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ABSTRACT

This report translates results and findings of the intensive field work research carried out by the DELILAH consortium into practical guidelines for managers and designers of distant (vocational) training for corporate settings. Based on practical experiences of ISVOR-FIAT the guidelines are illuminated with a description of actual examples of three distinguishing distant training arrangements: a learning centre, video-conference courses and business television.

The guidelines are produced in a printed and a digital version:
· a printed guidebook
· an online version (delivered under the internet homepage of the sfs and of DELILAH)

The digital version is illuminated with (hyper-)links, leading through the guidebook and selecting the relevant indicators and information step by step, combining relevant aspects with each other and switching or "surfing" easily between them.

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1 Guide for the Reader

The guidelines for *Di*stant *L*earning *A*rrangements for *C*orporate *T*raining *(DiLACT)* intend to be a practical and pragmatic guidance for enterprises or other institutions to decide, what kind of distant learning arrangement (especially open learning centre, video-conference, business television) should be **chosen** under specific conditions and prerequisites for **corporate training settings**. Furthermore the indicators for the choice of a specific arrangement are the "fundamental building blocks" for **designing** the concrete learning environment.

Therefore these guidelines are targeted as well at **managers** and at **designers** of continuous vocational training in a corporate setting. They might be also useful for the evaluation and assessment of learning results and the supporters of computer based learning arrangements.

The guidelines will assist

(a) decision makers and managers to select and combine relevant technologies, training contents and learning strategies;

(b) the designers of these learning arrangements to create adequate learning paths, pedagogical methods and support possibilities.

The guidelines will help to choose and create the specific learning arrangement for specific qualification needs adjusted on the specific capabilities of the enterprise or institution. The definition of typical qualification needs will refer to **three distinctive models** for distant learning arrangements in corporate training settings, with different components and a different range of application possibilities:

1. a **learning centre** as an example of an integrated learning approach, covering every possibility of distant learning and combining it with "traditional" learning capabilities, putting a strong focus on *individual* learning strategies; including self-instructed learning with "multimedia": computer based learning (online or offline), video-conferences, business television, but also (hand-)books and other "traditional" literature (e.g. encyclopedia, dictionaries);

2. **video-conferences** for vocational training with high demands on the pedagogical instrumentation and *interactive* learning;

3. **business television** as a simple possibility with a wide range of dissemination and a very low grade of interactivity (*receptive* learning).[1]

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1 Business Television is not "innovative" in the strict sense, for the technology is in existence for several years. However, satellite transmission and the internationalisation or globalisation of enterprises and markets make this technology more and more useful for particular training courses and contents. Even nowadays this technology is more a matter of large companies, it might be interesting for small and medium sized enterprises (networks) as well in the future. Furthermore there are "innovative" possibilities to combine business television with interactive communications (telephone-, online-hotlines etc.).

In respect to the findings of the DELILAH project (see the description below) *DiLACT* generates a **permanent information system** in the form of a (printed and digital) handbook, flexible and open for updates relating to new developments. Beyond the chosen range of distinctive examples for distant learning arrangements the guidelines will hopefully become a tool to design almost other innovative new learning arrangements as well, to create innovative learning environments, to give help for autonomous learning and the stimulation of collaboration between learners.

All in all the guidelines for *Di*stant *L*earning *A*rrangements for *C*orporate *T*raining *(DiLACT)* are:

1. process oriented,
2. context-related,
3. theoretical and empirical founded,
4. business-like and pragmatically designed and tested,
5. helping to define starting points in solving problems,
6. helping to develop strategic and operative objectives,
7. reflecting the background of recent existing innovations,
8. referring to the development of the "learning patrimony"[2].

The guidelines will give practical advise emerging from empirical (action) research. Nevertheless the theoretical background will be referred to if relevant. The manual is starting with the aims and objectives of the guidelines, completed in brief by the theoretical and empirical background (the DELILAH project). Overarching guiding principles, specifications and prerequisites are referred to before the fundamental building blocks and the critical factors for distant learning arrangements are listed up in form of a checklist and decision guidance. Before the distinctive description of the three different learning arrangements (learning centre, video-conference and business television) begins the underlying relevant qualification needs and the relation to the different types of learning solutions will be examined.

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2   The learning patrimony is a central concept of DELILAH concerning the analysis of cross-national and cross-sectoral differences and developments. For further explanation and descriptions see deliverable 1 of the DELILAH project. See also chapter 3.

2   Aims and Objectives of the Guidelines

The general aim of the guidelines is to create a criteria catalogue in the form of a "checklist" to decide, what kind of (technology based) learning arrangement should be chosen for a given training deficit, what kind of organisational framework and pedagogical support is necessary and so on. Scenarios and arrangements of corporate distant learning settings will be shown in order to:

1. select adequate learning contents,
2. combine them with the needs of the relevant target groups,
3. choose the right technology,
4. identify the necessary prerequisites,
5. involve effective corporate settings,
6. develop adequate learning and support strategies,
7. design a learning path for the learner,

for the purpose of facilitating the selection and design of an effective learning *configuration*.

The guidelines refer to the growing necessity of cooperation and networking and might stimulate more vocational training in corporate settings:

1. within large companies and their plants (worldwide)
2. between small and medium sized enterprises (qualification networks)
3. between large companies and small and medium sized enterprises (knowledge transfer through qualification networks with suppliers, dealers etc.)
4. within and across different branches (for sector independent qualification contents like basic or key-qualifications, multimedia competence, organisational development, continuous developing processes etc.).

3 Theoretical and Empirical Background of the Guidelines (The DELILAH Project)

In recent years economic development, reflected in changing labour markets and an increasing demand for new skills and new flexibility in education and vocational training, in conjunction with advances in information technology and telematics infrastructures, has precipitated the expansion of computer based (distant) learning and training applications. The perceived benefits from the application of new technologies to education and training focused on an increasing access to education and training provisions, enhancing the adaptability of the workforce through flexibility and "just in time" delivery.

The interdependency between organisational and technological innovation is creating new potentials for computer based networking and learning. New telecommunication possibilities effect value added training capabilities, which are able to face the demands and necessity of organisational needs as well as the flexible adaptation of "constant change" within continuous improving processes.

Working in a rapidly changing environment (technology, organisation and qualification), certain factors are to be emphasised concerning the background and content of vocational training:

- customer and service orientation (sales and post-sales training, improvement projects, training and education as well as assistance in the field and the implementation of methodologies)
- innovative programs for the integrated factory (e.g. lean production)
- network organisation, integrating various organisational levels of systems and methodologies (planning and reporting systems, quality, improvement, process reengineering); co-operation with other enterprises (suppliers, dealers, strategic networks)
- internationalisation (professional, managerial and technical development, integration of local resources, improvement of skills of managers operating international)
- permanent training (lifelong learning)
- dissemination of company know-how.

Progress in technology, the "global information age" and changes in learning lead to needs and opportunities to supplement new, flexible, distant and continuous training systems. Training and re-training are needed to support:

- new product introductions
- job skills training, higher skill levels demanded by new jobs
- advanced education and training, in both (technical and non technical) subjects
- management development
- customer orientation

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- the increasing flexibility and ability to handle "constant change".

Learning Innovations and Learning Applications (The DELILAH Project)

Innovative computer based distant learning and training arrangements effect new opportunities to provide demands of "constant changes". The DELILAH project (Designing and Evaluating Learning Innovations and Learning Applications), funded by the European Commission within the Targeted Socio-Economic Research (TSER) programme, was created on this ground. For this guidelines prototype models of distant training configurations were investigated in the frame of the DELILAH project. These can be regarded as "best practice" models for the creative combination of technological and conceptual interdisciplinary development of training possibilities in corporate settings.

Within DELILAH learning innovations were evaluated and designed, involving both "traditional" and telematic-based learning applications. On the basis of twenty case studies in four sectors and five countries and in collaboration with four research- and test-sites innovative models, methodologies and tools for supporting and evaluating education and training innovations were developed, particularly using information and communication technologies. Five research institutes provided, within an action research user-led approach, technical assistance, know-how and expertise to the education and training initiatives involved in the project, and to the wider policy constituency.

The collaborative DELILAH project focused on cross-sectoral and cross-national comparisons as well as on theoretically determined and practical-relevant results. The contents, sectors, research institutes and test sites as well as the main research themes of DELILAH are summarised in the following graph.

Within DELILAH the Sozialforschungsstelle (Social Research Centre) Dortmund was in co-operation with the test site ISVOR-FIAT[3] responsible for the sector of distant vocational training in corporate settings. The guidelines were assessed and developed in the DELILAH-project, especially in co-operation with the test site ISVOR-FIAT. Based on the technological possibilities of FIAT Auto three main innovative distant learning configurations were designed and proved by ISVOR-FIAT, building the background for these guidelines:

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3   ISVOR-FIAT is a "education service company, providing training and consulting activities" to enterprises. It was founded 1978 in Torino as a member of the international acting FIAT-GROUP to support the FIAT-GROUP policies of organisational and managerial changes and to develop human resource skills. These guidelines are based on information, documents, presentations and discussions with the responsible consultants of ISVOR-FIAT. Special thanks to Luisella Erlicher, Federica Garbolino, Ezio Fregnan and the Instructional Design Department Manager Luciano Battezzati as well as to Dr Mauro Mander (University of Torino, Evaluating and Assessment Project of ISVOR-FIAT´s distance learning projects) and the tutors and the personnel manager of the Cassino Fiat Auto Plant.

Graph 1: Research Themes, Research Institutes and Test-Sites of DELILAH (Designing and Evaluating Learning Innovations and Learning Applications)

Project-Coordinator: The Tavistock Institute - London			
The Tavistock Institute (TI) London	**Sozialforschungsstelle (sfs) Dortmund**	**Universitat Oberta de Catalunya (UOC) Barcelona**	**European Centre for Work and Society (ECWS) Maastricht**
Combat Against Social Exclusion	*Corporate Vocational Training*	*Open and Distance Learning in Higher Education*	*Open and Distance Learning in Primary and Secondary Education*
Educational Needs of Excluded Groups	*Continuous Vocational Training in Corporate Settings*	*Teaching Methods, Roles and Attitudes within New Forms of Flexible and Distance Education*	*Introduction and Institutionalisation of Pedagogic Innovations*
Manchester Metropolitan University	**ISVOR-FIAT**	**Universitat Oberta de Catalunya**	**University of Amsterdam - Faculty Educational Science**
Manchester	**Torino**	**Barcelona**	**Amsterdam**
Foundation for Research and Technology - Hellas (FORTH) Heraklion (Crete)			

- **business television**: a cycle of training units about trouble-shooting problems, addressed to FIAT Auto dealers in Italy (December 1996)
- **video-conferencing**: training courses transferred via video-conferencing addressed to five factories simultaneously connected via telecommunication (ISDN), (first course in October 1996)
- **learning centre:** self-managed learning centre for the employees of a FIAT plant in the South of Italy, co-ordinated by and connected to a central site as an education and training, information and know-how centre, including cultural, social, economics and technical contents (start in January 1998).

In reference to the findings of the twenty cross-national and cross-sectoral case studies[4] made within the DELILAH-project four sector-specific tools were developed, in this case guidelines for (continuous) vocational training in corporate settings. In respect to the DELILAH-project the following results (differentiated in tensions, opportunities, constraints and social exclusion)

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4   These sectoral case studies of education and training innovations referred to crucial social, cultural, economic, organisational and pedagogic factors. Technological aspects were subordinated and among others seen as one component of the learning arrangement.

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have to be mentioned in relation to the learning innovations for corporate vocational training.

Tensions

⇒ As described in the DELILAH project the **relevance of national learning patrimonies** is evidently shaped by economical matters.[5] The learning patrimonies (especially influencing the national educational sector) have been reconsidered in the light of an economic rationale and become more and more economically driven. For some countries this may be acknowledged to be a permanent characteristic of their respective patrimony. For others this economical emphasis, which demands a more practical knowledge, it is a new element not present in the traditional learning patrimony - induced by a new set of public policies, whose effects seem to have long-lasting, secondary effects. It is clear in this respect, that not only the countries, whose learning patrimony is more directly related to this liberal-humanist tradition but also those more pervaded by a vocationalist tradition are being influenced by contextual changes - namely in the economy and in public policy.

⇒ But within the economic sector and for corporate training **organisational efficiency and cost-effectiveness are** (and this is very different from the other sectors of DELILAH "disadvantaged groups", "primary and secondary education", "higher education") **evidently relevant** indicators. Individual and cultural development could be also of interest, if they are in congruence to the economical objectives of the enterprises (see the concept of ISVOR-FIAT for an open learning centre described later).

⇒ The (continuous) updating of qualification demands more **middle- and long-termed qualification strategies** instead of reactive strategies or a short-termed fulfilling of actual needs. While a lot of big companies (like FIAT) are taking this into account, especially in small and medium sized enterprises qualification gaps are still filled when recognised, no prospective orientation takes place.

⇒ More and more "indirect" cost-effectiveness has to be taken into account: The **elaboration of basic or key-qualifications** for further flexible and self-instructed adaptation of qualification gaps, a higher intrinsic motivation for more efficiency and quality, etc. Therefore the motivation and the capability for self-learning has to be demanded and supported.

⇒ Productive tension are coming from new policies and market necessities. Partnership and network are more and more important. **Corporation instead of competition for the sake of qualification** is becoming an increasing relevance. Pu-

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5 For the concept and relevance of "Learning Patrimonies" see Frade a. o. 1996.

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blic-private-partnerships for the enrichment of general education (multimedia competence, key-qualification) and for the combat against social disadvantage are necessary. Qualification networks and other networking platforms could especially help small and medium sized enterprises to overcome times of upheaval.

⇒ **Access to qualification becomes** more and more **a selection criteria** and a benefit for the employees (see "social exclusion").

Opportunities and Constraints

⇒ The deployment of information and communication technology (especially value-added applications) gave the sector of corporate training a creative initiation. **New (complementary) training techniques** and possibilities are increasing.

⇒ Constraints for innovations are referring to the **necessity of "multimedia competence"**. Currently there is no qualification background given from the educational sector, every hierarchical position and age group has sooner or later to get this kind of basic qualification not to be dropped out.

⇒ Constraints and opportunities related to the information and communication technology are dealing with useful and **added value applications** (almost complementary, not substitutive), the creation of innovative possibilities and dependent from the contents of the training courses.

⇒ Further constraints and opportunities are emerge from the **interdependence between technology, organisation and qualification**. Technology, organisation and qualification have to go hand in hand, fit each other. Especially the interdependency between **organisational development** (re-organisation, the integration of different activities in one workplace, continuous improvement processes etc.) **and qualification** are corresponding. Continuous vocational training is an important part of continuous organisational development and vice versa (see graph 2).

⇒ Pedagogy related constraints and opportunities mainly affect **support structures** with a growing emphasis on the tutor/trainer assistance, the role of the teacher/tutor, self-learning approaches and the changing learning contents and demands (networking, basic/key qualifications). These new pedagogic demands will indeed change all in all and step by the step the learning patrimony.

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Graph 2: The Magic Triangle of Corporate Training

```
                          TECHNOLOGY
                       up-to-date competence
                 user needs oriented implementation

                              ↓

                         CORPORATE
                          TRAINING

                     ↖              ↗

        ORGANISATION                    QUALIFICATION
         reorganisation          continuous updating of competence
          cooperation             enrichment of key-qualifications
```
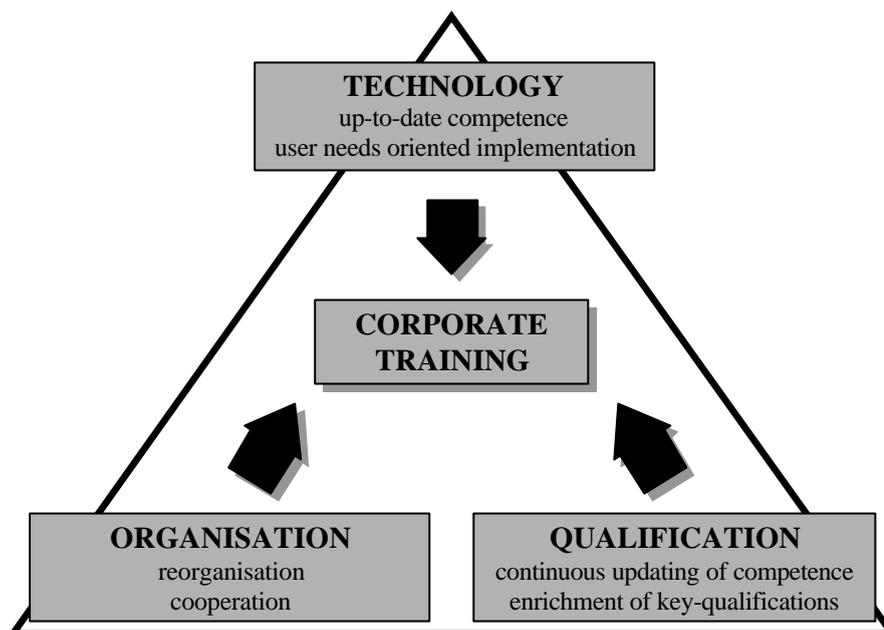
Training Access and (Social) Exclusion

⇒ Last but not least the aspect of (social) exclusion or access to learning/training possibilities has to be paid respect to and kept in mind concerning further developments: The **gap between lower and higher skills** increases, the recent more secure positions and more qualified employees could make more benefits from new training facilities, looser are low skilled workers, elder employees and nevertheless the unemployed. Employees which are older or lower skilled find themselves marginalised, if not excluded from training opportunities, especially from training innovations. They have difficulties to participate, this might be also related to the "learning patrimony" of the economic sector: no investigation in "human resources" that do not guaranty "profit". Emerging problems are pushed to the public sector. Public-private-partnerships are a possible and necessary way of dealing with these problems right from the beginning. Public-private-partnership or concerted co-operation between the public administration and the economic sector to fight against social exclusion are necessary. Not only for the sake of combat against social exclusion, but also for a general "multimedia competence" and the capability for self-instructed life-long learning on the one hand and a better cultural understanding and communication in a global world, to provide a wider platform for social and cultural exchange (even and especially in the economic sector).

4 Overarching Guiding Principles

Because of the rapidly changing environments (technology, organisation, qualification), overarching guiding principles for vocational training have to be emphasised and taken into account for distant learning and training arrangements in general:

⇒ learning as an **ongoing process**: permanent continuous managerial and technical vocational training for "learners" (managers, clerks, workers) as well as an ongoing learning processes for the trainers and for the company as a learning organisation as well

⇒ a wide range of **comprehensive contents** for vocational training, training for integrated processes ("integrated factory")

⇒ the design of a **comprehensive approach**, emphasising learning **strategies** and **systems**

⇒ integration of **new technologies as a tool to optimise training solutions**, the effective use and combination of technologies (multimedia mix) in a learning system (not a summary of single eclectic courses).

On this background - and to be more concrete - training needs and their determined demands could be summarised in a learning paradigm as follows:

Table 1: Learning Paradigm
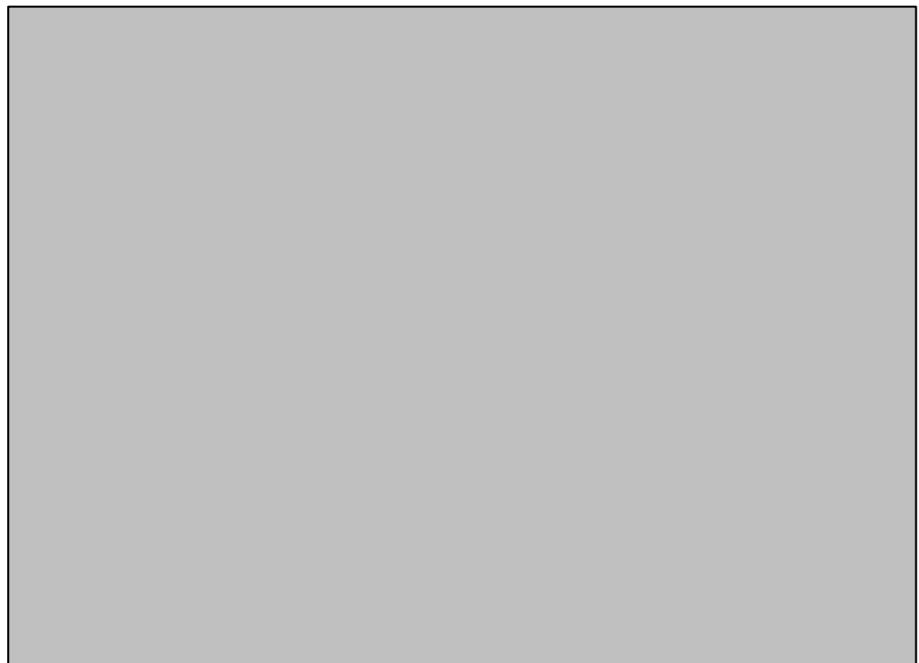
Continuous vocational training has to be seen as a **continuous improvement process** for the adjustment of technological, content and pedagogical components. A **continuous evaluation** of learning and cost effectiveness has to be an integrated building block as well.

For managing constant change and coping continuous improvement the **willingness and competence of the employees** for continuous learning and vocational training is essential. Recently, it has become evident, that there is a growing pressure on the employees for permanent, self-initiated learning and vocational training (even for unskilled workers). All these necessities will have a great influence on social life, especially by blurring the boarders of work and leisure, but also by infecting the (national) "learning patrimonies" as well.

To support self-learning activities a strong involvement of **learner oriented** or **social aspects** is necessary:

- commitment of user needs
- balancing the needs of managers (efficiency, cost-effectiveness) and learners (participation, motivation)
- the consideration of social aspects, creating of a social atmosphere (for the learning situation)
- simple and clear transfer of knowledge
- stimulating the processing of learning contents, associated with a pedagogical demanding design
- close relationship between trainers and especially tutors/supporters on one hand and learners on the other hand.

For the continuing realisation and adjustment of qualification an increasing flexibility and ability to handle "constant change" is required from the employees:

$\Rightarrow$ the enhancement of life-long learning
$\Rightarrow$ continuous and flexible training on the job
$\Rightarrow$ continuous upgrading of skills
$\Rightarrow$ a widening of the "knowledge base" for personal ("key-qualification") and professional development as well as a wider knowledge platform for cultural and social exchange
$\Rightarrow$ learning how to learn (self-instructed learning)
$\Rightarrow$ combining entrepreneurial and individual objectives.

5   Specifications - Prerequisites

Specifications and prerequisites for corporate training have to be determined and defined before the attempt for the implementation stage of a distant learning arrangement. Thus, one should concern oneself with the following:

⇒   the management of the company or institution has to be continuously involved and convinced of the added values of distant learning

⇒   company internal resistance has to be paid attention to

⇒   specific internal know-how for the planning, designing and proceeding of vocational training has to be identified

⇒   external know-how has to be embraced and integrated

⇒   interdisciplinary teams have to be put together

⇒   the technological equipment has to be checked and enhanced

⇒   the required pedagogical know-how and demands have to be examined

⇒   the relevant qualifications of the learners have to be discovered

⇒   the qualification deficits have to be worked out for the training sessions.

Although the specifications and prerequisites are dependent on the specific learning arrangements and therefore they have to be specified within the description of the actual learning arrangements later (learning centre, video-conference, business television), a few overarching requirements should be mentioned and obtained:

- the generation of a training as a learning **system**
- relevant environment factors for choosing learning technologies
- support demands
- evaluation, assessment, monitoring
- corporate settings
- new learner profile.

The Creation of a Learning SYSTEM

A learning **system** has to be created - consisting of different parts, that have to fit each other. To create a "learning system" the following prerequisites, components and steps have to be checked:

- know-how acquisition, improvement of performance level
- needs analysis: processes, skills, knowledge
- learning environment
- multimedia facilities, technological equipment
- facilitators: teachers, tutors, promoters
- evaluation, monitoring and assessment systems.

Due to its complexity, distant learning arrangements with all the different components should be made co-operative within **in-**

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terdisciplinary teams of almost every profession needed (technicians, trainers, educators, managers, etc.). Although the communication and co-operation between different professions (especially between technicians and educators) is sometimes very difficult, these diversified areas of expertise have to work together to construct a learning system or arrangement with compatible contents, courses and learning materials. For the acquisition of know-how the balance between external experts and internal trainers/teachers (attachment and transfer of external know-how) should be decided on the base of "make and buy" training (innovations). External competence, technical know-how and support (technological supply and technical experts) should be integrated if necessary and to improve internal capabilities.

The added values of distant learning technologies can only be realised within **appropriate social and pedagogic arrangements**. Therefore, within the learning system the didactic path has to be well designed and the monitoring and support of the learning process have to be well defined also. The learning arrangement has to balance and include phases of learning, exchange, reflection, deepening/studying and practising. Doubts, questions and problems have to be cleared in interactive and co-operative learning, supported by experts or tutorial assistance.

For the learning arrangement it is **important to have connection points or interfaces between the training institution and the corporate settings** (companies/plants): interface or project leaders, tutors, profession leaders, client leaders, know-how engineers (information managers, identifying knowledge gaps).

Environment Aspect are Relevant for Choice of the "Right" Technology

The balance between "traditional" and technology based arrangements should be characterised by the **value added combination** of different components, running the learning system. Within distant training arrangements information and communication technologies are fundamental, "traditional classroom arrangements" are integrated if useful, but they are only marginal and additional within distant training.

The choice of the appropriate technology and the compatibility to the objectives of corporate training is very important. Different **environment aspects should be considered** in choosing the suitable learning technology:

- the level of communication and interaction between trainers and participants, between the participants
- the level of the necessary use of technology
- the level of technological interaction and the communication range
- the number of involved participants and plants
- the kind of didactical objectives and the nature of learning contents

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- the organisation of learning, the organisational culture of the company
- the level of competence on specific contents (from a low up to a high level of experience)
- the familiarity with the technology
- the investment costs.

In the graphs that follow, the position of the relevant technology has to be understood as an example. Its real rank is depending on the capabilities of the target groups and the contents of the training. The conventional learning arrangement "traditional class room" is set of as well as the relevant examples described later. The other learning possibilities are beneath the already mentioned inherent probabilities of a learning centre.

Graph 3: Environment Aspects for Training Arrangements (I)

1. communication between trainer and participants

low ●——● high

| manual | audio-conference | desc top conference | traditional class room |
| CD-Rom | internet | business television | video-conference |

- -

2. communication between participants

low ●——● high

| manual | audio-conference | desc top conference | traditional class room | |
| CD-Rom | business television | internet | | video-conference |

- -

3. technology use

low ●——● high

| manual | audio-conference | desc top conference | internet |
| traditional class room | business television | video-conference CD-Rom | |

- -

4. number of involved plants

| | video-conference | | business television internet manual |
| traditional class room | desc top conference | audio-conference | CD-Rom |

●——●

| 1 | 4 | 12 | 100 or more |

- -

5. number of participants

| desc top conference | traditional class room | audio-conference | video-conference | manual | business television internet CD-Rom |

●——●

| 1 | 30 | 100 | 1000 | 2000 and more |

Graph 3 (continued): Environment Aspects for Training Arrangements (II)

6. number of user per location

few ●—— 4 ————————— 10-15 ———————————————— from 15 on ●● much

desc top conference

traditional class room

audio-conference

business television

manual

video-conference

CD-Rom

internet

7. kind of didactical objectives

cognitiv ●——————————————————————————————● operativ

manual

business television

desc top conference

traditional class room

audio-conference

internet
CD-Rom

video-conference

8. kind of didactical contents

general and trasversal ●——————————————————————————● specific

business television

manual

traditional class room

video-conference

desc top conference

CD-Rom
internet

audio-conference

homogenous ●——————————————————————————● different

business television

desc top conference

traditional class room

manual
CD-Rom

video-conference

audio-conference

internet

consolidated ●——————————————————————————● in continous evolution

manual

desc top conference

traditional class room

CD-Rom

video-conference

business television

audio-conference
internet

practical ●——————————————————————————● abstract

traditional class room

manual

desc top conference

CD-Rom

internet

business television

audio-conference

video-conference

9. organisation of learning

individual ●——————————————————————————● in groups

manual
CD-Rom

audio-conference

traditional class room

video-conference

business television

desc top conference

internet

10. organisational cultur

vertical hierarchical ●——business television / traditional class room / manual CD-Rom internet / audio-conference / desc top conference / video-conference——● **horizontal professional**

11. familiarity with the technology

low ●——internet / video-conference CD-Rom / desc top conference / business television / audio-conference / manual / traditional class room——● **high**

12. level of technological interaction

low ●——manual / traditional class room / audio-conference / business television / desc top conference / video-conference / CD-Rom / internet——● **high**

13. communication area

traditional class room / desc top conference intranet audio-conference / manual CD-Rom / internet video-conference business television

communal — **regional** — **interregional, national** — **European** — **worldwide**

14. investment costs for the starting equipment, technological and didactical support

low ●——manual / traditional class room / audio-conference / internet / desc top conference / video-conference / CD-Rom / business television——● **high**

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The decision for a traditional or a distant learning arrangement is very much dependent on the **cost-effectiveness**. As the costs of traditional setting are increasing with the number of participants, it is quite constant on a once designed distant learning course.

Graph 4: Cost-Effectiveness of "Traditional" and Distant Learning Arrangements (e.g. Video-Conference, Business Television)
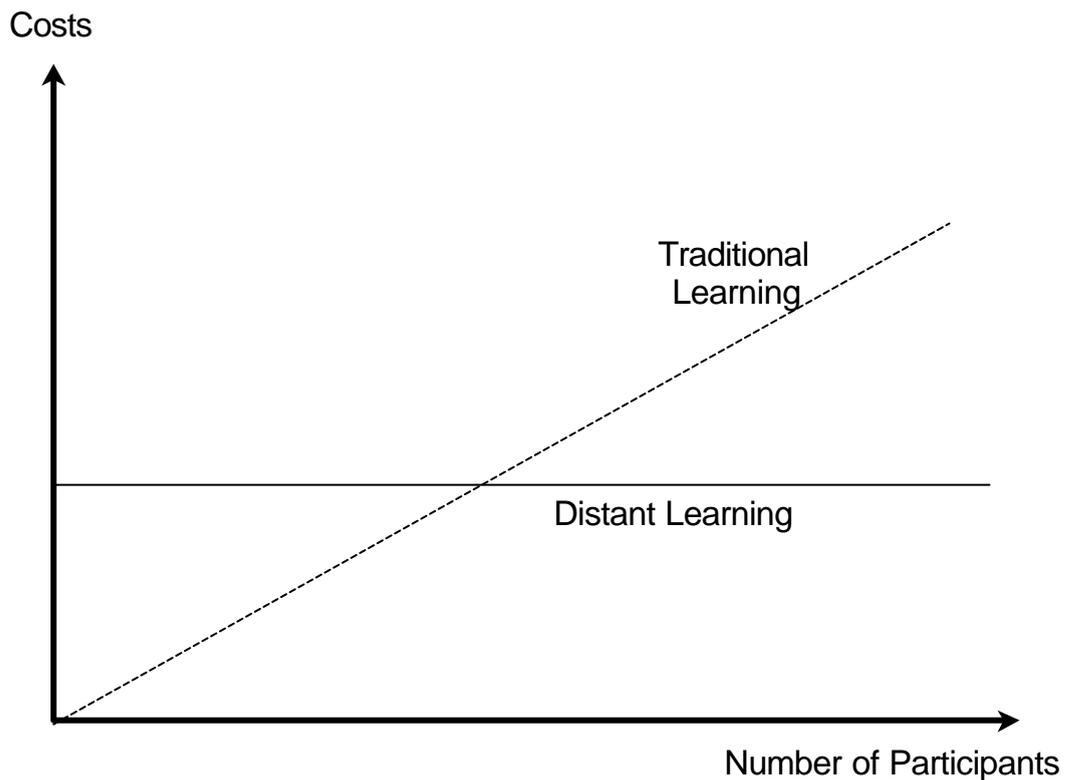
The **structure and amount of costs** for the planning and designing, the initial equipment and the continuous management and maintenance for corporate training arrangements are very different:

- For the "traditional class room" training the costs for the courses are depending primarily on the number of participants. The payment for equipment, management, maintenance, designing are almost include in the price for each participant.
- For business television the main costs are in the outsourcing of the production of the film and the satellite hours.
- Video-conference courses need an high investigation in the initial multimedia equipment and high costs for the (pedagogical) design of the training.

- The almost elaborated arrangement for learning and training is the creation of a learning centre, also from the cost perspective. Beneath an enormous investigation in the initial equipment and design especially the follow-up costs for support and maintenance have to considered about.

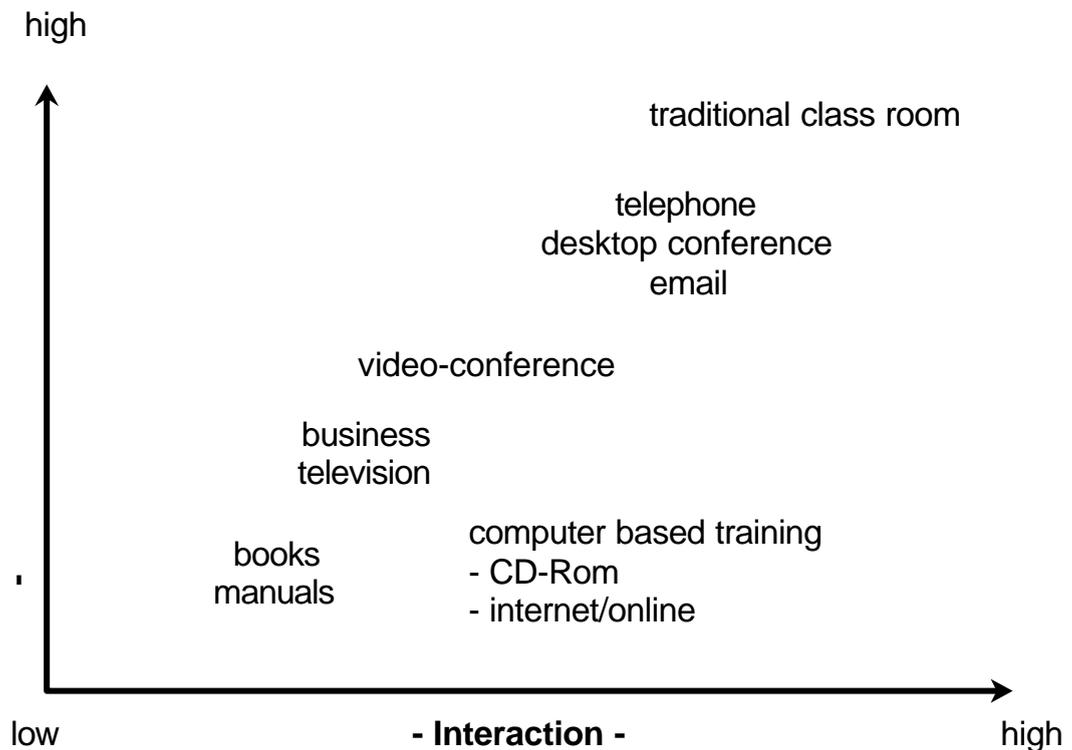**Table 2:** **Costs for Traditional and Distant Learning Arrangements**

The level of **interaction and the control of delivery** is to be considered about for choosing the appropriate learning system. The accumulation of different communication channels, that could be used in different learning technologies, are listed up in the table below.

Table 3: **Level of Interaction / Communication Channels**

The chosen learning technology has **direct impact on the control on delivery**. Manuals and books can be copied by everyone and online learning applications can be used at any computer link. However, the delivery of business television courses can be controlled by coded transmissions for a defined target group and video-conference training is restricted to previously defined group. Anyway it can be posted, that the higher the interaction level, the higher is the delivery control.

Graph 5: The Choice of Technology by the Level of Interaction and Delivery Control

high

traditional class room

telephone
desktop conference
email

video-conference

business
television

books
manuals

computer based training
- CD-Rom
- internet/online

low   **- Interaction -**   high

According to the Training Arrangement Modified or New Multimedia Products have to be Constructed

For distant learning new learning "products" and indications have to be produced as well as tools to manage and control the learning process. Additional support has to be given by "traditional" manuals and handbooks as well as by multimedia products (video tapes, CD-ROM). Relevant aspects for the choice and usability of multimedia tools are added values to the "traditional" tools like manuals etc. The **advantages of new multimedia tools** are seen in:

⇒ the standardisation and homogeneity of learning contents and processes
⇒ flexibility and re-usability of corporate know-how recording
⇒ the possibility of decentralised delivery
⇒ equivalent quality or verifiable quality assurance.

Contemporary Support is Definitely Essential

Stronger **tutorial support becomes a strategic prerequisite**. Tutoring systems should be developed for personal supporting and mentoring facilities. The more self-learning abilities are required from the learners, the more tutorial support is requested. Sup-

port on helping how to learn, on self-instructed learning leads to a great need for pedagogic tools helping learners to develop this ability. Therefore support has to be given on different levels: individual and group oriented support structures, organisational support, support and co-operation interfaces between trainers and learners, tutors and learners, learners and learners.

Evaluation, Assessment and Monitoring is Requested to Ensure the Quality

Working on the **quality of training**, evaluating on a quality program is obvious (e.g. software-based quality systems build on ISO 9001 containing methodologies, tools and assistance. Beneath the traditional learner centred evaluation special attention within the evaluation of distant learning innovations has to be paid to the **new characters** (in brackets possible evaluation techniques):

- distant teaching (teachers questionnaires)
- presence of the tutor (tutors questionnaires)
- use of technological support (participants questionnaires).

Relevant problems the actual evaluation of distant learning arrangements are dealing with are (in brackets methods to reduce this factors):

- different use, particularisation of time
- appealing of a new technology (changing cognition and habits, e.g. passive use of the screen technology)
- interaction modus, large audience (getting familiar by using)
- role of the tutor (training in tutoring, in video-conferencing = new added competencies, social capabilities)
- lack of experience in interactive learning by video (content restrictions, mix of technology, didactical methods and support).

The covered **limits of evaluation** are (in brackets the chosen methods to reduce the effects):

- typical limits of questionnaires (increasing the reliability by questioning more people involved, follow up questionnaires, control of variables)
- typical limits of training effects depending on the interdependency of different external factors
- typical limits of technology.

An assessment including **four levels of evaluation** is useful:

1. learning level, learning results
2. perceptions, gratification
3. behavioural effects, transferability (on the job)
4. organisational effects, efficiency (results in business, added values).

The first two levels are internal, directly related to the training. The first is the fundamental level, including tests for the learners. The third and fourth level are an external and very complex assessment, analysing variables influenced by various correlated

factors and dealing with external effects of the training. For the evaluation of external effects is very complex, most of the evaluation programs stop here. It might be good to include these levels within the evaluation of the innovative initiatives, but it is a matter of costs and, anyway, these kind of evaluation did not take place up to now.

Corporate Settings are of Growing Relevance not only for Large Companies

Corporate settings for distant training are of a growing relevance, not only for large companies with a (world-wide) spread of plants, but also in industry branches confronted with industrial and organisational change and characterised by a high number of small and medium sized enterprises (e.g. in the printing industry, where a strong change to multimedia providers and service companies is taking place) co-operative networking especially concerning vocational training is of increasing interest. To survive international competition and to overcome technological and structural changes enterprises are more and more obliged to collaborate. The case studies of the DELILAH-project remarked this as one of the few common cross-sectoral results. Starting point for project related co-operations or (continuous) networks (e.g. network cooperations with suppliers/ dealers) are extraordinary demands of globalisation, technological and organisational development, structural change and times of upheaval etc. Corporate settings for vocational training are more and more organised in networks with other institutions, sometimes with competitive enterprises, but also by involvement of public administrations, non-profit and socio-economic organisations, training initiatives and others.

A New Learner Profile is Requested

For distant learning arrangements a full diagnosis of the learners profile (needs, appropriate interfaces, learning experiences etc.) and the relationship between face to face and electronic scenarios has to be made. Furthermore new and enhanced key- or basic qualifications are requested from the learner, especially concerning **self-learning capabilities** and **multimedia competence**.

Although recent multimedia programs are of an increasing user-friendliness, a basis of multimedia competence is necessary to work with these learning applications efficiently. Multimedia competence includes not only the capability to use new media and its applications in general, but to make use of media in an efficient way (e.g. to know, how to find the right information; to critically select and verify the relevant information, to use the right media). Therefore traditional guidelines and manuals are still useful for the learners to advice them, how to use multimedia materials.

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Methodical competence is a required **key-qualification** for the increasing self-learning approaches (understood as a fundamental skill required to realise and develop specialist knowledge and social or personal abilities): ability to handle all assignments correctly (in sequence and time), for the acquisition of a systematic approach to setting about work (i.e. proceeding logically, not loosing track of objectives, learning to set the right priorities) and for learning to identify and solve problems independently.

Therefore distant learning arrangement have to use an **integrated approach**, which concludes all kinds of aspects relevant for the target group and the qualification needs. In addition to professional skills also key qualifications are be provided.

6 Critical Factor Checklist and Decision Guidance (Summarising Overview)

The fundamental building blocks of the guidelines are indicators or critical factors for the selection and the design of effective distant learning arrangements for corporate training. These will help to distinguish between different technology based solutions.

As a first overview and a guidance for a first preliminary decision a distinguishing checklist and prototype arrangements for the three learning arrangements (learning centre, video-conference and business television) are outlined in the distinctive checklist summarised in table 4.

Table 4: **Distinctive Checklist of Distant Learning Arrangements for Corporate Training**
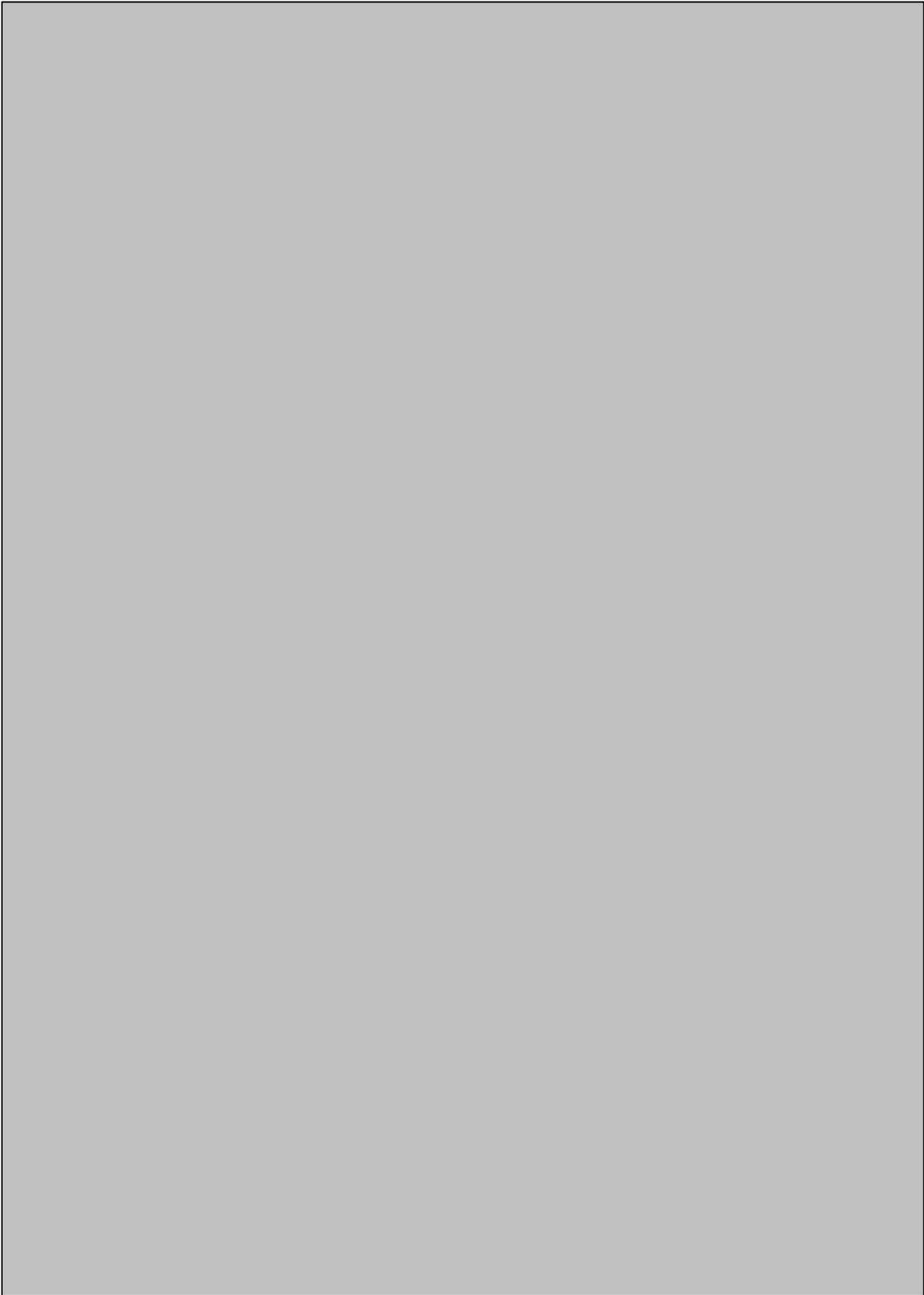
7   The Definition of Relevant Qualification Needs

The definition of relevant qualification needs is the basis for the choice of the appropriate learning arrangement and the relevant or most effective technological configuration for distant learning. The appropriäte learning contents and the expected learning results have to be defined as well as the relevant target groups and the necessary learner profiles.

For the choice of the relevant distant learning configuration distinction should be made between the three general kinds of qualification needs:

qualification gap 1: lack of general knowledge, continuous self-adjustment of actual and coming qualification needs

⇒ **learning contents:** broad information basis, a database of a wide range of different knowledge, all embracing contents; flexible to use, every kind of content, knowledge etc.; from general or basic knowledge to professional training; all aspects of social, cultural an working life

⇒ **learning result:** enrichment of basic and skilled knowledge, of individual capabilities; higher identification with the company

⇒ **target group:** every group of employees, independent from hierarchical status and education, but especially low educated and skilled employees, low qualification, deficits in education, basic knowledge

⇒ **learner profile:** individually intrinsic motivated, self-learning capabilities and motivation; no specific demands for skills and knowledge

> ⇒   flexible and continuous technological configuration: Example A "LEARNING CENTRE"

qualification gap 2: lack of basic transversal specific knowledge

⇒ **learning contents:** specific, but transversal relevant contents, comprehensive qualifications

⇒ **learning result:** new transversal specific knowledge, directly transferable to work

⇒ **target group:** specific key groups of employees (depending on the content), content promoters

⇒ **learner profile:** homogenous specific background of skills, working and qualifications

> ⇒   problem and content specific technological configuration:Example B "VIDEO-CONFERENCE"

qualification gap 3: (continuous) updating of (additional) information for a large group

⇒ **learning contents:** transfer of (additional) information, easy to understand (specific knowledge enrichment), e.g. information of new products, car repairing tools, error diagnostic (more in the direction of technological documentation)

⇒ **learning result:** updating of background information, overview over new products etc.

⇒ **target group:** large number of identical recipients (e.g. car dealers, mechanics etc.)

⇒ **learner profile:** specific homogeneous background and qualification

> ⇒ wide range of transmission allowing technological configuration: Example C "BUSINESS TELEVISION"

In reference to these main qualification gaps the mentioned three distant learning configurations are chosen as illustrative models:

⇒ learning centre

⇒ video-conferencing

⇒ business television.

As previously listed up in the distinctive checklist the appropriate technological configuration for distant learning will - after the already made definition of the qualification gap, the learning contents and expected learning results, the specific target groups and learner profiles - be described and checked in the following concerning the relevant framework, learning strategies and interfaces:

• framework/setting: organisational, structural, technological and social aspects

• learning strategies and activities

• learning support and interfaces

• monitoring, assessment and evaluation.

After a short description of the underlying background of the chosen examples for every model of distant learning arrangement these aspects will be examined and monitored with an emphasis on the description of the underlying empirical examples.

8   Example A: Learning Centre of SATA (Melfi)

8.1 Background

The initiative for creating a learning centre resulted from former experiences on building new plants of FIAT Auto in the South of Italy. The establishment of these new FIAT plants occurred like putting "cathedrals in the desert". Building a plant in a rural, industrial undeveloped zone without taking account on the social and cultural background forced an image of FIAT like a "colonist". To promote the image of FIAT and to development the basic skills of the workers the concept of a learning centre for SATA (Melfi) was designed to involve and promote the social and culture environment. It should be noted, that in the area of Melfi there are no libraries, no sports centres, no language schools and so on. Therefore FIAT invested in these cultural infrastructure to create a corporate culture and an identification with the plant.

Learning Centre to Bridge a General Education and Qualification Gap

A learning centre should be designed to continuously bridge a comprehensive qualification gap with a wide range of learning contents and possibilities, access for every employee (and probably other people like family members of the employees or public access) and the almost greatest flexibility for learning. Every distant learning arrangement (video-conference and business television as well) could be enclosed. Nevertheless beneath general qualification needs, specific vocational training for skills and knowledge adaptation should also be embedded.

Planning and Designing with an Interdisciplinary Development Team

To design a learning centre and its learning possibilities, an interdisciplinary group of experts have to be put together. In the underlying case a team of FIAT Auto and of the plant in Melfi (managers, technicians) were working together with ISVOR-FIAT (pedagogical designers, psychologists, trainers, tutors etc.) to create the learning centre. The co-operation between the technicians and the trainers are usually very difficult in the beginning (in terms of understanding each other and putting the different knowledge and perspective together). Nevertheless the later learners or clients of the learning centre have to be involved.

Needs Analysis of the Relevant Target Groups as a Basis to Select the Range of Learning Contents

To select the relevant contents a needs analysis has to be made, to find out the priorities of the respondents/target groups (workers, technologists/engineers, management). A broad, every aspect of life integrating environment for learning was the result of the needs analysis with the plant management, the blue-collar workers, supervisors and technologists in Melfi. Identified needs were the widening of the knowledge base for personal and professional development as well as cultural and social exchange. Therefore a high level of innovation (global modalities and solutions) was expected as well as an improvement of the company image.

Graph 6: Preferred Contents (Needs Analysis)

culture, leisure

general knowledge

first aid

literature books   politics   news, newspapars, journals

music   law

process   quality

economics

communication   information

plant

automation   team work   costs

production   products

electronics   market   costumer

sports   language   history   sociology   theatre

company related knowledge

economical knowledge

tourism/ ambience

Learning Contents

Based on results of the participation research and needs analysis (integrating every corporate hierarchy) an almost comprehensive learning centre with an integrated approach covering all aspects of the working and social life should be constructed; in the case of Melfi even in taking responsibility for the region. The comprehensive approach should involve the promotion of individual cultural development and the development of basic or general knowledge as well as technical company-oriented skills and know-how. In the case of Melfi the learning centre elaborates:

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- access to self-instruction methods and distance training for every interested employee of the plant (about 6.000 employees, family members will be possibly allowed to use the centre in Melfi in the future)
- corporate identity of SATA as an "open" company contributing to the development of the region and the people
- the creation of a meeting point for information and social exchange, producing a cultural infrastructure.

On this ground learning contents have to be differentiated in themes. The offered contents of the start-up-phase of the learning centre of Melfi were divided in three sectors:

- company related business and production knowledge
- basic and technical knowledge
- knowledge of personal interests

Table 5:   Offer of Contents and Courses for the Start-Up-Phase of the Learning Centre

A Wide Range of Expected Learning Results

Due to the integrated approach applied the training courses are not only referring to information and training but also to **basic qualifications** and the enrichment of **capabilities for self-**

instructed continuous learning ("learn to learn") and to the development of **multimedia-competence**. More and more there is a affiliation of specialists or skills knowledge and general knowledge, because e.g. operation instructions or technical documentation are often written in English, work becomes more and more global and cultural understanding and communication is an increasing part of working business life.

Because an enrichment of basic and skilled knowledge and an improvement of individual capabilities is expected as well as a **higher identification with the company**, not only the anticipation of the managers and designers of the learning centre is very high, neither the workers ones are. Because of a low level of education the (almost young) employees have an unsatisfied demand for general and professional knowledge. By fulfilling these demands the learning centre trains the workers to learn how to learn (active, self-instructed learning, more motivation). This produces also a good basis for professional learning and reduces the resistance against new learning technologies as well as for new production technologies and techniques.

Central aim of the learners are courses for practice and updating. The choice of the courses is driven by concepts of the normal job understanding, but also by a comprehensive understanding of the tasks to be done and working in general.

Possibilities of Widening Access for Additional Target Groups and Different Learner Profiles

The target group of the learning centre are the employees in general and - later - their family members[6]. Independent from their hierarchical corporate level and their profession, each employee should have the opportunity, to use the facilities of the learning centre. Therefore learning contents and applications especially oriented at low educated and skilled employees (with a low qualification and substantial deficits in education and basic knowledge) have to be designed.

There is **no special professional profile requested** from the learner of a learning centre. Indeed the professional profile determines the limits of the learning possibilities. But substantially relevant are the motivation and the key- or basic-qualification of the learner. Because of the self-instructed learning activities the learner has to be highly individual and intrinsic motivated, self-learning capabilities and motivation is absolutely necessary. Beyond this, no specific demands are relevant in general. The demands of the learners on the chosen learning content or subject are depending on the learning offers and their variety.

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6   Therefore the learning centre could become an "open" one in the meaning of access for everyone.

8.2 Framework (Prerequisites and Specifications)

8.2.1 Organisational Aspects

The creation of a learning centre is only of interest on a middle- or (better) long-termed education and training concept. There are high investment costs as well as continuous follow-up costs for:

- location
- hard- and software
- qualification of the tutors and managers etc.
- updating of courses
- continuous maintenance
- learning support.

To decrease the **initial costs** it is reasonable to start with the qualification material, that is already existing (manuals, video-tapes etc.). But beneath taking the chance of the step-by-step development of the learning centre, it is absolutely necessary to start with the latest equipment of technology (hard-, software, telecommunications). Not only because of the rapid technological development but also for the technological possibility and last but not least for the motivation of the learners.

To share the general investment, support and maintenance costs it could be proved, if a **co-operation platform or qualification network** could be implemented: Not only on the level of plants and sites, but also on the level of corporate networks with other enterprises (for vocational training) or on the level of public-private-partnerships (concerted efforts of economy and policy on general education).

Sustainable Organisational Implementation of the Learning Centre within the Company Structure

The learning centre has to be very well implemented in the organisational structure of the company:

- through an substantial integration in management and organisation
- through an installation in every day work, considering the organisation of work.

Problems with the (sometimes changing) management after the implementation of the learning centre could be minimalised by a strong and continuous involvement of the relevant managers of the company. **A learning centre is a very strong invention in the company structure and culture**, problems with the management (mentality, financial funding, organisational implementation etc.) are obvious; not only in the planning and starting phase, but during the development of the centre in general.

The learning centre should be build on the **concept of "open learning"** in contrary to time- and content-fixed courses, where

teachers or trainers "take care" of the learners only at a certain time. The open learning system consists of learning packages with many kind of tools and materials for tutors, learners and other involved people; the consultation of external experts is also a part of it.

The learning centre could be used by the employees (and possibly other clients) outside their working hours, self-instructed with different support possibilities. In the start up phase the learning centre of Melfi had a capacity of 40 to 70 people simultaneously per shift, approximately 200 to 350 people a week, 30 to 60 training hours per user over a period of four months. Opening the learning centre for every employee and other clients conducts in the starting phase the necessity to select and restrict the number of learners to a limited learning period, in order not to go over the capacities of the learning centre (especially concerning the guarantee of fitting the high support requirements for the first use of the learning centre).

Comprehensive Design of the Location with Different Learning Areas

The learning centre should be designed in almost seven different areas:

1. **information and organisation** area
   - an information point
   - a room for course orientation and introduction
   - a room for the permanent tutors
   - a room for the managing of the centre
2. areas for **individual, self instructed** multimedia based **learning**
3. areas for **group-working and -learning**, a room for video-conferencing
4. an area for **individual video-conferencing and net meeting**
5. an **area for language studying**
6. a multimedia **library** (CD-ROM, videotapes, manuals, books, encyclopaedia etc.)
7. a **break area**.

For the minimum the learning centre needs a capacity of about 30 multimedia workstations, two places for small video-conferencing with up to 3 or 4 persons, one video-conferencing room for 20 to 30 persons and about four places for watching video-films. As an example for the design of a location on the ground of this basic equipment see the map of the FIAT centre in Melfi.

Graph 7: Map of the Learning Centre of Melfi
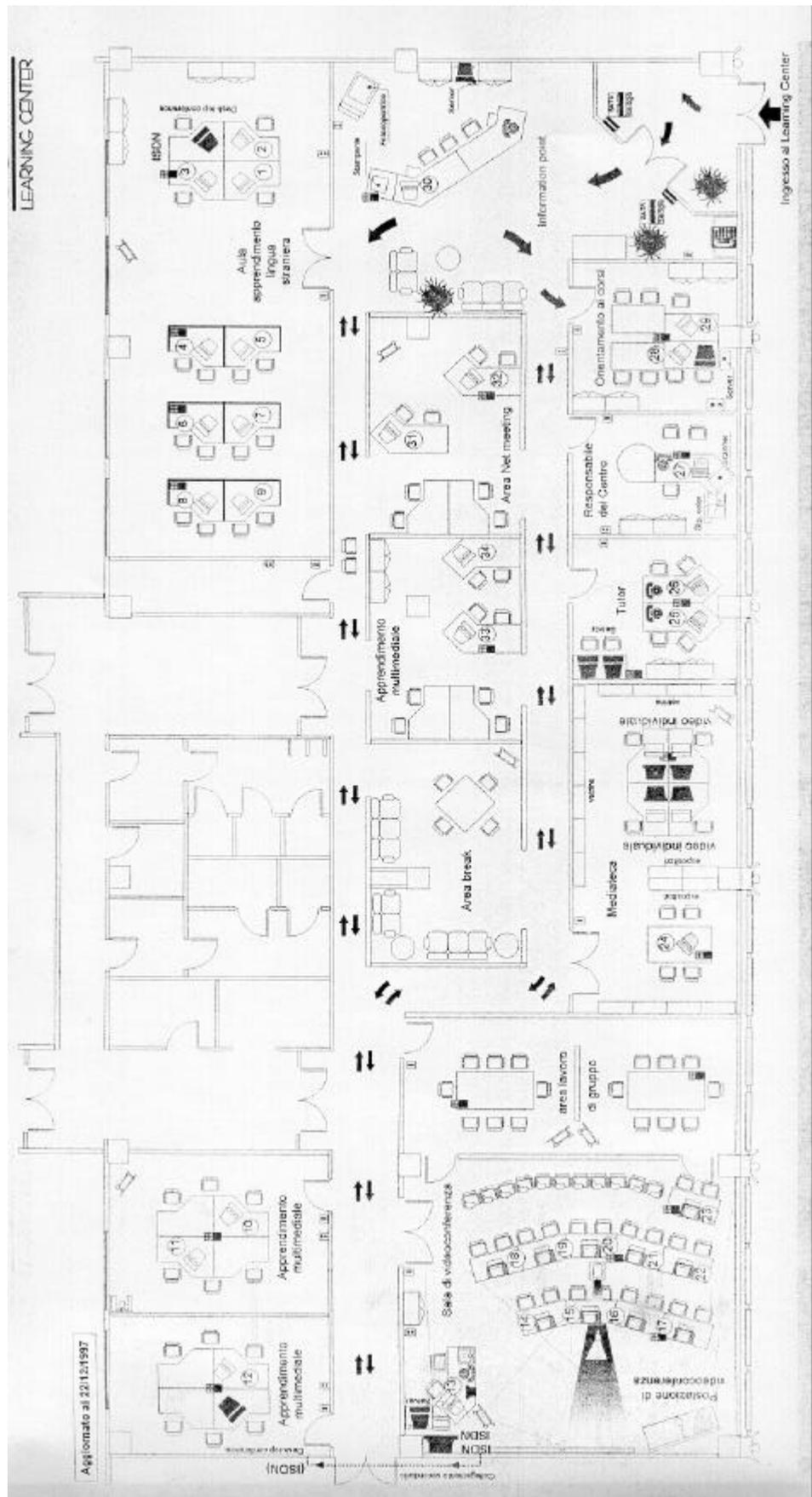
8.2.2 Technological Aspects

Comprehensive Networking Information and Communication Technology Configuration

The working and learning places of the learning centre should be connected on a **local area network** (LAN, inside the learning centre) and on an (existing) company internal **Intranet** (like the one of FIAT) as well as to the **internet**. The centre has to be set up with the **latest multimedia equipment** with various technological communication and information possibilities. A special technician has to run the centre, especially managing videoconferencing during the sessions technically (mixing audio, video, black boards etc.).

Graph 8: Technological Configuration of the Learning Centre in Melfi

Isvor Fiat - TORINO   Learning Center - MELFI

Sala Macchine Aree Tecnologiche	Sala macchino Learning Center

Server 1

Router

Router

IsoverNet

Ing. Form.

Linea CDN Gruppo Fiat
256KB Per applicazioni

Quick Cam   Scanner

Linee ISDN presso L. C. Melfi
64 KB   Internet / e-mail
128 KB   Video Conferenza
128 KB   Collegamenti con siti vari

PC Multimediale

Printer

Server 2

ReteLocale

Server Internet

Locali L.C.

circa 20 PC multimediali

A Wide Range of Learning Materials and Possibilities

The user of the learning centre has access to general information, guidance, learning programs and opportunities, tutoring and learning support and assessment on five levels of the server. A help desk service is always active and available for requests to the tutor, tutoring requested to the program itself, email message to the local tutor and to the experts, group conferencing. The learner can attend engineered courses, in which the didac-

tic path has been projected according the criteria that guaranties an easy learning.

Already **existing materials** and **new created products** for learning can be used for a learning centre. Various learning contents should be offered to the learners on various multimedia tools, including technical, corporate and basic knowledge as well as offers for culture and leisure time (from language learning over courses in industrial automation and electronics, customer orientation and product development to basic courses in mechanics, electronics or mathematics as well as topical themes on videotapes or via video-conferences). The courses should be offered by using the variety of the learning centre on CD-ROM, computer based training programs, via video-conferencing, on the world wide web / internet, on manuals and books, multimedia packages, videotapes.

Education and training opportunities should be advised in the "classroom" as well as at the "distance": training hours on basic skills, orientation, education via video-conferencing, personalised self-instruction pathways with multimedia packages support, opportunities of getting university degree, tutorship and meetings with present experts and distance lecturers, opportunities of exchanges, studies, research and group work.

From the perspective of the trainers and the learners **a very good technical equipment is absolutely necessary**, especially **for the motivation of the learners**. Nevertheless the technology solutions and the learning contents should be developed regularly in an **continuous improvement** process. A continuous production of new materials is necessary and possible, e.g. video-conference lessons could be taped and used again and else.

8.2.3 Social Aspects

The social effects of the learning centre are empirically proved. Interviews with the pilot learners of the learning centre in Melfi made clear,

1. that they are **highly motivated and enthusiastic**
2. that they **become promoters** for the other workers (there was a very high interest of the other employees, some of them were jealous because of this new learning opportunity etc.)
3. that it is a **new opportunity and chance for learning**, to get access to the power of information, access to the internet, to promote a cultural exchange
4. there was a **"family atmosphere" within the learning centre and the company**
5. that more possibilities for the management and the employees are given for the future, because of a **general higher level of qualification (as a base to handle "constant change")**
6. that because of the self-learning and its problems **interaction is very important** for the learners

7. that **self responsibility for learning** is seen very positively.

Enrichment of Individual Capabilities as a Prerequisite for and a Result of the Learning

For corporate training in a learning centre a **high intrinsic motivation** of the employees is also necessary as **key-qualifications** (self-learning, social competence) and capabilities for using multimedia packages (**multimedia competence**). Therefore the learning centre imparts beneath vocational qualification also basic or key-qualifications, social competence and an general education to the workers.

The demand of an high intrinsic motivation was not a problem in the learning centre of Melfi: Already in the starting phase about 500 employees want to take this opportunity. The interviews with the first clients of the learning centre pointed out, that the learners see opportunities for their occupational and personal development. First there is an almost general interest in taking the chance of learning, at second personal vocational qualifications are relevant. Effects in the future for the vocational qualification level are seen as well as business travelling to foreign countries. But nevertheless **personal satisfaction** is made through the enrichment of the own personal possibilities.

For the general necessity of life-long learning is obvious for most of the employees, a **appropriate motivation of the learners could be expected**. This went in Melfi as far as that, that learning after working hours or in the holidays were no problem for them, more opening hours were wished, two or more courses would be taken, if possible. This indicates the high interest of the employees of Melfi, additional work for the sake of learning is accepted there unrestricted. Learning (e.g. of a language) was a personal dream for the workers, because of the regional underdeveloped infrastructure other possibilities are not given or to expensive. Therefore the employees feel an decreasing and redressing of social disadvantage, not only concerning the access to new learning technologies, but for an enrichment and adjustment of educational deprivation.

The learning centre in Melfi is therefore a good example for **combining individual and entrepreneurial objectives** for the sake of the company and the employees. A higher connection and identification with the company goes hand in hand with an educational improvement of the employees and therefore - not to forget - the region.

The **growing self-confidence of the learners** of a learning centre could be obviously expected. After the overcome of the first inhibitions the new multimedia learning technologies could be used "simply" and the enrichment of individual capabilities should enhance the self-confidence as well. A growing level of individual (key-qualification, multimedia competence) capabilities as well as of social competence could be observed. The learners learn to help each other (language examinations, help

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for computer beginners etc.), they could inform other employees about the advantages of the learning centre etc.

The free usage of the learning centre will make the learners also more responsible for their learning (results) as in school. They feel more duty, because the company pays for it. As a learner mentioned in an interview in Melfi: "In school it was the teachers responsibility, if you did not learn". Now each learner is self-responsible, a higher self-responsibility - different from the one in school - is felt.

A Growing Corporate Identity

The concept of enrichment of the image of the plant through a learning centre is indeed fruitful, a strong identification of the workers with the company can be expected. By opening the learning centre for family members of the employees this identification will decrease much more. The learning centre could become much more meeting point for information and social exchange within the company and within the region. In the case of Melfi the workers were speaking of their company as their "family" and no criticism was tolerated.

The Learning Centre as a Measure for Social Integration, Cultural and Educational Development

Although combat against social exclusion is not an inherent or expected aspect of a learning centre, it could be a not to be underestimated result. A comprehensive designed learning centre - integrating educational and cultural contents - could indeed **promote social integration, cultural development and individual cultural sensibility**.

A learning centre of such a kind could be seen as a **future investigation for the integration of disadvantaged, rural and underdeveloped areas**. Therefore the (pioneer) learners of the learning centre are able to break traditional thinking barriers, a greater integration in the European Community (through advanced education and a telecommunicational connection with the internet) could occur. The interviews with the almost young learners of the learning centre of Melfi made quite clear, that there will be on the long run a transmission of a new European perspective to them and their children (and family members) and that the level of education will be enriched with lasting effects.

For it is a matter of public interest to develop education and vocational qualification in every part of Europe **public-private-partnerships or concerted corporate actions** between the public administration and the private economic sector **to fight against social exclusion** should be thought about further. The concept and integration of private and public leaning possibilities for the sake of everyone, even social disadvantaged or unemployed people has to be carefully contemplated about.

8.3 Learning Strategies and Activities

The learning strategy is very much **self-organised and self-instructed learning**, with additional and subordinated (organisational and tutorial) support. Different learning possibilities can be chosen in relation to the qualification background, learning interests and objectives of the individual learner. Preparing and supplementary traditional teaching lessons complete the learning arrangement.

Individual, autonomous and content dependent possibilities are offered. The learners could choose and mix different offers of learning strategies:

- self-learning
- video-conferencing
- teaching lessons (face-to-face).

Free time has to be given to the participants to be spent in the library for individual study and research, on multimedia self-instruction (CD-ROM, computer based training, video, internet), in the language laboratory, on individual tutoring, on group work or research (also via internet) or on individual talks or group discussions with local tutors. Time independent online learning should be also submitted as traditional teaching lessons. The choice of the learners is dependent on the key-qualifications and the already made experiences with the technologies. In Melfi currently computer based training is preferred, video-conferencing is momentary to unknown, problematic and difficult. The priority for different learning forms are depending on the familiarity of the learner with the different technologies: e.g. computer based training in the meantime has a kind of familiarity, video-conferencing does not; new experience has to create familiarity with easy courses, even in video-conferences.

For keeping the intrinsic motivation of learners on a high level the **quality of the multimedia programs and possibilities is important**: concerning the learning contents, the animation, the editing and processing, demonstrations and the interaction. One have to keep in mind, that mostly the learners do not have experiences with the corporate learning.

Within this learner oriented arrangement **the tutor is the central figure** to create an **individual learning strategy** with the learner and to provide corporate learning activities among the learners. It is the sustainable role of the tutor to help the learners going on and to overcome significant problems. The tutor has an elementary task in overcoming the learners first inhibitions. Later the other learners could help the beginners as a intermediary institution, to ease the burden of the tutors. In the meanwhile a basic computer knowledge could be expected from the most of the (almost younger) learners.

For the high intrinsic motivation (great willingness to learn after and before the shifts, in the evening and at holidays) **the atmosphere in the learning centre is important**. The clients of the learning centre have to considered the tutors and runners of

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the centre as helpers or colleagues, feeling a better atmosphere than in the factory, where competition, hierarchy, respect and other things are more dominant. To get this kind of ambience, possibilities to relax must be given as well (videotapes, books, games, internet-chat etc.). **Recovering phases** are necessary:

⇒ because some courses are very difficult
⇒ the playful use of the internet overcomes the learners inhibitions
⇒ other learning possibilities (CD-ROM, video-conferences etc.) are accepted more easily
⇒ the social aspect (even for mutual help) will be cultivated.

8.4 Support and Learning Interfaces

Technical assistance, local and distant tutorship, the advice and consultation of content experts (to be defined according the programs running) have to be given for every learner. Support is given by "real" and online tutors, other learners, group meetings, preparing and teaching lessons, and its kind and range is depending on the key-qualifications and the basic education of the learner. As already mentioned, **the tutors are substantially important** to solve the problems of the beginning (starting problems), for the first instructions to learn (how to learn), the creation of a personal learning path and for keeping the learner going on.

The tutor himself should be supported as well by a manual for using the learning materials and creating an individual learning path for the learner. This manual has to be customised at the level of the users.

For the self-instructed and self-motivated learning a good relationship between teachers, especially the tutors and runners of the learning centre on one hand and the learners on the other hand is necessary (support, problems solving, continuous development of the learning possibilities). In the pilot phase of Melfi this kind of familiarity was given because of the small group of about 20 pilot learners. The great interest of the employees and the opening for a greater number of clients will make an (organisational) problem out of it. The increasing anonymity could undermine the necessity of reliable persons for self-instructed and corporate learning and as links to the plant. Therefore "real" persons are important, online support could be used at most additional.

All in all **different interfaces are necessary**:

• between **trainers and learners**: Support, communication and co-operation on this level is the exception and does not take part very often. Nevertheless it could be arranged online (email messages, video-conferences), through video-conference courses (directly or through taped video session) and in a traditional face to face class room teaching. The con-

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tact between trainers and learners are described often as "business as usual".

- between **tutors and learners**: This kind of individual and group support, communication and co-operation is **the core of the learning centre** and has to take part as often as needed from the learners. Although the face to face contact is very important and individual **office and consulting hours must be a fixed part** of the schedule, tutorial support could be made more easy through online support (e.g. time independent communication per email messages). However, **the contact between tutors and learners has to be seen and understood as absolutely essential**. Problems in the start-up phase of the learning centre in Melfi led to a formal interaction between tutors and learners for problem solving (concerning the organisation of the learning centre, the content of courses, support possibilities etc.). **The (pilot-)seminar users became therefore a fourth intermediate interface between the tutors and the new learners.**

- between **learners and learners**: Mutual support and co-operation, social communication is an informal way of learning assistance and depends on the willingness and the individual demands of the learners. **Synergetic effects of learning in groups** could be managed as well as an enrichment of social competence. **Experienced seminar users** could **take** (and in Melfi they did) **the role as promoters and links to the other workers and learners**. Furthermore every learner of the learning centre could become an intermediate interface between the tutors and the new learners (**intermediate "tutors"** to select the most relevant, not solvable problems).

8.5 Monitoring, Assessment and Evaluation

Training is seen as an investigation in people, in the end paid back by a higher motivation for working and a better quality of products. A **certification** of the training could be a possibility to motivate the learners and to enrich their self-assurance. But in the case of Melfi the workers did not regard formal certifications. The workers only wanted to have a document testifying that they have frequented the learning centre or a specific course.

An ongoing evaluation of the learning centre is necessary under the aspect of **changing qualification demands** and from the perspective of a **continuous improvement** process. Within the learning centre there are a lot of **possibilities of monitoring and assessment**: A recording of the learning results is possible and should be done, each program should contain tests and exercises for the assessment of the learning results (course related, content related questionnaires, checklists, self-tests via paper or online). Beneath this also "qualitative", more weak results have to be concerned about (e.g. like the identification with the company).

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The friendly atmosphere and the direct communication between the users and runners of the learning system will be very helpful for the (problem) managing of the learning centre. It could also encourage the runners of the centre, to **implement continuous feedback from the users** and to **formalise the mutual support** through direct contact between the users and the tutors, managers of the centre.

8.6 Critical Factors

A learning centre is a great task for the management of a company and for the designers and operators of such a complex training arrangement. Therefore the following critical factors of a learning centre for corporate training have to be obtained:

- a middle or (better) **long termed training strategy** (involving the management of the company or/and plant) has to be designed, not only for the cost efficiency but also for the learning results (remember: long lasting upgrade of the basic and skilled qualifications of the employees)
- a **modern multimedia equipment** is a relevant basis for keeping the motivation for self-learning of the employees high
- the **learning content and materials have to be oriented on the learners needs** (needs analysis) and have to be developed as well as the centre in general with an **interdisciplinary team**
- a **high intrinsic motivation** and a **basic multimedia competence** is also needed from the learners as other **key qualifications for self-instructed learning**
- the core of the learning centre is the **continuous and individual tutorial support**
- the learning centre has to be monitored and evaluated with the involvement of the learners to succeed in a **continuous improvement process**.

8.7 Summary: Key-Factors of a Learning Centre for Corporate Training

Graph 9: Key-Factors of a Learning Centre for Corporate Training

qualification need:
lack of general knowledge, flexible usability of all kinds of skills, information and knowledge

learning contents:
• professional training
• general, basic knowlegde
• all aspects of social, cultural and working life

target groups:
• low skilled/educated workers
• with an intrinsic motivation

learning results:
• enrichment of basic skills and knowledge
• enrichment of indiviudal capabilities
• higher identification with the company

learner profile:
• individually different
• no specific demands

technological configuration:
LEARNING CENTRE

organisational aspects:
• special location
• continuous maintanance and
  support

technological aspects:
• different technology based and
  traditional learning applications
  and possibilities

social aspects:
• higher educational level
• identification with the company

learning strategies and activities:
• professional training
• general, basic knowlegde
• all aspects of social, cultural and working life

support:
• telecommunication based and
  direct personal support

**learning
interfaces
between:**

monitoring/evaluation:
• checklists, questionnaires,
  self-tests, online-tests
• continuous formal and
  informal feedback

tutors and learnes:
• highly intensiv individual
  support and communication
• video, online, face-to-face

learners and learners:
• group learning, mutual help
• online, face-to-face

trainers and learners:
• exceptional support,
  communication
• video, online, face-to-face

critical factors:
• high intrinsic motivation of the learner
• key-qualification of the learner (self-instructed learning, multimedia competence)
• continuous tutorial support
• very good equipment, multimedia learning material to keep the motivation of the learner high
• a good social atmosphere for good learning results, mutual support and feedback from the learners for a
  continuous improvement process

9 Example B: Video-Conference

9.1 Background

In former times video-conferences were infrequently and inefficiently used, essentially for the communication between managers. The further development and use of this communication technology was often stopped. Since a few years individual video-communication (via computers and internet) is increasing, but the effective use of video-conferencing for corporate training courses addressed to different groups of employees (including skilled and unskilled workers) is quite innovative.

The learning contents of video-conferences are predestined to fill a **qualification gap concerning transversal contents**. For instance the first elaborated video-conference courses for corporate training of ISVOR-FIAT were constituted for "tasks and models for the representation of workers", "personnel management", "organisation of work and industrial safety", "analysis and control of costs".

Video-conferences for corporate training are an excellent technology based distant training **modality to transfer in basic courses the background of training necessities**, **but** they are **no substitution for learning in practice, on the job**. Especially to transfer "hidden" messages (like the elaboration of co-operation, the transfer of guiding aims, social competence etc.) video-conferences are not the right "channel" of delivery. Video-conferences could initiate practical and operating activities and transfer a basic, general knowledge for practice. The lasting transfer on the job has to be made or supported with other training possibilities (in groups or self-instructed). To make video-conferences highly effective, it has to be "mixed" with other supplementary training probabilities. For the transferability of the learning results on the job is still a general problem, video-conferences have to be designed very precisely and in the later described way they are closer to the working place than traditional class-room seminars.

Target groups for corporate training via video-conferences **have to be of an homogenous qualification or working background** (e.g. the head of working units, personnel managers, foremen of different plants). The participants should be a kind of **content promoters for the other workers**.

9.2 Framework (Prerequisites and Specifications)

Video-conferences for vocational training precisely designed and elaborated are able to adopt organisational needs and to adjust qualification gaps flexible and continuously: Beneath the technical and organisational framework especially the pedagogical arrangement has to be attended - emphasising the

learning **process** and the **training path**, **active** learning and learning by **practical** involvement as well as the **tutorial support**.

9.2.1 Organisational Aspects

Video-conferences require **high investment costs** for the technological equipment, **but** these kind of distant learning technology **could save on the long run a lot of travelling and labour costs**. Workers could stay at their plant and do have to leave their work only for the training hours.

Although video-conferences from point to point are possible, it is more efficient to involve more than two sites or enterprises. One added value of video-conferences is the **creation of a platform for experience exchange between different plants and groups of participants**. These kind of platforms do not exist in any similar manner before. But to use this added application efficiently, the building up of an organisational network platform for corporate training across the sites or between small and medium sized enterprises is necessary. The **different organisational cultures of the plants and enterprises have to be coordinated and adjusted**. Even this is a great problem within a country, the difficulties are cumulating on the international level (different cultures, working times etc.).

For the beginning the first video-conference course has to be designed very exactly (about six months preparation could be necessary). Therefore an **interdisciplinary team of internal and external experts** should be build up: instructional designers, experts in technology and evaluation, teachers as experts of learning contents and the **involvement of tutors and "profession leaders" of the local sites**. The production of the following courses might cause half the time, but the agreement process with the teachers/trainers, pedagogical instructors, the managers and the certificators to stick to the same version could take also more time then the basic development.

One course should be limited up to one week and divided in four completed **modules**, each of about 2½ hours duration (one module per day, after two days one day off). This allows a better integration of vocational training in everyday work through a first transfer of the learning results on the job. After each training module the participants could **prove the learned capabilities immediately at work** at the following day and give a feedback for the following modules.

Table 5: Modular Construction of Video-Conferences Courses
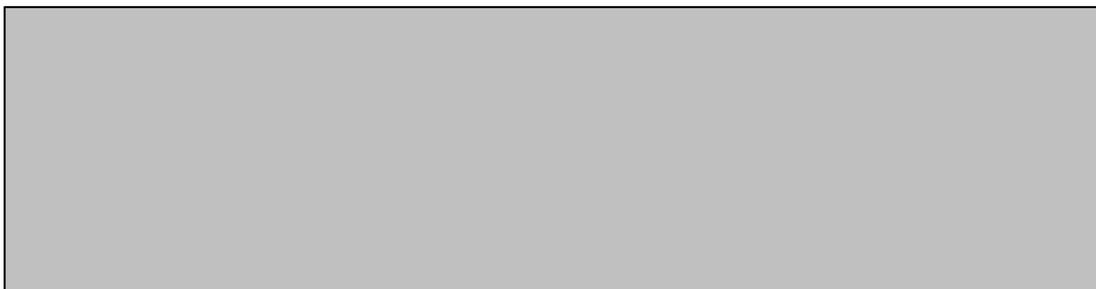
9.2.2 Technological Aspects

The technical equipment for the video-conferences could be bought, leased or rented. Because the technology is still in development and the innovation circles are very short, leasing might be an efficient way. The video-conference connection could be made via ISDN on the normal telephone line. This technology has the advantage of a greater flexibility to get a connection (in contrary to hired stand-by telecommunication lines). In the pilot project of ISVOR-FIAT video-conferencing was used for training courses simultaneously with four sites of FIAT Auto (all in all about 200 learners), after the successful initiation the number of the plants was extended to all nine FIAT plants in Italy.

Graph 10: Technical Arrangement for Video-Conference Courses of ISVOR-FIAT
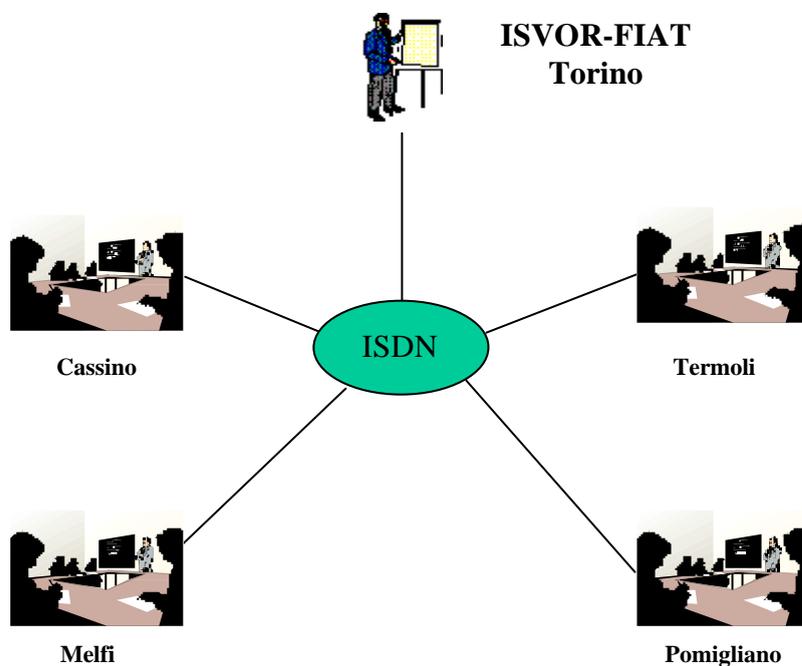
Absolutely necessary is a **multimedia control unit** (and the adequate software) to control the different communication channels during a video-conferences session (audio, video, "blackboards", slides, camera positioning, tapes, documents etc.), managed professionally by a (technical) specialist.

9.2.3 Social Aspects

Prior to the delivery of courses via video-conferencing, **new participants (teachers, tutors, learners) have get familiar with the technology**. Because the learning situation is new and no experiences or routines are existing, the involved participants

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feel very uncomfortable at the beginning (often it is seen as not commensurate with human behaviour).[7] This is a problem for the learners as well as for the teachers/trainers and tutors.

Practising before the first course "on air" is absolutely relevant for the runners of the distant learning system: the trainers/teachers and the tutors. The **first experiences** with the technology and the communication techniques of video-conferences should be made **without a connection** just for practice, to get familiar with it. A first presentation and watching of a video-conference should be arranged **with the operators** to show, how it works, which communication and behaviour rules are necessary for what reasons etc. (e.g. the communication in the video-conferences has to take place very disciplined). This meeting should also include technological practice (like speaking through a microphone).

Because of the fact that everything within the video-conference session is recorded, especially the trainers (but also the tutors) have to be well prepared. Mistakes or a poor preparation will be documented and the use of the taped course is not possible. This element of **control** is therefore an **ability to increase the quality and efficiency of the training** (in a traditional classroom this kind of control is missing). But it gives also the management of a company the possibility to control problematic statements of certain contents (concerning economic policy, the influence of trade unions, representatives of the workers); the management has the possibility to "certify" every word of the course (not only the content of a course in general).

9.3 Learning Strategies and Activities

A High Emphasise on th Pedagogical Design

The pedagogical design of the video-conference has to be prepared in detail very precisely. Within the learning system "video-conference" (characterised by a matrix of technology, learning strategies, learning contents, learning results and target groups) the **didactic path** has to be designed very accurately, as well as the **monitoring** and the **support** of the learning process. The learning arrangement has to be balanced and include **phases of learning, exchange, reflection, deepening/ studying and practice**. Doubts, questions and problems have to be cleared in interactive and co-operate learning, supported by assistance.

As trainers and tutors are the operators of the video-conference, they have to give special attention to the timing and to the reaction on **disconnection** (learner attention and for technical

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7   For this reason it has to be kept in mind, that the right choice of the learning and communication technology is dependent on the attitudes and preferences of the learners and the target groups. For example: If the social atmosphere is very important for the learning situation and the learners, video-conferences are a to "cold" medium.

reasons: telephone line). **Mistakes can not be corrected as easy as in a traditional classroom atmosphere.**

The **learning attention** is influenced by the audio-video quality and restrictions of the conference (no full motion, only one person can speak, sometimes the ISDN line breaks down). Another point is the **missing or minor quantity of non-verbal behaviour, no direct control on this communication level is possible** between the teachers and the learners. No direct feedback possibilities during the course could be used. The trainer could not perceive, if the learners are bored (like in the class room). Consequently **no flexible or intuitive change of the lessons or the learning path is possible**, no intervening is achievable. From another point this missing feedback could be an advantage for the teachers (and learners) concentration on the subject.

All in all there has to be made **great caution on the support of attention and discipline** (only one person can speak at once). For the reason that video-conferences are "controlled activities" the participants (teachers/trainers, tutors, learners) of such courses (have to) **learn to communicate in a very effective way**. Time and audio-video quality restrictions as well as the particularly defined design force the participants to speak shortly and precisely and to respect other comments.

Engineering of the Learning Path on the Principle of Variety and Alternation

The key point in distant training via video-conference is **variety and alternation**. Variety not only in terms of technology applications, but in learning compositions and activities (dialogue, games etc.). Only by variety and alternating active involvement you can hold the learners attention. Therefore a video-conference course has to be designed on a "learning path" including a mixture of different tools and a **continuous alternation between three phases**:

⇒ **information transmission**
⇒ **local practice / exercising**
⇒ **interactive controlling and feedback phase**: interaction between the involved groups to control the feedback and to promote exchanges of experience and information among the sites (also to maintain attention).

The **information is given in short lessons** by **two alternating teachers** (for the reason of maintaining the attention of the learners). **The interactive phase promotes an exchange of information and experiences among the sites** (which are working on the same topics) and allows a control or feedback of the session in real time. Intragroup and intergroup communication is made to illuminate the two way communication of the traditional classroom learning value added.

The learning path has to be **divided in short termed parts** (not longer than 20 minutes), mixing different learning activities to keep the learners attention, otherwise it is boring. Therefore **va-**

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rious didactical methods like exercises, business (competition) games, information, questionnaires and else could be used. These tools for video-conferencing have to be **especially made or transformed for this kind of distant vocational training**, because the "traditional" versions do not feed the new learning arrangement. Beneath the transfer of learning contents the tools are designed to maintain the attention and interest of the learners inside the remote sites (e.g. business games with the possibility to compete between the sites).

The **teacher** (with support of the tutor) has to **promote motivation and activity** in every phase of the course: between the participants, the plants, the learners and the tutor, the participants and himself as well as through technological support.

Questions of the participants of the video-conference are collected by the tutor in each plant. The **tutors collect, structure and summarise** them and **transmit** them to the two teachers of the course; during the session (if it is a part of the learning path). This filtering of questions is very effective, because there could be no confusion by everyone is talking. After the learning module there is also the additional probability to collect questions, remarks and assessments from the learners as a feedback and an input for the next module or a modification of the subsequently following courses.

An example of a "learning path" designed by ISVOR-FIAT for the pilot course based on a four module arrangement is summarised below:

Graph 11: Learning Path of Video-Conference Modules

Cognitive Area	Exercising Area	Controlling, Feedback Area

Module 1

Start-Up: *programme presentation* — 20'

Information: *general profile of team working* — 15'

Interaction: *plenary discussion* — 15'

Information: *presentation of a business game* — 10'

Observation of Videotape 1: *classification of working activities* — 10'

Exercise 1: *analysis of benefits and problems* — 15'

B R E A K — 15'

Interaction: *plenary discussion* — 20'

Information: *team work organisation* — 15'

Observation of Videotape 2: *teamwork in different areas* — 15'

Interaction: *reflection of the video observation* — 15'

Transfer to Work

Module 2

Reopening of the Session: *programme presentation* — 20'

Information: *efficiency of team work structures* — 15'

Interaction: *plenary discussion* — 15'

Observation of Videotape 3: *problems of team working* — 15'

B R E A K — 15'

Exercise 2: *teamwork dynamics* — 15'

Interaction: *plenary discussion* — 15'

Information: *preview to the next module 3* — 15'

Transfer to Work

Module 3

Transfer to Work

Module 4

Transfer to Work

9.4 Support and Learning Interfaces

It is important for the design and the running of such a learning arrangement to have connection points or **interfaces between the training institution** (like ISVOR-FIAT) **and the companies/ plants**: interface or project leaders, tutors, profession leaders, client leaders, know-how engineers (= information managers, identifying knowledge gaps).

The Tutor as a Key Person and a Link to the Plants

The **tutors** and the **profession leaders** - both "normal" workers of the local site - are key persons for the designing, running and support of the video conference training. The professional leaders are "**content** promoters and links" for the external trainers and learning designers to the local site. The tutor is the **pedagogical** key factor of the learning arrangement. His role within the learning configuration is very important:

- ₱ The tutor is a **link to the plant**.
- ₱ The tutor is an **expert of the specific problems** of the plant.
- ₱ The tutor is the link between the teacher and the learners group, a **media or substitution for the face to face contact between the teacher and the learners**.

Two different kind of tutorial capabilities (methodological, content related) have to be necessarily qualified for each plant. This could be improved to a more **integrated profile of the tutor**, including beneath **methodological** and **content** related also **technological capabilities**. For every tutor has this proficiencies, cost reduction and more flexibility (2 or 3 tutors per plant) is given by involving only one tutor for each video-conferences course.

The role of the tutor is an added value of the video-conference, characterised by coordination, co-operation, information managing, promotion, support etc. **The familiarity of the tutor to the specific problems and the workers of the plant is very important to overcome the inhibition of the participants**. Reserved people are encouraged to participate and to announce problems in understanding (more than in a typical classroom situation).

Within the video-conferencing session the very important role of the local tutor is to hold the face-to-face contact to the learning group. Thus the tutor has to be a "familiar figure", well known and accepted. During the video-conference the local tutor is not only a training session manager, but a know-how engineer, a controller and more.

Beneath the learning support the tutor (in co-operation with the profession leader) could take **responsibility for actual transfer problems** concerning the application of training contents on the job (solving actual problems, helping the learners to go on, being a reference address for problems at the application of the training etc.).

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The tutor role or the **tutor capabilities are added to the normal worker competence**, tutoring is an added value for their normal job. Much time and energy have to be invested in the qualification of the tutors. In the example of ISVOR-FIAT the chosen tutors were at the beginning completely unable to use new technologies for learning. Therefore their training was made first in a "traditional way" at the site, but than by video-conferencing. The tutor was send a manual first, than a video-conference took place added by a "real meeting" afterwards. To get familiar with it, the tutors were trained by ISVOR-FIAT more and more inside the plant and with the new technology video-conference.

A **tutor network** should be build **to exchange experience and to discuss and solve tutorial problems across and within the plants**. In the case of ISVOR-FIAT against all expectations the selected tutors excepted and enjoyed their new role very quickly as a normal part of their work.

Continuous Coaching for the Trainer

Beneath the support structures for the learners, **continuous support or coaching has to be given to the trainers/teachers**. For the trainers do not have direct communication links to the participants the tutors have to supply filtered support or intermediary from the learners to the trainers (see graph 12). Like for the tutors and the learners a first information and exercise is necessary for the teachers. Information meetings about video-conferences for corporate training illuminated that the trainers react in two directions upon this training innovation: Interested and seeing new possibilities on one side and resistance and wait and see attitude on the other side, depending on the prevalence of curiosity and fear.

The teachers have to prepare their lessons adopted to the demands and possibilities of the new media. They have to **test their teaching** in both ways: content related and concerning the video-conference technique before the lessons. Within the lessons the trainer (with the support of the tutor) must manage the technique, the participants (no familiarity with this kind of training innovation, excitement etc.) and the content transfer. For the trainer has to pay attention to a lot of things a **clear separation of tasks** is necessary for everyone involved in the session (trainers, tutors, technician, learners) and a exactly defined, strictly conducted learning path. Because of this a first support of the designers and operators of video-conferences courses is absolutely necessary.

Production of Media Adequate Support Materials

All the materials used in the video-conference have to be prepared in a particular **media relevant** way. The preparation of additional learning materials for video-conference courses will sustain the learners, to follow and repeat the lessons as well as

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to go on with the tutors, if the video-line breaks. The following **support materials** should be produced:

⇒ a guide for the tutor, a description of the training path for the tutor
⇒ an handbook, manual for the participants (additional for self-learning, this could be used also in other learning arrangements)
⇒ an appendix (slides, articles etc.).

Interfaces to the Plant are Substantial

Video-conferences for corporate training require:

- an indirect interface between **trainers and learners** filtered by the tutor: The communication proceed over the tutors, which have to select and summarise the questions, assessments etc. of the learners.
- an interfaces between **operators/trainers and tutors**: The tutor is the key-interface between the operators and the trainers of the video-conference courses and the plant.
- a direct and intensive interface between **tutors and learners**: The tutor is the link and representative of (the learners of) the plant. A high familiarity between tutors and learners could be reached, if the tutors are colleagues from the plant. The integration of the learners in the learning arrangement is the main task of the tutor.
- low or no interfaces between **learners and learners**: Interfaces between learners and learners across the plants are not relevant and interesting, but they are existing indeed (and only) during the video-conference session, furthermore no formal contact is supported.

Graph 12: Communication Interfaces between the Participants of Video-Conference Courses
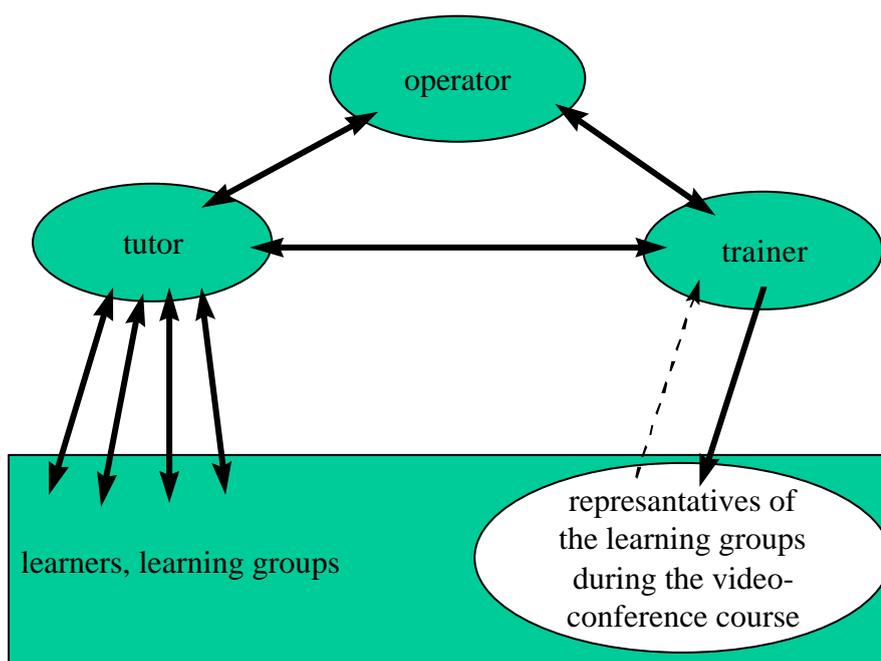
9.5 Monitoring, Assessment and Evaluation

The objective of the continuous monitoring and evaluation of video-conference courses for corporate training should be a **permanent evolution through feedback processes** for a continuous improvement process (CIP). This has to include the improvement of exercises, the development and reducing of materials, the creation of relevant follow up actions, the continuous training of trainers and tutors etc.

The evaluation should enclose **four levels**:

- the assessment of **learning results** through a questionnaire of the learners at the beginning and the end of the course (multiple choice)
- the **reply of the tutors and learners**
- the **transferability** of training through follow up actions at the distance (questionnaires with the managers of the learners in the plants
- a (quantitative and qualitative) **cost-benefit analysis**.

The monitoring in the fact of video-conferences is very easily to manage: **taping of lessons for quality control and continuous improvement**. An additional advantage of this learning arrangement is the possibility of repeating lessons and the **usage** of these tapes **in other learning environments** (like the learning centre).

The **regular monitoring** of the learning modules has to be **ensured through the tutor**. After every session, the tutors should collect, summarise and send faxes with questions, problems and general feedback of the learners to the operators and trainers. This could be used for the introduction and modification of the following modules and the video-conference course in general.

9.6 Critical Factors

The video-conference training has to be designed and planned very precisely and detailed, because everything has to fit each other. If any part misses or anything goes wrong, everything falls apart. For it is a very complex system, it is more risky than the traditional training. To calculate and to minimise this risk some critical factors have to be given respect:

1. **instructional design:**
   - ⇒ **design and structure of the course:** design in a systemic view, structure, timing, previewed activities, cultural and organisational factors of every plant have to be obtained
   - ⇒ **interaction:** interaction has to be planned and controlled step by step, "page by page"
   - ⇒ elaboration of a **media-competence** for every involved group: operators, trainers, tutors, technicians, learners

- Þ **motivation and attention through variety and alternation:** strategies to hold the motivation and attention high (at the beginning not so important because of the newness); large range of variety and alternation for didactical and communication forms, variation of different tools and activities, keeping the information, exercise and controlling/feedback parts short (maximum about 20 minutes), emphasising of practical aspects related to the work of the participants, each module has to be completed, preceding email contact between teachers and participants, two alternating teachers in every course to keep the attention high (different voices etc.), involvement of the participants (by asking for simple help)
- ⇒ **duration:** five modules per week are too much, one day off in the middle by four modules of about 2½ hour; video-conference courses optimise and compress learning contents (eight hours in traditional training are as much as five or six hours of training in video-conference)
- ⇒ **chosen contents:** not to specific, singular contents; choice of contents, that include the possibility of repeating, to repay the high costs of designing such a training course; the cost effectiveness for only one single or a few courses is not given (other forms of training have to be chosen therefore)

2. **technological aspects / architecture** (audio/video quality, choice of the right technology, considering the attitudes of the learners):
- ⇒ disturbances by loosing connection,
- ⇒ special character of different technologies have to be looked at
- ⇒ attitudes of the learners against technologies have to be respected (resistance, familiarity, active or passive behaviour etc.)
- ⇒ the necessity of a technical supporter, the maintaining and updating of the equipment

3. **organisation and management:**
- ⇒ **involvement of the management:** the continuous commitment of the management of the plants and enterprises is absolutely necessary to ensure the sustainable continuity of this learning arrangement
- ⇒ **coordination of different professions:** interdisciplinary team of professionals, coordination and circulation of information among them, feedback control, fitting different knowledge together
- ⇒ **coordination of different plants:** different expectations of every site, different corporate culture (depending on the region), different organisational framework
- ⇒ coordination and control of the complexity and information circulation

⇒ **organisation of didactic support and materials:** handbooks for every involved group, especially addressed to the target group and the necessities of the technology (very good quality is expected for video-conferencing), these materials could also be used, if the link falls down

⇒ **organisation of the tutoring:** information exchange and support for tutors in networks

⇒ **organisation of specific programs for teachers, designers, tutors, profession leaders:** organisation of the specific training for distant teaching (for teachers) and for every other group involved (designers, teachers, tutors, profession leaders)

⇒ **organisation of an ongoing learning process** for every one involved (also the trainers are learning by doing), organisation of learning from others (bench marking).

9.7 Summary: Key-Factors of Video-Conferencing for Corporate Training

Graph 13: Key-Factors of Video-Conferences for Corporate Training

qualification need:
lack of transversal knowledge

learning contents:
• transversal, basic skills specific knowledge
• new specific skills and capabilities, transferable to work

target groups:
• specific groups of employees (dependent on the content)
• promoters of the content

learning results:
• basic understanding of specific organisation and production forms
• transfer to work, initiation of practical and operating activities

learner profile:
• content specific qualification
• identical qualification and working interface

technological configuration:
VIDEO-CONFERENCE

organisational aspects:
• simultanous participation of different plants
• network organisation

technological aspects:
• realisation of familiarity with the technology
• ISDN-multimedia equipment

social aspects:
• high concentration and discipline during the sessions

learning strategies and activities:
• interactiv, team-oriented learning
• exchange of experience among the plants

support:
• tutorial support for the learners
• support and coaching for the trainers and tutors

learning interfaces between:

monitoring/evaluation:
• checklists, questionnaires
• continuous formal feedback from the tutors and the learners

tutors and learnes:
• within the lessons
• within the plants

learners and learners:
• within the plants, the lessons
• further interfaces between the learners are not necessary

trainers and learners:
• indirectly over the tutors

trainers/operators and tutors:
• tutor as filtering link to the plant

critical factors:
• precisely planned learning path
• keeping the attention of the learners through variety and alternation of didactical methods, information, communication and activities
• the coordination and control of different plants
• the training and coaching for trainers and tutors
• to overcome the inhibitions of the participants (trainers, tutors and learners) in the video-conference courses

10 Example C: Business Television

10.1 Background

Increasing demands of the market compulsions induce to the necessity for enterprises of continuously immediate spreading of (product) information to employees, customers, suppliers and dealers, more and more world wide. Business television is an excellent media for this (world wide) **information updating**, already used even large companies (like FIAT). Global or nation wide players are taking this technology for providing actual information to their customers (dealers and suppliers) and employees all over the country and the plants. In the case of FIAT transmissions were addressed to the FIAT Auto sales network. About 1100 dealers are connected up to now. Company news are send twice a month for different cars.

But business television could also utilised for **corporate training in more and more decentralising and globalising markets and companies**. However more than other training technologies business television has to be a complementary medium for corporate training, **combined with other training support**.

The training and information transfer has to correspond with the needs of the visitors of the course. **Learning contents** transmitted by business television **are product information, sales training and promotion, customer orientation etc., but also skills like car repairing and trouble shooting**. All in all the contents have to be **easy** to understand, clearly defined and **of general interest** for specific, but **large groups of "learners" or recipients** (basic information and updating of information and procedures). The use of business television demands a company and training content specific solution, so particular lessons have to be produced. Business television should be used for corporate training, if the **visual potency** of this media is an added value for the training transfer.

The target groups of business television training are almost similar to the target groups of the information transmissions (like company news): employees, dealers and their mechanics, suppliers etc. They should have an **homogenous qualification** background or deal with a **common object** (e.g. parts of information of a specific car are relevant for dealers and mechanics).

10.2 Framework (Prerequisites and Specifications)

10.2.1 Organisational and Structural Aspects

Business television could be seen as a **cost effective** training application concerning travelling and personnel costs for nation or world wide operating companies. The almost highest num-

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ber of recipients could be reached by this training opportunity, without an increasing of the broadcasting costs.

In the opposite the preparing costs of a business television courses have to be noticed. The production has to be done by **outsourcing**, because business television specialists have to produce these kind of training sessions. An interdisciplinary production group needed: beneath the teachers and pedagogical methodologists a complete film crew (a studio has to be rented as well).

The programs and the transmission have to be prepared in team work, even with involvement of the later recipients. Furthermore a **complex organisation** is required, to fit the needs of the large number of participants. This concerns especially transmission dates and hours, but also the guaranty of the content selection and quality, the preparing for the transmission (e.g. every interested recipient has to get **an information and a manual before the television broadcast**), additional **support** and other **follow-up activities** (for monitoring and evaluation).

For the trainer has a central role in the production and transfer of business television courses, **special teachers** have to be chosen. Not every trainer is able to handle this kind of teaching situation. The trainers **personality** is a critical factor for the attention of the learners and the learning results.

10.2.2 Technological Aspects

Business television is send via satellite on a rented channel at a fixed time, a television with a decoder (for coded transmission like payTV), a parabolic antenna (and a video recorder) are the necessary **equipment for the recipients or learners**. A broadcasting of live or pre-recorded training programs for corporate settings is possible.

Interactive broadcasting as an added value combines a satellite downlink with an audio conference by phone or direct telephone calls during the broadcasting. A combination with other feedback channels for business television is possible as well: teledata-services (for manuals, other additional information etc.), email, internet, fax etc. In specific events (e.g. virtual congresses) video feedback lines are also imaginable (but this is very similar to video-conference applications). But at least **clearly limited transmission times** restrain the possibility of answering questions in real time and suggest follow-up activities.

Graph 14: (Interactive) Business Television Setting
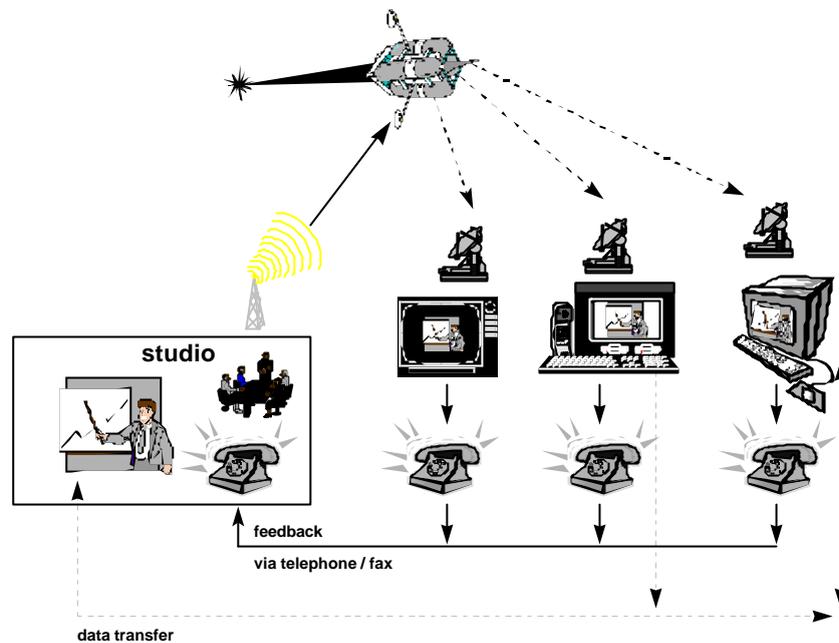
The technological advantage of business television is based on the **highest quality for the visualising of training aspects**, constraints have to be made upon the fact, that it is - even if it is combined with other interactive possibilities - almost a **one-way-communication** and information or training **transfer media**.

10.2.3 Social Aspects

Business television is an easy transferable way of corporate training, because almost everyone world wide is **familiar with this kind of technology**. But it has it constraints in the different cultures and languages. To use this familiarity and to keep the attention and motivation for the television training, the lessons have to **fit the cultural and social habits of the target groups**. For world wide broadcasting especially the **different languages** are a problem. As business television is mostly addressed to large target groups, there will be a lot of recipients without the capability of speaking another language. The most of this recipients would not follow a lesson in another language or with subtitles. Therefore business television courses have to be translated. This problem cumulates with the fact, that a lot of technical expressions are normally used. Also **organisational aspects** could be problematic: In the case of FIAT there were a great difference in working hours, the working attitudes and "culture" between the North and the South.

Beiträge aus der Forschung

10.3 Learning Strategies and Activities

Because of the media opportunities and constraints corporate training on business television conducts a high clarity and consistency of learning contents. Business television provides for every employee, customer, dealer and other recipients exactly the same information and training. Its high visualising training possibilities are more adequate to the manners of skilled workers: Showing how it works instead of reading papers (e.g. for car repairing) is easier accepted by the service staff of a car company.

But anyway, business television is characterised through an almost one-way information and training transfer. It is more a know-how transfer and an indirect training, a **receiving** of information and training. Skills, behaviour and procedures can be **shown, but not directly practised** under supervision of the trainer. No immediately training in simulated or real situation is possible during the training lessons. Therefore business television can only **initiate** training and practising activities. Nevertheless during the transmission it is possible for the learners, to have a television right in the garage for following and practising the instruction of the trainer on a car, that has to be repaired. To repeat the business television courses as often as needed, the recipients should **tape** them.

New media or better the combining of different media cause new **interactive possibilities** for business television providing constant feedback through the internet, keypads, telephone and else. But video transmission through the internet are loosing one added value of business television: the high quality of visualising (however, e.g. video-conference courses allow a better interactive communication during the session). On business television "interaction" is made additional to the transmission, mostly afterwards.

10.4 Support and Learning Interfaces

Corporate training via business television has to be **supported by additional adequate activities**, particularly adequate for the target groups of the training. For example, a supporting learning path on the internet is not adequate for skilled workers or mechanics. They are ordinarily not prepared, interested and willing to use this channel for learning. They are not qualified for active self-instructed learning on new media. Learning on the job and showing or visualising of training aspects are more accepted and efficient for these groups.

Support has to be given **before the training by manuals and a documentation** of the lesson. During live transmission of business television training courses **telephone hotlines** should be opened, with two or three experts of the actual content in the background. Problems and questions of the recipients could be collected, the most relevant two or three questions from of gene-

ral interest be selected and given to the trainer (at the end or between the lesson). This gives the trainer the possibility to specify or repeat not or misunderstood parts of the lessons directly. But it has to be kept in mind, that the recipients frequently are very shy of phoning, but by experience and a growing familiarity the number of direct phones during the transmission will increase. The none answered and almost more **specific questions are responded by fax after the broadcasting**.

Between the transmissions the teacher or trainer should be also a tutor for the recipients: answering their questions, giving additional information and advice etc. For a large enough number of recipients and transmissions **call centres** could be a more elaborated way for the continuous support of the learners. In "interactive" settings of business television telephone, fax or email responds could be made, e.g. concerning multiple choice questions.

On business television training courses there are only a few **interfaces**:

- between **trainers and learners** there is only a minimum of support and communication during the transmission, and this minimum is also filtered before.
- between **tutors** (this is also the task of the trainers) **and learners** there is a support between the transmissions.
- between **learners and learners** there is no formal contact in any way. Sometimes informal exchange between technicians or mechanics took place.

10.5 Monitoring, Assessment and Evaluation

Evaluation and monitoring of training courses via business television are made on the learning results and feedback of the recipients. Directly after the transmission the recipients should send an already prepared **multiple choice questionnaire** by fax. Because this opportunity is not taken by every recipient, **random telephone interviews** should be made with at least 10% of the learners.

On the long term the results of the training could be evaluated by **customer satisfaction indices**, but this is measurable about two years later.

An **indirect monitoring** is possible **on the support activities and feedback processes**. For example, if there are a lot of question on the same issue, something must be wrong with the (transfer of the) training content.
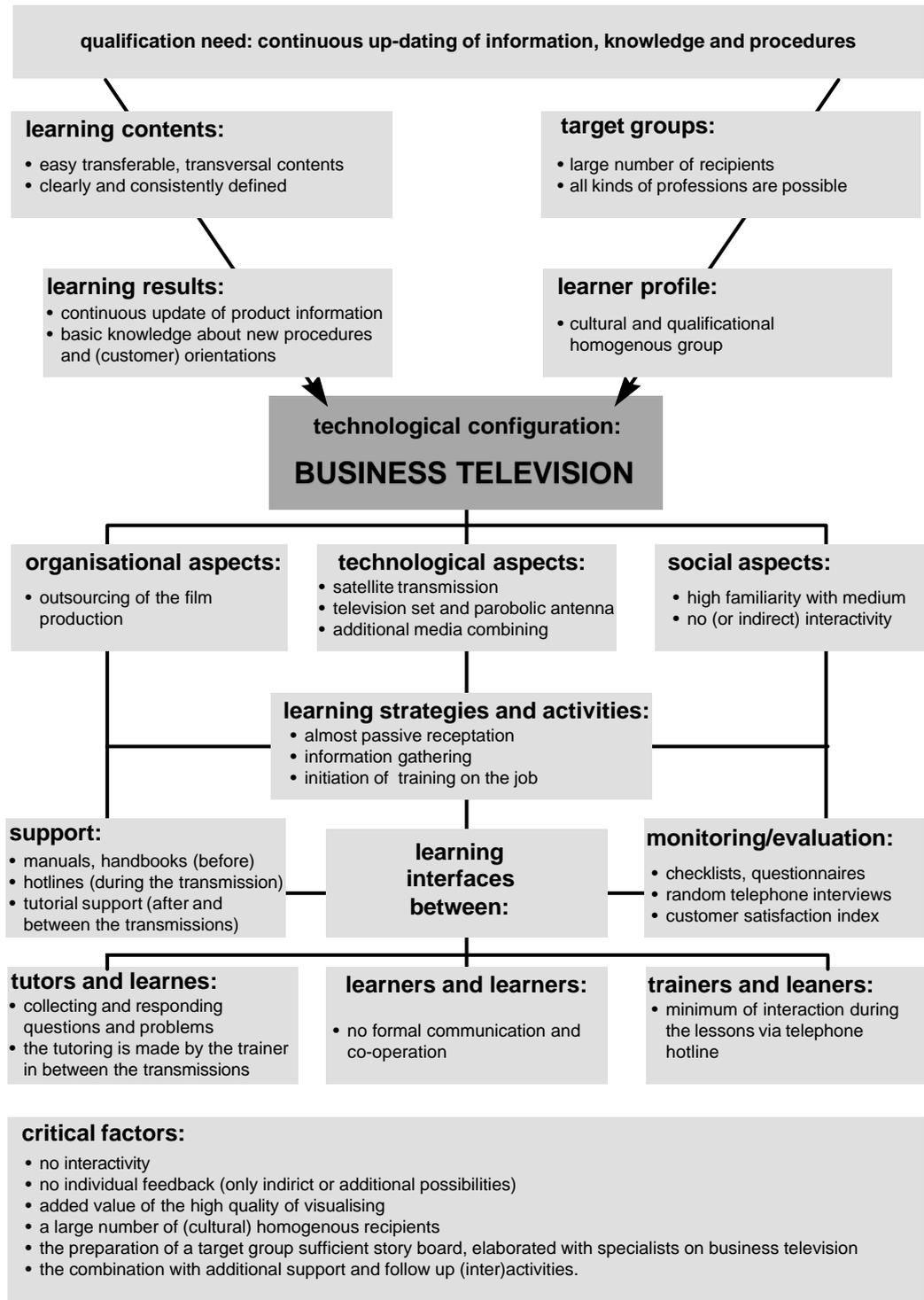
10.6 Critical Factors

Business television for corporate training has an added value to other training possibilities, if its application is are well elaborated and one complies about the following critical factors:

- a **large number** of (cultural) homogenous recipients; a large number for cost effectiveness and a homogenous background to ensure the motivation for participating and the attention of the learners (to remember: language problems)
- the preparation of a **target group sufficient story board**, elaborated with specialists on business television and film, including the selection of **trainers with a media specific personality**
- the **combination with additional support and follow up (inter)activities**.

10.7 Summary: Key-Factors of Business Television for Corporate Training

Graph 15: Key-Factors of Business Television for Corporate Training

qualification need: continuous up-dating of information, knowledge and procedures

learning contents:
• easy transferable, transversal contents
• clearly and consistently defined

target groups:
• large number of recipients
• all kinds of professions are possible

learning results:
• continuous update of product information
• basic knowledge about new procedures and (customer) orientations

learner profile:
• cultural and qualificational homogenous group

technological configuration:

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organisational aspects:
• outsourcing of the film production

technological aspects:
• satellite transmission
• television set and parobolic antenna
• additional media combining

social aspects:
• high familiarity with medium
• no (or indirect) interactivity

learning strategies and activities:
• almost passive receptation
• information gathering
• initiation of training on the job

support:
• manuals, handbooks (before)
• hotlines (during the transmission)
• tutorial support (after and between the transmissions)

learning interfaces between:

monitoring/evaluation:
• checklists, questionnaires
• random telephone interviews
• customer satisfaction index

tutors and learnes:
• collecting and responding questions and problems
• the tutoring is made by the trainer in between the transmissions

learners and learners:
• no formal communication and co-operation

trainers and leaners:
• minimum of interaction during the lessons via telephone hotline

critical factors:
• no interactivity
• no individual feedback (only indirect or additional possibilities)
• added value of the high quality of visualising
• a large number of (cultural) homogenous recipients
• the preparation of a target group sufficient story board, elaborated with specialists on business television
• the combination with additional support and follow up (inter)activities.

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11 List of Graphs and Tables