

**Status quo report on  
competence needs and training elements  
in the field of Multimedia**

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**Leonardo da Vinci**



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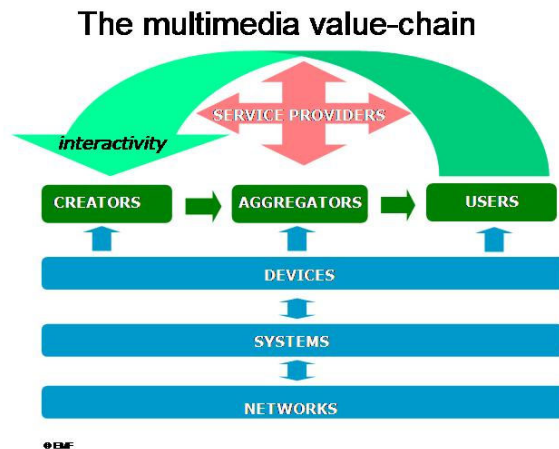
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## Survey methodology

The status quo report summarises the results of the quantitative study carried out in the context of the CompTrain project. The survey was based on primary research by online questionnaires. For this purpose, three types of questionnaires were developed and customized with regard to the three different target groups of the survey: SMEs, training institutions and students or young professionals. The aim was to gather comprehensive information about current competences needed in Multimedia jobs and the respective competences trained by training institutions for these Multimedia professions.

The methodology for the development of the questionnaires is based on the previously conducted study NAME. Starting point was the Added Value Creation Chain as analysed by Aquitaine Multimedia in the context of the former Leonardo da Vinci project NAME (F/2000/C/P/RF/91803) which provided a clear and usable definition for the term "Multimedia sector". The following figure illustrates the comprehensive understanding of this term.



**Graph 1: The multimedia value-chain**

Moreover, CompTrain's aim is to define professions in the "content technologies", i.e. content creators, aggregators, providers, but also in management to allow access to this content for users.

Besides this definition, NAME provided also job descriptions as well as comprehensive lists of tasks which have to be carried out in the framework of the respective job.

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In contrast to other European surveys in the field of Multimedia and ICT, CompTrain is not only concentrating on the comparison of qualification titles and descriptions of tasks. CompTrain goes even further, since the main target of the project is to determine competences and skills needed to excel in Multimedia professions. While there is a quite common understanding of the term “qualification” across Europe, the term “competence” is more difficult to define and it is up to now not harmonised at European level. So we basically referred to the definition provided by the European Qualifications Framework which understands ‘competence’ as the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and/or personal development. In the European Qualifications Framework, competence is described in terms of responsibility and autonomy.

Moreover, we differentiated between four categories of competences: Technical competences, to perform technical aspects of a job, Content-related competences, to express contents by text, picture or sound, Management competences, to organise, plan, control and lead a team, as well as behavioural competences, as the ability to behave and interact successfully in social contexts.

Based on this understanding of the term competence, we derived from the Multimedia job tasks determined by the former Leonardo-project NAME a list of competences required to excel in these tasks and therefore necessary for Multimedia professions. This list was presented to a restricted number of SMEs from the Multimedia sector and adapted and improved according to their suggestions.

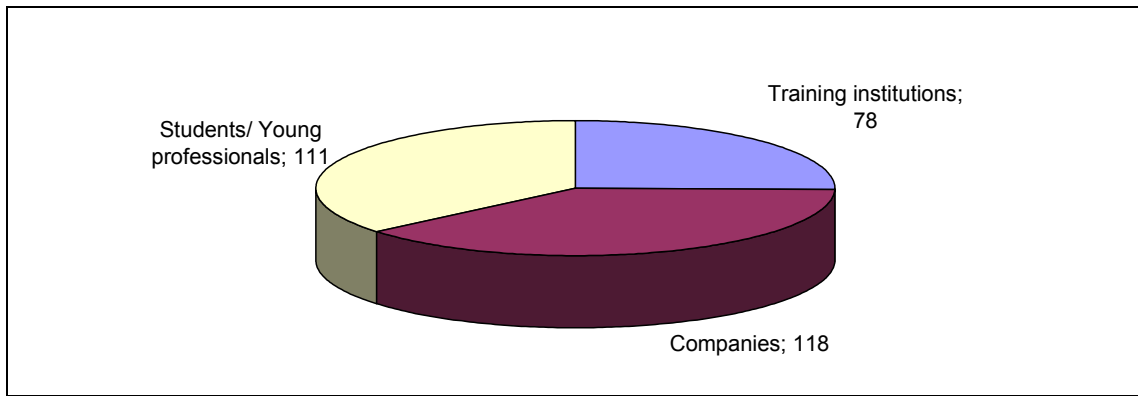
eMailing and Internet were decided to be used as means to collect the data. Online questionnaires were set-up on the CompTrain-related web-site <http://www.multimedia-observatory.org>. eMailing was used to inform a large number of representatives of the target groups about the online-questionnaires and to send them the respective link. Additionally, these processes were followed up by phone calls and emails in order to ensure enough responses.

All survey results were collected and when necessary translated into English. Data collection, codification and evaluation were handled and supervised by MMJ in cooperation with VCB.

## 1. Sample characteristics

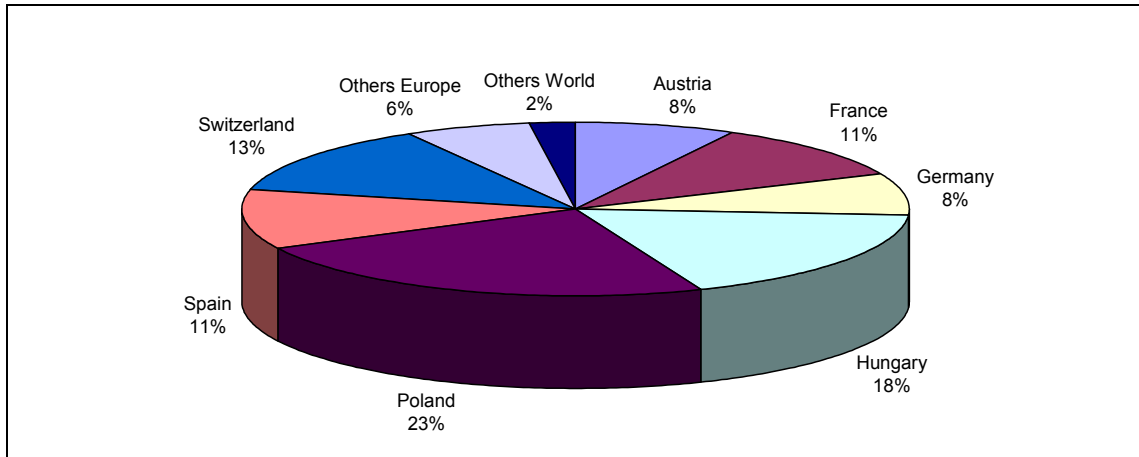
The sample consists of 1. companies employing staff in the Multimedia job positions, 2. training organisations providing trainings in the field of Multimedia at all education levels and 3. young professionals or graduates having graduated from or still studying in Multimedia related studying/ training courses. Simple random techniques were used to identify and determine the sample.

Since the questionnaires were put online, 355 persons or organisations from various European and also countries outside Europe registered on the CompTrain website. 307 questionnaires were fully completed and therefore usable in the context of the survey (Status: 12. January 2007). Most of the questionnaires were answered by company managers and a minor quantity by training institutions.



**Graph 2: Total responses per target group**

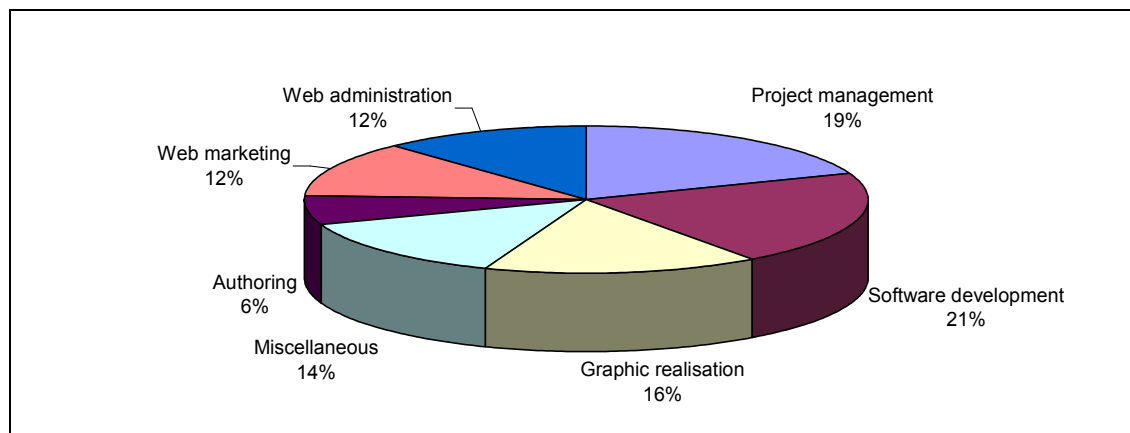
The response rate varied from country to country. The highest response was achieved in Poland, Hungary and Switzerland, the lowest in Austria and Germany. Apart from answers and registrations of the European countries of the partners participating in CompTrain, answers were also obtained from Great Britain, Belgium, Portugal and Slovenia as well as from countries outside Europe.



**Graph 3: Response rate per country**

The questionnaires referred to seven previously determined job families in the field of Multimedia: Authoring, Graphic realisation and Design, Project Management, Software Development, Web Marketing, Web administration and Miscellaneous, i.e. jobs that don't have a clear profile and consist of a variety of tasks in the field of Multimedia. Examples are internet librarians, netsurfers/ researchers or newsgroup moderators.

Most feedback was obtained concerning the job families Software Development 21%, Project Management 19 % and Graphic Realisation/ Design 16%. Only few responses (6 %) were received for the job family Authoring. It would be interesting to identify in future surveys if this distribution of answers corresponds also to the distribution of employees in these fields of work and if it is right to draw the conclusion that software development and project management are the most important Multimedia job families whereas Authoring can not be considered that important.



**Graph 4: Response rate per job family**

## 2. Analysis objectives

The intention of the survey and the analysis of the questionnaires was to determine the status quo of the competences needed in and trained for Multimedia professions. Accordingly, the objectives were the following:

- identify the competence needs in Multimedia jobs (demand)
- determine the offer in terms of competencies which are trained for Multimedia professions
- gather information if students/ young professional consider the training they had as sufficient and appropriate (offer) to meet the requirements at their jobs (demand)
- determine the mismatch in demand and offer
- determine influencing factors on competence needs (demand) and training contents (offer)
- identify differences of demand and offer between the European countries
- find explanations for these differences

## 3. Main findings

### ***3.1. Analysis of the demand – Identification of competence needs***

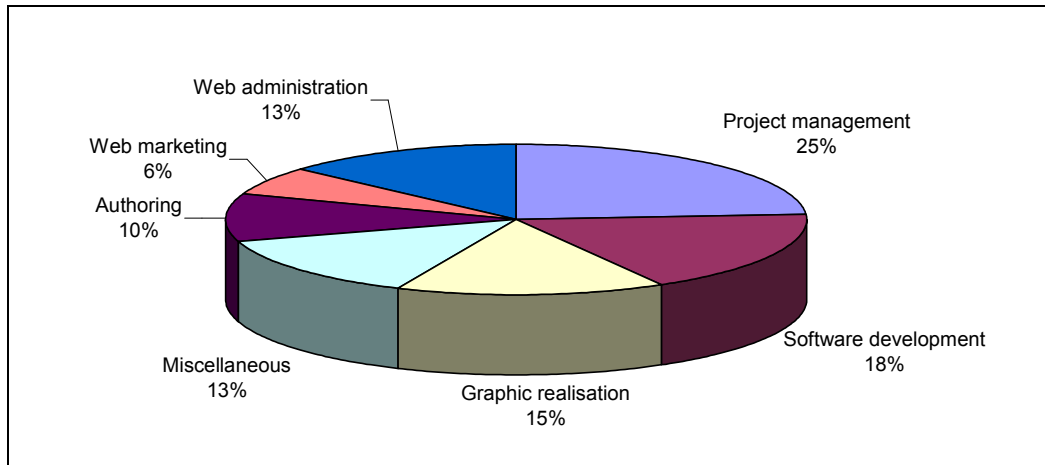
To identify the real competence needs in multimedia jobs, the responses of the company managers of SMEs were analysed considering the following variables: a) job titles used in job families, b) competences needed for these job families, c) common terminology at national and European level, d) most relevant competences per job family, e) least important competences per job family.

#### **3.1.1. Common terminology – job titles and Multimedia job families**

Comparing the Multimedia job titles that were stated by companies in the online-questionnaires with the job titles that had been used in the context of the former Leonardo-project NAME, it was interesting to see, that apparently no new job titles have been invented and introduced to the Multimedia job market since then. All job

titles that were used by the company manager to describe their Multimedia jobs made part of the job list determined by NAME in 2002:

Most of the Multimedia jobs described and offered by SMEs were in the job families Project Management, Software Development and Graphic Realisation/ Design. Only few Multimedia job positions were described for the job family of Web Marketing and Authoring.



**Graph 5: Response rate of SMEs per target group**

### 3.1.2. Competence profiles – competences needed for each job family

The questionnaires were scrutinised concerning the most relevant competences for meeting the requirements in each Multimedia job family. Since the responses of the various European countries were predominantly consistent, this allowed for the determination of general job profiles for each job family. Nevertheless, for certain job families some differences between European countries could be determined. These differences will be further described in chapter 4.4.

#### Web administration:

As far as technical competencies are concerned the creation of graphic documents, lay-outs and web-design, maintaining/ updating (application, site, software, computer or network) as well as knowing how to optimise a site according to the requirements of search engines are considered the most important across Europe. While for Switzerland and Spain the creation of graphic document and web design was

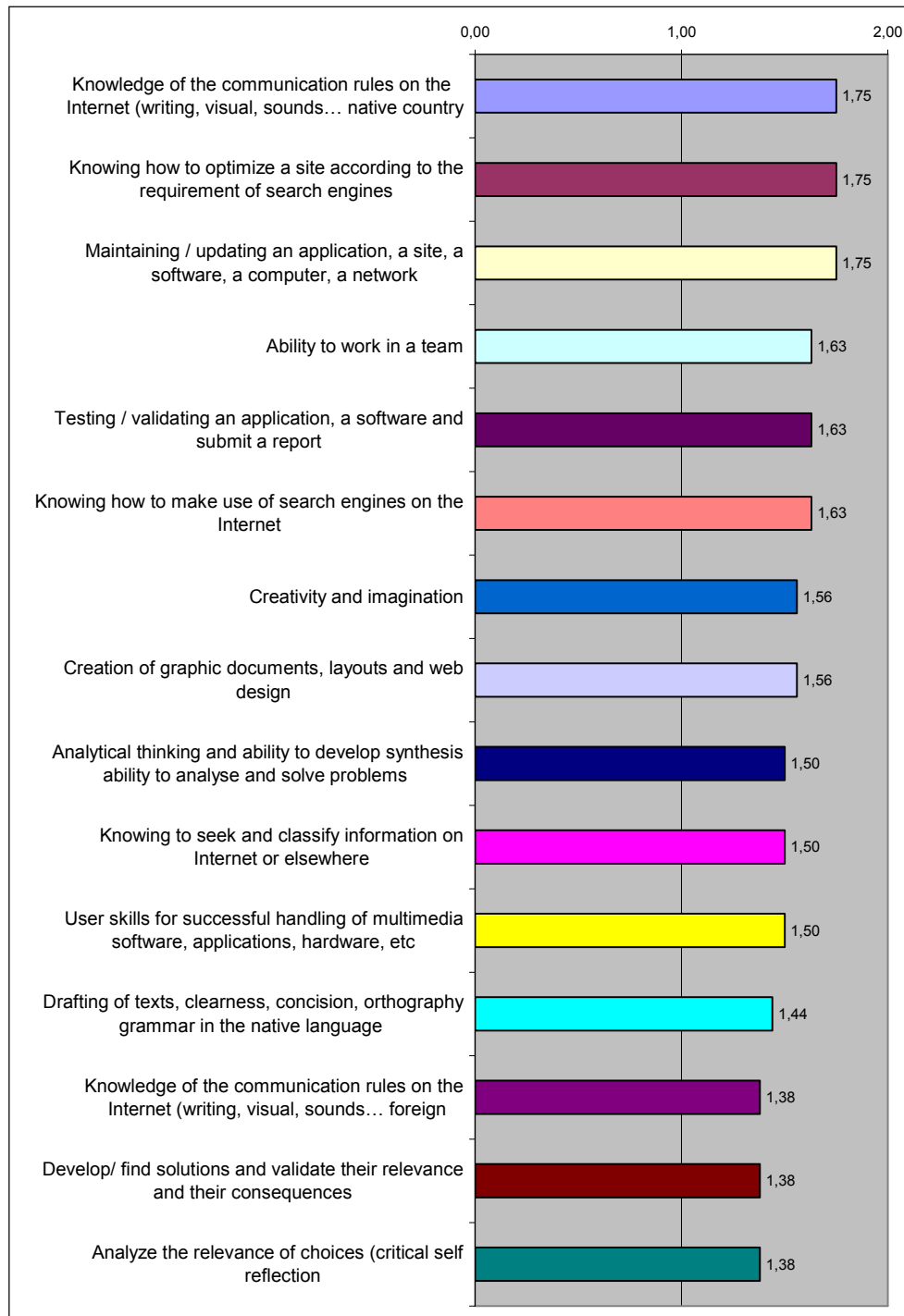
regarded as very important it was considered only average important in Germany and Poland.

Considering content-related competences, people working in the field of web administration should dispose of the ability to draft texts in proper orthography and grammar as well as be familiar with the national codes of communication on the Internet. English language competences were considered less important.

Especially as far as the concise drafting of texts and orthography is concerned, there is an interesting difference between Switzerland, Spain who consider this competence as very important and Germany, whose company managers consider it far below average important.

Management competencies were generally considered not important to medium important in the job family for web administration. However, behavioural competencies such as the personal disposition of creativity and imagination as well as the ability to work in a team are regarded as very important for excelling in this job. This was considered a little less important in Germany and Switzerland.

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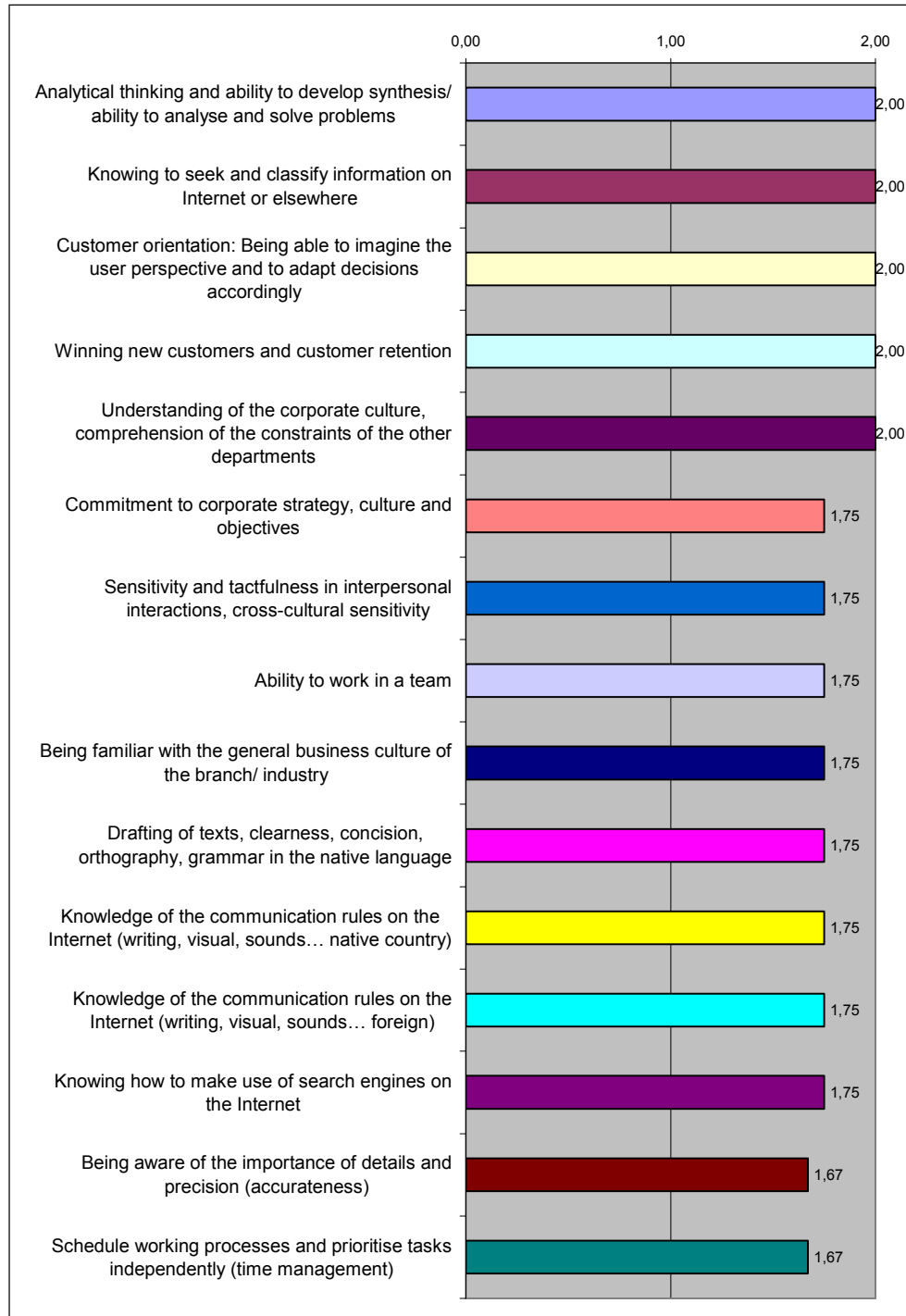
**Graph 6: Job profile Web administration**

Web marketing:

In the job family of web marketing Multimedia professionals should especially dispose of the competence to “make use of search engines on the Internet” and of “user skills of multimedia-software/ hardware”. While technical competences play a less important role, special emphasis is placed on content-related competences such as drafting of texts, knowledge of national and international communication codes on the internet. However, the most important competences in this job family are the behavioural competences. Among the most relevant were the ‘ability for analytical thinking’, ‘knowing how to seek and classify information’, ‘customer orientation’ and ‘customer winning and retention’.

At European level the responses obtained for the job family web marketing were all consistent.

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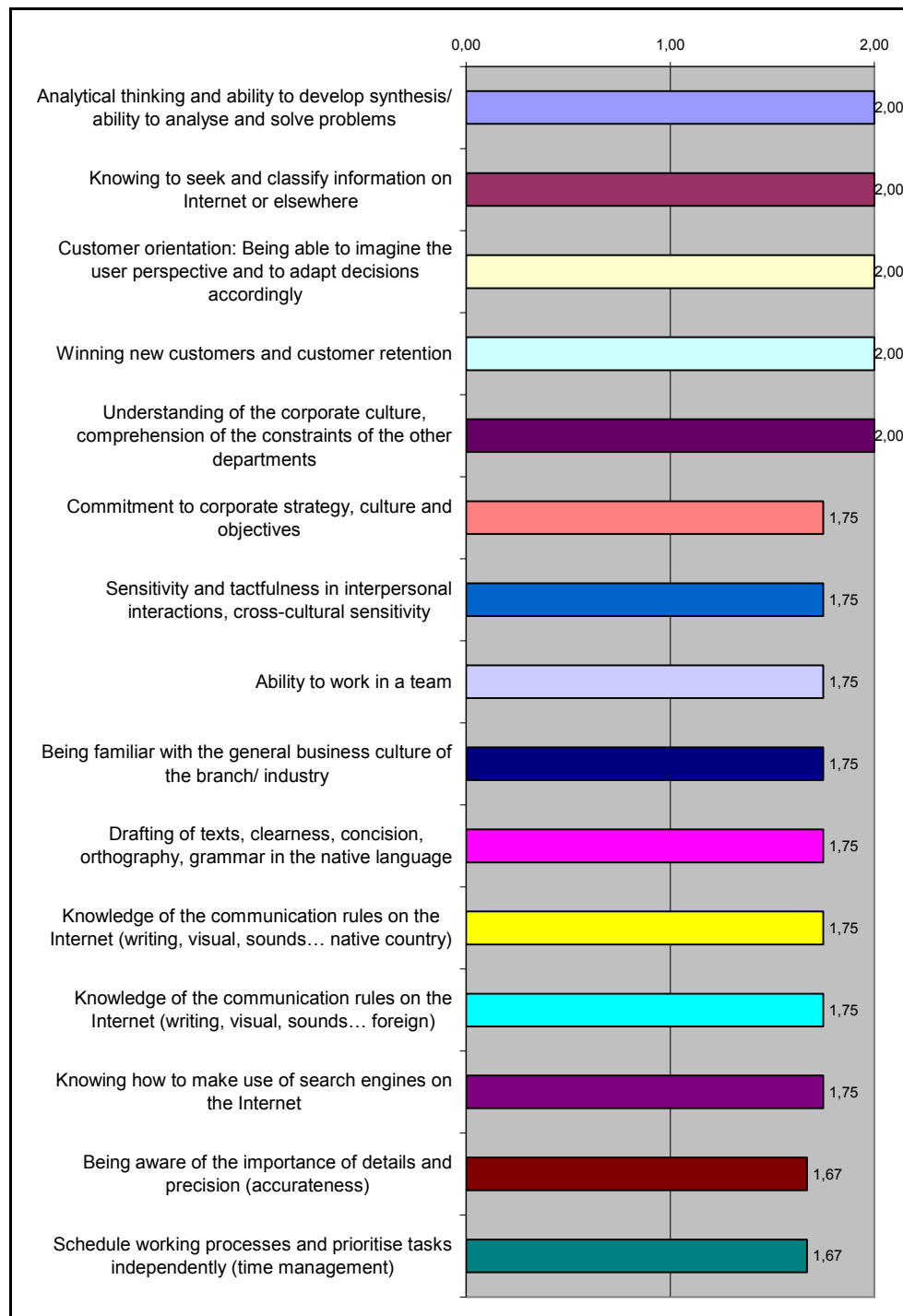
**Graph 7: Job profile Web Marketing**

Authoring:

The job family of authoring requires predominantly behavioural and content-related competences. Creativity and imagination, ability to work in a team and precision and accurateness were considered the most relevant personal dispositions and social skills in this field of work. As far as content related competences are concerned, the ability to draft texts in native language in correct orthography and grammar is the most relevant competence. Furthermore, professionals should dispose of the same competence in English language as well as of the knowledge of codes of communication on the Internet at national and international level. Among the Management competences the competence to find solutions and the ability to prioritise choices are the most important.

Responses received for this job family were quite consistent at European level. This might be also due to the low response rate for this job category (the lowest in comparison with the other job families).

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**Graph 8: Job profile Authoring**

Graphic realisation and design:

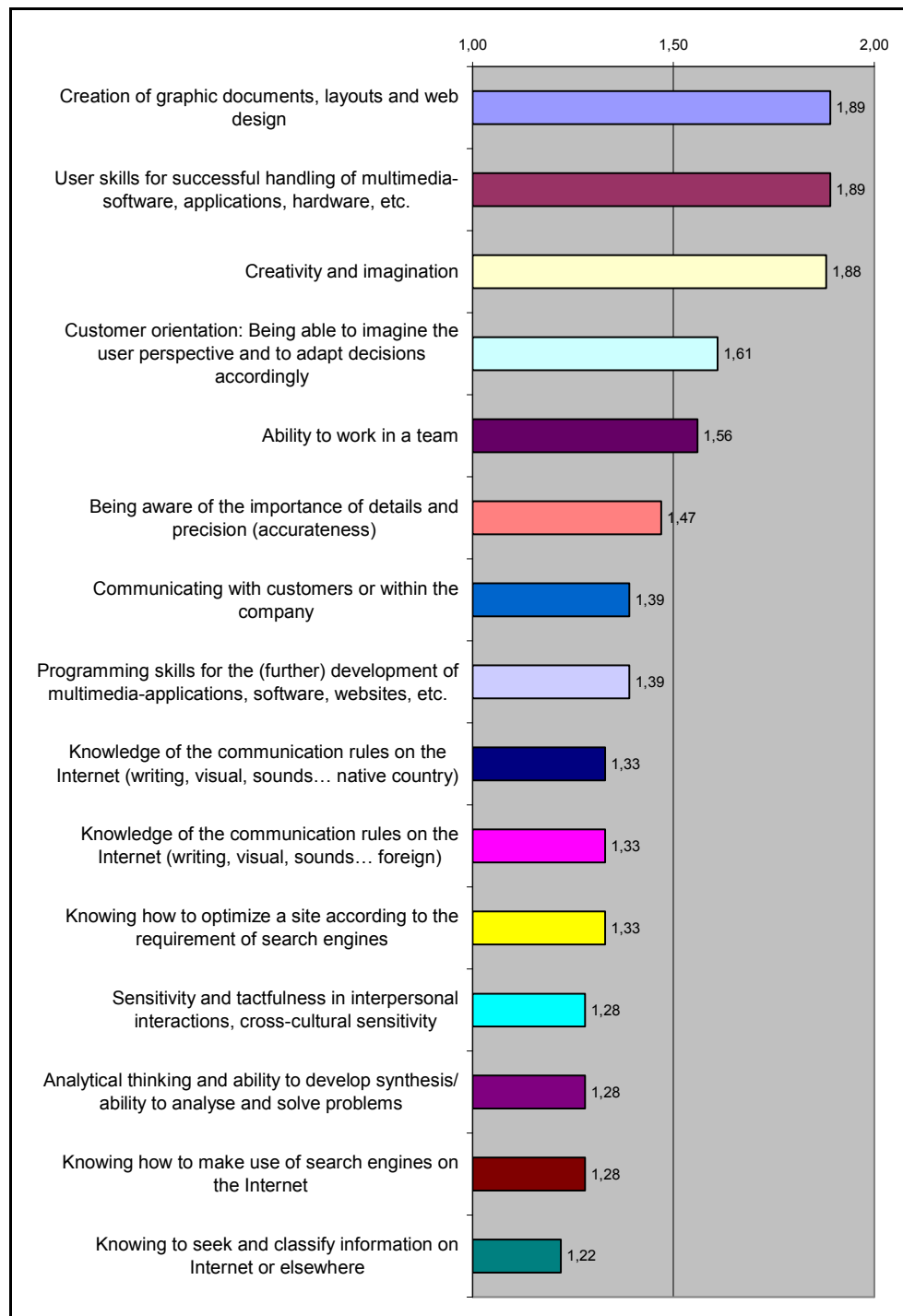
Multimedia jobs making part of this job family require the most behavioural and technical competences. In general, 'creativity and imagination' is considered absolutely important, followed by the 'ability to work in a team', 'customer orientation' and the 'sense for details and precision'.

As far as content related competences are concerned, a lot of emphasis is put on the 'knowledge of the codes of communication on the internet in the native and English language'.

Management competences don't play such an important role for the job family graphic realisation and design. However, technical competences are considered as important as the above-mentioned behavioural competences. Absolutely needed is the competence 'creation of graphic documents, layouts and web design' as well as the 'user skills for successful handling of multimedia-software/hardware'.

The survey led to extensively comparable results in this job family across all European countries, except in Germany and Spain. German and Spanish company managers consider 'customer orientation' as well as 'written communication skills' significantly less important than the other participating countries.

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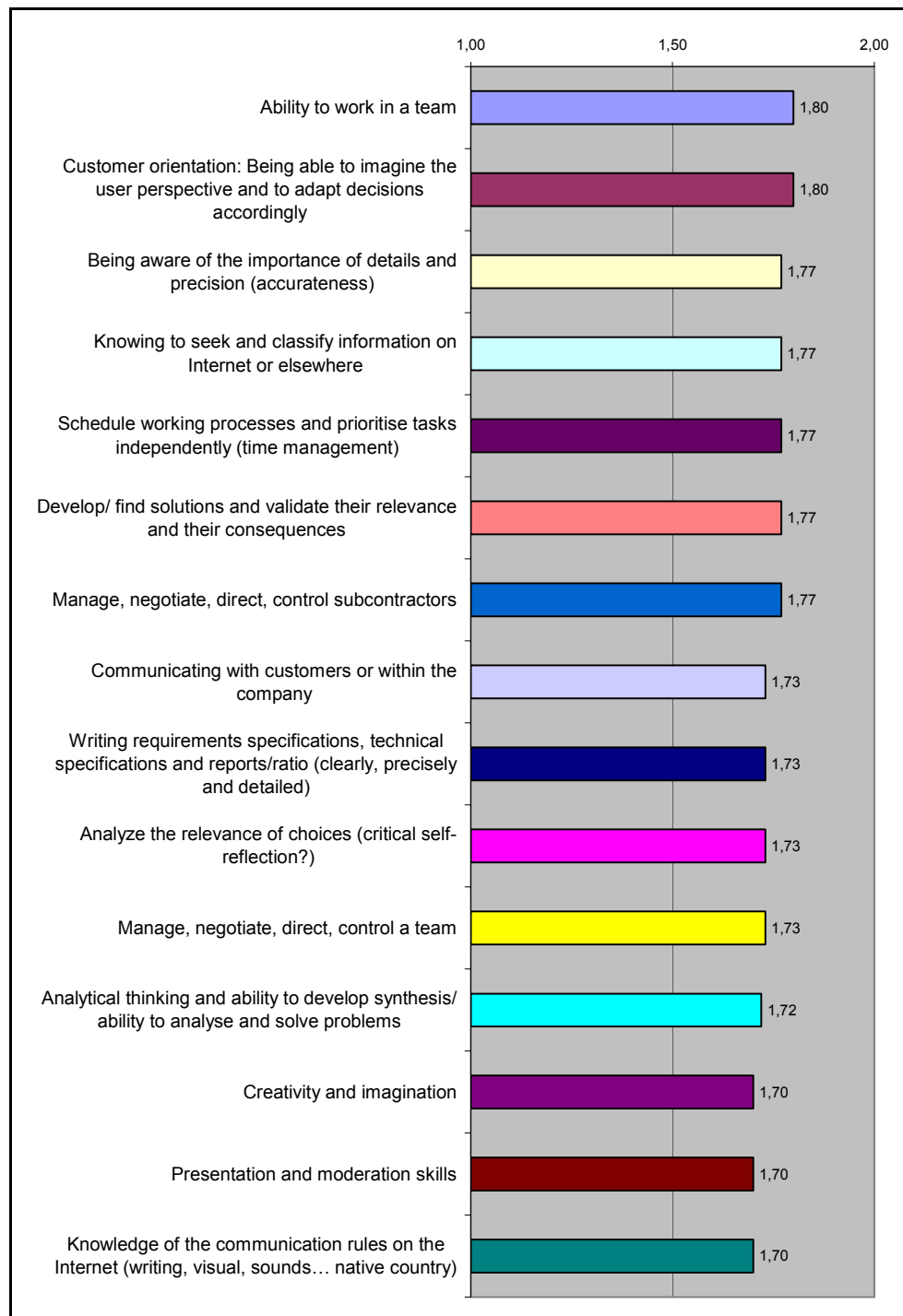
**Graph 9: Job profile Graphic realisation and design**

Project Management:

In the job family project management all content-related competences like 'drafting of texts', the familiarity with 'codes of communications on the internet' as well as 'basics of law' is considered of utmost importance. Less important are technical competences like 'testing/ validating of applications' or 'user skills of Multimedia software and hardware.' Project management rather requires a broad range of behavioural and management competences, amongst others: 'commitment to corporate strategy' and 'understanding of corporate culture' as well as 'business culture of the branch' paired with 'customer orientation' and a set of analytical and management skills.

Also in the job family of project management were no significant variations in the relevance of competences among the participating European countries.

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**Graph 10: Job profile project management**

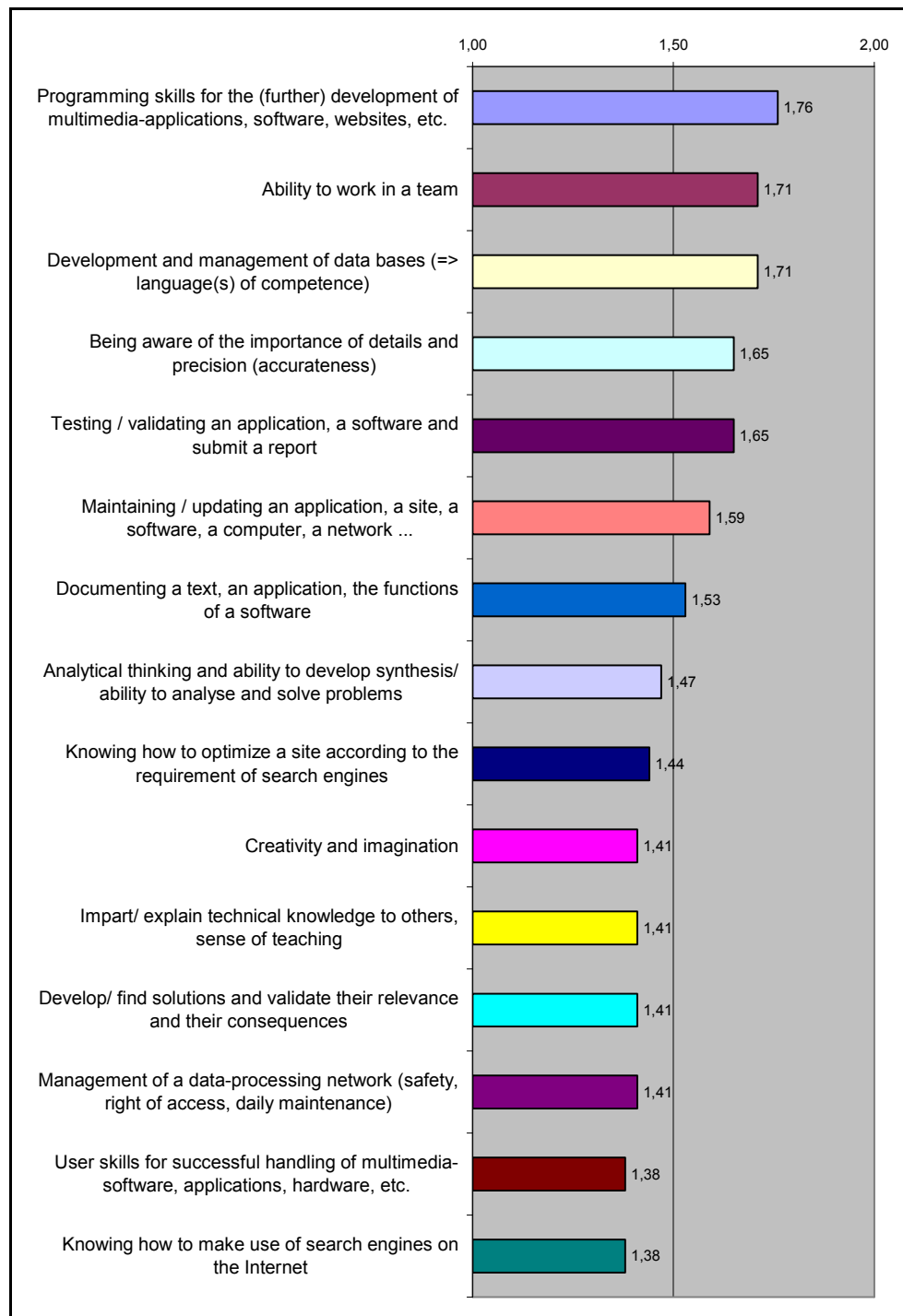
Software development:

In the job family software development the technical competences such as 'programming skills', 'maintaining/ updating of applications', 'testing/ validating applications' and 'data base development' play the most important role. Content related skills instead seem to be predominantly negligible. Written expression is only considered important for writing technical specifications or documenting software.

However, behavioural competences like the 'ability to work in a team' as well as the dedication to details and precision are also regarded as very important.

At European level the job profiles in software development show variations especially in Hungary and Poland concerning the following competences: Presentation skills are considered very important in Poland and not important in Hungary. Furthermore management competences are generally considered not important for excelling in the field of software development whereas these are considered medium important in the other European countries. Additionally the competence for station data-processing is not required for this job family in Hungary and Poland, in contrast to all other European countries.

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**Graph 11: Job profile software development**

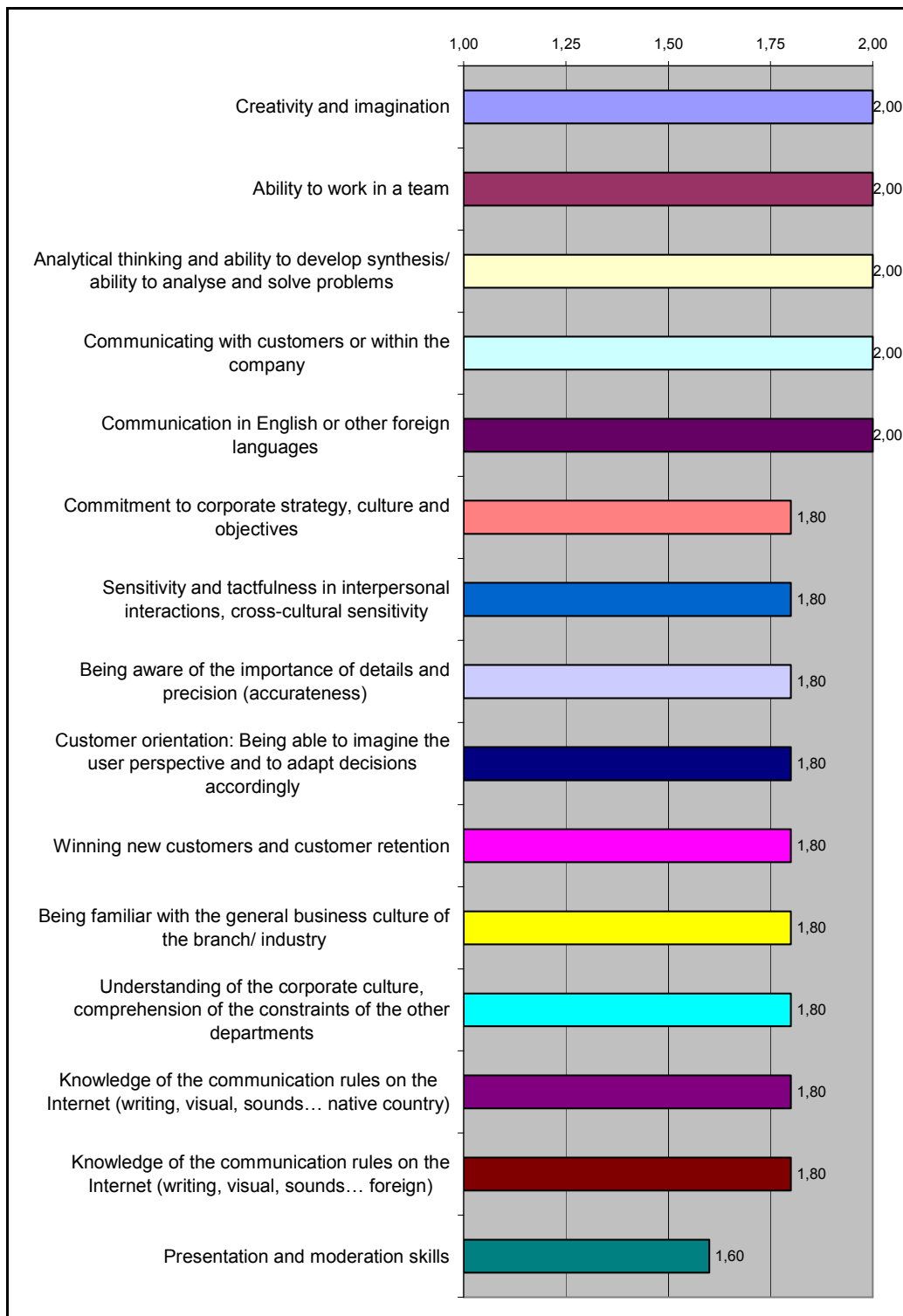
Miscellaneous:

Since this job family pools various Multimedia professions that can't be clearly related to the other above mentioned job families, competence requirements for the various jobs under this job family are barely consistent. Amongst the most important Multimedia jobs mentioned under this job family were the 'Newsgroup moderator' and the 'Netsurfer/ researcher'. In the following we will therefore have a closer look at the profiles of these two jobs.

The 'Newsgroup moderator' mainly needs a broad set of behavioural competences as well as basic management competences. Among the most important are 'Creativity and imagination', 'communication skills' especially in English language, the ability to teach and share knowledge with others and the ability to solve problems. Furthermore, he should be able to conduct technical or financial feasibility studies.

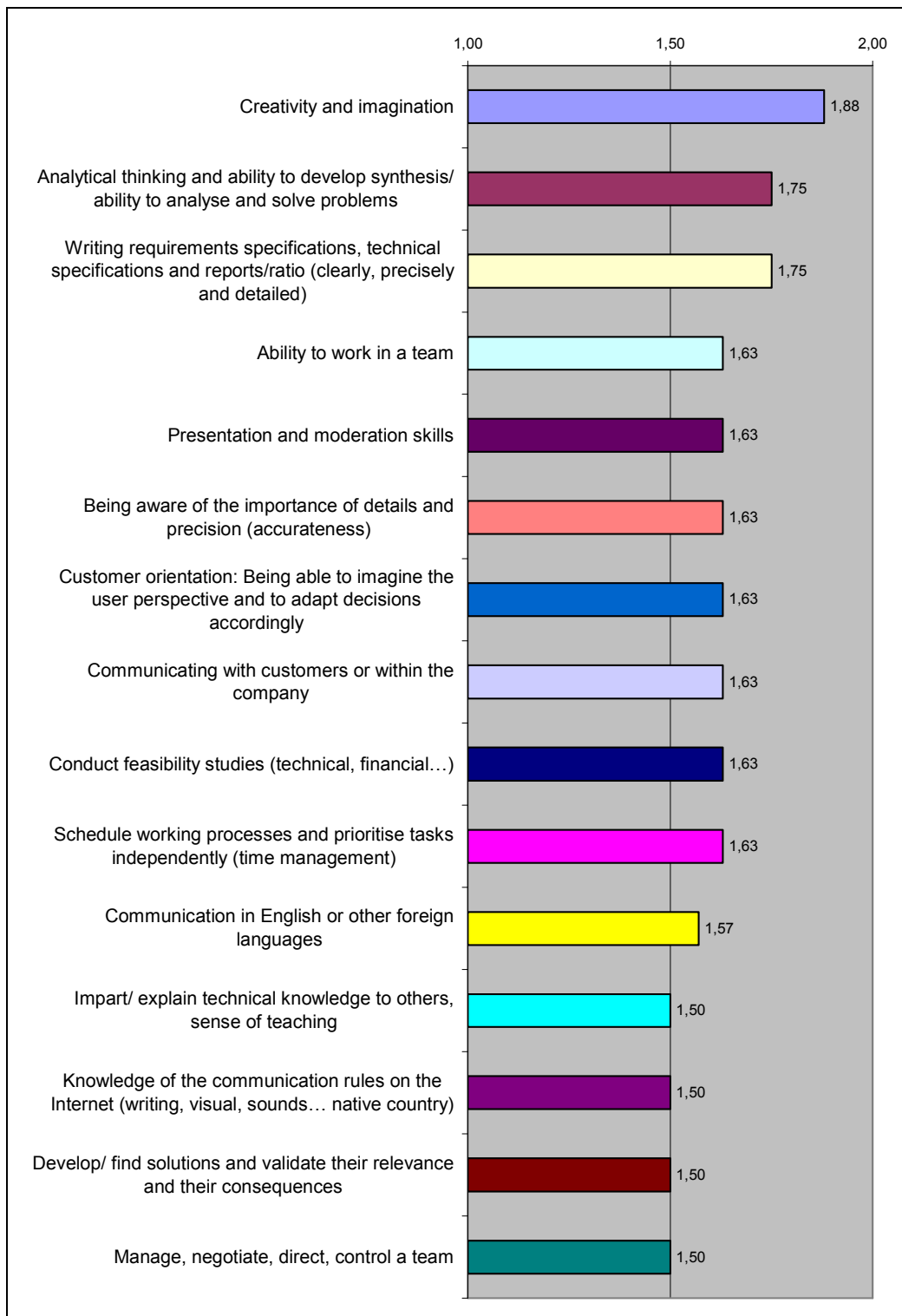
The job of a 'Netsurfer/ researcher' requires predominantly behavioural competences, content-related competences and few management competences. Technical competences are considered also important, but much less than the other skills. Netsurfers have to be creative team workers with the ability to think analytically and solve problems. Additionally they should work accurately, be familiar with the business culture of the branch they work in and dispose of strong communication skills on the internet in English and native language. This includes also having a good command of orthography and grammar. Although technical competences in general play a less important role for this job the 'user skills for successful handling of multimedia-software, applications and hardware' are considered also very important.

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**Graph 12: Job profile Netsurfer**

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**Graph 13: Job profile Newsgroup Moderator**

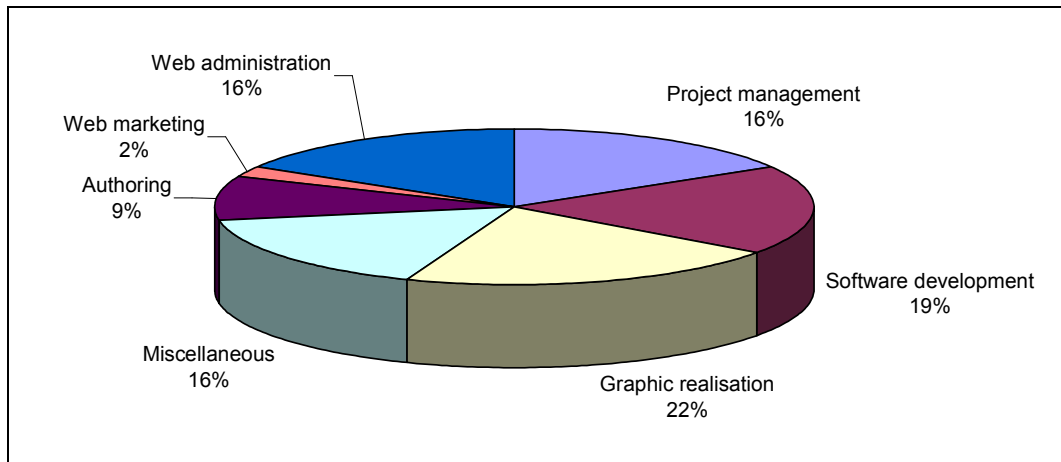
### **3.2. Analysis of the offer – Competences trained in Multimedia training courses**

This analysis was carried out to determine the competences which are trained in multimedia training courses at different education levels. For this purpose the response to the **questionnaires for training institutions** was analysed with regard to the following variables: a) Available course titles, b) Competencies trained in these courses (training profiles), c) Common terminology at national and international level, d) Most trained competencies and e) neglected competences.

#### **3.2.1. Common terminology – course titles and Multimedia job families**

The course titles that were used by the training organisations for their training courses were mostly consistent at European level. The courses titles mostly already implied the Multimedia professions they were aimed at, such as web administration, programming, software development, graphic design etc. Only few course titles were unique in the country they were offered such as the recently developed apprenticeship 'Médiamaticien' in Switzerland. The 'médiamaticien' is an interdisciplinary 'all-rounder'. He is able to adapt quickly to changes and new requirements, is able to apply various Multimedia applications and techniques, provides technical documentation and is able to share his technical and administrative knowledge and experience by training and consulting customers. This Multimedia profession is mainly needed in the financial sector.

Almost one quarter of the trainings for Multimedia jobs offered by training institutions are in the job family Graphic realisation, followed by trainings in the field of Software Development, Project Management and Web administration. Only few Multimedia trainings were described for the job families Web Marketing and Authoring.



**Graph 14: Response rate of training institutions per job family**

### **3.2.2. Competences trained for each job family**

The training offer of European training institutions described in the completed questionnaires was scrutinised with regard to the competences which are trained the most in each Multimedia job family.

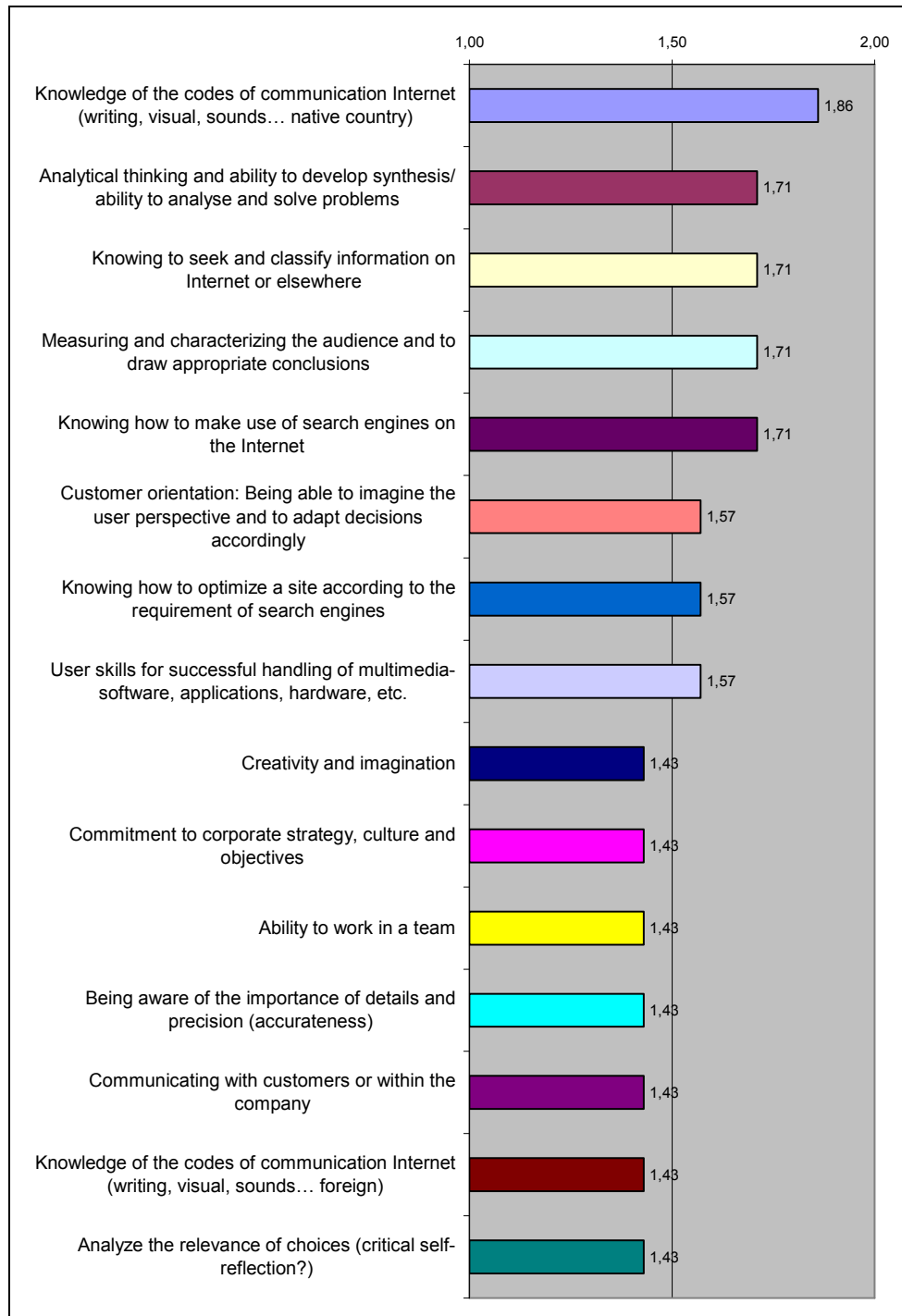
#### Web administration:

As far as technical competencies are concerned training institutions train prospective Multimedia professionals in making effective use of search engines and designing web sites according to the requirements of search engines. Furthermore they train 'user skills for successful handling of Multimedia software' and how to maintain an application or website.

In view of content-related competences, people are predominantly trained in 'codes of communication on the internet (native language and English)' as well as in the 'basics of law'.

Management competencies are also considered quite important but the least important of all competence categories. However, emphasis is placed on behavioural competencies such as 'analytical thinking', the 'ability to seek and classify information' as well as 'customer orientation'

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**Graph 15: Training profile web administration**

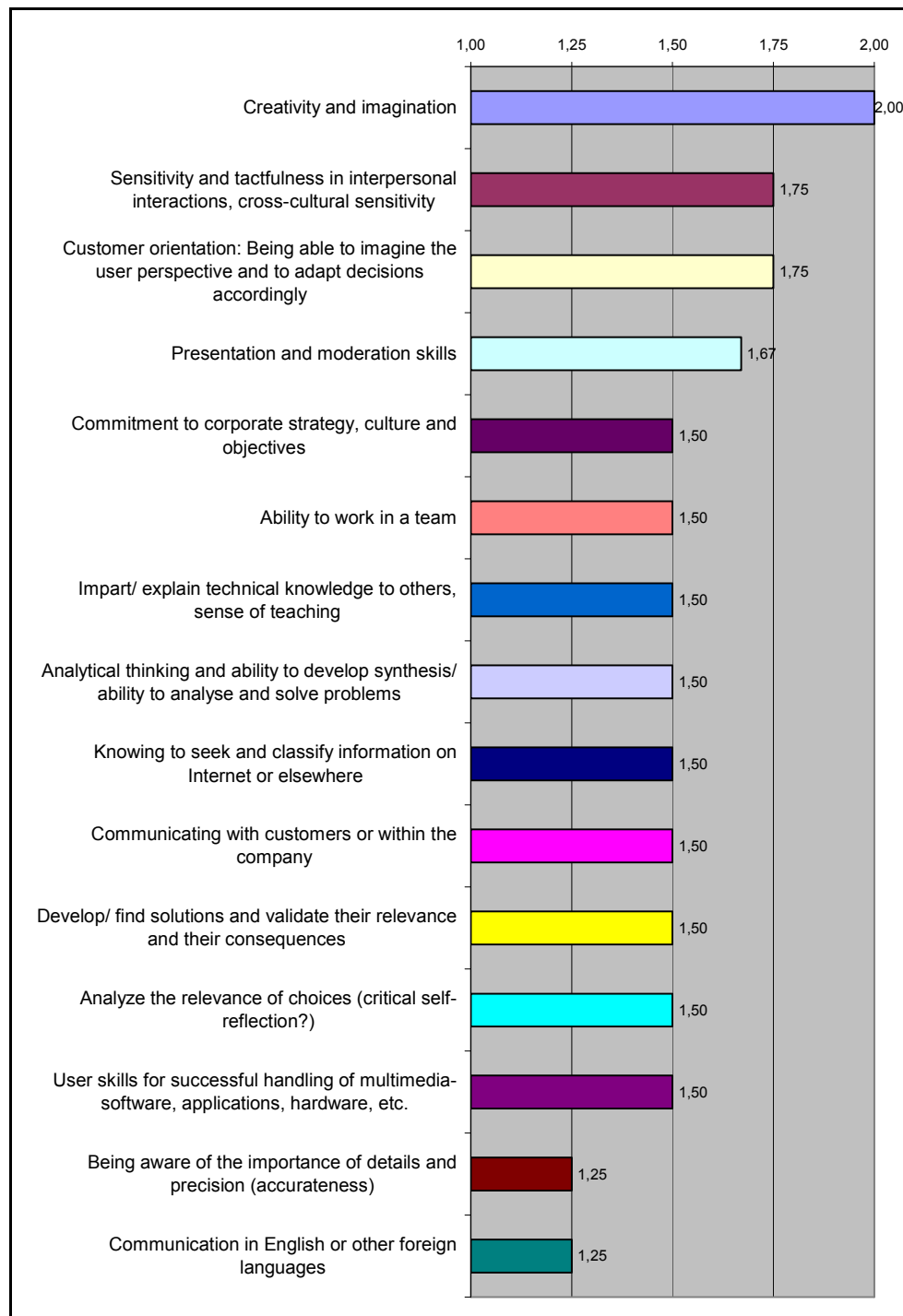
Web marketing:

For the job family of Web Marketing there was too little response for representative results up to now. This section of the report will be up-dated as soon as enough feedback is obtained.

Authoring:

As it was evidenced by the questionnaires of SMEs, the job family of authoring required predominantly behavioural and content-related competences. Surprisingly training institutions place their emphasis more on behavioural competences such as 'creativity and imagination', 'sensitivity and tactfulness in interpersonal relations', 'presentation and moderation skills' and 'customer orientation'. As far as content related competences are concerned, the ability to draft texts in native language or English in correct orthography and grammar is considered less important. Among the Management competences the competence to 'find solutions' and the 'ability to prioritise choices' are trained the most. This corresponds in general to the needs in SMEs. While technical competences are mostly negligible from the SMEs point of view, training institution focus especially on 'user skills for Multimedia software'.

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**Graph 16: Training profile Authoring**

Graphic realisation and design:

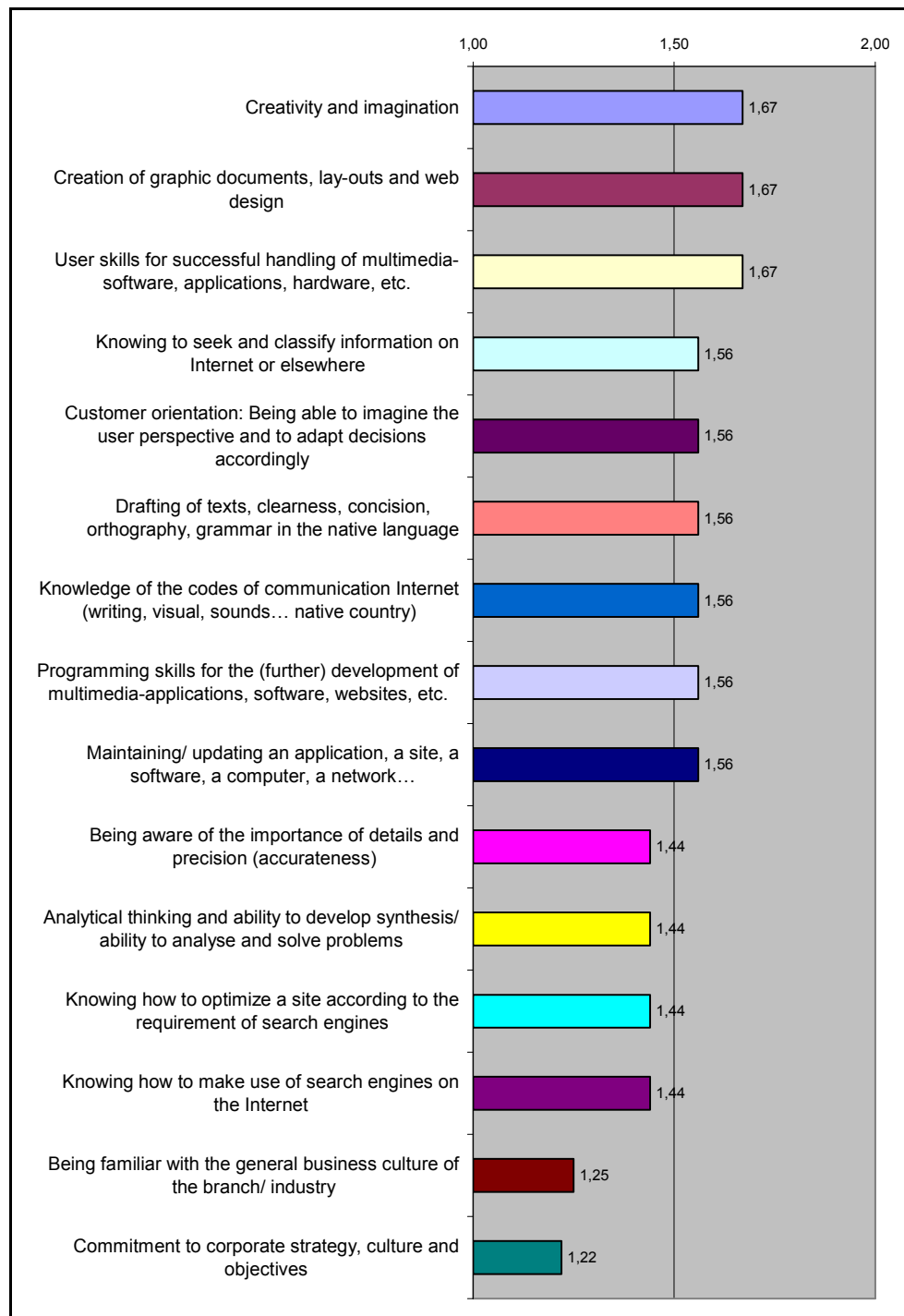
Trainings for Multimedia jobs in this job family are focused mainly on technical, behavioural and content-related competences. In general, 'creativity and imagination', 'ability to seek and classify information' and 'customer orientation' are trained the most.

As far as content-related competences are concerned, training institutions emphasise on the 'drafting of texts and orthography in native language' as well as on the 'codes of communication on the Internet in the native language'. The English language plays a less important role.

Apparently there is no special focus on Management competences. However, technical competences are considered as important as the above-mentioned behavioural competences. Training institutions predominantly teach the "creation of graphic documents, layouts and web design" as well as the "user skills for successful handling of multimedia-software/hardware". Additionally, training institutions also train 'programming skills' and 'maintaining/ updating of applications'.

In this job family competence needs and training offer are relatively convergent.

## R1.7 Status Quo Report - CompTrain

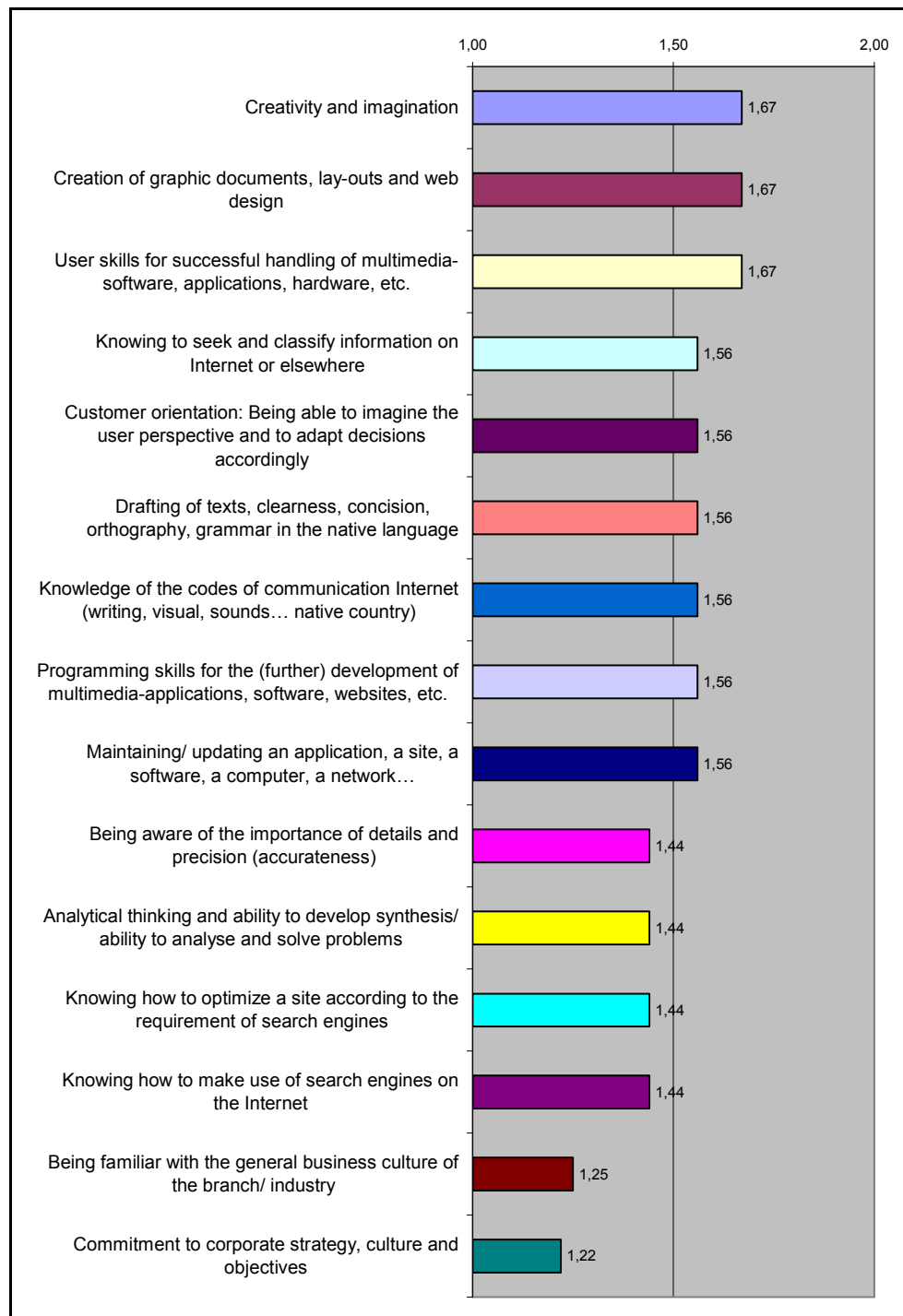


**Graph 17: Training profile Graphic realisation**

Project Management:

Training courses in the job family project management provide predominantly management competences and behavioural competences. In contrast to the need in SMEs for content-related competences like 'drafting of texts', the familiarity with 'codes of communications on the Internet' as well as 'basics of law', these competences are not emphasised in the trainings. Emphasis is rather placed on 'analytical thinking', 'customer orientation', 'sense of teaching', 'strategy commitment' and 'understanding of corporate culture' as well as on a set of management skills. Amongst others 'finding solutions', 'priorisation', 'time management' and 'reporting'. Almost neglected is the training of technical competences.

## R1.7 Status Quo Report - CompTrain



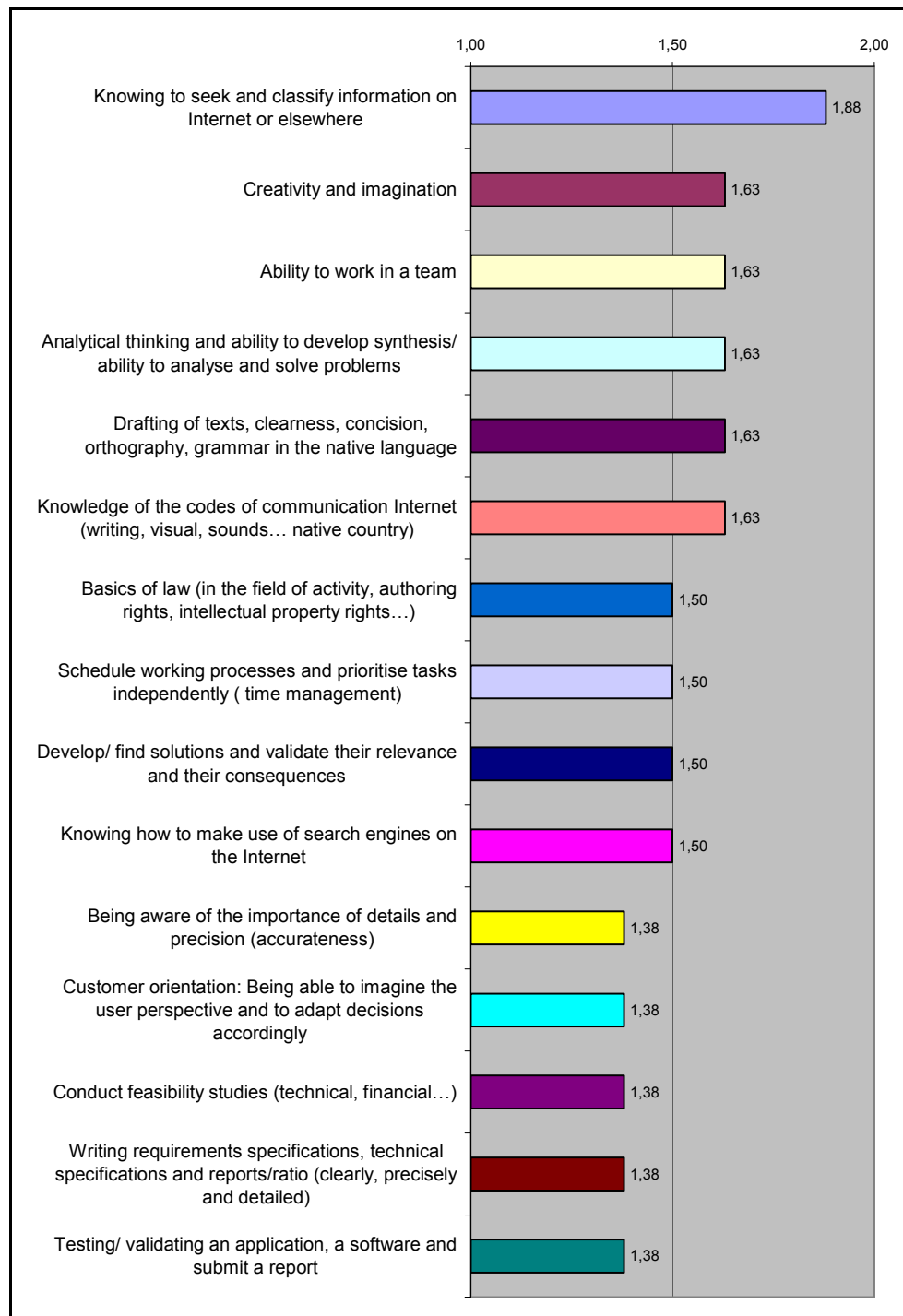
**Graph 18: Training profile project management**

Software development:

As determined by the evaluation of the questionnaires from SMEs, in the job family software development the technical competences such as 'programming skills', 'maintaining/ updating of applications', 'testing/ validating applications' and 'data base development' play the most important role. This is apparently not the case in European training courses for this job family. The focus in training is on content-related, behavioural and partly on management competences.

As far as content related skills are concerned, training institutions emphasise on 'drafting of texts in native language', 'codes of communication (national)' and 'basics of law'. As regards the behavioural competences, training is provided for 'creativity and imagination', 'ability to work in a team', 'analytical thinking' and 'seeking and classifying information'. Furthermore Multimedia software developers get trained in 'time management' and 'problem solving abilities'.

## R1.7 Status Quo Report - CompTrain



**Graph 19: Training profile software development**

Miscellaneous:

Since this training family pools various Multimedia training courses that cannot be clearly related to the other job families, analysis results in this field are not able to lead to a general training profile. An example for a training provided under the job family Miscellaneous is the training for the new interdisciplinary job 'Médiamaticien' developed and offered in Switzerland. The training focuses on Management competences, technical competences and culture. Furthermore, language and communications skills are stressed.<sup>1</sup>

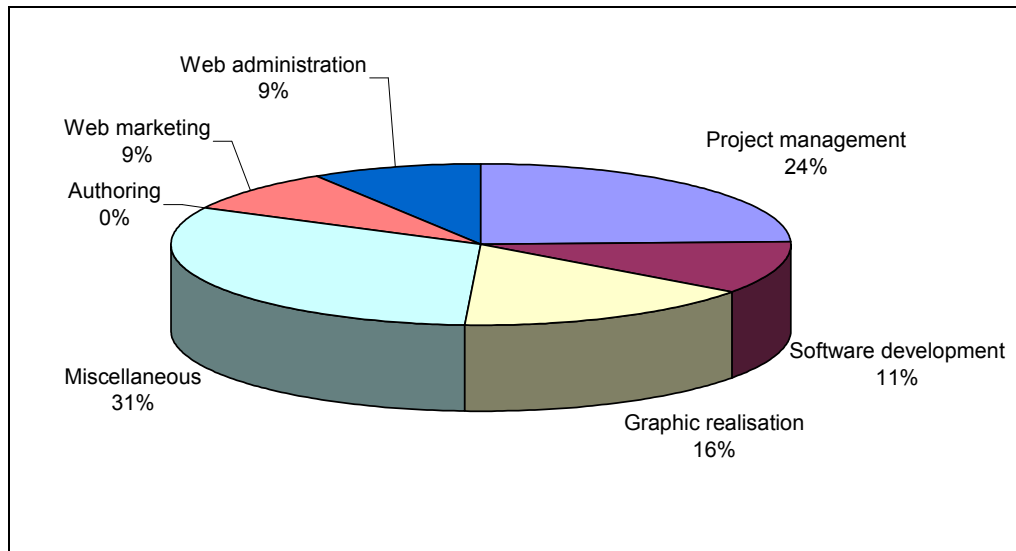
### ***3.3. Comparison of offer and demand by self assessment of students and young professionals***

The self assessment of the students and young professionals adds the point of view of the multimedia professionals to the study. The multimedia professionals are able to judge both, the competencies required in their jobs and the training they had. So the questionnaires of students/ young professionals show whether they have been trained sufficiently on the required competencies or not. Thus, first mismatches of demand and offer can be identified. **Students' questionnaires** were therefore examined concerning the following variables: a) Multimedia job positions/titles young professionals work in, b) Competencies needed in their current job, c) Competencies trained (in)sufficiently.

The following diagramme shows the distribution of responses received per job family from the target group students/ young professionals. The highest response was obtained from students/ young professionals in the job family 'Miscellaneous', followed by the job family 'Project management' and 'Graphic realisation'. No response was obtained for the job family 'Authoring' and relatively little response for the job families 'Web marketing' and 'Web administration'.

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<sup>1</sup> For further information concerning the training contents please refer to <http://mediamaticien.cpln.ch/>



**Graph 20: Response rate of students/ young professionals per job family**

Web administration:

Although training institutions apparently don't train prospective Multimedia professionals purposely in this broad variety of behavioural competences, young professionals and students are convinced, that they have been trained sufficiently in 'creativity and imagination', 'team work' as well as presentation and communication skills in addition to 'analytical thinking', 'classifying information' and 'customer orientation'. As far as content-related competences are concerned, students are convinced, that they have not been trained sufficiently in 'basics of law' although this was mentioned as a training focus by the training institutions.

In view of Management competencies students/ young professionals mention a lack in the training of 'problem solving abilities' and in 'writing requirements specifications'. Moreover, deficiencies in the training of the following technical competences were also declared: 'measuring and characterizing the audience', 'optimising websites according to search engine requirements', 'management of data-processing networks' and 'user skills for successful handling of Multimedia'.

Web marketing:

In the job family of Web marketing Multimedia professionals should especially dispose of the competence to "make use of search engines on the Internet" and of "user skills of multimedia-software/ hardware". Young professionals are predominantly convinced that they have been trained sufficiently in these technical

competences. Since technical competences play a less important role, SMEs place emphasis on content-related competences such as 'drafting of texts', 'knowledge of national and international communication codes on the Internet'. Young professionals think they meet this requirements, but are convinced that they have been not trained enough in 'basics of law'.

However, the most important competences in this job family are all behavioural competences. Students/ young professionals declared that they have been trained sufficiently in all relevant social skills, except in 'communication in foreign languages'.

Authoring:

Up to the present no response was obtained from students/ young professionals working in the job family 'Authoring'. The analysis of this job family will be updated as soon as we will receive enough responses.

Graphic realisation and design:

Trainings for Multimedia jobs in this job family are focused mainly on technical, behavioural and content-related competences. Students are convinced that they have been trained sufficiently in all this skills save in the competences for 'winning new customers' and 'communicating with customers'. As far as content-related competences are concerned, training institutions emphasise on the 'drafting of texts and orthography in native language' as well as on the 'codes of communication on the Internet in the native language'. The English language plays a less important role. Apparently there is a mismatch in the training offer, since students/ young professionals declare they were trained insufficiently in 'drafting of texts and orthography in English' as well as legal aspects.

Also the training of basic Management competences seems to be insufficient in this field, e.g. 'time management', 'writing of technical specifications' as well as 'managing and negotiating'.

However, technical competences are considered as important as the above-mentioned behavioural competences. Training institutions predominantly teach the "creation of graphic documents, layouts and web design" as well as the "user skills for successful handling of multimedia-software/hardware". But students/ young professionals consider this training still as insufficient and would require more training in 'programming skills', 'maintaining/ updating of applications' and 'documenting applications'.

Project Management:

Training courses in the job family project management provide predominantly management competences and behavioural competences. Emphasis is placed on 'analytical thinking', 'customer orientation', 'sense of teaching', 'strategy commitment' and 'understanding of corporate culture' as well as on a set of management skills. Still students/ young professionals think that they have not been trained enough in 'winning new customers' and 'communication skills in German and English'. Amongst others also the typical management competences of 'budget planning', 'time management', 'reporting' and 'managing and negotiating' are not trained sufficiently. Multimedia project managers also declare a training gap in almost all technical competences.

Software development:

In the job family software development the technical competences such as 'optimising websites to the requirements of search engines' and 'testing/ validating of software' were trained insufficiently. In general, all students/ young professionals declared a insufficient training of technical skills.

As far as content related skills are concerned, young professionals/ students would need more training in view of written communication skills and codes of communication in English.

Furthermore Multimedia software developers evidently require better preparation in management competences, since they generally felt not sufficiently trained in these area of competences,

### **3.4. Differences between European countries and possible explanations**

All results obtained at national level have been compared to results at European level. Basically all determined job profiles and training profiles have been compared between the participating countries. During four Comptrain workshops carried out in Budapest, Wroclaw, Vevey and Vienna training organisations, young professionals and company managers discussed the results of the study and sought for explanations for the determined divergences across Europe that concern several job families. In the following, we will summarise the most relevant differences and explanations which were discussed on these workshops.

In the **job family 'Web administration'** 'orthography and grammar' skills play a very important role for company managers in France and Spain. Companies from all other European countries that participated in this survey considered 'orthography and grammar skills' also important. Only Germany's company manager don't consider it important at all. However training organisations from all over Europe neglect the development of this competence in their trainings.

Training organisations argued that 'orthography and grammar' are usually taught at general education and school level and not at higher education or vocational training level. They consider a good command of orthography and grammar a prerequisite to participate in trainings at higher education or vocational training level.

Company managers attributed the difference in importance of this competence across Europe to different perceptions between the European countries. In France or Spain, company managers might recognize a certain lack in 'orthography and grammar' whereas companies in Germany, where a lot of importance to 'orthography and grammar' is already attached at school level, do not perceive any problems concerning this competence.

Another possible explanation was a change in the tasks in the field of web administration. Several companies argued that web administration is often carried out by two different Multimedia professions: 1.) Webmasters, who carry out the technical maintenance and updating of a website. 2.) Web content managers or Public relation officers or Project managers who take over the responsibility for the content of the website.

In the **job family 'graphic realisation and design'** there was a divergence in the importance of 'customer orientation' between Germany and Spain and the other European countries. Companies in Germany and Spain considered it as medium or not important. All other European countries stated that 'customer orientation' is a very important competence for 'graphic realisation and design'. By discussing this issue during the workshops it was not able to identify a clear explanation for this divergence. Some persons argued that deviations might be occurred through a different, exclusively technical understanding of the job family.

The **job family 'software development'** also showed very interesting differences across Europe. For Hungarian companies 'professional presentation skills and techniques' are very important, for Polish companies it is not considered important at all. The following possible explanations were given by the companies represented in the workshops: In Poland this competence is not considered that important since they don't perceive any problems in this field. This might refer to the relatively high education level of people working in the field of software development in Poland. In Hungary instead also less educated people are employed in this job family who might not dispose of the additional competence of 'professional presentation skills and techniques'.

Furthermore, the study determined that a broad set of 'management competences' such as organising, planning, calculating and controlling are required for this job family by companies in almost all European countries, except in Hungary and Poland. Training institutions also focus on the development of 'management skills' in their trainings for this job family.

A possible reason for this divergence might be the different extent to which management skills are required in the various countries to fulfil this job. In Hungary and Poland there is often an IT-project manager that takes over these tasks. Some organisations argued that there might be also a perception problem of the job family 'software development'. For some it comprises all activities related with a software development project, for others this job family only refers to the technical activities like programming.

In the **job family 'Authoring'** a gap was identified between competence needs in SMEs and competences trained for this job. SMEs considered 'orthography and

grammar' and other editorial as well as communication skills in native language and in English as very important. Training organisations instead put their focus on the development of 'user skills for authoring tools, applications and Multimedia software'. In the framework of the discussions at the workshops, this problem was fully confirmed by the different target groups. Training institutions argued, they have to train on skills that can be somehow evaluated. Communication skills and editorial skills are more complicated to assess and measure and therefore play a minor role in the training curricula for this job family.

Another gap between training offer and competence needs was identified in the **job family of project management**. SMEs all across Europe agree that a project manager in the field of Multimedia should dispose of good 'management skills' and 'basic juridical skills (in particular with regard to the Internet and Multimedia business)' as well as have a basic knowledge in the use of 'Multimedia software and authoring tools'. This multidisciplinaryity is important for IT project managers since they work as an interface between technical staff and the customer.

Training institutions usually place emphasis on 'management skills', whereas 'basis juridical skills' and 'user skills for Multimedia software and authoring tools' are usually neglected. Future training programmes should therefore fill this gap by providing a more comprehensive and multidisciplinary training in the field of Multimedia project management.