



Virtual Portal for Interaction and ICT Training for People with Disabilities

Research Methodology & State of the Art

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Glossary

Android: A Linux based operating system used predominantly on smartphones and tablet computers.

Cloud: Web based storage allowing remote backup and roaming file access

Desktop: a computer designed to be set up as a work station

Email: electronic mail. Message sent through electronic devices, i.e. computers.

E-learning: this includes all forms of electronically supported learning – but more specifically, the computer and network enabled transfer of knowledge and skills.

ICT: Information and Communication Technology – the use of computers and mobile devices to present and find information and to communicate with others

Input: feeding control data into a computer telling it what you want it to do.

Laptop: a portable computer usually with a built-in monitor

Mobile Access: Connect to a web resource through a mobile device

Mobile browsing: Interact with a web resource

Output: the means by which a computer or program can communicate information back to the user. E.g speakers, display.

OS: or Operating System – this is the software that your computer uses to allow you to interact with it and its programs. Common OS include Windows versions, Linux, Ubuntu and Mac OSX

URL: Abbreviation of Uniform Resource Locator, a web address often starting with <http://www>.

ViPi platform: The main resource portal of the project.

Introduction

The following is the statement from the bid document:

The research methodology will be organised in such way as to ensure the best approach to aggregate the correct user requirements, and in order to achieve the best results for the project. Several activities will be incorporated, comprising: online and library searches, surveys, face-to-face meetings / interviews, as well as a consolidated research programme that will be delivered to the researchers to follow.

This document aims to identify and set out the design of the research programme in order that ViPi's outputs can meet the needs of the stakeholders that it sets out to benefit.

In Europe, the majority of people with disabilities are unemployed. One of the underlying reasons for this is a lack of a number of skills (basic ICT skills being one of them) that are needed for today's working environment. The ViPi project will address this by providing a portal embracing modern web 2.0, web 3.0, games-based learning and mobile technologies with an aim of supporting and enhancing the learning of key skills in people with disabilities.

The ViPi portal will be a "one-stop-shop" interactive portal & learning environment that delivers:

- A comprehensive multilingual portal
- An embedded multilingual social community
- An accessible repository of learning objects for people with disabilities and their trainers.

The final outcome will be an entire set of applications and services that will be optimised via a blended educational and pedagogical framework, making full use of the interaction possibilities offered by web 2.0, and semantic search enhancements of Web 3.0. This will be localised, tested, piloted and subsequently fine-tuned by Greek, Belgian, Lithuanian, British and Cypriot end-user communities.

The document begins by detailing the similarities and differences between the national contexts in the partner countries of education and employment for people with disabilities. Details of the research methodology to be employed in the ViPi Project are given in Chapter 3. In section 4 we define the technological sectors that will be utilised –the state of the art-, and in sections 5 and 6 we briefly outline the evaluation strategies to be applied and target groups to be addressed by the project respectively.

1 The European Perspective

This Chapter will address the European situation with respect to People with Disabilities (PwD) in Education and Employment, by identifying and comparing the national contexts in the partner countries, but also Europe-wide.

1.1 Legislation, Policy and Support

1.1.1 Greece

There is no disability specific anti-discrimination legislation (nor case law) in the Greek Legal System (Gavalas, 2004). Extremely broad and open constitutional provisions protect the citizens against unequal treatment or discrimination by state entities but not by employers operating in the private sector. In 1998, the Compulsory Employment of Disabled People (Quota System) was introduced, but there is no case law applying this provision so far (Gavalas, 2004).

In the Greek constitution, the only provision which explicitly prohibits discrimination is Article 5, which reads in translation “All persons living within the Greek territory shall enjoy full protection of their life, honour and liberty irrespective of nationality, race or language and of religious or political beliefs. Exceptions shall be permitted only in cases provided by international law.” (The Fifth Revisionary Parliament of Hellenes, 1986). This Article does not therefore specifically cover disability.

Greece is bound by Article 14 of the European Human Rights Convention (Council of Europe, 1950), “The enjoyment of the rights and freedoms set forth in this Convention shall be secured without discrimination on any ground such as sex, race, colour, language, religion, political or other opinion, national or social origin, association with a national minority, property, birth or other status”, as well as by many other similar international clauses, but there is no case law prohibiting discrimination against people with disabilities (Gavalas, 2004).

In the employment field, Courts traditionally prohibit any discrimination by employers against employees in general. They base this prohibition on the Civil Code clause of good faith and good usages. Recently, the Courts also invoke the General Principle of Equality (Article 4.1) of the Constitution. Although, the Principle of Equal Treatment conceptually covers disabled people, there are no cases, where a disabled person has invoked this principle to claim equal treatment and non-discrimination (Gavalas, 2004).

On the same direction, the principal Greek law regarding Employment is the Law 2643/98 (later substituted by Law 2956/2001, Law 3051/2002 and Law 3227/2004) under the title: “Provision for the employment of special social groups and other clauses”, which defines a quota scheme applicable on the private and the public sector. The law foretells mandatory working positions to be covered by individuals belonging to protected social groups, in companies of private sector, public enterprises and organisations, but also in public services and local-government bodies. Selection takes place via objective criteria (age, familial and financial conditions, qualifications and percentage of disability which must be over 50%). According to this law, private enterprises of more than 50

employees have to cover 8% of their staff with individuals with disabilities and other socially-sensitive groups. The corresponding percentage in the public sector is 5%.

The application of the law is coordinated by OAED (the Greek Manpower Employment Organisation, which actually acts on behalf of the Ministry of Employment and Social Protection), which is responsible for the melioration of the manpower vocational skills through specialised training and relevant employment programmes.

30 years ago, an initiative for supporting people with disabilities for work was begun. This has encompassed education for persons with disabilities: Special efforts have been made to integrate the maximum number of students with special needs into the regular school.

Recently the law with respect to “Special Education and Training to ensure equal opportunities to persons with disabilities and special educational needs” was voted in the Greek Parliament. This law aligns the national legislative framework with the European one.

Other regulations exist, which foresee employment facilitation for people with disabilities comprising:

- additional leave (6 - 22 days) for public sector employees (Law 3528/2007)
- reduced working hours (by one hour, with pay) for public sector employees (Law 3731/2008)

The National Confederation of People with Disabilities (ESAEA) identifies the following basic weaknesses in the Greek quota system.

- The system includes social groups that do not have the same characteristics and the same needs. Thus, the obligatory 5% quota applying to jobs in the public sector and the obligatory 8% quota applying to jobs in the private sector are distributed among all of the categories that the law protects, and not only people with disabilities.
- The enterprises covered by obligatory quotas in most EU countries include those that employ fewer than 50 people, whereas in Greece only those enterprises employing over 50 people are covered.
- The EU Council Directive 2000/78/EC establishing a general framework for equal treatment in employment and occupation, which prohibits discrimination on grounds of disability, was transposed word for word into Greek legislation by Law 3304/2005. However, the law did not incorporate Directive 2000/78/EC in a manner that would extend the principle of equal treatment for people with disabilities to all areas of life, as was done in the case of Belgium, but limited itself to combating the discrimination suffered by people with disabilities in the area of employment and work.

The general conclusion therefore reached is that The Constitutional Principle of Equality, as understood and applied in the Greek Legal Environment, is practically unable to provide a tool to combat discrimination against people with disabilities in employment.

1.1.2 UK

In the UK DirectGov offers people with disabilities information on a wide range of topics including independent living, financial support, health and social services, employment and travel (DirectGov 2011 A). There are also a number of organisations aimed at specific communities of people with disabilities in the UK. Examples of these are the National Centre for Independent Living, the British Deaf Association, the National Federation of the Blind UK, People First and Mencap. Each of these bodies provides support, advice and services to the disabled communities in the UK.

Current UK strategies include both a 20 year plan 'Improving the life chances of disabled people (2005)' and a five year plan 'Independent Living – a cross-government strategy about independent living for disabled people (2008)' ongoing. These strategies have similar goals - to increase access to education, jobs, leisure and transport, and give people with disabilities better choice, control and participation in all aspects of community and family life (ANED, 2009).

British law relating to disability was most recently updated on 1st October 2010, when the Equality Act replaced most of the Disability Discrimination Act (DDA). This increased the protection and legal rights for people with disabilities. The Equality Act 2010 aims to protect people with disabilities and prevent disability discrimination. It provides legal rights for people with disabilities in the areas of:

- employment
- education
- access to goods, services and facilities including larger private clubs and land based transport services
- buying and renting land or property
- functions of public bodies, for example the issuing of licences (DirectGov, 2011 B)

In the UK Building Regulations, technical guidance is laid out on provision of access and facilities for people with disabilities.

The government agency, the Office for Disability Issues (ODI) works on National Strategy for equality in disability, and the Equality and Equal Rights Commission (EHRC) is an independent agency acting to both promote and enforce equality in relation to all discrimination cases (ANED, 2009).

1.1.3 Belgium

The Belgian data is mainly based on the country report that was compiled by the Academic Network of European Disability experts (ANED 2009B).

Policy and enforcement bodies

The key national bodies with responsibility for disability law and policy implementation in Belgium are:

- Secretary of State for People with Disabilities,

- but most disability policy falls within the separate jurisdictions of the Flemish Community, the Walloon Region, the French Community, Commission of the Brussels-Capital Region and the German-speaking Community.

The main bodies with responsibility for disability policy in each jurisdiction are:

- Vlaams Agentschap voor Personen met een Handicap (VAPH - Flemish Agency for Disabled Persons);
- Agence Wallonne pour l'Integration des Personnes Handicapées (AWIPH) covers some aspects of employment, technical aids, buildings accessibility, transport, and tax exemptions;
- Service Bruxellois Francophone des Personnes Handicapées (SBFPH) covers aspects of education;
- Dienststelle der Deutschsprachigen Gemeinschaft für Personen mit Behinderung covers some aspects of work and education.

The Direction générale Personnes handicapées/Directie-generaal Personen met een handicap is responsible for drafting, interpreting and applying regulations relating to benefits for disabled people. It issues certificates for rights to social and tax concessions, parking cards and public transport discount cards. It arranges medical expertise for the determination of disability in relation to family allowance.

The Higher National Council for Persons with Disabilities (CSNPH) is an advisory body responsible for examining all relevant issues within federal jurisdiction of the federal government and can make proposals (e.g. in relation to allowances, social security and some legal protection). It publishes an annual Activity Report.

National law and strategy

Legislative arrangements are complex, operating at the federal, regional and community levels. Important national laws, policies and strategies concerning people with disabilities include:

- The Social Rehabilitation Act 1963 established the main federal provisions on disability and employment, supplemented by decrees in the three Communities and three Regions. This includes provisions on sheltered employment and vocational rehabilitation. Implementation resides with the four regional agencies. Belgium then also introduced the quota law for people with disabilities in employment. It was only implemented in the public sector, but was not well enforced as there were a lack sanctions.
- In 2003, an anti-discrimination law was introduced in Belgium. Disability is among thirteen possible grounds for discrimination (European Industrial Relations Observatory, 2003). Just six months after the law was adopted there was active criticism of the law describing it as unclear and hard to enforce. The definition of discrimination within the law was thought by some experts to be at odds with those in European directives on the subject (European Industrial Relations Observatory, 2003). Three new anti-discrimination laws were issued in

Belgium in May 2007, including the Anti-Discrimination Act 2007 (International Law office, 2007). This reform of the existing 2003 and 1993 legislation was introduced because of the EC giving formal notice of previously wrongly implemented European Union directives within the legislation, and the fact that the 2003 act was no longer functioning due to part of it having been declared invalid by the Constitutional Court (International Law office, 2007).

- Anti-Discrimination Law of May 10, 2007 (replacing earlier law of 2003) is the primary federal legislation covering discrimination, racism and xenophobia. This includes both direct and indirect discrimination in access to employment, health care, public life and access to goods and services. It does not explicitly cover education.

There has been little specific legislation to regulate accessibility and inclusive design (e.g. in broadcasting, telecoms or e-accessibility) although the concept of reasonable accommodation is included in the 2007 Law.

On July 2, 2009, Belgium has formally ratified the Convention on the Rights of Persons with Disabilities (United Nations, 2011B). From the moment Belgium has ratified the Convention on the Rights of Persons with Disabilities, it has the obligation to respect the content of the articles of the Convention. In practice, this means that it must adapt its entire legislation (laws, decrees, regulations, decrees applications ...) to conform to the Convention. Similarly, any new legislation must respect the content of the Convention. The spirit of the Convention will therefore profoundly influence the overall Belgian legislation.

Also on July 2, 2009, Belgium formally ratified the "optional Protocol" (United Nations, 2012C). By signing the Optional Protocol, Belgium allows the Committee of Disabled People's Rights to receive requests from individuals or groups of individuals relating to the non-observance of their rights. To introduce a legal action, the person or group of persons must first exhaust all domestic legal actions.

Social protection

Key features of the national system include:

- Disability benefits: Disability benefits fall under the responsibility of the Federal Service for Social Security. The objective of Social Assistance is to ensure that everyone has the right to a basic level of income. The right is extended to all legal residents in Belgium. It is based on an assessment (mostly medical). Assistance in finding appropriate employment can also be extended to persons with disabilities. There are possibilities of assistance to employers who need to make modifications to the workplace in order to accommodate disabled staff as well as compensations to loss in productivity. Other benefits such as parking permits, exemptions or reductions in taxes and utilities can also be obtained.
- Rehabilitation and re-training: In Flanders, all (re-)orientation regarding work by people with disabilities is arranged by VDAB (Flemish Service for Employment Mediation). In Wallonia, this (re-)orientation is under the responsibility of AWIPH. The practice of guidance of people with disabilities towards employment (ATB arbeidstrajectbegeleidingsdiensten) can be seen as a well organized service in Flanders. There are five such services in Flanders, one in each

province. In their structure (composition of the governing board) and the type of work, they form a crossing point for the different services that support people with disabilities (assessment centres, educational centres, and sheltered workshops). From 2001 onwards, the ATB services have become embedded in the Local Workshops, which means that the guidance of workers towards specialized provisions for people with disabilities now also occurs through the VDAB. As a result of the common guidance system of clients there is slowly developing a common management system of the entire group of people with functioning disabilities.

- Preferential employment and quotas: There are several preferential employment systems in Belgium that provide incentives to employers when employing a person with a disability. A quota system of 2.5% persons with disabilities in Belgium is applicable only to the public sector. However, this percentage is not being achieved and also not enforced. There are many calls however to increase the percentage.
- Long-term support and care: There is no single system of long term support and care.

1.1.4 Cyprus

The research on disability issues, and especially the employment of people with disabilities, is rather limited in the Republic of Cyprus, where disability is mostly researched in the field of education. Therefore, the most important publications regarding the employment of people with disabilities come from Governmental bodies (Symeonidou S, 2009), especially in relation to their participation in European Forums. The majority of the information comes from the Cyprus “**Report on the employment of disabled people in European countries**” (Symeonidou S., 2009) in the framework of the Academic Network of European Disability experts (ANED, www.disability-europe.net). As stated in the report, its purpose was to review the national implementation of the European Employment Strategy from a disability equality perspective, and to provide the European Commission with useful evidence in support of disability policy mainstreaming.

As of 2009, the Ministry of Labour and Social Insurance of the Republic of Cyprus, founded a Department for Social Inclusion of Persons with Disabilities (www.mlsi.gov.cy/mlsi/mlsi.nsf/mlsi18_en/mlsi18_en?OpenDocument). The mission of this department is defined as “coordination, implementation, observation and control of politics that concern people with disabilities”. The department’s role is compatible with European and International agendas and its aim is to cooperate with other ministries, as well as, with the Cyprus Confederation of Organisations for people with disabilities. The vision of this department is the improvement of the life quality for people with disabilities, through designing and implementing actions for social inclusion. It supports interventions by firstly evaluating and tailoring education, skills and employment, based on the needs of people with disabilities.

Among the department’s responsibilities are:

- Reorganisation of the Employment Skills Creation and Rehabilitation section

- Promotion of actions for achieving the inclusion of people with disabilities in working environments, such as the quota system in the public sector
- Modernisation of the Christos Stelios Ioannou Foundation and of the People with Disabilities Employment Rehabilitation Centre
- Coordination of effort by volunteers' organisations towards employment rehabilitation of people with disabilities

As revealed, the area of employment is one fundamental priority of the newly established department, and thus several initiatives were taken towards this end (MLSI (2011) A). In particular, the department initiated a consultation process with disabled people's groups and other state representatives to promote legislation regarding the employment of disabled people. It also contributed in establishing a new organization, named the Organization of Vocational Development and Rehabilitation, which aims to design and implement vocational training programs and to co-ordinate or provide funding for programmes that promote disabled people's employment, either in the open market or in sheltered workplaces. More importantly, the department is now working towards the development of a unified disability assessment plan, which is expected to facilitate disabled people's inclusion in different areas (society, education, employment). In parallel the department continues to co-ordinate existing schemes targeting employers who wish to hire disabled people in their workplaces or disabled individuals who wish to establish their own business.

On the other hand, according to the report Poulida and Theocharidou, 2006, there are many challenges faced by the people with disabilities in Cyprus when it comes to their employment. These can be summarized to the i) limitation for job alternatives, even for people with higher education, ii) absence of qualified personnel to deal with the assessment of the skills, needs and interests of people with disabilities, in order to provide appropriate counseling, iii) lack of a rehabilitation centre with all necessary infrastructures that will provide vocational training in accordance to the needs of the labour market, and will take into account the employability prospects of each individual person, iv) accessibility problems resulting from the poor transportation network, the absence of appropriate sidewalks and of easy access to buildings, etc.

The personal experiences of people with disabilities in finding and maintaining a job was addressed in a research project about the personal experience of disability and the disability movement in Cyprus (Symeonidou, 2005). The project performed a qualitative, historical and interpretive study and interviewed people with different types of impairments. These people described mixed feelings in their efforts to find a job. Such feelings were the distress in the workplace due to stigmatization, their experiences of unequal treatment in promotion and their varied relationships with colleagues.

The following paragraphs describe the situation in Cyprus concerning the legal coverage of people with disabilities in their efforts to acquire skills/education and enter the workforce.

Legislative status

Since 2001, the Cypriot Ministry of Education applies the law (113(I)/1999) that concerns the education of children with disabilities (Ministry of Education and Culture, 2010). Special schools and special units are provided to give customised support to people with special needs, from the age of 3. Unfortunately, there is not enough provision to achieve real access to education opportunities. Universities offer some services as well, for example, access to libraries, social support, access to classes, but not real access to Education.

There are several institutes, organisations, associations, foundations and special Schools providing support to the people with disabilities in Cyprus, for example, the Institute of Neurology and Genetics, the Dyslexia Association, the Christou Steliou Ioannou Foundation and the School for the Blinds. These receive (mainly financial) support by charity events like the Radio-Marathon and Telethon. The general legal provisions in the Republic of Cyprus, relevant to people with disabilities include, among others:

- The European Social Charter: Signed in 1961. This comprises one of the European Council Agreements for protecting human rights which was confirmed and adopted by the Republic of Cyprus with the law 64/1967. More specifically, Cyprus legislation concerning persons with disabilities was approved in November 2000 and amended in 2004.
- The Regulations 127/2000 (MLSI 2011 B).
- Also there is law 57/2004 which covers the equal treatment at employment and work of persons with disabilities and clearly prohibit any type of discrimination against them (MLSI, 2011 C).

According to the Law 127(I)/2000 for Persons with Disabilities, disability of a person is described as any other form of insufficiency or disability causing permanent or of undefined duration physical, intellectual or mental barrier on this person, when, in correlation with its medical record and other personal data, depreciate or eliminate the possibility of completing one or more tasks or processes considered as normal and vital for the quality of life of each person of the same age that does not have any kind of insufficiency or disability. Part II 'Rights of Persons with disabilities' (Article 4 (1)) is of great importance, because among the rights of people with disabilities is emphasised that these persons have rights for independent living, full accession in the community and equal participation to economic and social life of the country. This particular Law is the most complete Legislative Paper concerning people with disabilities. It was written in accordance to International Declarations and International Standards giving emphasis to the principle of non-discrimination and equal treatments, with upper goal the achievement of full participation in community of persons with disabilities (including persons with mental or intellectual limitation) (MLSI , 2011 C).

When it comes to employment of the people with disabilities, the Law enhances the equal treatment. Article 5(1) makes provision for the equal treatment with the rest of the employees from employers regarding the procedure of applying for a job, hiring, promoting, firing, compensating, compilation and other terms and privileges concerning employment.

Additional regulations that refer to people with disabilities are the following:

- Law 79(I)/1992 for the establishment of Provident Lottery Fund. The aim of this Law is the establishment of Special Fund that will provide some additional aid to disabled persons. This fund originates mainly from the release of a special lottery and from governmental grant (Poulida & Theocharidou, 2010)

In addition, the Constitution of the Republic of Cyprus contains sections on Fundamental Rights and Liberties which outlaw 'discrimination against a person by virtue of being a member of a community' (Cyprus Government Web Portal I, 2011). In 2006 a law for the discussion procedure between governmental and other departments about people with disabilities was introduced. The agreement of the International Employment Organisation, No.159 was adopted with the law 42/1987. Articles 2-5 provide for the taking of measures towards employment of people with disabilities. In 2006 the United Nations Convention on the Rights of people with disabilities was adopted by the Republic of Cyprus.

In any case, the most important legal development in Cyprus, is a new law named 'Hiring People with Disabilities in the Greater Public Sector Law' (N. 146(I)/2009) (Symeonidou, S., 2009). The Law came into force on the 23rd of December 2009 and it aims to minimize the exclusion of disabled people from the workforce by introducing a hiring quota of 10% of disabled people in the public sector. It came into force from the 23rd of December 2009. The applicants are expected to hold all the necessary qualifications for the job, to pass any written or oral exams necessary and to be able to respond to the duties entailed in the job. The process, as defined by the law, necessitates that the applicants go through a committee set up by the Department of Social Inclusion of People with Disabilities that is expected to assess their impairment. Then all the applicants are listed and 10% of the total number of the applicants is selected for the posts available. Then all people with disabilities who are appointed to work for the public sector are entitled to assistive technology equipment and other arrangement that will facilitate their work.

Other strategies and interested bodies

There are strategies in place within the Republic of Cyprus addressing:

- Creation of skills and employment
- Self-employment
- Employment with technical and financial support
- The establishment and operation of small groups aiming to the self-employment of people with disabilities
- A plan for motives for the employment of people with disabilities (since 2 Oct 2009) – this scheme offers financial support to employers and local authorities to hire persons with several types of disabilities (Cyprus Government Web Portal, 2011 A)

Other public and private bodies with an interest in this area in Cyprus include:

- Human Resources Development Authority (www.hrdauth.org.cy) - They have several programs for the promotion of employment. But currently they have no specific actions for people with disabilities.
- Christou Steliou Ioannou Foundation - Employment Rehabilitation Department- provides vocational training and occupation in the various workshops of the foundation and vocational rehabilitation in the free market with the use of personal group or supported rehabilitation programmes
- The European social Forum of Cyprus (ESFC) comprises a team of young people from Active Citizens experienced in the Social course of the Cypriot population in all levels. The ESFC as an institution consists of a Pancyprian Network of NGOs with non-profit targets. It aims at supporting its members with offering professional training for persons with special needs, the acquisition of skills in order to improve their quality of life, consulting and instructive support for persons with special needs, involvement of persons with special needs into the society at all levels, etc.
- Epitygma – Computer Education Center. One example of a private education centre, that has a special department for the education of people with disabilities equipped with special supporting hardware and software
- Cyprus confederation of organisations for people with disabilities (www.kysoa.org.cy) - is a Member of the European Forum for the disabled. Its member organisations include: Cyprus Association of Blind People, Cyprus Paraplegic Organisation (www.opak.org.cy), Cyprus Association of Parents of people with disabilities, People with Disabilities Employment Rehabilitation Center, Cyprus Association of People with Multiple Sclerosis and the Federation of Deaf People. The organisation is active in National and European projects/initiatives.

Finally, the Cyprus Government Web Portal (2011 B) provides a special section for people with disabilities, providing links to many relevant organisations, activities, support actions, etc.

Conclusions

It turns out that the state has expressed the political will to include disabled people in the labour market by the passing of the 2000 Disabled People's Act (N.127(I)/2000), which emphasizes the issue of equal opportunities and non-discrimination in employment. It has also made an effort to legitimize the inclusion of disabled people in the Civil Service through piecemeal legislation safeguarding quotas in the hiring of disabled people. However, this commitment has had limited success (APPLICA, CESEP and European Centre, 2007).

Overall, there seems to be a gap between policy and practice in Cyprus. There should be a co-ordinated effort to evaluate implementation and the sufficiency of existing legislation regarding the employment of people with disabilities. Moreover, the existing policies should be improved according to research results. Also, the inclusion of disabled people in the labour market on equal terms with non-disabled people should be a top priority for the Cypriot state. To this end, committed

policy makers, state officials and disabled activists should work together in order to improve the existing situation.

1.1.5 Lithuania

Since the introduction of the 'Law of social Integration of the Disabled' in October 2005, the social integration system for the disabled in Lithuania comprises provision of medical, professional and social rehabilitation services, provision for special needs using special assistance tools, support to employment of the disabled, social assistance, award and payment of pensions and benefits of the State Social Insurance Fund, award and payment of benefits of the Compulsory Health Insurance Fund, provision of education services, ensuring equal opportunities to participate in cultural, sports and other areas of public life.

The social integration system for the disabled is funded from the national budget, municipal budgets, State Social Insurance Fund, Compulsory Health Insurance Fund, Employment Fund, Structural Funds of The Law on Social Integration of the Disabled, which entered into force on 1 July 2005, defined new terms and definitions, modified the methods of disability assessment used for children and adults, stipulated equal rights and opportunities of the disabled in the society thereby bringing closer the social integration model for the disabled to the model used in EU countries.

To implement the provisions of the new Law and ensure high-quality assessment of the level of capacity for work and disability level as well as settlement of disputes concerning the disability level and capacity for work level, the Ministry of Social Security and Labour reorganized, from 1 July 2005, the State Medical Social Expertise Commission under the Ministry of Social Security and Labour by dividing it into the Disability and Capacity for Work Service under the Ministry of Social Security and Labour and the Dispute Commission under the Ministry of Social Security and Labour the European Union and other legitimate financial resources.

From 1 July 2005, the people with disabilities over 18 until they reach the age for the old-age pension are awarded the capacity for work level instead of the disability group.

The capacity for work level is set at the interval of 5 percentage points, i.e. if the person is recognized as having 0–25% of the capacity for work, he is deemed to be incapable for work; in cases of 30–55% of the capacity as partially capable and in cases of 60–100% of the capacity as capable for work.

The Law on Social Integration of the Disabled pays particular attention to professional rehabilitation. Professional rehabilitation is defined as rehabilitation or improvement of an individual's capacity for work, professional competence and ability to participate in the labour market by using educational, social, psychological, rehabilitation and other measures. There are the following professional rehabilitation services: professional guidance, consultation, assessment, rehabilitation or development of professional skills, re-qualification. Professional rehabilitation is aimed at developing or rehabilitating the capacity for work and improving the possibilities to find work by the disabled. After completion of the professional rehabilitation programme, the Disability and Capacity for Work Service determines the final level of capacity for work.

To ensure better support for the special needs of the disabled, the new Law provides a systemic approach to meeting the special needs by using special assistance measures. Special assistance measures are the measures aimed at meeting the special need and ensure equal opportunities for the disabled for education, vocational training, social and full integration into the society. The municipalities are responsible for establishing the level of special needs of the disabled.

People with disabilities receive the following general social services: interpretation into the sign language, provision with compensatory equipment, assistants, guides, housing adaptation, transportation, information and consulting, assistance at home, care homes, assistance benefits, meals, provision with basic necessities, etc. Where the general social services are inefficient, people receive special social services. They are provided at fixed and mobile social care and rehabilitation institutions.

The Law indicates that employment of people with disabilities is regulated by Labour Code and other laws. However this law only indicates basic terms and conditions of disabled people, such as Chapter 11 Article 92 “Persons Provided Additional Guarantees in the Labour Exchange.”. People with disabilities are also provided with a minimum annual 35-calendar-days leave instead of regular 28.

Also the ‘Law of Social Enterprises’ of June 2004 stipulated that the aim of social enterprises shall be, by employing the persons who are attributed to the target groups indicated in this Law and who have lost their professional and general capacity for work, are economically inactive and are unable to compete in the labour market under equal conditions, to promote the return of these persons to the labour market, their social integration as well as to reduce social exclusion.

A social enterprise of the disabled shall be a legal person which is established in the Republic of Lithuania, has acquired this status in accordance with the procedure laid down by this Law and fulfils all of the following conditions:

- the disabled with Group I, Group II or Group III invalidity or severe or moderate disability or the disabled whose capacity for work does not exceed 55% or who are rated as having high- or medium-level special needs (irrespective whether they are registered with a local labour exchange office or not);
- the employees who are attributed to the target group of the disabled account for not less than 50% of the annual average number of employees on the staff list, of whom the disabled with Group I or Group II invalidity or moderate disability or the disabled whose capacity for work is rated at 30-55% – for not less than 40% of the annual average number of employees on the staff list.

Article 13 describes the types of state aid provided to a social enterprise as follows:

- A social enterprise may be granted the State aid of the following types:
 - partial reimbursement of wages and state social insurance contributions;
 - subsidy for the creation of workplaces, adaptation of workplaces to disabled employees and acquisition or adaptation of their work equipment;
 - subsidy for the training of the employees who are attributed to the target groups.

- In addition to the types of State aid indicated in paragraph 1 of this Article, additional State aid of the following types may be provided to a social enterprise of the disabled:
 - subsidy for the adaptation of the work environment of disabled employees, production premises and rest rooms;
 - subsidy for the reimbursement of additional administrative and transport expenses;
 - subsidy for the reimbursement of expenses on an assistant (sign language interpreter).

The 'Law on Support for Employment' of June 2006 contains sections detailing the sections of the community that will benefit from its support. Chapter 1, Article 4 „Persons Additionally Supported in the Labour Market” indicates the following groups of persons are additionally supported in the labour market:

- the disabled whose capacity for work is rated at 20-40% (before 1 July 2005 – persons with Group I or II disability) or the disabled for whom moderate disability has been established;
- the disabled whose capacity for work is rated at 45-55% (before 1 July 2005 – persons with Group III disability) or the disabled for whom mild disability has been established;
- persons who have completed vocational rehabilitation programmes;
- persons taking up their first employment according to the acquired speciality or occupation;
- the long-term unemployed;
- persons over 50 years of age who are capable of work;
- pregnant women, at the choice of a family, a mother (adoptive mother) or a father (adoptive father), a guardian or a custodian who actually raises a child under 8 years of age or a disabled child under 18 years of age (before 1 July 2005 – a child recognized as an invalid);
- persons who have been released from places of imprisonment, where the duration of imprisonment was longer than 6 months;
- persons whose unemployment period are or exceed 2 years from the date of registration with a local labour exchange office;
- persons addicted to drugs, psychotropic or other psychoactive substances, which have completed psycho-social and/or vocational rehabilitation programmes;
- victims of trafficking in human beings, who have completed psycho-social and/or vocational rehabilitation programmes.

The main organization in charge of employment policy implementation is the Lithuanian Labour Marker Exchange and local labour exchange offices. Other state institutions contribute to the achievement of the objective of the support for employment set out by this Law by fulfilling the tasks and implementing the employment support measures in accordance with this Law and other legal acts. The three relevant legal acts are as follows:

a) Chapter 2, Article 10. Competence of other Legal and Natural Persons

- Other legal and natural persons (and also branches of enterprises and organisations, which were founded in the states that have signed the Agreement on the European Economic Area, in the Republic of Lithuania) may provide general employment support services and submit

proposals to institutions implementing the employment support policy concerning the implementation of these services.

b) Chapter 5, Article 22. Active Labour Market Policy Measures

- Active labour market policy measures shall cover:
 - vocational training of the unemployed and of the employees who have been given a notice of dismissal;
 - non-formal education of the unemployed and of the employees who have been given a notice of dismissal;
 - supported employment;
 - support for job creation;
 - job rotation;
- The Lithuanian Labour Exchange shall implement active labour market policy measures.

c) Chapter 5, Article 26. Subsidized Employment

- Subsidized employment shall be organised for persons specified in subparagraphs 2, 3, 4, 6-13 of paragraph 1 of Article 4 of this Law seeking to help them strengthen their positions in the labour market and for persons specified in subparagraph 1 of paragraph 1 of Article 4 of this Law – to create special conditions enabling them to remain in the labour market.
- Employees, who have employed persons specified in subparagraphs 2, 3, 4, 6-13 of paragraph 1 of Article 4 of this Law, shall receive wage subsidies for a period of up to 12 months. Where fixed-term contracts of employment are concluded with the employed persons, the period of payment of the subsidy may not be longer than 3 months.
- Employers, who have employed persons specified in subparagraphs 2, 3, 4, 6-13 of paragraph 1 of Article 4 of this Law, each month shall receive a subsidy to compensate for the wage, the amount thereof is specified in the contract of employment concluded with the employed person, paid to each employed person and the insurer's compulsory state social insurance contributions calculated from this wage. The amount of this subsidy may not exceed the amount of the minimum monthly wage approved by the Government.
- 4. Employers, who have employed persons specified in subparagraph 1 of paragraph 1 of Article 4 of this Law, each month, throughout the whole period of their employment, for each employed person shall receive a wage subsidy calculated for the time actually worked according to the minimum hourly pay approved by the Government.
- The Government, or an institution authorized by it, shall set the conditions of and the procedure for subsidized employment.

Disability in Lithuania is defined as the condition of an individual, as established by competent institutions, which due to a congenital or acquired physical or mental defect, totally or partially incapacitates the individual from taking care of his private or social life, from enjoying his rights and from fulfilling his duties.

From 1 July 2005, according to The Law on Social Integration of the Disabled, the people with disabilities over 18 until they reach the age for the old-age pension are awarded the capacity for

work level instead of the disability group. The capacity for work level is set at the interval of 5 percentage points, i.e. if the person is recognised as having 0–25% of the capacity for work, he is deemed to be incapable for work; in cases of 30–55% of the capacity as partially capable and in cases of 60–100% of the capacity as capable for work.

Considering the legal regulations in Lithuania we can identify one basic tool of supporting the employment of people with disabilities: The Law on Support for Employment indicates main tools used while supporting the employment of people with disabilities. This law clarifies main principles of Subsidized Employment as indicated above.

Active labour market policy measures cover:

- Vocational training of the unemployed and of the employees who have been given a notice of dismissal;
- Non-formal education of the unemployed and of the employees who have been given a notice of dismissal;
- Supported employment;
- support for job creation;
- Job rotation.

The main institution implementing the employment support policy is Labour Exchange offices all over Lithuania. For people with disabilities there are special sub-divisions established there to provide supported employment.

1.1.6 Europe-wide - European Policy on Disability and the Position of People with Disabilities

This part is partially based on the work performed in the context of the Enabling Teachers and Trainers to improve Accessibility of Adult Education project (ETTAD Project, 2007).

A Commitment to the Social Model

The European Union policy on disability is built on an explicit commitment to the social model of disability. As stated by the Head of the European Commission's Unit on the Integration of People with Disabilities:

The EU perceives disability as the result of the dynamic interaction between a person and their environment, including social constructions, which lead to discrimination and stigmatisation. It is therefore the environment that should be adapted to each individual person, including people with disabilities, by removing these barriers. (Wallis Goelen, 2005).

This, in turn, leads to a commitment to an approach based on the rights of the disabled person.

Disability is a right-based issue, discrimination should be eliminated. Disability policies should follow a socially inclusive and individualised approach: rights have to be supplemented by actions, which provide access to rights, that is to say with equal opportunities (Goelen 2005).

The Legal Basis

The legal basis for EU action in this area is provided by Article 13 of the European Treaty, dating from 1999, which permits the European Council to 'take appropriate action to combat discrimination based on sex, racial or ethnic origin, religion or belief, disability, age and sexual orientation' (Goelen 2005). It has been expressed in a variety of forms, such as the Charter of Fundamental Rights and, for example, in the Commission communication 'Towards a barrier free Europe for people with disabilities' (European Commission 2000a).

Action against Discrimination

The European Commission Directive against discrimination on the grounds of religion or belief, disability, age or sexual orientation (European Commission 2000b) prohibits discrimination by setting a minimum standard which applies across the European Union. National laws determine the exact form of implementation and member states can impose more demanding requirements if they wish, but this Directive sets a common base level.

The Directive (paralleling the UK Disability Discrimination Act) requires employers (and training providers) to provide 'reasonable accommodations' to meet the needs of disabled people. So the obligation on employers and training providers is not absolute: for example, they are not required to pay costs beyond those that the business could stand, or accept severe disruption to overall training programmes. The Directive makes the correct assumption that most adjustments require only small-scale changes and that the requirement to make 'reasonable accommodations' will therefore considerably improve the labour-market position of disabled people.

In principle, existing member states of the European Union should have had anti-discrimination laws in place by December 2003, but in practice they were given the possibility of requesting an extension to this period until December 2006. Member states joining in 2004 were required to have such legislation as a requirement for accession and Bulgaria and Romania will have faced the same requirements on accession in 2007.

Member states that fail to meet their obligations can be taken to the European Court of Justice by the European Commission. An individual who is unable to gain redress because a national government had failed to introduce legislation would have to seek compensation from that government. This whole, multi-stage, process can be expected to take some years to work through to the status of practical policy in all member states.

Implications for Education and Training

The EU Disability Strategy emphasises equal access to quality education and lifelong learning. These two areas enable disabled people to participate fully in society and improve their quality of life. Providers of vocational training and general adult education face equivalent obligations to those of employers in terms of avoiding direct and indirect discrimination.

Lisbon Strategy

The European Council met at Lisbon in March 2000 and defined a new strategy 'to make Europe more dynamic and competitive'. This became known as the Lisbon Strategy. The goal of the Strategy was outlined as being 'to undertake economic and social reforms and to increase competitiveness and social cohesion' (European Community I 2010). The objective by 2010 being to become the most competitive, dynamic, knowledge based society in the world capable of sustainable economic growth with more and better jobs and greater social cohesion.

After an assessment of the situation in 2004, the strategy was re-launched with the goals being to:

- Transform Europe into a more attractive place to invest and work
- Creating more and better jobs
- Promote knowledge and innovation for growth
- Increase and improve investment in Research and Development
- Facilitate innovation and uptake of ICT
- Sustainable use of resources

i2010

The EU policy framework for the information society and media (2005-2009) was known as i2010. It promoted the positive contribution that information and communication technologies (ICT) can make to the economy, society and personal quality of life. (European Community II 2010).

ICT feature strongly in the four priority action areas identified by the March 2006 European Council:

- Research & Development in ICT
- Administrative procedures – can be streamlined through electronic means.
- eHealth and independent living solutions - enable more people to work.
- ICT promote energy efficiency through innovation.

Digital agenda

The I2010 strategy is now at an end and is followed by a new initiative – the Digital Agenda – in 2010. The Digital Agenda is Europe's strategy for a flourishing digital economy by 2020. It outlines policies and actions to maximise the benefit of the Digital Revolution for all. This is laid out clearly on the website and includes Actions 69 to 96 under the umbrella banner ICT for Social Challenges (European Community III 2010).

As of 1st January 2011, the European strategies on people with disabilities fall under the portfolio of 'Justice, Fundamental Rights and Citizenship' (European Commission – Employment Social Affairs and Inclusion, 2011). This covers the access to equal rights, strategies for finding and keeping jobs, education for all and independent living.

European Accessibility Act

European Commission Vice-President Viviane Reding will present a proposal for a 'European Accessibility Act' before the end of 2012 (euractiv.com, 2011). This new legislation is seen by the Commission as a key element of the European Disability Strategy, which was unveiled last year. The EU executive is getting ready to launch a major study that will identify and analyse the barriers which prevent people with disabilities from making full use of public buildings, transport and all kinds of services. The results of this study will provide the basis for developing new EU legislation on accessibility standards.

The Lisbon Treaty provides a legal basis for main-streaming disability issues into other policies, and also gives a legal status to the EU's Charter of Fundamental Rights. In this new framework, the Commission is obliged to make sure that the needs of people with disabilities are taken into account during the development and implementation of all EU policies and legislation.

Another important development is that the European Union has recently concluded the process of ratifying the United Nations Convention on the Rights of Persons with Disabilities. This is the first comprehensive human rights treaty to be ratified by the EU as a whole.

The Commission will be responsible for coordinating and monitoring the implementation of the UN Convention at the level of the European Union, in cooperation with the other EU institutions and also with the member states.

All the EU's 27 member states have signed the UN Convention on the Rights of Persons with Disabilities, and most of them have also already ratified it.

UNESCO

UNESCO Institute for Information Technologies in Education UNESCO IITE (2010) provides support to the policy dialogue and initiates the development of national e-inclusive strategies aimed at the following:

- increasing disadvantaged and excluded groups' access to ICT infrastructure;
- promoting basic ICT literacy and vocational training programs targeted specifically at the most vulnerable segments of society;
- supporting regional, sub-regional and inter-country cooperation and good practice exchange on the extension of ICT usage to excluded groups.

1.1.7 Summary of Legislation and Policy

In summary, the legal interpretations of discrimination laws with respect to people with disabilities in all partner countries are moving towards a common European policy agenda. The policies instigated at European level take time to be adopted across the whole of the European Union, and appear to be adopted more quickly in the richer and better developed member states.

Many of the member states have modified and updated their discrimination laws to bring them into alignment with European policy. The ViPi project should provide platforms to speed up the uptake of European policy in the member states by making basic ICT education accessible and available to all people with disabilities. This in turn should increase the skills of people with disabilities giving them advantages when looking for, or seeking to maintain employment in modern Europe.

A concise overview is provided in the thematic report from the European Network of Legal Experts, entitled “Disability and non-discrimination law in the European Union” issued on 01/12/2009. This report is published by the European Commission on the authority of the European Network of Independent Legal Experts in the non-discrimination field, a network established and managed by MPG and the Human European Consultancy.

The first part of the report examines the disability provisions of the Employment Equality Directive and also relevant case law of the European Court of Justice. It also explores how the Member States have transposed and interpreted specific provisions of the Directive, including examining how the personal scope of the national legislation has been defined, and how the concept of reasonable accommodation has been elaborated on.

The second part of the report considers issues of disability discrimination which are currently not covered by EC law. It focuses on areas of social activity other than employment, such as access to goods and services, education, transport, housing and social protection. After some discussion of the ways in which disability discrimination manifests itself in these areas, attention is turned to a consideration of various legal strategies which are used by Member States to counter such disability discrimination.

Finally the report presents an overview of Member States’ legislation on disability outside the field of employment, helping the reader to place disability discrimination in the context of EC anti-discrimination law.

1.2 Education and Employment Statistics

1.2.1 Greece

On 3 December 2007, which is Greece's National Day of People with Disabilities, the National Confederation of People with Disabilities (ESAEA) submitted its annual report to parliament. The report (ESEAE, 2011) examines the issue of disabled people's access to working life. Some 84% of this group are outside the labour market, while the 10% of the Greek population has a long-standing health problem or disability (LSHPD). It is also estimated that people with disabilities have only half of the education received by the average Greek citizen. The existing quota system for recruitment of people in vulnerable social groups is inadequate to cater for those with disabilities.

Similarly, a survey which was conducted on 2005 among 1,386 individuals with disabilities found that:

- 48.2% of them believe that promotion of the right to employment of people with disabilities is not at all satisfactory, 30.8% consider it to be somewhat satisfactory, and only 5.6% believe it to be very satisfactory;
- 80% of unemployed people with disabilities consider themselves to be long-term unemployed.

The same piece of research (Strati & Evangelinou, 2007) recorded the types of assistance that people with disabilities receive at

the workplace:

- 27.9 % receive assistance with the object of their work;
- 18 % receive assistance with the quantity of the workload;
- 1.5% with accessing work;
- 13.2% with mobility within and during work;
- 20.2% receive support and understanding;
- Other form of assistance 16.4%;
- 2.8% did not reply

Another national study, undertaken by the Ministry of Internal, Public Administration & Decentralisation (September 2006), aimed to identify the obstacles encountered by disabled employees in the public sector and on that basis to provide guidelines for best practice. It was the first systematic data collection on the number of employees with disabilities that work within the public sector, carried out within the framework of improving the efficiency of public services through facilitation of human resources (enhancing employee rights and conditions of work).

- 885 public agencies responded to questionnaires, regarding the number of people with disabilities employed and the kinds of issues/ obstacles they encounter within their working

environment. Out of those, 284 employ people with disabilities and 501 do not. This amounts to 2.232 employees with disability.

- With regards to obstacles encountered by the employees, 19 public agencies reported issues occurring while carrying out their work, such as lack of accessible computers and software, inaccessible office space and telephone devices. 16 report obstacles concerning the accessibility of the workplace, such as lack of or inappropriate ramps to enter the building as well as within, such as lack of accessible WC, lack of parking for people with disabilities, and inadequately accessible elevators.
- Furthermore, 16 public bodies refer to lack of option for flexible working hours, and 11 to demands for more special leave, annual leave, leave for doctors' appointments, and sick leave. 11 report other issues, such as earlier retirement, working closer to home, and difficulty in travelling to and from work in periods with really high temperatures.

1.2.2 UK

UK employment statistics from the 1999 UK Labour Force Survey (Shaw Trust, 2009), show the imbalance between disabled and non disabled people in employment. There are currently 1.3 million people with disabilities in the UK who are available for and want to work. Half of the people with disabilities of working age are in work (50%), compared with 80% of non-disabled people. Employment rates vary greatly according to the type of impairment a person has, for example, only 20% of people with mental health problems are in employment. Nearly one in five people (18.6%) of working age in Great Britain have a disability. The average gross hourly pay for disabled employees is £11.08 compared to £12.30 for non-disabled employees.

The data also shows a discrepancy between levels of education amongst working age people according to disability. 24% of people with disabilities have no formal qualification compared to just 10% of non-disabled people (ODI, 2011).

The employment-rate gap between people with disabilities, and non-disabled people decreased from 36% to 29% between 2002 and 2010 , however the employment rates still need to improve with some 78% of non-disabled people in work compared to just 48% of people with disabilities (ODI, 2011).

The employment statistics for people with learning disability show an even lower employment rate. Mencap, a UK Registered Charity who describe themselves as 'the voice of learning disability' cite the reasons that only 1 in 10 people with a learning disability are in employment are as follows (Mencap, 2011):

- Lack of appropriate training
- Lack of appropriate support
- The welfare system
- Employers' attitudes
- Discrimination

1.2.3 Belgium

Research on the employment of people with disabilities in Belgium is mostly based within government agencies (such as the Flemish, Walloon, and Brussels Government Agencies), and university research contract agencies (such as the Higher Institute for Labour Studies at the University of Leuven). Belgium was considered average in an OESO study of 20 countries when it comes to policies with regard to employment of disabled people, having in particular integration and compensation policies.

Policies

The policies for people with disabilities are based on the conviction that employers are willing to employ people with disabilities but that they need assistance. This assistance is provided in different ways through:

- bringing the employment capacities of people with disabilities up to date (through work rehabilitation, work education, re-education);
- adapting the production requirements to the capabilities of people with disabilities (through wage subsidies, adaptations of the work space);
- through improvement of the 'matching' process between demand and offer (through information provision, mediation, career counselling and guidance);
- sheltered work.

The first specialised training initiatives for people with disabilities date back to the sixties. It consisted of on-the-job training with little supervision. The situation changed in the nineties in the framework of recognized specialised training centres. Recently, the duration of the training has shortened and more training is taking place in the work space.

The improvement in provisions for assisting people with disabilities (including rehabilitation and employment training) has increased their employment capacities. These provisions are separately organised in rehabilitation centres and specialised training centres. There are no signs that there is a shortage of training initiatives for specialised occupations, but equally no proof that all people with disabilities are well reached. Good employment results after training are currently being achieved, but their long-term effect is yet to be determined. There is currently a shortage of specialised in-service 'up-skills' training for people with disabilities who are already working.

Employment people with disabilities – Numbers of Belgium

Approximately 60% of people with disabilities do not work. For the other 40%, about 1 in every 14 employees who is disabled, some information is available for following two groups:

- About 20000 people with disabilities work in a sheltered workshop (about 15.000 in Flanders), of which about 75% people with intellectual disabilities.

- About 5000 people with disabilities work in the regular employment market and receive a wage subsidy (CAO-26 or VIP, about 5000).

Both of these groups represent only 10% of people who work with functional limitations. Only two surveys, Socio-Economische Enquête (2005) and the Nationaal Instituut voor de Statistiek (2004) provide information about all workers with functional limitations.

According to occupations, most of the people with functional limitations work among household or service personnel (10%) and least among functionaries in the private sector (10%). The least persons with functional limitations are found in the sector of sale and rental of buildings (5%), and the most in public services and private households with employees (9%).

Employment people with disabilities – Numbers of Flanders

In Belgium (Flanders), the number of people with functional limitations is much higher than other European states. According to the European Labour Force Survey 2002, some 16,2% of the Flemish population between 15 year and 64 year was disabled or suffered from a long-lasting illness. For 12.3% of the same population, there are functional limitations when it comes to participation on the labour market. Still according to the same source, whereas 63.5% of the total Flemish population between 15 and 64 was working in 2002, for the sub-population of those with a functional limitations, only 45,7% was working.

Below table **Error! Reference source not found.** gives more details about the population of persons with a functional limitation as compared to the population without a functional limitation. The numbers are for 2001, for age group 15-64 (and not from the European Labour Force Survey, and therefore cannot be compared with the above-mentioned numbers).

Table 1: Population aged 15-64, status according to functional limitation (after Samoy 2006)

Category	Severe Disability	Mild Disability	Total	No Disability
Student (%)	2.7	3.7	3.3	11.7
Working (%)	24.8	48	39.6	68.4
Unemployed (%)	5.4	6.5	6.1	4.1
Inactive (%)	67.1	41.8	51	15.8
Total Number	175000	300000	475000	3400000

The share of working persons with a functional limitation is almost 30% lower than the share of the working within the group of persons without a functional limitation. This gap is 20% for those with a mild functional limitation, but accrues to 44% for those with a severe functional limitation. Here only 1 in 4 is working.

Below table **Error! Reference source not found.** distinguishes age groups. The percentages refer to the share of the four categories on top in each age group.

Table 2: Employment situation by age and disability status, Flanders 2001 (after Samoy 2006)

Age	Working No Disability	Working & Disability	Not Working & Disability	Not Working & No Disability
20-24	56.8	2.5	2.4	38.3

Age	Working No Disability	Working & Disability	Not Working & Disability	Not Working & No Disability
25-29	85.5	3.9	1.9	8.7
30-34	85.1	4.7	2.4	7.8
35-39	82.2	5.2	3.3	9.3
40-44	78.3	6.6	4.7	10.4
45-49	71.5	7.8	7.5	13.3
50-54	58.5	7.8	11.6	22.1
55-59	34.8	5.4	17.7	42.2
60-64	8.7	1.4	23.9	66
Total	60.1	4.8	7.3	27.8

As age increases, the share of persons with a disability increases. From the age of 50 onwards, there are much more disabled persons, and not many among them are working. Other sources confirm this: whereas 9.2% within the age group 20-49 do have a functional limitation, this number increases to 22,4% for the age group 50-64.

1.2.4 Cyprus

The Annual Report of the Ministry of Labour and Social Insurance (Republic of Cyprus, 2009) is an important source of information regarding the employment of disabled people. It provides detailed information about the activities of the Department of Social Inclusion of People with Disabilities (www.mlsi.gov.cy/mlsi/dsid/dsid.nsf), a department that belongs to the Ministry of Labour and Social Insurance and which aims to organize all services offered to these people under a new and more effective framework. Regarding employment, the 2009 Annual Report describes the activities of the Centre for the Vocational Rehabilitation of Disabled People and the existing programmes aiming to support disabled people's vocational training and employment.

It turns out that there are no official statistics for the employment of people with disabilities in Cyprus, therefore, no updated quantitative data could be collected from 2009 report. Statistical data from Cyprus is also absent from European Reports, indicating the lack of such information. However, statistical data recorded in the 2007 Annual Report (Republic of Cyprus, 2007) state that the proportion of disabled people employed in different areas of the economy are: 4.3% in the protogenic sector (i.e. agriculture), 22.7% in the secondary sector (i.e. industry) and 73% in the tertiary sector (i.e. services).

Concerning the unemployed people with disabilities, it is reported that in 2007, there was a total of 12,017 of them who were registered as unemployed; 5,209 were men and 6,808 were women.

There are also data reported on the funds allocated through programmes for supporting the employment of people with disabilities. It is stated that a budget of €150,127.66 was allocated to support 200 people who participated in the existing employment schemes (1 person participated in the Disabled People's Self-Employment Programme, 7 persons participated in the Disabled People's Vocational Rehabilitation Programme in Areas not offered in the Centre for the Vocational Rehabilitation of Disabled People and 192 persons participated in the Supported Employment Programme).

Another important report is the 2007 National Reform Programme of Cyprus Progress Report, prepared by the Planning Bureau (2007) and submitted to the European Commission. This report states the intentions of the Republic of Cyprus to make improvements or changes in different areas, including employment. The document does not mention the Government's plans about encouraging the inclusion of people with disabilities in the workforce but it rather describes the intentions to include women, migrants and EU citizens in the workforce.

The report of the Cyprus Workers' Confederation is one more source of information. It describes part of the employment condition in Cyprus (Poulida and Theocharidou, 2006). It provides statistical data from the Pancyprian Organization of the Blind regarding employment. These data states that 41% of people with visual impairments are eligible for employment. Of those, 21% are employed in the public sector, and 13% in the private sector, such as insurance companies, banks and investment institutes. Only a small percentage of 1% was self-employed, while 30% were unemployed. The remaining 35.6% received a monthly disability pension or other financial support from the Government. Most blind or partially sighted people in Cyprus are employed in call centres. There is a lack of other opportunities for employment, even in people with higher education.

In addition, there are a few websites that provide information about the conditions of employment of people with disabilities in Cyprus (Symeonidou, S (2009)). The website of the Department of Social Inclusion of People with Disabilities links to national providers of information on the topic and information about the current situation regarding the integration and retention of disabled workers in Cyprus. Another relevant website is "Employ@bility" (www.intercol.edu/employability) that provides information about disability related issues in Cyprus and it contains the basic legislative documents in full text. In addition, there are a couple of websites developed as a result of international cooperation, but it should be noted that information on these is not constantly updated. One such website was developed by the European Agency for Safety and Health at Work (www.osha.europa.eu/en/campaigns/hwi/topic_integration_disabilities/cyprus), which provides a list of articles and legislative documents regarding employment in Cyprus.

Type and quality of jobs (Symeonidou, S (2009))

The 2009 Annual Report of the Centre for the Vocational Rehabilitation of Disabled People (Republic of Cyprus, 2009) states that there were 3 sheltered workshops running in the Centre: a sheltered workshop for shoe making (23 disabled employees), a sheltered workshop for carpentry (8 disabled employees) and a sheltered workshop for sewing and embroidery (2 disabled employees). Apart from the sheltered employment provided at the Centre for the Vocational Rehabilitation of Disabled People, there are two other sheltered employment workshops directed to people with specific types of impairments: sheltered employment for people with visual impairments who are trained to make items out of straw (i.e. baskets, bassinets etc.) and sheltered employment for people with hearing impairments who are trained in carpentry and furniture making.

Furthermore, according to the same report, in 2009 the Department for Social Inclusion of People with Disabilities ran programs promoting the vocational rehabilitation of disabled people. In 2009 a total budget of €263,525 was allocated to support disabled people who participated in the programs reported below:

- Disabled People's Self-Employment Program: This program allocated €3,417.20 to disabled people who wished to be self-employed.
- Disabled People's Vocational Rehabilitation Program in Areas not offered in the Centre for the Vocational Rehabilitation of Disabled People: This program allocated €1,708.60 to disabled people who wished to be trained in areas not offered at the Centre for the Vocational Rehabilitation of Disabled People.
- Supported Employment Program: This program allocated €11.960,21 to supported employment programs implemented by disabled people's organizations. These programs supported disabled people working in the open labour market.
- Establishment and Functioning of Small Business Units for the Self-Employment of Disabled People: This program allocated €8.543,01, to disabled people wishing to establish a small business unit.

In addition, single-impairment organizations make their own efforts in securing employment for their members. One such example is the Pancyprian Organization of the Blind, which collaborates closely with the School for the Blind, and which provides training programs in the use of information technology. According to Poulida and Theocharidou (2006) these programs are mainly directed towards adults that are visually impaired and who either require retraining for a specific position or seek a new career.

However, these programs are not available throughout the year and there is often a long waiting period due to a lack of appropriate staff. The only training program that has been running regularly since 1988 is one for switchboard operators. Poulida and Theocharidou (2006) note that at the time of their report, 60 persons had completed the program successfully and all had been employed in the public sector and in banks. It has already been mentioned in previous section that there is a special law giving priority to the hiring of people with visual impairments as switchboard operators and thus, the training program for switchboard operators has remained alive.

1.2.5 Lithuania

According LT statistics (www.stat.gov.lt/lt/) in 2009 there were 269 033 people receiving the pensions or benefits for incapacity for work (disability) related to disability and people not entitled to any pension for incapacity for work (disability), i.e. about 8% of the population in Lithuania are recognised as disabled.

The highest portion of the disabled is comprised of people with the 30–40% capacity for work level or disability group 2 (159 506). These people comprise 60% of the total number of the disabled. People with the most severe disability, i.e. with the 0–25% capacity for work level or disability group 1 comprise 13% (34 731) of the total number of the disabled. In 2009, there were 58 794 people with disabilities with the 45–55% capacity for work level or disability group 3. They comprised 22% of the total number of the disabled. The rest of the total number – 5% consist from the children with disabilities.

There are about 170–190 thousands of people with disabilities (70%) available for work but only 30-40 thousand are employed (15%). There still a big lack of motivation as only 19597 people with disabilities (10% of working age available disabled persons) in 2009 were registered in the Labour centres as seeking for a job (5,3% from total number of registered unemployed people) and 4015 were employed (3,4% from total number of registered unemployed people). However, only 300 of them joined vocational training and retraining programmes.

There is a deep heritage of segregation in the models of education and integration of the disabled people in Lithuania. Baranauskienė and Ruskus (p. 33-35)¹, comparing social paradigm principles with the practice of professional training and employment of disabled, stresses

- a) the low motivation and undefined professional identity of the specialists working with disabled people, when part of specialists has entered to the system without the real vocation to say by coincidence, consequently, negative attitudes toward disabled can be observed;
- b) the lack of cooperation between social, educational and health systems can be observed in the professional consultancy field;
- c) the assortment of the professions for disabled is quite narrow;
- d) the purposes of the professional education are faintly related with independent living of the disabled and employment;
- e) the curriculum is oriented exclusively toward technical but not general competencies;
- e) the support system of the transition between professional education and professional activity is inexplicit;
- f) the responsibilities of the support of disabled in the work place are not defined explicitly.

Type and quality of jobs

In Lithuania there is no one dominant method of employment of disabled persons. Sheltered employment was a practice in soviet times; now, open labour market initiatives are promoted.

Through the EU funds there are several projects of open market initiatives or so-called Social enterprises initiatives. There are also regional business development centres for disabled people, or Centres for Professional Rehabilitation. So, semi-open market initiatives become dominating – emphasizing financing from private, Lithuanian state and EU funds (Equal or Structural) sources. All these initiatives are at the beginning of their existence. They are looking for their identity. There is no focus on specific kinds or types of work, but attention must be paid to the social value of the work distribution. The fact is that more often than not, initiatives are favourable towards persons with intellectual or physical disabilities. The most problematic field is the employment of people with mental health conditions.

¹ Baranauskienė I., Ruskus J. (2004). The Participation of the Disabled People in the Labor Market. An Interaction between Vocational Training and Adjustment. Šiaulių universiteto leidykla (in Lithuanian).

1.2.6 Europe-wide

Of a total population of 501 million people in Europe, an estimated 45 million people have a long-standing health problem or disability (LSHPD) (Eurostat, 2011). This represents 16% of people aged

16-64 in the EU as a whole (data from 2002 EU Labour Force Survey (LFS) and the 2004 EU Statistics on Incomes and Living Conditions).

Figure 1 shows a huge variation in the percentage of people with disabilities in employment and education. To some extent this can be put down to varying definitions of disability in the member states (Brunel University, 2002). The percentage varies from around 6% to over 30% between the Member States.

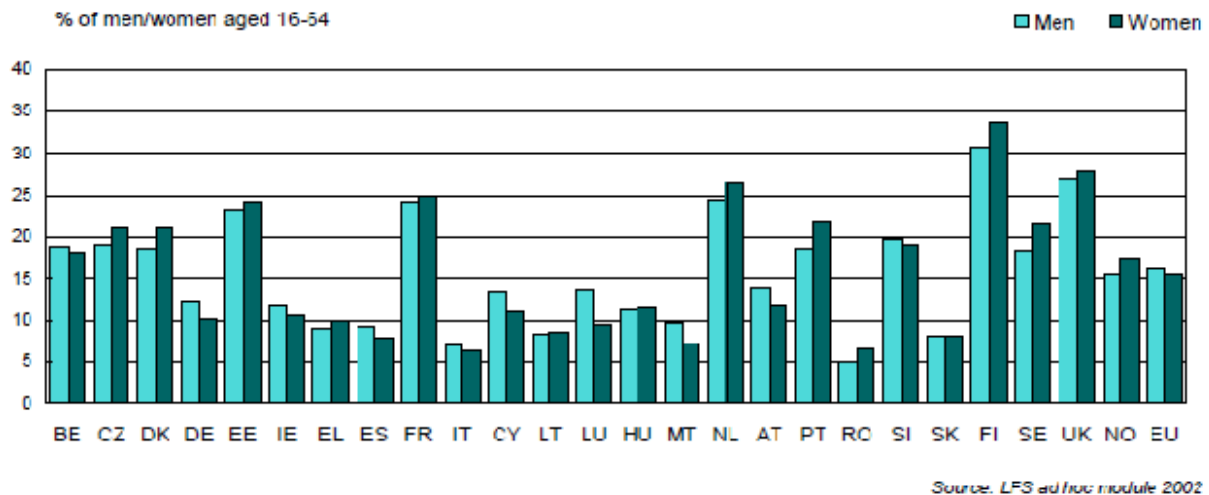


Figure 1 : EU member percentage of people with disabilities in employment or education (2002 EU Labour Force Survey (LFS))

Europe-wide, 33% of the people with LSHPD who were not restricted in the kind or amount of work they could do or their mobility to and from work were in employment. But the figures in individual states again fluctuate widely between 10 and 50%. The difference between high and low percentages here seems to be directly linked to the level of prosperity and the assistance available in the member state concerned.

Approximately 10% of all people aged 16-64 are restricted in the kind, or amount of work they can do, their mobility to and from work, or some combination of these. Of those that are considerably restricted in their ability to work, 28% were in employment, while for those that are not restricted in their ability to work, this is estimated at 68%.

Figure 2 shows the percentage of people with disabilities within the total workforce in a selection of member states. Again, it can be seen that there is a marked variation from 16% to practically 0% of the workforce having a LSHPD.

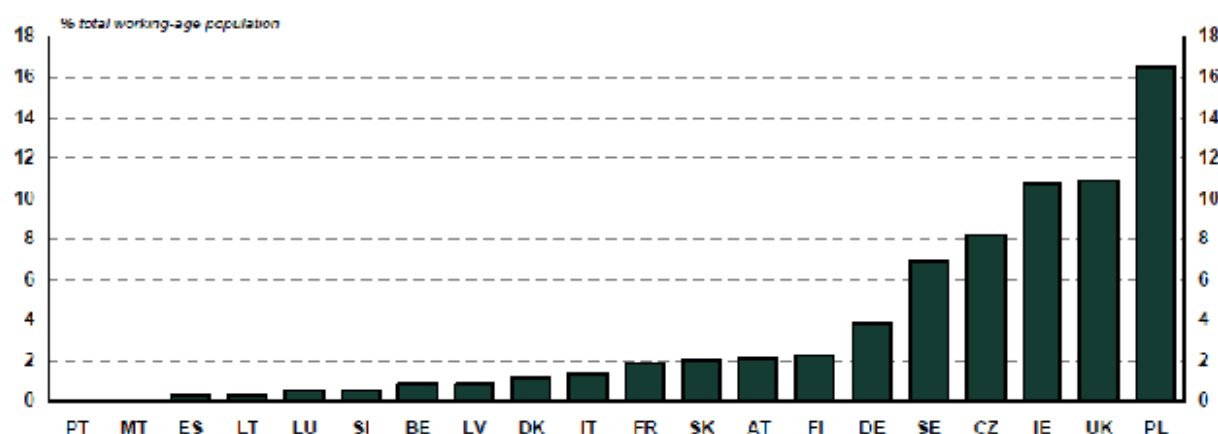


Figure 2 : Share of people with disabilities in total working-age population, 2005 (Study of compilation of disability statistical data from the administrative registers of the member states, Study financed by DG Employment, Social Affairs and Equal Opportunities, Contract no vc/2006/0229 – EUR 363,268.42, Applica & Cesep & European Centre, Final Report, November 2007)

1.2.7 Summary of Statistical Analysis

All of the members of the ViPi consortium had difficulty getting hold of reliable data relating to the employment and education of people with disabilities. What data there is tends to show significantly lower employment percentages amongst people with disabilities than amongst the non-disabled. The data also showed in 2002 (see Figure 1 and Figure 2) that there is a marked variation in the percentage of the workforce who has a disability in each of the Member States. This is likely down to the variation in infrastructure supporting the inclusion of people with disabilities in working and educational environments, local definitions of disability and to cultural factors in these states.

Fully documenting the situation with respect to people with disabilities in employment and education throughout Europe is not a trivial matter. Definitions of disability in each member state are different due to individual legislation and policy objectives (Brunel University, 2002). Also survey data may be flawed due to local culture and the limited age ranges surveyed. Because of these differences direct comparison of statistics between member states is not possible.

Based on the data available – mainly the European Labour Force Surveys and the European Statistics on Income and Living conditions, some 16% of the working population of Europe has a LSHPD (long-standing health problem or disability). The percentage of these people in employment is around half the equivalent percentage of non-disabled people (Commission of the European Communities, 2005). This may be due to a number of factors including lack of appropriate training and support, the welfare system (or so called 'benefit traps'), employers' attitudes and discrimination.

The ViPi platform will be focused on the need to train and support people with disabilities. If it can successfully address these issues then it may be of vital importance in improving these statistics and bringing employment of people with LSHPD closer to or in line with that in non-disabled people.

2 Definition of Research Methodologies

2.1 Research Objectives

The majority of Europe's people with disabilities are unemployed (ENAD figures state over 60%). There are many reasons for this. Many people with disabilities have advanced skills but suffer significant barriers to employment. This is an important issue which must be addressed. For others, skill acquisition must be facilitated. ViPi aims to support and facilitate the acquisition of basic ICT skills for those people with disabilities who lack them. The ViPi project will address this by providing the training content, as well as the tools (a portal embracing web 2.0, web 3.0, games-based learning and mobile technologies).

A number of fully accessible learning objects, focussing on basic ICT literacy, will be developed that are directly linked with curriculum content, and will enhance and reinforce the learning of end users. They will be based on tried and tested methodologies and technologies from previous projects undertaken by the consortium partners, some of which are described later in Section 4.

The ViPi portal will be a "one-stop-shop" interactive portal & learning environment that delivers:

- A comprehensive multilingual portal
- An embedded multilingual social community (for VET centres, people with disabilities, ICT training centres, etc.), using the latest social media, facilitating interactive information sharing, interoperability, and collaboration, with access to all
- An accessible (WCAG 2.0) repository of learning objects for people with disabilities and their trainers. The repository will contain interoperable SCORM compliant learning objects that focus on basic ICT literacy. The learning objects will be enriched with intuitive mobile and internet/PC based educational/serious games developed using Java and Flash. These learning objects will allow people with disabilities to grasp core ICT skills in order to be able to enter or sustain their employment in the regular labour market. The repository will be Web 2.0 and Web 3.0 enhanced to allow end-user feedback on, as well as, efficient discovery of the the learning objects delivered.
- The final outcome will be an entire set of applications and services that will be optimised via a blended educational and pedagogical framework, making full use of the interaction possibilities offered by web 2.0, and semantic search enhancements of Web 3.0 and localised, tested, piloted and subsequently fine-tuned by Greek, Belgian, Lithuanian, British and Cypriot end-user communities.

The platform will equally act as a "one-stop-shop" for trainer organisations to find and contribute learning objects that they can integrate with existing learning environments and practices. Using open source software, the ViPi platform learning objects will be easily integrated with existing materials. The ViPi platform will thus be able to support a fully accessible and Open Source based pan-European learning network and community, bringing together key stakeholders and gatekeepers

including VET centres, target groups and umbrella organisations, while offering a vast set of reusable (desktop, internet and Mobile based) learning objects, supported by Web 2.0 social services and Web 3.0 semantics.

The ViPi portal will offer the means to ensure that ICT competencies, and potentially other transversal skills (such as numeracy, literacy and social skills) are acquired by all, in a personalised manner. The interaction will be facilitated through learning settings, which are the most effective (formal or informal) for the people with disabilities, but also for the trainer who wants to enhance/access/share existing learning objects.

ViPi will allow for an open, flexible, accessible and interactive learning environment, while ensuring a learner-centred approach. It will focus first on ICT basic skills using various learning objects, supported by serious games, both for desktop and mobile.

The ViPi platform aims to achieve this by providing both a fully accessible learning environment that incorporates Web 2.0 services such as asynchronous and synchronous communication (e.g. eBuddy training or one-to-one training), and by the provision of a large portal repository of learning objects that support blending of professionally produced and self-produced content. The portal will also embed news aggregation from portals such as AccessForAll.eu (operated by P2) and Disabled.gr.

The ViPi portal will provide a news feed gathering dispersed initiatives that yielded useful outcomes, for example, free assistive technologies, and also launch new products that offer people with disabilities the possibility to enhance their skills in both ICT and other subject areas. It will include social networking features allowing a diverse community of people with and without disabilities to develop from all across Europe, enabling a wide exchange of information on relevant issues. It will also encompass an e-learning environment, aiming to disseminate and host outcomes of successful projects like Game On, Goal Net, VM2, and GOET, but also course material developed by partners that specifically address ICT basic skills training to improve employability of people with disabilities. It will allow the user community to upload e-learning resources and games to the portal, from which they can be either downloaded or played online, and they can be rated by the user community. This will enable the evaluation of the usefulness of the hosted learning objects. The portal will also host links to existing online material identified from resources around Europe increasing uptake of these and increasing the diversity of material available from the ViPi site.

2.2 Research Design

The approaches the ViPi team intends to use to ensure that the ViPi Platform meets the requirements of the targeted stakeholders, especially trainees and trainers, are as follows:

- Survey by questionnaire
 - Questionnaires will be developed to gain opinions from all stakeholders. Prior to the release of the questionnaires, a comprehensive list of stakeholders in each participating country will have been identified to be contacted to ensure high quantities of relevant responses are yielded. The questionnaires will be developed via an iterative process between the partners, and involving steering groups of stakeholders. They will be deployed both online in accessible form (using

LimeSurvey) and in printed form depending on user preference. The questionnaires will be developed and deployed online (in multiple language versions) by 30th April 2011. There will be a review of participants at the mid-point of the survey period to ensure all target stakeholders are responding, followed by a re-marketing of the survey's presence to identified missing target groups. The final outcomes will be reported on in the "ViPi Stakeholder Survey consolidation and comparative analysis of findings", and be available through the project portal (www.vipi-project.eu).

- Face-to-face meetings and interviews with stakeholders
 - Face-to-face meetings will be arranged with key stakeholders to gain further input and to assist in the iterative development processes being applied for both the web portal and learning object development. There will be regular face-to-face focus groups in each partner country with the steering committee members in order to gain feedback and to aid the iterative design process. There will also be face-to-face piloting sessions involving partners and piloting stakeholders where direct feedback can be given on the various ViPi deliverables.
- Design and implementation of research programme completed to proper standards and on-time.
 - A detailed breakdown of the project tasks and deliverables has been conducted with specific deadlines assigned to each (see Section 3.3 and Appendix 1). This will allow for high standards to be maintained in all aspects of the research and development work.
- Online and library searches
 - Searches will be carried out to identify:
 - potential stakeholders;
 - comparable syllabuses on which to base course content;
 - potential learning objects suitable for inclusion;
 - relevant news feeds which the portal could deliver or incorporate;
 - accessibility guidelines.

In all aspects of the development work for the portal, a learner-centred iterative design procedure will be implemented. This will include localisation, testing, piloting and subsequent fine-tuning in each of the end user communities of Greece, UK, Lithuania, Belgium and Cyprus. The entire set of applications and services the portal delivers will be streamlined using a blended educational and pedagogic framework.

Accessibility of the information contained within the ViPi portal is a core requirement of the design methodology, and so all content created by ViPi will be assessed and meet the requirements of WCAG 2.0 AA. This includes the provision of accessible PDFs.

To ensure the widest possible uptake of the created community, a project launch workshop was organised in Athens in 2011, together with a workshop during the second project meeting in Cyprus, also in 2011. This will be followed by a summer training event, which will be organised in May 2012 in Lithuania, an interim event at the Interactive Technologies and Games conference in the UK in

October 2012, a workshop in Greece in 2013, and finalised with a product launch event in Brussels in 2013.

2.3 Research Time Plan

The tasks under the research methodology umbrella are set out and have been broken down and assigned according to the schedule in Figure 3. This data is also represented graphically in Appendix 1.

Task Name	Start	Finish
WP2 - National research on current and emerging mobile and web 2.0 practices and usage of social media in enabling PwD to enhance skills	Mon 24/01/11	Mon 31/10/11
WP2 active period	Tue 01/03/11	Fri 30/09/11
D7 - Definition of research methodology (Academic approach / justification)	Mon 24/01/11	Thu 31/03/11
Definition of research methodology (Academic approach / justification)	Mon 24/01/11	Tue 15/02/11
1st draft	Tue 15/02/11	Tue 15/02/11
Defining the technological sectors that will be covered (mobile applications, web 2.0)	Tue 15/02/11	Mon 28/02/11
Input & feedback	Mon 28/02/11	Mon 28/02/11
D7 - Research methodology (REPORT)	Thu 31/03/11	Thu 31/03/11
D8 - Survey and data collection (and leave survey online)	Mon 28/02/11	Wed 31/08/11
Survey questionnaire design	Mon 28/02/11	Thu 10/03/11
1st draft – 10th Mar [NTU]	Thu 10/03/11	Thu 10/03/11
Input & feedback – 20th Mar [All]	Fri 18/03/11	Fri 18/03/11
Final – 31st Mar [NTU; All]	Thu 31/03/11	Thu 31/03/11
Translated – 15th April [NL, EL, LT partners]	Fri 15/04/11	Fri 15/04/11
Online – 30th April [NTU; PHKM]	Fri 29/04/11	Fri 29/04/11
Interim survey discussion	Thu 30/06/11	Thu 30/06/11
Formal survey period end	Wed 31/08/11	Wed 31/08/11
D9 - Consolidation and comparative analysis of findings	Wed 31/08/11	Mon 31/10/11
Consolidation and comparative analysis of findings	Wed 31/08/11	Fri 30/09/11
Draft version (coincide with CY meeting)	Fri 30/09/11	Fri 30/09/11
Final report	Mon 31/10/11	Mon 31/10/11
State of the art analysis – paper @ ITAG	Wed 31/08/11	Mon 10/10/11
State of the art analysis	Wed 31/08/11	Fri 30/09/11
Draft version (coincide with CY meeting)	Fri 30/09/11	Fri 30/09/11
Final report	Mon 10/10/11	Mon 10/10/11
2nd Project meeting (Cyprus)	Mon 03/10/11	Wed 05/10/11

Figure 3 : Research Time Plan

3 Educational Training Content

3.1 Curriculum Creation

The curriculum for ViPi will be created by the consortium in consultation with end user and stakeholder groups. An initial curriculum will be created introducing all important aspects of basic ICT including aspects about hardware, software, operating systems, safety and security, communication, internet browsing, email, office applications and mobile devices.

The curriculum will be created with a modular structure to allow access to individual sections of work. This will allow teachers to adapt the curriculum to teach the aspects of basic ICT that are required at the correct level for each end user group.

Because of the nature of this project's diverse end user groups, the curriculum will be broken down into a 3 tier system consisting of:

- Unit 1 - Computer Basics for Beginners
- Unit 2 - Basic ICT Skills
- Unit 3 - Higher Basic ICT Skills

Each of these tiers will then have its content broken down into coherent discreet modules with distinct goals, teaching strategies, learning objects and with a description of what previous knowledge is required.

The diverse user group also means that exact timings for planned delivery of parts of the curriculum are not possible. The differing needs of the end users mean that aspects of the curriculum may be covered quickly or over a longer period of time.

3.2 Curriculum Content

As mentioned previously there will be three tiers of modules in the curriculum of increasing levels of complexity.

Computer Basics for Beginners - The first tier of the curriculum will be aimed at complete beginners and people with intellectual disability. It will aim to familiarise the end users with computer hardware and software, teach them how to use hardware to interact with the computer, and teach them some basic skills which should enable them to use the computer in a way that is beneficial to their needs. Some aspects of the use of assistive technologies may also be covered using materials developed in the parallel ATLEC project.

Basic ICT Skills - The second tier will cover similar aspects to the first tier, going into greater detail about this content, and also covering a wider curriculum scope including making and saving documents, using email, using communication tools and using mobiles, smartphones and tablets.



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Higher Basic ICT Skills - The third tier will go into greater detail of office applications covering the essential skills for use of a word processing package, a spreadsheet package and a presentation creation package. It will have a discrete module about what other learning objects and support is available for a person with their individual needs called 'What is there for me?' it will also have modules on online applications, detailed information on safety and security and finally it will have a set of practical exercises allowing users to practice the skills they have developed through the course.

The curriculum is described in full in the separate deliverable (number 10) "ViPi Curriculum".

4 Definition of the Technological Sectors that will be covered

4.1 Introduction

ViPi project aims to deliver its training content in multiple formats, thus ensuring a wide take up by target users. It will do so by making proper use of available and state-of-the-art technological advancements towards meeting its objectives with high quality.

As mentioned in previous chapters, the ViPi platform will comprise a Web platform enhanced with mobile accessibility and applications, all accessible to all disability groups and with specific content to benefit people with disabilities and people who work with and care for them.

In 4 the most notable technologies and technological concepts that ViPi will adopt, are presented.

4.2 Web 2.0

4.2.1 What is Web 2.0?

"The power of the web is in its universality. Access by everyone regardless of disability is an essential aspect." (Professor Sir Tim Berners-Lee)

The term Web 2.0 is associated with web applications that facilitate interactive systemic biases, interoperability, and user-centred design. In fact, a Web 2.0 site allows users to interact and collaborate with each other in a social media dialogue as consumers of user-generated content in a virtual community, in contrast to websites where users (prosumers) are usually limited to the active viewing of content that they created and controlled. Sharing data between sites has become an essential capability. To share its data with other sites, a web site must be able to generate output in machine-readable formats such as XML and RSS. When a site's data is available in one of these formats, another website can use it to integrate a portion of that site's functionality into itself, linking the two together. When this design pattern is implemented, it ultimately leads to data that is both easier to find and more thoroughly categorized, a hallmark of the philosophy behind the Web 2.0 movement (source: Wikipedia).

While it is difficult to define exactly what Web 2.0 is, Web 2.0 websites include the below features and techniques. Andrew McAfee used the acronym SLATES to refer to them (McAfee, A. (2006). Enterprise 2.0: The Dawn of Emergent Collaboration. MIT Sloan Management review. Vol. 47, No. 3, p. 21–28):

- **Search:** Finding information through keyword search (ViPi aims for a semantic enriched search mechanism).
- **Links:** Connects information together into a meaningful information ecosystem using the model of the Web, and provides low-barrier social tools (ViPi will offer a wide range of social tools, fully integrated).

- **Authoring:** The ability to create and update content leads to the collaborative work of many rather than just a few web authors (ViPi will allow entries and contributions from many, especially in its repository of LOs).
- **Tags:** Categorization of content by users adding "tags" - short, usually one-word descriptions - to facilitate searching, without dependence on pre-made categories (ViPi will apply ontologies to the repository content, while tagging will be applied for all posted content).
- **Extensions:** Software that makes the Web an application platform as well as a document server. These include software like Adobe Reader, Adobe Flash player, Microsoft Silverlight, ActiveX, Oracle Java, Quicktime, Windows Media, etc. (where deemed necessary; the ViPi platform will also embrace those).
- **Signals:** The use of syndication technology such as RSS to notify users of content changes (this will be default offered by ViPi on all its pages and for all its services).

The term Web 2.0 was coined by Tim O'Reilly (2005) founder of O'Reilly Media company, outlining in detail what the company thought they meant by the term. Firstly, it was used by the company to identify common features of a set of innovative Internet companies and their business characteristics, rather than describe a group of technologies. However, the term has come to be associated with "social software" and user generated content, which share some of the features identified by O'Reilly, such as participation, user contribution and rich user experiences (Anderson, 2007).

One of the most significant differences between Web 2.0 and the traditional World Wide Web (referred to as Web 1.0) is the greater collaboration among Internet users and other users, content providers, and enterprises. Originally, data was posted on Web sites, and users simply viewed or downloaded the content. Increasingly, users have more contribution upon the Web content and in some cases exert real-time control over it. However, there is no clear-cut distinction between Web 2.0 and Web 1.0 technologies, hardware and applications. The distinction is, to a large extent, subjective. Perhaps the most distinguishable feature of Web 2.0 systems is that anyone can use them to share and discuss almost any topic. They don't require the same level of support that older and more structured websites, computer networks and software applications require. Using today's online resources anyone can publish online and carry on extended conversations with groups with like-minded individuals.

The term Web 2.0 is presented in two important dimensions of web based communication, technological and communicational:

- **Technological Web 2.0:** When used this way, Web 2.0 refers to the ways computer hardware, software and networks can be used to deliver sophisticated interactive processes over the World Wide Web to anyone with an Internet connection.
- **Communicational Web 2.0:** When used this way, Web 2.0 refers to the ways people can use the web to easily publish content online, share that content with others, and develop relationships and communicate interactively with people who share common interests.

There are a number of Web-based services and applications that demonstrate the foundations of the Web 2.0 concept. These are not really technologies as such, but services (or user processes) built

using the building blocks of the technologies and open standards that underpin the Internet and the Web. These include blogs, wikis, multimedia sharing services, content syndication, podcasting and social networks.

Social networks are comprised of the most intelligent components - human beings. Being so, any activity involved with the social networks, participation, management, optimization becomes extremely complicated and context based. Due to the various facets of the human species, we can have multiple types of social networks in all the fields and areas. Each type of network has its own focus area, member size, geographical spread, societal impact and objective. Managing such networks is not only complicated but requires lot of collective effort and collaboration.

A social network is usually created by a group of individuals who have a set of common interests and objectives. Success of a social network mainly depends on contribution, interest and motivation of its members along with technology backbone or platform support that makes the life easier to communicate and exchange information to fulfil a particular communication need.

Implementing social networks and sustaining them is one of the biggest challenges and people have formulated many mechanisms in the past to keep alive such networks. This has been largely supported by the advancements in the field of information technology. The large scale computerizations and the powerful advent of E-Commerce have aided this also, but overall the need for a structured support was and is still there. Web 2.0 has been one of the greatest contributors in this area.

4.2.2 Components of Web 2.0 for Social Networks

As discussed in (Dasgupta & Dasgupta, 2009), the major concepts that have been considered in Web 2.0 are:

- **Communities:** Communities are an online space formed by a group of individuals to share their thoughts, ideas and have a variety of tools to promote Social Networking.
- **Profiles:** Online profiles allow users to create a snapshot of them by sharing their favourite activities, likes and dislikes.
- **Blogging:** Blogs give the users of a social network the freedom to express their thoughts in a free form basis allowing visitors to leave comments and even message each other via widgets and it is this interactivity that distinguishes blogs from other static websites.
- **Wikis:** A Wiki is a set of interlinked web pages and is often used collaboratively by multiple users. Wikis replace the complex document management systems and are very easy to create and maintain.
- **Folksonomies:** Folksonomy is a user created taxonomy where users provide short keywords (tags) about their uploaded content which are generated by them rather selecting them from pre-fixed/pre-defined categories.
- **File sharing/Podcasting:** This is the ability of distributing or providing access to digitally stored information, such as computer programs, multimedia (audio, images, and video), documents, or electronic books for people of a network to see and contribute more on.

- **Mashups:** This is the facility via which people on the internet can congregate data, presentation or functionality from multiple sources to create a completely new service.

As we can see from the above components of Web 2.0, each of them contributes to help the creation and sustainability of social networks. Blogging is the art of social conversation and have replaced personal home pages and this helps for a more consolidated flow of thoughts and ideas. Wikis have enabled collaborative contribution and authoring among distributed teams. Tagging or folksonomy is a collaborative means of identifying information widgets to increase the power of any web site and searching required information in a faster way. Combined with other such concepts, Web 2.0 provides an ideal platform for implementing and helping social networks to grow.

4.2.3 Types of Social Networks

In order to understand what types of social networks exist on the Internet, it is important to look at all aspects of how people interact with each other online. Keeping this in mind, the main categories identified are given below.

4.2.3.1 *Social Contact Networks*

These types of networks are formed to keep contact with friends and family and are one of the most popular sites on the network today. They have all components of Web 2.0 like blogging, tagging, wikis, and forums. Main examples of these include Facebook, Twitter, MySpace and Google+ which are described below.

Facebook is the world's largest social network, and currently has over 800 million users worldwide. Facebook was founded by Mark Zuckerberg in February 2004, initially as an exclusive network for Harvard students. Within four months, Facebook added 30 more college networks. Users must register before using the site, after which they may create a personal profile, add other users as friends, and exchange messages, including automatic notifications when they update their profile. Additionally, users may join common-interest user groups, organized by workplace, school or college, or other characteristics, and categorize their friends into lists such as "People from Work" or "Close Friends". Many businesses, organisations and groups have created Facebook pages which allow the sharing of information with interested parties.

Twitter, founded by Jack Dorsey, Biz Stone, and Evan Williams in March 2006 (launched publicly in July 2006), is a social networking and micro-blogging service that allows users to post their latest updates. An update is limited by 140 characters and can be posted through three methods: web form, text message, or instant message. The company has been busy adding features to the product like Gmail import and search. They recently launched a new site section called "Explore" for external and third party tools that interact with Twitter and a new visualization tool called Twitter Blocks.

MySpace was one of the world's largest social networks. From 2005 to 2008 it was (according to Wikipedia) the most used social networking site worldwide, but its popularity is currently waning, and in August 2011 it had around 33 million unique US users. Originally inspired by Friendster, MySpace quickly grew to become the world's largest social network, before being overtaken by Facebook in 2008. User pages are highly customizable and support integration with widgets such as Slide or YouTube. MySpace provides users with a way to connect around content and culture.

Google+ is a new social network operated by Google Inc. It was launched towards the end of 2011 and integrates older Google services such as Buzz, Talk and Profiles into a consolidated tool. The main Google+ page of each user supports a 'Stream' of posts and interactions with friends, 'Photos' which shows a montage of the latest photos uploaded by the user and his/her friends, a 'Profile' which summarises the user's profile and posts, 'Circles' which are set up by the user as groups of friends with which the user can interact as a distinct group (for example, family, friends, acquaintances along with user generated circles), and 'Games' which allows the user to play interactive or individual games over the platform. Google+ also incorporates Messenger, a group messaging tool for a user's circles.

Tumblr is a microblogging platform and social networking website that allows users to post text, images, videos, links, quotes and audio to their tumblelog, a short-form blog. Users can follow other users, and 'reblog' their posts, or choose to make their tumblelog private. The service emphasizes ease of use. As of January 5, 2012, Tumblr had over 39.5 million blogs. According to comScore, Tumblr scored 13.4 million unique visitors in the U.S. in July 2011 — up 218% from July 2010.

Netlog is a Belgian social networking website specifically targeted at the European youth demographic. The site was founded in July 2003 in Ghent, Belgium, by Lorenz Bogaert and Toon Coppens, and by 2007 had attracted 28 million members. The site now claims to have over 94 million registered users across 40 languages. On Netlog, members can create their own web page, extend their social network, publish their music playlists, share videos, post blogs and join groups.

Launched in July 2005, **Bebo** also steadily rose to become one of the world's most popular social networking sites in 2008. Since then however a lack of site development and the advent of new sites such as Facebook and Google Plus has caused Bebo to suffer a similar decline to MySpace. Users can create profiles on the site for free, stay connected with friends, watch videos, and listen to music.

Finally, **Orkut** is a social networking service owned and operated by Google from 2004. Although Orkut is less popular in Europe than competing social networks like Facebook and MySpace, it is one of the most visited websites in India and Brazil.

4.2.3.2 Professional Social Networks

These types of social networks are specifically designed for core field workers like doctors, scientists, engineers, members of the corporate industries. A very good example for this type of network is LinkedIn, presented in the following together with Behance Network that is a further example.

LinkedIn is a fast-growing professional networking site that allows members to create business contacts, search for jobs and find potential clients. Individuals have the ability to create their own professional profile that can be viewed by others in their network, and also view the profiles of their own contacts, known as Connections. LinkedIn users can also invite anyone to join their list of connections. LinkedIn offers an effective way by which people can develop an extensive list of contacts, as the user's network consists of his/her own connections, his/her connections' connections (2nd degree connections), as well as his/her 2nd degree's connections (called 3rd degree connections). From this network, individuals can learn of and search for jobs, business opportunities and people. LinkedIn also serves as an effective medium by which both employers and job seekers can review listed professional information about one another. LinkedIn follows strict privacy

guidelines wherein all connections made are mutually confirmed and individuals only appear in the LinkedIn network with their explicit consent.

The Behance Network is an initiative from Scott Belsky's Behance, a company on a mission to 'help organize the creative world'. The network offers creative professionals a place to showcase their work to potential clients, as well as to connect with other creatives. It does this by making it easy for users to assemble an attractive portfolio of their work, organised by project, which is then available for visitors to browse.

4.2.4 Other Web 2.0 Applications

Apart from the social networks outlined above, there are multiple other Web 2.0 applications which serve a huge number of the internet population in multiple ways. Some of these applications die out very fast due to lack of constructive sustenance thoughts while others finally migrate to a more specialist network as shown above.

Blog - This is a website where users can post their issues, clarifications and discussions for various topics and areas. It allows dynamic content addition and modification and provides a real-time post on the web. The two main contenders for free blog hosting are Blogger and WordPress. **Blogger** is a blog-publishing service from Google that allows private or multi-user blogs with time-stamped entries. It's intended to be easy for beginners, while not being too limiting for advanced bloggers. For tech-savvy people, who want complete control over their blog, and who are willing to pay for web hosting there is also **WordPress**. It attracts a lot of people who want to create a website or blog for their business, but it also works great for hobbyists. Furthermore, WordPress can be transformed to a social network by installing the **BuddyPress** plugin. BuddyPress is an open source social networking software package owned by Automattic since 2008.

Bookmarking/Tags - Tagging is a collection of bookmarks which comes about through the effort of providing a set of keywords or tags that refer to useful information. Creating such a set of bookmarks would enable users to efficiently lookup the required information. One famous social bookmarking web service is **delicious** (formerly del.icio.us) useful for storing, sharing, and discovering web bookmarks. This is a community that comes together around shared references to online content and depends critically on the sustained contribution activity of its registered members.

Podcasting - This is a mechanism to publish media files to the internet so that users can subscribe to the same and helps in cascading useful content across communities. **Flickr** is an online network for sharing photos. There are various controls and settings associated with each photo uploaded to Flickr. First, privacy settings allow users to specify whether each photo can be viewed by the public, by the users that Flickr members have specified as friends and family, or just by the user. Second, the user can assign a title and a caption to each photo. In addition Flickr allows annotation of photos in the form of tags, or unstructured textual labels. The tags in Flickr are mostly assigned by the user who uploads the image. In addition, **YouTube** is a video-sharing website, where unregistered users may watch videos, and registered users may upload an unlimited number of videos.

Wikis - A wiki is a collection of pages which focus on a related content. Wikis have a set of users and access control rights. This is a very powerful tool for collaboration and can be very simply created.

The most common wiki is **Wikipedia**, a free encyclopaedia built collaboratively using wiki software that lets users not only read articles but add to or edit them. Moreover, **WikiHow** is a wiki-based community with a database of how-to guides. Although its original version was in English only, it is expanding in several language versions (Spanish, German, French, Turkish and Portuguese at the moment of writing).

Atom/RSS - Atom and RSS (Really Simple Syndication) are technologies which support the Web 2.0 paradigm by allowing users to subscribe to content instead of visiting websites. This represents a much smarter methodology of how consumers obtain information. Technically, RSS is an XML-based data format for websites to exchange files that contain publishing information and summaries of the site's contents.

4.2.5 Accessible Web 2.0

As we can see from the above, social networks have enjoyed an explosion of popularity in the past few years, making it easy for individuals to quickly and easily publish their own content and share it with the world, without needing technical skills in web publishing. As with all such revolutions, though, some people have been left behind. Individuals at most risk of exclusion are those who require websites to be fully accessible in order to access the content. There are many barriers which can impact on the accessibility of a webpage, affecting people with many differing conditions. A blind user, for example, will probably use screen reader software to have the content read out to them.

For these reasons, there are several articles and technical papers evaluating the accessibility status of various social networking sites. The American Foundation for the Blind (AFB) evaluated four popular social networking sites including MySpace, Facebook, Friendster, and LinkedIn (American Foundation for the Blind (AFB), 2006) Main results are described next:

- The most serious accessibility issue AFB found was the inability to create user accounts on MySpace, Friendster, or Facebook without sighted assistance. This is due to the use of CAPTCHAs—those abstract renderings of random characters that ask users to retype the word they see on the screen. LinkedIn is the only site in the evaluation that did not use a CAPTCHA as part of its registration process.
- Cluttered web pages with many links can also complicate usage for a person who is blind. MySpace and Friendster sometimes have more than 100 links on each page that loads—which makes for an overwhelming experience. While sighted users might quickly scan web pages for the most important information, screen reader users may have to listen to web pages from start to finish, top to bottom, left to right if the information is not well organised and structured. On sites like MySpace or Friendster, this can mean going through a lot of content before finding the desired content.
- Because these sites are free, most of them contain several online ads. Ads make it more cumbersome for screen reader users because they have to scroll down the page, and go through the scattered ads, before they can find what they're looking for. This is especially difficult on Friendster because ads are scattered throughout the pages.

Even worse, Nomensa's article on Social Media and Accessibility (Nomensa, 2009) points out that the YouTube interface itself is inaccessible. The website lacks many common accessibility features. The

player is not keyboard accessible, nor is it accessible to a screen reader user. Recently, YouTube have introduced the ability to upload captions for people with hearing difficulties, yet the player itself remains an obstacle for many other users. The same problems are apparent when YouTube content is embedded on alternative websites using the standard player.

In his paper, Swan (2009) summarizes the key issues that the American Foundation for the Blind (AFB) has found during their evaluation and proposes several solutions to move forward and make social networking sites accessible.

Similarly, Racon and Guillou (2009) noticed different accessibility issues (use of CAPTCHAs, AJAX functions, problems in interoperability with other sites) relevant to most social networking Web sites and provide recommendations in order to solve them. The main solution that they propose is the conformance to the main W3C Web Standards (WCAG 1.0, WCAG 2.0, ATAG) and the continuous accessibility evaluation of the resulted social networks. In order to achieve this, they have been working on designing an accessible social networking site.

An Online 'Sensehub' Portal (2011) has been created for Sense project allowing visitors to link to sense-based channels on sites such as Twitter, Facebook and YouTube. On the Twitter channel, for example, visitors can view streams of Tweets which contain words like 'touch', 'taste' and 'smell', while the Facebook link takes visitors to a group which encourages people to tag their photos with sense-based words, rather than just people's names. This portal was created to allow deafblind users to access a lot of the information on these websites.

Technosite's recent analysis of accessibility of social networking services (Observatory on ICT Accessibility, 2010) confirms the insufficient access for handicapped person. The study offers a panorama of the current level of accessibility of the most widespread social networking services in Spain (including Facebook, LinkedIn, MySpace, Twitter, Flickr, etc.). What they have found out was that the social networking services showed a low level of accessibility with LinkedIn showing the highest technical level of accessibility and Flickr the highest usability level of accessibility.

Finally, Boudreau (2011) described the most common accessibility problems and evaluated five of the most famous social networks (Twitter, Facebook, LinkedIn, Google+ and YouTube) against WCAG 2.0 success criteria. He found out that LinkedIn is the most accessible site with 29% score, a percentage rather disappointing.

Until the social networks are accessible, users need to be aware of the barriers and act accordingly, using alternatives such as the accessible versions of key platforms (EasyChirp , Easy YouTube, etc.) until the original sites improve.

4.3 Web 3.0

4.3.1 Introducing the concepts

The Web3.0 concept and technologies aim at turning the Web services and subsequently the content they carry, interoperable. In other words, the objective is to achieve semantic interoperability among the several Web2.0 services, including the human users. In a perspective, Web 3.0 can be seen as

integrating data. The idea is thus to creating fully Web 2.0 enabled applications also empowering them with the meaningful world of Web 3.0. Before providing more details about the Web3.0 technologies, we first give some definitions to create a common language with the reader:

- According to the IEEE dictionary, interoperability is “the ability of **two or more systems or components** to **exchange information** and to **use the information** that has been exchanged.”
- “An interoperability framework is an **agreed approach to interoperability** for organizations/components/systems that wish to work together towards **the joint delivery of services**. Within its scope of applicability, it specifies a **set of common elements** such as vocabulary, concepts, principles, policies, guidelines, recommendations, standards, specifications and practices.”
- According to the European Interoperability Framework [EIF, ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf], semantic interoperability “enables systems to combine received information with other information resources and to process it in a meaningful manner”.

Semantic Interoperability obviously is related with the **ability of sharing meaning**. Veltman (2001) defines semantic interoperability as “the ability of information systems to exchange information on the basis of shared, pre-established and negotiated meanings of terms and expressions”. Achieving semantic interoperability, i.e. resolving semantic heterogeneity is seen as one of the biggest challenges for the integration of components/systems. The meaning changes by context and over time, leading to several types of incompatibilities, such as structural incompatibility, representation incompatibility and conceptual incompatibility. The need to enable interoperability at the level of semantics, is driven by the decentralized design of information resources, by differing perspectives inherent in various domains, and by the widespread need to correlate data from increasingly diverse domains.

The above leads us to the need to define “semantics” more precisely. The Webster online dictionary [www.m-w.com] defines “semantics” as “the study of meanings” and “the historical and psychological study and the classification of changes in the signification of words or forms viewed as factors in linguistic development”. Other definitions include “The science of describing what words mean, the opposite of syntax”. To allow systems to understand exchanged information in a more dynamic way, the sole use of controlled vocabularies is not sufficient. It becomes necessary to have **semantically richer knowledge models**, such as **taxonomies and ontologies**, which **define the concepts** for a certain domain **as well as their relations**.

4.3.2 Key Standard organizations and consortia

The following European and International organizations deal with developing standards, aiming to achieve semantic interoperability and enhance the ability of services to share content by sharing its full meaning.

- The World Wide Web Consortium (W3C). Based in Cambridge, Massachusetts, USA, develops interoperable technologies (specifications, guidelines, software, and tools).
- OASIS (Organization for the Advancement of Structured Information Systems). A not-for-profit, global consortium that drives the development, convergence and adoption of e-business standards. It produces worldwide standards for security, Web Services, XML conformance, business transactions, electronic publishing, topic maps and interoperability within and between marketplaces
- The Web Services Interoperability Organization (WS-I). It is committed to promoting interoperability among Web Services based on common, industry-accepted definitions and related XML standards support.
- Etc.

4.3.3 Web 3.0 technologies

By today, Web 2.0 has several dominant and really successful applications—including Flickr, Wikipedia, Facebook, MySpace, and YouTube. With Web 3.0, on the other hand, the explosion of data on the Web has emerged as a new problem space and a next generation market is on the way (Hendler 2008, 2009, 2010; Pattal et al, 2009)

However, Web 3.0 technologies are difficult to define precisely. During the last years the applications that comprise Web3.0 have become clearer. Following the "Web 2.0" revolution with the growth of social networking, blogging, wikis, etc., (as described in the previous section) another set of technologies is growing and becoming increasingly successful and visible in the Web world. These technologies deal with the semantics of the exchanged knowledge. Hendler (2008) gives examples of successful companies listed with applications ranging from open and shared databases, to semantic search, to tools for collective intelligence of groups and teams, to control of personal information on the Web, to online television and many more. The theme behind these advancements is the "semantic", as defined earlier in this section. The Semantic Web is the technology that powers these new applications, aiming at combining the Web data resources, standard languages, ever-better tools and (mostly simple) ontologies into new applications that exploit the power of semantic technologies. In turn, Semantic Web technologies have been considered as a bridge for the technological evolution from Web 2.0 to Web 3.0.

Web 3.0 can be also considered as the realization of the Semantic Web vision expressed in Berners-Lee et al (2001).

Error! Reference source not found. shows how Web 2.0 is combined with the semantic Web to leverage the accepted definition of the Web 3.0 generation, that is, Semantic Web technologies integrated into, or powering, large-scale Web applications.

The base of Web 3.0 applications is the Resource Description Framework (RDF) that provides the means to share and link the data from multiple sources in a structured format. Once the data is in RDF form, the use of uniform resource identifiers (URIs) facilitates development of multisite mashups of the data. For more on the use of RDF in Web-application development (Hendler & Lalissa, 2007).

In addition to the structure, the data are also semantically described in the RDF Schema (RDFS), using ontologies (adopting the Web Ontology Language (OWL) or the Web Service Modelling Ontology (WSMO) frameworks). The ontologies comprise the way to provide the ability to infer relationships between data in different sites. The ontologies allow for the assertion of relationships between data elements, thus enabling the exchangeability of data among Internet applications, providing the means of generating useful information and subsequently knowledge.

(Source: [References Web3.0 1 to 4])

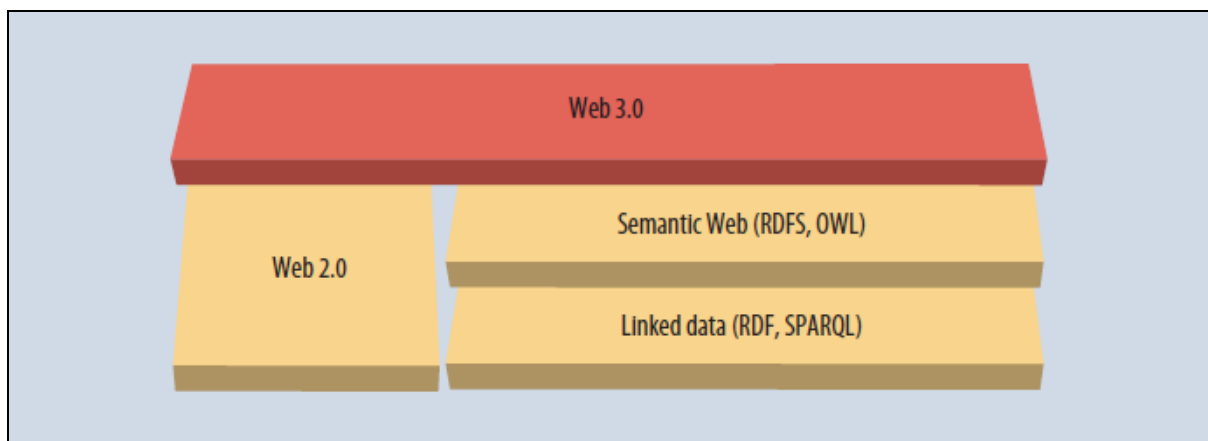


Figure 4 : Relation of Web 3.0 to Web 2.0 and Semantic Web

Finally yet importantly, the Web3.0 paradigm can be very promising in addressing several of the accessibility issues identified with social networks in the previous section. That is, tagging the content based on pre-defined or user-specific ontologies, will help any type of navigators (text-readers, etc) to guide the user to the exact content he/she is looking for, quickly and efficiently.

4.4 Online/Desktop Games

4.4.1 Background

Serious games are effective and engaging learning resources for people with disabilities, and guidelines exist to make games accessible to people with disabilities (Evelt et al, 2007). There have been many studies where games have been utilised as a teaching tool and found to be both effective, and engaging (Cromby et al, 1996; Standen & Brown, 2005; Helsel, 1992). Serious games have been proven to also have particular efficacy in the teaching of people with intellectual disability (Brown et al, 2007). The computer, unlike human teachers, has infinite patience and consistency, and a game can provide a safe environment to learn skills without risk (Standen & Brown, 2005). These advantages along with the ability to make learning a fun activity are the main drivers for games based learning.

Historically in the Interactive Systems Research Group (ISRG) at Nottingham Trent University, a number of serious games have been developed in projects such as Game On, GOAL, and GOET that are relevant to people with disabilities. Many of the games were developed using Flash as the front end technology, which is well suited to web and stand-alone desktop deployment. The games use

xml to make them configurable both in terms of providing multiple language versions and in terms of the actual content delivered.

For some of the games an editor package was also developed in Flash, which enables a tutor to add their own wording or content and media files to the .xml files using the tidy front end of the editor package. By these means, the application developed can be deployed in multiple languages and with multiple content sets – creating a highly versatile reusable learning object.

4.4.2 Examples of Historic Games

Historic ISRG projects have related to serious game development in the fields of learning disability, rehabilitation of prisoners, and route learning for people with disabilities. The following are descriptions of some of the games created in earlier projects.



Figure 5 - The Goal project games - from left to right, Cheese Factory, Escapology and the editor package

The Goal project was for development of serious games based learning for people with cognitive and sensory impairments. The first example was cheese factory (Figure 5), a Tetris style game where fractions of cheeses fall and the user moves them left and right to make complete cheeses, which then disappear. It was designed to allow practice of fractions and coordination of key presses. Escapology (also shown in Figure 5) is a hang-man style word game with words focussing on a theme. Successful guessing of the word shows a simple statement relating to the theme and which with repetition, the user will learn from. Each of these games can be edited using a Flash developed xml editor.



Figure 6 – Screenshots of some of the quiz type games created for the GOET project

The GOET Project's aims were to support people with learning disabilities in getting and keeping a job by helping people to learn, via games-based learning, to live more independently and to help them in their working day. The games varied in type. A number of them were multiple choice or

yes/no question and answer games with a multi-lingual graphical user interface. A number of subject areas were covered using this type of game, including personal hygiene, dealing with stress at work, getting and keeping a job, and anger management. Some screenshots of the games are shown in Figure 6.

Other games produced were of a more bespoke nature. My appearance for example was a game in which the user has to perform a number of tasks in the correct sequence and in sufficient time to prepare themselves for work. Tasks include making and eating breakfast, washing, dressing, using the toilet etc. The idea behind the game is to instil in the user a knowledge of not only what they need to do in the morning to be ready for work, but also a sense of how long it will take to do so. The game provides feedback after each play reminding the user of things they forgot to do and providing hints on how to improve their score. Some screen shots are shown in Figure 7.

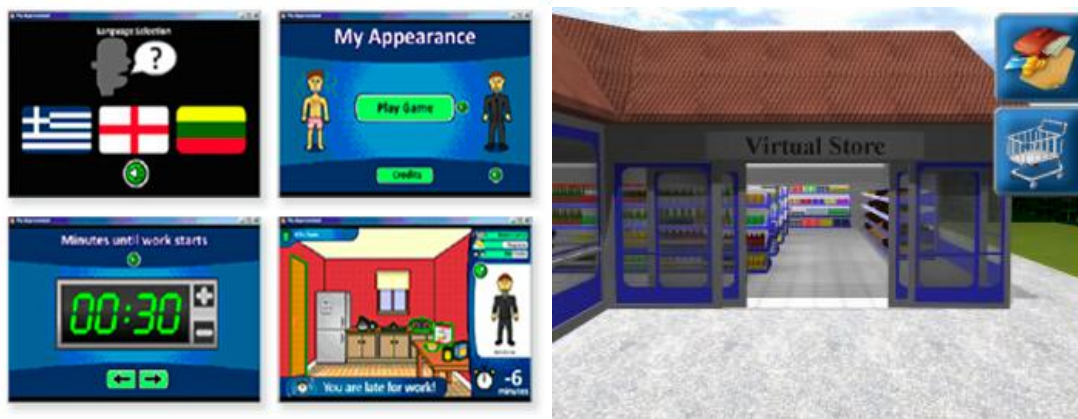


Figure 7 - Screen shots from the games My Appearance (left) and the Virtual Store (right)

In the Virtual Store game, the user has to find and purchase the items displayed on a shopping list from the virtual supermarket shelves. The lessons taught include likely groupings of items in a store (e.g. find an apple in the fruit section), the cost of items, totalling up costs, payment and change given. A screenshot is shown in Figure 7.

Starting work was an isometric 3D game where the user moves around the environment to hotspots in their house. At the hotspots, the game prompts a question related to the location. The user is scored on how many of the questions are answered correctly. Screenshots are provided in Figure 8).



Figure 8 - Screenshots from the game Starting Work

The games can be downloaded from following sites:

- RECALL Project – recall-project.eu (Location based services for people with disabilities)
- GOET Project - goet-project.eu (Serious games for people with learning disabilities)
- GOAL Project - <http://goal-net.eu> (Serious games for people with learning disabilities)
- Game On Project - gameon.europole.org (Serious games for prisoners with disabilities)

4.4.3 Development strategy

Where possible, learning objects developed specifically for the ViPi project will be built as in previous ISRG projects, utilising Flash and xml technologies to provide flexible and configurable learning objects.

All development will consider accessibility issues associated with the use of Flash. Flash has the facilities to create highly accessible content, as long as specific strategies are adopted during development (WebAIM, 2011). For specific disability groups, the following strategies should be adopted during content development:

- Synchronised captions /signing for hearing impaired users
- Keyboard accessibility requiring no fine motor skills for motor impaired users.
- Simple consistent navigation control, user controlled timings and clear simple language for cognitive disability.
- High contrast options and size-scalable applications for visually impaired users.
- No strobing content for photo sensitive users.
- Screen reader accessibility or alternative for blind users, along with keyboard.
- Accessibility, and textual equivalents for all essential non-textual content.

It is envisaged that the development of games in ViPi will encompass development of new content for some of the historic games mentioned in section 4.4.2. This development will reflect parts of the ViPi basic ICT skills curriculum that can be well represented in a similar format to the original games. This will allow fast development of new useful learning objects in a tried and tested format. There will also be two new bespoke games developed to further increase the variety of serious games on offer introducing further diversity to the end user's learning experiences.

4.5 Mobile Games

The intended programming language will be FlashLite. Mobile operating systems Flash versions have more limited features when compared to computer operating systems. Many previous generations of mobile phones were compatible with the older versions of Flash – FlashLite 2.1 or FlashLite 1.0

The possibility to programme on more recent Flashlite versions is opened up with the advent of 3rd generation mobiles, such as Android devices. More details on devices supporting different versions of the Flash platform can be obtained from www.adobe.com/flashplatform/certified_devices/

Historically, Flashlite 1.0 which was compatible with the older than 1st and 2nd generation mobiles was used. There is an important issue to be considered when developing for older phones – the choice of screen size in terms of both resolution and aspect ratio. Each of these would require

separate programming. While initial mobile game versions were developed on Flashlite 1.0 the continued development will use more recent Flashlite versions and adapt existing games.

The following important concepts will be considered when designing and testing mobile games:

Fun. People usually play games for one reason - to have fun. As such whenever considering ideas for the game the first thing to consider about will be how to make the game more fun.

KISS strategy (Keep it Simple Stupid). This is related to keeping the game fun. It aims to keep the game as simple as possible, regardless of its genre.

Controls. Having good controls basically makes the whole game play a lot smoother, even if it has a bland design.

Balance. Devoting some time for testing and balancing out the different elements in a game to make sure that there is no proverbial “instant win” button.

Level Design. Good level design is a design that can challenge the gamer without becoming too tedious or frustrating. Levels that allow for multiple strategies to be used are usually much better than linear one-path levels.

Graphics and Sound. Graphics and sounds are the first things a typical gamer sees when looking at the game. As such it’s important to make a good first impression.

4.6 Mobile Web 2.0

ViPi will incorporate functionality for mobile devices that embrace Web 2.0 essentials to facilitate its users to actively interact with the content provided by the main ViPi platform as well as author the content through such devices (mobile & tablets). In this respect a native Android application will be created and be available in Android Market. More specifically:

- **Interaction with Social Networks.** Users will be able through their mobile devices to interact in parallel with ViPi and Social Networks where they are subscribed to. All main “social networking” functionality (seamless profiling among them, creation of communities, blogging, file sharing, commenting, etc.) will be available through the mobile agent of each user, provided that the user will have installed on his/her device the relevant application. This is a prerequisite for Android in order to make such functionality available among any application that carries and provides Web 2.0 services.
- **Active Content.** ViPi mobile users will be available to interact actively with the content, provided that they are subscribed to ViPi platform and their credentials have been authenticated once (except if the user has personally selected that the credentials will not be “remembered” by his/her device). The interaction comprises:
 - Commenting on posts
 - Tagging content

- Authoring (for users with specific privileges)
- Sharing content
- **RSS.** ViPi main platform will provide RSS feed services and signalling of content and news, hence mobile users will be available to receive either the content or notifications through the respective client (e.g. RSS feed application or through the ViPi android application that will present to the users new content in a special format)
- **XML.** ViPi Android client operation will be based on the use of pure XML and Web services to interact with the main ViPi platform, natively, and not by presenting the content in the form of a simple web browser.
- **Web services.** As already mentioned above, ViPi Android client will connect and interact with the main ViPi platform, through pure Web services syndicate.
- **Search.** Advanced (semantic) and simple search will be available to the users of ViPi in both Android client, as well as ViPi main platform. The semantic search will facilitate users to find and interact with content specifically bundled with their needs.
- **Links.** Linking and sharing (also mentioned above) will also be available to the users of ViPi Android client, making the content easily accessible to other Communities and Social Networks.
- **Accessibility.** Both client and content will be accessible for All since the client as such will take advantage of the native Android accessibility API (Application Programming Interface) as well as will present the content in accessible format (following the Web Content Accessibility Guidelines (WAG) 2.0). Additionally, a feature to convert the ViPi client environment in high-contrast, will be available to facilitate users with visual impairments.
- **Usage of Extensions.** Android client of ViPi will embrace content and media reproduction through its native extension handlers (such as Adobe flash player, HTML 5, Java, etc).

5 Evaluation Methodology and Pilots

5.1 Pilot Site Disability Foci

The ViPi Project will address multiple organisations for people with disabilities in each of the partner countries. The specific groups, which will be targeted in each of the partner countries, are outlined in Table 3.

Table 3 : Targeted groups in each partner country

Country	Disability Focus	Focus Organisations
Greece	Motor disabilities	Disability Now
UK	Cognitive/learning impairments	Oak Field School
Lithuania	Hearing impairment	Centre of Deaf and Impaired Hearing and Hearing Impaired People; Centre of Psychosocial and Labour Integration
Belgium	Vision impaired	Flemish disability organisations KVG, VFG and Licht en Liefde; Werkgroep Vorming en Aktie
Cyprus	Mobility impaired	Cyprus Confederation of Organisations of the Disabled

5.2 Evaluation Strategy

An iterative evaluation strategy will be employed in order to ensure that both the beneficiaries and end users of the ViPi outcomes are involved at all stages of design, development, testing and piloting.

Internal testing and preliminary evaluation will be carried out within the partnership by the end of month 17 in Lithuania, in order to ensure that the ViPi products are on the right track in terms of functionality, usage and technical correctness. Findings will be consolidated in a report that will initiate a new iteration for ViPi fine-tuning before it is presented for usage to the end-users.

A major part of the iterative evaluation procedure will occur at 'local training workshops'. The local training workshops will be held in each partner country in order to provide information specifically to the pilots (trainers and trainees), but also other stakeholders. They will enable the demonstration of use of the ViPi platform in facilitating courses for lifelong learning. Participants will have the opportunity to:

- see a best practice blended pedagogical and educational model of ViPi courses by the means of the platform usage, combined with face-to-face training;
- learn everything about the ViPi functionalities;
- receive the ViPi handbook.

A detailed test plan will be drawn up prior to the 'local training workshops' detailing roles and responsibilities, schedule, and entry and exit criteria for each of the relevant testing phases that will

be considered to evaluate ViPi products. A methodology for the evaluation will be defined based on user sensitive inclusive design and evaluation methods to demonstrate how the project is meeting its objectives.

A test results report will be produced after piloting which will consist of test findings at every pilot site, using the detailed test plan and evaluation methodology. The report will be used as milestone for any further revisions in response to the testing outcomes and then reviewed once more with users and refined (as required) on the basis of feedback through the review process.

An external evaluator will also be appointed to deliver the evaluation plan, and to perform the interim and the final project evaluation. The role of the external evaluator will be to:

- act as a 'critical friend'
- assess the quality of the delivered material
- provide feedback, based on their extensive expertise with target groups

6 Target groups

Specific stakeholders will be identified by the end of March 2011 and will comprise in each country the end-user groups listed below:

- People with disabilities
 - Organisations
 - Individuals
- Training providers
 - VET centres
 - Open and distance learning universities/organisations
 - Organisations for ICT education
 - Training and course providers
 - Secondary special schools
 - Special needs units of mainstream schools
 - Pre-vocational groups in tertiary or non-tertiary education
 - Private trainers
- Intermediaries
 - Employment centres
 - Public sector end-user supported employment
 - Supported employment and pre-vocational projects operated by third sector social partners
- Policy makers
 - Ministry of education
 - Ministry of labour and social affairs
 - Agency of special needs education
 - Agency of people with disabilities
 - Education planners
 - National authorities
 - Local authorities

These groups will be targeted early to make the key stakeholders aware of the project and to gain ongoing publicity by reposts of press releases to stakeholder websites. Relevant social media groups (Twitter and Facebook) will also be targeted to raise awareness and increase traffic to the ViPi website and portal.

Along with the specific focus organisations used for evaluation and piloting, each country will also target:

- Individuals with impairments
- VET Centres that provide ICT training (minimum 3 per country)
- Employment Centres (minimum 3 per country)
- Organisations for ICT education (minimum 1 per country)

- Open and distance learning universities and organisations (at least 4 in Europe)

The ViPi Community will be expanded throughout the project by:

- Establishment of a cluster of stakeholders in every partner country (including those mentioned above), with key members from these groups forming national steering committees.
- Direct mailings to the extensive EU-wide contacts database.
- Circulation of leaflets (5000) and posters (300).
- A 6 monthly electronic newsletter.
- Project website (www.vipi-project.eu).
- Use of Web 2.0 media such as the ViPi Twitter account (twitter.com/#!/ViPi_project) Check! and Facebook group (www.facebook.com/vipiproject).
- Stakeholder participation in events such as the project launch meeting in Greece, year two summer training event in Lithuania and local workshops planned in every partner country running directly before or after project co-ordination meetings.

The short term target groups will be supported beyond the project duration, and there are some additional stakeholders that will be additionally targeted after the project completes to ensure the take-up of the ViPi platform. There will also be continued free access to the online community, where users will be able to exchange their own learning objects and have access to uploaded learning objects, including the ones produced by the ViPi team. The following long-term target groups have been identified:

- Stakeholder participation in events such as the project launch meeting in Greece, year two summer training event in the Lithuania and local workshops planned in every partner country running directly before or after project co-ordination meetings.
- Training and Course providers
- Secondary special schools
- Special needs units of mainstream schools
- Pre-vocational groups in tertiary or non-tertiary education
- Supported employment and pre-vocational projects operated by Third Sector social partners
- Private trainers
- Public sector end-user supported employment
- Pre-vocational projects
- Other Life Long Learning or related projects: they will be invited to share their outcomes using the ViPi portal giving them potential dissemination benefits
- Day Care Centres
- Rehabilitation centres
- Open Universities focused on accessible learning and accessible ICT (for example, The Open University (UK) and UNED (ES))
- Other universities active in the field of accessible learning such as KUL (BE) and Worcester University (UK).

Appendix 1: Research Time Plan

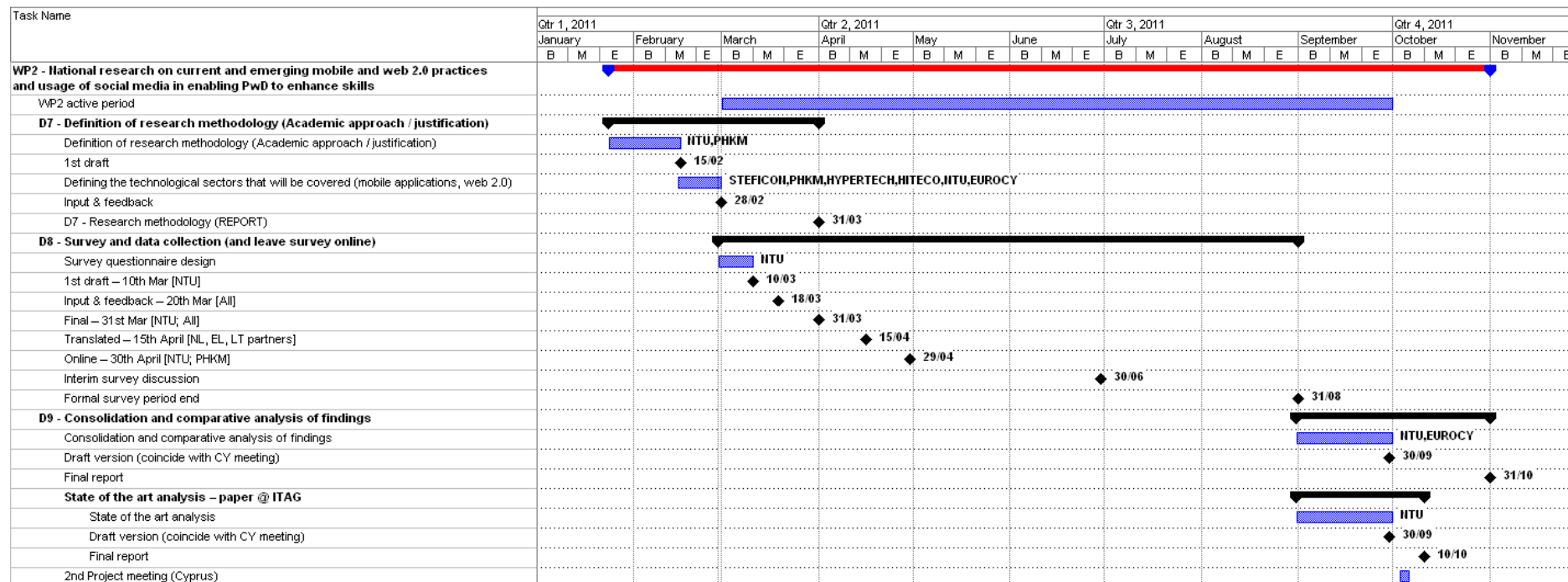


Figure 9 : Research Time Plan Gantt

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