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Education of Software Quality Specialists on the Basis of Academic-industry Collaboration

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Department of Information Technologies

Prague University of Economics

is currently one of the most prestigious informatics departments in the Czech Republic

The department is in charge of lectures in the field of informatics, where about 600 new students are accepted annually.



The goal of the department is to educate top specialists and undertake research activities in the application of information technologies. This goal leads to a number of activities in both, the educational and the scientific areas.



<http://kit.vse.cz>

Outline

- Introduction
- Software Quality Assurance Minor
- Academic-industry Collaboration within SQA Competence Centre
- Conclusion

Role of Software Quality

- Software quality is a key factor in gaining a competitive advantage
- Human resources, especially their level of knowledge and experience, becomes an important success factor

However

- The research focused on the level of testing and quality management in software companies in the Czech Republic in 2012 indicated a low availability of managed and structured training on quality management and testing



- Opportunity for universities
- Benefits of academic-industry collaboration

For companies

The knowledge of academics and their experience from the research field represents a substantial source of know-how as well as an opportunity to enhance company's processes and operation

For universities

Collaboration with practice provides universities with an insight in practical business world and helps them to enrich course syllabus with real life situations and also to better prepare their students for their future career

Importance of an Academic-industry Collaboration

- It is necessary to educate students with adequate knowledge and skills
- A suitable way to do so is to enable students to participate in practical projects through an industry and academia collaboration
- The aim of this presentation is to show the possibilities of the academic-industry collaboration in the field of Software Quality Assurance
- The real outcomes of this collaboration are
 - the Software Quality Assurance minor intended for major students at the University of Economics in Prague
 - and the Software Quality Assurance Competence Centre

Software Quality Assurance Minor

Reasons for Development

Reasons for development

- The demand for university educated specialists in the software quality and testing area in the Czech Republic has been growing strongly in recent years
- The practices of some companies that hire temporary workers and unqualified testers for manual testing proved to be wrong
- Companies lack qualified specialists, especially test analysts and automation testers for functional, performance or integration testing

Individual Software Testing and Software Quality Assurance courses have been taught as optional courses within the Applied Informatics undergraduate program and Information Technologies graduate program for more than 10 years

Now, the entire Software Quality Assurance minor has been prepared.

Concept of minor provides students with education in other areas in addition to their main specialization and thus supplements their chief focus.

Software Quality Assurance Minor

Aim and Target Audience

- Aim is to equip students both with theoretical knowledge and practical experience in the software quality assurance and testing area and to enable them to acquire a professional career as:
 - IS quality managers,
 - Test managers,
 - Test analysts,
 - Automation testers for functional, performance and integration testing.
- The Software Quality Assurance minor is intended not only for students of the Information Technologies major but also for students of all faculties as:
 - Faculty of Business Administration,
 - Faculty of International Relations,
 - Faculty of Finance and Accounting.

Software Quality Assurance Minor Study Program

Compulsory courses

18 ECTS

Ident	Name	ECTS
4IT446	Software Quality Assurance	6
4IT473	Software Test Management and Supporting Tools	6
4IT474	Test Analysis and Design	6

Software Quality Assurance Minor Study Program

Optional Courses

12 ECTS

Ident	Name	ECTS
4IT477	Software Testing Internship	6
4IT478	Automated Functional Software Testing	3
4IT476	Software Load Testing and Performance Optimization	3
4IT475	System Integration Testing	3
4IT479	Software Testing in Agile Projects	3
3PS422	Training of Social and Managerial Skills	6
4IT215*	Information Systems Analysis and Design	7
4IT218*	Databases	6

Software Quality Assurance Minor

Software Testing Internship

From the student's point of view

- possibility to gain practical experience in testing, ideally in a specific area studied within optional courses

Companies

- have the chance to involve qualified students in their projects
- can choose from outstanding students to work on their projects as the selection procedure is quite severe and competitive.
- are able to specify a concrete set of skills required for different positions within the project
- the internship program brings along low labour costs and thus helps companies with the project cost efficiency
- if both sides find their cooperation beneficial, they may enter into a long-term collaboration

Software Quality Assurance Minor

Final Remarks

- The minor is completed by a state exam.
- Students may write their diploma thesis also on a topic taught within the minor and then defend it at the state exam.
- The whole specialization is prepared in a tight cooperation with industry and most courses are taught by test professionals.
- The SQA minor is opened from the academic year 2016/2017.
- Right in the first year, a total of 30 students signed up for the minor.

Software Quality Assurance Competence Centre

History and Aim

- At the Faculty of Informatics and Statistics, University of Economics in Prague since 2012
- The aim is to provide companies with expert advice and guidance in planning and implementation of software quality management processes, especially in testing
- Currently over 20 members - PhD students, students of bachelor and master programs of Informatics and Information Technologies

Software Quality Assurance Competence Centre Companies

- Students have the possibility to participate in real and practical business and research projects during their studies
- Internal training
- Within bachelor and diploma theses, students develop a number of methodologies and manuals that serve as a basis for other students and also for educational purposes

SQA CC collaborates with companies:

- NESS Czech, s.r.o. ,
- HEWLETT-PACKARD, s.r.o. ,
- TRASK SOLUTIONS, a.s. ,
- IBM Czech Republic, s r.o. ,
- Tesena s.r.o. ,
- T-Mobile Czech Republic, a.s.,
- MSD

Software Quality Assurance Competence Centre

Services and projects

- The SQA Competence Centre offers a wide variety of services in the field of quality management, which includes know-how and special skills that are not usually available in the practice. These include:
 - Automated functional testing using commercial and open source tools,
 - Performance testing,
 - Integration testing,
 - Mobile application testing,
 - Testing methodology implementation,
 - Testing tools integration.
- Two examples of SQA Competence Centre successful projects:
 - the REGAN (REGression ANalysis) project
 - Integrated Testing Tool (ITN)

Conclusion

- Newly opened Software Quality Assurance minor
- It is a pioneer program among IT university programs in the Czech Republic
- Software Testing Internship course represents a key element of the academic-industry collaboration
- To enhance the academic-industry collaboration, the Software Quality Assurance Competence Centre is operating at the Faculty of Informatics and Statistics since 2012

Thank you for attention

