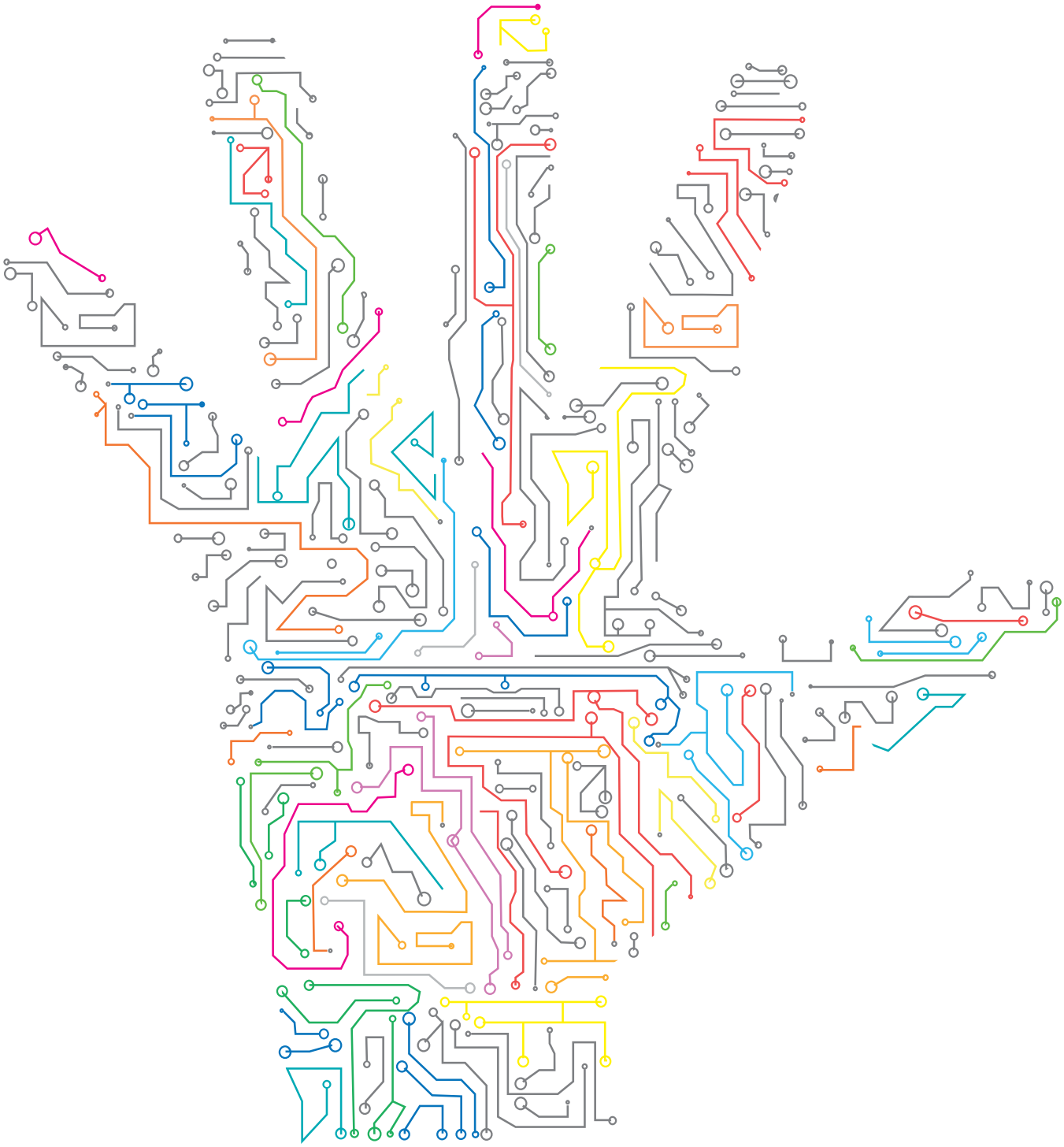
Future Skills

in the Graphical Industry



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in the Graphical Industry

IDENTIFYING AND PROMOTING
BEST PRACTICES IN EUROPE

EGIN
EUROPEAN GRAPHIC MEDIA INDUSTRY NETWORK

INTERGRAF AISBL
European Federation for Print and Digital Communication

UNI europa post & logistics
global union

With support from the European Union

1. Introduction

This report reflects the findings of the project entitled 'Future Skills of the Graphical Industry: Identifying and promoting best practices in Europe. In most parts of the report it will be referred to with the short title 'Future Skills'.

The Social partners of the Graphical industries; Intergraf (employers) and Uni Europa Graphical (trade unions) initiated the project in cooperation with EGIN (the European platform for education, training and labour market projects for the creative industry). The project is executed in the context of the European Social Dialogue, an initiative of the European Commission.

The Future Skills project is co-financed by the Directorate General for Employment, Social Affairs & Inclusion.

The Social Dialogue Committee for the Graphical sector drafted the 'Work Programme 2013 – 2015'[1] describing the key issues for this social dialogue. The work plan contains, amongst others, a paragraph about the development of skills. It notes the importance of monitoring and analysing the development of skills in order to be able to anticipate the skills requirements: "The Social partners will closely monitor the development of skills needs of the sector in order to anticipate changes in skills requirements and will discuss the education and training needs and exchange best practices."

The Future Skills project aims at describing a set of best practices of skills recognition, the analysis of skills and the development and implementation of these skills in education and training.

The member states of the EU all have their own national educational systems, arising from their culture and their political situation. Each country has its own stakeholders and key supporting organisations. This report does not aim to judge the existing frameworks of education, nor does it weigh or rank national procedures or practices that are applied to produce the content of education, these are primarily their own tasks and the responsibilities.

The project 'Future Skills' does attempt to describe a set of best practices for skills recognition, analysis of these skills and subsequent development of education and training programs and the implementation thereof in whatever form or setting education and training takes place. The best practices will provide the parties working in the broad sector of the Graphic-Media andallied industries with help and support with regards to skills development and implementation. It will describe the role of key players in the various processes of skills development.

1. Social Dialogue Committee for the Graphical Sector Work Programme 2013 – 2015, adopted in December 2012

2. Management Summary

Skills, and the ongoing need to review and update are rightly seen as the cornerstone of economic and social progress. Intergraf, along with its social partner Uni Europa Graphical, supported by the European Commission, initiated this project aimed at identifying the crucial stages in that ongoing process of identifying and analysing those necessary new skills and implementing training solutions.

The approach was threefold:

- A survey of the industry across Europe;
- Desk research into the present situation in the industry and education;
- Identifying and describing best practices.
- The results are reflected in the chapter on "best practices" and the report ends with "recommendations" on the current situation and how it may be improved.

In the survey of the industry a distinction was made between the traditional printing industry and what may be called "new media and digital industry". This resulted in some interesting findings / observations in the starting point of the identification of new skills (with employers leading the way in the traditional industry and VET schools in the new media) and the nature of the skills (with employers leading on extensions of traditional roles and VET schools on the development of completely new job profiles). It was observed in the new media responses that Higher VET had an increasingly important role which is not surprising given the IT and conceptual nature of these jobs and in the traditional print area the importance of social partnership bodies was noted. Finally, the length of time taken to develop and validate new skills programmes in VET, with anything up to three years, is problematic for employers in the fast moving parts of the industry as the case studies highlight.

In the traditional but changing printing industry it is not surprising that VET based apprenticeships are well established and respected. The EU has supported this position over the last decade with a number of encouraging declarations and communiqués recognising that VET, more specifically Workplace Based Learning (WBL), could be an answer to sluggish economic growth and youth unemployment. These pronouncements have been implemented across Europe with varying degrees of enthusiasm but nonetheless form the bedrock of education and training in the industry. The struggle however has been matching the aspirations of the EU and member states for a strong tripartite approach to skills development with the demands of a fast changing and competitive industry in which a 3 year skills programme development process cannot, in the current situation, be contemplated.

The present situation of the industry has been much referred to above with the compelling characteristic of the speed of change. This speed and the availability of technology continue to put pressure on employers and employees in an industry where new competitors emerge free from the, perhaps perceived, constraint of the history of the traditional industry. The way in which governments, social partners and the whole industry react to that competition will be crucial to the future success and growth.

The changes in industry and the speed of them, resulting in pressure on the companies to respond to them rapidly, results in pressure on VET providers too. It is almost impossible for schools / colleges to keep track with these changes or to anticipate at very early stages to those changes, but we address this in our recommendations.

In formal education the response time to make changes to programmes or to offer new courses is at least 12 months. This is due to formal rules, regulations and planning schemes. The need for intensive exchange of information about developments and skills needs of the industry, changes on the labour market, is of prime importance for all stakeholders. Social partners could and should play an important role in facilitating and initiating these relationships at all levels.

The chapter on Case Studies shows how the stresses and strains have been reflected in company behaviour at company and national level and point the way to the chapter on Best Practices. In that chapter the threads of the industry survey, desk research are, together with the Case Studies, drawn together to produce some answers to the skills "recognition, analysis and implementation" conundrum which in turn lead to our recommendations in the final chapter. Recommendations such as:

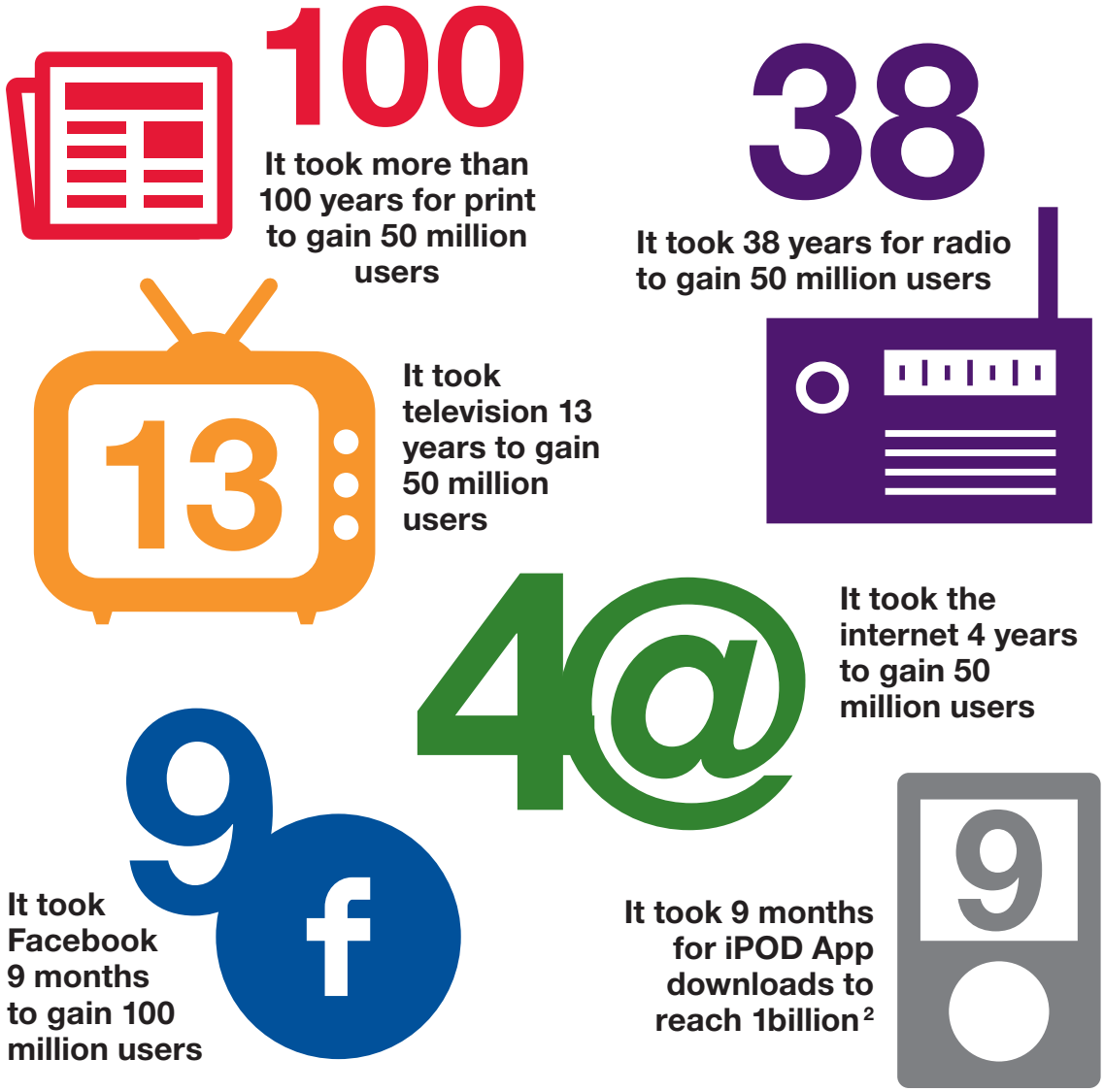
- Social partner guided VET development works well in the traditional industry but is less suited, in its current form, to the faster moving "new media"; involving different and new networks need to be implemented in the processes;
- VET schools, employers and trade unions have a joint responsibility and interest in an "early warning" role in technology/skills changes;
- Employers at the leading edge of the industry should be supported at EU and national government levels as pathfinders in new skill development.

3. Present situation of the industry

3.1 INTRODUCTION

The European printing industry is not only an essential part of modern communications but also a vital economic function with 685,000 wealth creating employees, a turnover of €88bn in 118,000 companies. However, because the industry is one dominated by SMEs with 90% of those 118.000 companies employing less than 20 employees it does not always demand recognition.

Figure 1:
When considering change in the graphics industry it may be helpful to put change in the context of communications in general. Consider the following statements:



2. Joseph W. Webb, Ph.D. Richard M. Romano 2012, Disrupting the Future

The evolution of the sector is a natural process as new ways of communicating are added to existing ones, not always to replace them, but to complement. We still have print, we still have radio and we still have television, but one thing is certain and that is that the pace of change is accelerating and the customer/end user is being offered more and more choice. This means, thinking positively, that the provider of print services is able to offer an increasing number of ways to customers to communicate their message; or, if one wants to be negative, the provider of print services faces more and more competition.

Google CEO Eric Schmidt said in his predictions for 2014, "The trend has been that mobile was winning; and it has now won." Mobile communications technology is a technology that is disrupting the role of traditional communications. But print still accounts for a third of communications spending, although declining and it is expected to decline by 6% in 2014[3]. In the same report mobile and online were both forecast to grow and together account for 17% of communications spending in 2014.

3.2 OVERVIEW OF THE DEVELOPMENTS

It is useful here to set out some of the technological changes in the industry and some of the innovations in other complementary media over the last two decades.

The 1990's began with the introduction of colour digital print (both with toner based xerography and liquid inks) which initiated the revolution in what the printer could offer his customers – short runs at economical prices backed up by long runs using conventional print technology. Interestingly, and this may say something about the perceptions of the industry from the outside, the initial market targeted by vendors was the agency and the repro house. Subsequently, the printing industry has embraced digital printing and even the smallest printer has some form of device.

Digital printing also made inroads into the poster market, normally the realm of the screen printing technology, with wide format digital printing and now, as with conventional digital printing, wide format digital is to be found in many small and medium size print companies.

The impact of digital printing had only just begun to be felt and the benefits realised by the industry when software providers (either independent or from equipment vendors) began to offer ways in which the full benefits of digital printing could be exploited – these include self-publishing, variable data printing, versioning and web-to-print. The latter offers the ability for printers to automate the production process, give control and responsibility to the customer (with template design and online proofing) and to market themselves via the internet. Additionally suppliers offered the training to go along with the technology changes and therefore the latest disruptive technology was supplementing or usurping the traditional role of colleges for vocational education and training.

"Social media" was originally within the hands of the marketers. Facebook, Twitter etc. have only been around since 2006/7 and with humble beginnings as a way of students communicating with each other or blogging by giving status updates/information to a group. Further platforms were developed – for example Whatsapp! in 2009 (acquired by Facebook) and Instagram in 2010 (also acquired by Facebook) – all offering more ways in which marketers can get their message across and providing further competition, or collaboration opportunities, for the printing industry.

3.3 PERMANENT CHANGE

However, the 'printing industry' has been in a permanent state of change ever since it evolved in Europe in the mid 15th century but as a major player in communications the figures above place emphasis on the fact that the pace of change is accelerating, particularly in the last decades. So what is the cause of the constant state of change, who is to blame? The answer is unfortunately not simple and there is not one answer but rather a complex interaction of technology, people, education, politics, economics, generational culture change and others and at certain times in history each of those causes has taken the lead to speed up or slow down the pace and direction of change.

It is a fact that the industry is not unique in having to deal with and react to change with all sectors of the economy having to respond to those challenges. Many industries have commissioned studies and reports on the structural problems and the consequent threats to their industries. Opportunities, recommendations and strategies to overcome part of the problems and be well equipped to fight the threats have also been published. The economic crisis, and consequent reductions in GDP in general and spending on print in particular, has resulted in a much faster pace of restructuring of the industry.

Many companies, for example in the traditional print and finishing segment of the sector, did not have the time to restructure or failed to take the necessary measures to carry on business and did not survive the recession. At the same time the industry is also facing the problem of shortages of skilled staff, due on the one hand to the demography of the workforce and on the other hand staff leaving the industry with their specialised skills and taking jobs outside the industry. Furthermore this "traditional" part of the industry has had little appeal to the younger generation as manufacturing industry with its 'heavy engineering' equipment is not attractive and recruiting young people is a problem.

3. Infotrends: Understanding vertical markets: Enterprise Communication Requirements 2012

Furthermore, training systems had not kept up with the pace of change and no longer satisfied the needs of employers neither for new skills nor for the future employee who was anxious to be trained quickly in that very new technology that permeates modern life.

3.4 NEW ADDED VALUE

To be successful many companies and their employees will have to undergo significant change to be able to deploy new media technologies and to integrate them into their current work processes. In this sense it is a matter of seamless integration of new technologies and therefore new services into existing services. It is more than likely that the successful company in the next decade needs to focus on creating new added value services for customers and offering full communication services. Adding new services of course has significant implications for the skills of current and future employees. It may be of course that these new services need not be all offered from within one company but more probably from long term strategic alliances along the whole industry supply chain which itself does not completely remove the need for new knowledge and skills. Therefore, the current issue for the printing industry is: how does it interact with the "new" technologies and in particular how does it take advantage of its pre-eminent position in the communication sector? The Infotrends report referred to above goes on to examine how those businesses accessing communication services make that access: "More than 85% of those surveyed were working with print service providers on mobile marketing initiatives" and the major avenue into the new media services such as web services, SEO (Search Engine Optimisation) and multi-channel marketing was through their current print provider. It is clear that success in the new media world demands that firms transition their businesses beyond offering only print services to providing cross-media marketing services with all the implications for skill sets.

The challenge is the integration of all methods of communication into a coherent and holistic campaign with the question being: who leads this integration. Print is in the driving seat but to retain that pre-eminent position the industry has to prepare, not by abandoning the old skills of printing, but by amending or adding to those gradually with the addition of new skills in the new media. This can be done by extending existing skills or in some cases by the introduction of completely new job profiles. This is explored in detail in later chapters.

3.5 IMPLICATIONS FOR SKILLS

The role of people in the industry in the future will be just as valuable in the new situation the industry will find itself in as it is today. After all the labour element of the industry's cost base is something like 30% so those running companies are right to pay careful attention to the contribution of people.
So what is the impact of the recent history of the industry on the mix of skills needed by companies and individuals to take the industry forward?

Existing skills, and the ability to add to and augment those skills, are being lost (by virtue of an ageing workforce) and new skills are needed in order to offer the new products, services and innovations which have to be implemented in the companies to remain competitive in an increasingly global environment.

This need for new products, services and innovations causes changes in skills needs which employers, employees (and their representatives), employer's organisations and VET schools will have to individually and collectively respond to. Describing the process of analysing these skills and developing them and further implications will be examined in the remainder of the report in particular case studies which reflect the technological and social changes in the industry and society.

4. Education

4.1 INTRODUCTION

Education plays a crucial role in the lives of people as does Vocational Education and Training (VET) being part of the educational system. It is vital for the development of nations being the backbone of economic development and as such it is indispensable for the companies and institutions that are material to this economic development.

In this report the focus is on VET as it is relevant for skills development and adjustment for new business scenarios in the graphics industry. Educational systems in the EU have many aspects in common but will always reflect the culture of the specific country or region and are subject to national and regional government policies and rules. Cedefop, European Centre for the Development of Vocational Training says about this: "There is no single European VET system. VET is very diverse and the variations in systems, providers, regions, and sectors make comparisons challenging. Complicated governance structures that affect the consistency and complementarity of policies make it difficult to point to single policies to tackle or alleviate problems. The merit of any particular policies must always be assessed taking into account the unique features of a country's VET system and the socio-economic context"[4].

These differences reflect the situation in each country, which makes comparing of educational programmes problematic. There are a number of possibilities to make comparisons at systems level, describing the generic levels of education. Two of these possibilities will be briefly described.

1. **The European Qualifications Framework (EQF)**
   Framework for overall education is one of the instruments that can be applied to classify education in agreed standards and descriptions. Each country has agreed at EU level to also describe its own national educational system in the format of the European Qualification Framework;

2. **For Higher education the European Credit Transfer and Accumulation System (ECTS)**
   A standard for comparing the study attainment and performance of students of higher education across the European Union and other collaborating European countries. For successfully completed studies, ECTS credits are awarded. One academic year corresponds to 60 ECTS-credits that are equivalent to 1500–1800 hours of study in all countries irrespective of standard or qualification type and is used to facilitate transfer and progression throughout the European Union.

The systems mentioned here by no means reflect current situations in the labour market nor have the intention to interfere with the systems of collective agreements between social partners of the EU member states. This explicitly remains the territory of national organisations.

In this period of low economic growth and ever shrinking economies, a number of specific measures with regards to labour market and employment have been agreed at European level.

- Intensifying the efforts to update vocational education and training which plays an important role in the measures that were decided, both with regards to economic growth that needs to be achieved;
- Overcoming the increasing rate of youth unemployment.

Intensifying the efforts to convince young people to choose a career involving further VET based education has not become easier. It is, however, seen as one of the most important pillars of overcoming the problems in the economy.

In a number of EU countries reforms are taking place in VET. At present Finland, Denmark, Norway and the Netherlands are going through such reforms, however, not necessarily because there is a demand from industry or the social partners. Mainly these governments are implementing new structures, new systems with the aim of cutting budgets to meet national or EU budgetary demands. These measures are called efficiency measures, but whatever the name they affect VET and in many instances not in a positive manner. The precise results of these changes are not clear at the moment of publication of this report.

4.2 WORK BASED LEARNING

Within the EU the term Work Based Learning (WBL) is more in vogue now when referring to different schemes of VET where work based learning is the key feature. The term Work Based Learning is more or less is self-explanatory: it means that a substantial part of the vocational education is spent on work related training and education. There are various descriptions that can be applied to work based learning schemes.

Three main areas are distinguished in the following descriptions:

- *Apprenticeships, or* alternating *schemes.* In e.g. Germany, Switzerland and Austria called 'dual system'. The basis for this scheme is a kind of integration

4. Cedefop: Trends in VET policy in Europe 2010-12, Progress towards the Bruges communiqué. Luxembourg: Publications Office of the European Union, 2012

between companies, VET providers and training providers (who may also be VET providers). Students of this scheme receive a substantial portion of their education in companies and in 'alternating' periods go to a VET school to receive more general education and skills, additional practical skills and competences. The work related part of the training will normally exceed 60% of the total training time. In many instances there is a contractual relationship (including remuneration by means of wages / salaries) between apprentice and company and in many cases also between school and the apprentice. The education leads to a formal qualification. The social partners take the responsibility for the quality of the work based learning.

- *On-the-job training programmes* as internships, training placements or work placements in school based programmes. These schemes can be an optional or compulsory part of a full time VET programme leading to a formal qualification. The internships may vary in duration, but they are less than 50% of the total programme.
- *Work based learning as part of the school-based programme.* The practical component is performed in labs, workshops, inside school businesses and should be regarded as simulations of the company environment.

Prerequisite for high quality Work Based Learning results are the cooperation of the social partners, a high level of company participation and very well developed relations between the industry and the educational organisations that have responsibility for VET. In the Northern parts of Europe there is a very strong social partner influence and support for the apprenticeship schemes. In other parts of Europe this is quite different, so the term apprenticeship cannot be used simply to describe the system in VET without further explanation. Recent research of Ikei[5], commissioned by the EU, states that in 24 of the 28 member states forms of apprenticeship can be found. There are several concepts of apprenticeship unfortunately there is not one single definition.

Cedefop defines apprenticeship as follows: *Systematic, long-term training alternating periods at the workplace and in an educational institution or training center. The apprentice is* ***contractually linked*** *to the employer* ***and receives remuneration*** *(wage or allowance). The employer assumes responsibility for providing the trainee with training leading to a specific occupation".* With this definition there is a clear contractual link between apprentice and employer. This contractual link was one of the most important characteristics of the apprenticeship system.

However, recently Eurostat[6] introduced the following definition: ***Apprenticeships*** *aim at completing a given education and training programme in the formal education system. Learning time alternates between periods of practical training at the workplace (inside or outside the employer premises) and general/theoretical education in an educational institution or training center (on a weekly, monthly or yearly basis).* In this definition the strong contractual link between the employer and apprentice is not present anymore. In a list of requirements the apprenticeship has to meet it says: *The participant (apprentice) receives remuneration (wage or allowance). The duration of the contract or formal agreement is at least six months and at most six years.* In the least it means the relationship and strong link between student and learning company has changed in this concept.

These differences make it very difficult to speak about a European Apprentice system. For this reason the Ikei report defines apprenticeships as follows: *those forms of Initial Vocational Education and Training (IVET) that formally combine and alternate company based training (periods of practical work experience at a workplace) with school based education (periods of theoretical/practical education followed in a school or training center), and whose successful completion leads to well and nationally recognised initial VET certification degrees.*

5. Ikei, Apprenticeship supply in the Member States of the European Union, Luxembourg: Publications Office of the European Union, 2012 ISBN 978-92-79-23166-7 doi: 10.2767/55842

6. Eurostat is the statistical office of the European Union situated in Luxembourg. Its task is to provide the European Union with statistics at European level that enable comparisons between countries and region

Figure 2: Basic Differences between work-based & school based apprenticeship-types schemes

MAINLY WORK-BASED	MAINLY SCHOOL-BASED
• Training in Enterprises > 60%	• Training in Enterprises > 70%
• Companies offer places • Students actively search for places	• Training centers & students search for companies
• Work contract: Entreprise - Apprentice • Apprentice = Employee	• Training agreement: School-Enterprise • Apprentice = Student
• High share of financing by enterprises	• Public sector main source of funding
• Apprentice receives remuneration	• Apprentice may receive compensation
• Companies define training plan	• Schools establish training plan

Source: Ikei, Apprenticeship supply in the Member States of the European Union

Figure 2 describes the significant differences between a mainly work-based system and a school bases system. The table illustrates well the differences between work- and school-based programmes in the printing industry, the employer however does not 'define' the training plan, rather they implement an industry standard plan.

In most EU countries printing and print finishing education is showing decreasing numbers of participants. Many Graphic Media schools have stopped offering education in these disciplines with the main reason being that there has been hardly any demand for this type of education. The equipment and infrastructure needed by the schools for these types of training mean a heavy burden on the budgets of the schools, so in many cases it is not possible for schools to continue the courses.

One of the most logical solutions in this situation could be to apply systems of work-based learning of a high quality and in a professional way. This can be in the form of a dual system, apprenticeship, alternate learning or whatever hybrid form of training in a company / or alternative site (learning labs) and the school's role can be developed for this.

It is important to know about the differences in the concepts of apprenticeship schemes in Europe. The discussion about updating the systems, about intensifying such schemes in Europe will need to also address the relationship, contractual or informal between the student and the workplace. The social partners should play an active role in this discussion both at national level and at European level.

Figure 3: Actors involved in the design of apprenticeship-type schemes by country

ACTORS INVOLVED	DK	ST	FR	DE	PO	SL	ES	NL	UK
State at central level	O	O	O	O	O	O	O	O	O
Regional/municipal authorities	O	O	O	O					
Social Partners	O	O	O	O	O	O	O	O	O
Vocational schools	O	O	O	O	O	O			

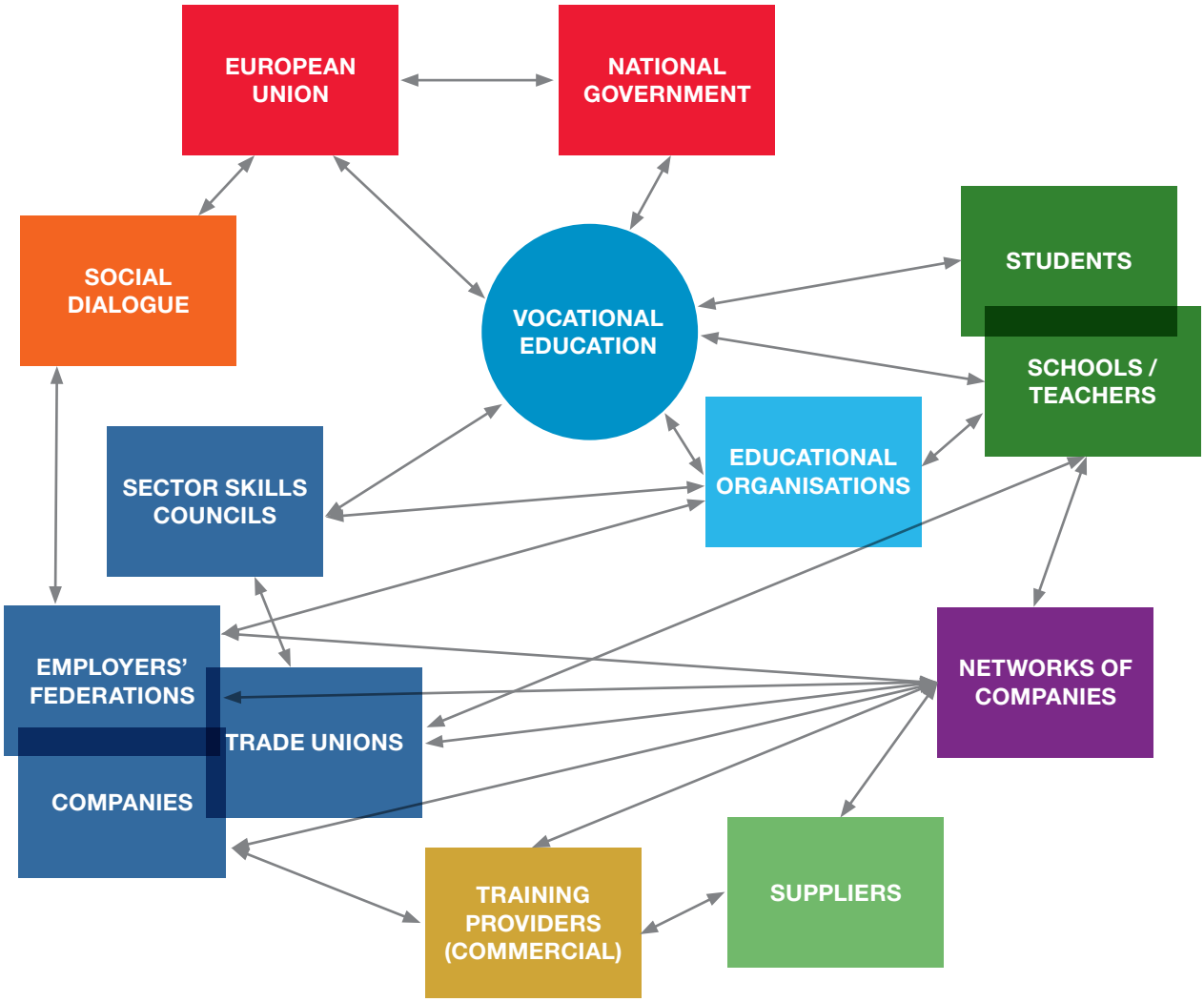
Source: National reports

In figure 2 the main actors in the apprenticeship systems in a number of countries are given. The overview of actors in the overall field of vocational education and training is slightly more complex (figure 3). Many parties are involved in shaping vocational education seen from a European dimension. Per member state the real stakeholders will differ. This needs to be remembered in the further descriptions of educational systems and in discussions at European level.

Figure 3 gives an overview of all possible parties that are influencing or interacting with VET systems in EU countries. The parties can change per country or per region. They all play their role individually, as joint parties, in association or federations and networks. There is also interaction between most parties about VET. The diagram shows the complexity of taking initiatives at European level, and it shows the importance of having networks of Social Partners / companies, unions and schools to 'organise' joint actions.

Figure 4: Possible actors in the VET system

'Notes on Figure 4' – *Sector skills councils:* tripartite committees for education.
Networks of companies: companies in the same sector / with the same interests / problems that work together without forming a legal entity (start ups self employed people, small companies and the like.)



4.3.1 Initial Vocational education and training

"Increasing participation in vocational education and training is one way to improve competitiveness hence it is in the focus of several European policies[7]". This is the opening sentence of the report about Initial Vocational Education and Training. It marks the focus on strengthening systems of vocational training at European level. Another quote from the review tells us that the discussions this report tries to initiate and the importance of developing views and strategies on modernisation of the different systems of vocational education and training need to have a high priority: "Modernisation of initial vocational education and training is one of the main topics of current discussions both at EU and Member State levels. To increase the attractiveness and prestige of vocational education and training we have to improve its quality and responsiveness to labour market needs. Knowledge of how different Member States deal with these challenges is important to assess experience and success".

Figure 5: Key factors for success of apprenticeship systems

- **A robust institutional and regulatory framework**
- **Active social partner involvement**
- **Strong employer involvement**
- **Close partnership between employers and educational institutions**
- **Funding, including employer subsidies and other incentives**
- **Close alignment with labour market needs**
- **Robust quality assurance**
- **High-quality guidance, support and motoring of apprentices**
- **Appropriate matching of apprentice to host organisation (company)**
- **Combination of theoretical, school-based training with practical work-related experience**
- **Existence on an apprenticeship agreement**
- **Certification of acquired knowledge, skills and competences**
- **Tailored and flexible approaches to the needs of vulnerable young people**

Source: European Commission (2013)

The first two forms of WBL that have been described in section 4.3 of this chapter, apprenticeships and on-the-job training programmes, both aim at preparing (young) learners for a place on the labour market. Apprenticeship schemes have a very good record of placement into permanent work at the conclusion of the apprenticeship. A large number of apprentices transfer their status of apprentice into that of employee in the same company. That demonstrates a close relationship between education and the labour market.

This being said, one remark needs to made on the transfer: there is no hard data on to what extent the 'company specific' skills an apprentice has acquired are highly transferable to another company in the same sector, or to a company in another sector. In summary one can say: " apprenticeships are a win-win situation for company and apprentice".

The apprentice is quite certain he will find his first job easily and the employer can be quite sure he will have a new employee that has been trained to the standards and the skills needs of his company.

Apart from preparing young people for a place on the labour market IVET should also create possibilities for students to enter further forms of education and higher vocational education and training. The apprenticeship schemes, with a contractual relationship between the student and the employer may not facilitate this kind of mobility as it may not be in the short term interest of one of the employers having invested time and energy in the apprentice. For this reason it is important that there are different ways to reach the final levels of IVET, in a sense that the entry requirements for higher education will be met in different ways or are flexible.

7. Initial vocational education and training (IVET) in Europe, review based on a comparative analysis of country reports written by ReferNet national consortia of 25 European countries on initial vocational education and training (IVET)

4.3.2 Life long learning

It is clear that the continuing skilling and re-skilling of the workforce needs to be seen as a priority for the near future. The times when people received their training and found a place in the labour market and in a safe and secure "job for life" without the need to keep up with the latest developments in their job are long gone. 'Life long learning' has become popular in the final half of the last decade. It is a fact of life now that people working in companies, at all levels, will have to be very active in keeping their knowledge and skills up to date. For employees, continuing education is not only a must to be a valuable employee to their company, they must also be active in keeping up to date in order to have a position in the labour market of the future if they need to make a change.

The EU emphasises the importance of Life long learning also in the agenda for 2020 (see chapter 4 page 19 of that report). However, not many real activities are deployed at this very moment. The social partners and specifically the sector social dialogue committee should assume responsibility and ownership in this field. Measures have to be taken at short notice; stakeholders should be activated again to move forward. A few points of possible action will be given at the end of this paragraph.

In the following chapters the changes in the industry and the need to develop new skills to meet the high pressure on companies to extend their business, to develop new services, to be innovative will be the main focus. The revolution in technology will have its implications for the labour market and the demands on employees to enter and keep a place in this labour market when a change in function or location is necessary. However, it is not enough to just make statements that it is a requisite for people to keep up their skills and competences in order to survive at the labour market. There is no doubt about that an individual's responsibility for self-education plays an important role in this aspect but there should be more opportunities for adult learning, especially in vocational education and whilst detailed discussion of that is outside the scope of this project some options may be:

- Special programmes in hybrid systems for on the shop floor learning, short modules to update skills / knowledge in order to have updated and recognised skills and knowledge;
- Specific schemes for up skilling courses to take account of technology changes;
- Schemes for building up rights or "credits" so employees can take part in for 'mandatory' up-re-skilling schemes adapting to changes in technology;
- Financial support schemes at EU level and national level to promote and facilitate continuous adult learning possibilities;
- A more collaborative approach of VET schools, employers and equipment suppliers to develop standard courses for step changes in technology;
- A recognition that a more holistic approach to training is necessary where a change in technology impacts on all aspects of a business eg sales, customer service.

4.4 THE ROLE OF THE EUROPEAN UNION

The member states of the EU are responsible for their country's education and the governance of the systems. The EU has many programmes to support the development of a wide scope of (key) issues that are relevant for all member states. In education the funding programmes for the mobility of students and staff, special projects for minorities, equal opportunities for all sexes and innovation are quite popular.

The EU has been active in the area of vocational education and training. A considerable number of the activities in the last 5 to 10 years have been targeted to resolve so called labour market imbalances and bottlenecks. There is the problem of the pressing situation of (youth) unemployment all over the EU with significantly high levels in some areas whilst unemployment in general has high priority in EU measures.

An overview of the EU policies and targets regarding vocational education clearly shows the strategy of the EU with this specific part of education. It started with the Lisbon Strategy (2000), transition to knowledge based European economy. Then the strategies flowed rapidly from that, with key features for VET.

- *The Copenhagen declaration* (2002) which established the European dimension to vocational education and training (VET) including recognition of qualifications and competences;
- *The Maastricht communiqué* (2004) which established action plans at national level to increase investment in VET, increasing flexibility in VET systems so they are capable of meeting the needs of employers and assisting those most vulnerable to changes in the labour market;
- *The Helsinki communiqué* (2006), which drew attention to the need for IVET to be a more attractive option for young people;
- *The Bordeaux communiqué* (2008) reinforced the importance of implementing common European instruments and principles. It concluded that, up to that point, the Copenhagen process had proved effective and that a European VET area is being built based on transparency and mutual trust;

- *The Bruges communiqué (2010)* including a package of objectives and actions to increase the quality of vocational training in Europe by making it more accessible and relevant to the needs of the labor market;

- *The EU strategy for 2020* contains a series of topics related to VET. 'Aiming for smart, sustainable and inclusive growth, the route to lasting economic recovery and social cohesion is knowledge and innovation. To reach this one of the prerequisites is a high quality VET'. "Youth on the move" will work on work based learning, recognition of qualifications and skills acquired elsewhere, outside education (volunteer's work)

- Adult- and continuous learning is a 'flagship' to attain 75% employment; continuing and adult learning must become widespread. Finally: supporting these objectives The Commission calls for flexible learning pathways, and a strategic approach for mobility for learning and working.

From these short statements it becomes clear that the EU, and all member states, agreed on this and to invest in VET and promote it as an important instrument for overcoming economic problems.

It remains a problem that not all member states implement all measures that have been agreed and even if implemented they are not to the same degree. In all of its further programmes the EU promotes a close cooperation in VET between the social partners, VET providers, educational organisations, training organisations and other actors in this field. In that sense, it maintains and builds on the positive effects that the apprenticeship has shown so far with the close cooperation of the social partners to start with.

4.5 PRESSURE ON VOCATIONAL EDUCATION

If the main actors cooperating in VET systems carry out their responsibilities and if there is a close cooperation between the social partners, it is possible to maintain a high quality educational system. However, due to the governance structure, the political influences and the financial priorities of many countries, there may be friction in all parties not discharging their obligations in order to fulfil all needs.

It is almost impossible for VET to keep up with the trends that are flooding the graphics industry and that have their obvious influence on labour market demands. VET mainly operates in the initial stage of vocational education, for persons aiming at a career in the industry. If companies have a need to change rapidly, it will be almost impossible to look for adequate solutions with regards to new skills in the VET schools.

Recruiting new, well trained school leavers as employees is of course possible. But, if we look at the changes / transitions many companies in the printing and graphics industry have to go through on very short timescale, VET schools cannot supply this demand immediately. Allocating blame is of course possible, but it doesn't help to solve the issue! Of course VET schools have to try and keep up with latest developments, however, they will not be able to respond to innovation lead training needs in companies at short notice, nor will they be able to deliver the kind of people with the skills needed by companies at the short notice that technology changes sometimes demand. Formal VET cannot work like that.

Many companies have recognised this and know they have to identify their own skills needs, skills profiles and find the appropriate people in the labour market and/or invest in their own in house training solutions. Schools should absorb the knowledge gathered in this way by close liaison between employers and VET providers so that schools etc. can respond more quickly to change.

And here the "catch 22" situation arises. In preparation of this report, the researchers have attempted to interview a series of companies to get some real examples from the sector to underline some of their findings and assumptions. Companies that have made a successful change and have developed a viable business case are not always willing to share their success stories, to tell how they tackled the problems and how they changed their strategy.

They used their own time and resources to identify new skills, found their own solutions and are therefore not keen on sharing that with competitors. This protective attitude is completely understandable, however, how can one expect schools or education in general to react on the demands of the industry, if there is no real two-way interaction? How should schools get the knowledge, the insight at short notice, if the 'owners of the knowledge are not willing to share. Is this a real catch 22 or, are there sensible solutions to it?

5. Results field research

5.1 INTRODUCTION

With the background of information obtained from the desk research on VET in general and the skills area specifically, a questionnaire was developed to conduct field research. The aim of the survey was to get a deeper insight in the main processes in the development of the important elements of change in VET at both profile level and skills level. The implementation of the new profiles and skills in the different areas of vocational education were also an area that was researched.

Overall the stakeholders have been identified and the possible actors that can play specific roles in the skills area are known. The fact that education in European countries is, and will continue to be a matter for the national governments, implies that development in VET systems has no standard procedures in Europe.

The differences in national educational systems make comparisons of the content and output of it complicated. However, there are possibilities to compile information on how content is developed, how processes of skills needs analysis in various countries progress, to identify the main stakeholders and identify who are the initiators of change and how the proposed changes are implemented at company level and in formal and non-formal education.

The survey was prepared in 5 languages, English, French, German, Italian and Spanish. The different versions were all distributed using the websites of the three participating organisations; Intergraf, Uni Europa Graphical and EGIN.

Furthermore each partner approached its own members, associates and networks to invite people to fill in the questionnaire and submit it to be analysed.[8]

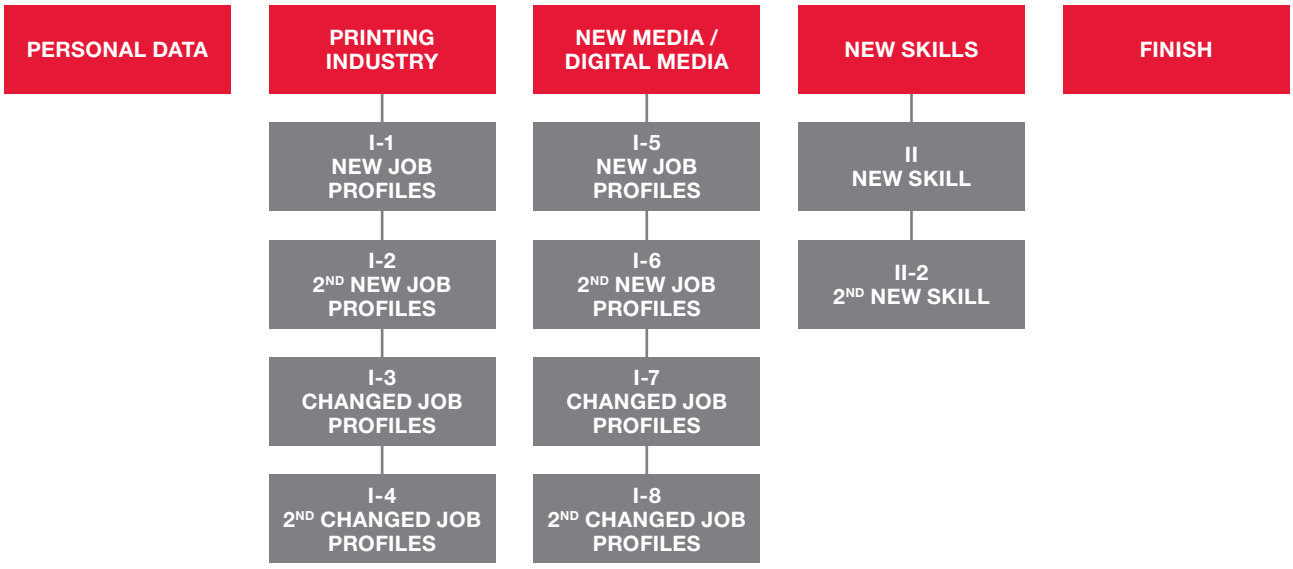
In total 202 surveys were filled in and submitted (figure 6) shows the total amount and the distribution over the languages. The different languages do not reflect the countries the answers came from. The total amount of countries where submitted surveys came from amounts to 20. If you would like to read the whole survey, it is available at the website of EGIN, please click survey here, or ask for it by sending a mail to info@egin.nl

Figure 6:

LANGUAGE	AMOUNT OF RESPONDENTS
English	87
French	4
German	44
Italian	35
Spanish	32

The survey was set up in such a way, that the questions were divided into separate clusters depending on the area of skills: printing, new media and digital media and areas where new skills (not full profiles) may be implemented.

Figure 7:



8. If you want to read the full report, please send an e-mail to info@egin.nl

5.2 THE PRINTING INDUSTRY

The first part of the survey aimed at obtaining information about new profiles (i.e. also functions) being implemented in the industry that would become part of future courses in VET.

Digital printing as a relatively new area and occupation was mentioned most in this area with 35% of the responses, with multimedia and design being mentioned by 25% of the respondents. These results indicate the main areas of change in this section of the industry. New profiles and courses for sales and management were mentioned but by a lower percentage of respondents.

The new content for education derived from these occupations was mainly implemented in Initial Vocational Education (75%) and in equal percentages (20+%) in continuous VET and Higher VET (figure 8).

Figure 8: In what type of education or training was this new profile implemented?

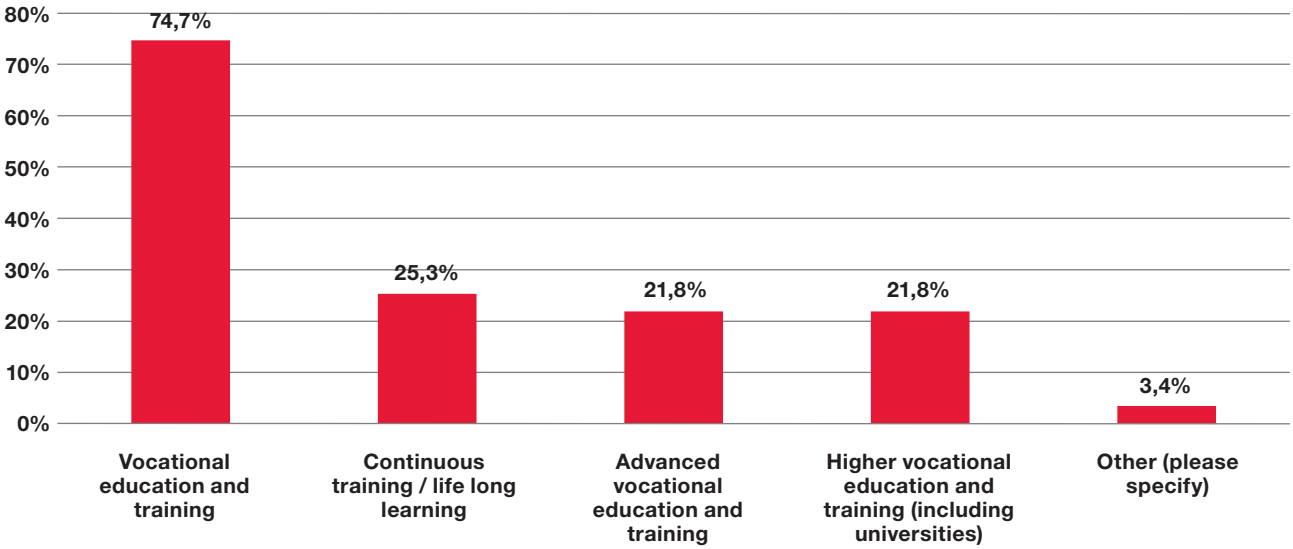


Figure 9: Who / what was the initiator / the organization behind the decision to develop this profile?

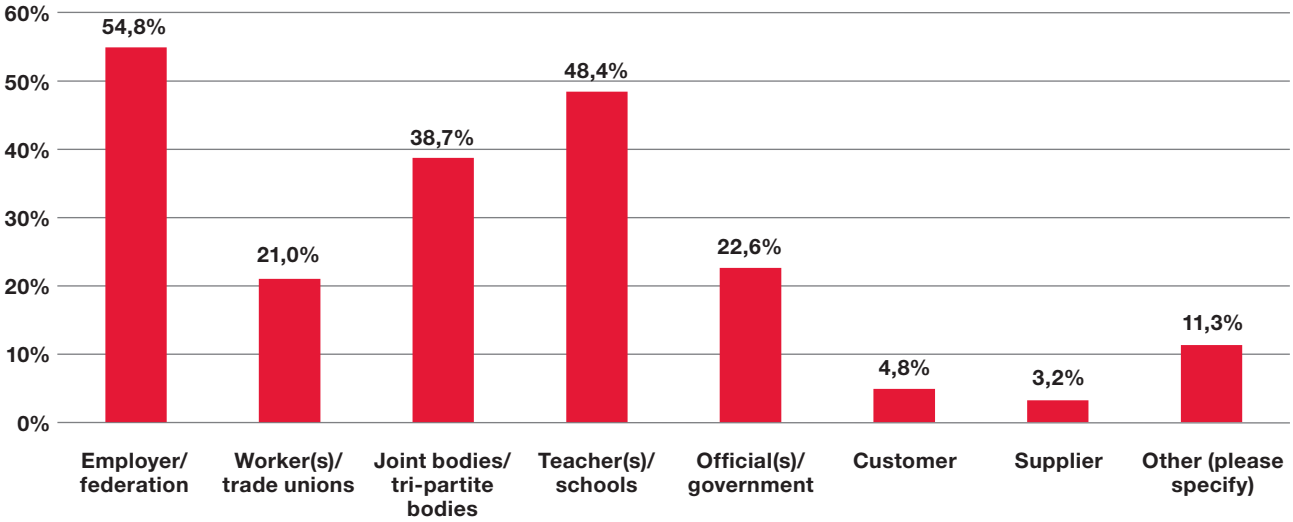
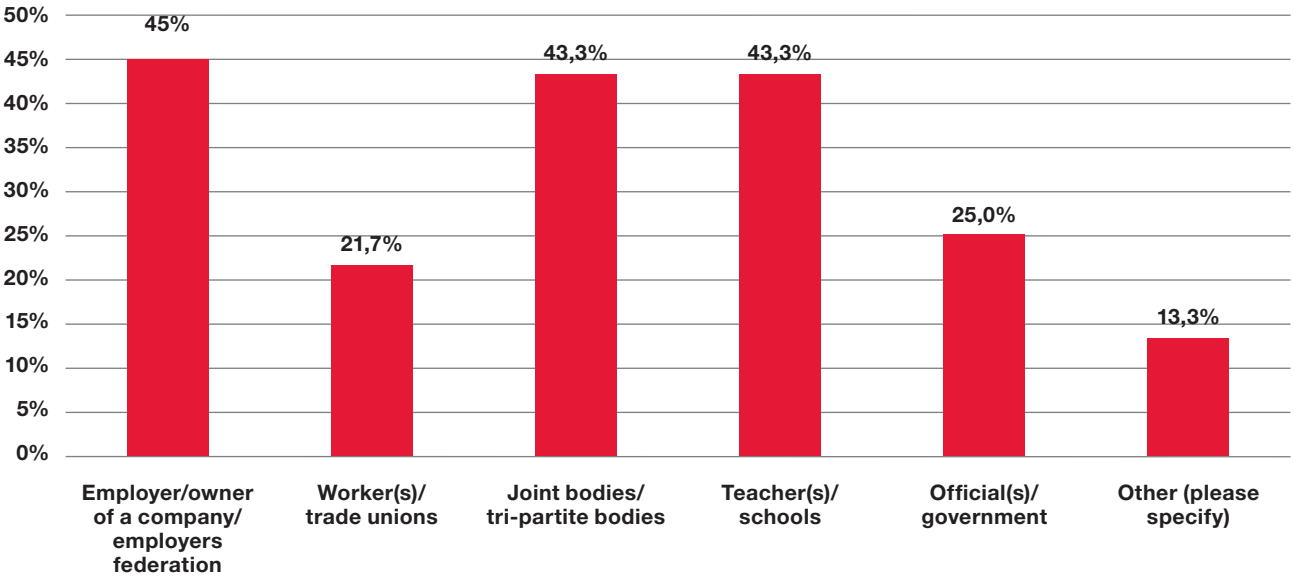


Figure 10: Who / what were the leading persons / organisations behind the implementation in training courses and vocational education?



The new developments in education were mostly implemented in the production (60%) and pre-production (55%) sections of the companies.

With regards to initiating the development of these new profiles the employers were seen as the party to take the lead in this kind of activity (55%), followed by the educational organisations. The joint bodies of social partners that operate in a number of countries were also recognised as initiators of the activity to develop new profiles by 39% of the respondents. The results clearly show the participation of three main stakeholders in this process: employers, employees and education (figure 9).

Furthermore, the survey enquired who took the lead in implementing the new profiles in VET. In the main employers (and/or their national Federations) were seen as the main drivers being mentioned by 45% of respondents followed closely by joint bodies and education with 43% and government was mentioned by 25% (figure 10). To show the scope and diversity of the developments, some 'tittles' or names for the changes that were given by the respondents will be given here: Digital printer; 3D printer, interactive media designer; project manager multi channel communication; project manager creative industry.

The time that was needed to complete the whole development process from initiation to implementation in education came to an average of 16 months, with highest scores of 36 to even 48 months. For companies that are in a period of change, this may be too long, mostly they need quick action and quick solutions to implement new techniques or market new services. For companies that are gradually progressing to new technology this pace is no problem.

95% of the respondents stated that developing the new profile had been successful. The main factor for success was the identified need for this new development in which the partners had a stake or ownership. The second reason for the positive result was the project team, the people who were in it and their determination to make it a success.

5.3 NEW MEDIA – DIGITAL MEDIA INDUSTRY

The new media and digital media industry section of the survey was expected to show some different results in comparison with the former section. That was true in most areas that were covered by the survey. A variety of different names were given to new profiles: content editor, 3D skills, social media manager, project manager creative industry, game artist and media sales person for print and digital media.

It is worth emphasising the significant change in the way new profiles were initiated in this part of the industry with VET schools being the pre-eminent source. This contrasts with the more traditional part of the industry where the employer took the lead. In a world which may be quite different to the background of the employer, it is left to the schools to satisfy the need of new skills.

The explanations for this are conjecture but could include the lower cost of delivering a new media course compared to a traditional printing course and the greater familiarity of potential students with IT and new media.

However, one might expect to see suppliers to be mentioned with a much higher percentage, but these are mentioned by only a small number of respondents. Further research may be needed in this area.

Most changes in the existing profiles were found in making clever combinations of existing profiles or to integrate existing profiles and occupations with new developments that have resulted in new profiles. This is completely in line with the findings of an earlier research and development project of the European social partners.[9]

The new profiles for this sector of industry were mainly introduced in initial VET (72%), with a very low percentage in continuous training (18%) and a relatively high percentage again in higher VET (30%). The fact that higher education takes a larger percentage here is related to the job profiles where conceptual thinking and concept development are the key areas.

The duration of developing new profiles also in this field of operation is 16 months, which given that the process is school lead, may not be perceived as an issue as there is no employer/market impatience! However, in a dynamic industry, where companies feel great pressure to continuously adapt their services and products to changing market needs, quick responses and solutions of VET are important.

5.4 NEW SKILLS

In this section the survey asked respondents to identify the newly developed profiles by title. This resulted in a long list of names of skills and occupations. By way of example the most popular were:

- Cross media skills;
- Database and digital publishing skills;
- Skills to use new technology;
- Digital asset management skills;
- Entrepreneurial skills;
- Engineering skills;
- Workflow engineering skills;
- Teamwork skills.

The survey also asked respondents to label the skills that had been developed in a series of given categories. This resulted in the following list (see figure 12).

It is not very remarkable in this list that technical (hard) skills score the highest percentage given the technical nature of the industry and the list of skills and occupations that were mentioned in relation with these changes. On the other hand it is remarkable that technical hard skills are ranked so high in the list of new skills that were implemented in the industry over the last three to four years. The topics of the discussions in the sector are mainly customer oriented services, new ways of marketing the services of companies operation in the media and digital / the creative industries. Concept development and cross media, multichannel publishing activities demand other than mainly the technical skills one would think.

The main areas of implementation are clearly shown in the figure 13 on page 25 and quite clearly Initial VET is the most important area for implementation of these new skills Perhaps more remarkable is that entrepreneurial courses in sales and marketing which would most likely be found in Higher education do not get a higher response than 20%.

9. The greatest progress comes from combinations of existing technologies, rather than brand new ideas. Future innovations in printing will be incremental combinations and adaptations of existing technologies. The successful business will adapt the technology to new market conditions'. The future of the European Print Industry in our hands: Intergraf / Uni Europa Graphical

Figure 11: The process of changing the job profile was

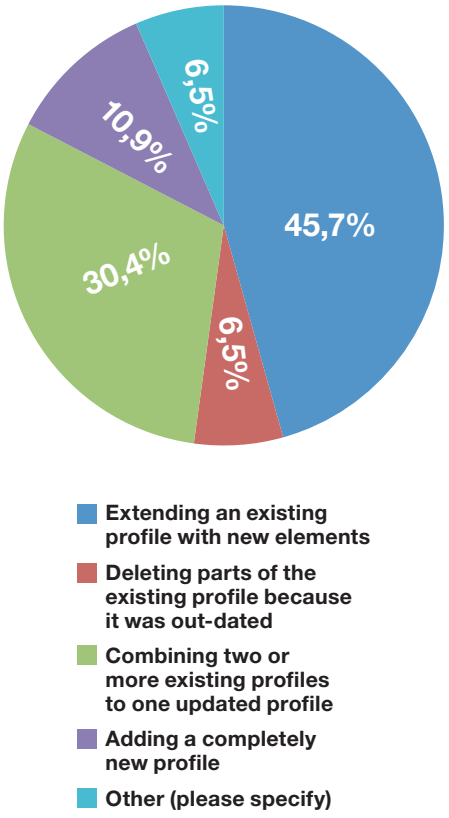


Figure 12: This skill is mainly related to

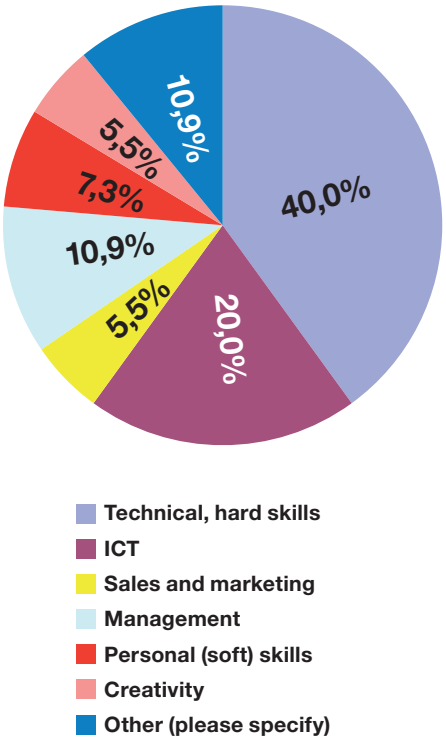
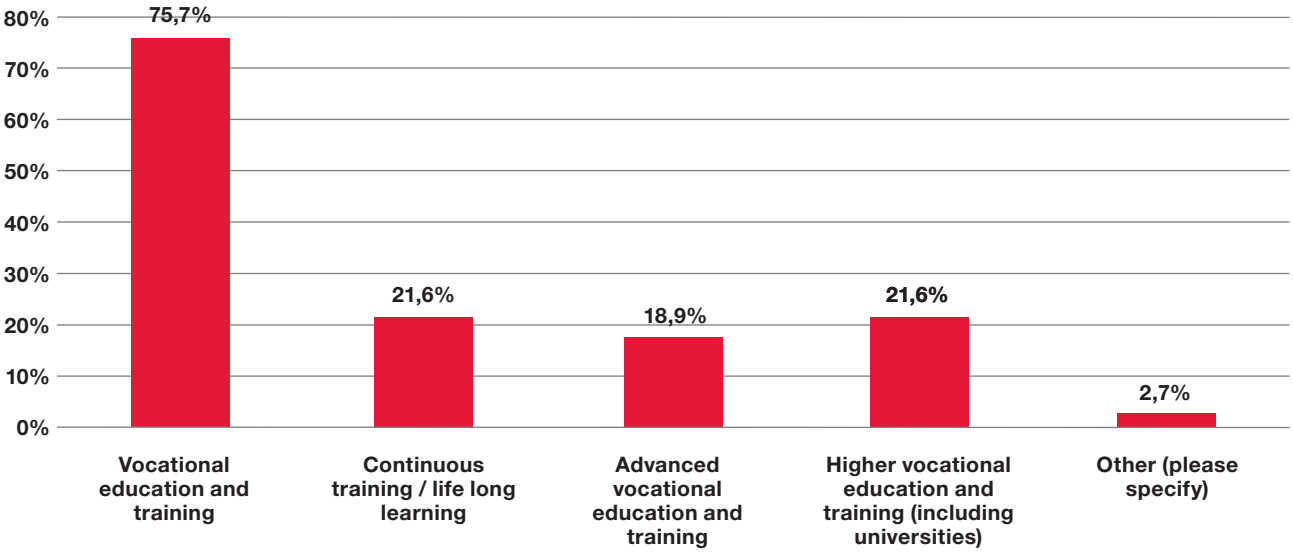


Figure 13: In what type of education or training was the new skill implemented?



6. Case studies, the practical aspect of change

6.1 INTRODUCTION

The fact that the graphics industry is going through a structural and in depth change has been mentioned several times in this report. The importance of skills identification, development and implementation in VET has been discussed intensively likewise. In this chapter we examine how three companies from three different countries and one printing industry sector (from a small country) have approached the subject and we make some observations from their experiences.

The project team developed a relatively short structured interview framework (see Annex II) used to interview a number of companies and the sector of industry that had the following characteristics:

- Going through or gone through changes from the traditional printing part of the industry to a company that extended its business model with extra services;
- Could be seen as a start up with a new business model in comparison with the well- known models from the existing printing industry;
- Would need / have needed the acquisition of new skills, new technology, extended knowledge that was not available / present in the company at the start of the change period;
- A need for the employees to get formal recognition for their skills and competences and accreditation of former learning.

As ever in these situations there appeared to be a wide choice of companies falling into those definitions but refining that down to those which really had an interesting and instructive case **and** were willing to share their experiences proved more challenging. In the end, three companies shared their knowledge in an open manner, two of whom wanted to be anonymous, which was of course respected by the project team. It was decided to keep all participating companies anonymous.

The information that came from the interviews has relevance to the main theme of this report, skills identification and implementation in vocational education and training, and relevance in the sense that it would support the best practices (in Chapter 7) or would add a caveat to them and thus providing valuable additional information. The interview was with members of management of the three companies, and with the employer's representative of the sector of industry of the small country.

6.2 CASE STUDY UK

"From producer to advisor"

6.2.1 How it used to be

The business began many years ago and was the largest pre-press services company in the region with over 200 employees. It was highly unionised at the time. It worked in all printing and publishing fields, including packaging. In making the transition from manual pre-press to digital the company had the double hit of not only technology driving the business to de-skill but also making technology available to customers (e.g. publishing houses) to take work in house. The company halved in size. That "double disadvantage" started the company on a strategic plan to change direction to become a packaging development specialist.

6.2.2 How it is now

They now work with leading brand owners across Europe and North America to develop and implement global brand creation and management solutions. They work across the entire packaging launch process from concept and creative design, through to artwork, pre-press and legal sign off. The company is an umbrella organisation for a number of specialist business units covering Packaging Science, digital solutions (online collaborative launch management platform, mobile marketing, augmented reality), creative design agency, pre-press services and legal compliance.

6.2.3 How they got there

It is tempting to say that the major cause of change and the need to change was technology, but that is too simplistic. The real drivers have been (with different drivers taking a lead at different times):

- The economy – where a downturn in a particular segment causes the business to change direction in search of volume or profitability;
- Customers – where their needs change due to, for example, regulatory environment, or their market forces;
- Competition – where new players come into the market from around the world or new communication media becomes available.

However, in the case of this business technology is seen as the enabler of change not the driver. Technology has enabled the company to react to an economic downturn and become more efficient; and an increasingly regulatory environment in food retailing has resulted in customers demanding a new service in legal sign off to all packaging text.

In terms of skill requirements the company had always operated a skills matrix process, originally agreed with its trade union partner, and used to assess employees both in situations of job reduction and to identify future training needs so the company already had the tools to enable it to move forward with the drivers.

An important aspect of the skills matrix is to set out not just hard technical skills but also soft skills to turn employees from "jobsworths to added value deliverers" – in plain English, to encourage flexibility in terms of tasks and working time. Flexibility is judged on two axes – the vertical is time flexibility and the horizontal is skills flexibility.

Some employees needed the "confidence to change" and where old ways of working were succeeded by new ones employees without that "confidence" left the business of their own accord; those with the "confidence" were given the opportunity to acquire new skills according to the needs of the business and their matched needs. Every employee had and still has a Personal Development Plan (PDP) driven by a gap analysis between the needs of the business and the skills of the employee.

6.2.4 How was training delivered

In terms of providers of training in the new technology this was delivered initially by suppliers and then this was cascaded internally. No external educational providers could offer a useful contribution in the timeframe needed. In fact this company led and (mostly) delivered training and that became the norm. Further Education (Vocational) colleges could not offer training in the skills and technologies needed to drive the business forward. Their knowledge and equipment was "old" as were the educational programmes. The pay structures were also out-dated with the cost of apprentices far outweighing the value to the organisation.

The company therefore continued to develop its training solutions in-house – recruiting talented young people and offering them training for a year whilst they developed as individuals – the best were retained and trained further; the others released into the world of work with greatly added skills and personal development.

The company did try to work with universities developing a graduate training programme but the needs of the business and the ethos of academia were irreconcilable. The company's philosophy is to reward its employees well for the contribution they make to the business. It is for this reason that the company has developed its own graduate training programme onto which relevant graduates (for example legal, packaging science, IT) are recruited and progress through the business with appropriate training both internal and external – but more likely from a commercial entity rather than academic.

The company has a well-funded recruitment and training plan, linked to the company business plan, and each employee's PDP fits into that. That plan not only deals with the necessary hard skills but also the soft skills which reflect the company's culture and business direction.

One difference to the training outlined above was the start of the new business unit named 'Technologies'. This business was completely different to the rest of the business at the time, though identified as a customer need for the future (it is basically an IT based online project collaboration network) and the need was for highly skilled IT experts and project managers.

After some start up assistance from another business in the group, the only option was to recruit new skills into the business – skills in software development, system support, project management and sales. This was kick starting a new business so training was not an option. However, once established, the business could slot into the normal business training system.

6.2.5 In summary

The company has changed and evolved around the shrinking historical core of the business responding to the drivers of that change. Because it has been operating at the leading edge of change of the industry it has not been able to engage with providers of vocational education or other academic institutions. There has been a mismatch on two levels:

a. The ability of the business to pay those trainees only according to their current contribution to the business rather than a theoretical calculation (percentage of skilled person's rate) or in anticipation of a future contribution to the business;

b. The lag that exists in training and higher education between the current needs of leading edge businesses and the speed of development of training course and the further the ability of education to invest in the latest equipment and software.

What this case study has shown however is that a business can work with its employees to identify the skills needed to match the future direction of the business so as to satisfy both employee and business expectations. Training in the evolving future skills needs to be business centred supported by commercial and vocational training bodies

However, if a business is making a step change into a completely new business area it needs to recruit those who have already got the necessary skills. This needs therefore a strong dialogue between industry and other stakeholders (academia, suppliers, customers etc.) as to the "blue sky" business opportunities and the skills needed to realise those opportunities.

6.3 CASE STUDY THE NETHERLANDS

"The processes and development companies go through to make a fundamental change, are partially known, and can be partially predicted but often have to be solved as they occur. Flexibility, motivation and perseverance are main elements in such a process".

6.3.1 How it used to be

The company has had various names over the 50 years of existence, all quite closely related to the main business or the state the company was in. Because of the transition that has taken place over those 50 years it is quite difficult to compare the company as it is now with the set up when it started.

The business started as a printing company, gradually growing to a size between 40 and 50 employees. Initial services were quality printing and other related services of pre-press and finishing.

6.3.2 How it is now

In the early nineties the management of the company already realised that structural changes would be needed to make the company 'sustainable' to carry on business on mid- and long term. It was clear that printing alone would not be enough to generate sufficient financial revenues for this ambition. From that time on strategies and business models have changed, expansion of activities to other areas were researched and developed, always with a clear view on the possibilities in the market, the strength of the company and of course the needs of customers.

The first steps in the development were still quite closely related to the main printing process but the company quickly realised that customer retention or expansion would not be possible with printing only. Furthermore, even in those days customers were asking for more services from the company and that, in combination with the economy, the demands of suppliers of the materials (e.g. ink and paper), and the sometimes unreasonable demands by advertising agencies for discounts and rebates, made the company change strategy and activities.

Using the latest technology available – desktop publishing, digital prepress etc. the company eventually decided to also set up full prepress division. Two positive results were expected in that: firstly print production output would increase in volume and speeds with the higher quality pre-press and quality control procedures; secondly the department itself would generate an added value (also financially) to the company.

These processes of change were mainly done with existing employees who were given the opportunity to 'migrate' from a function that became obsolete due to the changes to newly available functions in the new departments. This has always been the policy in the company, but the company realised the benefits of retaining employees if possible by retraining and reskilling. The specific area of ICT, for database development, infrastructure, networking, was outsourced to external professional companies. The skills and knowledge were not available within the company. Sending people for training to vocational schools was not an option as the specific courses were not available.

6.3.3 How they got there

Based on solid research and well-developed business cases a strategic vision for the company was established. Over the years additional services were added to the company to meet the needs of the customers and to keep a solid foundation for the company to sustain its business. The print production department was still the main business unit with regards to turnover but gradually the services 'surrounding' the print production unit were developed into separate divisions within the company.

In the beginning of this millennium the company again made a crucial strategic choice. A name change was the landmark to change from a printing company to a full service communication company with all services of the communication chain.

The solution seemed to be a company made of two units, graphic production and media solutions, both units in the same building, with the same management. This was done intentionally for a number of reasons including logistics, management, financial and marketing. The company wanted to show customers what the total company consists of but also make them aware of the different degrees of focus, expertise and services.

This policy was not easy and it took a lot of energy to manage both cultures: the print production side and a much more creative side. For example, working hours in relation to start and finish times were at odds with print production being more "disciplined" than the concept of the creative side of "work till the job is finished".

The next strategic change will be to become one stop bureau for communication, marketing and branding. Print production will still be a part of that company, but the turnover and contribution of that unit is expected to be less and less. The company will be active in all areas of communication from concept to realisation – in whatever media is appropriate for the customer.

With regards to education and training for this phase matters are and will be more complicated in the future. For the standard functions in the company, people can be recruited from initial vocational education and training. However, many functions will involve more client contact, working on marketing and design concepts which implies that a more fundamental split in the business may be needed; separating concept from realisation. This will demand a higher level of knowledge, skills, competence, and imply a higher academic level. This new recruitment strategy gives the company a new challenge: how to retain these recruited employees, can the company fulfil their demands and wishes, and will they be satisfied with the career perspectives the company can offer.

The period of development of the company has been long, from the beginning of the nineties till now and is still ongoing. This realisation lead the interviewee to the following quote: "If a company wants to start the activities we have done and still plan to do, they are too late! It takes too long to make a swing like that in the present times."

6.3.4 How training was delivered

With regards to skills profiles, the company applied a constant monitoring of the skills that were needed / would be needed in the near future and compared that to the skills that the employees in the company had in general. Of course each employee had his own profile. Also while the company was progressing the transitions were managed with approximately with 80% of existing staff. Up-skilling and training has been an internal process for several reasons – firstly the finances available for education and training, but secondly the company has the belief that it is important to transfer knowledge within the company and within teams.

This combination of the imperatives of budgets and a belief in a novel way of development means that by sending one or two people on external courses they are then empowered to cascade or transfer that knowledge / skills internally. In this respect the following quote says a lot about vocational education and the needs it has: "Vocational education in the initial stages, as we have it now, can hardly keep up with the developments. That means they have to focus on the basic skills, the foundation skills of the jobs. They cannot keep up with specialisation that new technologies bring. It is impossible for regular schools to become a substantial part of the innovation processes of companies that are in the process of change".

6.3.5 In summary

The company started adding new services and new technology to its original print section in the beginning of the nineties. Over the years they have been in various stages of reorganisation to keep up with the developments in technology and reacting on economic developments. In the early stages of change it was possible to offer employees whose functions became obsolete of changed dramatically a new function in the company. In the latest changes this has not always been possible due the character of the changes and also to the willingness and ability of people to adapt to the changes or to reach the required level of expertise and knowledge to perform well.

At present the company is becoming more and more a full service communication bureau, with all elements of the full communication chain in it. This strategy also meant the company has to recruit new employees with a higher, more academic level of education or with relevant experience at that level. The VET schools for initial and partially continuous training cannot provide the company with new entrants in that area. In quite a lot of new functions the change in development demands that the company has to find its own solutions to train their employees adequately. This is also due to the financial resources that are available for training and education. One of the strategies in this situation is to have one or two employees trained by external experts. These trained employees will than transfer this knowledge to their colleagues.

6.4 CASE STUDY SPAIN

"Expansion to survive"

6.4.1 How it used to be

The company started as a Graphic Reproduction company about 30 years ago and based their success on high quality, working in a stable environment with a more or less fixed group of customers. At present the company has 35 employees a reduction in 10 years from 60 employees.

6.4.2 How it is now

About ten years ago the management had to make changes in and with the company due to a range of circumstances: the economy, customer demands, and changes in technology. Therefore the company decided to be more focussed on digital solutions, both in printing and in the multimedia environment and their customers see them now as a communication company offering quality services in visual and graphic communication. The analogue photography, the starting point of the company, formed the basis of the knowledge and experience that is still valuable today. At present almost 99% of their output is produced digitally, with products as: computer generated images, digital manipulation, digital printing, colour management and design.

6.4.3 How they got there

Coming from the "traditional" business of the past, the company has gone through a range of changes, driven by the environment it operates in and the technology available. At first these changes were a 'race for survival' making changes in order to 'stay afloat'. This experience has now been turned into a positive advantage of the company with the management using the experience of the past to try to predict and plan for the future. Of course, it is not possible to predict the future with accuracy but much can be learned from the experience of the past. The company's experience has lead it to develop some ground rules for survival and success:

- Maintaining a level of modern equipment;
- Updating regularly associated software;
- An efficient workflow;
- Maintain a quality assurance system;
- Listening to customers;
- Maintaining training levels of employees.

6.4.4 How training was delivered

In the circumstances of this company it is of the utmost importance to have the level of skills and competences of the employees of the highest level. The problem is that that need cannot be delivered as rapidly as circumstances dictate due to the necessary structure and planning of VET and the time taken for the system to react. For that reason cooperation with between the Graphic Media VET schools and companies is essential. A strong liaison at the earliest possible stage may help schools to adapt current courses to deal with the current situation and develop new courses to supply the employees of the future.

6.4.5 In summary

The professional customers the company is working with at present demand quick reactions and flexibility beyond the ability of one company. The company has established its own network of people and companies with the appropriate skills, expertise and competence to apply when needed. It remains to be seen if these networks are sustainable and long lasting but the company believes this is the way forward due to the sporadic nature of the work and the huge variety of skills needed.

6.5 CASE STUDY MALTA

Development of industry standards and a course for vocational education.

6.5.1 How it started

For the printing industry of Malta one course is available in the formal system of vocational education for 16 year old students who have just finished their secondary schools. This is a three year course that offers an apprenticeship. For the employees of the companies who have not had the chance to get a certificate, diploma or whatever kind of formal recognition for their skills and expertise there were no courses or part-time possibilities to get that recognition.

The Malta Printing Industry Association (MPIA), had been working on getting industry standards developed for more than eight years. In this period many meetings were organised with the Malta College of Arts, Science & Technology (MCAST) and the Department of Education of the national Government to initiate a project to establish industry standards and from these courses for vocational education and training for people working in the companies to obtain their formal certificate or diploma. The problem was mainly that the funds needed to do the job were lacking.

6.5.2 Industry standards

However MPIA managed to be the first industrial sector in Malta to organise a study with the Malta Qualifications council (now called the National Commission for Further and Higher Education (NCFHE)) to develop national occupational standards for the printing industry.

MCAST applied for a European grant to co-fund a project to further develop the output of the occupational standards to standards and profiles for education and in 2010 the EU granted the request of MCAST as a European Social Funds (ESF) project. “Linking Industrial Needs and Vocational Education & Training (VET) to Optimise Human Capital”. The Maltese government provided the required co-funding for the project.

In the first stage of the ESF project the skills needs for the sector were identified. This was a mutual effort of companies (members of MPIA), MPIA as the representative organisation and the college MCAST. As usual not all needs of the companies could be met in the first stages of the project and very specific needs of individual companies or a very small number of companies had to be left out.

6.5.3 Developing educational standards and courses

A special working group was formed to develop the syllabus, based on learning outcomes, that were needed to meet the strict criteria of the quality assurance processes. The members of the project group were relevant experts from companies, the employers’ federation, VET providers and expert knowledge in formulating education in learning outcomes.

Whenever certain specialist expertise was needed this was provided by the members of the working group.

The task was to develop courses / learning outcomes that would comply with the National Qualification Framework (NQF) of Malta and have a relation of course with the European Qualification Framework (EQF), in this case at level 3. After 3 years and many meetings the result of the working group was ready to be launched as a part-time open entry course.

The course has a holistic character; covering all relevant areas of the printing industry, from the first brief about the design of the end product to the final stages of producing the actual product in print. The holistic approach also means that all different printing processes are addressed during the course.

The experts were called in from the very beginning of the course and also industry experts were engaged right from the start.

6.5.4 How it is now

The complete course consists of 6 modules of 60 contact hours and 40 study hours, assignments and some written tests in addition. The duration of the course can be one year, but it is also possible to spread it over a longer period as it as a part-time evening course, of which all modules have to be finished in order to receive the official certificate.

The results so far are good, there are positive reactions from both students and companies. For the year 2014 / 2015 15 new students have registered already, which is a good result for a small scale industry of course.

Finally is should be noted that a project of this kind would not have been possible without the financial support of the EU' the industry partners, including MPIA representatives have put in a lot of effort on a voluntary basis.

6.5.5 In Summary

This special case from Malta clearly shows that with a lot of dedication, financial support from the EU and cooperation of professional partners, a small scale industry is also able to achieve good results which is of great value to the country, to the industry and the people working in the industry.

The approach to this project, the way it has been set up and how it developed over the years, is a good practical example of the best practice described in chapter 7.3 page 38 of this report. The employers organisation initiated the activity, identified the need to have the achievements of the employees and of the companies officially recognised. The association contacted a VET provider and at various stages of the project (external) expertise is either called in or made available by the participating partners. In a joint project, the standards are set, materials are developed and a course in VET is started. As in many instances in practice, development also takes place 'on the run'.

7. Best practices

7.1 INTRODUCTION

The main objective of the 'Future Skills' project is to describe best practices for the identification, the analysis and the development of the skills in courses and programs for vocational education.

Skills and skills development is one of the corner stones for the further development of the industry in Europe to remain competitive in the global economy. The level of expertise of the people working in the industry is paramount given the necessity to modernise and adapt to the external circumstances such as economic and technological changes.

When we use the word company or companies in the descriptions on the next pages we mean the total concept of a company, employees, representing bodies in companies, management, owner, employer and all other elements that can be identified. In the descriptions the main focus is on the processes and steps to be taken in skills development, fulfilling the needs for new, additional or adapted skills. Obviously in situations of change, reform and restructuring many more elements need to be taken into account. We do not describe those elements here as they have been described in an earlier study by the social partners: *Restructuring and Reorganisation of printing companies.*[10]

Companies, trade unions and employees have to be flexible and creative to find solutions for the different skills needs. The best practices described in this chapter can help the different partners in the search for the best ways to deal with these needs.

7.2 DIFFERENT SCENARIOS FOR SKILLS DEVELOPMENT

The results of the field research (chapter 5 of this report) showed that the processes and partners involved in skills development vary with regards to the sectors of industry and mainly with regards to the reasons of change in the companies. The best practices will be described in three scenarios that can be distinguished in the main processes of change.

- **The traditional and continuing environment:**
  > Skills are mainly needed to increase efficiency, to adopt new or changed additions to existing technologies and possibly to produce new products with old technology;

- **Extensions or additions to traditional services:**
  > Skills needed for the companies to offer services in the print supply chain (up and down the chain);

- **New companies and new entrants to the changing market**
  Existing companies entering a new market area in order to be able to offer new services to existing clients and new companies entering the market from non traditional areas with little or no background in the graphical industry:
  > Skills needs show great variations, mostly there is a need to tailor the skills and the development to specific needs of these companies.

The next paragraphs will describe the scenarios for these environments by showing the processes and steps that are involved in identification of the skills needed, the analysis and development of the skills and the implementation thereof in education and/or the companies.

The partners / parties involved in the various steps will be different depending on the scenario.

It is obvious that a whole range of parties can be involved in the processes of skills development and implementation and for a an overview please check chapter 4, page 15 figure 3. However it should be mentioned at this point that in the instances where it is stated that the company initiates activities, also the trade unions have a role in these processes. The unions will support and facilitate the development stages and implementation in programmes in formal education and training programmes.

In some stages of the best practices a detailed description of the skills is advised. If a VET provider is not available or the company doesn't have the required expertise in house, there are a number of different forms of skills analysis on the market either from the employers organisations or offered by specialised commercial providers. It is worthwhile in those situations where a company wants to approach this analysis in a systematic way particularly when it impacts more than just a small number of employees.

In the final part of the chapter the well-known scenario in countries that have the apprenticeship system / dual system as an important part of vocational education will be described. This system is characterised by intensive co-operation and a high level of responsibility of the social partners.

10. The future of the European Print Industry in our hands: Intergraf / Uni Europe Graphical

7.3 THE TRADITIONAL AND CONTINUING ENVIRONMENT

The traditional and continuing environment can mainly be situated in the printing industry. The aim and level of change is mainly concentrated on continuation of the present position of the companies. The needs for new skills are mainly modifications to existing skills / profiles that are already in use in the programmes and courses provided by the schools or commercial organisations.

The survey (chapter 5 of this report) shows that for this kind of development mainly employers take the initiative for the development of the new skills (or initiating the changes to be made). The main partners in the whole process are the social partners, with a specific involvement of the employers, but also the schools and other VET providers have an important role in the processes of analysing the skills needed and their implementation in education.

In the following paragraphs the scenario will be described in the different stages that the whole process can be broken down into. In the different stages the partners, that are involved, will be highlighted with their respective roles.

- *Stage 1 Identification of skills needs by the company.* The company identifies the need for new skills in the analysis of the changes it is going to implement. This may not be a sophisticated or complex process but perhaps a realisation that the changes cannot go ahead (eg new investment) without additional skills.

- *Stage 2 Analysing the skills.* The skills have to be analysed both on the level of specific needs and content to assess if it can be acquired by technical training courses or if more complex elements / competences are required to solve the skills gap in the company, then other solutions need to be sought. This analysis can be performed by schools / VET providers (as experts) in combination with representatives of the company. If both parties, the company and the VET provider, assess the end result of this stage as satisfactory, it can be used for further development. Stage 3 can come as next step.
  In some instances it may be necessary to have the result of stage 2 validated by external experts.

- *Stage 2.1 Validation of stage 2 by external expert.* The external expert can be a consultant (technical or educational), a supplier, or other organisation. It is important that the person or organisation has a reputation as the expert in the particular subject matter and if, at the end of the validation, if all parties involved accept the result of this phase, stage 2 is complete. Stage 3 follows.

- *Stage 3 Decision about further development of the skills.* The partners involved, employers and VET provider, can decide now how the new skills will be developed to be transferred' if appropriate, into educational programmes / content. Of course, transferring skills to a program in VET is only appropriate if it concerns a large group of companies or has a broad based applicability.

- *Stage 3.1 Development of special course at company level.* The first priority in a case of this kind is to solve the need of the company. The VET provider can develop a special course for the employees of the company that need to be trained. In most cases this will be a commercial arrangement and the company will have to pay for services of providing course materials and teachers or coaches to deliver the knowledge or skills.

- *Stage 3.2 Development of courses to be implemented in VET systems.* A second decision will be if it is appropriate to develop the materials for implementation in vocational education. That will be a decision of the VET provider in close co-operation with expert organisations at either government level or specialised educational organisations and will depend on the future market for such courses.

- *Stage 4 Implementation of the skills in the company* The end results of the stages 2 and 3a will be fine-tuned in order to serve the specific needs of the company. In this phase the contents of the training programme on the shop floor will be developed and if necessary the course can be piloted.

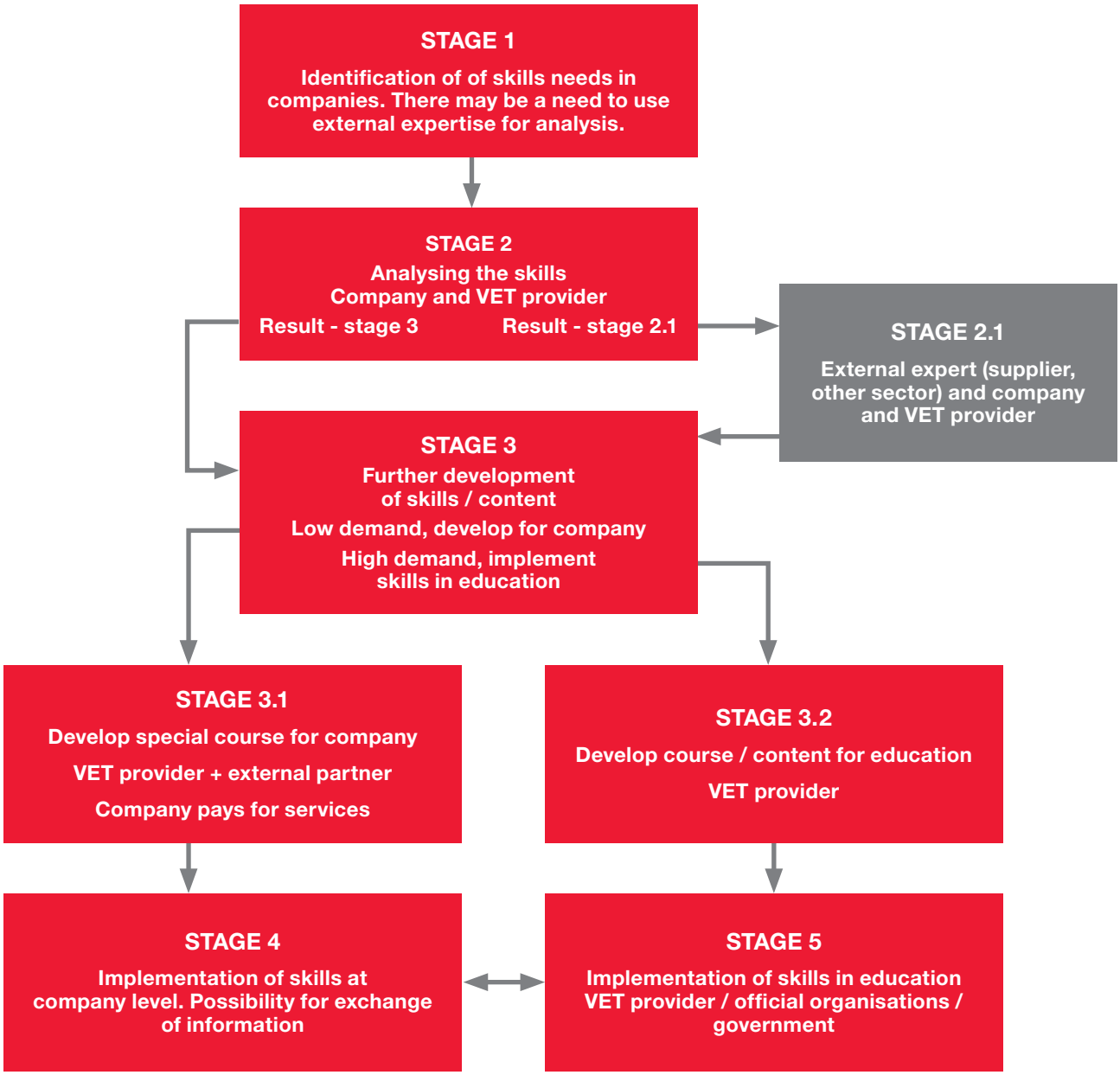
- *Stage 5 development of the skills for implementation in VET.* At this stage the VET provider will need to take the full lead in the project and use the official procedures to ensure the new skills will, if appropriate, implemented in education. In this specific phase of the project VET providers will need the involvement of official bodies and organisations and the national government to make sure the skills can be implemented in formal education. This process may vary per country.

In this practice two directions of development are described. The decision about developing skills / courses at company level (specific courses for small amount of companies) or at the level of VET is not unlikely. It is of vital importance for both parties, companies and VET providers, that the exchange of information about the development and the content of it really takes place. It is important that employers' organisations (if possible the social partners) stimulate this willingness to exchange the information at company level.

The stages that are described in the traditional scenario show that a rather limited amount of parties are involved in the overall process. That is partially correct in the context of applying it in a generic setting that seems applicable in the majority of the EU countries. It should be noted though that there are many variations possible on the kind of participating parties in these processes. A VET provider or college can also be a dedicated organisation specialised in research and development of education and labour market issues. In some of the EU counties (for example Germany with BIBB) special (governmental) organisations have the task to perform research on the changes in industry and how these changes should be implemented in education in order to supply the industry with well-educated employees.

In other countries it will be the Sector Skills Councils of the trade unions and employers organisations who will do the research and development part in close co-operation with schools and colleges. It is not possible to describe all variations in the best practice.

Figure 14: Traditional and continual environment



7.4 EXTENSIONS OR ADDITIONS OF TRADITIONAL SERVICES

This part of the chapter will deal with a different part of the graphics industry often referred to as the new media/ digital industry. Many companies in this segment of the industry originated in the printing industry and have (recently) completely changed their business of printing services to new media and digital media business (see next scenario) or added new media and digital media to their existing business. With extending or adding elements to the existing services the companies have created added value for the customers in, for example, multi-channel publishing or communication services.[11]

The skills needs for these companies will mainly consist of adding new skills to the skills employees already have and finding clever combinations of skills and functions existing in the company. The results of the survey clearly shows this (check chapter 5, page 22 of the report) and the report on The future of the European Print Industry.[12]

The new business models these companies apply will not only entail changes in technology that is applied but also a different client approach and customer relation pattern. Obviously also the marketing strategies and activities will need to be updated and extended and therefore training needs will not just be in technical areas like the first scenario but also in "soft skills" such as sales, marketing and customer service.

The survey that is analysed in chapter 5 shows a change in the role and involvement of the important partners in initiating and implementation the changes that have to be made to anticipate the changes in demands of the labour market (chapter 5.3, page 21). In the best practice for the traditional environment (see 7.3) it was the employers who initiated the activities to solve their skills needs. In this segment of the industry it is the schools colleges / VET providers who initiate most of the changes. In this best practice for the world of the new media industry/ the digital industry the starting position will again be the skills need identified by companies as they extend or add services to the existing clients.

- *Stage 1. Identification of the skills needs by the company.* In mapping and planning the process of change, in practice many times during this process, the company will identify shortages in the whole range of skills needed in the company for the present functions. The description of these shortages can be made by the company itself or with an external party. In order to find out if the existing courses offered by VET providers can solve the skills gap identified in stage 1, the company may first consult the colleges/ schools that are available or their employer's organisation to get the desired information or to come to a collective solution.

- *Stage 2. Consultation of VET providers for solutions with existing courses.* Based on the description of the future skills needs, the company and the relevant VET provider(s) or employer's organisation should analyse this need in more detail. The output of that analysis will form the basis for a comparison with the content of courses available in education at that moment. If the skills needed by the company are included in those programmes, the VET provider can solve the need and stage 3 will be the next step. If the existing courses in VET do not offer the desired solution an extra step should be included, this is stage 2.1.

- *Stage 2.1 Research existing courses on possible combinations.* If stage 2 does not generate the desired result, the VET provider can do internal research with the available expertise in their organisation (perhaps in another faculty), and if relevant in the company's own expertise, to find possibilities for clever combinations of various skills / parts of other courses that can be 'moulded' to a new course fulfilling the need. This result can be implemented in education to serve the needs of more companies. It can also result in a combination of existing functions within the company itself using existing skills with employees already in the company but perhaps in another department. If these possibilities are there, stage 3.1 is the next step. If this search for combinations does not solve the problem, the next phase needs to be started, stage 3.2.

- *Stage 3 Development of the new skills by VET provider.* Based on the detailed analysis of the skills in the first part of stage 2, the VET provider will develop the new skills in existing training courses.

- *Stage 3.1 Development of new courses by combining existing ones by VET Provider.* If in step 2.1 it is clear the solution for the skills needs can be combining two or more existing skills (profiles) courses, the VET provider will develop those and implement them at company level and / or in VET.

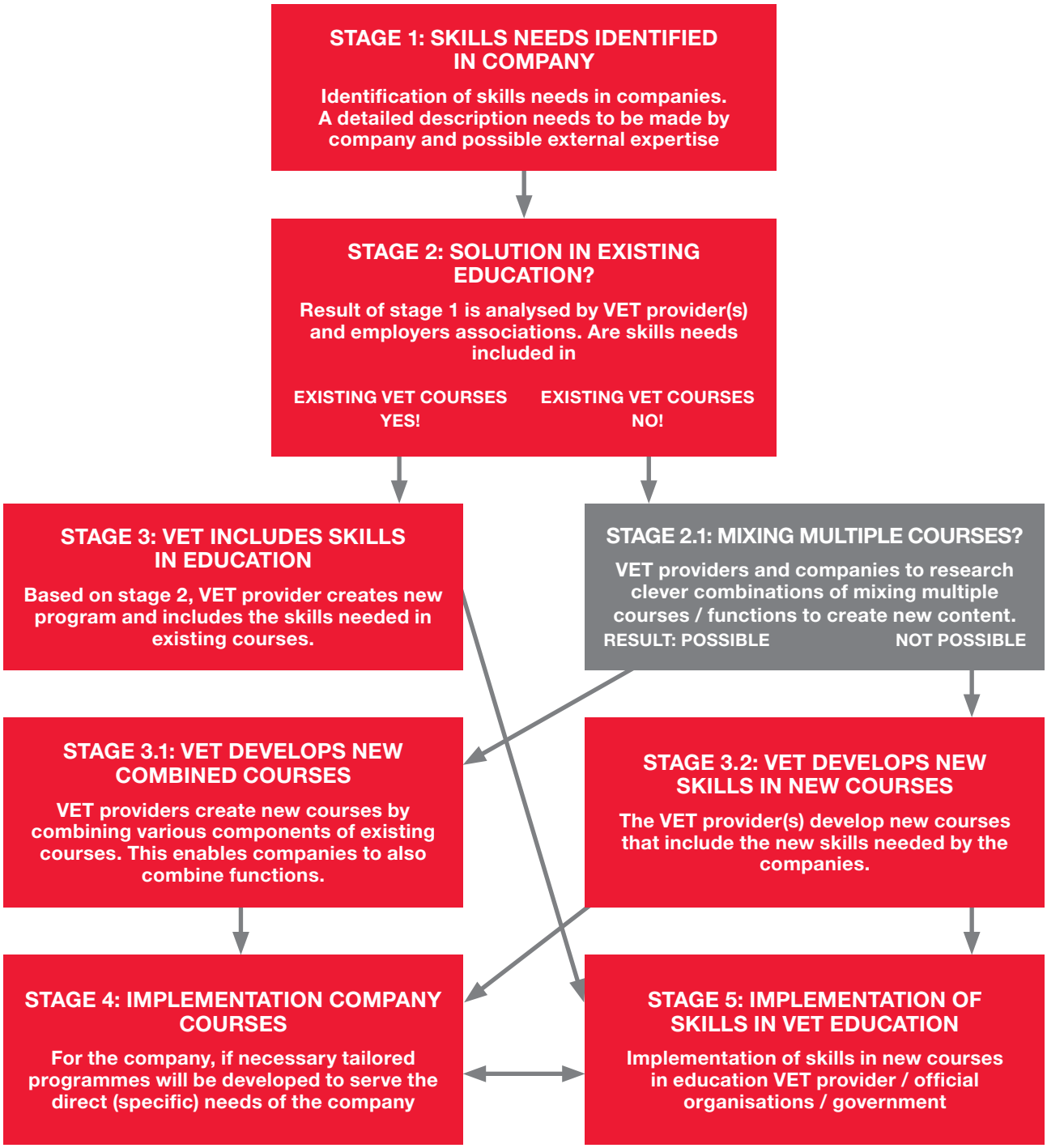
- *Stage 3.2 Development of new skills in new courses.* If stage 2 made it clear it was not possible to find any solutions in existing VET courses the VET provider will then have to develop new courses for new skills. As in the former best practice, decisions have to be made to if this will be done for a specific company (commercial service) of for VET in general.

11. Annex III show a list of names / skills / occupations that were mentioned by respondents about the developments in the new media industry / digital industry

12. 'The greatest progress comes from combinations of existing technologies, rather than brand new ideas. Future innovations in printing will be incremental combinations and adaptations of existing technologies. The successful business will adapt the technology to new market conditions'. The future of the European Print Industry- in our hands: Intergraf / Uni Europa Graphical.

- *Stage 4 Implementation of the skills in the company.* The end results of the stages 2 and 3 will be fine-tuned or piloted in order to serve the specific needs of the company. In this phase the contents of the training programme on the shop floor will be developed.
- *Stage 5, development of the skills for implementation in VET.* At this stage the VET provider will need to take the full lead in the project and, if appropriate, use the official procedures to ensure the new skills will implemented in education.

Figure 15: Extensions or additions of traditional services



7.5 NEW COMPANIES AND NEW ENTRANTS TO THE CHANGING MARKET

The third environment that will be described is also strongly related to the new media /digital industry and creative industry. The differences with the environment of paragraph 7.4 are the companies that operate on this market. We identify two different kinds of companies, whose backgrounds are completely different and diverse.

- The first group of "old" companies originated from the graphics industry, but have developed into completely new companies, dismantling the largest parts of their original printing services. These companies are familiar with the role and position of social partners and they are also familiar with centrally organised and collaborative structural training and updating the skills of their employees.

- The second group are the new companies into the "digital dimension" which do not necessarily have the background of the first group. They may never have been part of the culture of being organised in employer's organisations or employees' organisations and therefore do not have the culture of joint training development let alone apprenticeships. Further, the combination of an IT based basic education and simpler process controls built into equipment, mean that training is not seen as a multi-year process rather a multi week process! Their entry into this market is with a cost barrier which is much lower due to the business model described above. Less money is spent on education and training of employees. This results in pressure on the original business models of the 'old' companies.

Taking a closer look at the latest developments in the graphical industry (as has been set out in chapter 3 of this report) we see that it is not only high tech innovations that must be responded to but also it is the changing environment in the 'modern graphical industry' which is much more about operating in an 'overall communications and creative industry'. For companies this means developing new business models, developing new services, entering into changed supplier – user relations and engaging in networks or partnerships that create added value for all participants.

In this environment the employees for the immediate future will need new skills, new competences. The question "does VET offer the courses that train the students adequately for these functions and demands?" will be dealt with in chapter 8 with recommendations.

In this paragraph the methodology of identification and development of the skills will be described as a way forward. In practice the authors think that there are three main streams in the developments of skills for this specific setting:

1. Skills in relation with technology (mainly hard skills), workflow and service oriented skills in standard internal order management, and traditional sales and customer relations (soft- and hard skills). The educational area is covered mainly by VET, either initial level or more advanced level of VET. A variety of developments and changes are taking place but they can be regarded as on-going development in a different area.

2. Skills related to other processes than purely technical: improving efficiency, change and update working methods, establish new and effective communication lines, etc.

3. Skills in relation to multi channel, cross media 'thinking' conceptualisation, complex campaign management and also related with sales and marketing. This will be more the area of Higher VET. Companies that deal with these activities experience that the level of initial- and advanced VET cannot meet the demands employees in these jobs. For example developing and managing a marketing campaign involving many different forms of media is not only managing a project entails more functions of a complex nature. Furthermore a lot of the 'missing skills' emerge form new ideas, new applications, new possibilities entrepreneurs 'discover on the run'; unexpected problems pop up during the period of change; new ideas or possibilities emerge during creative processes on the search of new business possibilities.

Based on these deliberations the best practice for this environment of new companies and new entrants to the changing market' has been developed.

- *Stage 1. Identification of skills needs by the company.* The company needs to identify the skills need as clearly as possible. The quality of this description of these specific needs will depend mainly on the available internal expertise. In many situations the company, unless it has an expert internal resource, will need external expertise to assist with this part of the identification process. If this is the case, stage 1.1 needs to be applied. It is important to assess if the need is purely technical (application of new equipment) or has different dimensions to it (change in working methods, a more holistic approach to functions and processes, concept development).

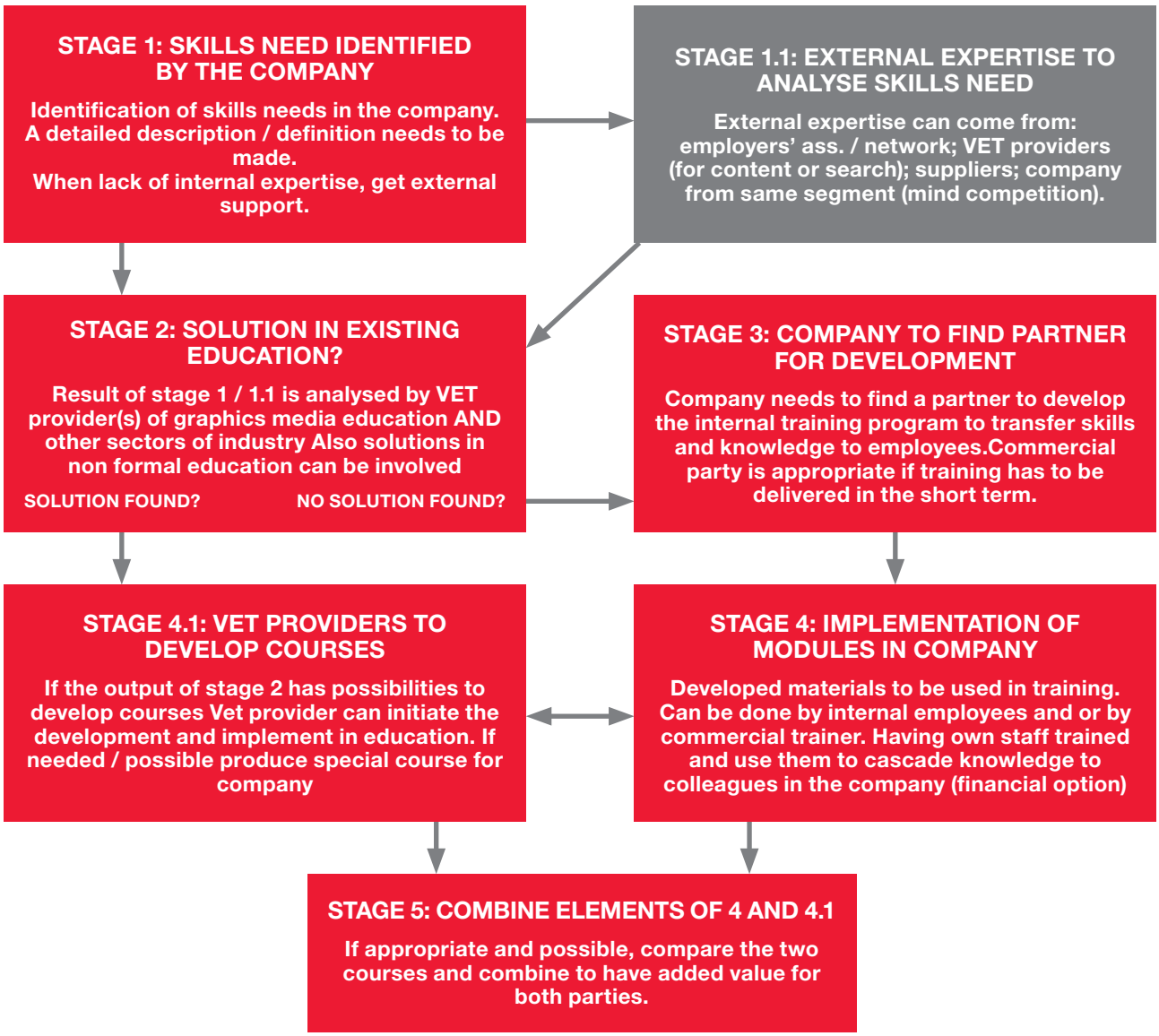
- *Stage 1.1 External expertise needed for further identification and analysis.* Unless the company has internal expertise in training needs analysis, it needs external expertise for further identification and analysis. Resources can be: company's employer's organisation, a consultant with adequate expertise from a commercial organisation or experienced company in the segment of industry (of course this

could not be a direct competitor), a VET supplier or possibly supplier of equipment / software. If a VET organisation is available, it might also be able to assist in finding the appropriate partners using its own networks. If the search is successful the further analysis can be made.

- *Stage 2 Evaluation of possibilities to find solutions in available VET programmes (related to graphics industry and other VET providers).* Depending on the result of stage 1 and 1.1 the possibilities can be evaluated to find solutions in existing courses or programmes that are available on the market in formal education, non-formal programmes or other possibilities. These can of course also be outside of the traditional boundaries of the graphics industry. If this stage results in a positive result, stage 4.1 will be the logic way to proceed. If the evaluation does not generate any relevant possibilities, the next *stage 3* will be necessary.

- *Stage 3 Identification of a partner for development.* At this stage the company needs to make a choice for a partner to develop the modules necessary to transfer the skills / knowledge to the employees of the company. Most likely this will have to be a commercial organisation to supply the training at short notice and in the timescale needed for the company to implement change.

Figure 16: New companies / new entrants to the changing market



- *Stage 4 Development and implementation of the training in the company.* Once the partner for development has been selected, the actual production of the course can start. The company will have to decide if it wants the developer to also conduct the training for the employees in question or to follow the "train the trainer" principle and have selected employees, once trained themselves, to transfer the knowledge and skills to their colleagues.

- *Stage 4.1 Development of appropriate courses by VET providers.* If the results of stage 2 were positive, the conclusion was existing VET education could develop and provide the courses to fulfil the need of the company. The development of courses and implementation in VET will then take place.

If the stages 4 and 4.1 are both a solution for slightly different situations, and courses / skills /modules are developed, it is of importance that both results are compared to see a combination of elements from both would create a better end product. This process need to be emphasised, possibly initiated and monitored by the employers' organisation in close cooperation with VET organisations.

7.6 SITUATION TRIPARTITE – JOINT BODIES OF SOCIAL PARTNERS

This practice describes the situation in countries where cooperation between social partners and several professional educational organisations is a standard procedure in relation with Vocational Education and Training. In most instances these are countries that have or had quite a strong system of apprenticeship learning, a history in a dual system, forms of alternating learning (periods of training, learning and working in a company and periods of learning additional skills and foundation skills and other competences in a VET school).

In such systems, the social partners have a mutual responsibility to participate in the development and partial funding of education and training having in many cases relationships with either governmental organisations or bodies representing the government that in some way control or regulate education initiatives. In this situation with the government the social partners take the responsibility for the content of the education by providing expertise from the industry.

These countries often have professional educational organisations for research and development in the field of (vocational) education; the organisations are partially or fully funded by the government. These professional organisations have close contacts with the social partners (the social partners sometimes are the board of directors or have a representation in the board of directors), and also they have contacts with individual companies. It is virtually a closed loop for educational matters.

Updating education is a continuous process in these countries. There is an ongoing monitoring of the situation in education and the industrial contacts of schools are well established. Contacts between schools and companies are well structured mainly due to the fact that both organisations have their own responsibility for parts of the educational programme in either teaching / coaching of students or as apprentices / interns / trainees.

The close relation between the different stakeholders does, however, not guarantee success but these countries have a better VET in many instances. Of course other factors influence the quality of (VET) education, with one of those being the approach of regional and national governments. In many countries it should be noted that VET does not get high priority in the plans, policies and financing of national education.

In short, working in partnership does have positive effects when the key organisations responsible for Vocational Education have relationships on a structural basis. The social partners mostly work in tripartite industry committees and generate funds for Vocational Education / apprenticeship. These committees have the tasks of performing quantitative and qualitative research in the relevant sectors of the industry on the basis of the decisions that can be taken to update educational programmes.

In this model the education field keeps the social partners alert to new developments and the social partners influence the content as programmes which are updated when needed. This is one reason why the EU is promoting programs for WBL as they can see excellent possibilities for extended relations between schools and workplaces (companies) in order to retrain teachers and pass that knowledge on to the next generation of the workforce of the companies in short courses on the shop floor. Examples are Denmark, Germany, Switzerland and in some instances The Netherlands.

At this moment Work Based Learning is an important issue and will remain so for quite some time. Especially in periods of recession WBL creates an important win-win situation. Young people can learn part of their skills on the job and with that get easier access to a job in a company. In return they are ready for work, have easier access to the labour market when leaving school and can contribute to economic growth, if the jobs are available. Where this system struggles to cope is with rapid changes in technology or market forces and its constituents (companies, employees) have to quickly acquire new skills in order to survive. Greater concentration on technology foresight may be the answer so that the tripartite-based systems can be ahead of the needs. The consequences their constituents are wrestling with the problems of today and they are seen to be not supporting them by working on the next big change, which may be 5 years ahead!

8. Recommendations

8.1 INTRODUCTION

The recommendations and observations in this chapter are meant to function as catalysts for discussions and thereby to provide clear answers to some questions. The authors of the report are convinced of the importance of a quality system of VET in the graphics industry. The questions raised and observations that are made are by no means intended to provoke people or to be negative on the educational sector or to blame whatever party involved. There are shortfalls, improvement can be made in certain areas and action is needed to secure the merits, achievements and crucial role of VET at national and European level.

ITEM CHAPTER	ISSUE
1 Chpt. 4	The role and task of VET should be critically reviewed in the forthcoming years. The present demands from industry to the schools of initial and continued education to meet the requirements of on-going innovation and market developments are, in the current circumstances, impossible to fulfil
2.1 Chpt. 3, 4, 6, 7	The industry is changing rapidly in response to technology, markets and economics which makes it difficult for schools and VET providers to offer the appropriate training
2.2 Chpt. 3, 4	Research and case studies show that to a great extent the 'advanced companies' make their own decisions in the context of their own business needs, the speed of change required and the availability of training support from all sources
3.1 Chpt. 4, 6, 7	The majority of companies are "followers" and, as noted above, will benefit from colleges listening to the needs of the advanced companies and adapting their courses for the "following companies" – but the rate of change is quick and the process of adaption needs also to be quick
3.2 Chpt. 4, 6, 7	VET should be enabled to also meet the needs and demands of 'advanced companies'. Special courses / departments should be introduced in 'leading VET schools'. Extra budgets should be allocated for innovative developments in close cooperation with companies. In some countries, at least Germany and Switzerland, a special form of VET is implemented in the dual system of advanced VET. This should be made possible in all countries

The recommendations are represented in a tabular format. In the first column the number of the recommendation is given and the chapter(s) where the matter is described or discussed. The numbers do not necessarily indicate a hierarchy; an attempt has been made to cluster the recommendations. The 'issue' is described in column two, the next column states the action that would be needed; the level of the action can be 'national', 'European' or both. In the last two columns the organisation(s) that is (are) supposed to take the lead and which are the expected partners are mentioned.

ACTION	LEVEL	LEAD	PARTNERS ROLE
The social partners to lobby national governments to support and fund the necessary structure changes of vocational education	National	Social partners	Intergraf, Uni Europa *Initiate and discuss with members at national level*
The industry should plot the changes in technology and markets and develop tools to assist companies to respond to the challenge of change, if VET cannot provide the solutions	EU	Employers organisations	Unions, technology suppliers *Support and advise*
There has to be interaction, strong ties, between such companies and the schools. Only then the companies / employers have maximum influence on the contents, quality and thus output levels of that education and not only will the "early adapters" be satisfied but so will the main thrust of the industry	National	Companies, Employers organisations	Schools, VET providers, Unions *Support, advice and activate organisations and members*
Employers' organisations should draw together these companies in a collaborative way to work towards a common view of future skills needs. This action should overcome the difficulties if VET organisations cannot respond to the needs	National	Employers organisations	Companies, Unions, VET schools *Activate, participate, implement*
Social partners should study the possibilities for implementation of such special courses in other countries too	EU	Social partners	VET schools, EU *Commission Participate in development and facilitate the development*

ITEM CHAPTER	ISSUE
4 Chpt. 7	Changes / reforms are not always just about investment in technology but also about collaboration along the communications supply chain
5 Chpt. 4	Schools and VET providers are faced with shrinking budgets and increasingly more diverse demands. They must therefore seek ways to respond to their "market" in more cost effective ways.
6 Chpt. 7	Strong bridges need to be built between companies and schools to make sure that the output of the latter matches the need of the former
7 Chpt. 4	Life long learning needs to be developed and become an integral part of adult education (VET based)
8	Changes / reforms have to be accepted by existing and future employees. They have to be motivated to develop their skills within a secure and transparent system (or "environment")
9	Urge national governments to acknowledge the stakeholder position of social partners / organised networks / councils. At present the proposals / ideas of social partners are neglected by national governments
10 Chpt. 4, 7	The industry should develop a platform on the web for exchange of skills development between the member's organisations of the social partners and Educational institutions and other relevant parties

ACTION	LEVEL	LEAD	PARTNERS ROLE
Case studies of such collaboration should be identified and analysed to point the way forward	EU	Social partners	Uni Europa, Intergraf *Initiate, activate national organisations*
Schools should cooperate more in international development of curriculum that may be efficient and save money in the mid-term. This will build on the research done on technology and markets in 2.1 above	EU	VET providers, Schools	EU Commission, Social partners Support and facilitate
Social partners or tripartite bodies (Sector Skills Councils) (employers/employees/colleges) should bring together the two "sides" at national/regional level	National	Social partners	Schools, VET organisations *Respond to and implement proposals*
Social partners should show ownership for Life Long Learning. It has to become part of their policies to promote and further develop access to adult learning	European and National	Social Dialogue Committee	Unions
Trade unions should develop good practices. They should also develop communication tools to enable and to create a confident and motivating environment for the employees	National and company level	Trade unions	Employers, Social partners *Support and advice*
European Social Partners should use their influence to convince national governments that social partners are key stakeholders in the development of VET and of the local economies	European and National	Social Dialogue Committee	EU Commission *Support / facilitate*
The EGIN network should develop a first plan to describe the functionality of such a platform, which can be hosted on the EGIN website	EU	EU Commission	EGIN, Social partners, Schools *Develop, implement, maintain*

Annex

Annex I. Terminology

COMPETENCE	The proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development.'
ECVET	The European Credit System for Vocational Education and Training. A technical framework to facilitate the transfer, recognition and accumulation of assessed learning outcomes with a view to achieving a qualification. It is designed to facilitate lifelong learning and to support the mobility of European citizens. The learning outcomes approach ensures a better understanding and comparability of qualifications and learning achievements across countries, institutions within a country or across qualifications.
EDUCATIONAL PROFILE	A detailed description on the contents of education and training in order to make it possible to develop courses to enable pupils / students to perform the description of the job profile in real practice.
EUROPEAN QUALIFICATIONS FRAMEWORK	Framework for lifelong learning (EQF) provides a common reference framework that assists in comparing the national qualifications systems, frameworks and their levels. It serves as a translation device to make qualifications more readable and understandable across different countries and systems in Europe
HARD SKILLS	Specific, teachable abilities that can be defined and measured; examples of hard skills include job skills like typing, writing, math, reading and the ability to use software programs
JOB PROFILE	A detailed description of a particular work function that includes the elements that are necessary to perform the post effectively.
KNOWLEDGE	The outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual.
LEARNING OUTCOMES	Learning outcomes are statements that describe significant and essential learning that learners have achieved, and can reliably demonstrate at the end of a course or program. In other words, learning outcomes identify what the learner will know and be able to do by the end of a course or program.
NATIONAL QUALIFICATION SYSTEM	All aspects of a Member State's activity related to the recognition of learning and other mechanisms that link education and training to the labour market and civil society. This includes the development and implementation of institutional arrangements and processes relating to quality assurance, assessment and the award of qualifications

NATIONAL QUALIFICATIONS FRAMEWORK	An instrument for the classification of qualifications according to a set of criteria for specified levels of learning achieved, which aims to integrate and coordinate national qualifications subsystems and improve the transparency, access, progression and quality of qualifications in relation to the labour market and civil society.
SKILLS	The ability to perform tasks and to solve problems'
SOFT SKILLS	The character traits and interpersonal skills that characterize a person's relationships with other people. Soft skills have more to do with who we are than what we know. As such, soft skills encompass the character traits that decide how well one interacts with others, and are usually a definite part of one's personality
KEY COMPETENCES	As defined in the relevant EU recommendation (European Parliament and Council, 2006) comprise literacy and communication in mother tongue and (two) foreign languages, numeracy, basic competences in science and technology, digital skills as well as sense of initiative and entrepreneurship (see STD15), cultural awareness, social and civic competences and learning to learn skills.
TRANSVERSAL SKILLS	The skills individuals have which are relevant to jobs and occupations other than the ones they currently have or have recently had. These skills may also have been acquired through non-work or leisure activities or through participation in education or training.
WORK BASED LEARNING 1	Definition 1: Acquisition of knowledge and skills through carrying out – and reflecting on – tasks in a vocational context, either at the workplace (such as alternate training) or in a VET institution.
WORK BASED LEARNING 2	Definition 2: Programs for both secondary and post-secondary students, which provide opportunities to achieve employment-related competencies in the workplace. Work-based learning is often undertaken in conjunction with classroom or related learning and may take the form of work placements, work experience, workplace mentoring, instruction in general workplace competencies and broad instruction in all aspects of industry.
FORMAL LEARNING	takes place in an organised and structured environment (frequently in an education and training institution) and is explicitly designated and intended as learning. It typically leads to award of a qualification(certificate or similar)
NON-FORMAL LEARNING	takes place through planned activities and where some form of learning support is present (such as student-teacher relationship). Non-formal learning is intentional. Very common cases of non-formal learning include in-company training, through which companies update and improve their employees' skills such as ICT skills, structured online learning (by making use of open educational resources), and courses organised by civil society organisations.

Annex II. Structured interview

CASE STUDY INTERVIEW – STRUCTURED DISCUSSION

1. Introduction

a. The business now:
   i. How would you describe the business now;
   ii. How would your customers describe your business.
b. Recent changes in the business:
   i. Describe the changes over a relevant period;
   ii. What would be the answer to the questions above (1.a.i and ii) have been 10 and 20 years ago.
c. Future changes in the business:
   i. Are there plans to consolidate, continue change, new direction etc.

2. Change

a. What has been the cause of change:
   i. The economy;
   ii. Technology;
   iii. Customers;
   iv. Competition – eg new media.
b. What has been the impact of change:
   i. Growing business/shrinking business/new business mode;
   ii. New customers;
   iii. New technology employed;
   iv. New people employed;
   v. New knowledge and skills needed.

3. The people aspects of change

a. Have the changes in your business meant:
   i. New jobs, new skills (hard and soft), new ways of recruiting;
   ii. We have had to retrain existing employees;
   iii. We have had to recruit new skills/knowledge/competences;
   iv. We have had to change the internal culture.
b. Recruitment, education and training:
   i. We analysed the future needs of the business and compared with current staff;
   ii. We responded only to urgent needs;
   iii. Any retraining has been entirely in house;
   iv. We compared the needs with a range of external providers; Vocational training, Higher education, Commercial;
   v. We revised our recruitment methods and targets eg graduate recruiting;
   vi. We worked with education providers Vocational schools, Higher education, international education, Commercial training, suppliers;
   vii. We continue to analyse knowledge/skill needs and source appropriate training.
   viii. Sources of training:
      1. Internal (using own and external trainers);
      2. External commercial;
      3. Higher education;
      4. Further education Vocational education;
      5. Other.

4. Potential difficulties

a. Managing change;
b. Introducing new technology;
c. Retraining and finding appropriate courses;
d. Employee involvement/engagement;
e. Customer retention/recruitment;
f. Other.

Annex III. List of job titles for developments

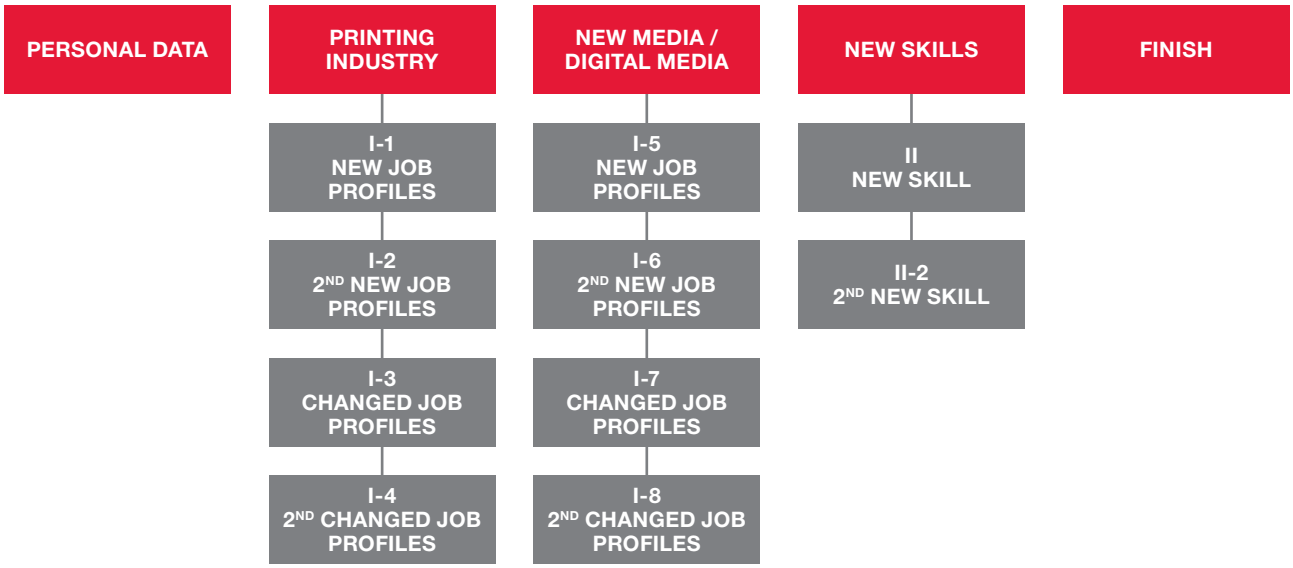
FIELD RESEARCH, ANSWER TO THE ONLINE SURVEY

At the start of each section of the survey, respondents were asked if they knew a new profile or skill or a changed profile, and if so, to give a name to the new profile or skill. Below you will find a list of free text / open answers given by respondents to of the survey.

The answers listed here are in a raw format, not edited or corrected regarding language. Parts are 'free' translations of answers given in French, German, Italian and Spanish

The list has no formal status, is added as possibly interesting for experts and interested persons in the development of skills in various EU countries.

The list is divided as the survey was structured as the figure below here shows.



PRINTING INDUSTRY

Section I 1-2 new profiles

- Interactive media designer
- Cross media sales representative
- General manager
- Project manager creative industries”
- Text writer)
- Sign Prepress specialists are studying more multimedia and cross media. Offset printing specialists are studying more digital printing. Titles of the profiles have not changed
- Digital Print Project Manager
- Digital printing
- Digital specialist of graphical processes
- Mechatronics
- Smart printing
- Vocational qualification of Printing assistant
- It is not named due this include the mechatronics and print operator competences
- Digital printer
- Frontend developer, app developer, e-book developer, interactive media designer
- “Graphic designer for mobile apps,” or something like that. Not a formal job profile.
- Media design med studiekompetanse
- 3D printing, personalized marketing/advertising
- Web designers & Programmers
- Commercial assistant for print industry
- Quality, health & safety and environmental co-ordinator
- Web to print
- Industrial production engineer with print technology engineer competence

PRINTING INDUSTRY

Section I 3-4 changed profiles

- Supervisor finishing , senior printer
- Photographer
- DTP, Internet at n2/3
- Media developer
- Prepress
- Graphic technician
- Printer
- Game artist
- Digital print operator
- Prepress specialist
- Prepress specialists are now also multimedia specialists
- Hi-end-printing
- Newspapers to e-Papers
- Digital graphic designer
- Further qualification of Digital Printing
- Mediegrafiker
- Offset printing operator
- Methodological competences in printing
- Designer and producer print, including digital,
- Technical designer and producer (EFA)
- E-book
- Master of science print and media technology
- Separate parts of hand bookbinding and mechanical bookbinding
- Team leader offset
- High quality corrugated packaging

NEW MEDIA INDUSTRY / DIGITAL MEDIA INDUSTRY

Section I 5-6 new profiles

- Content editor
- 3D skills
- Social Media Manager within public service broadcaster of Estonia
- Web developer
- Digital printer
- proDUCE
- Project leader creative industry
- Web integrator
- App developer
- Game developer
- Digital curation
- App Designers
- Game artist
- Liquid design
- Cross media producer (profile within independent production companies)
- E-designer
- 3D printer
- Game artist
- Technical media developer
- 3D Graphics developers, content developers and social media
- Media sales person for print and digital print
- Platforms for interactive communication
- Audio-visual media production, 3D films-interactive communication
- Technician for multi channel communication
- Augmented reality

NEW MEDIA INDUSTRY / DIGITAL MEDIA INDUSTRY

Section I 7-8 changed profiles

- Crossmedia and Transmedia lecturer
- Pre press including 3 D. it is going to be included in new education profile.
- Virtual/augmented reality producer
- Game developer
- Mediegrafiker
- Media Graphics designer
- Media editor
- Digital Instructors
- All qualifications
- Media design, will be ready in 2015
- Digital big picture printing / education
- Digital Media
- Journalist at YLE
- Social media manager

NEW SKILLS

II and II 2

- Product scanning on the machines
- Digital book binder, digital printer
- App programming
- Workflow engineering
- Digital printing
- Informatics
- App/web app developer
- Entrepreneurial skills, entrepreneurship
- Interactive pdf
- Content producer
- Entrepreneurship
- Preparing content for various media output
- Use of simulator Sinapse SHOTS in education of printer apprentices
- Integrating media
- Cross media skills; database and digital publishing skills; variable data printing skills; digital asset management skills; skills to use a new technology etc.
- Use of social media
- Web Development
- 3-D printing
- Ability to work with digital equipment
- TV production
- Web development knowledge better understanding of digital printing technology
- Multitask
- Broader overview of the disciplines and working area of the cultural industry is needed
- 3D camera and Editing, Game design,
- social competences
- project planning, communication planning
- interactivity scenarios
- Design management
- Teamwork
- new substrates to be printed on in digital print
- responsive design
- sales content for book binder and screen print
- strategic management competences
- Acquisition and processing images, videos, and graphics for publication on media
- Application of tablets
- Manager (contract management) multichannel operations
- Flexible packaging
- E-commerce, social use
- Specific skills on workflow in printing
- Digital resources for online editing
- Electronic publishing
- Communication

EGIN
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INTERGRAF
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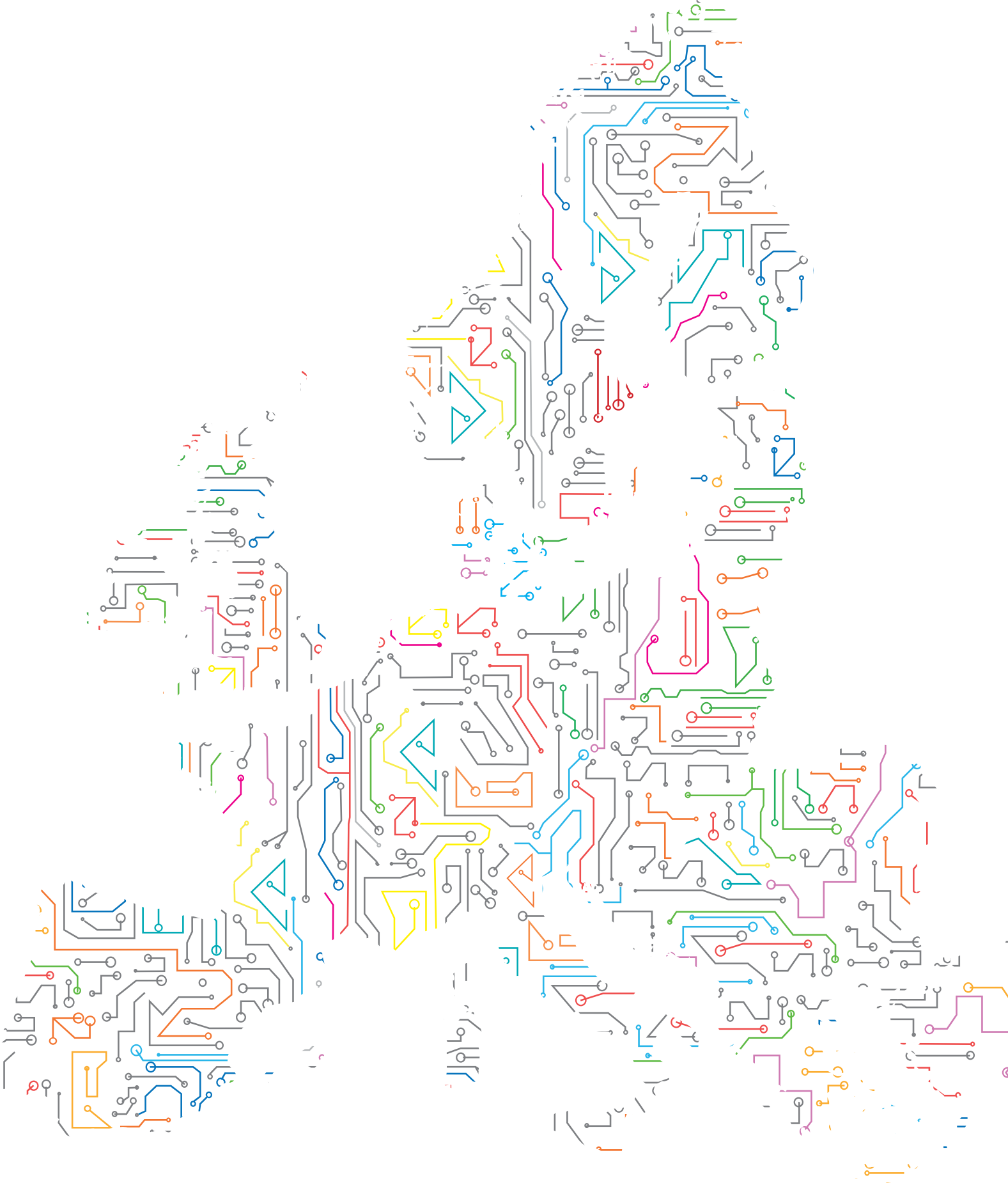
www.uniglobalunion.org



EGIN
EUROPEAN GRAPHIC MEDIA INDUSTRY NETWORK

INTERGRAF AISBL
European Federation for Print and Digital Communication

UNI global union
europa post & logistics