Euro-ISDN
Target Project - Ref 96/45503

Final Report

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CONTENTS

EXECUTIVE SUMMARY

1. INTRODUCTION

The TaRgET project was designed to address all issues associated with the design, implementation and operation of a distance learning network using Euro-ISDN applications to deliver training to SMEs both regionally and trans-regionally.

1.1. TaRgET Objectives

The objectives of the project were:

- to address the issues involved in the design, implementation and operation of a flexible, easily accessible and cost effective means of delivering training materials and programmes to SMEs.
- to implement and operate a trans-regional distance learning platform using Euro-ISDN based on the results from an initial feasibility study.

1.2. Objectives Deliverable D8: Final Report

The principal objectives of the Final Report were:

- to provide a detailed account of the project activities and outline key considerations, lessons learnt, evaluation and consider the practical steps in the establishment of a cost-effective platform
- to produce a Business Plan to provide recommendations on how to progress from pilot phase to full implementation of a trans-regional Euro-ISDN training and education platform.

1.3. Methodology Used

Thorough evaluation procedures have been conducted during the project. The evaluation has been based upon the continuous completion and submission of evaluation forms designed, distributed and analysed by the operational and technical management.

The questionnaires addressed the following evaluation issues:

- technical performance and outcomes of each videoconference;
- monthly trainer summary of experiences;
- final trainer experiences (at the end of the pilot);
- trainee experiences (after the first month of training and at the end of the pilot);
- assessment of the four multi-point project meetings;
- assessment of the train the trainer videoconference workshops.

The operational management also designed methods to record the estimated and actual regional costs of operating the distance learning platform.

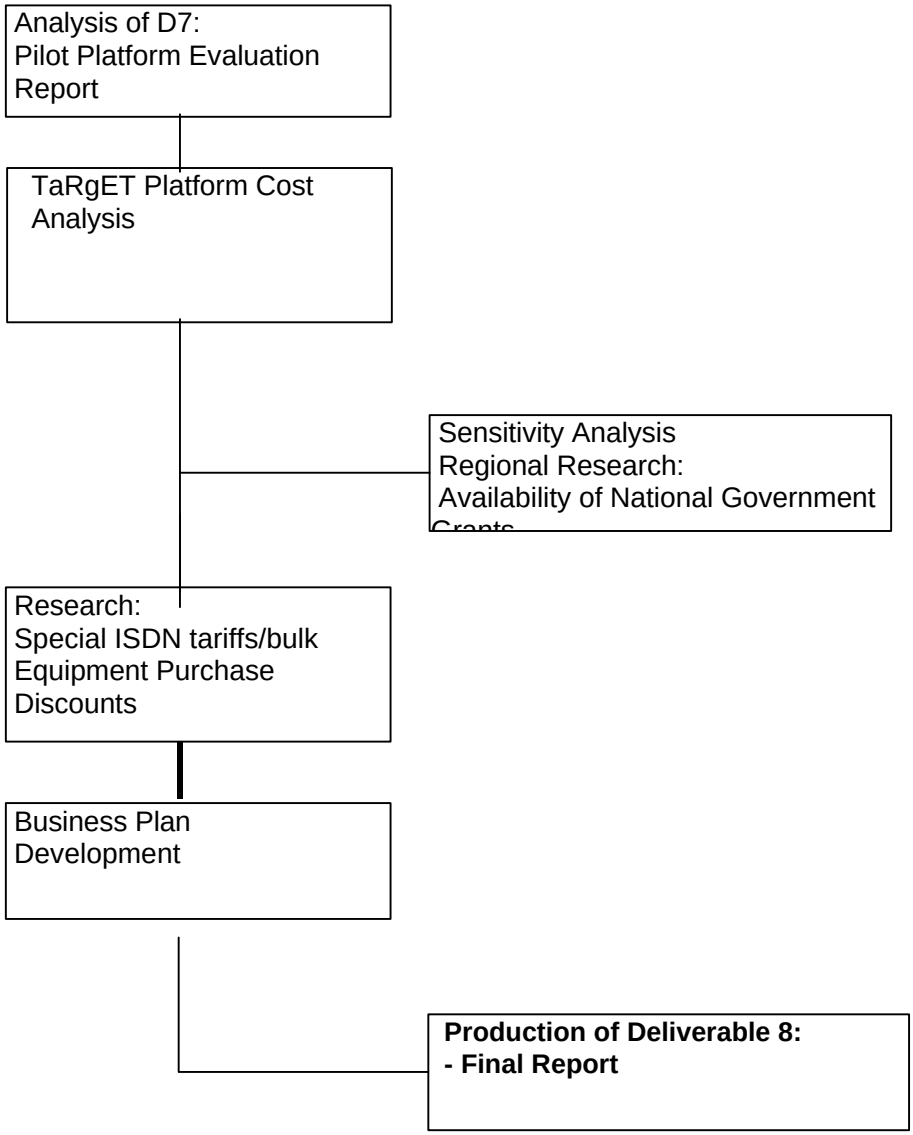
These costing forms completed by each partner have been analysed and where necessary, telephone interviews conducted to further clarify the actual regional costs involved in operating the distance learning platform.

1.4. Study-plan and methods

The activities which took place during Workpackage 9 are outlined in figure 1.

Figure 1:

Studyplan TaRgET – Deliverable 8: Final Report



2. WORKPACKAGE ACTIVITIES AND DELIVERABLES PRODUCED

Following the outcomes of an initial feasibility study, the main activities involved the implementation and operation of a trans-regional distance learning platform using Euro-ISDN at ten education and training institutions. These activities included the adaptation of existing training material to ensure it was suited to this method of delivery and, in close collaboration with SMEs in each region, the logistical organisation of providing training to employees via desktop videoconferencing.

Workpackage 1 - Information Needs Analysis
The main activities involved information gathering in each region concerning strategic sectors, technological developments taking place within these sectors, the training target groups of the organisation and future training needs. Suitable existing training materials to be adapted. A suitable SME which both required such training and whose management were interested and committed to be involved in the activities of the TaRgET project was then identified.

In June 1996 the project management analysed the results from Workpackage 1 activities which were integrated into **Deliverable 1 -** ***Needs Analysis Report***.

Workpackage 2 - TECHNICAL EVALUATION
Between June - September 1996 the activities related to Workpackage 2, Technical Evaluation were conducted by the Technical Management.. Questionnaires were distributed to TaRgET partners to establish current technologies used and the applications required for the training courses. Network operators were contacted to determine availability and pricing of Euro-ISDN services to all TaRgET regions. Research into the European videoconferencing market was undertaken. Taking into account the responses from the questionnaires, products from six manufacturers were obtained and their performance evaluated. The technical evaluation addressed the following factors: Availability; Functionality and Ease of Use; Standards Compliance; Hardware and Software Requirements; Peripherals and Costs.

At the beginning of September 1996, the findings from Workpackage 2 activities were integrated into **Deliverable 2 -** ***Technical Evaluation.***

Workpackage 3 - CO-OPERATION MODELS
Based on the information from WP 1 and 2, during WP 3 the identification of both regional and trans-regional co-operation models were developed. These models, which took into account the experiences of the training organisations and training needs of the SME, defined how the Euro-ISDN platform would function on an operational level.

Basic and advanced levels of co-operation were defined. On the basic level the Euro-ISDN platform would be used for communication purposes. On the advanced level, the platform would be used: to support or guide training, to deliver training to SMEs and to develop training materials.

Transregionally, the advanced co-operation activities were divided into 5 progressive levels. All regional co-ordinators would participate at both Level 4 -transregional training using Euro-ISDN (as each partner would receive a 2 hour train the trainer workshop via videoconference from a Belgian University on the use of desktop videoconferencing for training), and Level 5 - transregional multi-point sessions (through the linking of the project technical and training working groups).

Workpackage 4 - FEASIBILITY REPORT
From mid to late September, the project management gathered information from Workpackages 1-3 to form **Deliverable 3 -** ***First Phase Report and Feasibility Report*** .

The main factors concerning the feasibility of the continuation of the TaRgET project activities concerned technical, financial, organisational and operational issues. The activities of WPs 1-3 ensured that the project success factors could be met.

Regional training needs had been successfully defined, regional -co-ordinator organisations had existing materials which could be adapted to meet the regional training needs and there was at least 1 SME in each region which required this training and was willing to co-operate in the pilot trials.

The necessary hardware/software and Euro-ISDN facilities were available in all partner countries, videoconferencing manufacturers/distributors could support their products in all TaRgET countries and suitable 'train the trainer' materials on the use of videoconferencing had been identified. The cost analysis investigations reflected that it was possible to conduct the activities within the project budget. Also the activities could be organised into successful regional and trans-regional co-operation models.

The Feasibility Study was the major deliverable of the first phase of the TaRgET project. The completion of this report and the activities connected to Workpackage 1-4 brought to a close Phase 1.

Workpackage 5 - IMPLEMENTATION AND OPERATIONAL PLANNING

During Workpackage 5, the following tasks were conducted:

- technical timetable formulated for procurement, installation and training. It was envisaged that by the end of November 1996, equipment would be delivered to regional co-ordinators and SMEs and during December 1996, the installation and training process would take place
- regional co-ordinators finalised all detailed arrangements concerning the pilot projects i.e. the syllabus, module breakdown and schedule for delivery and videoconference sessions;
- regional co-ordinators made frequent visits to the SMEs involved in the project to clarify and finalise arrangements for the operational phase;
- project management gathered information concerning the following detailed operational plans of each regional pilot:
    - training content to be delivered;
    - the time scale for each project;
    - time schedule of the videoconferencing sessions;
- project management developed further transregional co-operation plans;
- organisation of train the trainer workshops in the use of videoconferencing;
- platform cost analysis investigations;
- project management conducted research into the evaluation of videoconference sessions;
- project and technical management developed project evaluation procedures. The evaluation criteria and mechanisms were developed both for a trainer and trainee perspective;

The activities of Workpackage 5 culminated with the production of **Deliverable 4 - *Detailed Installation and Operational Plans*** in early November 1996.

Workpackage 6 - PROCUREMENT AND COMMISSIONING

During WP 6, the technical Management conducted the following activities:

- Checks on the status of ISDN line installation (in both co-ordinator organisations and SMEs)
- Negotiations with Nokia concerning the purchase of the Nokia Mediastations for the TaRgET project activities;
- Negotiations with VCON manufacturers to supply the videoconferencing software;
- Requisitioning of Nokia Mediastations and VCON units;
- Co-ordination of ordering and shipping of technical equipment to all regional co-ordinators and SMEs;
- organisation of technical training in the use of the equipment for all regional co-ordinators
- Finalisation of technical evaluation criteria and mechanisms for the project.

Due to a number of unforeseen circumstances, the technical procurement and commissioning phase took longer than anticipated. Therefore the technical procurement, installation and commissioning of the equipment phase of the project was extended until February 1997.

At the beginning of February 1997 a report of the activities of Workpackage 6 and an outline of the equipment status in each region was provided in **Deliverable 5 - *Pilot Platform Operational***

Phase 3 - OPERATION AND EVALUATION

For the majority of the partners, the third phase of the project, Operation and Evaluation commenced during February - April 1997. During this phase of the project, the operation of the Euro-ISDN distance learning platform occurred over a period of 8 months. The detailed operational plans developed during WP5 were executed during this phase.

Workpackage 7 - OPERATIONAL CO-ORDINATION

Based on the tasks defined in WP 5, all regional co-ordinators worked both on a regional and transregional basis on the development and delivery of distance learning using Euro-ISDN. These activities included the following:

- TRAINING:
  Train the Trainer Workshop in the use of videoconferencing delivered by Audiovisuele Dienst, K.U Leuven delivered to the majority of partners and SMEs. This workshop (which consisted of a two-hour videoconference session plus a fifty page handbook on the effective use of desktop videoconferencing for education and training purposes) has proved to be a valuable investment of the partners. The addition of tele-tutored support was a very important factor for the majority of partners who, as inexperienced users of videoconferencing, were provided with 'hands-on' expert advice. As the Audiovisuele Dienst also had access to a Nokia Mediastation, it was possible during the workshops to test the applications such as whiteboarding, file transfer and application sharing.

- FAMILIARISATION:
  During this period, an important element for both the trainers and trainees was to familiarise themselves with using the videoconferencing equipment and the new teaching style. Consequently, the project management acted in a strong supporting role, linking with regional co-ordinators to enable testing of the various applications to be used during the pilots.
- REGIONAL PILOT KICK-OFF:
  During this phase all partners were involved in extensive contacts with the SME in their region ensuring that the technical infrastructure and equipment in the company was working correctly. As this process proved to involve a very steep learning curve both for the SMEs and the majority of training organisations, the process involved up to day 1 of the delivery of the pilot was considerably more time-consuming than originally anticipated;
- TRANS-REGIONAL KICK-OFF
  On March 25 1997 the Technical Working Group for the TaRgET project (made up of half of the total partnership) met via a transnational multi-point, continuous presence videoconference link. On March 26 1997 the Training Working Group for the project met also via a multi-point, continuous presence link. These links, which both tested the trans-regional distance learning platform for the first time and facilitated joint discussion on the progress of each region, were co-ordinated by the technical and project management team. The multi-point links were established using the bridging services of the Dutch Telecom company PTT.

Workpackage 8 - EVALUATION
Based on the evaluation criteria and mechanisms defined during WP 5 and 6, this workpackage has involved the evaluation of all aspects of the system, including training development and delivery effectiveness, costs, operational and technical effectiveness.

The evaluation information was then collected and anlalysed by the project management and integrated into ***Deliverable 7 - Pilot Platform Evaluation Report.***

Workpackage 9: Analysis and Final Reporting
The activities of workpackage 9 have involved analysing all the results of the project and identifying key considerations, lessons learnt and practical steps required to establish a cost-effective platform.

Also, the development of a business plan and analysis of how to progress from pilot phase to the full implementation of a trans-regional Euro-ISDN training and education platform to be used for the delivery of study programmes has taken place.
This workpackage culminated with the production of the last deliverable for the project - ***Deliverable 8 Final Report.***

3. PROJECT QUALITY CONTROL AND EVALUATION PROCEDURES

Each 3 months the regional co-ordinators were requested to submit overall progress and financial reports to the project manager. This process enabled close monitoring of regional activities.

Concerning the detailed technical and educational experiences of the pilots themselves, the project and technical management developed questionnaires to record the following:

- technical performance and outcomes of each videoconference;
- monthly trainer summary;
- trainee experiences (after the first month of training and at the end of the pilot).

The questionnaires (which can be found in section 4 of Deliverable 5) were made available to all partners and participating SMEs in November 1996. The forms were submitted monthly to the management team to enable ongoing analysis of the operation of the platform.

4. OVERVIEW REGIONAL PILOT PROJECT

4.1. Table 1: TaRgET Pilot Descriptions

Partner	SME	Nature of training
Sweden Swedish War College Bengt Kroon	NNP, which has 15 stores in the Lower Norrland region in Sweden	Basic management training to 15 NNP store supervisors Training Delivered in the Swedish language
	Saw mills, 9 Timber Companies in Jämtland in Sweden	Business English to sales personnel in timber companies. Training Delivered in the Swedish and English language.
UK Hertford Regional College Anna Malchow-Perryman	OCE	Basic maintenance. C & G, BTEC. Training delivered in the English
	Drake Electronics	Basic maintenance. C & G, BTEC. Training delivered in the English
	Paris Travel	Language training Training delivered in English and French.
Italy Associazione Centro Elis Michele Crudele	Libero Instituto Universitario Campus Bio-Medico, University in Rome.	Safety Rules/techniques on fire prevention. Training delivered in the Italian Language
Ireland RTC Tallaght, Dublin Pat Coman	MDS telephone systems	Electrical and mechanical skills development. Training delivered in the English language.
Belgium VIA Luk Indesteege	Borealis, plastics production plant, Beringen, Diepenbeek	Safety and responsibility care. Total Productive Management Training delivered in the Dutch Language.
UK NWIFHE Derry Robbie Hegarty	Total Engineering Design and install control systems in the chemical industry.	Amplifier design and digital techniques. Training delivered in the English Language.
Spain Camera Oviedo Barcelona Brendan Doyle	Ingenieria y Suministros Asturias Antonio Lopez	Language audit and training. Training delivered in the Spanish and English Language.
Netherlands Technology Centre Limburg Belinda Tanner	Textron Automotive LTD Polymer products production	To train production operators to become certified mechanical operators (VAPRO A). Training delivered in the Dutch Language.
Greece Greek Productivity Centre Dimitris Passouris	Hellenic Arms Industry S.A Arms Industry	Application Training Windows, Word, Excel. Training delivered in the Greek Language.
UK North Trafford College	Holt Lloyd Ltd. Process Industry.	Process operator training to recognised competence level. Theoretical basic training. Training delivered in English Language.

4.2. Table 2: Regional partner usage of the available applications

Site/Country	Application	Uses	Language Used
Sweden Swedish War College	E-Mail Videoconferencing	Communications Management training Language teaching Group meetings	Swedish, English
UK Hertford Regional College	E-Mail Videoconferencing	Communications Tutorials, Group meetings	English
Italy Associazione Centro Elis	E-Mail Video Conferencing File Transfer Application sharing	Communications Tutor/Student Teaching Sessions, Group meetings Tutor/Student Teaching Sessions Presentations	Italian, English
Ireland RTC Tallaght	E-Mail Videoconferencing	Communications Tutorials, Group meetings	English
Belgium VIA vzw	E-Mail Videoconferencing	Communications Tutorials Group meetings	Dutch, English
UK NWIFHE	E-Mail Video Conferencing	Communications Test Links, Teaching, Group meetings	English
Spain Camara Oviedo,	E-Mail Videoconferencing	Communications Group meetings	Spanish, English
Netherlands Technology Centre Limburg,	E-Mail Video Conferencing File Transfer Application Sharing Whiteboard	Communications Training Workshop, Demos, Group meetings Transfer of Presentations Demo Vocational Training	English, Dutch
Greece Greek Productivity Centre	E-Mail Videoconferencing Application sharing	Communications Student/tutor comms Group meetings Multimedia applications	Greek, English
Uk Western Connect	E-Mail Video Conferencing File Transfer Application Sharing	Communications Testing, Technical management Group meetings Project materials	English
UK North Trafford College	E-Mail Video Conferencing Application Sharing File Transfer Whiteboard	Communications Test, Tutorial, Group meetings Test, Practice Test, Practice	English

4.3. Table 3: Details of users involved in the pilot

Site/country	**Total no. of groups trained**	**Total number of Trainees**		**Total number of Trainers**		**VC SITES Total per session** (included trainer)
		Per group	Ratio trainer : trainee	Total	no. per session	
Sweden Swedish War College Bengt Kroon	1	15	1 : 15	7	1	16 different VC sites, connected with a bridge
	1	9	1 : 9	1	1	10 different VC sites connected with bridges
UK Hertford Regional College	1	3	1 : 1	1	1	2
Anna Malchow-	1	6	1 : 1	1	1	2
Perryman	1	3	1 : 1	1	1	2
Italy Associazione Centro Elis Michele Crudele	4	35	1 : 9 1 : 7 1 : 12 1 : 7	1	1	2
Ireland RTC Tallaght, Dublin Pat Coman	1	1	1 : 1	1	1	2
Belgium VIA Luk Indesteege	3	33: 1 x 8 1 x 3 1 x 22	1: 1	1	1	2
UK NWIFHE Derry Robbie Hegarty	1	1	1 : 1	1	1	2
Spain Camera Oviedo Barcelona Brendan Doyle	1	6	1 : 6	1	1	2
Netherlands Technology Centre Limburg Belinda Tanner	1	3	1 : 1	1	1	2
Greece Greek Productivity Centre Dimitris Passouris	1	10	1 : 1	1	1	2
UK North Trafford College	1	4	1 : 4	1	1	2
TOTALS	18	129		19		48

5. DESCRIPTION OF THE ESTABLISHED TARGET EURO-ISDN DISTANCE LEARNING PLATFORM

The evaluation of the TaRgET pilot activities was based upon the specific nature of the distance learning platform established during the project.

The selection of the platform was based upon the training needs as defined in Deliverable 1 *Needs Analysis Report* and as a result of a thorough technology evaluation conducted during Deliverable 2 *Technical Evaluation.*

During Deliverable 2, research into the European videoconferencing market was undertaken. Taking into account responses from questionnaires distributed to TaRgET partners to determine current technologies used and the applications required to conduct the training in the pilots, products from six manufacturers were obtained and their performance evaluated. The technical evaluation addressed the following factors: Availability; Functionality and Ease of Use; Standards Compliance; Hardware and Software Requirements; Peripherals and Costs.

The Technical management, in consensus with the regional co-ordinators, opted for the selection of the following equipment to form the basis of the platform:
- Nokia Mediastation 447k
- Digital Venturis FX5133 PC
- VCON Armada Cruiser 100 card

This videoconferencing system was installed in the majority of training organisations and participating SMEs involved in the regional pilots.

Slight regional variations to the standard platform were determined by partners specific requirements. VIA in Belgium received a Picture Tel unit for the participating SME. Due to the early pilot commencement date and large number of sites involved, at the start of the Swedish pilots a roll-about videoconferening system was used in addition to a PictureTel Live 100 desktop system.

Due to the low equipment budget available in the project, cost factors associated with the selection of the equipment played a central role. **The evaluation results are therefore specific to the particular platform established during the project as described above.**

6. EVALUATION

6.1. Suitability of the Training Subject Content

As part of the final evaluation procedure, each regional co-ordinator was asked to consider the following question:

Was the training subject content of your pilot suited to this delivery method?

The main areas of training delivered during TaRgET were as follows:
- Business English Language Training
- Leadership Management
- Health & Safety Regulations
- Basic Electronics and Process Operator
- IT Application Training

The main conclusions concerning the suitability of the training content were as follows:

a) Business English Language Training

Technical problems severely reduced the effectiveness of the language training courses. The sound quality provided by the standard system with half-duplex was the main cause of this reduced effectiveness.

It was noted that for language training, maybe more than any other subject, high sound quality enabling precise pronunciation is of utmost importance. Video quality was also regarded as being poor. Again, video quality was also viewed as being important particularly for language training as body language, facial expressions and for example, being able to see the position of the mouth clearly are important factors in the learning process.

During the Swedish pilot trainees became increasingly critical of the technology and quality of lessons after the delivery of the videoconference sessions was switched from the roll-about system to the desktop Nokia Mediastation.

Nevertheless, with reduced technical problems, improved organisation of the course and allowing more time for trainers and trainees to become accustomed to using the technology, the end conclusion from the pilots is **that Language training is suited to this delivery method albeit with certain limitations.**

Encouragingly, at the end of the Swedish pilot the head teacher of Business English commented that:

"the participants have received a greater self-esteem, a better vocabulary, and thereby have increased their communication skills in the English Language"

b) Leadership Management Training

The requirement to be able to stage structured discussions between the trainer and trainees was regarded as being an all important factor in the effectiveness of Leadership Management Training .

However, due to the sound delays encountered during the videoconferences and the fact that only a limited number of participants could communicate at a given time, discussions became stifled and not as dynamic as in a face-to-face learning scenario.

In conclusion, it was felt therefore that the subject content **Leadership Management was not suited to this delivery method** as too much discussion is required which is not easily facilitated by desktop videoconferencing. As noted by the co-ordinator:

"A clear majority (of users) could consider using this from of education again **if the subject was more concrete than matters of leadership".**

Further still, a large section of the Leadership Management course addressed the issue of business development and it was felt that the particular needs of the company and the employees should have been more explicitly addressed in the training.

c) Safety & Health Regulations Training

The contents of the Safety & Health Regulations course were obligatory for the employees to learn as it was teaching new standards imposed by the Italian government.

In conclusion, the regional co-ordinator commented that the **subject content was not suited to this delivery method** due to the fact that the content was *"scarcely interesting to the majority of the trainees, even though it was compulsory".*

Furthermore, the training situation created (the remote group following the training either in front of the 17" monitor or on a 200 x 200 cm screen) produced a rather "talking-head showing slides" scenario. This method is viewed as being suitable as long as the content is of interest to the trainees and the problem of simultaneous vision of slides and teacher is overcome.

In future use of this delivery method, the Italian partner noted that the nature of the training to be delivered will be more carefully selected.

d) Basic Electronics & Process Operator Training

The suitability of the content of Basic Electronics and Process Operator training was viewed as being reduced due to technical limitations of the established platform.

In addition to poor sound quality, the main technical drawback stemmed from the fact that the application sharing facility Farsite was much too slow. This meant that demonstrations of practical solutions, experiments, graphic images and multimedia applications were not effective.

The delay and lack of visibility of practical work meant that the quality of learning via this method was unsatisfactory. The fixed camera was also a drawback as trainers wanted to be able to look at students carrying out practical exercises.

Nevertheless, through the inclusion of external resources such as cameras, whiteboard and additional microphones and speakers, effective teaching methods were designed during the pilots. This activity improved the learning effectiveness (despite the fact that the basic platform had been almost totally bypassed).

In conclusion therefore, trainers believe that **with reduced technical problems desktop videoconferening is a suitable delivery method for this training** (particularly for use of mentoring and guiding trainees).

e) IT Application Training

In addition to the technical problems faced in the delivery of the basics and electronic and process operator pilots, the Information Technology pilot encountered further problems.

The man problem stemmed from the fact that when training using specific Microsoft applications such as Excel, the small lettertype and font size used in the applications were not visible during the videoconference sessions.

It is for this reason that increased video quality is required to improve the suitability of the IT Application Training.

6.2. Effectiveness of Teaching Method

Partners were asked from their regional experiences how effective was the teaching medium for:

a) mentoring and guiding trainees;

The general consensus amongst the partners was that the platform used in the pilot trials was most effective for mentoring and guiding trainees on a one-to-one basis as it provided the opportunity to have a “virtual look over the shoulder” of the trainee.

b) delivering ‘traditional’ lectures;

The platform was also perceived as being useful for delivering ‘traditional’ style lectures although the quality of the lecture was inferior to a face-to-face lecture.

The usefulness was seen as being more for practical, logistical and geographical reasons rather than pedagogical ones.

c) delivery of course materials/sending and receiving assignments/ administrative functions

In terms of delivery of course assignments and administrative functions the use of the system was seen as being satisfactory as technical problems and the costs involved reduced the advantages compared to more traditional methods.

6.3. Benefits and Disadvantages

Partners were asked the following question:

What are the benefits and disadvantages of this training method for both training organisations and SMEs?

The main benefits and disadvantages of this training method for both training

organisations and SMEs were perceived as follows:

Advantages

a) *Competitive Advantage* - Due to the new approaches adopted to the services of training and demonstration of products;

b) *Cost and Time Saving* - Reduced travel, access to geographically dispersed target groups, economic viability of training small groups, just-in-time training;

c) *Globalisation* - Possibility to offer training world-wide and have access to experts at 'low' cost;

d) *Staff Development and enhanced public image* (PR function).

Disadvantages

a) Technical problems

b) High investment required to train users

c) Lack of standardisation (multi-point videoconference calls)

d) ISDN costs too high (both initial investment costs and communication costs)

e) Reduction in social contacts.

6.4. Lessons Learnt

From the regional pilots, the main lessons learnt and recommendations to future training organisations planning this delivery method are as follows:

a) Ensure that the system and technology is tried and tested (is watertight) before being introduced to the company and the trainees;

b) Make firm agreements with the management of the company and ensure that the management is deeply committed to the methodology of training and that flexible work patterns are in place;

c) Establish a solid training environment in the company:
   - provide a quiet environment where trainees can train effectively;
   - ensure that the videoconferencing room is well-designed (lighting, back-drop; availability of additional cameras, microphones);
   - ensure that sufficient ISDN lines are dedicated for use during the training;
   - make alternative communication links available in case of loss of connection;

d) Provide thorough training to both trainers and trainees in the use of the equipment, and videoconferencing techniques.
   Allow sufficient time for users to familiarise themselves with the equipment and gain practical experience i.e. “learning by doing”;

e) Hold a face-to-face meeting with all people to be involved in the training (trainees, Trainers, company managers, tutors, evaluators) before the first videoconferencing training session;

f) Have one person available both in the company and training organisation who is skilled in using the equipment (to help with problem-shooting)

g) Motivate trainees and provide incentives to persevere with the technology

h) Conduct continuous evaluation of both the system and the user acceptance to ensure that problems can be identified and remedied at an early stage.

7.

PARTNER COMMENTS:
FUTURE PLANS/PERCEIVED WIDER COMMERCIAL AND MARKET POSSIBILITIES

During the final evaluation of the TaRgET project, partners were asked to comment upon the future plans of their organisation concerning the continuation of TaRgET-type training activities. Comments received from partners are detailed in Table 4.

Wider exploitation considerations are outlined in the Business Plan section of this Deliverable.

TABLE 4: Future Plans

Country	Partner	Future plans		
		To Continue Video Conferencing (VC) Training	**Development & Research Activities: VC possibilities and VC training materials**	**Other remarks**
Belgium	VIA	In the TaRgET pilot project company VC support continues to be used. Plan to organise VC sessions for more companies.	Development of VC projects and training material	Plan to publicise the results of TaRgET to draw attention of future customers
Greece	Elkepa	Plan to offer VC sessions to students and employees of companies	Transformation of the VC platform to Internet in combination with higher data transmission speed for interactive multimedia applications	Plan to train managers with the help of VC
Ireland	RTC	VC (inc. App. Sharing) training laboratory is being put in place to provide tutorial support for distance education programs	Application sharing is being further studied for applicability to remote access to tools and is also being evaluated for applicability for remote assessment and testing	Working on hybrid delivery technology, combining CD, ISDN and Internet
Italy	Elis	Continue to develop VC projects (K-12 projects) and use telepresentations for related projects . Deliver Informatics Course to classrooms located at different sites	Continue to test and improve different VC set-ups	Using VC as support for Teleworking. Use VC as an Aid for training the disabled
NL	TCL	Continue to develop TaRgET activities under approved projects under the ADAPT-BIS programme.	Plan to increase use of desk-top VC for training in SMEs	Plan to increase VC for Project management purposes Use VC as an aid for training the disabled
Spain	Camara Oviedo	Carrying out training audits in companies with the help of VC	Develop VC training programmes	
Sweden	NDC	The TaRgET company (NNP) will use VC in the future. Use VC for different kinds of short meetings e.g. to distribute information rapidly or short courses (2-4 hours)	Short tailor-made training courses	Use VC to Demonstrate new products to customers and suppliers. Access to national and international experts
UK	HRC	Organise VC activities for companies (12 SMEs in the region who want to engage in similar activities)	Continue to develop VC learning environment	
UK	NWIFHE	Offer this system under the European ADAPT-BIS Trades Project to SMEs	Training packages in Engineering, Business, Safety etc. with help of the VC platform	
UK	NTC	Continuing to market courses with the help of VC	To develop learning materials for use with the VC equipment. Plan to use these materials with local SMEs	

Partners were also asked to consider what they viewed to be the wider commercial and market possibilities of TaRgET-type training activities. Comments received are provided in Table 5.

TABLE 5: Perceived Commercial and Wider Market Opportunities

Country	Partner	Commercial and Wider Market Opportunities	
		Training	**Other remarks**
Belgium	VIA	Only commercially interesting when SMEs are already using VC for other purposes	VC might be a part solution to traffic congestion
Greece	Elkepa		Transformation of the platform to Internet Obstacles to be overcome: low data transmissions speed for interactive multimedia applications
Ireland	RTC	ISDN can have a role in mentoring & tutorials as a strand of a total commercial delivery capability if bandwidth issues are not present	Hybrid delivery technology is also likely to see a role for ISDN as one of the possible access strands Drawback - overhead cost of having a technician in SME to support VC sessions
Italy	Elis	Internal training for a company with different sites	Meetings or frequent briefing of individuals or small groups on new subjects: regulations, procedures, etc. Medical consultancy in remotes sites: telemedicine
NL	TCL	An effective medium for mentoring and guiding trainees	A cost-effective solution to solve the problem to free large numbers of staff for training Project management purposes and international project/business meetings
Spain	Camera	An effective medium for mentoring and guiding trainees and delivering course materials	Useful as a system in administrative functions and exchange of assignments
Sweden	NDC	Distance education (university and upper secondary schools)	Global projects with access to international expertise Global networks within schools Health and medical care
UK	NWIFHE	Develop a multi-point interactive VC conferencing system, delivering the same course to a number of different companies simultaneously	SMEs want to train employees at suitable times for the company
UK	NTC	Cost effective delivery of distance learning in many technology areas	

8. COST ANALYSIS

8.1 ISDN and Email Installation and Rental Costs

Concerning the actual costs involved in the establishment and operation of the platform (ISDN installation; ISDN rental costs; obtaining and monthly cost of an Email account), the experiences differed in each region.

The total project estimated pre-proposal costs for ISDN, Email and communication costs was 26.770 ECU. The approximate real costs were higher (although part of these costs were paid by participating SMEs).

The ISDN line installation fees were cheaper then estimated. However, the monthly costs were more expensive. The reason for this is that (for instance in the UK) communication costs are part of the monthly fee.

Email costs, both initial and monthly were higher then expected.

Table 6 illustrates the pre-proposal estimated and approximate actual costs incurred in each region.

Table 6 Installation and Rental Costs

TaRgET Pre Proposal Estimated costs and Approximate Real costs* (ECU)

Country	Partner	Pre Proposal Costs ISDN install free	Approx ISDN install fee	Pre Proposal ISDN monthly costs	Approx. ISDN monthly costs	Pre Proposal initial Costs Email account	Approx. initial Email account	Pre Proposal monthly costs	Approx. Email monthly costs
Belgium	VIA	227.00	250.00	30.26	30.00	15.00	120.00	10.00	53.00
Greece	Elkepa	170.00	95.00	33.98	16.00	15.00	-	10.00	16.50
Ireland	RTC	550.00	690.00	45.80	47.00	15.00	-	10.00	-
Italy	Elis	214.00	360.00	26.65	60.00	15.00	-	10.00	-
NL	TCL	218.00	140.00	24.24	25.00	15.00	15.00	10.00	15.00
Spain	Camara	245.00	68.00	40.78	23.00	15.00	-	10.00	-
Sweden	NDC	352.00	310.00	36.11	30.00	15.00	120.00	10.00	40.00
UK	HRC	492.00	418.20	34.44	74.57	15.00	38.45	10.00	23.00
UK	NWIFHE	492.00	164.00	34.44	37.00	15.00	90.00	10.00	8.00
UK	NTC	492.00	600.00	34.44	144.00	15.00	-	10.00	-
UK	WC	492.00	568.00	34.44	40.00	15.00	35.00	10.00	14.20
Total		**3.944.00**	**3.663.20**	**375.58**	**526.57**	**165.00**	**418.45**	**110.00**	**169.70**
Average		**358.55**	**333.02**	**34.14**	**47.87**	**15.00**	**69.74**	**10.00**	

* NB: standard rates which do not take into account volume discounts or special offers

Table 7 Videoconferencing Communication Costs									
TaRgET	**Pre Proposal Estimated costs and Approximate Real costs* (ECU)**								
Country	Partner	Pre Proposal VC training hours	Approx.*2 VC training Hours	Pre Proposal Icosts VC training	Approx.* costs VC training	Pre Proposal VC hours spent Transnat.	Approx. VC hours spent Transnat.	Pre Proposal * Transnat. VC Costs	Approx. Transnat. VC Costs
Belgium	VIA	67	85	924.60	1.173.00	3	4.0	186.00	
Greece	Elkepa	36	87	46.80	113.10	3	5.0	165.00	
Ireland	RTC	25	32	555.00	710.40	5	8.0	490.00	
Italy	Elis	18	35	46.80	91.00	7	5.0	504.00	
NL	TCL	33	35	108.24	114.80	12	11.0	828.00	
Spain	Camara	25	39	84.50	131.82	5	4.5	305.00	
Sweden	NDC	105	54	0.00	1.860.00	5	10.0	290.00	
UK	HRC	27	17.5	155.25	100.63	3	2.0	117.28	
UK	NWIFHE	45	59	315.00	413.00	5	3.0	450.00	
UK	NTC	27	20	189.00	140.00	3	7.0	270.00	
UK	WC	0	0	0.00	0.00	12	10.7	1.080.00	
Total		**408**	**463.5**	**2.425.19**	**4.847.75**	**51**	**70.2**	**4.685.28**	**4.576.00**
Average		40.80	46.35	242.52	484.77	7.5	7.35	633.00	
						hours	hours		
1. standard rates which do not take into account volume discounts or special offers									
2. includes testing, train the trainer/trainees, as well as real VC + mentoring training hours									

8.2 Videoconferencing Communication Costs

The hours spent on training or mentoring with the help of Video Conferencing ranged from 17,5 hours (minimum) to 87 hours (maximum). The average amount of time spent on training was 46,4 hours.

The pre-proposal estimated number of hours allocated for Video Conferencing was 408 hours in total. Most partners spent more hours than estimated, only three partners spent less hours due to problems with the equipment. The hourly VC communication costs for the delivery of the training were higher than expected.

Platform cost analysis has shown that the overall communication costs encountered through the staging of the local and international videoconferences were lower than estimated at the start of the project.

However, on a regional level, due to the use of multi-point bridge facilities and distances between certain training organisations the participating SMEs, the actual costs in certain regions were higher than envisaged.

This was evident particularly in the Swedish pilot due to the use of a bridging facility to connect different Video Conferencing sites. In Belgium local communication costs were high due to the fact that VC links between the training organisation and the SME were not classed at local rates (and a lot of hours for mentoring and training by VC were used). Also, in Ireland the real costs were higher than expected due to the high communication costs.

Nevertheless, the transnational videoconferencing communication costs were lower then expected. (despite the fact that an extra 19 hours were spent during the project on transnational Video Conferencing communication). In particular, the price of the multi-point connections was cheaper the envisaged.

Table 7 outlines the pre-proposal estimated costs and the approximate actual communication costs incurred in each region.

8.3 Personnel Cost Considerations

For all partners, the amount of time required for the installation of the required technical infrastructure, organisation of the pilots and training and familiarisation in the use videoconferencing equipment was much greater than envisaged.

Further still, it was noted in a number of regions that both at the training organisations and the SMEs it was necessary to have a technician present during the videoconference links to assist with any problems.

It is for these reasons that much higher personnel costs were encountered during the project than originally allocated. However, all partners were prepared to make this

commitment as the TaRgET project activities were viewed as being an invaluable investment for the future.

9. OVERALL CONCLUSION

Since its commencement on 1 April 1996, the TaRgET project has realised significant achievements. All members of the project management team and regional co-ordinators have strived to obtain maximum progress within the project life-cycle.

In total, 184 users (including trainees, trainers and other staff from the regional co-ordinator organisations and participating SMEs) based in 8 European countries have been involved in the project.

The challenge to determine the elements of, and then develop a trans-regional distance learning platform and deliver training to SMEs via Euro-ISDN was not an easy one to meet. This was particularly so given the fact that the majority of the training organisations did not have the technical

infrastructure or experience of delivering training using desktop videoconferencing. Furthermore, none of the SMEs involved in the pilots had the available technical infrastructure or previous experience of receiving training via such innovative methods.

The evaluation of results of the TaRgET project as outlined in this Deliverable are specific to the particular nature of the basic platform established in the majority of training organisations and SMEs (Nokia Mediastation 447k, Digital Venturis FX5133 PC and VCON Armarda Cruiser 100 card).

In conclusion, both trainers and trainees were open to the technology despite technical problems during the delivery (which somewhat reduced acceptance levels for a period).

Not all of the subjects delivered during the pilots were considered as being suited to this delivery method. This mainly stemmed from the fact that either too much discussion was required (Leadership Management) or the actual topic of the training was not stimulating (Safety and Health Regulations).

Technical problems and limitations associated with the platform somewhat reduced the perceived suitability of other subjects during the pilot trials. However, with reduced technical problems and the inclusion of external resources (such as cameras, whiteboard and additional microphones and speakers) effective teaching methods were designed which improved effectiveness of delivery (despite the fact that the basic platform had been almost totally bypassed).

As a result, trainers involved in these pilots (Language Training, Basic Electronics, Process Operator Training and IT Application Training) concluded that with reduced technical problems, desktop videoconferencing is a suitable delivery method.

Concerning the cost analysis, communication costs were lower than foreseen however costs involved in the establishment and operation of the platform varied.

The personnel costs involved in the project have been much higher than envisaged due to the very high amount of time required for the installation of the technical infrastructures, organisation of the training and the time required for users to familiarise themselves with the equipment. However, all partners viewed the activities of the project as being a valuable investment for the activities of their organisation in the future.

In hindsight, a higher equipment budget allocation would have increased the choice of the basic platform to be established which may have resulted in improved technical effectiveness of the platform.

Despite the problems encountered during the pilot the majority of the 184 users involved in the pilot would be willing to deliver/receive training via this method in the future.

Furthermore, all of the training organisations involved plan to exploit the experiences of the TaRgET project and expand such training activities in the future.