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for Digital Jobs**

WP4 - Certification

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1 Introduction to the Deliverable and Scope

The outputs described in this deliverable outline the uptake of the European e-Competence Framework (e-CF) powered tool at national and European level. This deliverable is part of Work Package (WP) 4 – Certification. The main objective of WP4 – Certification is to strengthen the ICT professionalism, by promoting the e-CF in Europe.

This deliverable relates to task 4.3 which aims to:

- Accelerate the adoption of the e-CF through the CEPIS e-Competence Benchmark Tool,
- Allow ICT professionals/aspiring professionalism to identify the competences they need/lack for various ICT roles (using the e-CF) enabling them to adapt to market demand and communicate competences across borders,
- Work with partners to generate an update of the e-CF at national and EU level,
- Raise awareness of the e-CF,
- Promote and share the resulting data on usage to demonstrate the value of the e-CF.

This deliverable will be widely disseminated once approved among national and European stakeholders to show the real-world, practical application of the e-CF in action. It shows how ICT practitioners can identify the competences they need/lack for various ICT roles, enabling them to adapt to market labour demand and communicate their competences in a comparable manner across the EU.

2 Context

The increasing demand for ICT practitioners is hampered not only by the lack of new entrants into the profession, but also by the mismatches in the competences that practitioners have today. While ICT provides crisis-resistant employment, Europe currently is not producing the talent with the right skills to boost competitiveness. The ICT professional bodies and informatics societies that are the members of CEPIS recognise the need to reduce the gap between supply and demand and commit to taking action to redress the balance and promote ICT professionalism.

Under the Grand Coalition for Digital Jobs, the European Commission has launched a series of practical initiatives to help fill the growing number of vacant ICT-related jobs across Europe, and to ensure that more people get the training needed to work in the digital economy. To support the roll-out of the Grand Coalition for Digital Jobs, DIGITALEUROPE has collaborated with partners such as ECDL Foundation, CEPIS and others to establish the Secretariat of the Grand Coalition. This deliverable is part of the WP4 within the strategy of the Secretariat of the Grand Coalition.

The purpose of this deliverable is to present the national and European-level uptake of an e-CF powered tool, which is a free, online interactive tool for current and future ICT professionals to identify the competences they need for various ICT roles, enabling them to adapt to labour market demand. It will enable individuals and recruiters to map their competences against a range of profiles and better equip themselves for future roles and employment. It will allow companies to benchmark entire departments, identify workforce gaps and plan accordingly.

It is powered by the European e-Competence Framework the common language for ICT competences created by the CEN workshop on ICT skills and therefore provides a standard upon which Europeans can better understand what is needed for their current and future IT roles based on the ICT Professional Profiles developed by CEN.

Several national reports have been produced for each participating country which aggregate the information for that country and produce a snapshot of the ICT professional landscape. This report will provide information to support policy making, as well as update information for the training industry on market needs.

The European level report brings together all of the data from throughout Europe and provide a basis for policy recommendations on future actions to support the ongoing development of the ICT profession.

3 Executive Summary

This report provides the Hungarian results of a European initiative designed to identify the digital competences held by ICT professionals across 31 countries in Europe and beyond. This report is based on the CEPIS e-Competence Benchmark an online, interactive tool that enables individuals and organisations to assess their competences against the European e-Competence Framework (e-CF)¹. Using the results of the CEPIS e-Competence Benchmark, this report offers a unique view of the status of professional e-competence in Europe and shows the practical application and real-world usage of the e-CF.

As experts predict that the demand for skilled ICT professionals will far outstrip supply, it is more important than ever to provide current and future professionals with the ability to compare their competences against those needed for typical ICT job profiles throughout Europe. This helps identify training and professional development opportunities to transition to new roles and even to start an ICT career. This work was carried out as part of the Grand Coalition for Digital Jobs, an EU-wide initiative to address the competence mismatches and fill vacancies of ICT practitioners to boost employment.

The results gathered through this pan-European initiative provide an insight into the level of professional competences and a snapshot of the types of ICT professions in each country. It also is a means to implement the e-CF, demonstrating to individuals and organisations how it can be of immediate and practical benefit. The ability to determine which competencies are underdeveloped on a national and European scale can assist policy makers as well as training providers with timely information for decision making. This, in turn, can facilitate the development of focused training courses to further educate the workforce so as to meet the needs of the labour market.

The research has been conducted via an interactive, free, web-based tool that is powered solely by the European e-Competence Framework ([e-CF](#)) and the accompanying professional profiles. The e-CF has been developed by the CEN (European Committee for Standardization) Workshop on ICT Skills and is supported by the European Commission. This framework identifies 36 ICT competences which are all used in this tool along with the professional job profiles developed by CEN.

This project has been led by the Council of European Professional Informatics Societies (CEPIS) and implemented in conjunction with CEPIS members. Special thanks to the [John von Neumann Computer Society \(NJSzT\)](#) who led the project in Hungary and provided expert perspectives on the national ICT landscape.

¹ For more information about the European e-Competence Framework see: <http://www.ecompetences.eu/>

4 Methodology

This initiative has been conducted in 31 countries in Europe and beyond using an interactive, web-based tool: the [CEPIS e-Competence Benchmark](#). The European results are compiled based on over 2,000 responses provided by participants from these countries.

It is important to note that the results presented here reflect the constituency of those who participated in the CEPIS e-Competence Benchmark. In some countries that may have implications for the general statistical significance of the data. The CEPIS e-Competence Benchmark has been completed by individual respondents who consider themselves to be ICT practitioners, or who will soon become one, and is divided into three sections as described below. It is fully compatible with and is based on the e-CF and associated professional profiles.

4.1 Personal Information

In the online tool, each respondent is invited to register and then enter personal information including education background, employment status, organisation size, and industry. They then select the ICT profile that matches their current role from the following 23 professional profiles, grouped into 6 families:²

BUSINESS MANAGEMENT	Chief Information Officer Business Information Manager ICT Operations Manager	DESIGN	Business Analyst Systems Analyst Enterprise Architect Systems Architect
SUPPORT	Account Manager ICT Trainer ICT Security Specialist ICT Consultant	DEVELOPMENT	Developer Digital Media Specialist Test Specialist
SERVICE & OPERATIONS	Database Administrator Systems Administrator Network Specialist Technical Specialist Service Desk Agent ³	TECHNICAL MANAGEMENT	Quality Assurance Manager ICT Security Manager Project Manager Service Manager

Figure 1 ICT Professional Profiles

4.2 Competence Questionnaire

In this section of the assessment, the respondent completes the competence questionnaire, which consists of 36 competences. The questionnaire is divided in five areas of competences - Plan, Build, Run, Enable, Manage - that are derived from ICT business processes.

For each competence, the level options available are: None, Knowledge, Experience, or Knowledge and Experience. Upon selecting 'Experience' the respondent is asked to indicate their corresponding level of experience. Additional information, such as

² For more information on the professional profiles : <ftp://ftp.cen.eu/CEN/Sectors/List/ICT/CWAs/CWA%2016458.pdf>

³ The profile of *Service Desk Agent* is excluded from the present analysis as the profile was sufficiently broad to encompass most respondents, thus skewing the results.

examples of the knowledge and skills associated with that competence, is also available to assist the respondent in choosing an appropriate level.

B-Build	None	Knowledge	Experience	Knowledge & Experience
B.1. Design and Development Designs and engineers software and/or hardware components to meet required specifications, including energy efficiency issues. Follows a systematic methodology to analyse and build the required components and interfaces. Performs unit and system testing to ensure requirements are met.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Please select all currently relevant experience levels (select one or more as required)				
Level 2 Systematically develops small components.	Level 3 Acts creatively to develop and integrate components into a larger product.	Level 4 Handles complexity by developing standard procedures and architectures in support of cohesive product development.	Level 5 Has ultimate responsibility for strategic direction of product, technical architecture or technology development.	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="button" value="OK"/>				
B.2. Systems Integration Installs additional hardware, software or sub system components into an existing or proposed system. Complies with established processes and procedures (e.g. configuration management), taking into account the specification, capacity and compatibility of existing and new modules to ensure integrity and interoperability. Verifies custom performance and	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 2 Example of Competence Level and Experience Level

4.3 Competence Questionnaire

Upon completion of the questionnaire, the respondent is presented with personal results. These results are displayed on a graphical radar, split into 36 segments (one for each competence) as illustrated in [Figure 3](#). The graphic will show which of the 23 ICT professional profiles best matches the respondent's e-competences, regardless of the profile the respondent selected.

The results are represented in a proximity index which gives an indication of how the respondent's competences match the requirements of the specific job profile (see [Figure 4](#)). A high proximity index indicates that the respondent has the necessary competences for this role.

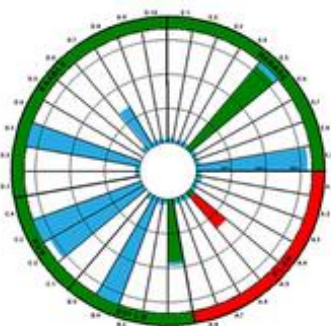


Figure 3 Personal Results: the 'Radar'

View report	Your proximity to this profile	View e-CF profile
SYSTEMS ANALYST	84.75 %	
ICT TRAINER	76.47 %	
TECHNICAL SPECIALIST	59.09 %	
DIGITAL MEDIA SPECIALIST	51.43 %	

Figure 4 Personal Results: Proximity Index

Moreover, the results also indicate the competences that the individual should seek to improve, as well as the competences that exceed the level required for the given profile.

Each respondent can review their proximity to any other professional profile to assess their potential to move into a new role, and export the results into a report that may be printed.

4.4 Proximity Profiles

The Proximity Profile is used to identify and classify respondents into homogeneous groups in terms of specific skills (professional profile).

The CEPIS e-Competence Benchmark uses the 23 professional profiles as defined by the CEN Workshop on ICT skills. Each profile is characterised by a specific set of competences (ranging from two to five competences) selected from the 36 competences identified and described in the e-CF.

An algorithm produces a score, based on the knowledge and experience reported, for each of the 23 profiles. These scores are then compared with what is required for each profile and expressed as a percentage match. The highest score shows the profile(s) that is closest to the expertise of the respondent. This is referred to as the Proximity Profile. The level of proximity is shown as a percentage: a 100% proximity index means that the competence declared by the respondent completely satisfies the requirements for that profile.

4.5 Competence Proficiency Index

The Competence Proficiency Index (CPI) is used to measure the degree to which the competencies identified by the e-CF framework are represented in Europe today.

On the basis of the respondents' declaration of competence, a Competence Proficiency Index is computed for each of the 36 competence identified in the e-CF. This index, expressed as a percentage, represents the degree of proficiency for each competence with respect to the e-CF. So, a 100% Competence Proficiency Index means that the respondent declared to have relevant experience at each one of proposed levels of competence.

The analysis of the Competence Proficiency Index of each competence can be useful to design detailed training paths to cover the competence gaps.

4.6 Criteria for Inclusion and Country Level Analysis

In order to ensure the integrity of the results, certain criteria for inclusion of the results were established at the level of the individual response as well as at the country level.

The criteria for individual responses were established so as to exclude responses that are incomplete, or completed in a manner that is implausible. Implausible

responses include those that for example have the highest level of knowledge and experience in all competences. Responses that do not comply with the established criteria have been excluded from the results.

The data validation ensures that only results meeting the following criteria are included:

- knowledge of 5 or more competences,
- experience in no more than 31 competences,
- Proximity Profile score(s) of at least 40%,
- ex-aequo⁴ top score in 5 profiles or less.

With the high number of participating countries, it was necessary to decide upon the baseline criteria to ensure that the volume and the quality of responses were suitable for country level analysis. The following criteria were adopted to ensure the integrity of the country reports:

- a competence profile is included when 10 or more valid questionnaires are completed. In other words a cluster of 10 respondents enables a professional profile to be analysed for that country,
- a country profile can be generated where there are more than 50 valid assessments completed, and at least one competence profile has 10 or more valid assessments.

4.7 The European Benchmark

All country results are compared to the European benchmark, sometimes also referred to as European average. In order to avoid distortions due to a higher number of contributions from certain countries, the European benchmark has been computed as a weighted mean, taking into account an equal number of contributions from those countries which, although in varying degrees, have proved to be the major contributors.

⁴ Assessments which show the same proximity score for more than one profile are counted as many times as the same score appears.

5 Respondent Demographics

The research was launched across 31 countries in Europe and beyond. Over 2,000 current and future ICT practitioners participated in the research.

This chapter provides an overview of the demographics of Hungarian respondents. Thanks to the John von Neumann Computer Society (NJSzT), 78 respondents were assessed using the CEPIS e-Competence Benchmark, which resulted in 2 professional profiles qualifying for analysis.

5.1 Respondents by Age

The Hungarian respondents represented a range of age groups as highlighted in [Figure 5](#)⁵. The average age of respondents in Hungary is around 48 years old, six years older than the European average.

As shown in [Figure 5](#), the percentage of the under 30 years and 30-40 segments are slightly lower than the European average. The 40-50 segment shows a wider gap. Almost a half of Hungarian respondents belong to the over 50 segment, which is more than double of the European average. National experts note that the most active young ICT professionals are often compelled to leave Hungary to find employment.

The Technical Specialist is the youngest profile with an average of 46 years, while the ICT Trainer profile is the oldest (50 years old).

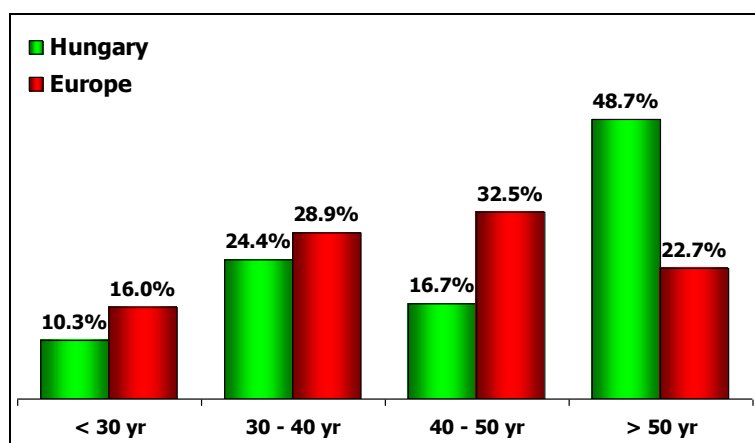


Figure 5 Respondents Distribution by Age

5.2 Respondents by Gender

The gender results show that there is still a large degree of gender imbalance in ICT; in fact, the comparative analysis in [Figure 6](#) shows that women in Hungary represent

⁵ Note: as '<20 yr' and '>60 yr' classes count for a low % of total assessments (respectively <1% and about 5%), they have been grouped into the adjacent class. As a result, only four age classes are shown: '<30 yr', '31-40 yr', '41-50 yr', and '>50 yr'.

only 15% of ICT professionals, in line with the European average which also stands at 15% in the sample.

The highest representation of female ICT professionals was found among ICT Trainers (29%), and there were no women at all among Technical Specialists in Hungary.

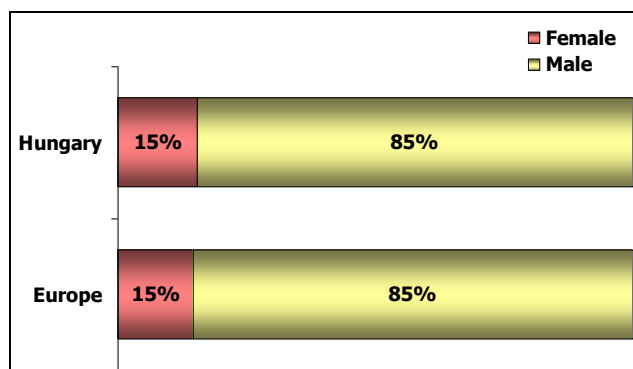


Figure 6 Respondents Distribution by Gender

5.3 Respondents by Education Level

The respondents were asked to select the highest level of education that they had achieved. The majority of the respondents in Hungary (90%) have at least a degree level qualification, showing the importance of third level qualifications in gaining employment in this sector. The Hungarian rate of 90% is quite high compared to other European countries that have an average of 86% in this sample.

Furthermore, 63% of Hungarian ICT professionals obtained a fourth level qualification (master's degree or doctorate). This is the highest rate among the analysed countries and it is significantly higher than the Europe's average rate of 40%.

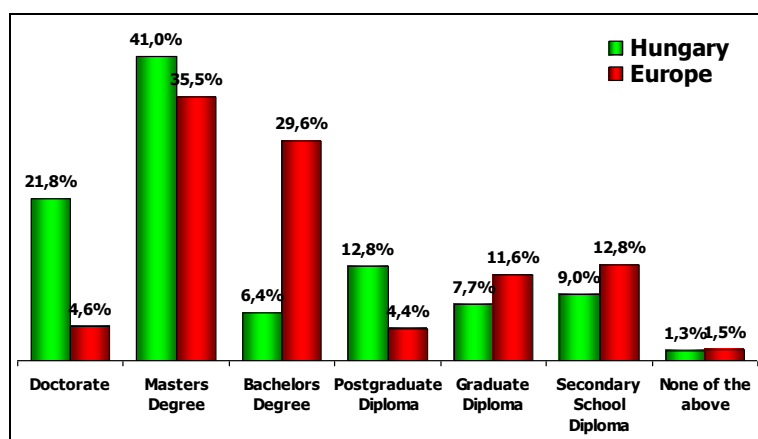


Figure 7 Respondents Distribution by Education Level

When looking at the education level for each ICT profile, it is generally equal to Hungary's average of 90%. For instance, 91% ICT Trainers and Technical Specialists have at least a degree level qualification. A different situation appears for

the rate of master's/doctorate degree holders. In this case, ICT Trainers (76%) shows a rate strongly higher than the average of Hungary (63%).

5.4 Respondents by Educational Field

The wide range of educational backgrounds of ICT practitioners points to the fact that the ICT profession is both attractive and accessible to graduates from different faculties. Three out of four respondents have an IT-focused background. This means that one fourth of Hungary and European professionals have an education in which IT was either a side subject or not significant in their studies.

A prevalence of IT-focused education appears in all Hungarian profiles in the sample. For instance, IT was central component of the education of ICT Trainers (71%) and Technical Specialists (64%).

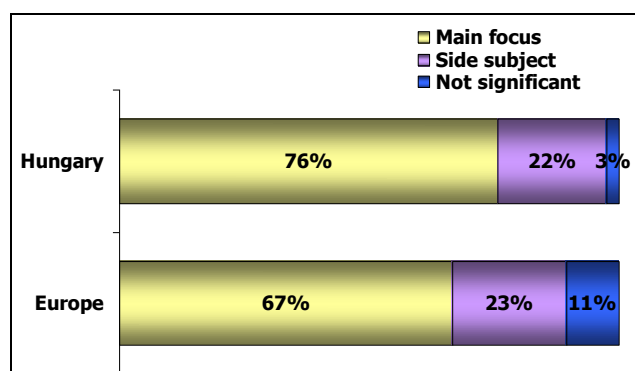


Figure 8 Respondents Distribution by Educational Field

5.5 Respondents by Industry Sector

Hungary has a slightly higher number of respondents working for the IT demand side (51%) than the European average of 49%. This trend is more pronounced for certain ICT profiles. For example, 57% ICT Trainers come from the IT demand side while the European average is 53%. This is also the case for Technical Specialists: 64% come from the IT demand side, while at European level the average is only 46%.

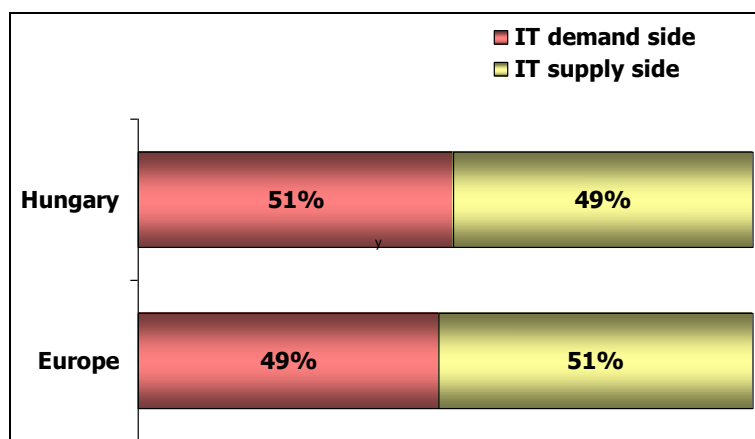


Figure 9 Respondents Distribution by Industry Sector

5.6 Respondents by Enterprise Size

The distribution of respondents by organisation size shows a preference for smaller enterprises in Hungary. The rate of respondents in micro or small enterprises (1-50 employees) is 33% in the sample, while 28% work in larger companies. The European average shows the opposite picture: 24% of respondents work in micro/small enterprises and 36% work in large organisations with more than 1,000 employees.

A number of profiles are more prevalent in smaller organisations. 33% ICT Trainers work in micro/small enterprises and only 17% work in larger organisations. Similarly, 46% of Technical Specialists work in micro/small enterprises - almost double the European average (24%) - and 27% work in large enterprises (European average: 33%).

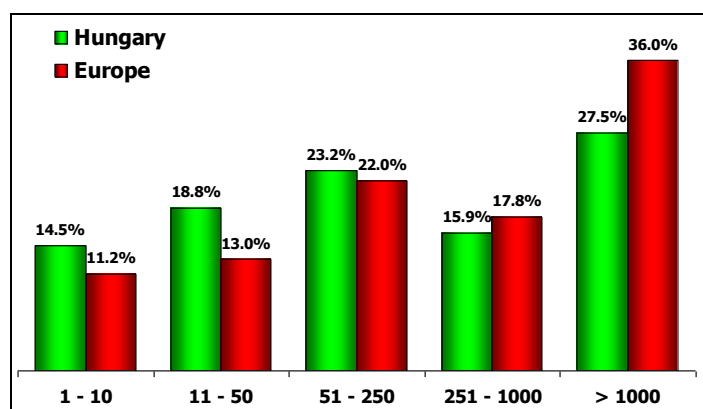


Figure 10 Respondents Distribution by Enterprise Size

5.7 Respondents by Professional Status

The large majority of Hungarian respondents hold full-time positions⁶ (73%), which is lower than the European average of 78%. When looking closely at the ICT profiles, it

⁶ Note: as 'Full time employee' choice counts 80% of total assessments, the other items were grouped as follow: 'Part time employee / Self-employed', and 'Student / Unemployed / Retired'.

appears that the rate of Hungarian Technical Specialists working as full-time employees (64%) is much lower than the European average (83%).

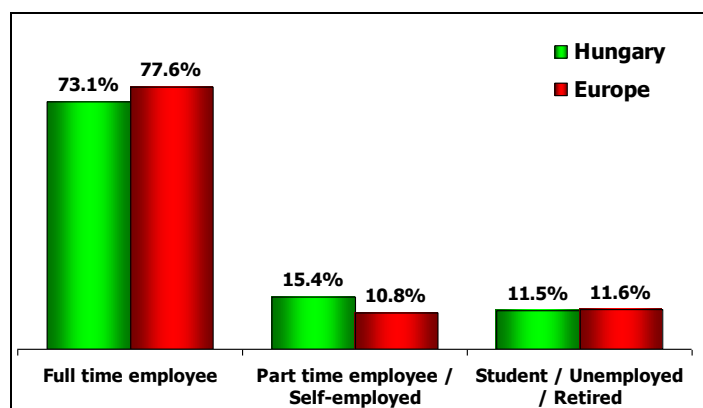


Figure 11 Respondents Distribution by Professional Status

5.8 Respondents by Declared ICT Profile

[Figure 12](#) shows the distribution of ICT profiles chosen by the respondents during registration (before starting the assessment). This subjective point of view is based on their experience and the actual role they hold. It differs from the Proximity Profile as explained in chapter 1.4.

Almost all of the 23 ICT profiles were selected. However, 11 profiles were only selected by 3% or less: Business Analyst, Database Administrator, Digital Media Specialist, ICT Security Manager, ICT Security Specialist, Quality Assurance Manager, Service Manager, Systems Administrator, Systems Analyst, Systems Architect, and Test Specialist. Three profiles were not selected at all: Enterprise Architect, Account Manager, and Service Desk Agent.

Only three of the Hungarian self-declared profiles had a noticeable difference with the respondent rate of their European colleagues: ICT Trainer (14.1% in Hungary and 3.7% in Europe), ICT Consultant (15.4% in Hungary and 10.9% in Europe), and Project Manager (9% in Hungary and 13.6% in Europe).

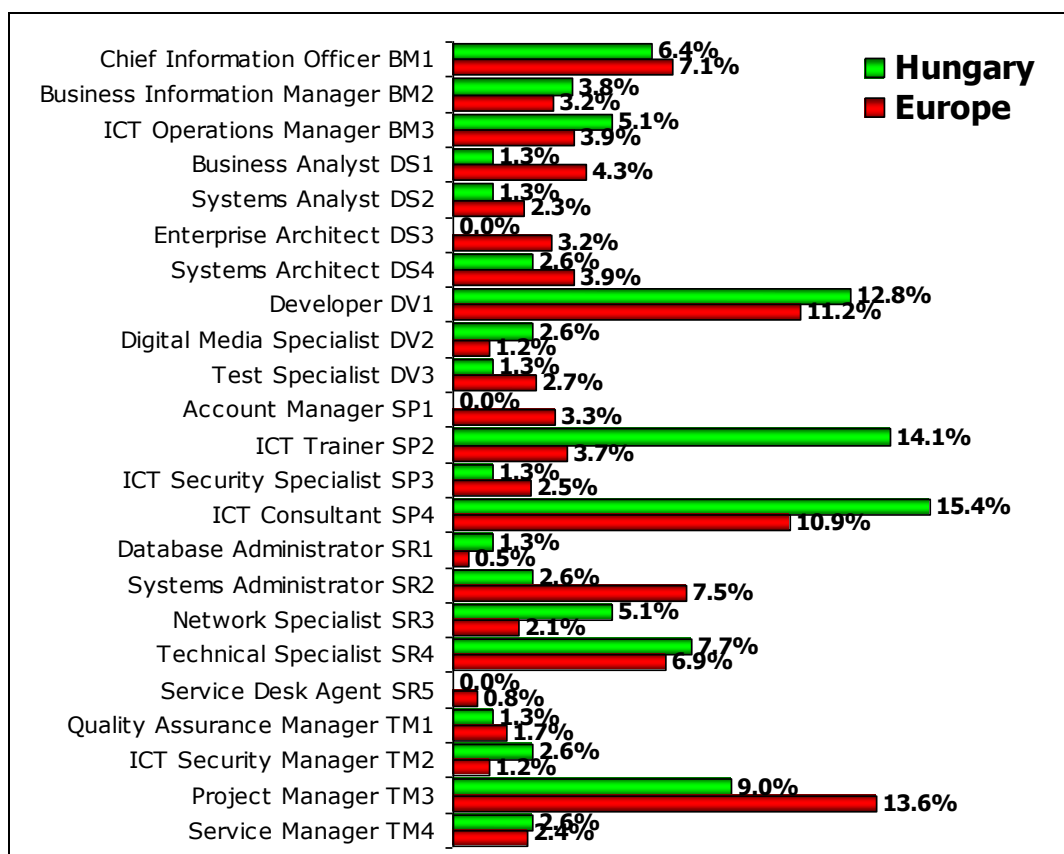


Figure 12 Respondents Distribution by ICT Profile

6 Proximity Profiles and Competences

6.1 Respondents by Proximity Profile

Based on the calculated Proximity Profiles, we can see a picture emerge of ICT profiles from the competences declared by the Hungarian respondents.

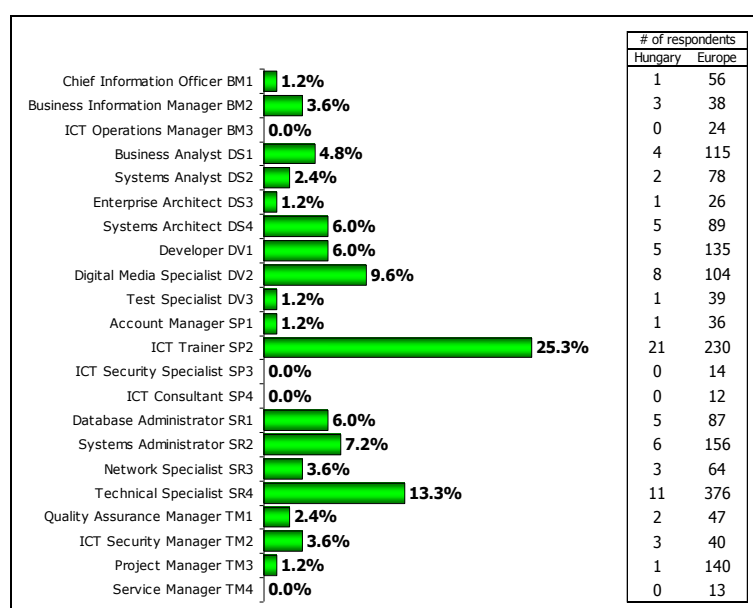


Figure 13 Respondents Distribution by Proximity Profile

A high rate of respondents fit the roles of ICT Trainer, Technical Specialist, and Digital Media Specialist. The ICT Trainer profile shows a rate that is twice as much (25.3%) as the European average of 12%. A similar trend is observed for the Digital Media Specialist profile: 9.6% in Hungary vs. 5.4% across Europe. Conversely, there is a lower rate (13.3%) of Technical Specialist profiles in Hungary compared to the European average (19.6%). There is also a much lower rate of Project Managers in Hungary (1.2% vs. 7.3%).

6.2 Comparison between Professional Profile and Proximity Profile

An analysis of the profile selected by ICT practitioners and the Proximity Profile, i.e. the profile that fits best with the competences that were declared, shows a large variance for many of the profiles in the case of Hungary in this sample.

As can be seen from [Figure 14](#), the Technical Specialist profile is a declared profile for only 8% of the respondents in Hungary, but an analysis of their competences leads to 14% of all practitioners having the necessary competences for that role. This trend, although with a slightly smaller gap, is replicated across Europe, as seen in [Figure 14](#), where only 7% of European respondents declared to be Technical Specialist, but 23% of practitioners had the required competences for this role.

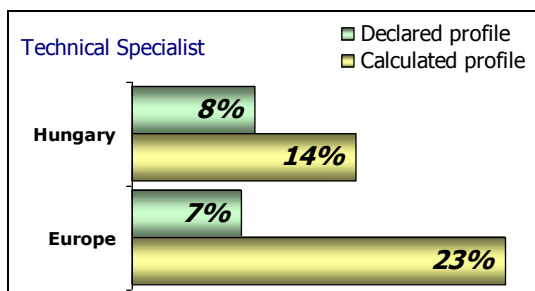


Figure 14 Technical Specialist: Declared and Calculated Profile

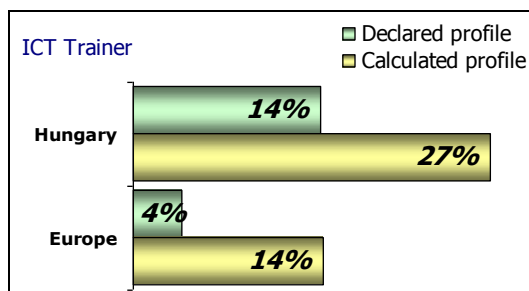


Figure 15 ICT Trainer: Declared and Calculated Profile

In Hungary, this case is also noticeable with ICT Trainers. Only 14% of Hungarian respondents in the sample selected this profile, but 27% of all respondents in Hungary actually hold the necessary competences for this role. This trend is replicated across Europe, as seen in [Figure 15](#), where 4% of European respondents declared they were ICT Trainers, but 14% of all practitioners held the required competences.

In general, the difference between the declared and the calculated professional profile highlights the importance of the level of competence granularity for each profile. The Proximity Profiles are created on the basis of the competences (and their proficiency levels) as self-assessed by respondents, and combined with an appropriate algorithm that calculates the Proximity Profile. In contrast, the declared profiles are simply selected by the respondent according to the job title they hold. The declared profiles can differ greatly from the calculated profile as a result.

Only 17% of the declared profiles of Hungarian respondents match the calculated profile (the European average is 23%).

For this reason, only the data from the calculated profiles is used for analysis: the calculated profile is a more precise profile.

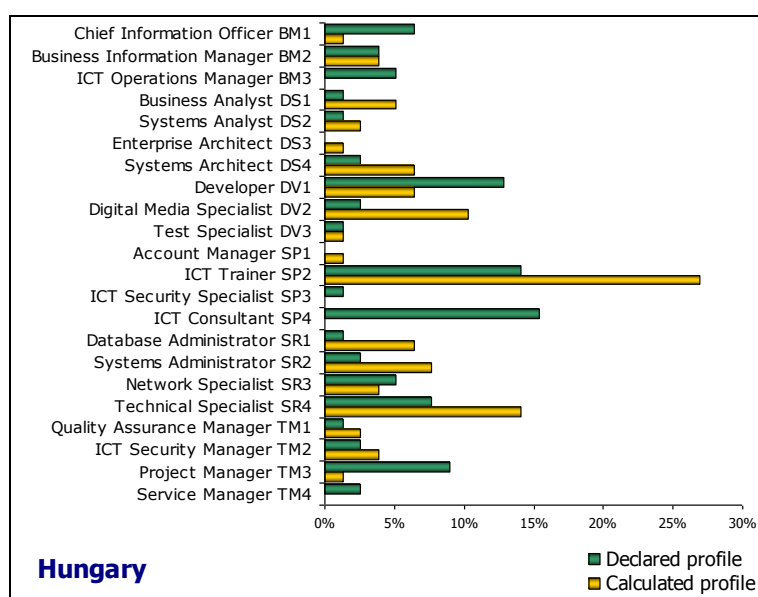


Figure 16 Comparison of Declared Profile and Proximity Profile

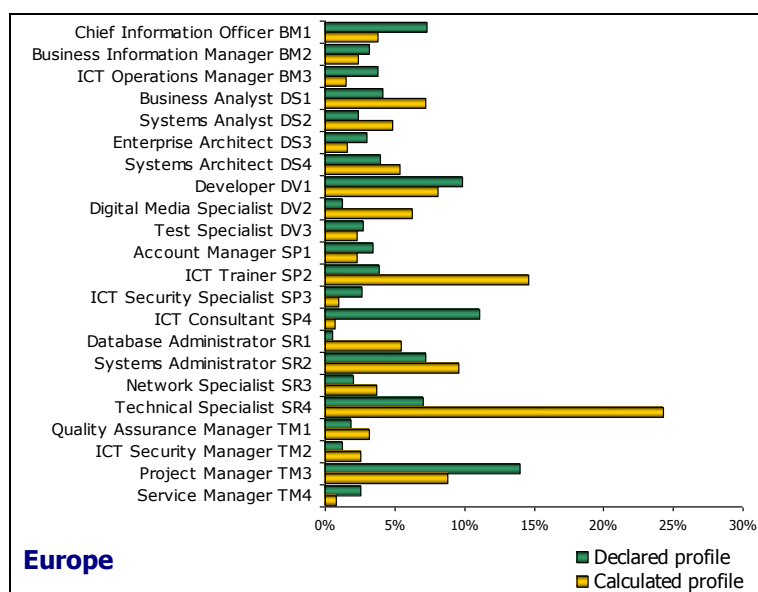


Figure 17 Comparison of Declared Profile and Proximity Profile

6.3 Analysis of Competence Proficiency Index

[Figure 18](#) provides a comparison of the Hungarian and European averages of the Competence Proficiency Index (CPI) for the five competence areas: Plan, Build, Run, Enable, and Manage.

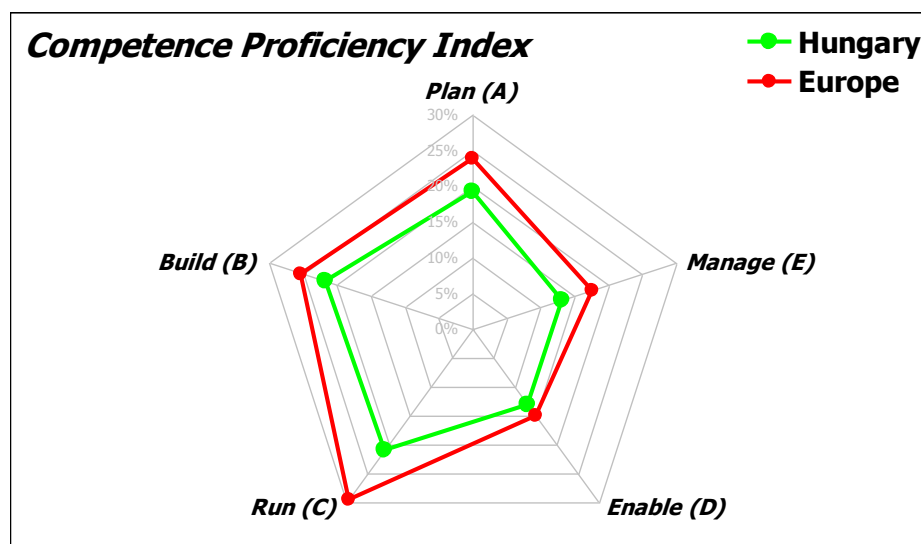


Figure 18 Competence Proficiency Index by Competence Areas

In Hungary, it appears that the Competence Proficiency Index is lower in this sample than the equivalent for Europe in all five areas. The full value of each CPI is 100%. The most relevant difference, compared with the European average, appears to be in the Run area (21% vs. 29.4%), which shows a gap of -8.4 percentage points. For the other areas the gaps are: -4.8 in Plan area (19.1% vs. 23.9%), -4.5 in Manage area (13.1% vs. 17.6%), -3.7 in Build area (21.5% vs. 25.1%), and -2.1 in Enable area (13% vs. 15.1%). However, it appears that the Enable and Manage areas are the weakest, both for Hungary and Europe.

As regards the CPI of the analysed profiles, the Technical Specialist gains better results in each area compared to the ICT Trainer, even if the gap is quite small in the Plan area (about 2%) as well as in the Enable area (1%).

The profile that has the highest CPI in the Plan area is Chief Information Officer; in the Build area the highest CPI is reached by the Developer, while in the Run area the leading profile is the Technical Specialist. As regards the Enable area, the best score belongs to ICT Trainer. The Project Manager profile gains the top score in the Manage area.

A deeper analysis of the Competence Proficiency Indexes of each competence area is fundamental in order to design detailed training paths to cover the competence gaps for each Proximity Profile of each respondent.

The following chart ([Figure 3.7](#)) shows the average CPI for all Hungarian respondents.

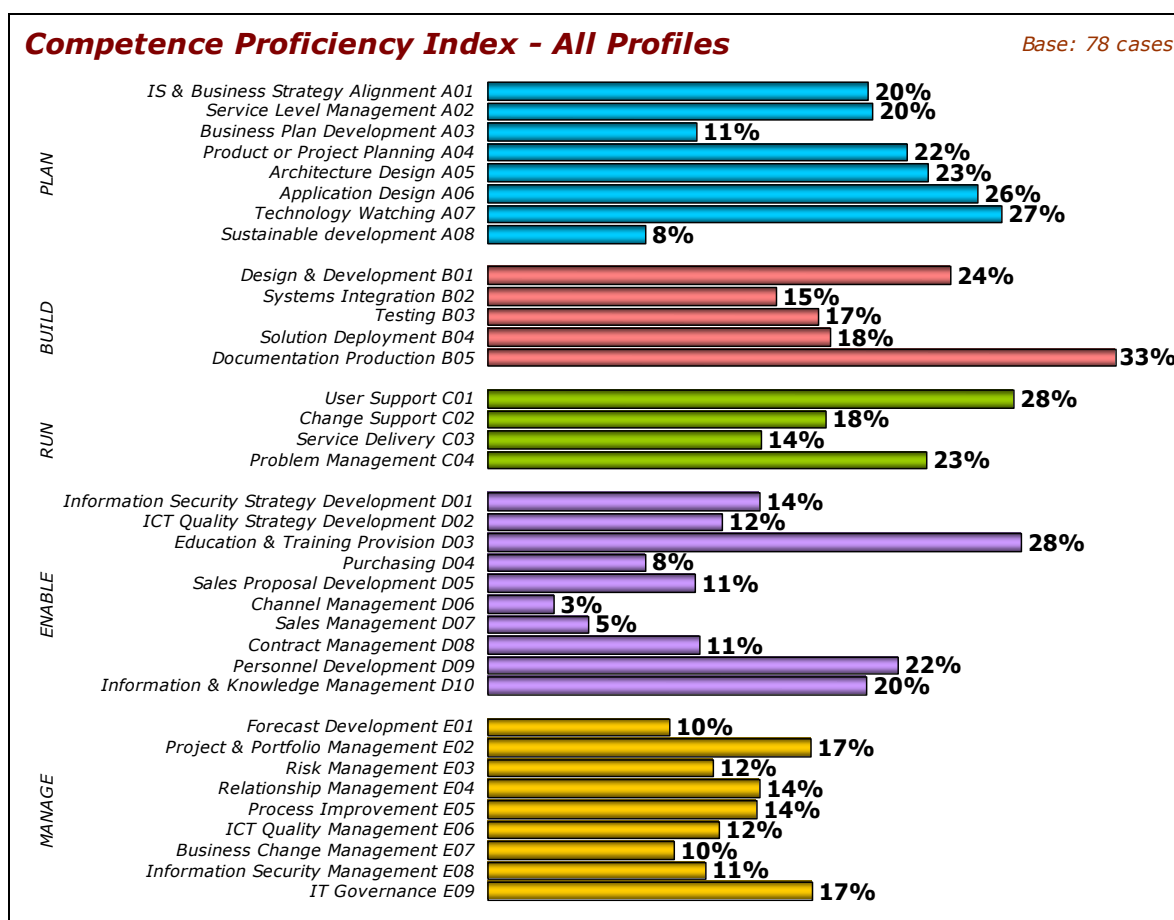


Figure 19 Competence Proficiency Index

7 Profiles Analysis

The answers collected generated 83 Proximity Profiles in relation to 22 ICT professional profiles ([Figure 13](#)). The eligibility criteria for the analysis of these profiles were the following:

- 10 or more cases per country for each profile,
- a Proximity Profile score higher than 40%.

Based on these criteria, the following 2 profiles for Hungary were selected and analysed:

1. ICT Trainer
2. Technical Specialist

A deeper analysis of the data for each of these 2 profiles is presented in this chapter.

7.1 ICT Trainer

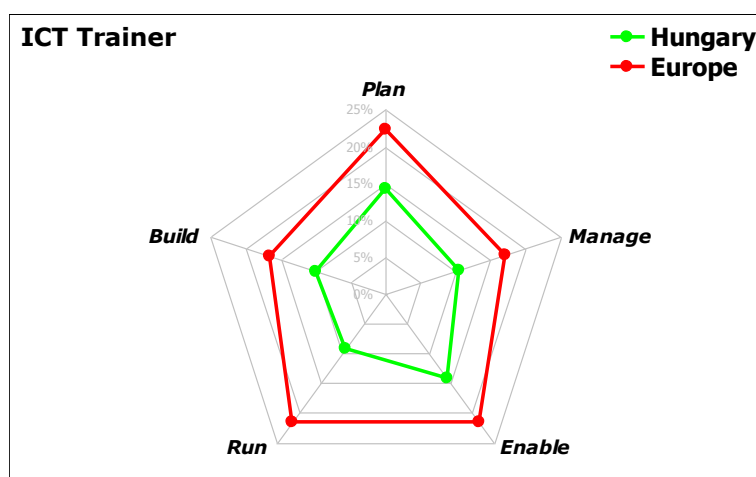


Figure 20 Competence Proficiency Index – ICT Trainer

91% of Hungarian ICT Trainers in the sample have obtained a university degree or higher; this is exactly the same rate as for ICT Trainers in the rest of Europe. This profile shows the same rate education as the general Hungarian average. Moreover, 76% of Hungarian ICT Trainers have obtained a fourth level qualification (master's degree or PhD) which is clearly higher than the European average of 53%. Over two thirds of Hungarian ICT professionals (63%) have obtained a fourth level qualification. In Hungary, 71% of ICT Trainers have an IT-focused education; this is slightly lower than the domestic rate of 76% but significantly higher than the European average for this profile (59%).

Hungarian ICT Trainers are aged 50 years on average, this makes them oldest group among all ICT professionals in Hungary. They are 2 years older than the Hungarian average, and 5 years older than their European colleagues who are 45 years old on average in this sample.

National experts from NJSzT Hungary say that the average monthly salary for a HE educator does not depend on professional field or the real demand, but it is similar to others and therefore based on diploma level and working age, not on the interest or teaching field. The result is that very few students intend to aim the career of an 'ICT teacher' in schools. Moreover, it is very hard to keep young and talented people in higher education to go to classrooms for about one third or one fifths of either industrial or foreign salaries available in the ICT sector. A very large gap is seen on the horizon in very short time at all levels of ICT education which would need urgent governmental and even industrial activity.

The majority ICT Trainers who responded were male (71%), this figure in line with the European average of 76%. However, Hungary is the only country where the male proportion of ICT Trainers is below the national average (71% vs. 85%).

Hungarian ICT Trainers have a lower Competence Proficiency Index than the European average in each of the five areas: Plan: 14% vs. 22%, Build: 10% vs. 17%, Run: 9% vs. 22%, Enable: 14% vs. 21%, and Manage: 10% vs. 17%.

The Competence Proficiency Index for Hungarian ICT Trainers clearly gains its best results in the Education & Training Provision (57%) and Personnel Development (30%).

Comparing the Hungarian CPI results to the European average reveals a general negative pattern with some remarkable differences. Major gaps are found in the following competences: Change Support (-19%), Architecture Design (-17%), User Support (-14%), and Service Delivery (-14%).

7.2 Technical Specialist

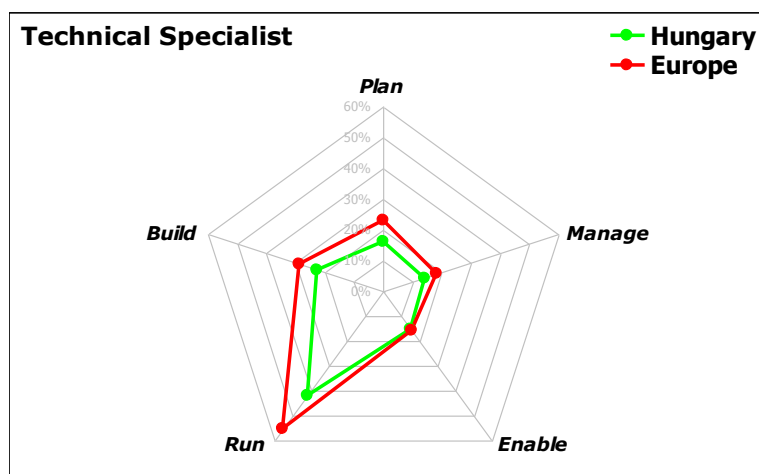


Figure 21 Competence Proficiency Index – Technical Specialist

91% of Hungarian Technical Specialists in the sample have obtained a university degree or higher. This is a much higher rate than European average of 79%. However, it is almost equal to the Hungarian general average (90%). Almost half (45%) of Hungarian Technical Specialists have also obtained a fourth level

qualification (master's degree or PhD). This figure is above the European average of 26%, but it is significantly smaller than the Hungarian average for all ICT professionals (63%). 64% of Technical Specialists have an IT-focused education; this rate is very close to the European average (68%) but lower than the national average (76%).

The Hungarian Technical Specialist is 46 years old on average, about 4 years older than their European colleagues (42 years old), but 2 years younger than the average of all Hungarian ICT professionals in this sample (48 years old).

Almost half of all Hungarian Technical Specialists work in micro or small organisations (46%); this is much more than the overall Hungarian average of 33%. The corresponding rate among their European colleagues is 24%. Moreover, about two out of three Technical Specialists come from the IT demand side (64%), while the European average is 46%.

All Technical Specialists who responded were male; this is quite far from the 85% male proportion for all Hungarian respondents, as well as from the European average for this role (89%).

Hungarian Technical Specialists have a lower Competence Proficiency Index compared to the European average: it is slightly lower in the Enable area (15% vs. 16%) with a wider gap in the Plan (16% vs. 23%), Build (23% vs. 29%) and Manage (14% vs. 18%) areas, and an even larger gap in the Run area (42% vs. 55%).

Regarding the Competence Proficiency Index, Hungarian Technical Specialists gain their best results in the Run area: Change Support (55%), Problem Management (45%), User Support (36%), Documentation Production (35%), Service Delivery (32%), and Education & Training Provision (31%).

When compared to the European average, significant negative differences appear in the following competences: Change Support (-17%), User Support (-16%), Service Delivery (-16%), Product or Project Planning (-15%), and Technology Watching (-14%). The best performance compared to the European average CPI is in Education & Training Provision (+12%).

8 Conclusions

The following section draws conclusions based on the analysis of 2 profiles that arose from the 78 respondents in Hungary.

The data gathered in this round of the CEPIS e-Competence Benchmark research proves a high level of interest among ICT professionals in reflecting on their own competences and shows how the e-CF provides an effective basis for this. However, from a statistical point of view, the results need to be tackled with care, as the sample of voluntary respondents who accepted the invitation from the computer society could prove to be biased and not fully representative of the total community of local ICT professionals in Hungary.

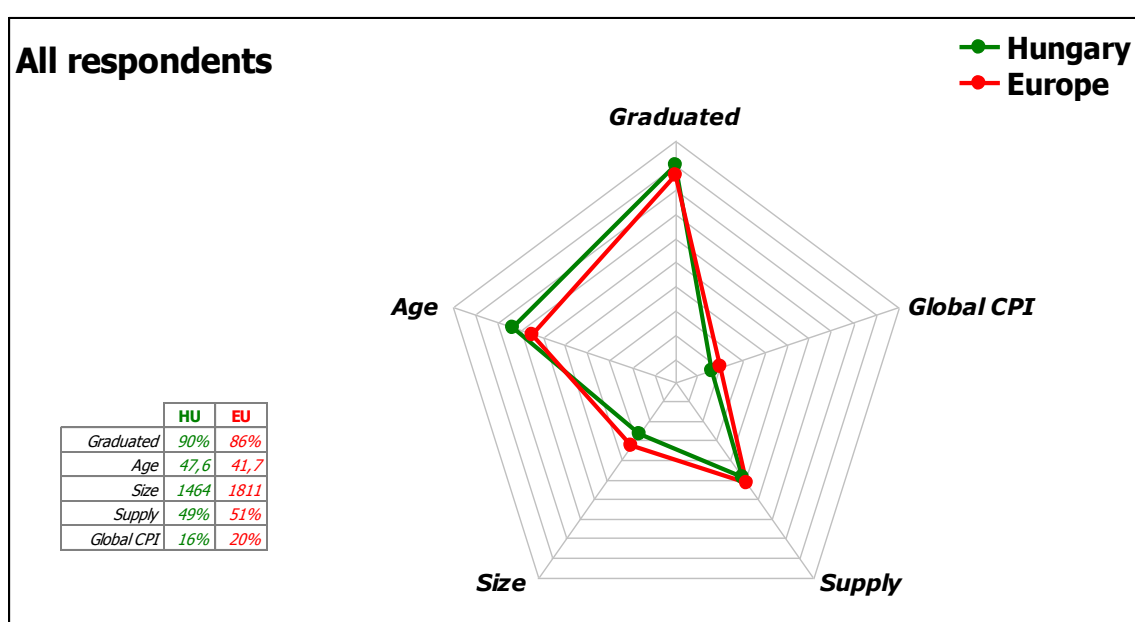


Figure 22 The Hungarian Respondents Profile

The average profile of the Hungarian respondent ([Figure 22](#)) differs from the European average profile essentially by being older by having a lower global CPI.

The analysis of profile segmentation per profile and by age (see section 6.1.1) shows that the general average age is around 48 years in Hungary, which is above the European average age of 42 years. It is remarkable, that even the youngest identified profile in this sample (the Technical Specialist with an average age of 46 years) is 4 years older than the European average. Moreover, almost a half of Hungarian respondents belong to the over 50 segment, which is more than double of the European average. As mentioned before, national experts note that the most active young ICT professionals are often compelled to leave Hungary to find employment. Although the profession is known to be ageing, it should be noted that result here may be primarily reflective of the research participants.

As in other countries, for Hungary there is a need to attract younger people to the ICT profession without losing the experience of the older age group. Hungary shows

a very low rate of professionals under 30 in the sample (10%). [Figure 23](#) below shows the distribution for each profile of Hungarian ICT professionals by age range.

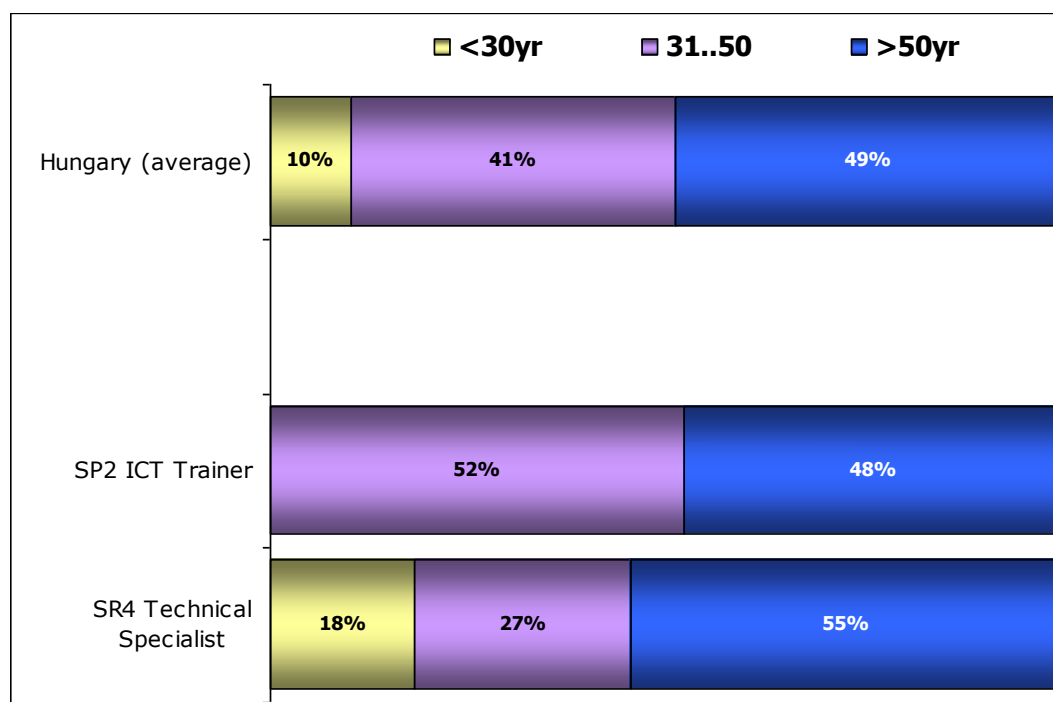


Figure 23 Profile Distribution by Age Range

The segmentation of the profiles by gender (section 6.1.2) provides evidence that the female representation in Hungary is very limited, as indeed it is across Europe. However, it was found that 29% women selected the ICT Trainer profile; this is almost double the domestic average and 4% above the European average in this sample. There were no female respondents at all for the Technical Specialist profile.

The results of the educational level questions (section 6.1.3 and 6.1.4) indicate that many ICT practitioners in Hungary hold a university degree compared to other European countries. The graduate rate of Hungarian ICT Trainers is similar to the European average for this profile, while it is significantly higher for the Technical Specialist (91% vs. 79% which means +12%). With regards to the profile distribution by IT-focused education, there is evidence to suggest a sufficient level of IT-focused education. In fact, both profiles count for more than half of ICT professionals with an IT-focused education.

Furthermore, 63% of Hungarian ICT professionals obtained a fourth level qualification. This is the highest rate among the analysed countries and is significantly higher than the Europe's average of 40%. National experts point to the fact that ICT higher level education is completely free of charge as an explanation for this. This differs from Business, Law, Medical, etc. studies which are fee-paying. In this sense, Hungary offers an excellent and effective model to encourage higher education in ICT. That is also an explanation for the high rate of Doctorates (22%) compared to the European average of only around 5%.

In general, results show that about half of Hungarian ICT professionals in the sample work in the IT demand side (section 6.1.5). Almost one out of three Technical Specialist works in the IT demand side. The distribution of respondents by organisation size shows a preference for smaller enterprises in Hungary but the European average shows the opposite picture with 24% of respondents work in micro/small enterprises and 36% work in large organisations with more than 1,000 employees.

Local experts indicate that the Hungarian ICT industry portfolio is rather strange, having no large hardware-software facilities. The biggest ICT employers are support service centres which normally do not need to employ highly educated ICT professionals. The most common ICT employment-type in Hungary is a mid-manager at a middle-sized company or an 'all-round' ICT expert at a SME: the only difference can be seen in the public sector and at some large multinational firms including branches of worldwide-operating companies like SAP, ORACLE, Telekom, etc.

For the level of Competence Proficiency Index (section 3.3), it appears that Hungarian respondents score the weakest results in the five competence areas compared to other countries: Plan area 19% vs. 24%, Build area: 21% vs. 25%, Run area 21% vs. 29%, Enable area 13% vs. 15%, and Manage area 13% vs. 18%. A deeper analysis of the Competence Proficiency Indexes compared to each profile requirement is fundamental in order to design detailed training paths to cover the competence gaps for each Proximity Profile of each respondent.

A comparison between the competences of those working in SMEs against larger companies provided some very interesting results: [Figure 24](#) shows that ICT professionals working in SMEs have overall a higher level of competence.

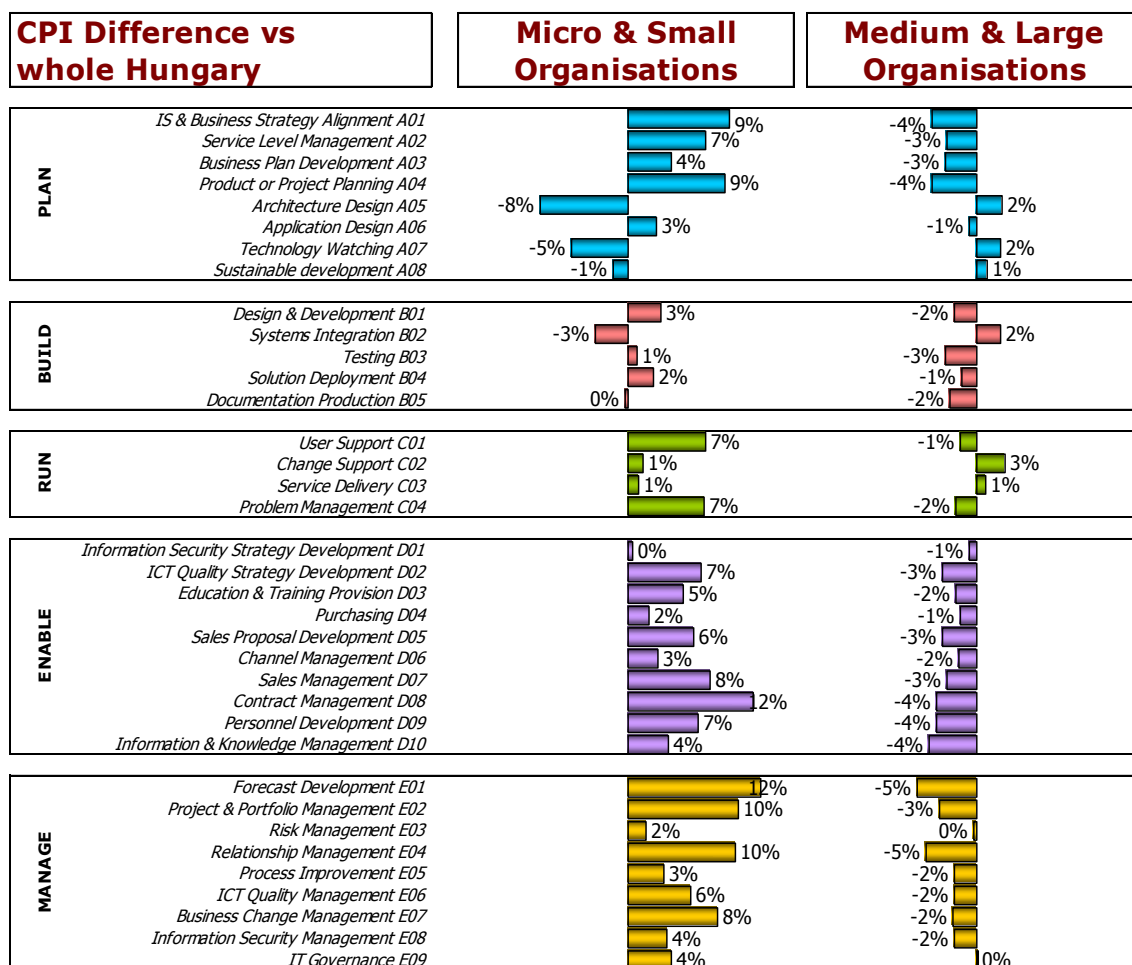


Figure 24 CPI Difference versus whole Hungary

The following chart ([Figure 26](#)) reveals the difference between the CPI in Hungary and the corresponding European average CPI.

In general, Hungarian CPIs shows significant gaps compared to the European average. The largest variances, lower than the European CPI, appears for Change Support (-14.6%), Product or Project Planning (-10.0%), Relationship Management (-9.3%), Systems Integration (-9.3%), Process Improvement (-9.0%), Architecture Design (-8.3%), Business Change Management (-8.2%), User Support (-7.6%), Purchasing (-7.3%), Service Delivery (-7.2%), and Business Plan Development (-7.0%). On the other hand, Hungarian CPIs are only significantly higher than the European average for the Education & Training Provision competence (+6.2%).

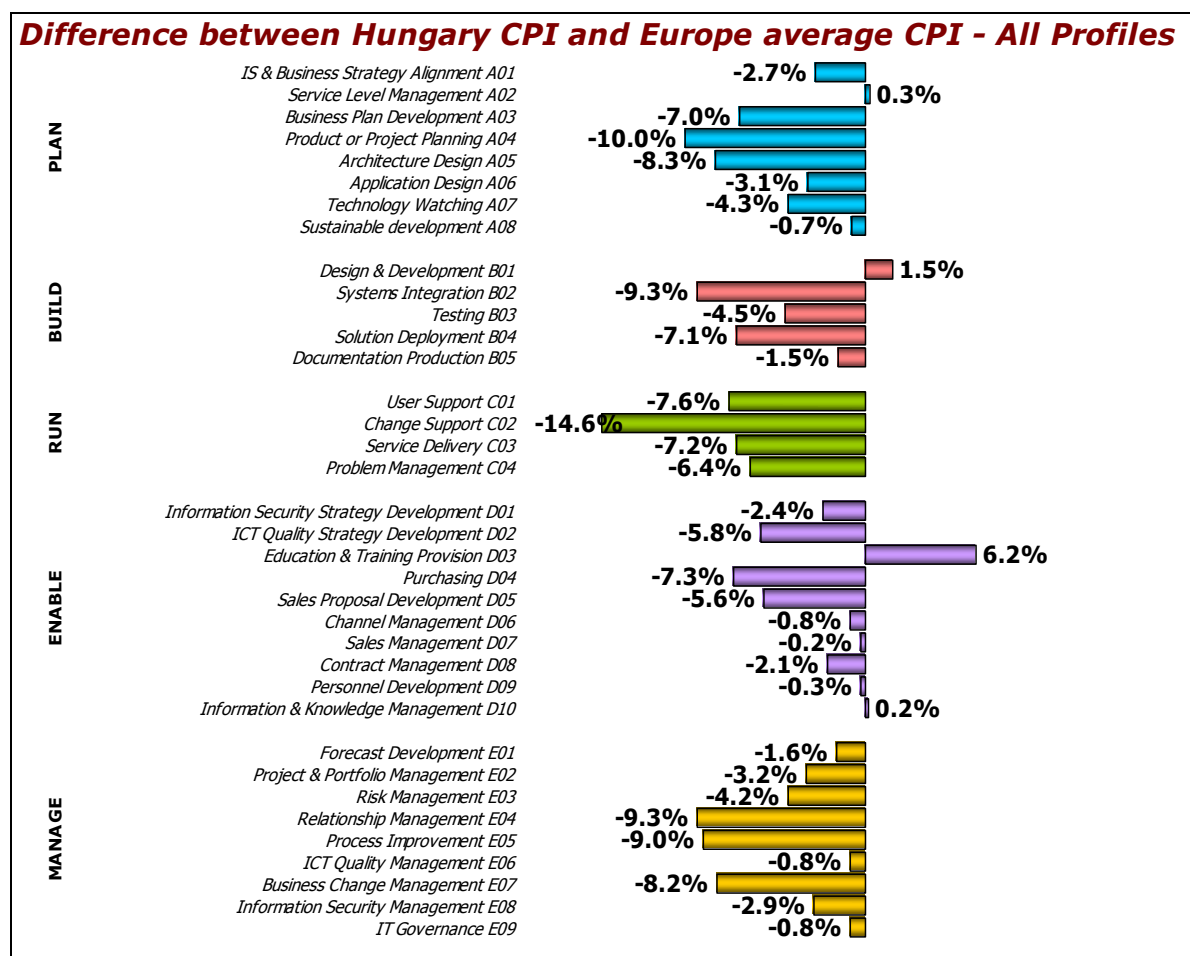


Figure 25 Competence Proficiency Index – Differences to European Average

A deeper analysis of the Competence Proficiency Indexes compared to each profile requirement is fundamental in order to design detailed training paths to cover the competence gaps for each Proximity Profile of each respondent.

For example, the analysis of the two main competences of the ICT Trainer profile reveals that Hungarian ICT Trainers always suffer a competence gap compared to their European colleagues: -7% as regard Education & Training Provision and -13% in Personnel Development.

9 Annex

9.1 Proximity Profiles – Overview

9.1.1 Profile Distribution by Age

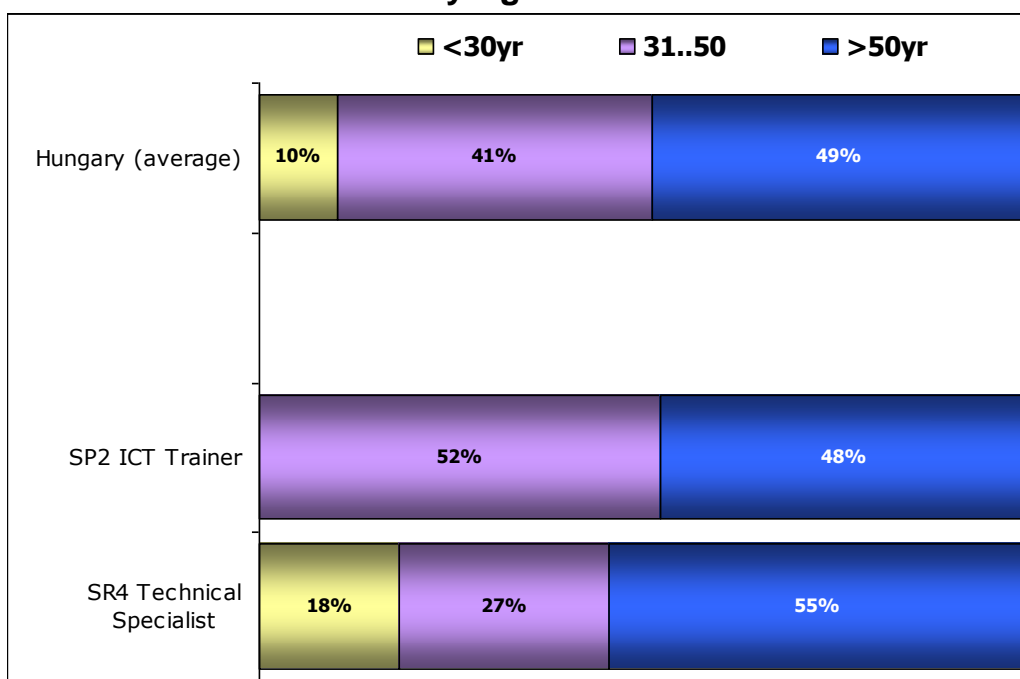


Figure 26 Proximity profile - profile distribution by age

9.1.2 Profile Distribution by Gender

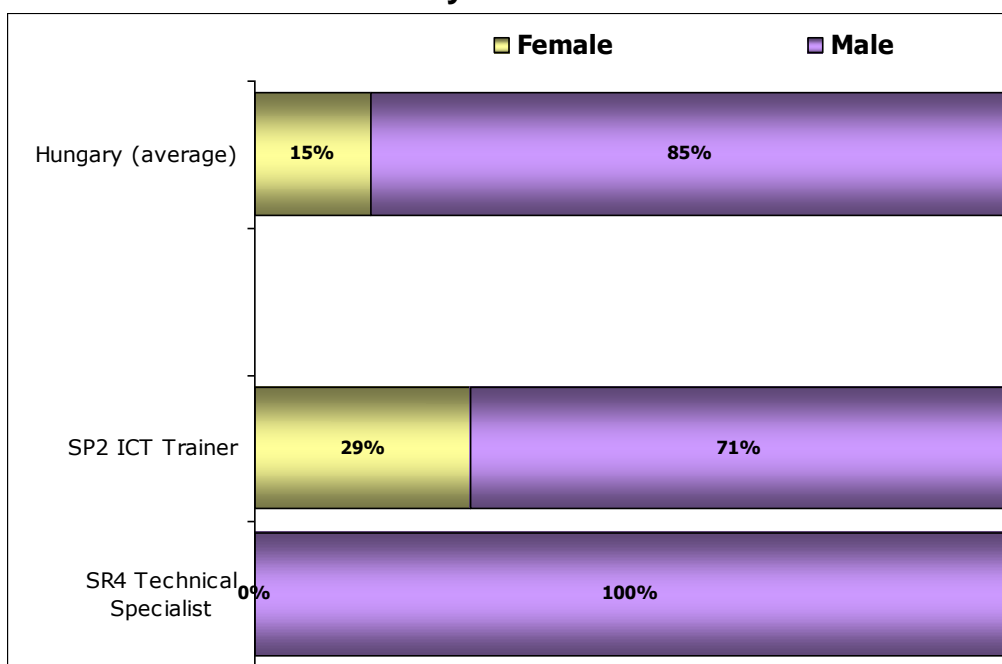


Figure 27 Proximity profile - profile distribution by gender

9.1.3 Profile Distribution by Education Level

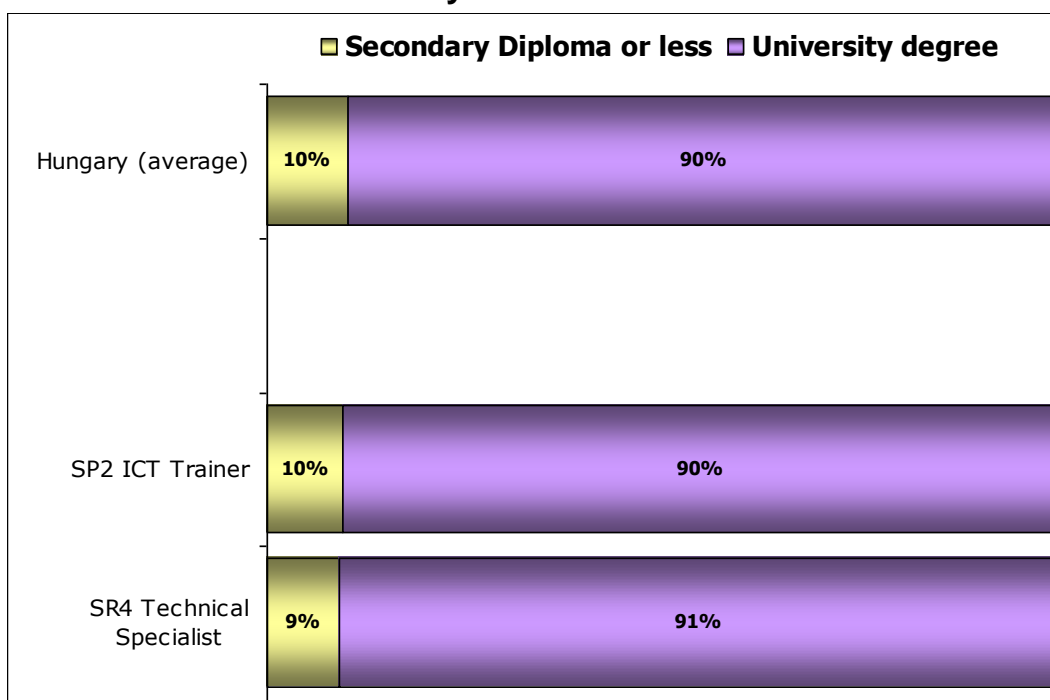


Figure 28 Proximity profile - profile distribution by education level

9.1.4 Profile Distribution by IT Education

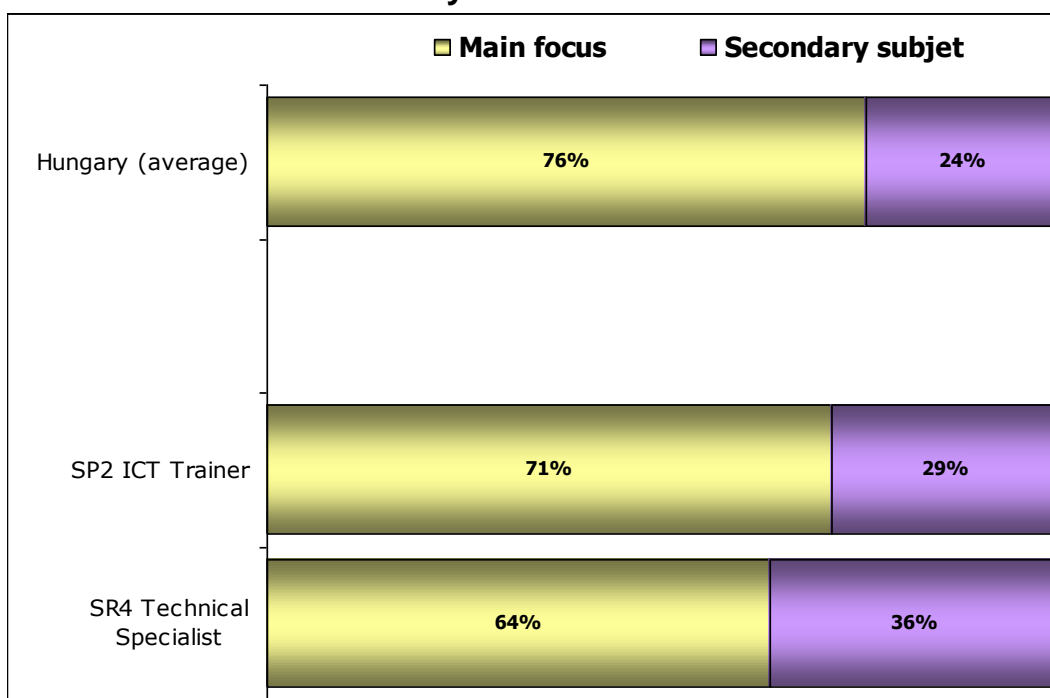


Figure 29 Proximity profile - profile distribution by IT education

9.1.5 Profile Distribution by Industry

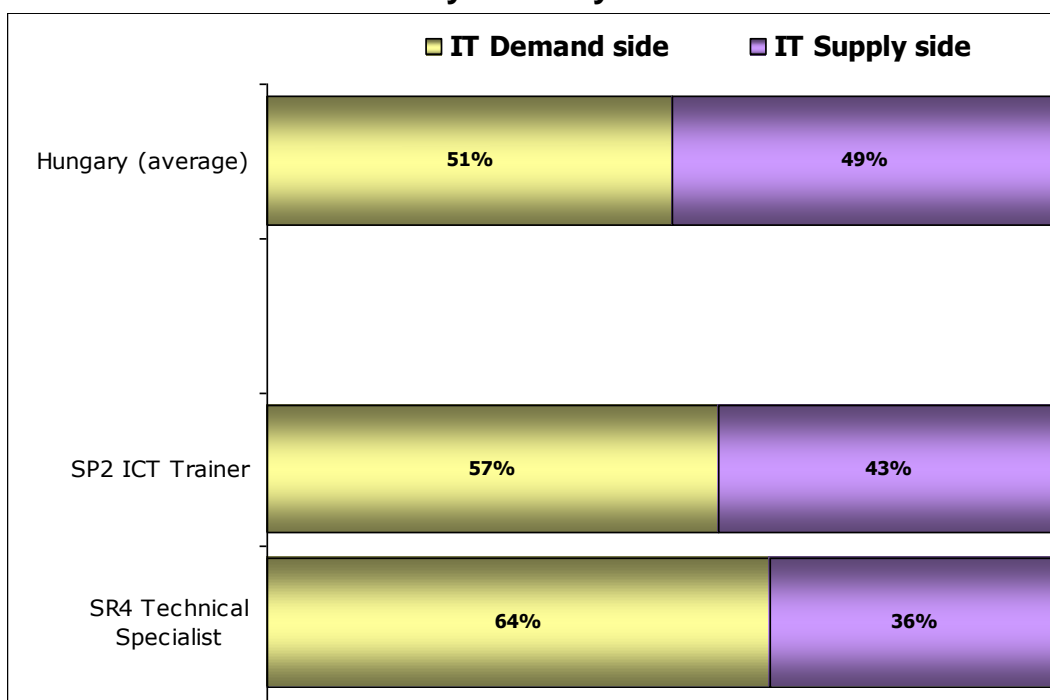


Figure 30 Proximity profile - profile distribution by enterprise size

9.1.6 Profile Distribution by Enterprise Size

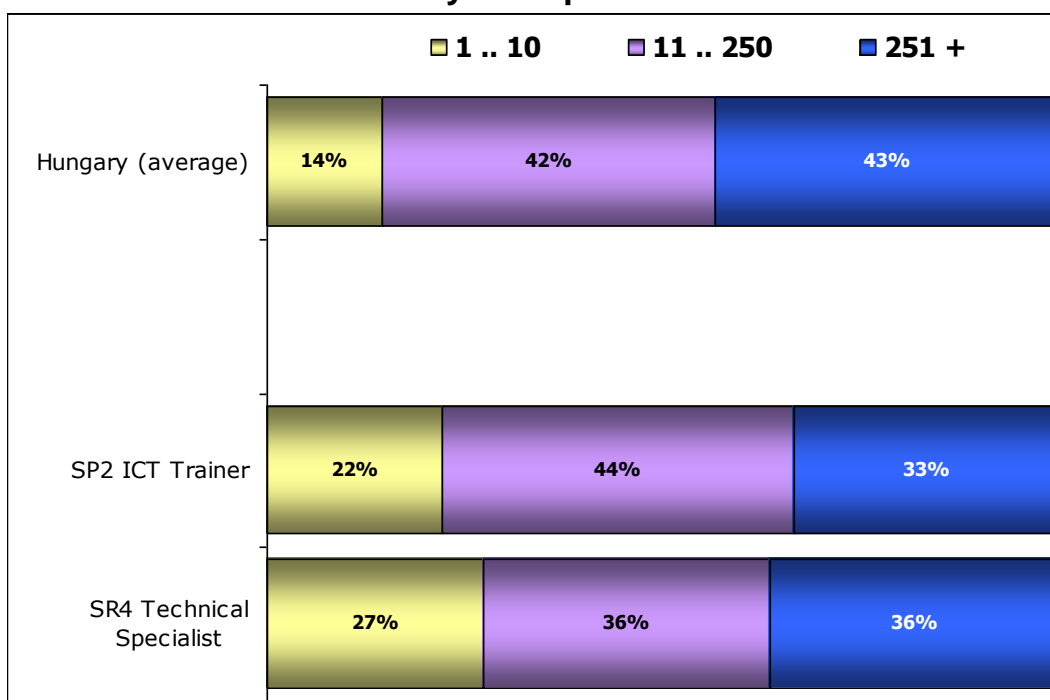


Figure 31 Proximity profile - profile distribution by industry

9.1.7 Profile Summary Table

	Europe	Hungary	SP2 ICT Trainer	SR4 Technical Specialist
Cases	1604	78	21	11
Age				
Mean	41.7	47.6	49.8	45.9
<30 yr	16%	10%	18%	18%
30 - 40	29%	24%	24%	18%
40 - 50	32%	17%	29%	9%
50 - 60	17%	27%	24%	45%
61 - ..	5%	22%	24%	9%
Gender				
Female	15%	15%	29%	-
Male	85%	85%	71%	100%
Education				
Secondary or less	14%	10%	10%	9%
University (Graduate or more)	86%	90%	90%	91%
4th Level (Masters/Phd)	40%	63%	76%	45%
IT Educational				
IT was the main focus of my education	67%	76%	71%	64%
IT was a side subject	23%	22%	29%	36%
IT was not significant in my curriculum	11%	3%	0%	0%
Current professional status				
Full time employee	78%	73%	71%	64%
Part time employee	2%	5%	10%	0%
Self-employed	8%	10%	5%	27%
Student / Unemployed / Retired	12%	12%	14%	9%
Number of employees				
1 - 10	11%	14%	22%	27%
11 - 50	13%	19%	11%	18%
51 - 250	22%	23%	33%	18%
251 - 1000	18%	16%	17%	9%
> 1000	36%	28%	17%	27%
Industry				
Mainly on IT demand side	49%	51%	57%	64%
Mainly on IT supply side	51%	49%	43%	36%
Proximity index	86.9	81.9	85.0	84.9
Min	40	41	75	41
Max	100	100	99	100
Competence index				
A- Plan	24%	19%	14%	16%
B- Build	25%	21%	10%	23%
C- Run	29%	21%	9%	42%
D- Enable	15%	13%	14%	15%
E- Manage	18%	13%	10%	14%
Competence index				
A01 % IS & Business Strategy Alignment	23%	20%	15%	14%
A02 % Service Level Management	20%	20%	12%	16%
A03 % Business Plan Development	18%	11%	12%	7%
A04 % Product or Project Planning	32%	22%	17%	16%
A05 % Architecture Design	31%	23%	7%	29%
A06 % Application Design	29%	26%	15%	26%
A07 % Technology Watching	31%	27%	26%	19%
A08 % Sustainable development	9%	8%	10%	8%
B01 % Design & Development	23%	24%	11%	20%
B02 % Systems Integration	24%	15%	5%	21%
B03 % Testing	22%	17%	8%	14%
B04 % Solution Deployment	25%	18%	6%	27%
B05 % Documentation Production	34%	33%	21%	35%
C01 % User Support	35%	28%	15%	36%
C02 % Change Support	32%	18%	4%	55%
C03 % Service Delivery	21%	14%	2%	32%
C04 % Problem Management	29%	23%	13%	45%
D01 % Information Security Strategy Development	17%	14%	12%	23%
D02 % ICT Quality Strategy Development	18%	12%	9%	18%
D03 % Education & Training Provision	22%	28%	57%	31%
D04 % Purchasing	16%	8%	5%	14%
D05 % Sales Proposal Development	16%	11%	11%	12%
D06 % Channel Management	4%	3%	6%	0%
D07 % Sales Management	5%	5%	3%	9%
D08 % Contract Management	13%	11%	5%	15%
D09 % Personnel Development	22%	22%	30%	10%
D10 % Information & Knowledge Management	20%	20%	21%	21%
E01 % Forecast Development	11%	10%	14%	5%
E02 % Project & Portfolio Management	20%	17%	10%	19%
E03 % Risk Management	16%	12%	7%	16%
E04 % Relationship Management	24%	14%	11%	17%
E05 % Process Improvement	23%	14%	14%	18%
E06 % ICT Quality Management	13%	12%	10%	18%
E07 % Business Change Management	18%	10%	11%	13%
E08 % Information Security Management	14%	11%	6%	10%
E09 % IT Governance	18%	17%	14%	8%

9.2 Proximity Profiles – Details

9.2.1 ICT Trainer

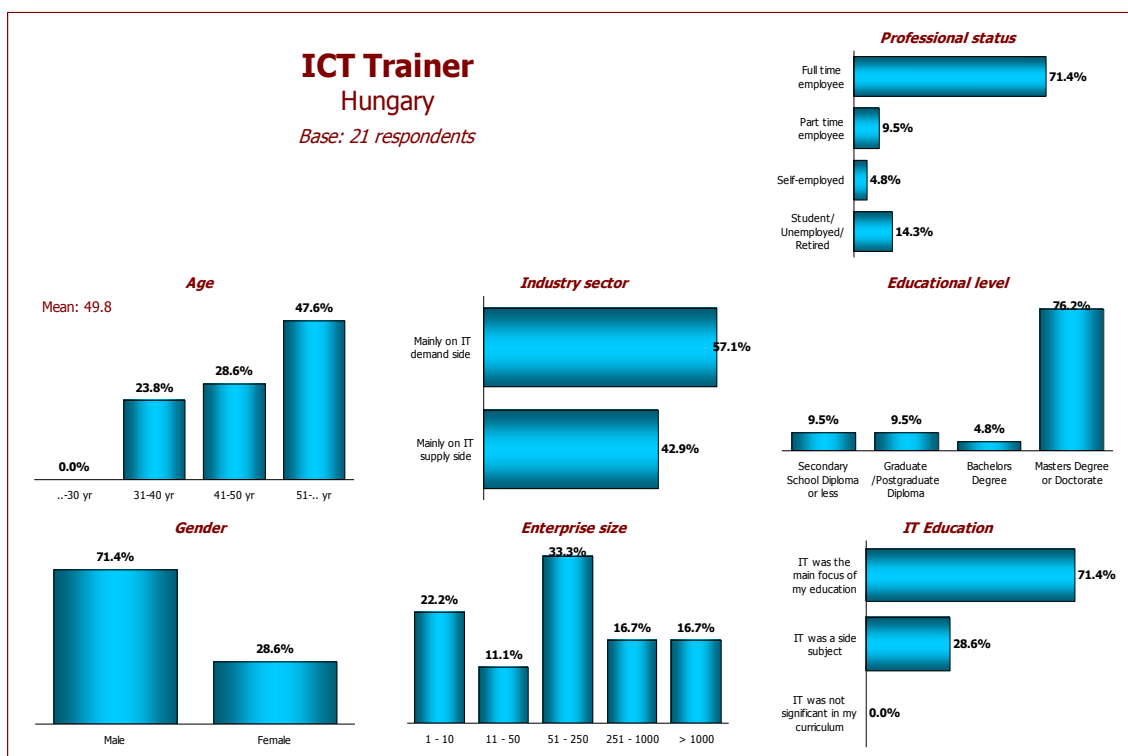


Figure 32 Proximity profile - ICT Trainer

9.2.2 Technical Specialist

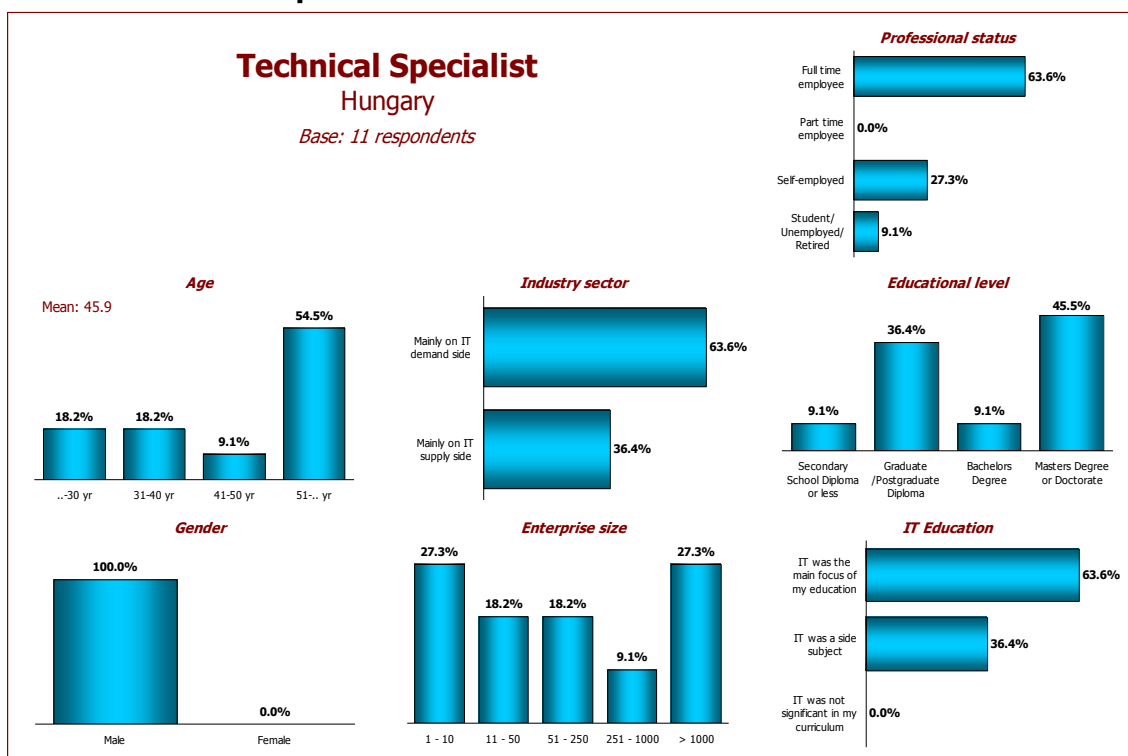


Figure 33 Proximity profile - ICT specialist