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INTERNET PROJECT FOR DISABLED PEOPLE

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The scenario

In 1980 the World Health Organization issued the International Classification of Impairments, Disabilities and Handicaps (ICIDH) as follows.

Impairment: "any loss or abnormality of a psychological, or anatomical structure or function".

Disability: "any restriction or inability (resulting from an impairment) to perform an activity in the manner or within the range considered normal for a human being".

Handicap: "any disadvantage for a given individual, resulting from an impairment or a disability, that limits or prevents the fulfilment of a role that is normal ... for that individual".

Recently the WHO issued the Beta-1 version of the ICIDH-2 (www.who.ch/programmes/mnh/mnh/ems/icidh/icidh.htm) which proposes the replacement of *disability* with *activity* and *handicap* with *participation*, following also a different conceptual relation scheme among them, trying to stress on the contextual factors, both environmental and personal.

We can notice that at the base of these definitions the concept of *health* is still present. It is therefore useful to read the WHO definition: *Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity*.

We'll talk later about the social face of the health condition, to discover a wider sense of the terms disability and handicap. As you know, handicap is a word taken from the horse races jargon. Its etymology comes from a gambling game, based on taking out with the hands something form a cap (*hands in cap*). For a horse, the handicap can be the extra load added to make it equal to the others. Otherwise it would have a great advantage.

We can therefore say that in some sense **the handicapped is the best one**. Let's start from this statement and let's try to apply it to disabled people. We take out the handicap and we disclose hidden capabilities. Obviously it is not always possible to eliminate all the consequences of an impairment, but we can do quite a lot. For example, tetraplegics cannot move most of their body, but often their brain is perfectly working. If we give them tools that allow them to act notwithstanding their functional limitations, they can be taken almost to the efficiency level of a normal person. The case of mental disabilities is more complex and is not part of our project yet.

Let's go back to the concept of health, relating it to the social context and widening its meaning. Disabled person is also somebody who has not the physical capability of fulfilling his or her role in the society. An unemployed person is somehow disabled, because his or her "health" is not characterised by well-being. The reason of his or her unemployment is the disability. For example, students coming from a small town, with no money, cannot go to the big city for specialised vocational training: they have a physical disability. A teacher who is seriously injured so that he or she cannot move from home, not being able to keep teaching at school, is impaired. A young woman in an Eastern Europe country not yet

technologically advanced, has no possibility of preparing herself for the professional challenge of the third millennium: she has a handicap.

These are different levels, with a wide variety of motivations, which may be solved, as long as the search for a job is involved, through a common methodology.

The "Internet project for disabled people"

The project "*A Social Enterprise through the Internet: enhance occupational opportunities of physically disabled people through the setting up, via the Internet, of a Virtual Community at European Level*", which started under the framework of the *Internet Initiative* promoted by Hewlett Packard, is run by ELIS Centre and it is aimed at proposing solutions to the working problems of disabled people.

ELIS (Education, Labour, Instruction, Sport), following its institutional aim, the formation of young workers, has been focusing its attention during the last years on the new information technologies, as they are capable of requesting many specialised people at all levels. Since 1964, ELIS has grown, widening its operations also to developing countries (it is a NGO) and to the continuous education for adults. The new step is now distance learning. The aim is to reach also those who, for many reasons, cannot move to Rome or to the other centres co-ordinated by ELIS in Italy and abroad. Young pregnant women or with babies (who don't want to leave their important role of educators at home), young workers who cannot follow the usual training rhythm, injured students who did not complete their courses. The list can be much longer, of course.

The final result is training for work: not only an intellectual activity to fight the boredom of a forced stop, but a paid work, maybe done in unusual places and new manners. Technology helps, especially for overcoming distances: you can call it tele-work or distance learning, respectively if you are providing or using a service.

On these two fields ELIS is working with the help of many leaders in the Information and Communication Technology: RAI, Telecom Italia, Hewlett Packard, Finsiel, Stream and other companies are teaching or collaborating in the vocational training programs.
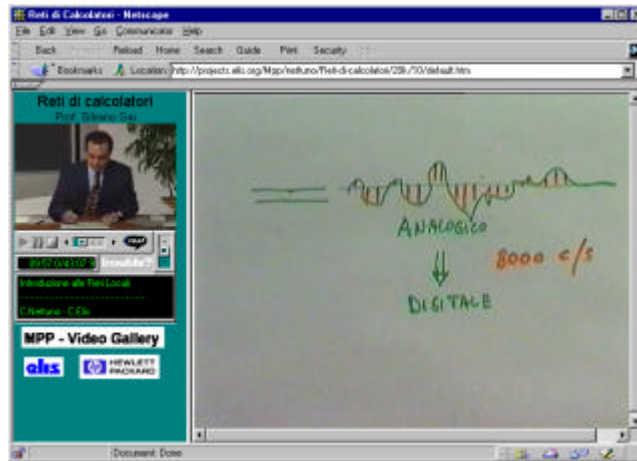
The first phase: distance learning

The first phase is training on multimedia. The *Multimedia Languages & Technologies* course started three years ago in a meeting at RAI International. After the first two years of teaching for 28 young post-diploma students coming from Southern Italy, which ended with full employment for all those who did not have to go immediately for civil service, the course has been extended to distance learning modalities.

A few days ago the lessons started, broadcast live over the Internet using streaming video or, if there is a need for software demonstration, using an application sharing tool. It is therefore possible for the participants - limited for obvious reasons of resource planning - to follow the lessons live from their home or later from the Mediateque-ELIS (http://mediateca.elis.org) which allows to

search the internal content of each video stream. Only a multimedia PC connected to the Internet is needed.

For the Mediateque-ELIS we have developed a fast, cheap and easy methodology for producing videos (Multimedia Production Process, http://projects.elis.org/mpp) which can be viewed using a normal 28.8Kbps modem. The picture shows the typical layout of a lesson from the NETTUNO Consortium (University Diploma course broadcast on TV), available on the MPP site.

With the current telephone costs, which can be lower than half a EURO per hour, the Internet is affordable for this purpose. Other details of the MPP system can be found in the AICA (Italian Informatics Association) 97 and 98 congress proceedings.

The Mediateque-ELIS is growing with the running and past lessons. There may be an agreement with the NETTUNO Consortium to convert all the videotapes of the University Diploma courses in the MPP format, setting up a dedicated video server. A juke-box of courses is more flexible than the TV broadcasting which requires waiting for the wanted lesson, even though there is a 24 hours satellite channel. We have also developed a CD version: in 600 Mbytes we can fit a 40 lessons course, compared to the actual 20 videotapes. Another advantage of the MPP format is that the student can print the slides, graphics or drawings shown by the teacher.

It is clear that this versatile tool widens the possibility of training a disabled person, especially if he or she cannot move from home or from the hospital: in this case only a notebook computer is needed, with a plain telephone connection, without affecting the hospital internal organization. As long as the Mediateque grows with other contributions, training for many professions is possible for disabled students.

En passant, we would like to tell about an "opposite" experience between ELIS and the "Campus Bio-Medico" University Clinic of Rome. A teacher from ELIS had to stay quite a long time in the hospital for a broken leg. To make his stay more pleasant, we organized a lesson using ISDN videoconferencing from his room to the school. The students followed a lesson about electronics held by their teacher: they were very interested and really learned it. This is another way

of overcoming a disability, a temporary one in this case. We have been lucky to find collaboration in the hospital (take the ISDN line to the room, install the multimedia PC and the videocamera) and we are aware that this is not always possible. That is why we are focusing our efforts on tools, which allow easy access from any part of the world using normal equipment.

The second phase: tele-work

The second phase, after the training, is employment. In the ICT and multimedia field we are watching a large request of employees by small and medium companies. For a disabled person it is not easy to work in these companies, notwithstanding the legal advantages for the firms. Moreover a fresh trained person is not always capable of presenting him or herself to the world.

Therefore ELIS has promoted a social enterprise, a non-profit company, with the aim of maximizing employment instead of profit. The benefit is for the single person who finds a way to fulfil his or her professional ambition. The JEEL (Junior Enterprise ELIS - http://jeel.elis.org) started a few months ago and has its main operational site in Bergamo. Now there are some young workers who studied in ELIS, but our aim is to involve also disabled people, after finishing the educational period. They can decide the pace of the training and the level of competence they want to reach.

Working from home is not a problem, as many of the jobs assigned to JEEL are feasible for distant production: writing a CD multimedia book, manage an Internet site, etc. The field is not restricted to Pisa, Sassari, Trieste, Firenze and Roma where the disabled participants are located: Holland, Sweden, Finland, Estonia and Lithuania are the other countries involved in the project.

Establishing a network makes it easier to solve complex problems without moving. An example was given by the production of a cartoon on CD, for the promotion of the Hewlett Packard Chemical Analysis Group, on water pollution. The voices of five children from six countries were requested. The Dutch contact has been important for getting in a few days via e-mail the digital recordings of the Flemish phrases. Students of ELIS composed the team and the leader kept all the contacts with the co-ordinator of the production who was based in Geneva. His stutter was not a problem, because most of the relations were e-mail based.

All our efforts are on the communication systems, to compensate physical absence, therefore helping those who have problems in moving.

Conclusion

In the Medical Informatics Laboratory of "Campus Bio-Medico" University of Rome, headed by one of the authors, there is a deaf and dumb person working. The wide use of e-mail, project management tools and his very good capacity of learning new techniques, reduce his handicap to nearly zero. Without avoiding the direct human relation, which contributes to make him feel perfectly tuned with the others, we have given him hardware and software tools that make a favourable environment. We have been very pleased to know that he refused another job, with higher wage, because he likes informatics and to stay in a

friendly place, more than work as a guardian, even in a very important establishment.

We are now in a favourable time when technology can be used not to make work less human (think of the past assembly lines of "Modern times"), but to recover those hidden capabilities in so many, who are willing to live with the dignity of a "person". We can really recover "the best ones".