



## **2.16 Switzerland**

Jean-Claude Gabus

Maria Sarrias

Frédric Ryser

FST

Swiss Foundation for Rehabilitation Technology

Charmettes 10b

Case postale

Ch-2006 Neuthâtel

Switzerland



### 2.16.1 *First Part: In General. How are end-users being recruited*

FST exists for 15 years on the foreign and Swiss market and has, today, 3'800 customers in Switzerland (5000 in Europe).

This allowed to us to reach the necessary critical mass as much to the level of the costs as in the level of the quantity of persons.

In order to recruit customers, our foundation especially use the following means, by order of importance:

#### **I. Mouth to ear :**

- a) The professionals attending a workshop (training) organised and made by FST,
- b) some symposiums and some regional conventions,
- c) publications in Switzerland.

#### **II. The organisation**

FST appraises that about 20% of the customers are directly recruited by the Swiss following organisations:

- Swiss para-tetraplegic association and foundation
- CP's parents associations
- CP's foundation
- Mentally disabled parents association
- Rheumatism association
- Parkinson association
- Muscle dystrophy association
- ASKIO: "roof" association of many pathology specific disabled associations
- Multiple Sclerosis association



- Lateral sclerosis association
- ...

FST maintains regular relations with these last.

In a first time, these organisations identify the cases and then, in a second time, put the patient in contact directly with FST.

### **III. Public Relations :**

In order to inform the families, we do actively practice public relations, including an as strong as possible presence in the medias:

In 15 years, we can count :

- 200 to 300 articles in the (daily or weekly) press,
- about 15 hours of televised broadcasts,
- about 15 hours of broadcasts radio.

Prizes were awarded to the journalists who achieved reports about FST.

- a) 1986: Community of the public radios of French language, 1st prize
- b) 1991: Festival of medical and surgical movie, (Entretiens de Bichat, PARIS): 1st prize

Activities and public conferences:

This is not only to the attention of medical professionals, but also and especially for the users and their families.

#### Exhibitions to be known

Mainly, the permanent exhibition centre called EXMA, which is relatively large (about 5'000m<sup>2</sup>), local or temporary exhibitions among which we can mention "Salon Handicap" in Lausanne. There are no official databases besides local or company databases. This information is used when people know about the existence of such a service. This last point could be a problem in Switzerland because the people not directly involved in rehabilitation are not familiar enough upon the



existence of such a permanent exhibition centre; we mainly think of general hospitals and private doctors who should be informed.

#### Database and publications

FST is specialised in Low and High Tech RT products (as well as services linked to them). It has, for information purpose, an electronic database containing (1998) about 500 RT products, including a small description in French and German as well as a digitised picture. This database provides, for example, a selected list of items required by any individual. Beside the list of products, FST runs a relatively large specific documentation in the RT application field. Another database contains about 500 papers corresponding to 20 years of RT related activities. This documentation is not exhaustive but contains at least many of the main papers written in Switzerland since RT electronic aids dedicated to physically disabled were introduced.

#### **IV. Identification of users**

FST use some canvases which allow them to define the parameters of sickness. For this end, we use some questionnaires to the attention of the concerned person (Appendix I).

Before being interested in the different available products of FST or on the Swiss market, we have to be sure that the responsible persons of the application measure the advantages and limit some different solutions that we suggest. Regarding the needs of particulars, it is important to know what are the different aids available on the market. Remember that we have to make correspond a device to the demand of the user and of its environment, and not adjust the needs of the user to the technical performances of the machine.

It is clear that in order to fulfil our mission, we need the collaboration of the institutions and more precisely the collaboration of the teams which support the applications, stimulate the use and make the necessary adjustments. Their ability and their long experience of these applications is indispensable. **In fact, FST provide services before products.** In terms of turnover, services are more than three times the turnover made with products.



**2.16.2**      *Second part: Professional users. Have the users been through some training?*

**I. Strategy :**

Our goal is to train professionals in the field of RT products in order to:

- a) Decrease the average service cost for each individual (trained professionals could do the whole job or a part of it),
- b) avoid that a concentration of ability keeps in our "hands",
- c) find cases,
- d) define their needs and demand at best,
- e) enable, for some simple cases, to carry out themselves the complete realisation of the project with some local partners,
- f) allow us to satisfy the growing demand without having a linear increase of our staff.

So, our interventions are limited to the most specific cases. THE MAJOR BENEFIT IS A SIGNIFICANT REDUCTION OF THE COSTS LINKED TO EACH INDIVIDUAL USERS (see statistics).

**II. Education of intermediaries :**

All the involved professionals (therapists, educators, teachers, social workers) do not benefit, within their studies, from a consequent and current training about Rehabilitation Technology. They have the possibility to improve their knowledge later, within some kind of permanent professional training, available in following contexts :

- professional associations (organised in or outside their own original universities or schools),
- RT companies themselves,
- individual training or information through organisations like FSCMA, Pro Infirmis, ...



There are no general rules about the programme and duration of those trainings. For example, FST organise a 4-days workshop about alternative and augmentative communication aids, a 3-days one about special ergonomic computer keyboards emulation, a 2 or 4-days workshop about environmental control systems. Note that training is available in all RT areas.

### III. Some examples of trainings :

Training : **“ Adaptation of toys ”**  
Concerned people: Occupational/speech therapists working with disabled children.

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Training : **How to start an AAC (alternative and augmentative communication) project with an individual suffering from headinjuries or aphasia.**  
Concerned people: Speech/occupational therapists and other professionals working with people who are suddenly speechless.

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Training : **“ Communication aids for young speechless people ”**  
Concerned people: Professionals working directly with young people who are speechless or speaking with difficulties.

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Training : **“ Use of pictures and realisation of communication boards from Boardmaker computer ”**  
Concerned people: Occupational/speech therapists, orthopaedists and all professionals working with pictures or communication aids.

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Training : **“ Communication in spite of all! ”**  
Concerned people: Professionals working in specialised schools, social workers and educators. Occupational/speech therapists. Parent’s speechless children.

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Training : **“ Applications of environmental controls”**  
Concerned people: Rehabilitation specialists, people responsible for technical services in institutions. People living with environmental controlling devices.

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Training :                    **“ Making computer ergonomically accessible ”**  
Concerned people:        Rehabilitation and education specialists, disabled users or  
  people knowing computer manipulation.

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#### **IV. How to treat individually a case :**

In order to take a decision about the RT products which are going to be attributed to the disabled, we involved many persons in this process:

- disabled people (the users),
- environment (family or rehabilitation professionals),
- FST's team.

This first meeting has following goals :

- to assist the project of rehabilitation,
- to fix and to value the criterias used to evaluate the result,
- to put the product at the disposal of the disabled person (period of test is 1- 4 months) The cost of a test is mainly beared by the RT company.

Then FST follows the project until it is really suitable for the user and contributes to the nominative decision.

The initiative does not concern the insurance (Federal Disability Insurance) as long as an assessment and a preliminary test have not been executed. There is no fixed procedure for the assessment which lasts, as well as prescribing the RT product, 2-4 months. 3 months are necessary to get the answer from the insurance and 2 months to receive the payment.

For your information, Appendix III “ a brief description of the scope of the system ”.



**2.16.2 Third part: In R&D projects. Users – Both professionals and disabled persons**

We think the best way to describe how FST's users are involved in R&D evaluation is to take the example of the TIDE FOCUS Project Evaluation which was made in April - May 1996.

**I. The context :**

First of all, we would like to draw your attention on the fact that the 2800 disabled persons using FST 's technical aids in Switzerland have never seen any M3S ongoing developments. Usually, we don't present the result of innovative projects as long as we don't have reached a concrete and reliable enough result.

We tactically prefer to present first the problem's description which the project is supposed to solve and obtain an high enough consensus. For this reason, we broadly published following text (World Congress on Technology for the Disabled, Washington, December 1991) in "Readaptation"-1993 (France), in "Les cahiers de Suresnes"-1992 (France) as well as in some local Swiss meetings. This paper, describing the "problem", is the following:

**World Congress on Technology - Washington DC, December 1-5, 1991**

**What is important is not what technology can achieve,  
but man's ability to make full use of it!**

**Development of electronic aids, what does the future hold?**

In the near future, manipulators (robots) whether fixed on a wheelchair or not, will undoubtedly be integrated into electronic aid applications.

Looking at the world market, one realises that products are developed according to a vertical concept, that is, by integrating the application; one develops an environmental control, a communication appliance...

Increasingly, current market demand is heading towards integrated means, towards an horizontal concept. Communication electronic aids (equipped with synthesised speech) need to be adapted so that users can have access to a computer or environmental control. However, needs evolve over time. Initially, a simple



application suffices, then as experience widens and aptitudes developed, demand grows for better performance!

At the present time, each application and each type of handicap require different appliances and know-how. This is not a satisfactory situation. This heterogeneity makes a rational approach impossible and gives rise to poor management of human and technical resources, which in turn leads to relatively high costs. Indeed, one observes that a considerable number of different kinds of electronic aid machines:

- increase the time needed to train handicapped people and teams of professionals,
- quickly make obsolete the installations in service as technology, pathology or needs evolve,
- multiply the cost of developing each new machine,
- prevent manufacturing from reaching a satisfactory level of industrialisation make maintenance of range of total number of machines in service difficult.

An overall approach calls for extremely varied elements and components. Only a few years ago, technology could not meet this challenge or rather, only at prohibitive cost! Furthermore, insufficient experience in daily application meant that an high quality concept was not successfully developed.

In 1991, technological progress linked to about twenty years experience should provide a sound basis for developing a global concept: different ergonomic inputs would be interchangeable, and the integration of one or several outputs customised to each application feasible.

This would take the form of a modular and progressive unit of electronic aids, designed to solve the majority of problems arising from a) the numerous disorders to be dealt with and b) the great number of different applications users require.

Research should be carried out on those appliances and applications that are currently available to discover factors which could be put to the common good at all levels to simplify the lives of everyone concerned. In other words, generally get much more out of every hour and every franc invested in the electronic aid process.

To sum up: in order to arrive at a global concept, we shall have to bear in mind all that is known on the subject of the application and development of electronic aids.

### **HOW ?**

By involving the people who use electronic aids. The concept will be based on their experience; through their comments, they will show the way...

**The approach will take into consideration different sectors of application, such as:**

- Environmental control
- Communication
- Man (handicapped) - Machine interfaces
- Professional place of work or study
- Other (including applications as yet unknown)

### **The concept will be open-ended:**

The elements which go to make up the system will be able to be combined without restriction.

### **The result should be user-friendly**

Today the following is well-worn but nonetheless remarkable fact: most drivers only need a relatively short time to learn how to drive a car. Yet technical progress alone, having made it possible to go from this:



was not enough! It took in-depth studies of needs, a well-adapted concept, established norms and rules as well as driving lessons to do it.

Likewise, in the field of electronic aids, all efforts should be directed at making the system easy to learn, for both the handicapped person and his family circle, and the team carrying out installation and maintenance. Also, the length of time between initial contact with the machine and mastering should be as short as possible.



## **Conclusions**

A few years ago, people using the machines often thought that their merit lay in the fact that they existed at all! Today, this is no longer good enough, we are more demanding now. Engineers have to devote much more time to develop the machines. We are not talking about producing prototypes. A product like the environmental control JAMES (developed in 1986-87) required 3000 hours of work to be carried on it. About 40% of this time was spent on perfecting the machine and finding out how it could be manufactured to meet industrial norms.

The author has no pretensions to be a prophet. He is not saying that in the future there will be no place for appliances specifically developed with a sole application in mind. Yet having worked in this field for more than 20 years, he is convinced that electronic aids must "come of age" as soon as possible.

Moreover, if engineers could accept that the true worth of their work lies in the applications used by handicapped people and not in the technology they are developing, then this would reconcile high-tech, ethics and tact and there you have it!

## **II. The evaluation preparation**

In order to prepare the evaluation, we elaborated a paper dedicated to both places where the evaluation took place. We chose two completely different sites: The first one is a special school for physically and multiple handicapped children in Lausanne, called "LA CASSAGNE". This school belongs to FST and Mr. Gabus's clients since 1974. About 30 kids are using more than three different technical systems. The second place is the "Swiss Paraplegic Hospital" (SPZ NOTTWIL), near Lucerne. We also have a long co-operation with this hospital which is using a lot of our existing rehabilitation systems. SPZ NOTTWIL is the largest rehabilitation hospital in our small country.

The following pre-evaluation paper was presented to each team, about two weeks before the evaluation started. This was to make explicit the goals of the evaluation. This paper is the following:

In 1989, the FST started the development of an integrated and modular system codenamed "IRIS". In 1991, it was given the opportunity to participate in a



preliminary research project (TIDE M3S) within the framework of the European Union. From that time on, "IRIS" took on a completely new dimension. Since then, 5 projects, more or less directly linked to this concept, have been carried out or are still ongoing. At present, 40 partners from 12 different countries are collaborating in this effort. The FST is one of the few partners which have been given the task of creating the standard (or norm) without which such a system could not function. This standard is called M3S.

### **Why an integrated system ?**

At the moment, the bulk of technical aids are so-called "dedicated" devices, which are conceived to carry out one or several tasks. It is almost impossible to combine these elements with each other, unless the time and the necessary means are available.

An integrated and modular system consists, in a way, in manufacturing a LEGO® toy making it possible, in a relatively easier way, to create the technical aid that the disabled person needs and to make it easily adaptable.

Let's imagine a LEGO® box composed of bricks of three different colours:

**BLUE** Input interfaces such as JOYSTICKS, ERGONOMIC KEYBOARDS, SCANNERS, PNEUMATIC INPUTS, VOICE RECOGNITION, OPTICAL POINTERS, etc...

**RED** End-effector devices such as CONTROLS FOR THE WHEELCHAIR MOTOR , REMOTE CONTROL, DIGITAL VOICE, VOICE SYNTHESISERS, INTERFACES FOR COMPUTERS, etc...

**YELLOW** Elements which, in each situation, are common to every RED-BLUE combination .

Imagine that we can use this "LEGO® box". Following a specific demand of an user, the professional chooses one or several modules in one of the colours. Using the adequate pieces, he then creates a specific technical aid, relying only on the standard elements. Besides a possible better adaptation to the expressed demand, this will



result in a considerable saving in material and time, provided certain conditions relating to the number of tasks which should be accomplished as well as their development are met.

**System evaluation :**

Late May/early June, some results of this work will be subjected to an evaluation in Holland (IRV, Hoensbroek) as well as in Switzerland (French Association against Myopathy-AFM and the FST). Our aim is to evaluate what one could describe as "THE ADAPTABILITY AND THE FLEXIBILITY" of the M3S system, of which several modules have been developed within several European TIDE projects: M3S/FOCUS/MOVAID/LAMP and SPRINT IMMEDIATE.

The evaluation should be able to provide answers to questions in relation to the following two parts:

**FIRST PART:**

Compared to the devices available today, to what extent and under what conditions could an integrated and modular system meet the huge diversity of needs in technical aids so as to solve in particular the difficulties linked to movements, augmentative communication and adaptation to the workplace?

To this end, we ask you to collaborate as follows:

Testing the adaptability of a modular system mainly consists in reproducing, as well and as fast as possible, an existing configuration of conventional technical aids, using these new devices. In the second stage and provided that the results are at least as good as those obtained with the current equipment, the actual operation of the conventional technical aids should be compared to that of the modular and integrated systems.

Ideally, we would need the co-operation of a maximum number of disabled people who already use technical aids. We will need at least the following information concerning each person:

- List of the technical aids used,
- cost of the devices,



- cost of the adaptations done by the supplier,
- the time needed by your team to carry out this project,
- the degree of satisfaction, on the part of the user and of the professional,
- other tasks which should, ideally, also be carried out.

#### SECOND PART:

The technical and economic limits of the current technical aids mean that sometimes specific demands cannot be met. Are the standardised integrated and modular systems - allowing several manufacturers' efforts to be combined - able to push back these limits and under what conditions?

To this end, we ask you to collaborate as follows:

Do you know of any cases where the demand for technical aids has not been satisfied (or partially satisfied), for lack of ergonomic, cognitive, technical and/or economic means?

We would also need a maximum number of disabled people who wish (and who you would wish) to be able to accomplish new tasks which cannot or can only with difficulty be carried out with the conventional technical aids that you are familiar with. For each of these people, we would need to know the following:

- List of the technical aids used,
- cost of the devices,
- cost of the adaptations done by the supplier,
- the time needed by your team to carry out this project,
- the degree of satisfaction, on the part of the user and of the professional,
- the other tasks which should also be accomplished,
- the reason(s) why this demand could not be satisfied.



### **Modules available for this evaluation :**

In Europe, the M3S standard is the subject of many module developments. Not all of them are available yet (for the FST, it will be the "IRIS" system). During this FOCUS evaluation, we will have prototypes of the following devices available:

#### Inputs (detectors):

- Joystick** Conventional joystick, mounted on one of the wheelchair's armrests.
- Springless joystick** Small joystick without return spring, very "light" to manipulate.
- Finger joystick** The finger moves on a circular surface, causing the same effects as a conventional joystick.
- Headrest** Kind of light helmet, detecting the movements of the head along a vertical and horizontal axle (for example, direction and speed of the wheelchair).
- Sip & puff** Simulates a joystick's functions, by using a pneumatic control.
- Headmouse** Simulates a joystick's functions, in accordance with the movements of the head.
- Keypad** Keyboard of 4 by 4 keys.
- Scanboard (keyboard)** The number, the size and the contents of the keys is definable. It is also possible to define one or several "finger joystick(s)".
- Scanboard (scanner)** Combined with the above, access to the functions is possible by using one or several sensors. This device is also able to simulate a joystick.

#### Outputs (end-effectors):

- Wheelchair** Electrical wheelchair, also equipped with an electric control of the lean of the back, the footrest and the seat height. We will use two wheelchairs, as not all the applications are available on both our models.



**Navigator** Device to assist driving, able to recognise and to avoid some obstacles, to follow a wall, to guide the chair as it goes through a door. This system should allow some persons whose movements are not sufficiently reliable, to use a wheelchair regardless.

**Environmental control**

JAMES //, second generation of JAMES.

**Emulation keyboard** Allows, with one of the system's inputs and from the wheelchair, for example, to communicate automatically with the computer at one's workplace, through an infrared transmission.

**Digital voice** Module making it possible to create a task of increased communication equipped with a digital voice (will soon be followed by a synthetic voice; and will then basically be considered as HECTOR ///).

**Robotics arm** It is not impossible that, in a few years' time, the use of environmental control elements such as door or window openers will be replaced by a manoeuvring arm able to open or close any door or window. This manoeuvring arm is called "MANUS" and has been manufactured in Holland. Concerning this item, there will only be a matter of demonstration (within this evaluation) and no thorough trials.

**A typical evaluation**

**a) First part** In the presence of the disabled person and the member(s) of your team who know(s) him, we will start to draw up the inventory and the description of the current equipment, followed by possible additions that are desirable. We will then choose, from the M3S assortment available during the evaluation, the modules corresponding to this demand and we will assemble them. A first test is organised and carried out, the final result will then be compared to what the user had before. It will not systematically



be necessary for the user to test the result, as the new system is intended to reproduce the old one, with better adaptation possibilities. We estimate that, on average, this exercise will take 30 minutes.

- b) Second part** Dito, but longer. Indeed, as far as possible, each user will carry out the "user evaluation" (average time: 60 minutes).

### **Partners of the evaluation :**

#### Our team:

The FST will provide at least three persons: an engineer from its research & development team, a specialist from the "application" sectors as well as its president. The following partners will also collaborate: a representative of the French Association against Myopathy (AFM) and, in all probability, one Dutch and one Irish colleague. The FST team will assemble and configure the modules, the AFM will draft a report with the results.

#### Your team:

We would be grateful if you could put at our disposal the persons of your choice who best know the people whose needs will be evaluated. During the evaluation, your opinion on the result will be a decisive factor together with that of the disabled person himself, to the extent possible.

If you wish, a delegate of your centre is cordially invited to publish his own reflections within the final report and to participate in the closing session of the FOCUS project. The representatives of the partners associated with this project as well as a member of the European Commission and its experts will be present. A member of the institutions OFAS and OFES (Federal Office for Education and Science) will also be invited to this session, scheduled to take place on 4 July 1996 in Neuchâtel.

#### The disabled persons:

They will stay on your premises during the evaluation or, with your agreement, outside your institute, at the invitation of the FST (in Switzerland, more than 2800



people are using technical aids proposed by the FST, some present, within this project, particularly interesting needs).

**List of partners :**

This work is carried out with the support of the DG XIII of the European Commission, within the TIDE and SPRINT programmes. In Switzerland, the support of the Federal Office for Education and Science (OFES) is decisive.

**III. Conclusions**

Since 1979, we believe in the concept of integrated and modular systems. Having standardised them by using a public domain standard M3S, gives this concept an essential dimension. For us, FOCUS is the core project of a group of TIDE and SPRINT projects (M3S-MOVAID-LAMP-SPRINT IMMEDIATE) in which we are working since 1991, developing a range of M3S devices in order to bring a new system called IRIS. To date, about 35'000 hours have been put in those projects. More or less half of them were done within the above mentioned projects, the rest is considered as our own participation (with the support of FST's sponsors).

Our first conclusion is clear: for an organisation like ours (30 employees, 2.3.MECU), developing an open international standard would have been impossible without an EU R&D program. Firstly because of the needed resources, of course, but also because of the cumulative aspect of the different competencies brought by the partners and the de facto awareness generated by the 41 partners who co-operated, at different levels, in M3S related projects.

Our second conclusion is linked to the actual state of the art of the available results. M3S is working! It takes into account some more or less complex tasks related to products, even if those are not much demanded today; we are convinced that they will have a growing demand in the coming years (manipulators, navigators for example). M3S is also able to fulfil the requirements linked to simple applications, in order to provide cost-effective simple solutions (ECS-AAC-simple wheelchair).

Our third conclusion is linked to the behaviour of the FOCUS consortium. We are very happy to see that all of us were able to face difficult situations which appeared during the project:



- we had to change our plan concerning the CHIP,
- we had difficulties to generate, at a certain stage of the project, a good enough consensus about the specs,
- at the end, it was necessary to make an other evaluation, in addition to the one initially planned,
- some of the partners had to do some additional work in order to face unexpected technical problems.

#### **IV. Perspectives**

In FOCUS, and apart from the specs which used most of the R&D resources, we could realise following works:

- development of a powerful CCM,
- adaptation of our environmental control JAMES // to the 2.0 M3S specs,
- development of an IR M3S bridge,
- conversion of different previous modules from 1.1. to 2.0. standard,
- creation of a level of experience close to the one we need before our new IRIS M3S system is on the market,
- successful evaluation of the results with some representative "traditional" FST clients.

The IRIS system will propose, early 1997, available modules on the market. Following items will be available from the FST:

#### **INPUTS:**

1. Mouse and joystick input
2. Keyboard input
3. Touch screen input (Scanboard)
4. Scanner input (Scanboard)



## OUTPUTS

5. ECS JAMES //
6. Wireless keyboard and mouse emulator
7. M3S wireless bridges
8. Digital voices
9. Synthetic speech

Considering that most of the partners are going to provide the market with other M3S devices (more inputs, manipulators, wheelchair controllers), we are strongly convinced that, if above mentioned items are really coming through, M3S will be THE standard in the RT field. This will contribute to the fact that always more and more wheelchair manufacturers will provide M3S "on board".

The FOCUS consortium will also have to find a solution concerning a permanent M3S office with at least following tasks:

- training and documentation for new-coming "members of the club",
- keep up to date the standard,
- certification of new M3S devices,
- bring the standard to an official ISO level.

The FST really hopes that M3S will continue to receive support from the commission. A very big step was done within M3S TIDE related projects, especially in FOCUS. It would be much easier for new-coming partners (SME) if a participation of the commission is available.



#### 2.16.4 *Fourth part Methods of approach*

##### **I. Definition of the words "need" and "demand":**

**Need:** theoretical analysis definition of the users/carers situation and related weakness possibly compensated by assistive technology.

**Demand:** based on the total needs (according to the above mentioned definition), the demand is the part which is precisely recognised by both the user and the carer(s).

If a product evaluation is based only on the "need" aspect, its results could be too optimistic. One should also take into consideration that doing such an evaluation can be difficult, if the initial motivation of both user and carer(s) is too low. As a consequence, the fact of being faced with problems (for example technical ones) during the evaluation will create a good or better reason to stop it.

Again, from an ideal point of view, if the evaluation is made with a confirmed demand from both the user and the carer(s), the "reliability" of the results will be higher.

In order to explain the headlines and FST's approach to a new product and market, we present here a FST analysis from the process starting from a new product down the market.

##### **II. Creative process:**

###### a) First Condition: What to Create

In most situations, if a consumer is asked what product he would like to see launched on the market in the future, he or she will be unable to go beyond the limits of previous experience. In other words, it is very difficult to (dare to) imagine the use of a new product. If a creator presents a new idea for evaluation, based on a project or prototype, the best he can hope to obtain is confirmation, sometimes no more than partial, that a specific need could be answered by the product he proposes. The user confuses the idea of need and the demand generated by that need. In the end, the product's utility will



be proved by the demand for the product. Unfortunately, the concept of demand is very rarely generated on presentation of an idea. Demand does not really begin to arise until the first applications of the product take place. Therefore, a risk directly proportional to the size of the project must be assumed.

The creator's interest is centred principally on the potential uses of an idea or product, rather than on the idea of the product itself. In addition to creating the references necessary to invent a new item, he must be able to calculate its impact. A creator must learn from the past in order to understand why the present is as it is. The present can then be used as a basis for evaluating the future. A creator knows that he must rely mainly on his own forecast of the demand which will be generated for the product he intends to create.

From an observer's standpoint, a creator essentially follows his intuition. In reality, he pursues a relatively logical reasoning process. Taken to extremes, this process may be characterised as intuitive, provided that intuition is defined along the following lines: "a logical process of which the detail and development escape our conscious awareness". (...)

b) Second condition : How to create:

The greater the innovative nature of the projected creation, the less recourse to acquired knowledge is theoretically possible. choices.(...)

A creator's priority should not be what he knows (or others know), but rather what he can make of what he knows. For this purpose, one solution is to work with a team whose members are competent in several fields. We must also recognise that new ideas are often produced by people who are not experts on a particular subject: nevertheless if the idea is to be developed, a specialist will be better able to bring it to fruition.

c) Third Condition: the Necessary Means and Support

The initiator must convince others that the project he wishes to develop has merit. The great difficulty here is the inventor's tendency to underestimate



the problems he will encounter. We do not take this for a deliberate manipulation, but rather as a healthy reaction: if a creator were to know beforehand the extent and nature of the problems facing him, he would hesitate to proceed with, or even renounce his project. However good the idea, a creator must not forget that it is of fleeting value as long as it is not shared with other like-minded people.

d) Fourth Condition: Patience

Based on the creative experiments carried out by the foundation, we have observed that a new creation goes through several stages. When a new product is launched, consumers rarely applaud. The creator should not be surprised at this, nor offended by a lukewarm response from potential users. He must accept that a reliable judgement can only be formed if enough tests have been performed, i.e. where critical mass is achieved. It is best to warn the project contributors of this, even at the risk of causing a disappointment which may have grave consequences.

e) Fifth and Last Condition: BELIEVE IN IT !

A creator's task begins by an assumption of risk (by the creator and those involved in the project). In spite of continuing doubt, he must not be afraid to seek solutions to the series of problems his creation will pose.

A creator must remain confident and meditate on the following maxim: having self-confidence does not mean ignoring doubts, but learning to handle them. At critical moments, it often occurs to us that "things are going well when one's available energy is sufficient to respond to the problems that arise".

f) Conclusion:

In the context of technology and social services, to create is to remember that the primary factor in the process is not the technological advances made, but man's capacity to make use of them. Like those in many other fields, a creator must accept reversals from time to time, which may even



compromise his career. Above all else, creation brings the pleasure of seeing one's ideas fully accepted and adopted by consumers.

In social services, creation can be summarised in this maxim: reconcile high tech, ethics and tact !

#### 2.16.4 *Fifth part: General statistics*

In order to conclude this paper, we think that it could be of interest to describe statistically our activities. It could be important to see concretely the results obtained using this strategy, especially in terms of :

- increase of the demand,
- cost evolution.

In 1997, we installed the third version of the integrated management programme "ANTIOPE". Containing all datas from FST 's activities from 1991, this programme gives us the opportunity to have a detailed and almost global overview of our activities.

Every collaborator has a computer at his workplace and enters all datas generated by his activities at FST. Thus, we have at our disposal a very complete database representing, in a certain way, the history of our institution. At the end of 1997, this database included all our partners (end-users, suppliers and correspondents), that is to say over 9000 files concerning persons or organisations.

This third version of "ANTIOPE" has enabled us to improve our information research engine in order to be able to extract, over a period of time which we have set to five years, the main parameters that are characterising our activities. Undermentioned we use those which seem to be the most representative ones.



**Number of handicapped (physically affected) persons having benefited from our products and services in Switzerland, per year:**

1993	1994	1995	1996	1997
319	440	657	823	913

One can notice that, on average, 30% of these figures are new cases and the remaining 70% are cases that are monitored year after year. At the end of 1997, there were 3.600 handicapped (physically affected) persons who used on a daily basis one of our technical aids or services.

**Number of persons, per year, having attended a training course organised by the FST:**

1993	1994	1995	1996	1997
69	60	64	103	275

Our training courses attract an ever-growing number of participants. On one hand, this progression proves us the quality of these courses and, on the other hand, it is the result of a training policy we have since 1990. This progression proves us that we offer quality courses and also indicates that the training policy we have had since 1990 is efficient. By training more and more professionals to use our technologies, our on-field interventions tend to decrease in such an extent that these interventions are now more and more limited to very technical matters. Since 1991, it is more than 580 persons who have been trained by FST, essentially rehabilitation professionals

**Average cost evolution, by year and by case.**

**Average time spent on each case, per year:**

1993	1994	1995	1996	1997
7.72	7.15	7.08	5.36	4.13

The average time spent by our advisors on each case decreases. This can probably be explained by the fact that our staff is now more experienced and by the ever increasing number of professionals trained by FST.



**Average cost for supplied hardware, for each case, per year:**

1993	1994	1995	1996	1997
3'843	3'623	3'519	2'658	2'210

This decrease in cost is certainly the result of two cumulating factors. The first one is the tendency of electronic and computer hardware to become less and less expensive. The second one is the systematic recycling of the hardware going to the AI warehouse managed by FST (when a device, reimbursed by the Federal Disability Insurance is no longer used by the insured person, it goes to this special warehouse). The device is then controlled and re-introduced into the cycle.

**Workforce and number of cases ratio, per year:**

	1993	1994	1995	1996	1997
<b>Number of concerned collaborator (Switzerland)</b>	12.74	12.23	14.73	14.42	14.88
<b>Number of concerned handicapped persons, for one collaborator</b>	25	36	45	57	61

This table demonstrates, generally speaking, one collaborator from FST is able to handle an higher and higher number of cases every year (same commentary as under point 3.1)

**Hardware and services cost evolution index by case, per year:**

1993	1994	1995	1996	1997
1.00	0.91	0.79	0.64	0.54

This table represents all average costs (including hardware) for services, after sale services etc... One can only conclude that these figures are decreasing.

**Stock value, in CHF, per year:**

1993	1994	1995	1996	1997
765'000	784'000	803'000	1'005'000	1'020'000

We lend the hardware for a trial period. This means that an important part of this stock is not in our own offices but being tested by some potential clients potential clients. This particularity is very expensive if we consider the necessary financial



resources. If one balance this with the quality of the offer from the point of view of the demand, this is completely justifiable, the decision to buy can be made after thorough consideration.

**Range of product renewal, per year:**

	1993	1994	1995	1996	1997
<b>Total range of products</b>	461	441	371	494	529
<b>New products in the range</b>	25	27	119	66	73
<b>Products discarded from the range</b>	5	9	49	189	108

The field of electronic technology and computer science evolves very (too) fast. In terms of our range of products, this implies a very fast renewal, challenging stock management and a continuous training for using and maintaining the equipment.

**Number of cases by activity sector, per year:**

	1993	1994	1995	1996	1997
Alternative + Augmentative Communication	138	153	176	234	349
Environmental Control	125	168	180	247	299
Quo Vadis (for people with Alzheimer)	0	0	0	17	75
<b>Computer applications</b>	74	85	123	129	223

This table shows a general increase of the number of persons, in every activity sector, having benefited from our products and services. The increase is particularly important in the field of AAC. This seems, however, to be mainly the case in the German part of Switzerland.

**FST training, per year:**

<b>Number of trainees</b>	1993	1994	1995	1996	1997
Alternative + Augmentative communication	36	42	40	72	119
Environmental Control	22	9	11	8	13
Computer science courses	11	9	13	23	29
Others (Alzheimer, adaptation of toys)					57
<b>Total</b>	69	60	64	103	275

Officially introduced in 1991, the FST training becomes more and more successful. This fact, in our opinion, is the result of a real demand and desire from professionals to work with FST as much as possible to resolve difficult cases or, during a project, find a solution to a difficult situation.



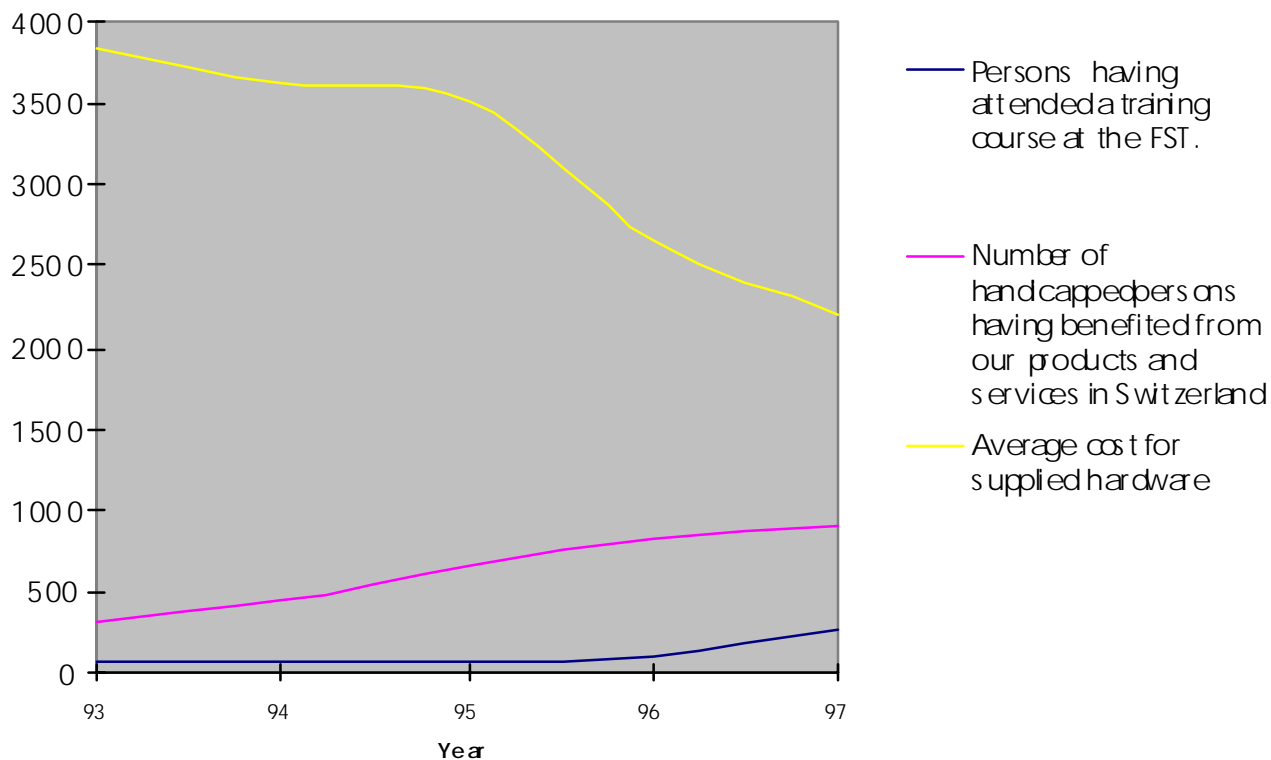
**Continuous follow-up of the level of satisfaction of users (disabled and/or professionals)**

It has now been three years that FST systematically send a questionnaire to every user, in order to have a good idea of the manner in which people respond to our services. We cannot affirm that the responses are favourable in all cases. However, it is encouraging to notice that to the question “Would you recommend FST to others?”, more than 90% of the interviewed respond favourably (these questionnaires can be consulted any time at FST).

**Comparison between number of persons having attended a training course, number of handicapped persons having benefited from our products and average cost for supplied hardware.**

COMPARISON	1993	1994	1995	1996	1997
Persons having attended a training course at the FST.	69	60	64	103	275
Number of handicapped persons having benefited from our products and services in Switzerland	319	440	657	823	913
Average cost for supplied hardware	3'843	3'623	3'519	2'658	2'210

Table of comparison



**Conclusions**

We are happy to note that, generally speaking, the cost of our interventions decrease, in spite of a slight increase of the degree of disability we are confronted with.

At its foundation, FST claimed that the best way to respond to the increase of the demand was not, as a priority, to increase the number of our collaborators, but to have a training policy eventually relieving us of certain tasks.

Furthermore, the systematic recycling of technical aids results in real cost savings hardware-wise, sometimes representing more than half the costs.

The general tendency of high-tech hardware to decrease in price has also an effect on the benefit.

One must not forget to mention our advisor's increase in experience and know-how. One can probably project that the necessary time by case will still decrease in the years to come.



However we will try through this document to show you how it is possible for us to reach these good statistical results.

**2.16.6**      *Sixth part: A brief descriptions of the scope of the system (i.e. who benefits)*

In Switzerland the insured has a right to medical benefits not mainly designed to treat the disorder as such but which are directly necessary for vocational rehabilitation and which are likely to result in a major and lasting improvement in earning capacity or to safeguard it from a marked reduction.

The Federal Disability Insurance scheme provides aids within the limits laid down by Article 21 of the Disability Insurance Act in pursuance of the Order on the provision of aids under disability insurance (OMAI) issued by the Federal Department of the Interior. In principle, the insured persons who need aids to carry on a gainful activity or to do usual work, are entitled to aids. Insured people who, on account of their disability, need expensive appliance to move about, establish contacts with their surroundings or develop their personal independence, are entitled to such aids regardless of their earning capacity. This Order also contains additional provision concerning the supply of aids, contributions to the cost of adapting appliance and homes necessitated by the disability and contributions to the cost of special services required by the insured in lieu of an aid. It is important to note that RT products paid by the OFAS remain property of the insurance. They are at the disposal of the disabled as long as he needs the aids. If, for a reason or another, the person does not use it any more, the aid will be recycled/revised. After having being controlled, the aid will be put again at the disposal of another user.

In the few cases the Federal Social Insurance is not financing the RT products (like television set for someone who needs an environmental control, a computer for an adult who does not need it for professional reasons or an augmentative communication aid), subsystems like private insurances or private charity foundations (for instance, for physical or mental handicap, deaf a.s.o.), partially or totally, will take care of the costs inherent to the disability.



All RT companies are involved in service delivery. Mainly, RT delivery of RT products and services is organised in this way:

Testing and training are made by the user, before definitive prescription: with the support of RT companies or local organisms supported by private charity organisation and official organisms like FSCMA (Fédération Suisse de Consultation en Moyens Auxilliaires, FSCMA).

Prescription: after the testing and training period, official request is made and submitted to the OFAS by a medical staff or a social local organism (Pro Infirmis, for example).

#### **2.16.6.1 We would like to summarise the procedure mainly used in Switzerland :**

- Identification of the demand (user directly, his/her family or rehab professionals of any kind).
- Investigation in order to be able to consider the available range of RT products, via permanent exhibitions or direct contacts with RT specialised companies.
- Obtaining the possibility to test the products in order to check if the correlation between the demand and the offer is suitable. Training is provided during this phase. The cost of a test is mainly supported by the RT company (risk usually accepted, outside some exceptions, for example when the RT product is especially designed or adapted to one specific user; in this case, the RT company could receive financial support from the insurance).
- If the test is positive, an official demand is submitted to the social insurance. This demand is made by the professionals or a social service around the user. The demand includes a quotation made by the RT distributor. The time elapsed between the first contact with the user and the day of payment is approximately the following:
  - 1 to 2 months for assessment testing and prescribing the RT product;
  - 3 months to get the answer from the insurance; RT company sends its invoice directly to the concerned Federal Disability insurance



- 2 months to receive the payment
- If the test is negative, the case is closed until, for example, another RT product, better adapted to the demand, is available. A new test is then started.
- Technical maintenance is paid by the insurance, if the responsibility of the user is not engaged.

The RT product is attributed (by decision of the Federal Disability Insurance-OFAS/AI) to the user by name, but it does not belong to the insured. It becomes property of the Disability Insurance. The user has the right to keep the attributed product as long as he needs it. If after a period of use, it turns out that the insured no more needs the attributed RT product, he must return it to a so called “RT products depot”. There, it will be revised and put at the disposal of another user under the same conditions as above-mentioned. The difference lies in the fact that this time the RT device is free of charge for the insurance (only manpower will be invoiced).

