



**EXTERNAL EVALUATOR'S REPORT  
FOR ARACIS OF THE  
MILITARY TECHNICAL ACADEMY, BUCHAREST,  
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## 1. INTRODUCTION

This external institutional evaluation report is prepared and written according to the specifications of the Romanian Agency for Quality Assurance in Higher Education, ARACIS, and the project: Quality Assurance in Higher Education in Romania within European Contents – Development of Academic Quality Management at the System and Institutional Level (POSDRU/2/1.2/S/1, Project Manager Prof. Dr. Ioan Curtu). The author of this report was appointed as International External Evaluator by ARACIS as a member of the evaluation team for the audit of Military Technical Academy, MTA or institution in Bucharest. The institutional visit took place from 2<sup>nd</sup> to 4<sup>th</sup>, December, 2009. The task of the evaluator was to evaluate the MTA in regard to its quality assurance processes and programs related activities as specified in the ARACIS guide. ARACIS has appointed the following evaluation team:

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Ms. Oana Sabru the ARACIS technical secretary provided logistics and technical support for the preparation of the audit.

The evaluation team members have received prior to the visit the Institutional Self-assessment Report of the MTA containing 67 pages and a list of 312 annexes.

In addition the external evaluator has received the ARACIS Quality Evaluation Activities Guide for university study programs and for higher education institutions, part III, External Evaluation of Academic Quality in Accredited Higher Education Institutions (External Institutional Evaluation), December 2006, 39 pages. All the mentioned documents are written in English languages.

At the introduction of the exercise there was a meeting (December 2, 10-11 a.m.) with the MTA selected leaders and the self-assessment team members. The rector Col. Prof. Dr. Christian Barbu presented in

brief the operations and general data of the MTA. The contact person from the MTA was Col. Prof. Dr. Minu Mitrea. The team has discussed the different issues with the students, alumni, rector, senate members, self-evaluation team members, staff representatives and employers of MTA graduates.

Later, I was able to see selected locations, while other team members were engaged in programs evaluation. These visits contributed to my understanding of the institution, operations and to see premises with laboratories. The evaluation process was carried out in an open, constructive and collegial dialog and spirit. The MTA offered translation and guidance for campus and of laboratory visits. I have visited the library and discussed different issues with the selected staff members. I do consider the evaluation was well prepared and thanks go to all involved, especially to LCT Prof. Dr. Amelia Molea for assisting me in the visits and providing excellent translations. It should be mentioned that I have discussed different issues regarding the SER and appendixes with Col. Prof. Dr. Minu Mitrea. For understanding research operations and funding I have met Col. Prof. Dr. Lucian Anton, the Vice Rector for research, who provided additional information regarding different components of R&D funding.

The discussion and information provided by Vice Rector for education Col. Prof. Dr. Ioan Nicolaescu was very enlightening and assertive for my understanding of MTA student's progression, mobility, and staff mobility, the MTA research achievements and bilateral agreements with other universities. My interest was in this discussion devoted to the admission of students, staff working load, to the PhD studies and rather large members of different laboratories. It is a pity that the 312 annexes to the SER were not provided. I do believe that many documents in the annex could be of additional help and could provide better understanding of the MTA. Due to my interest I have obtained some essential documents like the MTA Charter and The rule of the MTA Senate, all in Romanian language, but still useful for assisting my understanding of the MTA governing rules and management structures.

At the end of my introduction would like to express my opinion that the SER is written rather descriptive with quoting numerous laws, regulations and displaying a line of wishes. Supportive evidence and data for displaying current functioning and achievements are very rare in the SER or entirely missing. To some extend helpful in this

regard, was the presentation of the Rector Col. Prof. Dr. Cristian Barbu at the introduction of the evaluation activity, containing interesting and useful data, in some areas, displayed with development trends.

## 2. PRELIMINARY OBSERVATIONS

The MTA is a legal entity, state higher education institution, accredited and functioning following regulations given by the Ministry of Defense and the Ministry of Education, Research and Innovation (Act of Education No. 84 of 1995 and Government acts 14 in count, as referred in annexes A 01-08 till A 01-21). The main task of MTA is to train specialists in engineering sciences for different military and defense needs. To ensure attractiveness and easier open market employment of graduated, when leaving military services, the study programs are designed to be comparable to other university studies. From 2005/06 year the MTA was granted the right to accept also "private" referred as tax students. These students are paying tuition. In essence the MTA is a military institution, offering similar education as state universities, but in addition it provides military and sports drilling.

The mission and goals of HE provided at the MTA a predominantly tuned to military requirements and specialties. This is reflected in the funding, provided mainly by the Ministry of Defense. It is covering salaries, running costs and commissioned R&D work. The MTA has an income of about 30 % from tuitions. This means are mostly spent for equipment and technical supplies. In accordance with the law the Ministry of Defense is deciding and determining the number of admitted numbers of students to specialties. It is also determining the number of tax students. In addition the research and numerous development projects commissioned to the MTA by the Ministry of Defense are resulting in rather limited possibilities for competitive research involvement at the National Research Agency for Scientific Research – ANCS (HGR no. 551/2007), or on the open market. The later has to be approved by the ministry. The MTA is entitled since 2007 to compete for ANCS funding.

The main problem of MTA is the "dual personality". It was established by the Ministry of Defense but operates also by the laws valid for higher education and university operation, enforced by the Ministry of

education, research and innovation. Such an operation under the laws of two ministries is rather limiting, but also setting firm "boundary conditions for the MTA operation possibilities. There is not much room left for mid term planning, deciding of research priorities and students intake numbers, but also of the study programs contents and selection and priorities in other areas. Owing to it, the MTA has hardly sufficient autonomy for being able, to compete on equal level, with public universities. There is open space left mostly in providing better care for students. This includes the free lodging, food, study supplies and cloth, covered and included in annual funding provided by the Ministry of Defense. The "free space" for MTA to engage for additional income is limited. Such income is needed to improve up keeping and for equipment renewal. The MTA can compete for market-sponsored research, international attracted EU and NATO funding. The income could be raised also by the support for increasing the number of tax students.

The national and unique importance of the MTA, we could mark it as monopoly, has owing to its status also special and greater responsibility. Because of it the academy is more exposed and has wider visibility, compared to a general public university. The MTA is a sort of national "show window" of Romania higher education for national security, internal affairs and defense, with important responsibilities toward the society, EU and NATO cooperation.

At the MTA there are two faculties and a language department. The Faculty of Mechatronics and Integrated Armament System with 8 study programs and 13 specialties and the Faculty of Military Electronic and Information Systems, with 3 study programs and 4 specialties. Among other non-teaching units there is also a Center for research and technology transfer.

It is interesting to note that tenured staff is allowed to teach three times the "basic teaching load" of 8 hours per week. The hired staff is permitted only one basic teaching load. There are about 97 tenured staff positions and about 70 contracted teachers. This is resulting in total of 167 staff count. The interest for studying at the MTA is good. In average 2 to 3 candidates apply, while half of them are accepted. There are approximately 1689 students, 847 B.Sc. (110 tax students), 167 Master students (100 tax) and 326 PhD students (170 tax, 2009). There is good student staff ratio of 13.6. Exceptional seems the high

number of 326 PhD students (150 tax) in 2008. Comparing it with the number of 41 PhD advisors reveals nearly 8 students per advisor. This is a very high load. It is difficult to understand why only 23 PhD students are annually graduating. This is indicating a low efficiency of 7 % or less than one of 10 is graduating, (2004/2008 in average 7–9 %). There were not provided data to assess the average time needed to finish doctoral studies at the MTA.

Considering the diagram displaying MTA units it appears that there is a high count of laboratories about 93. It is rather close to the number of tenured staff in 2008/09. The high number of laboratories and associated staff is supporting the expectations for an adequate publications record. These should be considered in relation to the articles published in ISI journals. For the time of 2006-2009 there were published 16 journal papers and 35 papers in ISI conferences (2005-2009) and 476 papers delivered at conferences (2005-2009).

The mobility of staff is essential for upgrading of knowledge, scientific and didactic exchange with cooperation and benchmarking. At MTA there are in average, annually, 3-4 staff members, paying visits to other institutions, universities. These are predominantly short visits, from several weeks to a month. It was only in 2003 that a staff member remained at DU Delft for 18 months and in 2007 one member remained abroad for 6 months. Staff mobility at the MTA needs consideration for improvement. On the contrary, outgoing student mobility is rather good. At average 40-50 students, annually, are associated to other (mostly EU) universities, for 1-6 months and some even for a whole year. Also the incoming student mobility is good, in spite of being three times smaller. Foreign students, about 15-20, annually, spent at MTA, about 3 months in average.

The list of bilateral agreements, with foreign universities, is extensive. The same can be said for the list of signed agreements with other universities. For both lists applies the comment: it does not count the number of universities, but more essential are activities carried out in regard to these signed agreements. Considering the activities, it is important the number of joint study programs, staff exchange, money flow within institutions as a consequence of research cooperation and joined research grants. Similar comments apply to the list of obtained projects from the National research development and innovation plan,



Annex No. B 34-03. The list is impressive, but in essence does not show much. Important data for assessment, like granting year, duration of the project, funding received, accomplished results, transferred knowledge, received patents, new jobs created are missing. The same comments apply to the list of projects commissioned by the Ministry of Defense, Annex No. B 34-02. We may conclude, with a general remark, that the reporting in the SER is very superficial and incomplete in regard of displayed data, providing evidence of performance. Difficult or impossible is to assess the associated quality assurance and other in the SER listed systems like functioning, performance, productivity, efficiency, output, and de facto accomplished results. For instance, the data of graduates display, annex No. A 01-22-1 for the year of 2008-09, are displaying that out of 562 students only 63 have graduated? Is it good or bad, what happened to the other students? During the years of 1989 until 2009, 2193 engineers have graduated.

The information received does not display, out of how many regular students and how many students have been dropped during this time. It seems that the accountability issue was not properly considered, but probably also not the retention and efficiency. Any student dropped is a national loss and the MTA must be responsible for it, aware of it, and must devote great care for reducing the retention and drop out rate of students. Similar comments apply to the high retention of PhD students compared to the figure of promoted students.

The observations considering the SER can be summarized that the culture of reporting, norms and values displayed in the report are not following the common EU and international established methodology. Also, performance and output data are not presented in a sufficient and transparent format. Therefore assessment is difficult. Particularly the efficiency of the quality arrangements and system at the department, programs and specialties level are difficult to assess. The SER is over done with presenting all kind of laws, regulations, listing different offices, approaches, commissions, but supported evidence for performance of these units is mostly missing. It seems, for an observer, that the contents and "boundary conditions" determining the MTA institutional operations and administrative issues and regulations are in the forefront. The contents matters,

efficiency, cost efficiency, rewarding of good performance and similar performance issues, seems are not of great importance.

The institutional evaluation is considering, among other systems, the essential quality assurance, QA system approaches and performance. The MTA has in place a QA system supported by the ISO 9001/2001, but there is neither provided reasons for it, nor the supportive evidence about its function, efficiency, and how does it enhance and influence in a positive way the MTA activities in particular the learning and research outcomes. There are also not provided any benchmarking data to other universities utilizing ISO standards. To the evaluator's knowledge such universities are very rare and therefore it would be good to provide arguments why the MTA has introduced ISO standards. Since the ARACIS quality evaluation guide is making reference to the ENQA and consequently to the Standards and guidelines for QA in the European higher education area, EHEA, we would expect that the SER is addressing in more details the relevant parts of these standards, like Part. 1, points 1.1 to 1.7 and the Part 2. Owing to it would be of advantage to provide in our conclusions at least some comments in this regard.

### 3. RECOMMENDATIONS

#### 3.1. STUDENTS

The MTA is a military HE institution, but with similar operation like public universities. The MTA students have prepared their addition to the SER and provided some opinions. The students are rather positive and satisfied with the education and services provided at the MTA. The same was expressed during the discussion organized with the students on 2. December, 5-6 p.m. Regardless of the positive attitude in the students report, during the discussion, several issues and problems surfaced. The MTA is a unique national institution and "show window", therefore a library operating with paper cards catalogue, in the 21<sup>st</sup> century, in the computer age, is below an expected standard and in regard to the national importance of the institution. The same remark applies to the poor reading room condition, the library and its entire organization. Most of the newly purchased books and current international periodicals are distributed at the faculties, laboratories and staff. This is not a supportive

arrangement for students. All the periodicals for the last three years should be kept at the library, to be displayed for all potential users. The services of the library should be improved. An open access to the shelves, storing course books, dictionaries and annual publications should be introduced. The reading room needs web connected working stations and more seats. Modern libraries have an electronic catalogue, access to other libraries and a service for interlibrary loan of publications.

By students two additional complains were posed. The laboratories, to be modernized and -the comfort of dormitories improved.

Considering student's accommodation facilities the majority of complains were related to over crowded dormitories, low number and bad shape of showers and toilets.

During the discussion the students pointed to the questionnaires and how they are processed. They complained that improvements are not taking place. This is related to the QA system at MTA. In this regard several improvements are necessary and will be elaborated in 3.6.

Would recommend that MTA is paying attention to the enforcement of bullets 1.1 to 1.7 of the ESG-European standards and guidelines. By considering the publications issued by MTA for perspective student and public information, we noticed that there is a weak compliance with the requirements displayed in the ESG. The information provided to the incoming students should follow the proposal in Part 1: ...

"provide up to date, in-partial and objective information, both quantitative and qualitative, about the programs and awards". The information brochure of MTA (blue covers) is not displaying information regarding the expected de-facto study duration, retention, and student's failure rate. Students shall obtain fair and complete information before they decide to enter, accept their responsibility and entrust their future to the MTA.

### 3.2. BOLOGNA FIRST AND SECOND CYCLE STUDIES

The meeting with the recent graduates and alumni revealed and confirmed their good satisfaction with the knowledge and skills obtained. Most of the present were in general satisfied also with their jobs. Some complained that the job has placed them in an environment, where they can't utilize their skills and feel that the years invested in education, are not proper used to their capabilities. There were also opinions that the MTA provides "too good"

education, since numerous graduates are seeking nonmilitary employment, in the high tech economic sector. This is a good result. The skills and awards of the MTA graduates are good and in some areas even better compared to the other universities in Romania. Recommendation: the MTA should perform regularly surveys of graduate opinion, regarding their experiences at MTA, their satisfaction with knowledge and skills, but also job placement. This survey should be anonymous, conducted by students and used for the enhancement of the MTA functioning, programs, services and reputation.

The meeting with employers of the MTA graduates on 3. December from 5-6 p.m. was in many aspects positive and confirming, that the knowledge, skills and awards obtained at MTA are of good standing. There were minor complains from some employers regarding the knowledge in some areas and about the incapability of graduates to use modern laboratory equipment. The need for updating of some MTA laboratories is well known and does not require further elaboration. At the end we may conclude: the Bologna studies at the MTA provide adequate knowledge and trust worthy awards. This is also a confirmation and positive result of the MTA policies. The MTA could devote greater care to the students, student's progression and relevant programs.

### 3.3. BOLOGNA DOCTORAL STUDIES

Doctoral studies are the motor and driving force for new knowledge, supporting and stimulating the enhancement of university education. It seems that this fact is not sufficiently utilized at the MTA. It has to be mentioned, that university studies and learning should not be concentrated only along the development of skills and transferring of existing knowledge to graduates. On the contrary, university studies are educating and preparing students for emerging jobs in the future, knowledge and technology transfer from the university to the economy but also for military utilization. Owing to it the first two cycles of teaching should evolve out of research performed and science knowledge exchange. At MTA there are about 320 doctoral students, but the annual completion rate of about 7.5 % (about 20 promotions) is very low and pointing to several problems. Considering that at MTA there are 41 PhD confirmed advisors who are active in

research, the number of awarded PhD is small. About 1 of 10 students is promoted annually. By presented data it is not possible to assess the time spent until the completion of the PhD.

Recommendation: The MTA should pay attention and improve the efficiency of PhD studies. At prosperous universities doctoral students form the core of research activities and considerably contribute to the university research performance and publications record/output.

This is not happening at the MTA in a sufficient and visible manner. The majority of PhD students should be obliged to perform research at the MTA. The MTA shall consider the establishing of a graduate school, governed by the PhD advisors and strongly connected to the research activities of the MTA. There is an additional advantage of such arrangements. The PhD students can provide also a good help and contribute to the lower size and cost of staff since they can be involved in laboratory training and teaching in the first two cycles.

There are no data available about the PhD students that work at other institutions? Of campus PhD students are not receiving the complete package of needed help. Campus PhD students are associated to the advisors and other research staff. In this regard they are daily supervised and trained in writing conference and journal articles. It is important that after the second year of their studies they are starting assisting staff and advisors in writing research proposals. It is necessary for PhD candidates to gain knowledge and skills for later independent competing for research funding (national and EU).

### 3.4. RESEARCH

This part is devoted to the good practice utilizing research results for institutional progress. This is very essential for improving the study programs. From this point of view also the academic infrastructure is improving due to the research needs and generated income. The comparison made to the number of specialties offered at MTA with the infrastructure and the number of laboratories (89) is revealing that there are nearly a similar number of laboratories as teaching staff employed. According to this we conclude that the infrastructure is rather fragmented and the laboratories minimized according to the teaching specialties. It seems that the laboratories are built to suit

teaching and learning and less to the research needs. Accordingly, there is no "critical mass" of staff associated in these fragmented laboratories. Because of this laboratories are less equipped and capable to support PhD studies, research and development activities. Such arrangement is resulting in less efficient PhD studies and particular in much diversified output characterized with low publication record.

The MTA is too small and can't effort to conduct research in many areas with the same vigor. For about 100 employees, 60 ISI articles and 500 conference papers published in the last 5 years is not a great achievement. Simple arithmetic reveals that the annual output per staff is questionable. This fact indicates that staff development and research activities have to be considered and improved. In particular, because the noncompetitive research funding received by the MTA from the Ministry of defense is about 6.7 % of the total income. The competitive research income is low, only 0.32 % of the total MTA budget. Recommendation: Benchmarking of research and development performance with selected EU institutions is needed. MTA shall start to consider the role of research as a "light tower and compass" for institutional and particular programs and didactic catalyst.

### 3.5 INTERNATIONALIZATION

The outgoing number and duration of the MTA student's mobility is good. The incoming student's mobility is moderate and could be improved. The opinion of incoming students before leaving the MTA should be monitored. These opinions and comments of foreign students could provide valuable information for planning and improvement.

Staff mobility is insufficient and needs improvement in regard of duration and increased number. The frequent arguments that funding shortage is preventing better mobility are incorrect. At universities displaying acceptable mobility two approaches are utilized. The larger laboratories with "critical mass of staff" and curricula adjusted to ensure lower teaching load of professors. Critical mass of teacher is essential for making load sharing of the professor on leave. This is tolerable if the teaching load of staff is not set at maximum level. Considering the number of students matriculated per study

specialties, we noticed that at some specialties the number of students is very low. This is calling for reduction of specialties and providing room for lower staff teaching loads. Staff mobility is essential for staff knowledge renewal and upgrading, but also transfer of knowledge and good practice. Recommendation: benchmarking and improved staff mobility should be ensured. The above said is essential for prosperous future development of the MTA.

### 3.6 QUALITY ASSURANCE

In a formal way all the prescribed commissions and procedures are established and operational at the MTA. There are the Commission of quality assessment and assurance, the instrumented annual reports and prescribed steps in processing and validating of findings. The Academic Senate is discussing the reports and making decisions for improvements, changes and corrective activities that have to be taken.

There are also other control bodies and audits prescribed at the MTA. This is all to ensure proper quality and functioning. Also students are represented in management structures. According to the law they have the power of 25 % votes in each body. This is similar to the established and recommended practice in the EHEA. At the MTA there is a policy to establish groups of students and each of them has a study advisor. This is a good and positive sign how the institution cares for students and their progress, learning and teaching. In the last five years period the MTA number of students has tripled. But the facilities were not upgraded accordingly. Therefore there are serious complaints by the students in regard of crowded and low accommodation standard. The MTA is annually preparing the SER. It is discussed and critically examined by the Academic Senate, but obviously some correcting measures are not applied probably due to financial shortage.

Romania has accepted and elaborated the evaluation methodology, reference standards and list of performance indicators, published by RQAHE. These documents, standards and performance indicators were not presented to the evaluator and therefore this assessment is based on common sense and in the EHEA utilized practices with criteria. In the SER of the MTA all the QA approaches are listed and the law regulations presented rather in detail. It is missing, the evidence of performance and data to support the efficiency and

satisfactory functioning of these systems. In technical terms all QA systems have to be “closed loop feedback systems”. The students for instance complained about the questionnaires they have to fill. Students provide their opinions about the programs and staff performance, but they are missing explanations and do not see expected changes to be applied for rectifying the problems. This is indicating that the “loop” is not closed and that feedback information about corrective measures is not reaching the students. It is a good practice to summarize the opinions posed in questionnaires and immediately inform the students and staff about the findings. The collected information is transferred and displayed to the quality assurance bodies at the institution. This has to be accomplished and happen in a two to three weeks time. In addition, the decisions of the corrective measurements have to be presented to the students in the following next two to three weeks and the students should have the possibilities to complain and provide their opinion about the corrective measures.

It is recommended that the presented methodology of questionnaires handling be applied. The second recommendation is that MTA shall consider ESG standards particular part 1 and part 2. These regulations may assist the MTA for better understanding and adjusting the internal laws and procedures. By doing so, the MTA will better and easier utilize ARACIS prescribed QA activities.

#### 4. EXTERNAL EVALUATION RESULTS

##### 4.1. Managerial capacity for continuous improvement of study programs

The aims and goals of the MTA is the education of military technical, professionals in different engineering fields. It operates like a general public university. There is an added value that MTA is providing, comparing to other universities, by offering military and sports training. The governance of the institution is predominantly conducted by the Ministry of defense, while the management by the MTA, utilizing appointed structures. The beneficiaries provide feedback in many aspects, to ensure and improve the MTA operations. There are several levels of management contributing to the continuous improvements the study programs and MTA operations in general. The Audit department of the Ministry of Defense, the different



commission operating at MTA and the Academic Senate, all are contributing to the improvements. In this regard we can conclude that the control approaches are in place and are functioning. The opinions presented by student and employers are positive. This is indicating an acceptable efficiency of institutional procedures and support that is provided to the educational processes.

The MTA is devoting care to the student's progress, utilizing tutoring and mentorship. There is some monitoring of the reasons for student failure. The students are encouraged freely to use the premises. The MTA is aware that at different laboratories there is a need for better equipment and that the library needs to be entirely renewed. The information disseminated to the public and incoming students is methodologically and in contents similar to other higher education institutions in Romania. But in my opinion it is not sufficient (consider ESG part 1, bullet 1.7: ... in-partial and objective information both quantitative and qualitative about the programs and awards).

The strength of MTA is visible from the decision of taking care for students by tutoring with structured mentorship, but also in the requirement of great discipline associated to all military training institutions.

#### 4.2. The MTA capacity for supporting the progress of teaching and learning activities and of graduate's quality

There are several interlaced activities and system approaches at MTA, directed for the enhancement of teaching and learning activities (3.2, 3.3, and 3.4). The knowledge capabilities and skills of graduates are monitored at the level of the employers be at military institutions or economic enterprises. The MTA is devoting care to receive feedback and proposals in this regard. In addition the senate is monitoring and acting to understand the reasons why some students have failed. The graduation standards and knowledge, skills expected and requested from graduates are not entirely determined by the MTA. They are the result of beneficiaries needs. After the beneficiaries have specified the profile of the graduates the MTA is accommodating and ensuring the provided wishes and standards. The SER from the MTA is informative in this regard. We are missing analytical and evidence data for different claims made in the SER. provided data are not displayed in a convincing manner. There is a

need for improving of the SER content. Also transparency of operations and reporting needs to be improved. Regard to this the following recommendations are composed in a stimulating and supportive manner.


## 6. CONCLUSIONS

The evidence and understanding of the MTA functioning, accomplishments, graduates quality are supporting in most aspects a positive opinion. Being aware that quality can be always improved, we are also aware of the fact that the MTA displays acceptable good functioning and performance. In this regard it is justified to grant confidence to the current operations and activities, as well as justified, to expect quality improvements.

The recommendations to different aspects of the MTA functioning, activities and achievements were implicitly or explicitly presented in chapter 3. Regardless of it some general recommendations should be presented with the aim to challenge the MTA approach and philosophy.

It is acceptable and clear, that the best system of quality assurance, system of governance and management, can't function better than the applied criteria, norms and values. The later applies universal to any institution and not only to the MTA. If criteria, norms and values are set inappropriate, wrong, sloppy, or in misleading manner, they can create great problems.

Recommendation: start adapting performance criteria according to the established and common accepted measures in the European higher education area. In this regard serious and systematic benchmarking is rather helpful and invaluable.

  
15.12.2009