achievement of skills they have reached as a result of studying degree of each study programme (for example, skills for analysis, synthesis, critical thinking, elementary computing skills, research skills, information management skills and other). Transferable skills modules (work experience/placement, active laboratory exercises, project design and management, seminar works, oral and written communication, dissertations and other) should develop those competences which are needed to close the gap between theory and reality, which have always been in demand but still pose a problem for many graduates when entering the labour market. COMPETENCES tend to convey meaning in reference to what a person is capable or competent of, the degree of preparation, sufficiency and/or responsibility for certain tasks [5]. Competences represent a dynamic combination of attributes (with

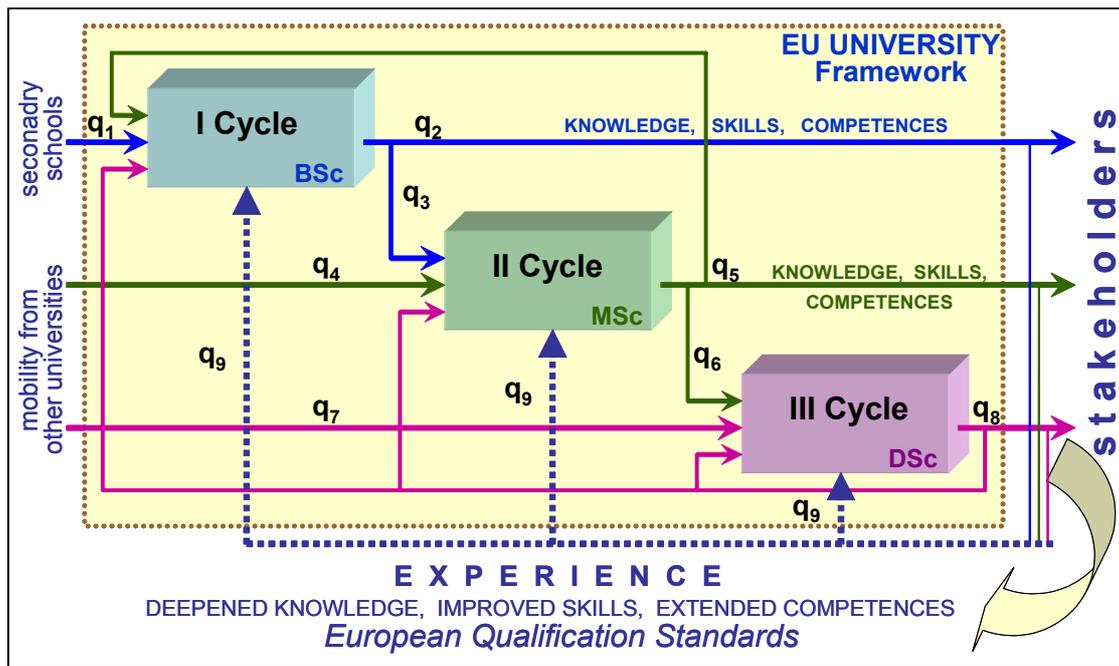


Figure 5. System of feedback questionnaires from ALUMNI ALFaMEB

respect to knowledge and its application, attitudes, skills and responsibilities) that describe the level or degree to which a person is capable of performing them.

Competences (generic or subject-related) are always linked with knowledge but in the case of subject-related competences that connection is even closer. It is also possible to define instrumental, interpersonal as well as systemic competences. Some examples of competences are: ability to work autonomously, problem solving, decision-making, capacity to adapt to new situation, capacity to generate new ideas (creativity), critical and self-critical abilities, ability to communicate with experts in other fields, ability to work in an international context, capacity for organisation and planning and other.

For the 1st cycle (BSc) and 2nd cycle (MSc) of the common European Higher Education Area (EHEA), it is necessary to define the qualification framework with relevant skills and competences of graduated engineers. For example, profiles of expertness as the final products (engineers) of the Department of Production Engineering are *Constructor of machine tools*, *Constructor of tools and fixtures*, *Designer of metal cutting technologies*, *Designer of metal forming technologies*, *Designer of production lines and systems*, *Engineer for automation*, *Programmer of NC/CNC machines*, *Engineer for information integration*, *Robot designer*, *Assembly line designer*, *Production manager*, *Manager of integrated manufacturing*, *Manager of logistic operations*, *Engineer for diagnostics*, *Management of quality*, *Manager of IC technologies*, *Teacher of engineering disciplines* and other.

## 6. CONCLUSION

ALUMNI associations are worldwide academic traditions of well known and old universities. Some of the faculties of the University of Belgrade already have

their ALUMNI Association. Establishment of the Alumni ALFaMEB or **αMEB** association started with defining the international sections and potential coordinators [1], taking into account employment of huge number of mechanical engineers all over the world. Feedback information ALUMNI ALFaMEB members and other stakeholders connect different subsystems of the Quality Assurance System in Higher Education [2]. With the numerous activities of the ALFaMEB association as well as through the questionnaires about realised expectations concerning the knowledge obtained at the Faculty of Mechanical Engineering, the continual and gradual improvement of teaching and research activities has to be achieved.

Faculty of Mechanical Engineering as the academic institution of special interest has close inter-relationship between teaching and research activities with industry and technology development orientation. With new Alumni ALFaMEB activities the purpose and interests of the Faculty of Mechanical Engineering will be broadened and promoted. Education process will enable of actual and former students for life-long learning by using advanced methods.

With the company model for the training in distance university education, the education limits are expanded to meet joint interests of the university and the industry as the member of ALUMNI ALFaMEB community. The students test their theoretical knowledge through Virtual Manufacturing Systems of different industries with the aid of real and current data/knowledge which intensifies their learning. Mechanical Engineers as the ALUMNI members employed in industry expand and refresh their knowledge with new disciplines and research results to be applied in their production-business systems under conditions of rapid technological changes and increasingly stricter demands of the world market. The subject CIM (Computer Integrated Manufacturing) taught during the last

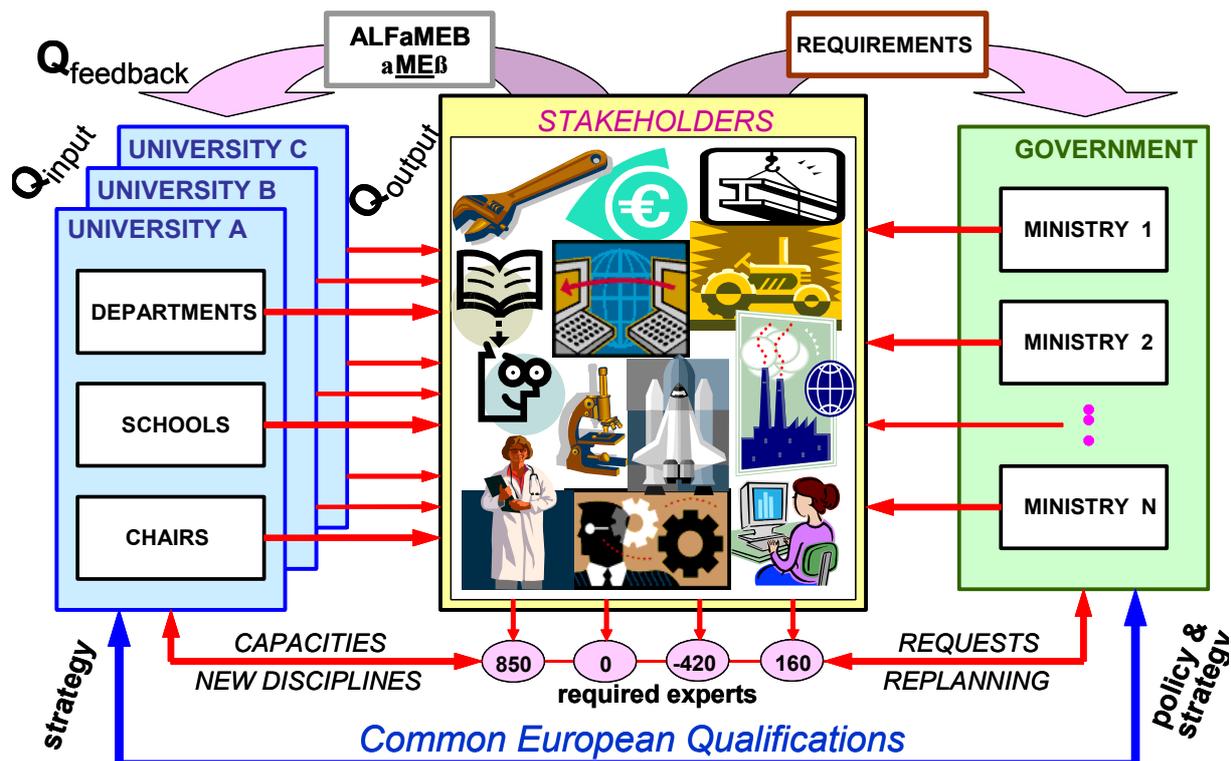


Figure 5. Stakeholders and ALUMNI ALFaMEB in the "University-Government" relation

semesters of the II cycle (MSc study) should interconnect educational disciplines of subjects/courses taught at different departments of the Faculty or University. This integration is primarily based on new advanced information technologies and current communication possibilities of the networked world which consists of the university world and business world of ALUMNI ALFaMEB association.

With the established ALUMNI ALFaMEB (aMEß) association the Faculty of Mechanical Engineering will combine excellence with relevance, implementing the Quality Assurance System for Higher Education. Providing a high quality education and research for all students and business environment, the Faculty of Mechanical Engineering will produce creative engineers of different profile of expertness for our society of prosperity as well as for global community.

#### ACKNOWLEDGEMENT

All necessary information about the ALFaMEB ALUMNI Association of Mechanical Engineers and friends, as well as the document *APPLICATION FORM* are on the web-site <http://alumni.mas.bg.ac.yu>

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