Fitting ICT education into

Europe will face a shortage of up to 900,000 ICT (information and communication technology) professionals by 2015. This well-established observation by analysts from the European Commission sounds overwhelming. In reality, the impact is even more widespread if we interpret it as: "European educational institutions are not developing enough (personnel) resources to shrink the gap."

Slovakia, at the moment, is in a relatively positive position when it comes to information and communication technologies. In the area of Eastern Slovakia, alone there are some 6,500 ICT specialists, and in the Bratislava region an additional 12,000 - 15,000 specialists work either directly in ICT or ICT-enabled sectors. According to forecasts of the IT Association of Slovakia and the Košice IT Valley Cluster, the number of ICT jobs in the eastern regions of Slovakia may increase to 10,000 within the next five years. But increasing the number of ICT educated professionals requires a game change; i.e., companies need to be more involved in the learning process – not only at the university level, but in particular to expand the reach of the ICT sector by cooperating with secondary schools to design and implement long-term solutions to fill the mentioned gap in an effective way.

How? By refreshing Dual Vocational Education.

As analyzed by the AmCham "Year of Education" initiative throughout 2012, the main added value of dual education is the utilization of close partnerships between educational and corporate institutions as an asset in preparing and developing ICT professionals. The philosophy of dual education links theoretical schooling and the acquisition of knowledge at school with the development of hands-on hard and soft skills and practical experience within a company. While the exact ratios vary, a typical share of practical education is as high as 70% of the overall curriculum, which represents some 1,600 hours of practical skill building during a three-year study, with an additional 1,050 hours of on-site professional practice.

These ratios are key competitive features of the new dual vocational education program that formally began in April at a workshop in Košice co-organized by AmCham. In September 2013, a pilot dual vocational education study in information and communication technologies (ICT) will be launched as the result of fruitful collaboration between the Secondary Vocational School for Electrotechnics in Košice and T-Systems Slovakia. The initiative also received valuable conceptual guidance from AmCham and the Slovak-German Chamber of Commerce and Industry.

> **We learn to do something by doing it. There is no other way.**
>
> John Holt

Once vocational study at the post-secondary level like the one in Košice gets off the ground, graduates of technically focused secondary schools will be able to develop their practice-oriented ICT skills and competences. Unlike other programs, the dual vocational education is a state-recognized and state-accredited study provided free of charge to the students. The three-year long advanced ICT training is formally at the same level of complexity as a university Bachelor's study, but with a stronger practical component. As is common in other countries, the program is going to be certified by both the Slovak Chamber of Commerce and Industry as well as the Slovak-German Chamber of Commerce and Industry to achieve national and international recognition. Higher vocational study in ICT enables students to realize their potential in the industry with the highest added value of becoming ICT "versatilists". That is, professionals specialized in one particular ICT area, yet with a broad overview of related ICT areas as well as non-ICT skills such as project, process, or business management. This kind of 'in-depth and scope-oriented'

The main benefits of the dual vocational education in ICT

- 30 to 60 certified ICT specialists ready each year to enter local labour market
- Practical training provided during the study, hence, graduates are prepared for work immediately after the graduation
- The program formally approved and aligned to the State Educational Framework of the Ministry of Education, Science and Culture of SR.
- In addition to this, internationally accredited by Slovak-German Chamber of Commerce and Industry.

the future

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Dual Education in a nutshell

Study programme consists of three mutually complementary types of subjects:

- specialized ICT subjects focusing on in-depth skills development (55 % of the curriculum)
- specialized non-ICT subjects focusing on scope development (25 % of the curriculum)
- subjects developing language and social skills (20 % of the curriculum)

Extent of practical education:
The practice will be accomplished directly in an ICT company (T-Systems Slovakia) within the proposed study programme as follows:

- 1st year - 4 consecutive weeks of practice (a minimum of 140 working hours)
- 2nd year - 10 consecutive weeks of practice (a minimum of 350 working hours)
- 3rd year - 16 consecutive weeks of practice (a minimum of 560 working hours)

expertise mix is currently not readily available either in the European or the Slovak labor markets!

However, the philosophy of dual education is not only about benefits. It introduces new requirements regarding the corporate responsibility of companies and chambers of commerce. We need to mention the moral responsibility to ensure the curriculum is up to date and generally applicable across the ICT industry. We also need to mention the financial responsibility, especially in terms of sharing the costs of educating ICT professionals. Due to the strong practical focus the costs of preparing a skilled professional are two to three times higher than what the State currently pays for a single student. Thus, a working partnership needs to be established and nurtured between schools and companies in order to get value added for all parties. Then the main effect of the system will be to shift the accountability of educational institutions from focusing purely on satisfying the State to satisfying those who are creating the jobs – the companies and entrepreneurs.

The educated differ from the uneducated as much as the living from the dead.

Aristotle

Dual education philosophy emphasizes harmonization of employers' business needs with the knowledge and skillset of secondary and higher education graduates. It is particularly this harmonization that makes dual education more than a cosmetic change in the Slovak educational framework. When

running full speed, initiatives like the one started at T-Systems Slovakia have the potential to completely re-define the ICT labor market in Slovakia. A relatively saturated labor feed can become sustainable within three to five years, which in turn can lead to doubling the number of ICT jobs in the country. T-Systems Slovakia has recognized this historic opportunity and decided to respond to a recent initiative supported by AmCham, the IT Association of Slovakia and the Slovak Government. The outcome is a public pledge at the request of the Digital Leader (State Secretary Peter Pellegrini from the Ministry of Finance SR) to form a Grand Coalition in Slovakia for digital skills and digital jobs.

Admittedly, some 50 new graduates per year in a single ICT company and a single school will make little difference to the Digital Leader's agenda, and an even lesser impact on the shortage of ICT professionals in Europe as mentioned at the beginning. On the other hand, the dual education philosophy presents a shift in the approach to educating young people and implicitly carries a strong scaling effect. Consider, according to the Slovak Institute for Information and Prognoses in Education, that there are more than 8,000 annual graduates from Slovak secondary vocational schools with a potential link to ICT, electronics, process management, and related fields. From these, less than 4,000 graduate from universities with a degree directly linked to ICT and related fields. If only a portion of these secondary school graduates continue into higher vocational education in ICT, there would be an interesting volume emerging in Slovakia alone – some 2,000 additional specialists per year added to those 4,000 university graduates, the scaling effect is thus up to 50%. How realistic this scaling is depends on the interest of the ICT industry and the leading ICT players in Slovakia. Should they embrace higher vocational education as a respectable foundation for a career in ICT, the potential can be indeed achieved within five to ten years from today. Are we ready for this shift in the Slovak ICT industry?

Martin Džbor, Head of Strategy Development, T-Systems Slovakia

Kristián Kuchár, Strategy Development Specialist, T-Systems Slovakia

Ivana Krištínová Communication Specialist, T-Systems Slovakia