Opportunity for Change

Assistive Technology:
A National & European Perspective
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“My life has been transformed; previously my parents were just sitting there for 4, 5 maybe even 6 hours a night, writing, writing, writing and then everyone was up in a heap…. everyone tired and all up in a heap. When now… Mum and Dad have time to do things, the atmosphere is better. I can do my own projects, reports and everything… I was in the top twenty-five in class now I am in the top two….”

16 year old student with physical disabilities who with the use of assistive technology has now gone to university and to independent living. (Statement Project 2001)

“If we operate within an horizon of myths or a galaxy of assumptions, then our real needs will not be so easily identified”

- Inglis 1989
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Executive Summary

Technology is advancing rapidly and as with the rest of society, this has had a major impact on people with disabilities. For most people, technology can make life easier, expanding life’s choices and opportunities. For people with disabilities, however, technology changes the most ordinary of daily activities from the impossible to the possible. Assistive technologies (AT) have a central role to play in equalising opportunities for people with disabilities in all aspects of life. These technologies have been recognised at an international and European level as a means of generating an inclusive society by assisting people to overcome the barriers that exist within their environment (European Commission 2003).

Increasingly people with disabilities and older people find themselves in need of assistive technology to remain independent and productive, yet in Ireland, access to services and expertise in obtaining such technology is limited. There is little awareness of assistive technologies (ATs), a lack of comprehensive organisation of services and little coordinated funding. Many of the recommendations for Technology and Telecommunications made by the Commission for the Status of People with Disabilities ten years ago (Strategy for Equality Report 1996) have not been realised and this has had serious implications for the delivery of AT services.

In Ireland, AT is administered in a number of ways through rehabilitative services and local health services under the remit of The Department of Health and Children, while technology in education is administered through the Department of Education and Science and its agencies. The health care services supply devices such as hearing aids, eyeglasses, wheelchairs, braces, canes and other devices to support function, these are largely considered as “aids and appliances with little reference to AT (Craddock & McCormack 2002).

The historic background of disability services that developed within a medical framework explains why the primary responsibility for the assessment and
administration of grant aided technical equipment for people with disabilities lies within the local health service. This has significant implications for AT, as it is considered as a rehabilitative tool, which will help in the eventual rehabilitation of the “patient” rather than as an enabling tool to support people with disabilities to achieve a better quality of life (Seelman 2001). Over the past twenty years, the field of AT has developed and grown into a well-grounded and recognised body of knowledge, practice and research (Weiss-Lambrou 2002) yet this is hardly acknowledged with policy and legislation in Ireland. Essentially technology in Ireland has yet to be exploited in any meaningful way for people with disabilities, although technology has become central to our economy. (McLaughlin 1999).

Although there has been a good deal of research in Europe on the provision of AT, and some excellent recommendations made, most countries (except for the Scandinavian Countries) trail far behind the type of provision and legislation that exists in America, according to Egidio Ballabio, a former TIDE Director (Technology Initiative for the Disabled and Elderly). He outlined four difficulties that beset assistive technology; it is still regarded as a medical matter, there is no policy or legislation similar to American legislation in Europe; it must compete for R&D funding with sectors of much higher industrial and economic weight and there is a serious lack of user involvement.

The central importance of Assistive Technology has been recognised at a European level but the onus for implementation is now focused on National Governments. Crucially in Ireland, at this juncture, with the enactment of the Educational Act for Students with Disabilities (2004) and the Disability Act (2005) in which Individual Educational Plans (IEPs) and a Statement of Needs (SONs) for people with disabilities are central to ensuring the right of inclusion, it is time to fully consider the provision of assistive technology services. The outline Sectoral Plan under the Disability Bill 2004 aims to ensure that the provisions of the bill are completed and that measures to maximise access to existing services are in place. An essential element in translating this policy into practice is assuring the provision of Assistive Technology.
Clearly, within the Sectoral Plan “provision is made for “strategic review” of existing service provision, in consultation with relevant interests, with a view to enhancing health and personal social services”. It is stated that this review will have regard to current national and international thinking and the principles of equity, quality, accountability and people-centeredness will prevail.

Evidence from research in the Keeping Pace with Assistive Technology project clearly indicates that policy and planning in AT is currently happening in other European countries, while it has been in place for a number of years in the America.

The purpose of this report is to outline the central role that assistive technology plays in the building of an inclusive society and provide recommendations for service development in Ireland, these are detailed in part one and two. Part three outlines the background to the report with definitions and examples of AT use and attributes, drawing on evidence of European and international policies, directives and research detailed in part 4. Part five of the report gives an overview of the current services for assistive technology in Ireland and part six summarises training in AT in Ireland with details of the survey from the KPT project. Finally part seven draws conclusions as a basis for the recommendations.

The basis of this report stems from research undertaken through the Keeping Pace in Technology (KPT) project. The KPT is a new project under the Leonardo da Vinci Programme established, to investigate the provision of Assistive Technology in each partner country or region, Ireland, England, Italy and Belgium, to ascertain the level of service and the existence of legislation and policy particularly in relation to the training needs of professionals. The final intention of the KPT research is to develop guidelines, which will direct and support training provision in the rapidly advancing and expanding field of Assistive Technology.

Details of research in the KPT project are in Appendix A.
Recommendations

A national strategy is required to ensure that persons with disabilities and older people benefit from the multiple opportunities that new technologies can offer, particularly in the priority policy areas: education, Health care, vocational guidance and training, employment, social integration and environment. The aim of the strategy must be to provide a comprehensive assessment of the current and future direction of AT in Ireland in the following six core areas, service delivery, user involvement, standardisation, research & development and finance.

- AT must be included in the planning and assessment in Individual Education plans (IEPs) as legislated in the Education for People with disabilities Act.

- AT must included in the planning and assessment in the Statement of Need (SON) as legislated in the Disability Act

- There should be ongoing communication between teams working with IEPs and SONs to avoid costly duplication and to ensure the access needs of each person are fully assured.

- The remit for the provision of AT needs to be reconsidered to determine the most appropriate Government Department or Departments to manage and resource the AT sector to guarantee that all mainstream services incorporate accessible measures to ensure an inclusive society.

- One agency should have overall responsible for the provision of AT services, providing expertise in best practice in AT assessment, technology advancements, research and development, technical assistance and training and support for individuals providing AT service throughout the country.
• Aggressive awareness initiatives are needed to inform individuals who could benefit from AT, their families and friends, service providers and the public about the AT available today.

• Recognition of the need for technical training in the field of AT with three levels of expertise, Liaison Officer level (providing information, advice and support) in both ICT (Information Communications Technologies) and AT; technical support level (providing technical expertise in the use, training and maintenance of the technologies) and finally at degree/engineering level (providing expertise in modifications, manufacturing of specific technologies) to work and support as members of teams with existing professionals such as occupational therapists, speech therapists, physiotherapists, educators and other professionals providing services to people with disabilities.

• Existing procedures that fund AT have gaps that fail to address the needs of many individuals with disabilities; those that exist are frequently misinterpreted or implemented inappropriately. Funding policies must be more comprehensive, more consumer-responsive and better coordinated incorporating direct payments.

• Direct payments for services should be made to the individual rather than through a service provider, this will promote the concept of consumer control and facilitate participation by people with disabilities in the decision making process, as outlined in the Sectoral Plan under the Disability Bill, direct payments.

• AT expertise needs to be cultivated and expanded in pre-service preparation programs and as part of consumer empowerment activities.

• The establishment of an expert user group made up of “power users” to assure that AT assessment, provision, research and development are meeting the needs of people with disabilities. This could be co-
ordinated and funded through the new Centre of Excellence in Universal Design.

• A definition of AT and its constituent parts with testing & standardisation that only good and safe assistive devices find their way to the Irish market in compliance with the EU medical device directives. Standards are a key element of inclusion in the Information Society, and Standards Bodies are central in this. They present the most likely method by which the needs of people with disabilities will be mainstreamed in the Information society.

• Centre of excellence charter on AT in Ireland will set out a strategy for inclusion and will provide recommendations for action to all stakeholders. The ultimate goal is to lower barriers and achieve greater participation of disabled people as fully-enabled citizens in our modern society.

• All technology products and services should be accessible to people with disabilities. To the maximum extent possible, mainstream technology should be produced with accessibility built in, utilizing the principles of universal design. When it is not possible to build in accessibility, products should be compatible with AT to allow access. AT must be thought of in the context of the full range of mainstream technology – information, educational, entertainment, medical etc..
Background

People with disabilities have formed themselves into a new social movement, which shifts attention from the ‘needs’ of people with disabilities, to society and the barriers that exclude them, such as discrimination, inaccessible buildings, unemployment and lack of education. The rehabilitation services, which are currently available in many countries, provide largely medical and therapy based provision, which Barnes (1999) refers to as ‘piecemeal welfare system of professionals and services’ specifically designed to ‘help’ disabled people to learn how to cope with ‘impossible social, financial, housing and environmental difficulties’, which would be totally unacceptable to any other section of the community.

There is still growing concern, according to the OECD (2003) about the exclusion of people with disabilities from the labour market and the costs of disability income support programmes. The report concludes that disability policy faces two goals that of ensuring that disabled citizens are not excluded, and that they are encouraged and empowered to participate as fully as possible in economic and social life including employment. Secondly to ensure that those who are or who become disabled have income security and a means to live.

The European Disability Forum estimates that from 10% to 20% (almost 50 million people) of the European population has a disability. Much attention has been given in recent years to the fact that the population of the western world is ageing rapidly. Research would indicate that most individuals within this ageing population are likely to acquire some form of disability, from natural or external causes which will, according to current estimates, lead to an increase in the number of people registered as having a disability to 17% by 2020. This increase will create an even greater demand for technologies, which will allow people to participate more fully in society and enjoy a greater quality of life.
The Committee on the Rehabilitation and Integration of People with Disabilities (CD-P-RR) an intergovernmental EU committee convened a team of researches from various EU countries, to look at the impact of new technologies on the quality of life of people with disabilities. They concluded that:

“Since new technologies will more and more shape everyday life in the future, there will be an ever-increasing need for the ability to handle these technologies in order to be able to cope with everyday life. However, many people with disabilities are at risk of being excluded due to newly created obstacles and barriers caused by inappropriate technology design or provision – a form of social exclusion that is undoubtedly a denial of basic human rights.”

- Bougie 2001

The Lisbon Declaration (2000) set a new strategic goal for the EU for the next decade: to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion. The shift to a digital, knowledge-based economy, prompted by new goods and services, it claims, will be a powerful engine for growth, competitiveness and jobs. However the declaration also advised that:

“it is vital that the gap in the digital divide is not increased but narrowed and calls on national governments to develop priority actions addressed to specific target groups, minority groups, children, the elderly and the disabled”

- Lisbon 2000

In a report published by the EU Commission in 2003, Anna Diamantopoulou, Commissioner for DG Employment and Social Affairs wrote:

“The enhancement in quality of life that will result from a wider use of Assistive Technologies will lead to a generation of new aspirations, new demands to promote improvement in such equipment to the benefit of people with disabilities, and thus to new innovations in a continuous positive feedback loop of market innovation and development”.

- EU Commission 2003
The report estimated that there were more than 20,000 AT related products in existence which represented a market volume of over €30 billion in 2003 and that this market was developing rapidly. A world-wide-web search on “AT” returns over 9 million hits in the English language. AT is clearly a growing market.

In 2003, Microsoft Corporation commissioned Forrester Research, Inc., to conduct a comprehensive, two-part study to measure the current and potential market of AT in the United States and to get a better understanding how AT is being used today. The findings in this study show that a majority of working-age adults are likely to benefit from the use of AT. They concluded that 60% (101.4 million) of working-age adults are likely or very likely to benefit from the its use.

The former director of National Institute on Disability and Rehabilitation Research (NIDRR) which is part of the US Department of Education referred to the narrow focus of AT provision within health and social welfare and said that:

“People with disabilities want to move beyond the confines of health and benefits policy, where their interests have been segregated, to policy that can allocate research and development resources for AT, accessible consumer products, built environment and transportation”

- Seelman 2001

In short people with disabilities are faced with a perennial dilemma that there is no formal structure through which they can be informed of the possibilities that AT can offer them in overcoming barriers in their environment. Where they are informed of AT, there are neither the supports nor resources or training to fund and use it. The primary purpose of this report is to highlight the role of AT, its importance to people with disabilities, the problems within service delivery and make recommendations to the appropriate government departments and agencies to rectify these issues.
Assistive Technology

Over the past twenty years, the field of Assistive Technology (AT) has developed and grown into a well-grounded and recognised body of knowledge, practice and research (Weiss-Lambrou 2002). AT in terms of specialised equipment and devices for people with disabilities has been available since the 1930s. The telephone, for example, was invented as a result of Alexander Graham Bells’ concern for improving the communication of people with hearing impairments. The development of the typewriter was initiated based on a wish to devise a method whereby people with visual impairments could write print. With the advent of computers, technology entered the lives of many people and now represents one of the few areas in which the interests of people with disabilities and the non-disabled people intersect (Mendelsohn 2002).

The International ISO-9999 standard defines AT as:

“Any product, instrument, equipment or technical system used by a disabled or elderly person, made specially or existing on the market, aimed to prevent, compensate, relive or neutralize the deficiency, the inability of the handicap.”

This definition has several important components; it includes commercial, modified and customised devices, which encompass an extremely wide range of applications, communication, environmental control, access, education and employment etc. AT devices are tools for enhancing the independent functioning of people who have limitations or disabilities. They range from low tech devices, such as built-up handles on eating utensils, to high tech ones such as computerised communication systems, alternative access systems or electric wheelchairs to name just a few. Technology has also become smarter, smaller, lighter in weight, and many devices have become more affordable. AT devices are considered in the following environments, in the Home/Local...
Environment, the Community, in Education and employment and for Leisure/Social/Recreation.

The European TIDE/HEART study (1994) looked at AT from the perspective of its outcomes, bringing in the human dimension and concluded that:

“The ultimate objective of AT is to contribute to the effective enhancement of the lives of people with disabilities and elderly people helping to overcome and solve their functional problems, reducing dependence on others and contributing to the integration into their families and society.”

This definition has also several important elements. By including all types of devices, it encompasses an extremely wide range of applications. It emphasises the functional capabilities of individuals with disabilities as a result of the successful use of AT device/s and takes a strong quality of life outcome perspective. This definition underscores the importance of assessing the unique needs of each individual and the context in which they will be applying the device/s. It recognises the fact that no two applications are exactly the same in terms of their capacity to cater for the needs and skills of the person being served and the activities to be achieved. AT not only involves the design of devices and matching these to the needs and skills of a user. It requires careful consideration of the entire system and how it fits into and matches the needs of the user. It also involves devising implementation strategies and the provision of training. These are now known to be essential if the optimal use of any AT device or system is to be achieved.

In America the importance of technology for people with disabilities was recognised in a number of major legislative enactments during the mid 1980s. The technology-related Assistance for Individuals with Disabilities Act (Tech Act) of 1988 adopted the terms AT devices and defined AT as:

“Assistive technology device means any item piece of equipment or product system, whether acquired commercially off-the-shelf, modified or customised, that is used to increase, maintain or improve the functional capabilities of an individual with a disability”
An indication of the benefits of AT was recorded in a comprehensive study of individuals and families who had received devices and services, conducted by the American National Council on Disability (1993). It was found that

- About 75% of children who received AT were able to remain in a regular classroom and about 45% were able to reduce school-related services.
- About 62% of working-age persons were able to reduce dependency on their family and 58% were able to reduce dependence on paid assistance.
- About 80% of older persons were able to reduce their dependence on others and 50% were able to avoid entering a nursing home.
- About 90% of employed persons reported that AT helped them to work faster or better, 83% indicated they earned more money and 67% reported that AT helped them to obtain employment (NCD 1993)

In England a wide coalition of organisations across sectors was brought together in 2001 to discuss a definition for AT which could be commonly accepted across sectors and by a wide variety of service providers. A determining factor for the scope of the definition, learning from the experience in the USA, was to ensure that the definition could accommodate old and new forms of technology (from bath hoists to virtual reality tools) and encompass new service models (such as remote support using telecare) without requiring amendment to any associated legislation or regulation. The following definition is widely used. Assistive Technology is any product or service designed to enable independence for disabled and older people (FAST 2005). Adoption of this definition, though by no means uncontroversial, has brought an increasing recognition of the similar experiences of professionals working with AT across sectors and disciplines. The UK Forum is an independent coalition of 48 organisations representing service users and carers, professional bodies, service providers and industry in England. The aim of the Forum is to work together at a strategic level to make urgently needed improvements in AT services. In the UK there have been a number of recent government policies and initiatives which highlight the crucial role which AT can play in maintaining independence at home for older and disabled people and for increasing their
quality of life and social inclusion. For instance Employers now will be required to support their staff and provide an adequate AT services, or they will fail to meet the government’s vision for social care.

There are further examples of research in AT pointing to key elements regarding best practice in AT assessment, intervention and core elements that user want and can benefit from in AT.

“The purpose of AT intervention is not to rehabilitate the individual or remediate an impairment, but to provide assistive technology that enables an individual to perform at functional activities.”
- Cook & Hussey 95

In a survey of services for people with disabilities living in Leeds in England, AT was cited fourth in seven practical actions for community inclusion

- Accessible information
- Counselling
- Housing
- Assistive Technology
- Personal assistance
- Transport
- Access

- Davies (1996)

Lupton & Seymour (2000) identified the positive attributes of AT as enabling:

- Communication with others
- Mobility
- Physical Safety
- Personal Autonomy
- Control over one’s body and Life
- Independence
- Competence/Confidence
- Engage in the workforce and wider community
Classification of Assistive Technology

In 1993, the European standardisation organisation CEN (Comité Européen de Normalisation) started producing AT standards for Europe, most of which are linked to EU product directives, in particular the Medical Devices Directive. The result is that all technical aids marketed in countries applying the EU trade regulations must comply with these standards. The CEN work is done in close cooperation with the International Standards Organisations, aiming at identical standards.

AT devices include a variety of tools and equipment from the low-tech, such as a white cane making it possible for a person with a visual difficulty to be mobile; to devices such as a hearing aids to enable someone with a hearing impairment use a telephone; or a wheelchair enabling a person to move around their home, work or school. However, in the last ten years there have been great advances in the development of high-tech electronic devices. These include remote-control devices, personal alarm systems and specialised computer software including voice-recognition and speech synthesis. Types of high-tech AT which can facilitate independent living include:

- Computer access - alternative means of access to computers and technology, eg switches using eye-movement control or suck-and-puff, specialised software and voice recognition systems, alternate keyboards Interface devices switches with scanning, scanners & optical character recognition, trackballs and touch screens

- Environmental controls - accessible remote controls (eg switch or voice-controlled) for turning on and off lights, using the telephone, opening and closing doors, windows, curtains, operating household devices

- Augmentative and alternative communication - devices for people who have communication difficulties which include text-to-speech, symbol-
to-speech, text-reading-to-speech, click-to-type, and loop-system hearing aids

• Mobility - alternative control of powered wheelchairs such as using a switch instead of a joystick to operate a wheelchair, suck-and-puff switch control, seat-raising devices, posture changing devices.

**Computer Access**

In order to participate in either employment or education, people with disabilities often require special devices that provide access to computers or environmental controls. Computers are an important type of AT because they open up so many exciting possibilities for writing, speaking, finding information, or controlling an individual's environment. Controllable, anatomical sites like eye blinks, head or neck movements, mouth movements may be used to operate equipment that provides access to the computer. Input devices, selection techniques (direct, scanning), and acceleration strategies (coding, prediction). Input devices include such things as switches, alternative keyboards, mouse, trackball, touch window, speech recognition, and head pointers. Once computer access has been established, it can be coordinated with other systems that the person is using including powered mobility, communication or listening devices, and environmental control systems.
Environmental control

In Ireland and in many other countries an aging population will put enormous strain on an already overstrained healthcare system. It is estimated that the cost of caring for older adults will escalate sharply in less than a decade. There is increasing pressure to develop a more effective and less costly model of delivering services to older people as well as people with disabilities. In research conducted through the Intel Corporation (2005), it was determined that the solution should include three components:

- an emphasis on prevention rather than treatment;
- a shift in the focus of care from expensive clinical settings to the home;
- This solution can be enabled by a range of proactive computing technologies in the digital home.

These digital home technologies have the potential to improve public health and significantly lower the healthcare costs while enabling older people or people with disabilities to maintain their independence and deferring more costly institutional care as long as possible (Intel 2005).

The more common term for these technologies are Environmental Control Units (ECU), which provide an easy, independent means of operating the various appliances located in the home, office and classroom. ECU's can range from a simple remote control to operate a TV, VCR or a light to the more sophisticated, voice-activated computer-based systems, which can control fax machines, answering machines, telephones, and room temperature. A person can independently turn lights, radio, and television on and off, answer or initiate phone calls, and unlock a door. A crucial aspect of ECU is as a safety device for people to be able to independently seek help when needed.

With the increasing sophistication of electronic goods it is essential that technical professionals monitor their use and adaptation. This has become
even more crucial in the light of the Medical Devices Directive (93/42/EC). This directive focuses on the responsibility of the device manufacturers. Therefore there can be no CE mark without technical documentation, including risk analysis and reference to the essential requirements of the directive, as well as the declaration of conformity with the directive issued by the manufacturer. The onus will be on rehabilitation professionals, particularly rehab engineers, AT advisers to ensure that any equipment they develop, manufacture or modify is safe. It will be essential that these personnel have both technical and recognised credentials within the health and social care areas

**Augmentative & Alternative Communication**

Every person needs some method of communication in order to interact with others and learn from social contact. Individuals who are nonverbal or whose speech is not fluent or understandable enough to communicate effectively may benefit from using some type of communication device or devices. Communication devices include such things as symbol systems, communication boards and wallets, programmable switches, electronic communication devices, speech synthesizers, recorded speech devices, communication enhancement software, and voiced word processing. Whatever assistive communication device is chosen must match the needs of the individual. An electronic device does not teach communication, it enhances communication by giving audible expression to thoughts that already exist in the mind of the user.

**Powered Mobility**

Individuals whose physical impairments limit their mobility may need any of a number of devices to help them get around. There are may aspects to mobility devices which include such things as self-propelled walkers, manual or powered wheelchairs, and powered recreational vehicles like bikes and scooters. - alternative control of powered wheelchairs such as using a switch
instead of a joystick to operate a wheelchair, suck-and-puff switch control, seat-raising devices, posture changing devices or indoor powered wheelchairs (EPIC), attendant controlled powered wheelchair, an indoor/outdoor powered wheelchair (EPIOC), specialised seating systems to give postural support within a wheelchair. There are multiple options now available including the development of intelligent wheelchairs, which can react appropriately when approaching an obstacle.

Framing the journey that the AT field has travelled and where it is going can be broken down into three eras according to Mendelsohn;

- the specialised device era, stand alone devices such as Braille devices, eye glasses, artificial limbs etc, the devices were developed outside of the mainstream industry and did not depend on the existence of, or on interface with any other devices.
- The second era was the interactive device era, with the introduction of computers, developments in AT moved from stand alone devices to peripherals, add-ons and other equipment that would facilitate access to the mainstream computing, telecommunications and transportation environments.
- Finally the third generation of AT has been emerging, the integrated device era or universal design (Design For All in Europe), universal design allows the full use of the technology or systems by all people irrespective of disability.

“Design for All” is a holistic approach to create goods, services or buildings that are accessible and understandable to everybody regardless of age, size, ability or other physical characteristics. It is not exclusively addressed to the needs of people with disabilities, but it is inclusive to their requirements. AT is central to the application of Universal Design and Design for All principles. In many cases it is only through the use of AT that goods, services, and buildings can be made accessible to those with additional needs.

In the report “Assistive Technology in the European Union”, it was recommended that the general principle should be to include special needs as
much as possible from the outset in the design of products and services, in other words following the approach of “Design for All.” The concept is promoted for two main purposes: on the one hand to meet the needs of consumers who have often experienced difficulty in using products, and on the other hand to meet needs of companies who want to expand their potential market.

Universal Design or Design for All can be summarised as:

“...the design of products and environments to be usable by all the people, to the greatest extent possible, without the need for adaptation or specialised design.... The universal design concept targets all people of all ages, sizes and abilities”

- Holtem, 2003, p. 54

A universal design / design for all approach is congruent with current policy approaches to disability at an international, EU and National level. Firstly universal design/design for all is a mainstream approach, not particularly aimed at a “special” disabled population but aimed at all people based on the fact that we all face a range of barriers to participation at different stages in our lives.
Assistive Technology in Education

AT plays an equally important role within Education, Pierro (1996) concluded in his study of children with disabilities who grew up using technology that they expanded their worlds and increased their independence. This correlates with research here in Ireland (Statement 2001) that technology levels the playing field, allowing students to compete with their peers and meet new challenges with confidence.

Beginning early in life, technology is making it possible for children with disabilities to do more for themselves. A child who cannot use her hands can operate a computer with a switch and an on-screen keyboard. A child with speech problems can communicate using a portable electronic device that "speaks." The Individuals with Disabilities Education Act (IDEA) in America defines AT service as: "any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device." It declares that a service should include all of the following possibilities:

- evaluation of the technology needs of the individual, including a functional evaluation in the individual's customary environment;
- purchasing, leasing, or otherwise providing for the acquisition of AT devices for individuals with disabilities;
- selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing of AT devices;
- coordinating and using other therapies, interventions, or services with AT devices, such as those associated with existing education and rehabilitation plans and programs;
- AT training or technical assistance with AT for an individual with a disability, or, where appropriate, the family of an individual with disabilities;
And a further element of the evaluation that is not included in this list is the assessment of the child’s abilities to determine what the technology can "enable" the student to access, this shifts the emphasis away from what the child cannot do. The assessment must also draw out the child’s view and include their “wants and needs”. The same philosophy applies to children as to adults, the emphasis should not be on the child’s disability but on the barriers that exist in the educational system or society that prevent the child from achieving his or her potential. The process needs to be value lead in partnership with the child, their parents or carers, the school and the support services. (Craddock 2002)

“Every child needs a statement of need, from the day they start preschool and constantly reviewing the change in needs, its forward planning.”

“Having the statement of need in my hand gave me confidence”

“Once I got the technology up and running everything else fell into place”

- Views of students in the Statement project, Craddock 2002

Expertise in the use and deployment of computer and adaptive computer technologies for students with disabilities is rapidly becoming a necessity in all levels of education (Fichten, Ausuncion & Barile 2001) Resources need to be invested in professional development to maximise the opportunities that assistive technologies can have for all concerned.
Universal Design for Learning

We need to use the new technologies not only to overcome existing learning barriers but also to design learning environments with fewer barriers right from the start.

- Rose 2002

Extending the “universal access” theme to education and learning, Universal Design for Learning is a new paradigm for teaching, learning, assessment and curriculum development. In today's schools, the mix of students is more diverse than ever. Teachers want their students to succeed, but a one-size-fits-all approach to education simply does not work. Educators are challenged to teach all kinds of learners to high standards, yet a single classroom may include students who struggle to learn for any number of reasons, The Center for Applied Special Technology (CAST) outlines fundamental principles of UDL as

- Students with disabilities fall along a continuum of learner differences rather than constituting a separate category
- Teacher adjustments for learner differences should occur for all students, not just those with disabilities
- Curriculum materials should be varied and diverse including digital and online resources, rather than centring on a single textbook
- Instead of remediating students so they can learn from a set curriculum, curriculum should be made flexible to accommodate learner differences
Assessment and Evaluation of Assistive Technology

As the previous outline of AT testifies, AT can open up exciting new opportunities. However other key components in the definition of AT are the services and practices in delivering assessments. These are generally multidisciplinary in nature and encompass a multitude of stakeholders: rehabilitation engineers, computer specialists, therapists, teachers and manufacturers. Many professions play a part in the delivery of AT with a myriad of opinions from different sectors.

A further complication in the process of AT may be the setting in which the assessment is delivered. Whether it is a rehabilitation centre, an educational, vocational, social or industrial setting, a research laboratory, a personal home or a private practice, each setting has a significant bearing on the assessment outcome. While each of these dimensions in turn have varied significance to each of the different stakeholders, agencies and sectors and while all are looking for a successful outcome, not all may be seeking the same outcome.

However AT service providers must consider as a priority what are the benefits of AT to the user. Olsen & DeRuyter (2002) suggest that “If the practitioner asks only one question of the user, it should be “How has this technology made a difference in your life?”

It is essential that Individuals conducting an AT evaluation should:

- Be knowledgeable of a person’s abilities, needs, desires, strengths and weaknesses: medical needs, mobility, cognitive ability, communication abilities, vocational potential, self help needs, sensory abilities, level of academic achievement, and area(s) of disability;
- Have knowledge of and access to an array of AT devices;
- Be familiar with the person’s environment, employment or educational setting and be fully cognisant of their needs;
• Be able to communicate effectively with, in particular the user, their carers, teachers etc
• Provide essential training and support to the user
• Present outcomes and measurement

Within assistive technology, there are many issues and environments to be considered. The central issue is that the user is involved in all stages of the evaluation, their views elicited, and their abilities acknowledged. Assistive technology requires the user to invest a commitment of both time and money and it is extremely important therefore, that the instrument to measure the effectiveness of a device is both sensitive and accurate. (Craddock, G & M. Scherer 2002)

There are numerous reliable and valid instruments which measure the impact of assistive technology on the quality of life of people with disabilities. To name just a few; the Quebec User Evaluation of Satisfaction with Assistive Technology (Quest 2.0), the Psychosocial Impact of Assistive Devices Scale (PIADS), Siva Cost Analysis Instrument (SCAI) and Matching Person with Technology (MPT) model. An instrument should aid consumers and professionals to predict whether an assistive technology device is a worthwhile investment so it is essential that the views and the opinions of the user are incorporated. Factors can be identified that might prevent the device been used to its optimum or even abandoned and education and training efforts can be directed towards these obstacles, which will assist the client to use the device fully.

AT has progressed significantly within the last decade to now being recognised as a specialised field to enable people with disabilities to participate and be more independent in the major life areas such as home, community, education and the workplace. It is also impacting on the mainstream industries and promoting a more inclusive society through the design for all movement.
Developments in Assistive Technology in Europe

The term Assistive Technology came into being at a European level with the advent of the HEART (Horizontal European Activities in Rehabilitation Technology) study (1991-1995) funded under the Technology Initiative for Disabled and Elderly People (TIDE) initiative. TIDE funded research and development work in the area of AT and disability in Europe. The TIDE program began as a grassroots movement of technologists and people with disabilities. The HEART project was a joint effort by sixteen European countries to examine AT and service delivery across Europe. A major emphasis was placed on user involvement. One of the goals of this project was to bring about changes in AT service delivery by creating a single market, facilitating co-operation and exchange between service providers and raising the quality and efficiency of products and services.

The Bridge Project report (2002) funded by the European commission in the framework of the Programme against Social Exclusion outlined the importance of AT an ally against the social exclusion of people with disabilities and concluded that:

- AT intervention is, by definition, a complex and long-term process involving many stakeholders
- Independent AT centres are important resources. Many European citizens do not have access and the provision of AT services is geographically uneven
- Different European countries and/or regions provide different models of AT service delivery.
- There is an urgent need for the promotion and provision of up-to-date information and the life-long training of professionals

Although there has been much research carried out in Europe on the
provision of AT, most countries trail far behind the type of provision and legislation that exists in America, with the exception of the Scandinavian Countries (Petrin 2003). This, according to Egidio Ballabio (Quoted in Seelman 2001), a former TIDE Director, is due to the following factors:

- Assistive technology is still considered a medical matter
- Europe lacks policy and legislation that would correspond to the ADA (American Disability Act) and the Rehabilitation Act
- The AT sector is competing for R&D funding with sectors of much higher industrial and economic weight
- User involvement needs to be stimulated

It was thought that mainstreaming AT within the European Union ICT frameworks (5th, 6th & 7th) would stimulate recognition and support within mainstream industry and business as well as moving AT out of the “medical model” thinking, however this has created its own difficulties as the AT sector was and is still very much in its infancy in Europe compared to the mainstream ICT sector but also when compared to the US AT market. Ballabio believed that the AT sector was too “professional lead” rather than “user lead” and more work needs to be done to bring people with disabilities into the centre for real progress to be made.

In response to concern over the growing gap in the digital divide amongst minority groups, the European Union set up a number of horizontal Actions (a direct call for reports) on AT including the setting up of a Committee on the Rehabilitation and Integration of People with Disabilities (CD-P-RR). An intergovernmental committee working under the Committee of Ministers the Social and Public Health Field convened a team of researchers from various EU countries to examine the impact of new technologies on the quality of life of people with disabilities (Bougie 2001).

The Committee aimed to devise a policy on new technologies for the benefit of all individuals, which would incorporate principles of full citizenship and
independent living. It was envisaged that this policy would eliminate barriers to integration, whatever their nature, whether psychological, educational, family-related, cultural, social, professional, financial or architectural. Data was collected over a three-year period from the social and public health field within member States, from European international non-governmental organisations, and from a range of other organisations. The Committee elaborated their findings in a draft comparative analysis, “The impact of new technologies on the quality of life of people with disabilities” (Bougie 2001).

“Since new technologies will more and more shape everyday life in the future, there will be an ever-increasing need for the ability to handle these technologies in order to be able to cope with everyday life. However, many people with disabilities are at risk of being excluded due to newly created obstacles and barriers caused by inappropriate technology design or provision – a form of social exclusion that is undoubtedly a denial of basic human rights.”

Driven by its mandate to protect and promote human rights, the Committee of Ministers of the Council of Europe (Partial Agreement in the Social and Public Health Field) adopted the Resolution Res AP (2001)3 “Towards Full Citizenship of Persons with Disabilities Through Inclusive New Technologies” in October 2001. This Resolution takes as a starting point that it is a the right of all individuals, including persons with disabilities, to equality of opportunity, freedom of choice, independent living, full citizenship and active participation in the life of the community. This includes the right to access to, and use of, technology. The resolution recommends

- drawing up national strategies to ensure that persons with disabilities benefit from the manifold opportunities of new technologies, particularly in the priority policy areas: education, vocational guidance and training, employment, social integration and environment,

- Training of relevant stakeholders in Assistive technology,

- The design and use of new technologies be permanently monitored to avoid them becoming yet another form of barrier or segregation for people with particular needs.
In addition, the resolution concluded that priority should be given to developing economically accessible products and services for people with special requirements. This would be particularly relevant from the point of view of production and cost rationalisation. Systems and services for persons with disabilities need to be developed alongside the design and delivery of products and services for the general population.

“The mainstreaming of this strategy for new technologies will improve the quality of life, independence and inclusion of persons with disabilities in society.”

- Commission Report on AT in Europe 2003

The report “Assistive Technology in the European Union” examined service delivery and identified six main areas where action needs to be taken to alleviate underlying weaknesses in relation to access to and provision of AT:

- Information and advice
- Education and training
- Product acceptance
- Complexity of national systems
- Assistive Technology in the workplace
- Discrimination issues.

The report highlighted a number of issues under each heading and noted that information and advice needed to be improved, coordinated, structured, shared and validated on disability issues, AT products, assessment procedures, experience, markets and above all on practical solutions. It stressed the importance of making comprehensive information available and accessible for all stakeholders within and across Member States. It also recommended that significant efforts should be made to create transparency in markets, products, acceptance procedures and public tendering procedures and that assistive devices must be easily accessible to all people with impairments.
Most significantly the report highlighted the need for education and training and recommended that action be taken to improve the theoretical and practical knowledge of professionals. It stressed the particular need for prescribers and assessors to have sufficient expertise in the use of assessment procedures and products. It was noted that there were still too many differences between the educational or training levels of stakeholders within the Member States. Within this context, the report recommended the development and delivery of multiplier education and training programmes, which would fulfil the requirements of professionals involved with

- the provision of specialised continuing training via modules on AT, dedicated training in AT products and their capabilities (for technical experts etc),
- the promotion of e-learning for training purposes (including the development of learning materials that can be used across borders), and most importantly
- the introduction of a mandatory certificate for any professions (i.e. medical doctors, paramedics etc) involved in prescribing AT products.

The European Disability Forum (EDF) is the umbrella organisation of persons with disabilities in Europe. EDF is composed of 17 national councils of disabled people’s organisations, one from each member state plus Norway and Iceland and 86 European non-governmental organisations representing European networks of organisations of specific categories of persons with disabilities. EDF is the voice of 50 million persons with disabilities and parents of disabled people not able to represent themselves across Europe. The EDF believe the potential of the Information Society is to create a much more inclusive society than that experienced by many people with disabilities today and that people with disabilities are heavily affected by the digital divide and the barriers experienced by people with disabilities are frequently not of their own making. They cannot use inaccessible ICT products and services even if they can afford them and have the ability to use them. This is particularly true for those with cognitive and intellectual impairments as the complexity of ICT products is often baffling.
The EDF argue that positive actions are required of Governments, manufacturers and all aspects of society to ensure equal access through

- Design for All which includes the needs of the maximum number of potential users without modifying a product or service.
- Harmonisation of standards: Standards are a key element of inclusion in the Information Society, and Standards Bodies are central in this. They present the most likely method by which the needs of people with disabilities will be mainstreamed in the Information society.
- Public Procurement, Public bodies must serve all citizens and cannot choose their customers. Public bodies can achieve savings through the use of electronically delivered products and services rather than the more traditional, labour-intensive ones.
- National Initiatives, to include legislation that outlaws discriminatory practices and insures access to ICTs. To cover ICTs used in education, training and employment.

The European Design for All e-Accessibility Network (EDeAN) was established in 2002, in accordance with one of the specific goals of the eEurope 2002 Action Plan. The goal of this network is to raise the profile of Design for All (DfA) and emphasize its importance in achieving greater accessibility to the Information Society for as many people as possible.

EDeAN provides:

- Support to the eInclusion goals of eEurope
- a European forum for Design for All issues (eEurope objective)
- input for European curricula on Design for All
- on line resources on Design for All
- There are already more than 135 organizations represented in the network.

In Ireland the Central Remedial Clinic is the national contact centre.

www.edean.ie
The eEurope 2005 carries the ambitious objective of achieving "an Information Society for All". This means overcoming social and geographical differences, ensuring an inclusive digital society that provides opportunities for all, thus minimising the risk of ‘digital divide’. The achievement of a truly inclusive Information Society requires a demand-oriented approach where the needs and specificities of all social groups and areas of the EU are taken into account.

The eAccessibility target of the Action Plan for 2002 in the eEurope Initiative deals with this general topic and gives some impulse to many actions in this field. Accessibility is a wide concept. All citizens have the right to benefit from new opportunities that the Information Society offers. People with disabilities and older persons sometimes experience difficulties in accessing these new technologies and services, as some barriers can be inadvertently created by the Information Society itself. Accessibility problems can also be created by specific environment or social conditions. On the other hand, Information Technologies and Services can greatly help overcome other environmental or social barriers, encountered by people with disabilities and older persons. Accessibility problems concern specific groups of users e.g. persons with disabilities, elderly persons, etc, which are not homogeneous groups, or very specific environmental or social situations, so the solutions to overcome these problems of accessibility are very wide. The recommendations listed for eAccessibility below are further evidence of the EU's recognition of AT:

- Policy implementation, including investigation of possible regulation needs with a new Communication of the Commission planned for 2005.
- Design for All and in particular Internet accessibility
- Assistive Technologies
- Telecommunications accessibility (Terminal Directives and other relevant activities in the EU Telecom Policy).
The Work Programme 2005-2006 of the Information Society Technologies (IST) Priority in the European 6th Framework Programme for Research and Technological Development includes an eInclusion Strategic Objective. These are defined as follows:

- To mainstream accessibility in consumer goods and services, including public services through applied research and development of advance technologies. This will help ensure equal access, independent living and participation for all in the Information Society.

- To develop next generation assistive systems that empower persons with (in particular cognitive) disabilities and aging citizens to play a full role in society, to increase their autonomy and to realize their potential.

With the EU’s social agenda still forefront in the eInclusion initiative (2000), any solution of delivery of AT to people with disabilities is complex. However the EU Commission are of the opinion that “subsiderarity” is the key for a way forward. In other words National Governments and agencies need to take responsibility for their own people and need to implement the research recommendations and examples of good practice.

**Evidence of Best Practice in Legislation**

In Italy there are a number of laws and draft acts governing the provision of Assistive Technology to people with disabilities, and work is still going on, and example of the acts which specially relate to the provision of assistive technology are listed below

**National Act N°. 4 (09.01.2004)**

The act was prepared by an “Interministerial Commission set up in 2002 for the development and use of information technologies for disabled people”. The Commission has published a white paper “ Technologies for Disabilities”, in which it defines a comprehensive picture of the problems concerning accessibility to information technologies. It provides a concise picture of the
situation in Italy, a list of all the main European Laws on “e-accessibility” and a list of all the main projects for AT development. The white paper includes a draft version of the act that will be known by the name of the Minister for Technological Innovation Stanca (The Stanca Act).

The aims of the Act are to safeguard the right to access all sources of information and related services and in particular to grant the right to access electronic Public Administration resources and online services for the disabled. The accessibility criteria are applied to all learning tools used in all schools. The provision of a digital copy of educational books

*The act clearly states that those public employees involved should be trained in AT and accessibility related issues. It further intends to promote projects, programmes and initiatives for the diffusion of AT and the concept of accessibility, including funding for AT awareness and information and AT related research. Finally the Act aims at bringing together end users, developers, administrators and companies for the exchange of experiences and the joint development of new products.*

**Regional Act N° 29 (21.08.1997)**

This regulation aims to encourage opportunities for disabled people to lead an autonomous life and to be socially integrated. The regulations promote activities aimed at awareness and guidance. These activities include putting information on line as well as services concerning appropriate technological aids, to be implemented with associations, moral bodies and local authorities. The law provides funding for Assistive Technology devices for independence (mobility, communication, day to day activities) which are not funded through other national or regional laws. Grants are also awarded to assist with studies, work, and rehabilitation. All is to be documented with studies and research; the planning should be carried out together with relevant and professional associations.

**National Act N° 68 (1999)**

This legislation regulates the inclusion of people with disabilities in the labour market. Italian companies and institutions of a certain size are already obliged
to employ a certain percentage of people with disabilities, but the innovative nature of this law lies in the fact that it establishes the necessity of appropriate placement by matching a person’s abilities to the job description. The Regions will have to provide for funding for services, adaptation to work places and telework solutions and provision of Assistive Technology.

**Regional Act N° 2 (12.03.2003)**

The act establishes norms for the promotion of social citizenship and for the realisation of an integrated system of social services and actions. Particular attention is dedicated to the assistance provided to people with severe disabilities. The act further designs specific models of coordination and integration between rehabilitation services, local services and local authorities to encourage continuity in care between clinics and home care situations. The act recognises the necessity of the adaptation of the domestic context for people with disabilities and the aging population. A multi professional team is identified as a key element in the definition of an effective life project.

*With reference to the quality of AT provision, the law highlights the importance of specific training for medical staff (doctors, nurses, therapists) in Assistive Technology.*
Developments in Policy and Legislation in Ireland

In Ireland the Minister for Equality and Law Reform in Ireland established the Commission on the Status of People with Disabilities in 1993. They published a report entitled “A Strategy for Equality” (1995) that heralded a paradigm shift in relation to disability and consequent changes in disability legislation, policy and provision. This report contained 402 recommendations that addressed all major life domains and it continues to be utilised as the strategic blueprint in relation to people with disabilities in Ireland. The progress report, four years later “Towards Equal Citizenship” announced that almost 20% of the Commission’s recommendations had been implemented in full and that progress had been made in relation to 66% of the other recommendations.

Overall, the Commission’s Report proposed:

- a radical restructuring of the Irish system to include new equality legislation;
- the mainstreaming of services;
- the abolishment of the National Rehabilitation Board; the main agency responsible for delivering the Department of Health remit relative to people with disabilities;
- the establishment of new structures to oversee implementation of the equality agenda and regulation of service delivery.

number of functions, including the assisting in the co-ordination and development of policy, undertaking and commissioning research, advising on appropriate standards, monitoring the implementation of standards and recognition of the achievement of quality. The employment advice, training and services previously provided by the NRB have been integrated into the FÁS network. Information entitlements and advice were integrated into the mainstream National Social Service Board which was replaced by Comhairle. The Disability Act 2005 is a positive action measure designed to advance and underpin the participation of people with disabilities in all aspects of life. It establishes a statutory basis for mainstreaming, which places an obligation on public service providers to support access to services and facilities for all citizens, including those with disabilities, to the greatest practicable extent.

The Disability Act 2005 establishes a statutory basis for:

- An independent assessment of individual needs and a related service statement
- Access to public buildings, services and information
- Sectoral Plans for six key Government departments which will ensure that access for people with disabilities will become an integral part of service planning and provision
- An obligation on public bodies to be pro-active in employing people with disabilities
- Restricting the use of information from genetic testing for employment and insurance purposes
- The establishment of a Centre for Excellence in Universal Design.

Currently the NDA are preparing a proposal for the establishment of a Centre for Excellence in Universal Design, which includes a draft strategic plan and an estimate costing for the development of a Centre. The study will investigate a number of issues in relation to a Centre including a review of both national and international experience. Consultation has begun with relevant stakeholders, including Government Departments and their agencies,
umbrella groups and representative group for and of people with disabilities, professional bodies, etc. regarding the functions, structure, staffing and funding of a Centre for Excellence in Universal Design.

Comhairle was established, under the Department of Social, Community and Family Affairs to provide information, support, independent advice and advocacy to disabled people and their families. It provides assistance in identifying needs and options and accessing entitlements, aiming to increase awareness of available services, to participate in the development of social policy and to support the voluntary sector in providing services. In its strategy Comhairle is committed to the development of an integrated electronic source of information on AT for people with disabilities. It has developed an information website “Assist Ireland” on assistive technology in Ireland. The service does not provide recommendations or assessments for AT. The website is www.assistireland.ie

The Employment Equality Acts 1998-2004, and the Equal Status Acts 2000-2004, prohibit both direct and indirect discrimination. These Acts require employers, service providers, education and training bodies to provide reasonable accommodation for people with disabilities. The Employment Equality Acts 1998-2004 allows for positive action measures which help integrate people with disabilities into employment and which provide training or work experience for disadvantaged groups. The Equal Status Acts 2000-2004 allows for positive action measures in relation to disadvantaged groups or measures which cater for the special needs of any individual.

The Equality Authority, which was established in 1999, has a broad mandate to promote equality of opportunity and to combat discrimination in the areas covered by the Employment Equality Acts 1998 and 2004 and the Equal Status Acts 2000 to 2004. Importantly the acts require employers, educational and training bodies, service providers and educational establishments to provide reasonable accommodation for people with disabilities. Under the Equal Status Acts, universities and colleges must, under law, provide facilities necessary for a student with disabilities to have full curriculum access.
The employment advice, training and services previously provided by the NRB have been integrated into the FÁS network. In order to respond to this challenge, FÁS is involved in access audits of its facilities, an information pilot project and staff training and development. The FÁS strategy includes a change in customer focus.

This includes:

• addressing the additional cost of disability;
• developing flexible provision of quality and professional services;
• devolved responsibility for managing resources;
• providing guidance and counselling;
• examining the feasibility of different models of delivery;
• establishing links to specialist agencies and Health Boards; and
• identifying current options and disincentives to employment.

**New Policy and Legislation in Education**

A key element in quality of life is the level of involvement and participation in day-to-day life activities. Participation in education is critical for success, (Lynch 1999) yet for many students with disabilities participation can be a constant struggle (Daly 2000, Lynch 1999).

One of the more significant features of educational policy in the latter decades of the 20th century in Ireland was an almost complete lack of legislation. Educational policy, especially with respect to people with disabilities, was increasingly driven by people using the courts to vindicate their rights. In contrast to the reactive policies which emerged before, the Education Act of 1998 (Ireland, 1998) ushered in a era of legislated policy initiatives. This Act decreed that education was a right for all persons under eighteen years, irrespective of disability. In addition, it set up the National Council for Curriculum and Assessment (NCCA) which is responsible for advising the
Minister for Education and Science regarding curriculum and syllabuses. In fulfilling its remit, the NCCA has begun by addressing the needs of students with general learning disabilities. In its course documents for teachers, the NCCA has recognised that ICT can be an invaluable learning and teaching resource for all children and teachers and that Assistive technology can greatly enhance the school curriculum experience for some children. (www.ncca.ie)

The next significant developments were the Disability Act (2005) and the Education for Persons with Special Educational Needs (EPESEN) Act (2004). EPSEN makes provision for the assessment of children with disabilities and gave extensive powers to the National Council for Special Education (NCSE) in this area. The NCSE was established by order of the Minister for Education and Science in December 2003 as an independent statutory body. Its functions are to co-ordinate the provision of education and related support services, with health boards, schools and other relevant bodies. Their remit is to co-ordinate the provision of education and related support services, with health boards, schools and other relevant bodies, providing a range of services at local and national level in order that the educational needs of children with disabilities are identified and provided for. They will also carry out research and provide expert advice to the Minister on the educational needs of children with disabilities and related services. Special Educational Needs Organisers (SENOs) are now dealing with applications for additional teaching, Special Needs Assistants and all applications for special equipment to support for children with special educational needs from all schools.

If a special educational need is identified as a result of assessment the Disability Act states that this aspect of the assessment will be referred to the newly setup NCSE or to the Principal of the school the child is attending. Health needs identified in an assessment under the EPSEN Act (2004) will be dealt with in a Service Statement under the Disability Act. To assist with technology integration in schools, the Department of Education and Science provides grants for the purchase of ICT. The NCSE will handle all applications for special equipment which must be submitted by school management.
authorities to the Special Educational Needs Organiser (SENO) with assigned responsibility for the school.

The National Centre for Technology in Education (NCTE) was established under the auspices of the Department of Education and Science as part of a major initiative to integrate ICT in Education in 1998. As the Government's agency on the use of information and communications technology (ICT) in education, it plays a central role in helping to maximise the benefits for learners and teachers in using ICT. Part of its remit is providing support in educational ICT to teachers in special needs and undertaking research on the best uses of ICT in education.

The “Minister's Fund” a special fund for students with disabilities provides funding for any assistive or adaptive technology a student with a disability requires while they are in college. Funding for such technology and supports is only available to those studying on a full-time basis. At primary and secondary level funding for AT is provided through a “Scheme of Grants towards the purchase of equipment for pupils with a disability”, this is detailed in a circular issued by the Department of Education to schools in which provision is made for a grants towards the purchase of equipment for the use of pupils with physical disabilities.

Arising from the Equal Status Acts 2000-2004, all 3rd level educational establishments must make reasonable accommodation for students with disabilities throughout Ireland. Universities employ Disability Officers and Institutes of Technology employ Access Officers to fulfil this function. The role of the Disability/Access Officer is to work collaboratively with students with disabilities in arranging supports and reasonable accommodations that a student with a disability may need while they are in college. Such supports and accommodations may include, AT, special examination arrangements, additional tuition, or support during lectures/ classes.
Current Issues in Assistive Technology in Ireland

The central importance of Assistive Technology has been recognised at a European level but the onus for implementation is now focused on National Governments. Crucially in Ireland, at this juncture, with the enactment of the Educational Act for Students with Disabilities (2004) and the Disability Act (2005) in which Individual Educational Plans and a Statement of Needs for people with disabilities are central to ensuring the right of inclusion, it is time to fully consider a national structure on delivering AT services.

Under the Disability Act 2005, six Government Departments are obliged to produce a Sectoral plan. The Department of Health and Children is one of these six Government Departments and they produced their Outline Sectoral Plan in 2004. An essential element in translating this policy into practice is assuring the provision of AT. Clearly, within the Outline Sectoral Plan “provision is made for “strategic review” of existing service provision, in consultation with relevant interests, with a view to enhancing health and personal social services”. It is stated that this review will have regard to current national and international thinking and the principles of equity, quality, accountability and people-centredness will prevail. There is growing evidence that early intervention of AT in a person’s life, and particularly in their education (Pierro 1996, Craddock 2002) can be a critical factor in supporting people with disabilities in advancement to employment and a better quality of life.

Nine recommendations were made by the Commission of the Status of People with Disabilities on technology and telecommunications for people with disabilities, broadly covering the main issues such as the introduction of legislation to ensure access to AT and telecommunications in line with the UN Standard Rules; the assigning or responsibility for all AT to a single agency; recommendations about accessibility to companies such the telephone and broadcasting services. In particular three recommendations referred to the provision of AT services.
The Department of Social Welfare and the Department of Transport, Energy and Communications should introduce legislation to ensure access to assistive technology and telecommunications in line with the UN standard rules. Access to this technology should include financial access.

- Recommendation 271

A single existing agency should be responsible for all assistive technology and for dissemination of information about new technological developments. Services should continue to be provided by a mixture of state and voluntary organisation but voluntary sector services must be properly funded and regulated. This agency should also provide an adequate assessment service of the most appropriate technical aids for people with disabilities.

- Recommendation 272

One agency should be responsible for all technology and for giving out information about new kinds of equipment. This overall agency should set up nominated assessment centres and support them with appropriate funding for equipment, staff and training. There should also be a county network of ‘feeder’ or ‘outreach’ centres to provide primary assessments and training. All assessment must be based on a person centred approach.

- Recommendation 273

These three recommendations are important elements in the provision of AT services but, to date, none of these recommendations have been fully implemented. In the first instance, a subsequent progress report on the implementation of the recommendations of the Commission on the Status of People with Disabilities “Towards Equal Citizenship” it was reported that “Neither the Department of Public Enterprise nor the Department of Social Community and Family Affairs see this recommendation as falling with their brief and this recommendation should be referred to the National Disability
Authority when it is formally established for its consideration and advice. This leaves the provision of AT in the remit of Department of Health and Children through which it is largely considered "aids and appliances". This is well illustrated in the report of the National Physical and Sensory Disability Database Development Committee (Gallagher 2001). This report contains no reference to the provision of AT services. The intention of the database is to gather information on technical aids and appliances currently being used by people with disabilities. The areas covered are aids to mobility, orthotics and prosthetics, vision aids, aids to hearing, communication aids, incontinence aids, special furniture and other aids to personal care. For each technical aid and appliance identified, there are three subsequent fields to identify up to three individuals who assessed/authorised that particular aid and appliance, the list includes, audiologists, audiometricians, community resource workers, continence advisors, G.Ps, information technology specialists, nurses, occupational therapists, ophthalmologists, optometrists, orthotists, physiotherapists, prosthetists, mobility specialists, seating technicians, speech therapists and suppliers. The database also includes future technical needs. It would appear from this listing that AT is still considered a rehabilitative tool viewed solely as helping in the eventual rehabilitation of the "patient" rather than as an enabling tool to support people with disabilities to achieve a better quality of life.

This is further evident within the Education for People with Disabilities Act, eligibility both for support and technology service hinges on the assessment of the individual, as does the content of the services offered. In the Education for People with Disabilities Act, it is recommended that in preparing an education plan, the Special Educational Needs organiser must ascertain the needs of the child and make an application to the National Council for Special Education (a new board to be set up by the Department of Education). Upon receipt of the application, the Council, should it consider appropriate, will have an assessment carried out by two or more of the following

- An educational psychologist
- A medical practitioner
- A teacher nominated by the principal of the school where the child is attending
- A social worker
- A therapist

It is evident from the medical background of the personnel involved that the emphasis is on the diagnostic factors of the child’s special needs. A broader view of the child needs to be to be considered and in particular the child’s “abilities” and how “enabling” technology can have a positive impact on both the behaviours and quality of life of the child (Scherer 2004).

The National Council for Special Education (NCSE) has been established by the Department of Education and in future all applications for special equipment must be submitted by school management authorities to the Special Educational Needs Organiser (SENO) with assigned responsibility for the school. Their remit is to “examine” applications from all schools for special equipment/assistive technology. At present there is no reference to AT assessment or training.

The Commission on the Status of People recommended the setting up a “Disability Support Service” which would operate through a national network of one-stop-shops whose function would involve displaying a range of technical aids and AT. The Commission had envisaged that these centres would operate as a single point of contact for information, advice, support and advocacy but would not act as “needs assessors”, they would assist people with disabilities in understanding their needs and identifying and helping to negotiate appropriate provision to meet those needs. One element of the Strategy for Equality report was fulfilled with the establishment of Comhairle. However while the establishment of Comhairle is a crucial step in the right direction, Comhairle itself is very clear that information on it’s website, Assist Ireland is general in nature and does not address the specific circumstances of any individual nor does it recommend any particular product. There are also
reservations that many people with disabilities do not have the resources to access online information resources

Concerns still remain over key elements of service provision and there is acknowledged need for improved co-ordination of services at all levels. The NDA (2005) reports that in the private sector companies, there are FAS grants of up to €15,000 available to support reintegration of a person with a disability into work and FAS grants of up to €6,300 towards adapting workplaces for any person with a disability. However FAS reports that is almost no take-up for these schemes – 84 recipients of the workplace Equipment Adaptation Grants in 2003 and fewer than ten recipients of the job Retention Grants. This would appear to indicate that information on these schemes is not getting through to the people who would most benefit.

Recently the National Disability Authority has expressed serious concern that more than €17m in grants for people with disabilities was not disbursed in 2004. “NDA is concerned that a similar situation must not happen this year. It is simply not acceptable that such money would not be disbursed to address the needs of people with disabilities in having their homes adapted so that they can continue to live independently within their community.”

It would appear from these reports from the NDA that neither information on accessibility or AT is getting through and that we need to urgently reassess policy and practice.

Recognising and acknowledging truly “User-Centred” approaches within organisations represents an important strategy in transforming service delivery systems within the disability sector. Existing new legislation and policy has not yet been resourced and therefore has had little effect on the delivery of disability and rehabilitation services. It is now generally acknowledged that community-based service provision is preferable to the prescriptive, institutionalised approaches that have prevailed in the past.

This shift from the institution to the community has had little effect on how AT services are delivered throughout Ireland. There is now a broader range
personnel involved involved in service provision. Many of these individuals for example general practitioners, nurses, and carers have an increasingly important role in raising awareness of AT. However, many of these professionals have not been given access to training and untrained personnel are left in the unenviable position of recommending costly equipment without the knowledge or expertise of the technology. They are unable to provide a proper assessment of the client or the environment in which they will use the equipment. Through a second survey within the “Keeping Pace with Technology” (KPT project) which looked at current training provision of AT, the majority of professionals working with people with disabilities said they had obtained their knowledge of AT through experience, some of their comments were,

“I just had to learn as I went along working with clients and assistive technology programs and products”

“The OT degree courses appear to have little content directly relating to AT. Some students do gain experience when on placement.”

“there is a lack of AT training programmes out there geared towards third level personnel”

- details of survey are in appendix A

Without proper training in AT assessment, inappropriate AT devices are being prescribed. It is now widely recognised that an assistive device mismatch ultimately leads to abandonment, often of costly equipment. This is an enormous waste of valuable resources. Adapting to the use of AT requires building new skills, developing positive attitudes and above all providing the necessary supports to avoid abandonment of the device. It has also been shown that a person who is prescribed inappropriate AT is very reluctant to try other devices.
“You need to promote independence and a ‘can do’ philosophy. Equipment assessments often look at what can’t be done and often feels like you are incapable unless you use particular equipment, or provides you with lots of useless equipment which is cumbersome and difficult to use. I’m constantly amazed at how much equipment supplied… is not used or returned as considered useless”.

- Response to UK Survey The Trusted Assessors’ Framework 2005

AT is only successful when it is easily incorporated into daily activities. There are now assessment instruments, such as the MPT (Matching Person with Technology) model (Scherer 1998) which has a high reliability rate on matching a person with technology. Use of such instruments and trained personnel would greatly reduce the cost of inappropriate technology. Having appropriate equipment, training and a good local support network are now considered the key to the successful use of AT technology. Ester Dyson (1999) talks about funding for technology being broken down as follows:

- 1/3 on the Equipment,
- 1/3 on training,
- 1/3 on Support/Maintenance.

At present although training is acknowledged as an important element within all services, there is no policy on training in AT nor is it part of continual professional development (CPD) or formal accredited education. Recommendations have been made at a European level that professionals working in health care and education should have mandatory training in AT at undergraduate and graduate level of disability.

There are exemplars of good practice in the country, predominantly funded through European projects. To acquire funding these projects have had to go through an arduous selection procedure which is an acknowledgment of their worth and all of the projects are highly commended through external independent evaluators. Unfortunately these projects, although successful, are pilot projects and they are not been moved into the mainstream.
Pilot projects on Assistive Technology

The impact that AT can have on the lives of students with disabilities was highlighted by the STATEMENT (Systematic Template for Assessing Technology Enabling Mainstream Education – National Trial) project funded under the European Horizon Initiative. (Craddock 2003). This was a one-year pilot project that took place from 1999 to 2000 in which 61 students with disabilities were accessed through an innovative evaluation service setup in Client Technical Services Department within the Central Remedial Clinic (CRC) with the National Association for Deaf People (NAD), National Council for Blind people in Ireland (NCBI) and the Dyslexia Association.

The findings of this study indicate that AT played a critical role in enabling the participation of these students both socially and educationally. In particular, the students reported that the AT they had access to provided them with the opportunity to demonstrate their skills and abilities in a way that was not previously open to them. In general, students reported that AT had increased their skills, abilities, and capacity for communication. They said that they were able to work faster and cover more of the curriculum than before and that this in turn allowed them more time for leisure pursuits. As is evidenced from the students quoted below, AT gave them the chance to complete their education on an equal footing with their peers. Some of the comments made from the project were;

“Since I received the technology my life has become unbelievably easier. The Kurzweil 3000 reads the material I need, out to me…Now instead of 3-4 hours it takes me 45 minutes to an hour…The “Dragon Naturally Speaking” (voice activated software) also saves me time, as usually I spend so much time concentrating on my spelling that I lose my train of thought and cannot focus on the correct way to phrase my words…the pressure that I was under is practically gone. For the first time in my life I’m interested and excited about reading and I’m realising how restricted I was. It has made my life so much easier, I could never have believed that reading and studying could be this enjoyable. My only regret is that I didn’t have this for my Leaving Cert.”
“(I’m) back on par with others, especially around exams”

“Assistive Technology levelled the playing field.”

Subsequent research with students of the Statement Project (Craddock 2005) identified three types of users, novice, transition and power user. Each type of user is indicative of what stage the student is in assimilating AT as part of their learning. It was found that both time and the environment governed their proficiency through the AT process and in particular the timing of the intervention in relation to the person’s life cycle, educational cycle, the length of time that the students were using the technology and the duration of the assessment process. These four elements were instrumental in the length of time it took for change to occur within the student’s assimilation of AT.

Furthermore, it was important the student’s environment was supportive, in the make-up of formal supports inside the educational setting such as knowledgeable teachers or lecturers, mentors or disability liaison officers or outside the educational setting such as AT assessment and training personnel. Whether these supports were inside or outside the educational system had a major bearing on the student’s assimilation of AT. The formal supports offered by schools in this study were mainly provided by individual teachers or principals rather than through standard structures or procedures that were in place. Other formal supports were provided by outside service providers such as the AT personnel working on the Statement project. These were concentrated and structured around the provision of AT, however they were available only as long as the project was funded, which in this case was for one year.

“Since I received the technology my life has become unbelievably easier. The Kurzweil 3000 reads the material I need out to me.”

“I could never have believed that reading and studying could be this enjoyable”
The study provides evidence that in a collaborative/partnership approach, the student is more than willing to become a participant in his or her own educational development. A significant change in the approach to technology within education is required if AT is to be included as an essential tool for students with disabilities. Information and communication technologies (ICT) are still considered a support to existing classroom activities and AT as a tool for students with disabilities to fit into the existing structures. New technologies can vastly increase access and learning opportunities, yet new media have yet to be exploited within the educational setting, talking books, and descriptive video, instructional environments where students are consistently supported in learning how to learn. An educational system is needed where there is not one ‘typical’ learner but a variety of learners each provided with adequate supports. Change can occur at many levels but in particular, in the classroom setting where the teacher could view technology as a means for creating a collaborative learning environment (Craddock 2005).

**Inclusive Learning Through Technology (ILT)**

Most educational technology in the classroom is at an early stage of adoption. Educational technologies are been used in the traditional ways, they are “new tools to do old things” such as word processors, calculators and electronic games. (Rose 2001) For students with disabilities, technology can make a dramatic difference, new technologies have been extremely effective but there must proper funding and support. Evidence of the impact of technology when used creatively has come through the Inclusive Learning through Technology (ILT) Project (Craddock, G & K O’Callaghan 2005, Craddock, Gordon & Scherer 2005) which has been implemented in two special schools, two
mainstream schools and a community College, based in Dublin and Limerick, funded through the McMahan Centre in New York. Elements of the ILT project are now been implemented at 3rd level through the E4 (Education for Employment) project funded through the European Equal Initiative II

Through the ILT and E4 projects, students are introduced to the thinking skills of Edward De Bono and to new technology at three levels:

- **ICT** – Wireless Classrooms and Laptops, Virtual Learning Environments and the Internet as a tool for collaborative learning and a learning resource
- Educational/Instructional Technologies such as interactive whiteboards which enable teachers to interact at whole class, small groups or individual students in the classroom
- **Assistive Technology** – alternative access hardware and software for students with access issues [www.atireland.ie/inclusive](http://www.atireland.ie/inclusive)

These technologies have allowed the building of a collaborative environment within and between schools through the use of video conferencing, email and online discussion. A central element of the project is the measurement of the impact of these techniques and the technology on the learner self-esteem and the quality of life of the students. To facilitate the IATP (Individual Assistive Technology plan) process and as a basis for the questionnaire, the MPT (Matching Person with Technology) instrument was used (Scherer 1992) and validated for use in an Irish context (Craddock 2002). The MPT instruments connect technology use with the environment, the personal characteristics and the quality of life of the user.

**APHRODITE**

Through the project APHRODITE (A Partnership Approach to Harness Resource Opportunities and Distribute Information Technology Expertise) (Craddock & McCormack 2001) two important elements of AT were developed
The CATA (Certificate in Assistive Technology) and DAT (Diploma in Assistive Technology) are both courses offered in partnership with the Adult Education Department of University College Dublin (UCD), who provides accreditation for these programmes through the National University of Ireland.

A new type of professional working in the delivery of AT. The TLO (Technology Liaison Officer) are people with disabilities, who have been trained through the CATA and DAT courses to provide a valuable local support for other people with disabilities in their geographic area.

The establishment of the role of TLO had the triple effect of providing education, employment and a vital local support network in AT. TLOs provide support for those using new technologies. They also offer information to those who have yet to hear of AT and provide a vital link at local level for regional or national based AT service providers.

A similar scheme is just been instigated in England that of training “Trusted Assessors”. The term “Trusted Assessor” was originally coined to describe staff, such as assistants or support workers, who had undergone specific training because of their growing importance in providing people with disability equipment, as part of delivering community care services. Similar to the TLO role it is envisaged that their work would be within the realms of ‘straightforward’ and relatively low risk needs, leaving qualified staff to concentrate on people with more complex, higher risk. (“Training Framework for Trusted Assessors for Community Equipment Services”, 2005)

Reuse Technology Service

Existing procedures are not covering the huge need for computer technology and the gaps that fail to address the needs of many individuals with disabilities are in part the impetus behind the project Reuse Technology Service. The RT centre is a "not for profit" organisation dedicated to the provision of re-useable computer technology to people with disabilities, disadvantaged students and
economically disadvantaged persons in society to give them the opportunity to engage in school, work and leisure activities thus leading to a more independent, fulfilling and productive life. It was developed in partnership with the Central Remedial Clinic and the Center for Independent Living and sponsored by Dell computer, Institute of Technology Blanchardstown and the National Christina foundation In America. Its vision is to connect communities through technology by utilising computer equipment that no longer meets the needs of individuals or organisations who will donate their technology through this website. The redistribution of the technology fulfils the EU requirements in relation to waste management and a “sustainable future”

The Aphrodite project led to the employment of five people with disabilities as TLOs and the mainstreaming of the certificate and diploma course in AT which are still offered through the Adult Education department in UCD. The STATEMENT project led to forty three students securing third level education without any access difficulties. The ILT and E4 projects have introduced technology and thinking techniques to over 150 students at primary and secondary level in four schools and training has been provided through professional development to thirty teachers. The project has produced a workbook, an informational CD and a website, www.atireland.ie/inclusive

The Reuse Technology Centre has within its first year redistributed 573 computers to individuals with special needs and local community groups. http://www.atireland.ie/rtcenter

These projects have been proven to provide, through independent evaluation, a valued service in AT. The mainstreaming of these ‘pilot’ projects requires resources, funding and commitment from national government departments and agencies. (Craddock 2004, Craddock 2003)
Training in Assistive Technology in Ireland

‘Professionals indicate that they often lack the specific competences needed to know how technological aids can support rehabilitation, independent living and social inclusion programmes, tailored to the individual needs of people with disabilities.’

- The ‘KPT - Keeping Pace with (Assistive) Technology’ project funded by the European Union, from 2004-2007

The Keeping Pace with technology survey of training in four European countries highlighted some of the issues involved in AT training in Ireland. 180 questionnaires were send to the following stakeholders in Ireland;

- Service providers (24),
- Universities & colleges and in particular their disability support services (39),
- Education centres (52),
- Health boards (8),
- Companies (10)
- Other educational groups such as FAS, distance education, local education centres, institutes of education etc (47).

Thirty-seven organisations responded of which thirty provided some form of training, Twenty-three organisations provided short modules which were part of a broader programme and less than half of these were formally accredited. A number of these did include third level providers which provided modules as part of degree courses, these include courses in special education, speech & language therapy, occupational therapy, engineering and computer science. However the length and provision of information within the modules or in some cases one lecture varies hugely and does not provide adequate training in AT. Of the remaining organisations who provide AT training, these are
predominantly organisations which provide medical and rehabilitative services detailed below. (A full summary of the survey is given in appendix A)

As is evident from the results of the KPT project, there is a small cohort of AT centres throughout Ireland that provide AT training and education utilising in-house skills and expertise, including National Council for the Blind in Ireland (NCBI), National Association for Deaf People (NADP), Central Remedial Clinic (CRC), RehabCare, The Dyslexia Association and Enable Ireland. These centres are effectively fulfilling a dual function as both service provider and trainer/educator. This duality poses a major dilemma as many find themselves under continuing pressure to fulfil the primary service objective for which they are funded, i.e., delivering AT solutions to people with disabilities, but at the same time must deal with the imperative of training staff to ensure that the services they provide are up to date and of the highest quality. (Boyle, Craddock, Fitzsimmons & MacKeogh 2005) Most do not have the capacity in terms of personnel, resources, skills, or expertise to provide full packages of training or education and to deliver services to people with disabilities in the area of AT in tandem.

Service provision for people with disabilities are funded primarily from the national Exchequer, through the Department of Health in Ireland. Funding for AT to address the individual needs of people with disabilities is provided as part of the rehabilitation service. While all policy documents issued by the Department of Health emphasise professional development, multi-disciplinary collaboration and training, no explicit funding is allocated to support the provision of AT training and education for personnel working in the wider community of social and health services. Following are just three comments from the KPT survey highlight the lack of training (full details are in Appendix A)

“There is a lack of AT training programmes out there geared towards third level personnel”
“On-going in-service is needed for trainers to ensure that they are up to date with the assistive technologies that are available and that they are fully informed of any relevant research”

“Students must be given the time and opportunity to continue their learning and experience of AT within their own organisations. It is our experience that … it is rarely carried out.”

At present, few opportunities exist for the exchange of knowledge between experts in the AT field and those who are working on the ground to support the inclusion of people with disabilities. While expertise in the provision of AT exists in AT centres, the skills and expertise required to transfer this knowledge into meaningful training and education provision in the area may not. There is an urgent requirement for provision to be made to allow those with expertise and knowledge in the AT area to shape their experience and expertise, which has often been gained on the job, into education and training programmes so their expertise can be passed on to others.

The Central Remedial clinic is one of a small cohort of centres that provide training in AT services. The CATA (Certificate in Assistive Technology) and DAT (Diploma in Assistive Technology) are both courses offered in partnership with the Adult Education Department of University College Dublin (UCD), who provides accreditation for these programmes through the National University of Ireland. The courses are delivered on a part-time basis, using a “blended learning” approach, mixing traditional face-to-face learning, with use of a dedicated web based e-learning system. The use of modern e-learning tools and strategies to support learning, has a two fold effect; firstly, it allows students to pace their learning and to take advantage of educational opportunities without traditional, geographical, social, financial, personal and cultural barriers. Secondly, it provides an opportunity to provide AT personnel with a broad range of skills useful in the emerging Knowledge Society, where ease of access to new up-dated information will supersede traditional occupational roles when defining who is best suited to a particular professional role. Integration of e-learning tools in AT training and education
can be seen as “promoting e-learning for training purposes” as recommended by the EU report discussed previously in this paper.

According to the Department of Health and Children’s Outline Sectoral Plan (2004) under the Disability Bill 2004, the recruitment and retention of personnel is vital to the future delivery of appropriate and accessible services. In addition the plan states that, in addition to the direct investment in services, ‘other measure have also been taken to ensure the availability of appropriately trained personnel to support existing and future services which include increased availability of training places for key health professionals such as nurses, physiotherapists, occupational therapists etc ……with the introduction of clinical specialists…’ (Outline of Sectoral Plan under the Disability Bill 2004) Clearly there is provision made for other specialist training and it is vital with the increase in AT provision that professionals in this area should be provided for in future policy The Outline Sectoral Plan also provides for a “strategic review” of existing service provision, in consultation with relevant interests, with a view to improving health and personal social services. This provides us with an opportunity to reassess service provision in AT.
A Strategy Forward

Building on the legislation and policy already in place, there is an opportunity now to incorporate AT into the provision of services for people with disabilities. Fundamentally it must be ensured that persons with disabilities benefit from the multiple opportunities that new technologies can offer, particularly in the priority policy areas: education, vocational guidance and training, employment, social integration and environment. From research in the KPT project it is clear that policy and planning in AT is currently happening in other European countries and it has been in place for a number of years in the US.

In the short term there is an urgent need that AT is firstly recognised and included in the planning and assessment of Individual Education plans as legislated in the Education for People with Disabilities Act and in the Statement of Need as legislated in the Disability Act. Furthermore, a strategy should be put in place for ongoing communication between teams working with IEPs and SONs to avoid costly duplication of equipment and to ensure the access needs of each person are fully assured. Assessment procedures need to be established with professionals in AT as part of the multidisciplinary team using established instruments in AT to determine the success of the intervention.

In relation to education: when assessing the needs of the child for an IEP, a broader view of the child’s needs ought to be to be considered and in particular emphases should be on the child’s “abilities” and how “enabling” technology can be utilised. Research has shown that “enabling technology” can have a positive impact on the behaviour and quality of life of the child (Craddock 2004, Scherer 2004, ).

In the light of current research and recommendations from the Commission for the Status of People with Disabilities, the remit for the provision of AT needs to be reconsidered to determine the most appropriate Government
Department or Departments to manage and resource the AT sector to guarantee that all mainstream services incorporate accessible measures to ensure an inclusive society. The present situation is needs to be reviewed because it currently provides little recognition of valued work within AT at both a national and European level.

Technology is advancing rapidly, the fields of AT have expanded in all areas of AT expertise, environmental control, computer access, augmentative and alternative communication and powered mobility, no one profession can cover the educational requirements to cover this expertise and it is acknowledged that the preferred choice for AT assessment is through a multidisciplinary team however there is also a need to develop a particular AT expertise to work within the team and it is recommended that technical training in the field of AT should be considered at three levels,

- Technology liaison level (providing information, advice and support) in both ICT (Information Communications Technologies) and AT;
- technical support level (providing technical expertise in the use, training and maintenance of the technologies)
- degree/engineering level (providing expertise in modifications, manufacturing of specific technologies)

These three professional groups would work with members of existing teams of professionals such as occupational therapists, speech and language therapists, physiotherapists, educators and other professionals providing services to people with disabilities to provide assessments in AT. At the technology liaison level there are examples of best practice already detailed in this report, TLOs established through the pilot project, APHRODITE and in the UK a report detailing a similar position, the Trusted Assessor is now been considered. The report also recommends the Acknowledgment within the Health Care Professionals Bill of the field of AT and the setting up of a Council of AT professionals.
It is widely acknowledged that it is a difficult task for individuals working at a local level to remain up to date with advancing new devices both at assessment level and providing essential training. Many lack opportunities to update their knowledge or to find AT related support in managing cases. The KPT study has verified that training in AT both at undergraduate and post graduate is piecemeal and insufficient leading most professionals to learning about AT from experience and word of mouth. These gaps in training can be facilitated at two levels

- The establishment of one agency with overall responsible for the provision of AT services, providing expertise in best practice in AT assessment, technology advancements, research and development, technical assistance and training and support for individuals providing AT service throughout the country.

- Recognition at a European, National and local level that professionals working in health care and education should have mandatory training at undergraduate and graduate level and an essential prerequisite for professionals working with people with disabilities

An essential element of AT assessment is user involvement, national policy and legislation must reflect a “social model” of disability, which sees disability as the result of barriers, and restrictions that are imposed upon people with impairments. The needs of people with disabilities must be considered beyond the confines of the health and benefits area and their views taken into account both at policy and practice level. This can be achieved through

- The establishment of an expert user group made up of “power users” to assure that AT assessment, provision, research and development are meeting the needs of people with disabilities. This would be coordinated and funded through the new Centre of Excellence in Universal Design
• The creation of a agreed Charter or Guideline on AT in Ireland that will set out a strategy for inclusion and will provide recommendations for action to all stakeholders.

Gaps currently exist in the funding mechanisms for AT services and, as a consequence, services have failed to address the needs of many individuals with disabilities. For instances in education funding is provided at the three levels: primary, secondary and third level however once the student has acquired their requisite equipment, it is the property of the educational establishment and the student can only retain the equipment for that cycle. Having to start the lengthy procedure for assessment and funding each time. Funding policies must be more comprehensive, more consumer-responsive and better coordinated incorporating direct payments.

• Guidelines on ownership and funding need to be established for all AT equipment

• Direct payments for services should be made to the individual rather than through a service provider, this will promote the concept of consumer control and facilitate participation by people with disabilities in the decision making process, (Outline Sectoral Plan, Department of Health and Children, 2004)

• Recognition and funding for the AT Centre as a means of providing technology within the community and a fulfilment of the EU requirement for a “sustainable future”.

This report recognises the important work already achieved by Comhairle in providing information on AT as an online source (www.assistireland.ie). However since this initiative is web based only, many people with disabilities will be unable to access the information. Reports on the lack of take-up of funding opportunities for equipment in the workplace appears to indicate that potential beneficiaries are unaware of the availability of equipment (and other) grants

• Positive awareness initiatives are needed to inform individuals who
could benefit from AT, their families and friends, service providers and the public about the AT available today.

- Recognition of the TLO service which can provide vital information and support at a local level, while also providing people with disabilities with valued employment

EU directives such as the Medical Devices directive will place increasing pressure on services providers that the equipment and intervention they are providing is up to standard and safe. There is an urgent need to

- Define AT and its constituent parts with testing & standardisation that only good and safe assistive devices find their way to the Irish market.

- The introduction of policy that is focused on allocating research and development resources for AT particularly through the Irish Science Foundation.

- Standards are a key element of inclusion in the Information Society, and standards bodies are central in this. They present key element by which the needs of people with disabilities will be mainstreamed in the Information society.

All technology products and services should be accessible to people with disabilities. To the maximum extent possible, mainstream technology should be produced with accessibility built in, utilizing the principles of universal design. This report acknowledges the work of the National Disability Authority in establishing a Centre of Excellence in Universal Design and recommends that AT will play a central role to ensure that when it is not possible to build in accessibility, products should be compatible with AT to allow access. AT must be thought of in the context of the full range of mainstream technology – information, educational, entertainment, medical etc.

"Independent Living" means that disabled people want the same life opportunities and the same choices in every-day life that their non-disabled brothers and sisters, neighbours and friends take for granted. With the
provision of Personal assistants, AT and support services people with disabilities can enjoy independent living but the choice of service must be left to the individual. Choices of services should be made by the individual rather than through a service provider as this will promote the concept of consumer control and facilitate participation by people with disabilities in the decision making process, see also Department of Health and Children’s Outline Sectoral Plan (2004). This concept is also underpinned by the four key principles of the national Health Strategy “Quality and Fairness”, (Department of Health and Children, November 2001): Equity, People-centeredness, Quality and Accountability.
"Keeping Pace with (Assistive) Technology" (KPT) is a new project under the Leonardo da Vinci Programme. It comprises of an international consortium of AT Centres, Universities, Training Organisations and Organisations of people with Disabilities. Technology is developing rapidly and one of the major challenges of the inclusive society is to enable people with disabilities to benefit from available technologies Agencies which provide training in AT need to be aware of the impact of AT on their clients and the growing range of technologies now available. It has been found that many agencies lack opportunities and time to update their knowledge to find AT related support services

The purpose of the project is to develop guidelines, which will direct and support training provision. The guidelines will refer to an integrated model of training in which the various learning opportunities a provider will come across during his/her career (initial training at university or vocational training, AT centre managed training programmes and informal learning through case management support) will be geared towards co-ordinated and common goals. The guidelines will distinguish these learning opportunities defining for each of them learning objective content tools and delivery strategies, taking into account differences among the target audience’ professional profiles and national and regional situations. Finally, examples of training units that meet these guidelines will be developed.

The project outcomes will be useful to staff members of AT centres responsible for training and support, university teachers, employers in Health, Social Services and Vocational Training. All participants will be informed of
the outcome of the project, which will be made available through the project web site.

There have been two elements to the KPT research conducted through the Central Remedial Clinic,

- a study was carried out to explore the nature of Assistive Technology training across four partner countries. In Ireland and in regions of Italy (Emilin Romagna), Belgium (Flanders) and the United Kingdom (London).

- A further study of policy and legislation was conducted by partner organisations in the four countries

Of the 150 individuals who responded to the questionnaire, the largest number were employees of further or higher education providers (56, 37%) and members of teams delivering AT (53, 35%). The remaining respondents were made up of employees in private companies (16, 11%), individuals in private practice (8, 5%) and individuals delivering AT (4, 3%). Respondents in Ireland were more likely than others to be working in Higher Education, while respondents in Italy were more likely to be in private companies that respondents in other countries. Those who responded from Belgium were more likely than others to be in private practice. There was a significant difference in the number of people working for User Organisations across the partner countries, there were fewer in Italy and Belgium, and significantly more in Ireland. A quarter of those who responded (37, 25%) worked with AAC/AT specific organisations and these were more likely to be based in Italy than in any of the other partner countries. Respondents in Belgium were most likely to be working for Disability Specific organisations. Almost half of those surveyed (73, 49%) worked for statutory agencies while 45% (68) worked for non-statutory organisations (e.g. a charity, voluntary body, or private agency).

Of the 150 who responded to the questionnaire, the two most common positions reported were an employee of further or higher education provider (37.3%) and a member of a team delivering AT (35.3%). The remaining
participants were made up of employees in a private company (10.7%), individuals delivering AT (2.7%), and individuals in private practice (5.3%).

Two thirds of those who responded to the survey said that they were involved in AT training (99, 66%) while 28% (43) said that they were not. Those who were not involved in AT training were asked the reason why. The largest number (14, 27%) said that they lack the resources to carry out AT training. Ten respondents (20%) each said that training was already being provided for by others and that others can do it better. Other responses included that training is not part of the mission of the organisation (8, 16%), that they did not consider it to be a priority (8, 16%) and 14 respondents gave a variety of other reasons.

Training was most likely to be delivered in University settings (41%), in AT centres (28%), and in school settings (27%). Those who were involved in delivering AT training were asked if the programme they were involved in was part of a broader programme covering more than just AT. Over half of those who responded to the survey said that this was the case (60, 56%) and 35% (37) reported that it was not. Interestingly 77% of Irish respondents said that the course they were involved in was part of a broader programme compared to 59% of respondents in Italy, 39% in Belgium, and 36% in the UK. The broader training programmes that AT training was most likely to form part of included Education (26%), Speech and Language Therapy (13%), Occupational Therapy (8%), and Computer Science (8%). Other programmes mentioned included Physiotherapy (6%), Nursing (4%), and Architecture (4%). The majority of courses reported on were run in a group setting (72%) involving practical or hands on training (70%) delivered face-to-face (57%).

A large majority of those who were involved in training said that their course was evaluated (90, 84%). Feedback from participants was the evaluation methodology most relied on with 61% saying that they asked for informal feedback from participants and a further 55% reporting that their course was formally assessed by participants. A quarter of those whose programmes were evaluated said that this was carried out externally (25%) while 20% said
that the course was evaluation by a unit from within their organisation. Irish programmes were more likely than others to be externally evaluated.

Less than half of the programmes in which respondents were involved (44, 41%) were part of a formal qualification however 47% (50) were accredited. The majority of programmes in which respondents were involved in Italy were accredited (22, 65%), as was the case for Ireland (17, 57%). Just over one fifth (4, 22%) of the courses in which respondents were involved in Belgium were accredited and even fewer of those reported in the UK were accredited (5, 20%). Of the 50 courses that were accredited 38% (19) were run at pre-graduate level while 22% (11) were at Masters Degree level or higher, and one fifth (11, 20%) were post-graduate programmes.

When respondents were asked to indicate the professions of those involved in delivering the AT training programmes in which they were involved the largest number were Education professionals (54, 51%) followed by Computer Science professionals (38, 35%), Speech and Language Therapists (35, 33%) and Occupational Therapists (28, 26%). Other professionals involved included Engineers (26, 24%), Physiotherapists (21, 20%), Doctors (11, 10%), Social Workers (10, 9%), Architects (5, 5%), and Nurses (2, 2%).

There were significantly more Speech and Language Therapists involved in training in the UK than in other countries and significantly less in Italy. Italy had significantly more Physiotherapists involved in training programmes than other countries while Ireland had less, and there were significantly fewer Computer Scientists involved in training in the UK than in any of the other partner countries.

The majority of respondents (75%) reported that the trainers working on the courses they were involved in were internal to the organisation providing the training while 46% reported that they were External. Programmes reported on in the UK had significantly fewer external trainers than those in the other partner countries. Courses reported on in Italy were the most likely to employ external trainers followed by Ireland. Almost half of the external trainers
employed (23, 47%) came from AT organisations. Seventy three percent of those employing external trainers (36, 73%) said that they came from a variety of different sources including University staff and Independent Experts.

When they were asked to report on who provides input into the content of the AT programmes they are involved in the most commonly mentioned individuals were clinical or frontline staff (34%), and research or academic staff (24%). Service or technology users were mentioned by 22% or respondents. Other centres or AT organisations were reported to provide input in 16% of cases, parents or carers in 11%, manufacturers or suppliers in 8% and administrators in 7% of cases. Researchers or academics were most likely to be involved in Irish programmes and least likely in Italian programmes.

Respondents were asked about the general and the specific nature of the content of the AT programmes they were involved in. A large majority of those surveyed said that the content of the programme they were involved in was user specific (67%). Others said that it was device specific (60%), it was service specific (45%), and covered pre-assessment planning (41%). Fewer programmes were policy or legislation specific (24%) and 22% involved other content such as issues relating to software. Italian programmes involved more device specific content than those run in any other country. When specific content areas were discussed the majority (68%) of those who were involved in training programmes said that computer access was a part of the programme, 57% said that the course involved augmentative/assistive communication, and 39% said that it involved environmental control. Other specific content areas mentioned included software. Augmentative/assistive communication was less frequently mentioned as a content item in Italian programmes than those run in any of the other countries, Belgian programmes were most likely to cover this area.

Courses were most frequently targeted at clinical or frontline staff (48%), professionals in training (37%), and service or technology users (33%). Parents or carers were targeted by 29% of those running courses, other
centres/AT organisations by 18%, researchers or academics by 17% and administrators by 14%. Professionals to whom training is delivered most frequently included education professionals (35%), Speech and Language Therapists (31%), and Occupational Therapists (30%). Physiotherapists (15%), Social Workers (15%), Engineers (13%), Computer Scientists (11%), Doctors (10%), Nurses (10%), and Architects (2%) were less frequently mentioned. Occupational Therapists and Speech and Language Therapists were likely to participate in training more frequently in the UK than in the other partner countries.

**Qualitative Analysis**

The KPT survey also included a number of open-ended questions, which were explored using a thematic analysis. This involved reviewing the comments in each section and isolating the most salient themes present. Two questions in particular were examined, participants reports of the aims of their AT programme and then the supports they report they need to further develop their programmes. Each of these will be considered separately.

**Aims of the AT Programme**

Two major themes emerged in relation to this question, the first of which was classified as providing training. Participants talked about providing training to both teachers/professionals and students/clients. One participant described the aim of their programme as “to equip teachers with the necessary skills to assist children in schools with special educational needs,” while another highlighted a focus on students saying, “to trait students to use particular AT packages.”

A second major theme in this section was increasing knowledge and awareness of AT, again to both professionals and service users. For example a number of participants described providing professionals on various courses with “a knowledge of AT”, while another example of increasing knowledge
within professionals can be seen in the following quote “to ensure that practising [speech and language therapists] understand current debate and ideas in AAC knowledge.

However a number of participants described their programmes as aiming to both train and increase knowledge, with an example give by on participant who described the aim of their programme as “to provide users/carers, service providers [and] educationalists with a knowledge of AT, to provide an essential backup service and training for users of AT.”

A final theme to emerge, which was more interesting than common, was the use of AT to increase autonomy and independence among service users, with one participant describing the aims of their programme as “[to] disseminate the culture of independence and autonomy.”

**Supports Required to Develop AT Programmes**

A number of themes emerged in this section that did not occur with any frequency but provide an interesting insight into the needs in this area. Participants reported the need for more training programmes (“there is a lack of AT training programmes out there geared towards third level personnel”), for continuing professional development in AT training (“on-going in-service is needed for trainers to ensure that they are up to date with the assistive technologies that are available and that they are fully informed of any relevant research”) and for accreditation of existing programmes (“accreditation from key accrediting bodies”).

The major theme to emerge in this section was the need for more resources, with one participant referred to “time and money.” This reference to time was developed on other occasions, for example one participant reported “students must be given the time and opportunity to continue their learning and experience of AT within their own organisations. It is our experience that ... it is rarely carried out.” Aside from stating a general need for more resources
participants referred to specific needs including equipment ("access to a wide range of technology and equipment"), staff ("[we need] more specialists, educators, …special teachers"), and particularly additional technical support ("AT experts", "technical support").

However one comment made highlights a possible reason for consistent lack of resources. As one participant stated, “The provision of any piece of equipment or software is but the tip of the iceberg. It is what you do with the technology that matters and, so often, the cost of and the time necessary for the implementation are not taken into account.” This quote highlights a need to think about the process involved in providing AT training from beginning to end, including the demands of adequate time for appropriate implementation and to base resource allocation on this more representative model.
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