Centre for Advanced Learning Technologies

CALT

Director’s Research & Development Report

CALT Key Research Areas

Individual Learning Systems
- Intelligent Learning Agents
- *modelling of highly interactive learning & change processes
- *modelling of knowledge domains (ontologies)
- *intelligent conversational agents (InCAs)

Advanced Simulations
- *effectiveness of advanced experiential learning systems
- *design of multi-user, virtual reality environments
- *object-oriented modelling of organizational dynamics

Organizational Learning Systems
- Virtual Communities
- E-novation Studies
- *online platforms design and evaluation
- *analysis of online social dynamics
- *analysis of knowledge- & value-creating processes (learning communities)
- *cyberentrepreneurship cases and studies
- *innovation processes at company and market level
- *sector-specific studies (banking, content, etc.)

Key Application Domains

- e-Learning
- Knowledge Management
- Innovation & Change Processes
- e-Business & e-Management

May 2002
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INSEAD’s Centre for Advanced Learning Technologies (CALT) was officially launched in the 1995/96 academic year with the aim of:

⇒ studying new media and technologies in order to better understand their specific impact on management theory, practice, and on management and organisational learning,

⇒ stimulating research, experimentation and innovative developments in the emerging fields identified in the CALT Research Agenda.

The CALT Research Agenda (Section 5) has progressed over the last few years thanks to a large number of CALT Projects (Section 6) studying the impact of new media and technologies on the business environment in general (e.g. projects on Internet-related business transformations as well as knowledge management and virtual communities) and on management learning at the individual, team, organisational and community level (e.g. projects related to the design of multimedia-based cases, advanced simulations and the dynamics of Internet-based learning communities).

During the last few years, CALT has become one of the main research centres at INSEAD and a CALT Team has been formed, whose role is to conduct research on CALT Projects and to disseminate and share the knowledge generated by the Centre with INSEAD colleagues, research partners, and with the academic and business community. The CALT Team has profited from cooperation and support from a large number of academics, involved in different CALT Projects or contributing with their work to research relevant to the CALT Agenda. Corporate Sponsors such as the Reuters Foundation, and a number of academic and corporate R&D partners invested resources (in the form of funds, time and knowledge) in CALT research and provided opportunities to exchange experiences and mutually extend our knowledge of the theory and the practice of technology-enhanced learning (see Sections 2-4).

Over the last year, CALT has generated a large amount of learning for all those involved directly in the Centre’s activities, and also an extensive output which is accessible through articles in academic journals and the business press, a series of working papers and technical reports, conference presentations, knowledge dissemination events and workshops, as well as conceptual and methodological contributions and innovative learning systems which have already started to be adopted by researchers and schools worldwide. A complete list of CALT Output is included in Section 7.

By the end of its seventh year, the 2001/2002 academic year, the Centre has succeeded in establishing a solid basis for developing further its research agenda, providing its innovation-oriented contribution to both INSEAD and the academic and business community.

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2001-2002 Annual Update

Over the period 2001-2002, CALT has made significant steps in the three fields of research it targets: (1) Experiential learning and simulations of organizational dynamics; (2) Learning in virtual communities & learning networks, and (3) the design of agent-based systems to support learning at the individual and community level.

High-Tech Simulations for Hi-Touch Situations
In the VERDI Project, we have explored the impact of enabling learners to participate in simulations addressing organizational dynamics via 3D/Virtual Reality interfaces, as well as the design and implementation of such complex distributed real-time systems. The new prototypes will enable us to create new highly involving simulations in which to experience inter-personal and group dynamics. Furthermore, we have started extending the models underlying our simulations (which are used today worldwide for teaching or research purposes) to address specific contexts such as situations of resistance to change in educational environments, family businesses, as well as driving change in virtual organizations, in which employees interact almost exclusively through a variety of electronic means.

Learning across Organizations: Theory and Practice of Learning Networks
The eCAMP and Knowlaboration Projects have generated an extensive set of research data related to the theory and the practice of Learning Networks, cross-organizational groups and communities focused on knowledge sharing (and creation) within a given industry or focused on a specific issue, such as their management competencies. We have explored Learning Networks operating in a 'traditional' way (in terms of their governance, decision-making, learning and knowledge management processes) as well as 'post-Internet' Learning Networks operating using an OpenSource model and integrating information and communication technologies to redesign and extend/transform their key governance and value-creation processes. The insights from these studies are providing a sound basis for better understanding the dynamics of Learning Networks in general as well as the social, technological and knowledge engineering design principles characterizing the next generation of Learning Networks.

Towards Intelligent Agents operating in Social Contexts
The K-InCA and the EdcomNet Projects have advanced our understanding of how to design software agents operating in organizational contexts aimed at triggering learning and behavioral change in individuals. After having explored extensively the cognitive dimension of such anthropomorphic agents interacting with people using a conversational metaphor, we have focused on how to design such agents in a way which leverages as much as possible the social context in which such agents operate, as well as research issues related to user modeling and ontologies of knowledge management systems, which we are exploring in the context of the OntoLogging Project. These studies are leading to the definition of new standards and design principles aimed at employing advanced learning technologies in a way which recognizes and exploits more explicitly the fact that learning and change always take place in a social context.
[2] CALT TEAM

Team Members 2002

- Albert A. Angehrn
- Karen Askov
- Alexander Bogatov
- André Campos
- Vanida Chanthalangsy
- Panagiotis Damaskopoulos
- Manjusha Deshpande
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- Michael Gibbert
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- Katerina Nicolopoulou
- Catherine Nielsen
- George Por
- Sunil Rachamadugu
- Liana Razmerita
- Claudia Roda
- Rachel Royer
- Lynn Selhat
- Michal Strahilevitz
- Joe Tabet
- Larry Wilson

More details about the current team members can be found at the following web address:
http://www.calt.insead.edu/people/

[3] CALT ALUMNI

- Jill Atherton
- Chiara Benedetto
- Marc Bolh
- Elena Branet
- Carolyn Dare
- Alastair Giffin
- Pooja Goyal
- Max Grauert
- Yael Kedar
- Sandra Kramer
- Nicholas Leck
- Revital Marom
- Sonal Mawandia
- Jamie McNeil
- Christian Menou
- Jens Meyer
- Hubert Poulhes
- Michael Walls
- Anna Wertenbroch
[4] CALT’S CORPORATE & RESEARCH PARTNERS

[4.1] Corporate Partners & Sponsors

Since CALT’s creation, Corporate Sponsors and a number of academic and corporate R&D Partners have provided funds for research and opportunities to exchange experiences and to mutually extend our knowledge of the theory and the practice of technology-enhanced learning. They include:

- Andersen Consulting
- Alcatel
- Apple Computers Europe
- Bocconi University, Milan
- CEDEP
- Daimler Benz
- Ericsson
- Ernst & Young
- European Commission
- Hypobank
- IAF & INSEAD Alumni
- IBM Canada
- IBM Europe
- ICEDR
- IESE, Barcelona
- IMS Europe
- Lotus Corporation
- McKinsey & Co
- Microsoft France
- Reuters
- Swedish Trade Council
- Sun Microsystems
- Teledanmark
- Wall Street Journal – Europe
- Xerox Corporation

A special thank-you goes to Mr Stephen Somerville, Director of the Reuters Foundation, as well as to Mr Hasse Karlsson from the Swedish Trade Council, for their direct involvement with innovation in the domain of management learning and the extensive support provided to the Centre. Special thanks also go to IAF (INSEAD Alumni Fund) and the Xerox Corporation. Alcatel, through its Chair of Net Economy and e-Management is also indirectly sponsoring the Centre.
4.2 Research Partners

A number of projects are based on CALT’s collaboration with researchers from a number of institutes and centres:

- Xerox Parc Research Lab, USA and EuroParc, Grenoble, France
- IBM Research Centres
- FZI Research Center for Information Technologies at the University of Karlsruhe, Germany
- Centre for Educational Technology, Bocconi University, Italy
- Institute for Technology and Enterprise, Polytechnic University, New York, USA
- Learning Lab, The Wharton School, University of Pennsylvania, Philadelphia, USA
  (Professor Angehrn is a member of the Advisory Board)

Our simulation and virtual platform projects have profited from the active involvement of professors from the following universities and schools:

- INSEAD
- Stanford Business School
- Columbia University
- MIT
- University of Chicago Graduate School of Business
- Kellogg School of Management, Northwestern University
- College of Business and Public Administration, University of Arizona
- Institute for Technology and Enterprise, Polytechnic University, New York
- College of Business Administration, University of Tulsa
An Overview

CALT Research Projects focus on learning and change/innovation at the individual as well as at the organizational and community level.

Individual Learning Systems

Much of our research focuses on learning at the individual level. Our objective is to design, develop and analyse the impact of two types of advanced learning models and systems: Intelligent Learning Agents (InCAs) and Advanced Simulations of Organizational Dynamics.

Intelligent Learning Agents (InCAs) operate primarily at the individual learning level. Their objective is to accelerate the acquisition and the adoption of relevant new concepts and practices by individuals. InCAs are a very advanced approach to technology-enhanced or e-learning. They operate first at the motivational level, and then gradually involve the learner in an interactive process, in which an individual first better understands and develops interest for the new concepts and practices, and then successfully integrates and adopts them, individually as well as in his/her organizational or social context. In our current projects and research plans, we are modelling, designing and developing prototypes of InCAs operating in different application domains such as making people learn to manage and share knowledge in organizations better and faster (K-InCA), generate and extract value from virtual communities (C-InCA), or become more learning-oriented (L-InCA).

Advanced Simulations of Organizational Dynamics are experiential learning systems exploiting technologies such as multimedia or virtual reality to accelerate the understanding and learning of organizational processes. Such simulations are built on models of human behaviour and social processes in organizations, and their design and evaluation helps us to understand the opportunities and the limits of supporting learning through the design and creation of highly realistic, simulated learning experiences. In our current projects and research plans, we are modelling, designing and developing extensions of the kernel (organizational behaviour processes) as well as of the interactive components (learning in multi-user virtual reality environments) of the EIS Simulation, which addresses learning in the domain of change management and resistance to change in organizations, and which is currently extensively used as a pedagogical and research tool in a number of universities and organizations world-wide (providing a rich continuous flow of feedback data for evaluation research).

Organizational Learning Systems

Our other research projects completing the CALT Research Agenda focus on learning and change/innovation processes taking place at the organizational or community level. Here, our objective is to understand the design and the social dynamics of Virtual Communities and to analyse how the Internet and the emerging 'Net Economy' is a source for new models of learning, knowledge and value creation (we call these 'E-nnovation Studies').

In the domain of Virtual Communities, our research projects address and contribute to knowledge creation in the domain of the design of effective online environments in which communities (of researchers, employees of one or more companies, customers, service providers, etc.) learn, structure and manage knowledge as well knowledge- and value-creating processes. In our current projects and research plans, we are extending further the technical features, the underlying social dynamics model, and the evaluation of the ICDT Platform, a virtual community environment which is used in a variety of research projects, knowledge management and elearning contexts.

In the domain of E-nnovation Studies, our research projects aim at better understanding the phenomenon of 'innovation in the Information Age' by studying new models and forms of innovation taking place at the individual level ('CyberEntrepreneurs'), in organizations (e.g. through the introduction of 'incubators'), as well as in whole market or industry sectors (e.g. the transformation and evolution of the content, of the banking, and the education sectors).
CALT RESEARCH AGENDA - Overview

CALT Key Research Areas

Individual Learning Systems
- Intelligent Learning Agents
  * modelling of highly interactive learning & change processes
  * modelling of knowledge domains (ontologies)
  * intelligent conversational agents (InCAs)
- Advanced Simulations
  * effectiveness of advanced experiential learning systems
  * design of multi-user, virtual reality environments
  * object-oriented modelling of organizational dynamics

Organizational Learning Systems
- Virtual Communities
  * online platforms design and evaluation
  * analysis of online social dynamics
  * analysis of knowledge- & value-creating processes (learning communities)
- E-nnovation Studies
  * cyberentrepreneurship cases and studies
  * innovation processes at company and market level
  * sector-specific studies (banking, content, etc.)

Key Application Domains
- e-Learning
- Knowledge Management
- Innovation & Change Processes
- e-Business & e-Management
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Multimedia Case Design Studies

This project aims to provide case study authors with a design methodology and development toolkit for leveraging multimedia technologies to enhance the case study learning experience. It is based on CALT’s extensive experience since 1992 in the design, building and delivery of different forms of “multimedia cases”, and analysis of their impact on pedagogical effectiveness.

Multimedia cases improve on traditional cases both by enhancing “learning-by-absorbing” and extending the opportunity for “learning-by-doing”. We have distinguished four key categories of multimedia case that offer different mixes of these two dimensions:

- Basic Multimedia Business Case
- Enhanced Multimedia Business Case
- Situation-based Multimedia Business Case
- Multimedia Business Case Simulation

For a given case study, with its corresponding set of “raw material” and underlying pedagogical objective, authors will be able to use the case design methodology to choose the multimedia case design category that provides the best fit, and the development kit to actually build the case.

Figure 1: Adding Value through Multimedia
Figure 2: “Basic”, “Enhanced” and “Situation-based” Multimedia Business Cases

Minitel – A Home Retailing Application

Introduction

“We realised right at the outset that Minitel was a very valuable means of communicating with our customers.”

Pascal Retzke
Head of Video at Camif

Pascal Retzke was analysing the results of VideoGuide (Exhibit 1, Transcript Exhibit 1, Transcript of the English, Exhibit 1 Video). Minitel-based video service introduced by the Co-operative des Antennes de la Multimédia (Exhibit 2). In October 1990, Camif’s phone service were able to beat up to 1990 compared with...

Try different options

- cold
- standard
- warm
- top left
- top right
- bottom left
- bottom right

Need help?
**Web Authoring Studies**

This research field explores how to facilitate the implementation on the world wide web of different types of learning methodologies, by examining the extent to which these methodologies can be articulated in the form of a specific authoring system that enables authors to focus on the “content creation and conversion” process and deliver a learning system that is consistent with the methodology.

**Web Authoring: TrainerKit**

The aim of the TrainerKit project is to create new insights into how to develop and deliver effective online training on well-defined bodies of knowledge (such as how and why to use a software product), that both stimulates the user and captures the advantages of classroom-based training. These new insights will be disseminated in the form of academic papers and journal articles, and will be reflected in a methodology that helps trainers apply these insights to training material.

The new insights developed during the course of the research project will take the following tangible forms:

- Designing effective online product training: research and experiences with the TrainerKit methodology?
- Encouraging trainers to train and learners to learn online: experiences and conclusions with an online software product training module?

The TrainerKit methodology will take tangible form as a set of web-based material that explains the underlying conceptual framework and components, presents a set of rules to follow, and includes items such as examples of its application, trainer forums and user forums.

Trainers and end users will benefit from an integrated, coherent and effective online training environment for a given body of knowledge.

This research project, “TrainerKit”, builds on the collaborative research projects already completed with Reuters, and is funded by the Reuter Foundation.
Web-based Training Studies and Modules

As companies and educational institutions increase their investments in multimedia systems and the Web (see Figure below), the objective of this project is to analyse the advantages and drawbacks of Web-based training modules running on corporate Intranets or offered to the public via the Internet, the pedagogical methods most suited to this delivery medium, and the results obtained in terms of learner’s satisfaction and motivation as well as retention and comprehension levels achieved in the subject area addressed. Within this project, a number of Web-based training modules are designed and analysed. Two recent projects analyse the potential of using the Web to support a specific pedagogical technique of “programmed instruction” (see [WTSM-SL]) and another the effectiveness of management training modules distributed to a community of professionals (see [WTSM-Memphis], a project sponsored by the EC).

Evolution of global multimedia spending in European educational institutions (source: Datamonitor)

Web-based Structured Learning

A number of pedagogical techniques can be used to provide training over the Web. This project explores the application of a “Programmed Instruction” (PI) approach to Web-based training delivery. Programmed instructions (PI) textbooks have been used for several decades to allow students a self-paced learning. The key features of the PI-learning approach are given in the following list:

- **Interactive**: The learner is regularly asked to answer questions while working through a PI-textbook.
- **Immediate response**: Once a question is answered by the learner, e.g. by filling in a blank or choosing out of a multiple choice list, the learning package will immediately give feedback and comment on the correctness of the answer.
- **Branching**: According to the answer given, a PI-textbook might indicate the learner where to continue learning. If, for example, an incorrect answer was given by the learner, the prescribed course of learning might return to a previous chapter in order to refresh or reinforce the learning of material.
- **Self-paced learning without an instructor**: PI-textbooks are designed to allow the learner to advance in gaining basic knowledge without the guiding function of an instructor. Often these textbooks are used as a supplement to courses or as an introduction, e.g. INSEAD suggests its MBA students to work through a financial accounting PI-textbook before arrival.
Web-based PI-approaches potentially enhance the features mentioned at every stage of the process illustrated in the Figure above. Examples are given in the following list:

- **Multimedia:** Rather than text and static graphics only; video, sounds and interactive simulations can be included as well. Further, by using hypertext technology, external information sources can be included in the learning material.
- **Management of learning results:** The computer keeps track of how the learner advances in the material and is able to give feedback.
- **Certification:** The participation in a class or course, or reading a textbook does not guarantee that the learner actually masters the material. Usually an examination is used to assess the knowledge of the learner. A computer-based PI approach would constantly verify the learner’s success and is hence capable of implicitly certifying the mastery of material.
- **Availability and content/structure maintenance:** Computer-based learning material can be made easily accessible to everybody who accesses the Web. At the same time it can be centrally updated, thus ensuring that always the newest material is available and used. Current web-technology, i.e. browser-technology, is already able to support the implementation of sophisticated computer-based learning material and offers a widely available and standardised platform.

This project investigates Web-based Programmed Instructions from the following perspectives:

- technical feasibility and different technological stages for web-based learning (see figure below)
- segmentation of buyers and users
- current market and offerings of computer-based learning material.

#### Technical Complexity

<table>
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<tr>
<th>Human Instructor - Learner Interaction</th>
<th>Memory Technology Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Complexity</td>
<td>Standard Browser Technology Sufficient</td>
</tr>
<tr>
<td>Technical Complexity</td>
<td>Special Server Technology Needed</td>
</tr>
</tbody>
</table>

#### Human Instructor - Learner Interaction

- **Memory**
- **Reactive Branching**
- **Electronic Delivery**

#### User Interface

- **User**
- **Content + Branching Code**
- **Platform**
MEMPhIS

The MEMPhIS project is a Pilot Project presented by the Associazione Italiana Terapisti della Riabilitazione (A.I.T.R.), established under authority of the LEONARDO DA VINCI program and financed by Basilicata Region.

The aim of the project is: to provide an innovative solution to the training needs of Managers in Physiotherapy by establishing a continuous education program based on modern multimedia information and telecommunication technologies, whose aim is the training of rehabilitation specialists that in the near future can be the starting point for the institution of the School of specialists in the European area and that would be potentially open to all institutions.

CALT’s role in this European project is to advise the consortium on the development of a Virtual Management Learning Environment (VMLE) supporting all the dimensions involved in the distribution of management education modules via Internet.

Partners involved in this project:

- Associazione Italiana Terapisti della Riabilitazione, A.I.T.R, Italy (prime contractor)
- Associazione Italiana Terapisti della Riabilitazione Basilicata Region, A.I.T.R. Bas, Italy (project coordinator)
- SERIC/Multisystems Consulting, Italy
- Training Research and Net Development “TR&ND”, Italy
- CALT, Centre for Advanced Learning Technologies, France
- Institut Formation Bois-Larris, Portugal
- Associação Portuguesa de Fisioterapeutas, APF, Portugal

Funded through: Leonardo da Vinci (ESPRIT)

Figure 1: Design of the Executive Learning & Virtual Interaction System (ELVIS)
Figure 2: Content Customisation via the evaluation of Cluster One (Module One)

Figure 3: MEMPhIS Website (http://www.insead.fr/calt/Project/memphis/)

MEMPhIS
Methodology for a European Manager in Physiotherapy with Interactive Systems

About MEMPhIS
Project Overview, Project Partners, MEMPhIS Demo

Frequently Asked Questions
Objective, Results, References, Answers

News from ELVIS
News, Status Reports, Changes

Inside MEMPhIS
Project Code, Password/related Access

Figure 4: MEMPhIS in ALPHA WORLD
Virtual Learning Platforms

As demonstrated by recent experiences in companies such as Arthur Andersen or Price Waterhouse, groupware and internet/intranet technology provide the opportunity for companies to rethink and redesign communication, information/knowledge sharing, and cooperation channels and modes. In the specific context of a management development programme, groupware can provide an effective infrastructure for extending and stimulating the learning process even beyond (before and after) the traditional “in-class” training sessions, contributing to:

- higher involvement of the participants in the on-going learning process,
- better integration of the learning materials in the working context of participants,
- direct exposure to new ways of communicating and sharing information using electronic means, and setting up efficient virtual project teams in the organisation.

The aim of the Virtual Learning Platforms (VLP) project is to explore the design and impact of such infrastructure aimed at opening a new “continuous” communication and collaboration channel among all the participants of a Training Programme (learners, trainers, and other learning resources, enabling participants to extend their learning experience between occasional same time - same place modules by participating in on-line discussions on selected topics, working on projects related to the Programme, and communicating amongst themselves and with selected Faculty members.

Besides analysing to which extent and under which conditions VLS can effectively achieve the 3 key learning-related objectives listed above, the project explores the impact of VLS on dimensions such as:

- effective and “time saving” communication/coordination among network members,
- efficient sharing of information & ideas for problem solving,
- exchanging knowledge & expertise for decision making,
- launching & contributing to on-line discussions,
- sharing and working together on any type of document via the network,
- setting up efficient project management infrastructures to reduce project cycle time.

In the context of this project, a number of groupware and Internet-based VLS have been designed and tested in the context of INSEAD programmes (see e.g. the project [VLP-INSEAD] for more details). New ways of structuring the design and the interaction with VLS are currently explored in the [VLP-ICDT] project.
ICDT-based Learning Platforms

ICDT-based Learning Platforms are specific VLP supporting navigation in a structured community environment. This project aims at exploring the design of advanced technical features included in such advanced VLSs (customisation and intelligent agents) and collecting data from a number of groups experimenting ICDT-based Learning Platforms in the context of INSEAD and in-company programmes.

From a user’s perspective, the website is structured as illustrated in the two figures below.

ICDT-based VLS are designed using a project management metaphor. Hence, a “Project List” is always displayed on the left-hand side of the window, with one of the projects selected. The VLS always includes at least one default project called “Virtual Community”, with all its related documents. In practice, every “project” in an IDT-based platform can have 4 separate “spaces” attached to it, an “I” (information) space, a “C” (communication & cooperation) space, a “D” (distribution) space and a “T” (transaction) space. Each space can in turn include a variable number of “items” (i.e. documents stored in the underlying Notes database/s). The user can then easily select the “I”, “C”, “D”, or “T” buttons to visualise the items/documents related to the selected project.
INSEAD Virtual Learning Platforms

Objectives

The aim of the Learning & Knowledge Platform (L&K Platform) is to open a new “continuous” communication, collaboration and learning channel between all the participants of the Programme (Executives, Faculty, Guest Speakers, Project Partners, et al), and other learning resources during as well as after the programme.

(1) The key objectives of the L&K Platform:

- Knowledge Sharing and Discussions
- Reflections on Learning Experience
- Teamwork & Projects

(2) Additional Objectives of the L&K Platform:

In addition to the 3 key learning-related objectives listed above, the L&K Platform has the objective of gradually exposing the participants to new ways of learning and working together, as a new basis for:

- effective and “time saving” communication/ co-ordination between network members,
- efficient sharing of information & ideas for problem solving,
- exchanging knowledge & expertise for decision making,
- launching & contributing to on-line discussions,
- sharing and working together on any type of document via the network,
- setting up efficient project management infrastructures to reduce project cycle time,
- exposure to the Internet and its different facets of employment.

Figure 1: Possible Design (1), Content (2) and Employment (3) of the LKP
Business Navigator Studies

The Business Navigator Method [1] is an approach to management development which combines the advantages of the two most widely used methods (Case Method and Business Simulation Games) and defines a framework for the integration of computer and telecommunication technologies underlying the next generation of management development tools. The key to Business Navigator is the development of a Virtual Interactive Business Environment (VIBE), a realistically simulated business context (e.g. a company) which the learner is invited to explore step-by-step in the course of a “virtual visit”. With a VIBE, case reading is transformed into a real experience in which one can wander through buildings, enter offices, look for information, meet people and interact with them. In a VIBE, a given business context is mapped onto the three interconnected navigation levels illustrated in the Figure below: the Physical Network, the Organisational Network and the Information Network.

The research conducted within this project aims at developing and validating a conceptual basis for new approaches to management development, and in particular to methods and tools extending and enriching traditional pedagogical methods such as case studies and simulations. The Business Navigator Model (see for instance the picture below) has provided the basis for a number of articles, conference presentations, and the conceptual basis for a number of CALT Projects (Multimedia Cases, EIS Simulation, etc.) exploring separately different dimensions of the Business Navigator Model. Current research includes refining and further developing the Business Navigator Method and exploring its implementation (i.e. the design of advanced Virtual Interactive Business Environments (VIBES)) in different learning contexts.

EIS Simulation Evaluation Research

The evaluations includes a series of studies carried out with different groups of participants in several teaching programmes. The studies are divided in the following two main categories:
- Assessing the ‘Learning value’ of the EIS simulation
- Assessing the ‘Learning value’ of industry-specific simulations

Assessing the ‘Learning value’ of the EIS simulation

The aim of the project is to conduct an objective evaluation that would provide a quantitative measurement of the value added of the EIS simulation as a learning tool. At the same time, the project will help us develop the competencies within CALT in order to be able to design and conduct future evaluations.

Since the EIS simulation started to be used at INSEAD, systematic evaluations were done in order to get feedback from the participants. These evaluations were mostly qualitative, focusing on the experience and participants’ satisfaction. The results of these evaluations were published in a paper which appeared in the Journal of Management Information Systems.

These new series of studies will conduct a different type of evaluations, mostly quantitative measurements focusing on the learning experience. Objective indicators such as comprehension or retention will be measured, and, whenever applicable, evaluations will be carried out to compare various learning methods.
(lectures, case-studies, simulations). Qualitative measurements of the learning process will also be conducted in parallel.

For example, the comparative studies will apply the following methodology:

**Assessing the ‘Learning Value’ of industry-specific simulations**

The aim of the project is to assess the value of ‘customised simulations’ and their effect on learning. The purpose is to conduct an objective evaluation of a customised version of the EIS simulation – tailored to the context of a specific industry – and compare its impact to that of the generic (non-tailored) one. The study aims at clarifying the extent to which it is necessary to develop tailored, industry-specific simulations, and understand their positive (or negative) effect on the learning experience.

Qualitative as well as quantitative indicators will be measured. The learning experience will be evaluated in relation with the use of 3 types of simulations: a) generic, b) customised and c) placebo (i.e. a generic simulation with only cosmetic changes that would make it look as customised).

Different simulations will be used with different, statistically equivalent groups. The study will measure the level of knowledge as well as the satisfaction with the learning experience. Cross comparisons will enable to assess the marginal value gained/lost by using customised simulations with target groups.

A tailored version of the EIS simulation will therefore be developed, modelling a “professional organisation” represented by a hospital. Such organisations typically regroup three categories of key players: managers, professionals and para-professionals, each having a very specific culture and behaviour, who interact in a very particular one with another. A placebo version will also be developed.
EIS Simulation and Change Mgmt Theory/Practice

Deregulation, unstable financial markets, increasing global competition, advances in information and communication technologies – these are only a few of the conditions driving the escalating pace of change evident within business communities today. Harnessing an organisation of people who thrive on the challenges of ambiguity, complexity and uncertainty and who can successfully and rapidly implement strategic and operational changes, is seen as a differentiating core competence for competitive companies.

Today, technology and information systems are usually key enabling factors when organisations embrace major change strategies, but it is becoming evident that to leverage strategic opportunities from advances in information systems and enabling technologies such as the internet, intranets and e-commerce, good change management practices must be adopted.

In this project we are deriving a framework for assessing training programmes for change agents, based on an extensive review of the literature on change management models and the skills and competencies necessary to manage change successfully. This framework provides a basis for identifying pedagogical objectives for teaching change management to executives, IT specialists, change agents and change recipients. As an illustration, the framework is applied to evaluate the effectiveness of a computer based multimedia simulation, a training tool known as the EIS Simulation, in satisfying these pedagogical objectives.

Key Pedagogical Objectives

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<tr>
<th>Change Strategists</th>
<th>Change Agents</th>
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<td>Planning</td>
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<td>Implementing</td>
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<td>Visioning</td>
<td>Reviewing and Learning</td>
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| Key Pedagogical Objectives

- **Visiting**
  - Information Search skills
  - Concept Formation skills
  - Conceptual Flexibility (including pattern recognition)
  - Interaction Management skills (including team and coalition building skills)
  - Ability to use Diagnosis Tools

- **Reviewing and Learning**
  - Change Strategists and Agents
  - Information Search skills
  - Interpersonal and Listening skills
  - Reflection and Learning skills
  - Knowledge Management skills
  - Achievement Orientation
  - Staff Development skills

- **Planning**
  - Recruitment skills
  - Interaction Management skills (including team and coalition building)
  - Staff Development skills
  - Proactive Orientation and Planning skills

- **Implementing**
  - Project Management skills
  - Time Management skills
  - Proactive Orientation and Planning
  - Conceptual flexibility (including pattern recognition)
  - Information Search skills
  - Interpersonal and Listening skills

- **Influencing**
  - Communication/Presentation skills
  - Concept formation skills
  - Self Confidence and Decision Making skills
  - Staff Development skills
  - Interaction Management skills (including team and coalition building skills)
  - Achievement Orientation

- **Resistance Management**
  - Ability to set performance standards
  - Reward management skills
  - Ability to use formal and informal networks
  - Ability to use Diagnosis Tools
  - Knowledge of all business systems (technical, functional and operational)

- **Not addressed** (n)
- **Low, inadequately addressed** (l)
- **Average, adequately addressed** (a)
- **High, particularly addressed** (h)
Agent Technology in Simulations

This project aims at exploring the integration of Agent Technology in business simulations and experimentally extend the EIS Simulation outlined below with different types of agents (anthropomorphic agents, search agents, intelligent advice agents/stimulus agents).

The original objective of the EIS Simulation is to focus managers’ attention on key issues involved in the implementation of organisational change, in particular when such change is driven, enabled or accompanied by technical systems such as Executive Information Systems, computerised accounting systems, or sales support systems. The simulation presents learners with the challenge of introducing an innovation in a company. They dispose of six months of simulated time to convince the members of the company’s management team to adopt a new EIS.

EISs are computer-based systems belonging to the broad category of Management Decision Systems. Introduced company-wide, they are intended to enhance top management efficiency and effectiveness by modifying, streamlining and hence improving information and communication flows. The process of implementing an EIS has been selected for the purpose of this simulation as EISs are part of a class of computer-based management systems which (1) are becoming increasingly popular in organisations, (2) provide a concrete example of innovative systems that have a tangible impact on the way managers work, gather, share and process information, and communicate, and (3) are generally difficult to implement and likely to generate different forms of resistance.
The interactive and multimedia components of the EIS Simulation provide a realistic experience challenging learners to influence the attitude of the change recipients. This is achieved by:

1. gradually “discovering” the company’s formal and informal networks (who are the “key people”? who is likely to resist? Who is having lunch with whom? Who might play a “gatekeeper” role?),
2. gathering information about the members of the management team,
3. developing a change strategy (bottom-up, top-down, etc.), and
4. implementing this strategy by selecting “tactics” from a set of Organisational Development tactics used to introduce and spread change in organisations.

Cyber-Entrepreneurship/Virtual Company Simulation

This project aims at developing a new multimedia simulation aimed at teaching managers how to identify entrepreneurial opportunities on the Web (using a variety of business models) and then set-up a virtual company able to operate on the market. Initial versions of this simulation have been tested in the context of the “Competing in the Information Age” Executive Programme using the format displayed in the figure below.

Change Management in Airlines Simulation - RAP

The objective of the RAP project is to make it possible to reengineer Flight Operations in spite of the following difficulties:

1. Flight Operations is highly critical: when it breaks down, even for a few hours, the airline loses huge amounts of money. Software migrations cannot be allowed to threaten the availability of the process.
2. Flight Operations is the most complex process of the airline. It involves dozens of departments, thousands of employees and hundreds of computer applications. Efficient co-operation and workflow are especially difficult to achieve.
3. Flight Operations involves the management, the planners, the crew-members and the IT staff. The need for a consensus among these groups often translates into a strong resistance to change. Efficient change management is a key factor of success.

These objectives will be reached as follows:

1. The RAP project will produce a tool for ensuring the safe migration from legacy Flight Operations systems. The tool will rely on so-called mirror databases, i.e. devices that make it possible to run new applications in parallel with the legacy applications which are being replaced.
   The tool will be a generic one: any airline will be able to re-use it into its own IT environment with a small systems integration effort. It will not duplicate commercially-available products, and will be applicable to a number of Flight Operations areas that is large enough to ensure that further exploitation makes economic sense.
2. The RAP tool will support groupware capabilities in order to ensure that the new Flight Operations applications do not depend on specific workflows. Such groupware capabilities will combine what-if simulation areas and advanced broadcast mechanisms.
3. Enhancing change management skills can be achieved with new pedagogical tools such as Multimedia Business Simulation.
The RAP project will develop a dedicated Multimedia Business Simulator that will take into account the peculiarities of Flight Operations. This pedagogical tool will be used to enhance the change management skills of a reengineering team. It will also be used by the project team itself, and will thus significantly contribute to a more efficient exploitation and dissemination of the results of the RAP project. Partners involved are: KLM, Lufthansa, SAS, CALT.

**Figure 1: Design and Architecture of the Flight Operator Change Simulation (FOCS)**

**Figure 2: Organisational Chart of the Flight Operator Change Simulation (FOCS)**

**Figure 3: The FOCS Website** ([http://www.insead.fr/calt/Project/RAP/](http://www.insead.fr/calt/Project/RAP/))
Organisational Intranets Studies

The performance of modern organisations is determined by their efficiency in generating value by matching market demand, predicting it accurately, and contributing to its development through innovation.

The key resources that companies use to achieve their goals are people - their skills, knowledge and imagination. Companies also depend on their people's capability to extend and apply all these qualities in working together to create and implement the corporate vision and objectives.

From this perspective, a company operates like a market in which organisational agents (such as individuals, teams or business units) cooperate and compete to achieve a shared objective. In these ‘corporate market spaces’ the role of management is to govern: creating and regulating the four key ‘virtual’ spaces within which organisational agents operate and interact:
I Virtual Information Space
Accessing company-related information in a fast and transparent way, answering questions such as “who’s who?” or “who knows what?”

C Virtual Communication Space
Communicating in formal and informal ways, unlocking sources of knowledge and expertise, and improving the performance of teams.

D Virtual Distribution Space
Distributing efficiently key internal documents (e.g. corporate guidelines), resources (e.g. software) and services such as training and support.

T Virtual Transaction Space
Reducing the cost and cycle time of structured internal transactions and administrative processes such as budgeting and claim processing.

The cases in this research illustrate how intranets can provide a backbone for radical new efficiencies across all four key areas.

The immediate benefits are in the scope for major improvements to corporate information, communication, distribution and transaction channels.

Further, the easy sharing of ideas, ‘best practice’ and achievements open the way to stimulating continuous corporate renewal through innovation of internal processes at all levels of the organisation.

Internet Strategies Studies & Industry ICDT Analysis

The aim of this project is to provide a conceptual framework for studying the impact of new technologies such as the Internet on companies’ performance and competitiveness. The ICDT Model developed in the context of this project has been used as a basis for analysing the maturity of Internet and Electronic Commerce strategies in different sectors (see e.g. [ISS-Pharma] for a specific project focusing on the Pharma and Healthcare industry) as well as the impact of new interactive media on functions such as marketing and distribution. Current research aims at extending the ICDT Model into a systematic methodology for identifying business opportunities and threats generated by the emergence of the Internet.
ICDT Model and implications

The aim of this project is to validate and extend the ICDT model both as a diagnostic tool and as a conceptual framework for systematically identifying business opportunities related to the Internet. Implications for managers in functions such as marketing, sales, purchasing, and human resource management are explored, together with effective strategies to leverage the Internet to achieve advantage through disintermediation or re-intermediation strategies and through effective web presence (see a classification of websites from a recent Financial Times article) on the subject.

High-Tech

Low-Tech

Low-Touch

High-Touch

Level of SOPHISTICATION

Level of CUSTOMISATION

“Entertainment & Learning”

“Hi-Tech Hi-Touch”

“Brochure”

“One-to-One”

quadrant

quadrant

quadrant

quadrant

Internet strategies in the Healthcare industry: an ICDT analysis

Based on the ICDT model (Information, Communication, Distribution, Transaction), the study will analyse the current use of Internet by the top pharma companies and other healthcare organisations in Europe. It will also study the correlation between the type of Internet presence and the company’s strategy.

The objective is to provide a cliché of the actual usage companies are making of the Internet, and to make the difference between the use of Internet simply as an information medium or as a strategic business platform to host new Internet-enabled strategies.
The project also includes the development of an internet-based interactive module that illustrates Internet/Intranet applications in the healthcare industry. The module has already a prototype built around a series of real examples of internet/intranet usage by pharma companies or other organisations (8-12 short cases). Based on the ICDT model, the cases illustrate two applications in each of the four categories (Information, Communication, Distribution and Transaction), one on Internet and the other on Intranet applications.

The module also includes an interactive section with on-line assignments, which allows the participants to send on-line submissions, and/or discuss in forums. They may also submit their own cases. An instructors' section provides an on-line teaching note.

Electronic Commerce: European Studies and Cases

Electronic commerce includes any business transacted electronically, when this transaction occurs between two business partners or a business and its customers. This online business may represent a new sales channel for the company or may be completely virtual, holding no inventory. If information, entertainment or digital products such as software are sold over the web, the entire business process, from prospecting to order processing to delivery, can occur online. Electronic commerce can be divided into three classes: Business-to-Customer, Business-to-Business, and Intra-organisation. Customer-to-Business transactions include consumers learning about the product through electronic publishing, buying the product using electronic cash and other secure payments system and having them delivered physically or electronically. In the case of Business-to-Business, corporations, government and other organisations depend on computer-to-computer communication to conduct business transactions which can include EDI and electronic mail for purchasing of goods and services, buying information and consulting services and submitting and receiving proposals. The intra-organisation application applies maintenance of the company’s customer relationship over the net which can imply, for example, facilitating close attention to service both before and after the sales.
Electronic Commerce studies conducted at CALT aim primarily at analysing the adoption of Electronic Commerce by European companies and consumer through the participation to large-scale studies such as the Surf&Buy experience organised by IBM France, similar experiences in a number of other European countries, surveys of European best practices, and through the production of case studies.

Recent studies have focussed on understanding the dynamics of Electronic Commerce adoption in France and Germany through questionnaires, market analysis and data mining of widely accessed Electronic Commerce sites.

French companies are still wary of Intranet technology. Worries about the security aspects and the still immature technology are two of the major concerns. From a study made this year in France, the Figure on the right hand summarises the principal functions that Intranets are used for in French companies.

Electronic Commerce: 3D Studies

This project aims at exploring online consumer behaviour in cyberspace shopping environments, web based 2 Dimensional (2-D) and Virtual Reality (VR/ VRML/ ActiveWorlds) stores. It examines the design of such virtual spaces as well as the shopping experience of consumers by looking at issues such as pattern in surfing/navigation, access and usage patterns of the services provided, as well as pattern of interaction and acceptance of the services. The study aims at answering questions like: how do customers actually use each shopping environment and which design features hinder and/or encourage adoption of virtual shopping. Experimental environments in the domains of retailing and banking have been developed for this purpose (see 2 figures below).

Figure 1: A virtual storefront as the context for Hi-Tech Hi-Touch interactions with customers
Figure 2: Non-traditional 3D virtual shopping environments with avatars acting as personal agents

Figure 3 illustrates the evolution of websites and related technologies. For instance, first-generation banking websites which first began to appear in the mid-1990s are one of the best examples of the non-committal “Brochure” approach. In the meantime, sophistication has helped banking sites to recreate pleasant experiences of visiting a virtual branch (even if it is not entertaining!). Today, banks who are experimenting with third-generation websites aim to exploit the Internet totally. They are redesigning the interface between the bank and its customers by extending the distribution of highly personalised services to every customer. If this trend towards Hi-Tech Hi-Touch accelerates, visiting a banking website might soon become synonymous with entering the (virtual) office of our personal (virtual) banker, who might even proactively send us an e-mail to remind us to (virtually) meet so we can discuss the impact of the (real) recent Russian crisis on our investment portfolio.

Figure 3: Three generations of websites and related technologies
The KnowNet project addresses the knowledge management needs of business entities by developing, applying, testing and evaluating a state-of-the-art Knowledge Infrastructure that will support the creation, retention, sharing and leveraging of knowledge assets and enhance the performance of knowledge operations and the learning capabilities of business organisations. The KNOWNET Knowledge Infrastructure (i.e. the necessary systems, processes, methods and techniques) includes as interrelated elements: a technology infrastructure, a management infrastructure and a social infrastructure. The project adopts a multi-disciplinary approach, in the sense that it explicitly covers not only the technological, but also the management and social issues of knowledge management, and a total systems approach, in the sense that it explicitly addresses and integrates the two most commonly employed technological approaches in knowledge management:

- the process-centred view (“knowledge as a process”), which focuses on Knowledge Management as a social communication process and is enabled by ICT-based groupware support; within this view KnowNet intends to extend, integrate and explore existing software products, such as Knowledger; and
- the product-centred view (“knowledge as a thing”), which focuses on the creation, storage and reuse of knowledge objects in ICT-based organisational memories; within this view KnowNet intends to extend, integrate and explore the KARAT and EKI tools of DFKI (Deutsches Forschungszentrum fuer Kuenstliche Intelligenz).

Hence KnowNet aims at achieving technical innovation by integrating groupware-based and AI-based knowledge management approaches.

In order to verify and validate the applicability and usability of the Knowledge Infrastructure, the KnowNet consortium has taken decision to test and evaluate the improvement of knowledge operations and learning capabilities in service-oriented business organisations, that exhibit the utmost characteristics of knowledge-intensive organisations.

Specifically KnowNet pilots include:

- a consultancy company (PLANET),
- a chartered surveyors company (JTW),
- a professional body (ImE) and
- a banking services company (SWISS BANK CORPORATION).

Hence KnowNet intends to satisfy the knowledge management requirements of knowledge-intensive organisations, thereby fully testing the applicability and guaranteeing the exploitability of KnowNet’s results.
Knowledge Exchange Platforms - BOPS

This research direction aims at exploring the design features and the dynamics of web-based platforms aimed at supporting knowledge sharing and mutual learning within organisations. The research is conducted in the framework of the project BOPS sponsored by the EC. BOPS proposes an environment that fosters the learning enterprise dynamics and support employees in improving best practices through continual learning.

The project’s objectives are to:
1. Develop an EPSS (Electronic Performance Support System) that allows corporations to implement the BOPS concept of business performance support for their customer related services. This environment will combine “on the job” training at the time of task performance, and “on demand” plus “recommended” training in advance of task performance.

2. Assess this environment through pilot operations in four organisations of Greece, Italy, France and Luxembourg. Co-operation with pilot users will start from the very beginning of the project and during the last five months, the BOPS solution will be demonstrated at pilot sites in its fully operational configuration.

3. Estimate the conditions for commercial deployment for possible future BOPS tools through a user group of European firms. This objective requires combining resources for research on corporate acceptance of EPSS, dissemination towards the potential User Community, and market analysis.

The business plans delivered at the end of the project will summarise the findings.

Partners involved:
- Datatech and Italtel Sistemi from Italy
- Business Flow Consulting, Le Preau, INSEAD and CCI Paris from France
- Loewe Interactive from Germany
- SAIOS from Luxembourg
- Emphasis and Connection from Greece
- CALT

Funded through:
Knowledge Exchange Communities - WCSN

WCSN – World Class Standard Network.

The WCSN Mission

The mission of WCSN is to create an electronic community of business people interested in learning from each other. The aim is to assist European businesses on the journey towards achieving world class standards of productivity and performance. The network is oriented around the provision of structured access to benchmarking and process improvement information, while facilitating a ready flow of communication with other subscribers and industry experts.

The main output has been the design of a web based virtual community server. The first key component is the message boards that support open debate and discussion on issues of common interest. They are categorised and structured so that you can readily pick up the threads of an ongoing debate, contribute to it, keep in touch as it progresses, archive interesting contributions, and get in touch direct with particular participants if you wish to. The system keeps track of your access to the site, and highlights those messages you haven’t read, so as to make it as painless as possible for you to keep up to date.

Several plans for future exploitation have been elaborated by the different partners of the project, and include:

a) The setting up of a business proposing services for supporting Professional Societies

b) The creation of virtual benchmarking services to be proposed by the Benchmarking club as a new category of services for their customers

c) The Support for Alumni Communities

d) The support for university extranet for research discussions, education, project management and other collaborative activities over a geographically dispersed area.
Partners involved:
- IESE from Spain
- Technical University of Eindhoven (TUE) from Netherlands (leader)
- Executive Systems Research Centre (ESRC) from Ireland
- The Benchmarking Centre (TBC) from UK
- The Benchmarking Club, Italy (BCI) from Italy
- Internationalzentrum für Benchmarking (IZB) from Germany
- The Finnish Benchmarking Association (FBA) from Finland
- Swedish Institute for Quality (SIQ) from Sweden
- ENIX Consulting (ENIX) from UK
- Fast Media (FM) from UK
- IFS International (IFS) from UK
- Mission Critical (MC) from Belgium
- Status Meetings Ltd (SML) from UK
- CALT

Funded through:
- ESPRIT
Virtual Professional Networks - STC

This project aims at designing and validating an innovative approach to Internet-based learning addressed to a community of geographically distributed managers. It addresses specifically the needs of the community of Swedish managers working in SMEs and coordinated by the Swedish Trade Council (STC). These needs can be summarised in two key components:

- The possibility for SME managers, in spite of their geographical distribution, to access and participate in high-quality management training and learning processes through a state-of-the-art, Internet-based, low-cost learning environment supporting their personal development as well as the emergence of a Virtual Learning Community stimulating the dynamic exchange of ideas and best practices, as well as benchmarking and cooperation.

- The possibility for SME managers to get exposed to the business opportunities generated by new technologies such as the Internet, enabling them to identify concrete actions for improving the performance of their working environments (“Intranet” dimension) as well as key business processes and competitiveness of their companies (“Internet” dimension).

Expected Results:

- A fully operational, Internet-based Distributed Learning Platform (DLP) providing the basis for distributing management training modules on-line and the structure necessary to stimulate the dynamic exchange of ideas and best practices, benchmarking initiatives and cooperation among the members of the Virtual Learning Community.

- A specific Learning Module addressing the subject “Internet in Business” supporting managers in (1) understanding the impact of the Internet on their companies and on future developments in their industry/sector, (2) learning to identify systematically opportunities for implementing Internet-based projects to improve performance and competitiveness, and (3) share in a systematic and dynamic way ideas and best practices of business applications of the Internet.
- The incremental creation of a Virtual Learning Community of Swedish SME managers connecting regularly to the Distributed Learning Platform for learning, knowledge creation and knowledge sharing purposes.

- The gradual involvement (supported by guidelines and training) of Universities, training centres and individual content providers in the design and distribution of Learning Modules addressing other management development needs (assessed in the context of this project) via the Internet-based Distributed Learning Platform.

- The analysis of alternative business models and the development of a business plan for the commercial exploitation of the project’s output (the platform and the developed training modules) by the Swedish Trade Council.
Virtual Alumni Studies is an initiative that was set up to experiment the development of virtual communities in 3 dimensional virtual worlds. The project will help better understand the effect of design and shaping of 3D virtual spaces on the development of virtual communities as well as their effect on community dynamics. At the same time, the project provides an opportunity for the INSEAD Alumni community to enter and benefit from the “digital age”. The “VirtAlun” world is currently a prototype that was created using the ActiveWorlds technology (multi-users Virtual Reality). The world is still under development and will be used in the near future by the INSEAD Alumni community.

The “VirtAlun” world currently includes the following features:

- An Information Desk (for on-line assistance)
- An Alumni Office (provides access to announcements, address book, etc.)
- An Amphitheatre for conferences and presentations
- A Company Area (for company presentations/recruiting, etc.)
- A Bar (for socialising)

Further planned or potential evolutions include:

- A more complete mapping in a 3D representation of the web site (2D representation) of the alumni community
- A support for the organisation of the Alumni related events (the annual alumni meeting, the ball, etc.)
- The support/organisation of services useful to the Alumni community (conferences, support for the establishment of business or other relationships, meeting with companies, etc.)
- Mapping in 3D of the Alumni address book: (password protected) access to the address book from the virtual world
- Artificial agents (helper agents, electronic mediators, etc.)
Knowlaboration Project

KNOWLABORATION (Knowledge Applications for Collaborative Organisational Networks) addresses the need to develop an inter-organisational learning approach. Learning Networks (LN), structures that have formally been established in order to increase the participants' knowledge and innovative capability, give organizations the opportunity to benchmark themselves to other organizations and also to support the self-directed learning of their employees.

Such an approach has previously been used in the case of regional networks (regional clusters of small firms in Italy are typical examples in such flexible specialization). Such processes are greatly enhanced by the implementation of Information and Communication technologies, which in terms of the particular project, will allow for supporting decision-making processes, tracking of individual learning processes, accessing the learning sessions and managing the particular knowledge assets. Therefore, the specific objective of the project is to develop, apply, validate and exploit a dynamic tool-set (software platform and methodological guidelines) that will assist European inter-organisational learning networks empower their members and the involved individuals to define, develop and manage the content and the process of their learning.
Satellite communications have a role in the provision of broadband corporate services, mainly those with inherent multicasting characteristics. In this framework, the VERDI (Virtual Environment for Real-time Distributed applications over the Internet) project aims at delivering a comprehensive solution, demonstrating the value-added brought to corporate applications and working on the improvement of both the cost-effectiveness of the service provision and the perceived quality of the service.

The approach followed by the VERDI project is based on the following key technologies:
- Multimedia platform, for content and application hosting, multicasting and distribution
- “Smart” routing and caching, for content delivery acceleration
- Virtual Reality and agents (bots), with Multi-User Real-Time simulation capability, enablers of more ergonomic and more attractive services
EdComNet Project

EdComNet (A Humanistic Urban Communal Educational Net) is an educational communal net, a virtual learning community platform for adult citizens to be set up in many regions of the European Union and associated countries like Israel. The net will act as a portal stimulating the active learning of social skills by the citizen, thus enhancing the social integration of individuals within urban communities. It will empower the individual citizen to be a self-reliant part of society, fostering creativity and autonomous opinion forming as well as decision-making.

The EdComNet system will be a network based information system consisting of a number of local servers. The different servers communicate through the internet but will operate in the local language and will be embedded in the regional cultural context. In the underlying RTD project a novel multi-agent infrastructure will be developed enabling information retrieval relevant to the needs of average citizens as users.
Ontologging Project

Onto-Logging (Corporate Ontology Modelling and Management System) addresses the problem of corporate ontology formalization and intends to better integrate formal ontology definition methods within Knowledge Management (KM) systems which aim to be more adaptable to the user needs and to better support the exchange of knowledge in organizations.

The project also analyses and tries to enhance the customization possibilities of currently existing commercial products, by building the necessary tools for creating, maintaining and reusing a metarepository of corporate knowledge and which will allow the user to have a personalized, customizable information space.

Within this research project it is aimed to develop a set of tools, which will get closer to the next generation of distributed Knowledge Management systems.
E-Camp Project

The E-Camp (European E-Commerce Associate Merchant Program) project aims to develop innovative and dynamically networked virtual environments called “corporation modelling platforms.” These “Merchant Corporations” will draw their revenue by obtaining memberships and interfacing with existent web affiliate programmes.

The created system will provide interested parties with the platforms, technological resources, business guidance, and real-world environments necessary for the building, business development, maintenance and growth of their own on-line merchant corporations. These real-world market business development environments will lead to unique business-led consensus ecommerce model building between all the participants.
Hortonet Project

The Hortonet (A Global Horticultural Network: Social and Business Models for Multimedia Content) project can be described thus: Future Heritage faces the problem of how to exploit the enormous potential of gardenslive.com in terms of social & business models. This is a new area of business requiring an effective model which spans Member States, USA & Japan.

The objectives are to:
(1) Identify the most effective social business model for gardenslive.com
(2) Study available best practices to identify the most suitable business model
(3) Prepare the findings for exploitation.
CALT Encyclopedia and Knowledge Wrapper Project

The CALT Encyclopedia consists of a structured set of pages that reference all the Web resources related to research projects conducted within CALT and at INSEAD in general. Two elements in particular are addressed in this system:

1. The design of a web architecture representing information and knowledge that is able to scale well as the content of the system grows (this content consists of a complex semantic network);
2. The identification of categories of sources of information & knowledge (article in magazine, journal, personal home page, newsgroup, etc.) that provides a rich perspective of how knowledge and information is made available to the user. This project is now extended with the Knowledge Wrapper project which consists of an object-oriented portal approach for managing easily sources of information of different types. This project may integrate in the future agent-based mechanisms which would be used to automate maintenance tasks (or provide more advanced capabilities), as well as collaborative & social features (opinions, voting, etc.).
Xerox KinCA Project

The aim of the Xerox KinCA (Knowledge Intelligent Conversational Agent) project is to validate a new approach to enable managers at every level or function in an organization to effectively learn, understand, and then apply Knowledge Management concepts and techniques. The approach is based on the concept of a “Personal KM Agenda” and consists in providing managers access to an interactive, web-based system, helping them to identify knowledge management opportunities in their jobs, to achieve their targets and objectives, and in their business environment (individually or in teams). Manager(s) are hence helped to understand better the key principles of Knowledge Management, to develop stepwise their own Personal KM Agenda, and then act upon it.
Virtual Communities & Collaborative Learning Project

Virtual communities are social relationships forged in cyberspace through repeated contact within a specified boundary or place (e.g., conference or chat line) that is symbolically delineated by a topic of interest. Recent business literature places emphasis on three different types of online communities: a) Internet communities as a marketing and advertising tool, b) extranet communities designed to strengthen relationships with trade partners or customers and c) intranet communities that facilitate knowledge sharing within an organization.

The CALT approach to Virtual Communities (VCs) contains four elements: 1) Facilitation and VC Dynamics 2) Value Creation 3) Theory of Knowledge Creation and 4) Design (including Technologies like Platforms).

1) **Facilitation** In VCs ‘the core of facilitation and hosting is to serve a community and assist it in reaching its goals or purpose’. By facilitation, we mean providing some structure to the interaction between people, as well as between people and the technology.

In terms of Virtual Community Dynamics, it is interesting to observe the influence of:

a) **the dynamics of complex systems.** These focus on the basic definition of a system as a set of inter-related and interacting parts tied into one whole.

b) **the dynamics of group processes.** It is by now well accepted that groups go through a given set of processes in order to effectively come together and perform. The same holds for bigger entities, such as communities, in the virtual space.

c) **the dynamics of change/adoption of new mental models and competencies in the domain of knowledge exchange (intra- or inter-organisational contexts).**

2) **The issue of Value Creation** is a central one in Virtual communities. In the New Economy, knowledge is an asset and the way that organizations are capable to capitalize on the exchange of it, gives them a distinct competitive advantage, and makes them innovative. Innovation can also lie in-between in the communities created within the channels of an organization’s customers and suppliers, outside the traditional boundaries of an organization.

3) **The theory of knowledge creation:** Learning processes are processes through which knowledge is created/acquired as well as shared/disseminated. Related to that is also the conceptualization of learning as ‘project’. This is much more the case in contemporary networked organizations, which run on a project/team basis. Since community has to do to a large extent with those that participate, where they come together and finally, what they produce, VCs centrally become focused on knowledge creation.

4) **Design issues related to VCs**
Design in Virtual communities has to take into consideration issues of motivation for user participation, as well as general usability, such as ease of use. Moreover, sociability should be addressed in the sense of the norms, values and rules that govern the VCs and make them sustainable. The project ECAMP (2001) explored in greater detail these issues.

**CALT projects with a Virtual Community content:**
CALT focuses naturally on Virtual Learning Communities. At the heart of CALT research lies the study of VLCs in terms of the People involved, the Processes and the different online media which aid this learning to happen. A starting point in all CALT work, is that learning in VCs is an issue of process and technique, not tool. Great emphasis is placed upon having a process and being able to implement it, unlike most commercial applications which may be rich in content, but do not really address the process of learning.

**Past, Current, and Future VC-related Research at CALT**
1. 1994: research on Decision Support Systems for businesses and organizations. This focused on deducing some behavioural biases which come up when people come together to work online.
2. 1994: research on Virtual Learning Communities, through INSEAD’s International Teachers’ Programme, which focused on keeping the learning agents in online communication after the learning intervention.

3. 1995-96: research on LEAP, a project conducted with managers from TeleDenmark, interesting learning experiences were tracked down through a database that existed with competitor companies. Additionally, a competitive game was developed through which community dynamics were studied.

4. In 1996, CALT focused on European Union projects, which involved community creation, managing knowledge online in communities, as well as technology and design issues (WCSN and eCAMP). 3D virtual reality environments were developed, creating spaces of different types, exploring people’s behaviour, and particularly, how to recreate a space in a way that people can access different knowledge. In this tradition, the VERDI (2001) project focuses on the dimension of creating a virtual environment where people have to interact and make decisions.

5. The above contributed to the creation of the ICDT platform (1997). The ICDT platform is based on the agent-centered framework for the analysis and diagnosis of organizational groupware platforms and was developed in order to address the need for extending the traditional interaction space in which organizational agents (individuals, teams, task forces, organizational units etc) operate.

6. The SMEs community and the Swedish Trade Council were both interested both in the learning dimension, the knowledge sharing and the business dimension of Virtual Communities. This is an ongoing project today, and its application is the ICC virtual community, with some thousands of people from Insead as well as other institutions. CALT aims to use this platform to experiment as an Intranet type of tool, based on previous CALT studies on Intranets which took place in different companies (e.g IBM) which focused on online spaces for organizations.

7. In 2001, during the E-FMD learning expedition, participants were responsible for e-learning and the version could be for example on the organization learns.

8. More recently, CALT has started two projects, a) trying to get a comprehensive overview of virtual communities and learning in virtual communities research efforts b) A new project has started with a focus on facilitation, with the aim to focus on agents, and the role that they can play in facilitation and learning, in supporting all these processes, and particularly the concept of the community intelligent conversational agents to intervene in the dynamics of the community, and thus manage knowledge.
Over their first few years, CALT Projects have been focused mainly on establishing a conceptual and technical basis for addressing successfully the Centre's Research Agenda. Nevertheless, during this set-up period, the CALT Team and the contributing faculty members have generated a number of Academic Publications (section 7.1), a CALT Working Paper Series and a number of Technical Reports (section 7.2), as well as several prototypes and fully operational Learning Systems (section 7.3), which have been extensively tested and integrated in programmes at INSEAD and in other schools internationally. R&D projects have also led to several Case Studies (section 7.4), presentations of CALT-related work in academic Conferences (section 7.5) and an extensive number of articles mentioning or describing CALT research have appeared in the international press (section 7.6). Finally, CALT has contributed to the organisation and hosting of a number of research and knowledge dissemination events (section 7.7).

**[7.1] Academic Publications**

Output resulting directly from CALT Projects included in this Report are marked with [*].


Executive Information Systems (EIS), groupware and other types of computer-based information and communication systems are increasingly used in companies to support major change processes leading to the redesign of work processes, information flows, responsibilities for resource allocation, and decision making. However, the high failure rate in implementing such systems is an indication of the resistance to change normally encountered in organisations and the limited skills of IS managers in the domain of change management. The “EIS Simulation,” a multimedia business simulation, has been successfully used to increase managerial awareness of the dynamics and the problems arising when implementing information systems which have important implications for work processes and power redistribution within companies. This paper illustrates the innovative design of this multimedia simulation and the broader pedagogical value of such an experiential learning approach.


The effective management of knowledge is important for the competitiveness of organisations. Rapid technological progress over the last decade has made knowledge-based systems (KBSs) (including expert systems, organisational memory information systems; and other advanced information technology solutions) an integral part of every organisation’s effort to manage its knowledge assets effectively. KBSs have an important impact on all levels of organisational knowledge: individual, group, organisational, and knowledge links. This paper outlines four generic knowledge processing strategies to guide the implementation of KBSs within organisations. These generic strategies are related both to the level of knowledge assets under consideration and the locus of responsibility for the development of KBS. The different knowledge processing strategies influence the management of knowledge possible within an organisation and consequently influence the development of KBS within the organisation. The paper also outlines different facilitators and barriers to the four knowledge processing strategies.

This paper introduces and discusses a framework for the analysis of organisational initiatives aimed at improving internal efficiency and effectiveness through the creation of groupware-based, cooperative workspaces. Starting from the assumption that organisations can be seen as networks of cooperating agents (individuals, teams, task forces, organisational units such as departments, etc.), the framework views groupware platforms as efficient information, communication, distribution and transaction channels used by agents to (1) increase their visibility within the organisational network, (2) improve communication and cooperation potential, (3) support efficient exchange and distribution of internal services, and (4) provide a platform for formal, workflow-related transactions among agents.


The purpose of this panel is to facilitate a discussion about the potential opportunities, impacts, and consequences of the Internet on business education and its traditional institutions of knowledge creation and dissemination. The panel session will focus around the issue of whether the developments described above constitute the beginnings of a revolution in business education, or simply new approaches to ‘education as usual’. The panel participants have been assembled so as to provide multiple perspectives on this issue, and include the co-authors of two recent substantive articles in this area, complemented by senior academic and senior executive wisdom.


For all that has been written about the Internet, most managers and researchers remain confused regarding its likely strategic impact on how companies operate (internal perspective) and on competition in general (external perspective). The aim of this paper is to use a generic framework (the ICDT model) to classify and illustrate (1) significant business opportunities and threats generated by the Internet, and (2) research projects aiming at better understanding current Internet-related developments and trends.


In recent years, many large firms have been undergoing profound transformations, streamlining their operations, typically moving away from vertical integration toward more external contracting of key activities, thereby building a complex network of firms. While there are several factors that explain this trend toward more cooperative relationships, we are in this paper concerned with the phenomenon of interorganisational cooperation that explicitly leverages information technology (IT) capabilities -- that has been variously described as: ‘inter-organisational systems’, ‘information partnerships’ and ‘electronic integration’.


Education is one of the most relevant domains in which the integration of emerging technologies such as multimedia, groupware, and the Internet, is enabling significant innovations. A prerequisite for this development are appropriate frameworks to guide education professionals in exploiting advanced information and communication technologies to significantly enhance the quality and efficiency of traditional management learning and training methods. This paper describes how such a conceptual framework, the Business Navigator method, can be adopted as a basis for integrating advanced multimedia telecommunication, object-oriented simulation, intelligent agents and virtual reality technology to design “flight simulator”-like learning experiences with high pedagogical value. Technological and pedagogical implications of designing such state-of-the-art management learning approaches are illustrated and discussed.

The exponential growth of world-wide Internet adoption and the rapidly increasing use of the World Wide Web as a platform for electronic commerce are forcing companies to reconsider and redesign their IT strategies. As documented widely in the academic and business press, the Internet represents a new source of opportunities as well as threats for companies of every size operating and competing in every sector of the world economy. In order to better understand emerging Internet strategies, identifying which companies are trying to take advantage of the Web, and how they are proceeding in implementing their strategies, it is particularly insightful to focus on the banking sector. Banking plays a central role in the world economy and indirectly determines developments in other sectors. In addition, banking is a sector in which IT has traditionally played a key role as a factor for cost cutting, business expansion, and gaining competitive advantage, for instance through new or qualitatively improved services to corporate or retail customers. Hence it would be natural to expect a leading edge approach to the Internet in this particular sector, which has recently been transformed so radically by information and networking technology that by 1995 more than half of all the banking transactions with customers took place outside the bank, i.e. were already electronically mediated. The analysis presented in this paper demonstrates that such an expectation is not matched in practice, and that banks are still struggling to develop mature Internet strategies.


This paper illustrates a systematic approach to the analysis and classification of business-related Internet strategies as well as a framework to guide the strategy-building process of companies aiming at redesigning or innovating their products and services in the light of the new opportunities and competitive pressures generated by the spread of the Internet. First, the paper shows that current strategies adopted by large and small companies world-wide have been generally based on a narrow, unidimensional interpretation of the Internet, as either an Information, a Communication, a Distribution or a Transaction channel (ICDT Model). The model is then used as a systematic framework guiding (1) the analysis of how traditional products and services are redesigned in the light of the Internet, and (2) the identification of organisational adjustments companies need to undergo in order to fully exploit the business opportunities created by the Internet.


Successful implementation of IT-enabled change requires good management of the change process and of the various sources of resistance that typically accompany the introduction of such change. As a result, helping managers better understand the dynamics of organisational processes is an important objective for IS and IT educators. The “EIS Simulation” is a new computer-based multimedia simulation that allows managers to experience the process of introducing an EIS in a fictitious organisation. It has been used extensively over the last two years with groups of management students and executives. The paper presents the simulation and discusses its potential pedagogical benefits, possible extensions, and use in a research context. More generally, the EIS Simulation provides a first step in the development of a new generation of pedagogical tools: computer-based organisational games exploiting the potential of multimedia and object-oriented technology to provide managers with realistic experiential learning environments.


This paper presents and illustrates an approach for effectively integrating case-based reasoning (CBR) techniques into systems supporting human decision making. CBR techniques are encapsulated in an autonomous agent which is able to assume the role of an adviser or of a story teller in order to facilitate and stimulate the decision-making process (by using stored cases of prior decision/problem
solutions) and to incrementally enhance its knowledge by observing and storing current problem solving behaviours of decision makers. The result is a highly interactive, conversational, human-computer decision making environment. The experimental domain of multi-criteria decision making has been chosen for illustrating case-based decision support in a widely studied and relevant application area.


The omnipresent nature of the Internet and the WWW has been a defining characteristic of the ‘new world’ of electronic commerce. The impact of electronic commerce spans national boundaries and sectoral differences. While experts estimate that the number of users of the Internet will grow to 550m, or 10% of the world’s population, by the year 2000, little is known of the degree to which business models have been transformed by the Internet across different types of businesses. This paper takes a step in this direction by studying how strategic marketing, defined by the four Ps – Product, Price, Promotion and Placement, and Customer Relationship are getting transformed in the on-line world of electronic commerce across sectors and geographic regions. Our conclusions are drawn from the results of a survey of 167 organisations chosen from a number of sectors across the globe.


A global virtual team is an example of a boundaryless network organisation form where a temporary team is assembled on an as-needed basis for the duration of a task and staffed by members from different countries. In such teams, coordination is accomplished via trust and shared communication systems. The focus of the reported study was to explore the antecedents of trust in a global virtual-team setting. Seventy-five teams, consisting of four to six members residing in different countries, interacted and worked together for eight weeks. The two-week trust-building exercises did have a significant effect on the team members’ perceptions of the other members’ ability, integrity and benevolence. In the early phases of teamwork, team trust was predicted strongest by perceptions of other team members’ integrity, and weakest by perceptions of their benevolence. The effect of other members’ perceived ability on trust decreased over time. The members’ own propensity to trust had a significant, though unchanging, effect on trust. A qualitative analysis of six teams’ electronic mail messages explored strategies that were used by the three highest trust teams, but were used infrequently or not at all by the three lowest trust teams. The strategies suggest the presence of “swift” trust. The paper advances a research model for explaining trust in global virtual teams.


The knowledge-based theory of the firm suggests that knowledge is the organizational asset that enables sustainable competitive advantage in hyper-competitive environments. The emphasis on knowledge in today’s organizations is based on the assumption that barriers to the transfer and replication of knowledge endow it with strategic importance. Many organizations are developing information systems designed specifically to facilitate the sharing and integration of knowledge. Such systems are referred to as Knowledge Management System (KMS). Because KMS are just beginning to appear in organizations, little research and field data exists to guide the development and implementation of such systems or to guide expectations of the potential benefits of such systems. This study provides an analysis of current practices and outcomes of KMS and the nature of KMS as they are evolving in fifty organizations. The findings suggest that interest in KMS across a variety of industries is very high, the technological foundations are varied, and the major concerns revolve
around achieving the correct amount and type of accurate knowledge and garnering support for contributing to the KMS. Implications for practice and suggestions for future research are drawn from the study findings.


This paper explores the challenges of creating and maintaining trust in a global virtual team whose members transcend time, space and culture. The challenges are highlighted by integrating recent literature on work teams, computer-mediated communication groups, cross-cultural communication, and interpersonal and organisational trust. To explore these challenges empirically, we report on a series of descriptive case studies on global virtual teams whose members were separated by location and culture, were challenged by a common collaborative project, and for whom the only economically and practically viable communication medium was asynchronous and synchronous computer mediated communication. The results suggest that global virtual teams may experience a form of ‘swift’ trust but such trust appears to be very fragile and temporal. The study raises a number of issues to be explored and debated by future research. Pragmatically, the study describes communication behaviours that might facilitate trust in global virtual teams.


Deregulation, unstable financial markets, increasing global competition, advances in information and communication technologies - these are only a few of the conditions driving the escalating pace of change evident within business communities today. Harnessing an organisation of people who thrive on the challenges of ambiguity, complexity and uncertainty and who can successfully and rapidly implement strategic and operational changes, is seen as a differentiating core competence for competitive companies. Today, technology and information systems are usually key enabling factors when organisations embrace major change strategies, but it is becoming evident that to leverage strategic opportunities from advances in information systems and enabling technologies such as the internet, intranets and ecommerce, good change management practices must be adopted. In this paper we derive a framework for assessing training programmes for change agents, based on an extensive review of the literature on change management models and the skills and competencies necessary to manage change successfully. This framework provides a basis for identifying pedagogical objectives for teaching change management to executives, IT specialists, change agents and change recipients. As an illustration, the framework is applied to evaluate the effectiveness of a computer based multimedia simulation, a training tool known as the EIS Simulation, in satisfying these pedagogical objectives.


A growing community of teachers, at all levels of the educational system, provides course material in the form of hypertext/multimedia documents. In most cases this is done by creating a “course Web site”. This paper explores the issues related to the design of software systems that aid teachers in monitoring how students use their sites and proactively advise students navigating the sites. In connection to these functions two important topics in current applications of technology to education are discussed. Firstly the definition of a set of criteria allowing the evaluation of the appropriateness of multi-media and hypertext technologies vis-à-vis to classic course support material and in particular textbooks. Secondly the issue of the utility and acceptability of proactive user interfaces such as interface agents or personal assistant agents. A multi agent system capable of advising and monitoring students navigating instructional Web sites is introduced and it is used as a basis for discussion of the above two topics. The system generates and uses a set of indicators evaluating how much use is made
of hypertext and multimedia tools as well as indicators of usefulness and cognitive support of the proactive user interface.


Electronic Performance Support Systems (EPSS) were born in the United States in 1991 to address the problems that raising software complexity was creating to employees. It is now a well-established software niche in the US, with many case histories and success stories and a very active research community working on it. In Europe there have been only a few implementations of EPSS in the last years, and still the acronym EPSS and the approach, methodologies and technologies it implies are almost unknown. Nevertheless the European approach to performance support deserves some insights, as it is not only a late copy of American experiences, but also a new innovative way to develop highly flexible software tools to introduce, support and manage best practices inside corporations. The Back Office Performance Support (BOPS) European project is one of the most recent initiatives to investigate this field and develop methodologies and products. Carried out by a consortium of eight European firms and partially funded by the European Commission, the BOPS project goes beyond the traditional EPSS boundaries and combines net coaching with knowledge management, training management and decision support. BOPS has developed a fully integrated web-based solution for performance support in medium and large companies. The final product of the project, an intranet system, has been installed and extensively tested in 4 pilot organizations. The Centre for Advanced Learning Technologies (CALT) of the INSEAD Business School has monitored these four pilot tests, collecting data through questionnaires, interviews and analysis of the log files. These data have been used to assess the impact of the adoption of an IT system like BOPS in the target organizations. This impact analysis focuses on the following points: (i) Benefits (improvements in efficiency, training and quality of work); (ii) Barriers to the adoption, both external (social and legislative) and internal (company culture); (iii) Potential organizational changes due to new processes and practices introduced by BOPS; (iv) Resistances to change and effectiveness of change management plans.


Intention is a keyword in the multi-agent domain, either to specify agent goals or to structure the behavior for the entire system. However, some complex social behaviors originate from non-intentional interactions. For instance, to study the interaction mechanisms of emotion contagion, there is a need to design agent interactions without considering them as a part of the agent aim set. We propose in this paper a new approach to model agent interactions, where communications (to be more specific: information exchanges) can occur in a non-intentional fashion. These interactions are designed by agent information that can be perceived, voluntarily or not, by others agents, which we have named perceptive agents.


C-VIBE is an advanced learning system taking advantage of simulation, multimedia, virtual reality, agents/avatars-based, and multi-user, distributed communication technologies to deliver a realistic learning experience addressing the dynamics of change and innovation processes in organizations. This paper illustrates and discusses the pedagogical effectiveness of the core layers of C-VIBE, the design of its VR and multi-user components, as well as its application in the domain of management learning.

This paper describes an artificial agent system, K-InCA, designed to help people to adopt new behaviours. This agent continuously observes the actions of the user in order to build and maintain a "behavioural profile" which reflects the level of adoption of the "desired" behaviours. Using this profile information, and relying on a model borrowed from change management theories, the agent provides customised guidance, mentoring and stimulation, and supports the user change from his old behaviours to the new ones.


This paper describes an agent-based system designed to guide, monitor, and stimulate managers towards the understanding of knowledge management concepts and the adoption of knowledge management practices in organizational contexts. In particular, we focus on the mechanisms needed to support the adoption of knowledge sharing processes, which are vital to knowledge management practices and often encounter the strongest resistance. A competency matching function, integrated in the presented agent system, allows dynamic matching of suppliers and consumers of information. Profiling (of people as well as of other resources) is used to supply knowledge-sharing partners with contextual information necessary for efficient knowledge exchange. Finally, we discuss another distinctive feature of the system, its capability to propose knowledge sharing actions within the context of user’s activities and in relation with their level of adoption of knowledge sharing practices.


This paper develops a framework of analysis of “organisational capital” as a strategic field of corporate action. It concentrates on three dimensions. First, the paper surveys the changing parameters of competitive advantage with specific attention to changes in valuation processes in financial markets. Second, it advances an analysis of the growing importance of the intangible assets of corporations, and specifically the field of organisational knowledge. Third, the paper examines processes of organisational design and explores horizontal organisational tendencies and specifically the concept and practice of the “horizontal network enterprise” as a key component of competitiveness.


In the context of the ECAMP IST European project we are designing a virtual community as a means for helping managers from Small Medium size Enterprises (SMEs) to better understand, develop, evaluate and implement ECommerce projects in the B2B area. In the first part of the paper, we evaluate the importance of designing virtual communities addressing SME managers, and in particular how such knowledge-exchange networks can facilitate and accelerate the adoption of E-commerce practices. In the second part, we examine how technology can be used to provide support to such a virtual community and derive a set of design principles. In particular, this section explains
that beyond providing digital communication means, the technology should also be used to support much more deeply the social process (opinion, reputation, trust, and coordination). Finally, we illustrate how these virtual communities design principles are being applied in the context of the ECAMP project.


This paper develops a framework of analysis of the dialectical relationship between the structure and capabilities of the firm and the competitive environment within which it operates in order to identify the key factors of corporate competitiveness. The nodal concept of this framework is "organizational capital" which denotes synergistic processes between 1) technological and financial corporate strategies, 2) knowledge management, and 3) their deployment for organizational learning and continuous adaptation of business models to a dynamically changing competitive environment. The framework is structured around three dimensions. The first advances an analysis of the pattern of economic change associated with the transition to the new economy with specific attention to the interaction between technology and finance. The second dimension concentrates on the changing patterns of economic valuation with specific emphasis on the growing strategic importance of intangible assets of organizations, in particular organizational knowledge capabilities. The third dimension develops an analysis of the dynamics of organizational design with particular attention to learning process within knowledge-intensive organizations.


The present chapter introduces a philosophically grounded conceptual tool for diagnosing and intervening in organisations through the categorization of seven different phenomenographic domains of discourse (talk and text). The tool is a taxonomy of ontological and epistemological domains. The seven-level model has been empirically validated by field testing in organisational consultancy as well as by means of Ph.D. research thesis with particular emphasis on Knowledge Management in large scale organizations. The model suggests that epistemological clarification between defined different, but co-existing, universes of discourse is a potent method of dealing with complexity in organizations, facilitating diagnoses, organisational learning and enhancing effective systemic interventions at all levels.


Through the experience of working on the commercial project Cat Muri the paper tries to answer the question: is a lot of interactivity in the Interactive story system (ISS) necessarily a lot of fun? (Here, interactivity means structure: the number of options.) The paper presents the constraints of the structure of the interactive story. The narratives that children like have happy endings. By having multiple paths in a story, the end might not be in line with children’s expectations. Hypermedia structures can also lead to children losing track, not only of the structure, but also of their own thinking. Encounters with children's literature in the preschool period should be spontaneous and directed towards a creative voyage through literary worlds, but at the same time stimulate the child's receptive ability and help him or her experience a literary work in all its aesthetic and emotional intensity.

Koštomaj, M., “Limitations of the Digital Storytelling worlds,” Proceedings of VRI 2002 - Laval Virtual, Virtual Reality International Conference, Laval, France (the paper was also accepted for Digital Storytelling workshop at IEEE VR2002)
Interactive storybooks are established genre in storytelling and they help to bring children closer to literature and books, helping them to learn how to read and have positive effect on cognitive and affective outcomes. This paper touches the issues how to develop next generation of products with complex 3D and robotic technology including mixed and augmented reality in the children's play and story listening. The paper gives a definition of Interactive story systems (ISS), describes what children like in ISS, or books and toys, what children learn in a story, and why is important that when introducing new digital storytelling technology this should be included. In second part of the article 4 fictional treatments are presented. The discussion presents features and the limitations from the children's perspective.


In the article we present one of the most popular Slovenian children's picture-book Cat Muri, written by Kajetan Kovic and illustrated by Jelka Reichman, and interactive version of the story “Cat Muri on the CD-ROM”, developed by Mitja Koštomaj, Maša Kozjek and Jerko Novak. First we describe main features of picture book and interactive storybook. In the second part we present the results of the research conducted among 230 children from Slovenian elementary schools. The research compares how much children know about the story and how they perceive traditional book and interactive storybooks. Results show that children like interactive version of the story more than version in the picture book. Children age 3 and 8 are most exited, when children age 10 think that some activities are too “childish” for them.

Other Publications


This article proposes a model for the next generation of learning tools - the Business Navigator Method - which projects managers into a virtual business environment. This is a highly interactive and realistic environment in which he/she will experience the difficulties of thinking, moving, understanding and acting in the diverse, socially complex, information and knowledge-intensive, competitive and cooperative reality of today’s businesses.


Groupware Therapy? New multimedia technologies are helping managers explore how to overcome internal barriers and drive organisational change. And they’re having fun while they’re at it.


Quelles sont les conditions et les limites de l’utilisation des nouvelles technologies multimédia pour l’enseignement de la gestion? Albert A. Angehrn, dans un exposé concret et alerte, s’appuie sur l’experience de l’INSEAD et plonge aux racines de l’apprentissage.


Companies and Internet growth, make use of the Net. Make use of the Net, say Albert Angehrn and Jean-Louis Barsoux. For many companies, engaging with customers has always meant ‘telling them’. The idea of interacting with customers via the Internet is something new, as the notion that back-office functions, such as accounts or distribution, might bypass the marketing department altogether and relate directly to customers.
A new age of online business is dawning, or so we are repeatedly told. But it is far from easy to separate the hype from reality. Which companies are really those transforming their business models to adapt? Which strategies work the best and who are the winners?

The Internet will have a huge impact on the way business is done - especially for small and emerging companies. Albert A. Angehrn and Jean-Louis Barsoux explain the ramifications.

In this article we analyse why knowledge has become such an important asset to the firm and what this implies for managers. We emphasise the increased connectivity, accessibility and interactivity of knowledge bases. We describe how managers will have to involve from readers into writers of information.

Many companies talk about becoming leaders in electronic commerce, but only a few actually succeed. Most firms still see the Internet and World Wide Web as mere extensions of existing business channels, rather than new and unique business opportunities.

Today’s management education methods were developed in response to the stable and predictable business environment of the 1960’s, 1970’s and early 1980’s. The new model of the business world is turbulent and characterised by unpredictability, uncertainty, flexible structures and information overload. It is not only the business environment that has changed during the last decade. Our perception of what makes learning effective has evolved too and the new information and communication technologies such as multimedia and virtual reality provide us with new opportunities for pedagogical development. Given these two enabling factors, what is the next step? A new generation of pedagogical tools combining a richer form of learning with the potential of modern technology to better prepare managers for the challenges of today’s and tomorrow’s business environment. In this paper we propose a model for the next generation of learning tools - the Business Navigator Method. This model projects managers into a virtual business environment. A highly interactive and realistic environment in which he/she will experience the difficulties of thinking, moving, understanding and acting in the diverse, socially complex, information and knowledge-intensive, competitive and cooperative reality of today’s businesses. This paper provides insights into
the pedagogical objectives underlying the Business Navigator Method, the evolutionary approach we are taking to implement this vision and the lessons learned from our experiences to date.


The aim of this study is to analyse the “Multimedia phenomenon” in order to provide up-to-date information and insights on its current impact on companies and on the development of European industry in general. This report focuses particularly on Spain, contributing to a better understanding of:

1. The current state and the development of the Multimedia industry in Spain.
2. The key factors affecting this development.
3. The dynamics of market acceptance of current and future Multimedia products and services generated by this development.
4. The major transformation affecting industry in general derived from the spread of such products.

The report provides recent data on key players, regulations, strategies of telecommunication companies, experiences with market reaction to multimedia products and services, and multimedia-enabled transformations which are underway in Spain. Comparisons with other European countries and the US are provided, allowing a better understanding of the situation in Spain. The special characteristics of the Spanish market in terms of regulation, infrastructure, management style, consumers, and their specific attitude towards the adoption of new technologies are also examined. Future developments and key success factors in the new environment are also analysed, as well as the remaining obstacles for the development of Multimedia in Spain.


Education is one of the most relevant domains in which the integration of emerging computer and telecommunication technologies is enabling significant innovations. A prerequisite for this development are appropriate frameworks to guide education professionals in exploiting advanced information and communication technologies to significantly enhance the quality and efficiency of traditional management learning and training methods. This paper describes how such a conceptual framework, the Business Navigator method, can be adopted as a basis for integrating advanced multimedia telecommunication, object-oriented simulation, intelligent agents and virtual reality technology to design “flight simulator”-like learning experiences with high pedagogical value. Technological and pedagogical implications of designing state-of-the-art learning systems based on the Business Navigator method are illustrated and discussed.


Executive Information Systems (EIS), groupware and other types of computer-based information and communication systems are increasingly used in companies to support major change processes leading to the redesign of work processes, information flows, responsibilities for resource allocation, and decision making. However, the high failure rate in implementing such systems is an indication of the resistance to change normally encountered in organisations and the limited skills of IS managers on the domain of change management. The “EIS Simulation,” a multimedia business simulation, has been successfully used to increase managerial awareness of the dynamics and the problem arising when implementing information systems which have important implications for work processes and power redistribution within companies. This paper illustrate the innovative design of this multimedia simulation and the broader pedagogical value of such an experiential learning approach.


The ICDT Model described in this paper is a framework for categorising and analysing Internet-related business strategies. The model provides the basis for a systematic approach (1) to the analysis
of how traditional products and services are redesigned in the light of the new opportunities and competitive pressures resulting from the rapid penetration of the Internet, and (2) to identify specific competencies companies need to acquire and organisational adjustments companies need to undergo in order to fully exploit the business opportunities created by the Internet.


This report reviews the literature on how Groupware is being used in different types of educational settings.


Ce rapport se propose de faire une présentation globale de l’ensemble des tenants et des aboutissants d’Internet pour le monde économique. Son objectif est de fournir au décideur du monde de l’entreprise les éléments d’information qui lui permettront de se faire une première idée de l’usage qu’il pourra faire de cette technologie pour son entreprise, mais aussi de mesurer le volume des efforts qu’il lui faudra consacrer pour bâtir et mettre en oeuvre une solution opérationnelle.


This document reports on an experience with groupware in management education conducted over one and a half year by INSEAD and TeleDanmark. The project included the selection, design, set-up and running of a groupware platform used to support and enhance a modular management development programme for Teledanmark managers (“LEAP”). This groupware platform will be called in the following “LeapNet3” (to reflect its association with the LEAP Programme), or more generally “LEN” (“Learning Executives Network”).


The performance of modern organisations is determined by their efficiency in generating value by matching market demand, predicting it accurately, and contributing to its development through innovation. The key resources that companies use to achieve their goals are people - their skills, knowledge and imagination. Companies also depend on their people's capability to extend and apply all these qualities in working together to create and implement the corporate vision and objectives.


This reports illustrates in detail the rationale and the application of an Internet-based platform used by a team of distributed managers during and after an INSEAD Programme.

The EIS Simulation is a computer-based multimedia business simulation which has been used extensively over the last 2 years with groups of management students and executives. The simulation was initially created as a pedagogical tool to support the discussion and learning of “change management skills,” particularly when such change is driven, enabled or accompanied by Information Technology. It has proven very useful in this context. The simulation has also started to be used in research projects, primarily as a data gathering mechanism. Our paper illustrates the innovative design of this simulation, discusses the pedagogical value of such an experiential learning approach, and explores how the EIS simulation can be used to gather data to investigate a number of research questions.


This document first defines mediation generally, and in particular identifies its different functions such as intermediation, facilitation, arbitration or transaction support. Mediation is then considered in the perspective of a virtual community and in particular potential areas where mediation can be used in a digital infrastructure:
- supporting the organisation of the virtual community “life”,
- building structure in the virtual space,
- supporting transactions between different participants of a virtual community.

The last part of this document presents how mediation can be proposed in a digital infrastructure according to different perspectives:
- CMC (Computer Mediated Communication),
- CSCW (Computer Supported Cooperative Work) agent (Distributed Artificial Intelligence).


This document reports and analyses what was presented and discussed during the 1st Open Workshop of the BOPS European Project. The objective of the workshop, entitled "Performance Support and Knowledge Management", was the study of the functionalities and of the learning models of performance support and knowledge management sample implementations, focusing then on the challenge of introducing such systems in large corporations.


This document reports and analyses what was presented and discussed during the 2nd Open Workshop of the BOPS European Project. The main objective of the workshop, entitled "Electronic performance support: State of the art and latest solutions", was to present the BOPS Platform prototype to a selected group of professionals, compare it with similar products and projects of leading IT firms, and highlight its strengths and weaknesses. A second objective was to enlarge and enrich the community of interest that INSEAD is building around the concept of performance support.


The present document is one of the deliverables of WP12 (Evaluation and Lessons Learned). The initial objectives of Workpackage 12 were described as follows: (i) to apply the KnowNet Evaluation method in the three user companies; (ii) to evaluate and validate the KnowNet infrastructure in the real business environment of PLANET; NAI GW and UBS (covered in D11.1); (iii) to provide inferences about the suitability of the KnowNet Evaluation method as a system for intellectual capital measurement.
Kramer, S., “RAP Project Outcomes - Knowledge Sharing Center (KnoXX),” 17 April 2000.

This book presents an overview of the outcomes developed in the RAP project. The different deliverables are divided into 2 main sections (i) Knowledge Sharing Center “Safe Migration” and (ii) RAP Toolbox. The Knowledge Sharing Center concentrates on the Methodology and the experiences out of RAP. The RAP Toolbox is an important part in the RAP project, because it contains the developed software packages.


This report talks about the shift away from traditional EDI (electronic data interchange) towards Internet-based B2B e-commerce.


This report discusses the 2nd Virtual Product Development Workshop in the context of the ECamp project. This workshop was held to identify the various components of the Virtual Community. It was designed in a specific context (B2B) with four uses in mind (training, business plan generation, assessment and functionality simulation) and to test how technology can be used to provide support to such a virtual community and derive a set of design principles for further research.


This short paper illustrates our approach to e-learning. We first consider the current challenges presented by e-learning (and the limitations of the traditional e-learning systems in fulfilling these needs). In the second section we describe our vision on how e-learning systems could be designed in the future (we identify the features that e-learning systems should support). Finally we analyse how K-InCA, an agent-based system that we have designed to support the acquisition of Knowledge Management concepts and practices, can address the e-learning challenges responding to our vision.
Learning Systems

CMW Website & Forum
The CMW Website and Forum supports exchanges between participants of the CMW Workshop before and after the actual Workshop at INSEAD. The Forum aims at collecting participants’ experiences with complex change management projects.
Location: http://www.insead.fr/CALT/Workshops/CMW/

Coca-Cola web-based learning module
This web-based learning module aims to be used as class materials at INSEAD (MBA participants). This interactive learning tool includes Java calculation applets (try your hand).
Location: http://inside.insead.fr/mba/courses/weiss/coca-cola/

INSEAD Intranet Prototype
An Intranet prototype aiming at supporting INSEAD MBA students, Faculty and administration. The Intranet promises to fundamentally change the way employees communicate. Internet technology used within secure bounds as an Intranet offers many advantages, most notably ease-of-use and communication to any hardware platform that supports a Web browser at INSEAD and from outside. The output is to give teams at INSEAD autonomy in making their work more productive.
Location: http://inside.insead.fr/mba

ITP Knowledge & Learning Platform
This is the first Notes-based platform which has been designed at INSEAD to support the group of faculty members from international business schools attending the International Teachers Programme (ITP) at INSEAD.
Location: CD-ROM

ELVIS - A Learning Platform for Memphis
Web site supporting project management functions within the Memphis consortium and experimentation with Web-based learning.
Location: http://www.insead.fr/CALT/Project/memphis/

“DealTracker” Learning Module
Multimedia Learning module based on InteractKit.
Location: CD-ROM

Easy Computer Learning Module
The aim of this multimedia learning module is to explain to incoming MBA’s unfamiliar with the world of computers, groupware and the Internet how these tools are playing an increasingly important role in business, and motivate them to use these tools actively during their year at INSEAD.
Location: CD-ROM

Accounting Foundation Module
Multimedia, Web-based module for learning accounting basics.
Location: CD-ROM

Virtual INSEAD
This is a 3D, internet-based, distributed environment representing a Virtual Campus in which students, represented by avatars, can meet, attend courses, engage in teamwork, and visit virtual offices.
Location: http://www.insead.fr/CALT/Project/VirtualCentre/
Internet Virtual Centre
INSEAD Internet Virtual Centre (IVC) is an extended manager’s Guide to the Internet. It consists in a set of integrated pedagogical tools (Readings, references, cases, etc.) that cover the different facet of Internet useful for the manager.
Location: Web-site “http://www.insead.fr/CALT/IVC/”

Virtual Learning Communities Website
Website developed in collaboration with the Swedish Trade Council (STC), related to the exploration of virtual communities in the context of SME.

CALT in Alpha World Environment
Set of virtual 3D buildings (virtual laboratory, amphi, classrooms, agora, etc.).
Location: Web-site “http://www.insead.fr/CALT/Encyclopedia/ComputerSciences/VR/Wrlds/Alpha/”
Located 0 North, 2100 West in Alpha World.

Web-based Interactive Learning Tools
Set of HyperMedia (HTML + video + director). Interactive learning tools in the domain of accounting.
Three systems now : AccountANT, Deal Tracker and FXHistory.
Location: Web-site “http://www.insead.fr/CALT/Project/InteractiveLearning/” (password protected).

WCIP Workshop Website
The World-Class-Internet-Presence is a two-day workshop based on the idea of proposing a ‘virtual study mission’ presenting 3 companies (around the world), through the use of lectures and video-conferencing.
Location: Web-site “http://www.insead.fr/CALT/Programmes/WCIP/”

CIIA, CIIA 97, Remy Cointreau Websites
CIIA (Competing In the Information Age) is a series of INSEAD executive programmes. The web is used to support this programme by providing information and communication means for the participants (Notes: CIIA uses Notes & Domino technologies).
Location: Web-site “http://www.insead.fr/CALT/Programmes/Executives/CIIA97/”

LeapNet Website
Leap net is the follow-up of the Teledanmark electronic programme. The web is used to support this programme by providing information (description, schedules, etc.), and communication means for the participants. (LeapNet uses the Webforum technology).
Location: Web-site “http://www.insead.fr/CALT/Programmes/Executives/LEAP/”

LGMB & Cyber Entrepreneurship
LGMB & Cyber Entrepreneurship were the first INSEAD courses using groupware and the Internet to support MBA participants and stimulate Internet experiences (authoring web pages, setting up virtual shops). LGMB & Cyber Entrepreneurship use Notes and webforum technologies.
Location: Web-site “http://www.insead.fr/CALT/Programmes/MBA/Cyber/”
Location: Web-site “http://www.insead.fr/CALT/Programmes/MBA/LGMB/”

MicroWorlds
Microwork is a software architecture in Smalltalk, useful to model systems as microworlds with highly cognitive representation.
Location: Web-site “http://www.insead.fr/CALT/Programmes/MicroWorlds/”

DTA TrainerKit module
This is a prototype web-based training module for a Reuters Transaction product called “Deal Tracker Analyser,” built using the TrainerKit authoring system.
Hospital Simulation Prototype
This prototype is a variation of the EIS Simulation focusing on the implementation of Quality initiatives in a hospital environment.
Location: CD-ROM

FORAD Xmatic-business game
Simulation-based learning experience designed to help corporate executives and bankers to better understand what it takes to manage the financial position of a multinational industrial corporation.
Location: CD-ROM

EIS Simulation - Change Management Learning Tool
EIS Simulation (available in English, French and German) for Macintosh.
Location: CD-ROM

Internet Challenge Interactive Case Study
This interactive case (included in the IVC environment) provides an interactive introduction to Internet navigation for managers.
Location: http://www.insead.fr/calt/IVC/CAses/Challenge/t1.htm

Discover Internet Learning Module
This interactive, Web-based module introduces managers to Internet and to a variety of business applications.
Location: http://www.insead.fr/calt/IVC/Guide/index.html

Microsoft Merchant Server Experimentation Environment
This environment supports experimentation with Electronic Commerce on the Web.
Location: Web-site “http://calnt.insead.fr/”

Java Applet Demos
Environment including a set of examples for understanding the application of Java technology.
Location: Web-site “http://www.insead.fr/CALT/Project/Simulator/gamelife.html”

LEAPNet Knowledge & Learning Platform
This Notes-based platform documented in a separate report has been designed to support a group of distributed Danish managers attending a modular programme at INSEAD. The Platform supports learning, knowledge sharing, and project management.
Location: CD-ROM

Muma
Object-oriented environment for modelling and visualising networks of alliances between companies operating in the multimedia sector.
Location: Web-site “http://www.insead.fr/CALT/Project/Projects/MicroWorlds/Alliances/”

CALT Web Site
Presentation of CALT (objectives, people, summary of projects, etc).
Location: Web-Site “http://www.insead.fr/CALT/”

CALT Forum
The CALT Forum, is an electronic bulletin board, for general exchange of ideas.
Location: Web-site “http://www.insead.fr/CALT/Forum/”

CALT Virtual Bar
A virtual environment for informal exchanges among Internet users interested in Learning Technologies.
Location: Web-site “http://www.insead.fr/CALT/Bar/”
**WCSN Project Management Server**
This Web area is used to manage the exchange and the archiving of the information of the WCSN project.

**SocialNetworks**
Tool for modelling and visualising social networks.
Location: Web-site “http://www.insead.fr/CALT/Project/Projects/MicroWorlds/SocialNetworks/”

**BSG**
Tool for modelling and visualising organisations.
Location: Web-site “http://www.insead.fr/CALT/Project/Projects/MicroWorlds/BSG/”

**The Encyclopedia: The CALT WEB Knowledge base**
The CALT Encyclopedia consists in a structured set of pages that reference all the Web resources related to research projects conducted within CALT or at INSEAD in general.
Location: “http://www.insead.fr/calt/Encyclopedia”

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**Other Learning Systems related to the CALT Research Agenda**

*Videos from the INSEAD Series* http://www.insead.fr/MeetINSEAD/Video/

**Managing in the Cyber Era**
Video with Professor Albert A. Angehrn
(also available as CD-ROM in English & French under the titles “Boosting Performance through Internet Strategies.” and “Internet et Intranet pour repenser la compétitivité de l’entreprise”; http://www.mediatid.fr/cdrom/angehrn.html)

**Managing Value-Adding Partnerships: the Networked Organization**
Video with Professor Ben Bensaou

[7.4] Case-Studies

Swatch Multimedia Case Study
Location: CD-ROM

Gauloises Blondes Multimedia Case Study
Location: CD-ROM

Fidji Multimedia Case Study
Location: CD-ROM

Gist-brocades Multimedia Case Study
Location: CD-ROM

Capital Multimedia Case Study
Location: CD-ROM

Minitel Multimedia Case Study
Location: CD-ROM

Apex Situation-Based Multimedia Case
Location: CD-ROM


Other INSEAD Cases related to the CALT Research Agenda


Tabet, J. and Téboul, J., Telemédecine at AP-HP (English version)

Tabet, J. and Téboul, J., Télémedicine à l’AP-HP (French version)
[7.5] Conference Presentations

Les Autoroutes et Services de l’Information
7 December 1994, CNIT Paris La Défense.

EFMD Case Development Workshop
18 September 1995, Barcelona, Spain.

Workshop of ALT Presentation
13 November 1995, at the Hernstein Management Centre.

EFMD Case Development Workshop

Lilis Conference
25 March 1996, Genova, Italy.

5e Forum des Innovations Pédagogiques dans les Formations au Management
28-29 March 1996, Lyon, France.

EDMA Conference
11 April 1996, Brussels, Belgium.

ITIMA Conference

4th European Conference on Information Systems

First German Internet Conference
6 July 1996, Karlsruhe, Germany.

2. Formed
25 September 1996, Bari, Italy.

Direct Marketing Conference
11 October 1996, Maastricht.

FEFSI
5 December 1996, Brussels, Belgium.

30th Annual Hawaii International Conference on Systems Sciences
January 1997, Hawaii, United-States.

5th European Conference on Information Systems
July 1997, Cork, Ireland.

International Conference on Human-Computer Interaction
August 1997, San Francisco, US.

Business Strategy 1997 Conference
18-19 September 1997, Tokyo, Japan.

17th Annual Strategic Management Society International Conference
7 October 1997, Barcelona, Spain.
Association of North-Italian CEOs (Assolombarda)  
24 October 1997, Milan, Italy.

“21st Century Consultancy - Technology the Driver” Conference  

CASCON ‘97 Conference  
November 1997, Toronto, Canada.

EHPF (The European Health Policy Forum) Annual Conference  
6 December 1997, Leuven, Belgium.

31st Hawaii International Conference on System Sciences (HICSS’98)  
6-9 January 1998, Hawaii, USA.

Forum des Innovations Pédagogiques dans les Formations au Management  

9th Annual Meeting of the EURO DSS Group  

EBC Conference on Knowledge Management  
9-10 September 1998, Copenhagen, Denmark.

First European Conference on Electronic Retailing: Can you afford not to sell via the internet?  

Annual EFMD Conference (Building new connections: preparing managers for a different world)  
Albert Angehrn was Conference Chairman and also made the following presentation: “Managing the Third Millenium: Learning and Knowledge Management in the Digital Age”

Seminar on “Learning and Knowledge Management in the Digital Millenium”  
October 22, 1999, Stockholm, Sweden  
Albert Angehrn, “Learning and Knowledge Management in the Digital Millenium”

9th Annual BIT Conference 1999  
November 3-4, 1999, Manchester, U.K.  
Albert Angehrn, “Learning in the Information Age: Research and Experiences”

Convention APM 1999  
November 19, 1999, Poitiers, France  
Albert Angehrn, “Regards sur le futur : journée d’un entrepreneur ; défis pour l’entrepreneur”

Lecture for Antwerp University E-Business Chair  
February 15, 2000, Antwerp, Belgium  
Albert Angehrn, “Competing in the Information Age”

Conference “Knowledge Management in the Public Sector”  
March 14, 2000, Ministry of Finance, Copenhagen, Denmark  
Albert Angehrn, “Knowledge Management”

Strategic E-Commerce Day on Customer Relationship on the Net  
May 17, 2000, Zürich, Switzerland  
Albert Angehrn, “How to get deep customer relationships in a digital world”
**Congrès 2000 de l’Ordre des Experts-Comptables et de la Compagnie Nationale des Commissaires aux Comptes**
September 28, 2000, Palais des Congres, Paris, France
   Albert Angehrn, “Nouvelle Economie et CyberEntrepreneurship”

**Dexia Seminar**
October 10, 2000, Brussels, Belgium
   Albert Angehrn, “Competing in the Information Age”

**International Financial Services Conference**
October 11, 2000, Brussels, Belgium
   Albert Angehrn, “Designing Mature Internet Strategies”

**ISCIS XV Conference**
October 11-13, 2000, Istanbul, Turkey
   Giovanni Giacometti-Ceroni, “Success Drivers in an Electronic Performance Support Project”

**Workshop on Supporting Organisational Learning: Knowledge Management and Case-based Reasoning - SOL’2000**
October 20-22, 2000, Tokyo, Japan
   Giovanni Giacometti-Ceroni, “Success Drivers in an Electronic Performance Support Project”

**Futuract World Business Forum 2000**
December 19-20, 2000, Paris, France
   Albert Angehrn, “The Secret of Companies Built to Last”

**IT Executive Forum 2001**
February 28, 2001, Helsinki, Finland
   Albert Angehrn, “The New Economy and Cyber Entrepreneurship: Innovation in the Information Age”

**CCMX Executive Forum 2001**
May 11, 2001, Paris, France
   Albert Angehrn, “L’ère numérique, evolution ou revolution ?”

**European Workshop on Modelling Autonomous Agents on Multi-Agent Worlds, MAAMAW’2001**
May 2-4, 2001, Annecy, France
   André Campos, “Perceptive Agents: modeling non-intentional interactions”

**Bot Show 2001**
June 14, 2001, Paris, France
   Albert Angehrn, Thierry Nabeth and Claudia Roda, “Conversational Agents for Advanced Learning: Applications and Research”

**20th EAPM European Congress & Exhibition on Human Resources Management**
June 27, 2001, Geneva, Switzerland
   Albert Angehrn, “New technology and learning”

**IFS Symposium on Customer Relationship Management in the Financial Services Industry**
   Panagiotis Damaskopoulos, “Evolutionary Dynamics of the Concept and Practice of Customer Relationship Management (CRM): Perspectives from the Financial Services Industry”
The First Global Brain Workshop: From Intelligent Networks to the Global Brain
July 3-5, 2001, Vrije Universiteit Brussel, Brussels, Belgium
George Pór, “Using Dynamic Knowledge Repositories to Support “Real-Time/Delayed Time” Synergy in Global Communities that Learn”

IEEE International Conference on Advanced Learning Technologies (I-CALT 2001)
August 6-8 2001, Madison, Wisconsin, USA

The i3 summer school on Designing for communities
September 1-10, 2001, Ivrea, Italy
Katerina Nicolopoulou participated in this workshop

IHM-HCI 2001 Conference
September 10-14, 2001, Lille, France
Liana Razmerita, “Organisational Overview of CALT”

7th International Netties Conference
September 13-15, 2001, Fribourg, Switzerland
Claudia Roda, “Matching Competencies to Enhance Organisational Knowledge Sharing: An Intelligent Agent Approach”

28th International Small Business Congress
September 17, 2001, Stockholm, Sweden
Albert Angehrn, “Virtual Learning Communities: From E-Learning to C-Learning”

eBusiness and eWork Conference (E-2001)
October 17-19, 2001, Venice, Italy
Panagiotis Damaskopoulos, “Managing Organisational Capital in the New Economy: Knowledge Management and Organisational Design”
Thierry Nabeth, “Designing Virtual Communities to support E-Commerce adoption”

Computers and Fun 4
November 27, 2001, York, U.K.
Mitja Koštomaj, “Is a lot of interactivity necessarily a lot of fun and what makes an Interactive story system a fun place for children?”

Knowledge Management Europe Forum
November 27-29, 2001, The Hague, Netherlands
Liana Razmerita, “Ontologging Project Presentation”

Cyber-Identity Workshop
December 10-11, 2001, Seville, Spain
Thierry Nabeth participated in this workshop

SPS (Strategic Planning Society) Seminar
April 8, 2002, London, UK
Albert Angehrn, “Leadership in the Knowledge Society”

The ‘Business Navigator’ hypermedia package expands on the approach to case pedagogy created by multimedia cases. The key to Business Navigator is the development of a Virtual Interactive Business Environment (VIBE). This is a realistic simulated business context (e.g. a company) which the learner is invited to discover step by step in the course of a ‘virtual visit’. With a VIBE, case reading is transformed into a real experience in which one can wander through buildings, enter offices, look for information, meet people and interact with them.


ECCH was represented by Ira Blake at last September’s European Foundation for Management Education Case Workshop hosted by Sheffield Hallam University. On her return she reported that the otherwise conventional academic proceedings had been over-shadowed by INSEAD’s Professor Albert Angehrn who had described a new hypermedia package, ‘Business Navigator’, being produced at INSEAD. This explained on the approach to case pedagogy created by multimedia cases, its key being the development of the Virtual Business Environment (VIBE).


Interactive teaching methods are about to revolutionise executive education, says George Bickerstaffe. Like everything else, management teaching is about to be invaded by the information superhighway, multimedia and CD-Rom. Many business schools, including Harvard, are now working on the application of these technologies to case studies and business simulations.


A decade ago, it was said that having an expensively paid academic spend an hour or so in lecturing a single class of students about basic economics or accounting was a remarkable expenditure of resources in an age of information technology. Yet the management development industry has been, in some eyes, remarkably slow to take advantage itself of IT at a time when this technology has had such sweeping implications within business. That situation is now changing rapidly.


A new generation of educational software is arising. With CD-ROM technology, images, sounds and knowledge are brought together and allow the individual to learn at his/her rhythm and at a distance. But can we really do without professors?


Business schools are investing in research. As schools jockey for position, the ability to deliver on research is becoming a key competitive factor. The benefits of success can feed into many areas of the school’s life - providing course materials, raising the institution’s profile and attracting vital corporate sponsorship, for instance.

‘What’s behind all this marketing?’, The Times, Monday 16 October 1995.

The market to attract MBA students is among the most competitive in the world. Though applications are up significantly on recent years, most business schools re fishing in the same pool to attract the best students.

Business schools and academics are not slow to promote the latest management thinking or to lead business into new areas - the financial innovations of options and derivatives, for example, were largely created by research carried out at business schools.


Business schools turn to CD-Rom. Some leading business schools, such as Harvard in America at INSEAD in France, are taking up the technological challenges by putting case studies (a way of teaching business by exposing students to real life business issues) on to CD-Rom, computer-based compact disks that combine data, sounds, still pictures and video.


Top MBAs for Europe. MBA programmes are reaching out to the world. As they try to demonstrate that they are truly global in reach, Europe's top business schools are following different and varied cross-frontier highways. Stepping up efforts to peddle distance-learning packages, exploiting the Internet and the World Wide Web, launching joint projects and appealing to the emerging markets of Asia and Eastern Europe figure prominently in these moves.


Business Education in France. The Net allows schools to run joint projects. When it comes to using the Internet for business teaching, France has lagged behind countries such as the United States and Britain. But now the idea has suddenly caught the imagination of schools across the country, and French business educators are rushing to hook up and switch on. How this will affect the basics remain to be seen.

‘Technology development faster than adoption by customers’, Translation of article from ‘Adfo Direct’ (May - June 96).

Does today's information age really involve a greater revolution for society than all recent technological revolutions in modern history put together? And what will be the consequences for direct marketers? If anyone can answer these questions, it is Professor Albert Angehrn of CALT at INSEAD. Angehrn, as key note speaker, recently gave the most inspiring contribution to the latest Edma Forum in Brussels. The dynamic professor briefly gave an overview of a number of outstanding new media developments and changes in the communication infrastructure. He took his audience on a search through cyberspace in which - according to him - INSEAD and Harvard Business School regularly have conferences together.

‘Simulations for Managers’, Translation of article from ‘Il Sole 24 Ore’ (N.206, 29.07.96).

Multimedia software from SDA Bocconi University teaches how to manage organisational changes. The EIS software will be the subject of an intensive seminar in October 96. Organisational changes? New strategy to be implemented? Better to verify in advance the possible outcomes in a simulated - yet very flexible and articulated - software assisted environment. This possibility is currently provided by a multimedia simulation software named EIS (Executive Information System) Simulation.


Emerging approaches to education require more flexibility. Growing diffusion and application of technologies is also affecting education, facilitating also distance education, via information systems. This is the thesis investigated in the third day of study, during a week about the information society, held in Tecnopolis. The pace of change is faster and faster, often faster than the life cycle itself. In other words, some life cycles of a learned technological job are shorter than the technology itself, and this requires a great deal of flexibility and faster and faster learning systems. This is a new reality which is breaking the traditional units of place, time and action (from school and from classroom to house, via computer), as explained by Doct. Giovanni Ingravallo, Director of Corporate Relations for Tecnopolis.
'IT - an inexpensive way to new markets', Translation of article from 'Strategi' (N. 3, 1996).

Small exporters challenge via Internet. The export giants' conservative attitude towards the Internet way have disastrous consequences. New information technology opens up the way for small companies to enter and compete in markets without high costs. The export giants' conservative attitude towards the Internet way have disastrous consequences. New information technology opens up the way for small companies to enter and compete in markets without high costs.
[7.7] Events

Internal Research Seminars

Speaker: Mr Joel Sachs from the NASA Goddard Space Flight Centre

Speaker: Professor Bharat Rao, Polytechnic University, New York

Speaker: Dr. André Campos, a CALT research fellow

Workshops (for internal and external participants)

Change Management Workshop, 7 March 1997
The Change Management Workshop is a one-day hands-on learning experience designed by INSEAD’s Centre for Advanced Learning Technologies to give managers insight and skills in how to successfully develop and implement an organisational change strategy. CMW addressed two key subjects:
(1) The need to Manage Change: In today’s complex business environment, organisations need to change constantly to compete, and implementing change has become one of the key tasks of managers.
(2) An Innovative Learning approach: The CMW combines a group discussion led by an INSEAD Professor with an innovative multimedia simulation exercise: the ‘EIS Simulation’. This simulation is a powerful learning tool that requires users (organised in teams) to implement an organisational change in a risk-free simulated environment.

The World-Class Internet Workshop, 19-20 June 1997
WCIP is an innovative two-day learning event designed by IESE International Graduate School of Management and INSEAD’s Centre for Advanced Learning Technologies to give managers insight and skills in how to strategically design and successfully manage the development and implementation of a World-Class presence on the World Wide Web. The WCIP Workshop is based on a ‘virtual study mission’ to discover how three companies (one American, one European and one Asian) have achieved a World-Class standard presence on the World Wide Web, and combines classroom discussion based on case studies on those three companies with a ‘virtual study visit’ (through video conferencing and Web links) to all three companies during the course of the two-day Workshop.

Change Management Workshop, 4 December 2000

On Monday 4 December 2000, we ran a one-day management development workshop. These workshops are typically taught by a member of the INSEAD Faculty and are based on a set of innovative learning techniques developed at INSEAD’s Centre for Advanced Learning Technologies (CALT).

This particular workshop was entitled The Change Management Workshop and was designed to give managers increased insights and skills in managing change. The workshop was based on the EIS Simulation: a computer-based multimedia simulation that challenges participants working in teams to develop and implement a change in a fictional but realistic organizational setting.
SYBASE: eBusiness Challenges Workshop, 8-9 February 2001

From 8 to 9 February 2001, we ran the “eBusiness Challenges Workshop” for participants from the Sybase company. This workshop was the first VPDW (Virtual Product Development Workshop) to be organized in the context of the E-Camp (European E-Commerce Associate Merchant Program) IST European project at INSEAD. Professor Albert Angehrn (INSEAD) and Professor Brian Subirana (IESE – Spain) co-directed this workshop.

E-Learning Workshop, 23-24 April 2001

From 23 to 24 April 2001, we hosted the Learning Review Meeting for the “E-Learning Experience programme” (organised by EFMD - Brussels). This meeting was a follow-up to a project which started with an initial meeting in Belgium and then continued on-line in a virtual environment optimized for e-learning.

B2B Workshop, 17 May 2001

On 17 May 2001, we held the second Virtual Product Development Workshop (VPDW) in the context of the E-Camp project. This workshop was animated and coached by Professor Albert Angehrn (INSEAD), Professor Brian Subirana (IESE), Mr Peter Holm (LinKS and Consensus Online) and Dr George Pór (CALT – Community Intelligence Labs). This workshop was held to identify the various components of the Virtual Community. It was designed in a specific context (B2B) with four uses in mind (training, business plan generation, assessment and functionality simulation) and to test how technology can be used to provide support to such a virtual community and derive a set of design principles for further research.

European Trade Management Forum, 12-13 March 2002

On 12-13 March 2002, we hosted the European Trade Management Forum in conjunction with the Swedish Trade Council. This seminar was the launch for a three-year Leonardo da Vinci project coordinated by the Swedish Trade Council in partnership with the Exporters Association of Northern Greece and the Hungarian Foundation for Enterprise Promotion to meet the need of personnel with relevant vocational trade management competences in small and medium-sized enterprises (SME) in Europe.

Workshops/Events organised outside INSEAD

HICSS-31 (31st Hawaii International Conference on System Sciences (HICSS), 6-9 January 1998

CALT contributed to the 31st HICSS conference with a joint team presentation on ‘New Learning Methods and Tools’
- Multimedia Casestudies, by Alastair Giffin
- Computer Simulations, by Joe Tabet
- Web-based Learning Platforms, by Jens Meyer
- Learning in Virtual Worlds, by Thierry Nabeth
- The Future of Learning Technologies, by Albert Angehrn

Workshop “Communautés Virtuelles d’Apprentissage”, 3 July 1998

(“Virtual Learning Communities”)
http://www.insead.fr/CALT/Programmes/CVA98/

CVA’98 is a conference co-organised with “le Préau” (a French organisation dedicated to the dissemination and the use of new information technology for education in France) which objective was to shared the knowledge and experiences in the use of “virtual learning communities” in France.
The participants to this conference were academic/education institutions and research Centres (CUEEP, HEC, ESSEC, CNED, UTC, CESI, etc.), and companies (IBM, CEGOS, Renault, etc.) interested in new pedagogical models of education.

12th EnCKompass Research Workshop 28-29 June 2002 Paris (forthcoming)

Joint INSEAD-Paris Dauphine University Workshop Series

The 12th EnCKompass Workshop will be hosted jointly by Professor Albert Angehrn, the Alcatel Chair of Net Economy and e-Management, Professor of Information Systems, Director, Centre for Advanced Learning Technologies, INSEAD, and, Dr Claudine Tofflon of Paris-Dauphine Université, Centre d'Études et Rechercher en Informatique Applique, Department of Decision Support Systems & Sciences.

All papers presented at the conference will subsequently be considered for publication in a forthcoming internationally refereed special issue on Facilitating Creativity and Knowledge Integration.

Other Events

CALT R&D Showcase at Meet INSEAD Days, 22-23 October 1998

The theme of this 2-day event was “Leveraging Knowledge for Growth”.

CALT joined a number of other INSEAD R&D initiatives in presenting its research output in the physical environment of the Upper Gallery. Members of the CALT team were available to demonstrate the learning tools and environments that are part of CALT’s output, answer a wide variety of questions about its role within INSEAD, and more particularly share their view of the opportunities offered by the bringing together of new enabling media technologies and academic research.

CALT also constructed a new region of “Alphaworld”, a 3-Dimensional shared virtual meeting space, specifically customised for the virtual delegates of the Meet INSEAD Days Event, attending from the comfort of their own offices. Users were able to access sound recordings and videos of INSEAD Faculty, but more importantly, actually communicate with fellow participants and members of the CALT Team, represented on-screen by their “avatars” or “digital puppets”.

CALT expects this new mode of participation to become an increasingly powerful “window” between INSEAD and the outside world.
What we call CALT Virtual Worlds are multi-users 3D spaces easily accessible through the Internet, in which we meet to:

- exchange and share experiences or simply chat
- discuss subjects related to the application of advanced information & communication technologies in education and business
- perform experiments and research with the design and the dynamics of virtual online communities.

CALT Virtual Worlds consist of virtual environments we have designed with and for INSEAD participants and alumni, groups of managers from different companies, as well as colleagues sharing our research interests. We are also designing, analysing and evaluating virtual environments for future forms of learning, knowledge management or the provision of services such as banking and retailing (we have for instance a couple of prototypes of Virtual Shopping Spaces). Last but not least we “do what we preach” and really use some of our spaces to have Virtual Meetings.

The CALT Virtual Hub is located at the coordinates (9 North, 2101 West) on Alpha World. There, all the connected people, represented by avatars, are able to “move”, “see” each other, “communicate” real-time, and experience the interactive “design” of virtual 3D (virtual offices, virtual cafeterias and training centres, virtual lab and teamrooms, etc.).

By designing and using such virtual spaces, we attempt to better understand the extent to which (and for which) 3D environments affect particular educational or business contexts. These types of virtual environments are extensions of traditional physical spaces and go a step further beyond the two-dimensional websites by adding a “social” component.

Over the last year, a number of new experimental, web-based, distributed, 3-D environments have been created for research or pedagogical purposes. A number of different domains have been created (using Active Worlds technology) in order to experiment on the following applications:

- Organisation (how to map an organisation in a virtual space)
- Education (how to use virtual space to support the learning process)
- Electronic commerce: what will be the next electronic commerce platform
- Computer Mediated Communication: how can a virtual space help to support user communities (Alumni, groups of clients, etc).

### CALT’s presence in Active Worlds

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<tr>
<th>Location Name</th>
<th>World Name</th>
<th>Coordinates</th>
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<tbody>
<tr>
<td>The CALT Lab</td>
<td>AW</td>
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<td>The CALT Training Centre</td>
<td>AW</td>
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<td>The Virtual Bank</td>
<td>AW</td>
<td>13N 2112W</td>
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<tr>
<td>The Investors’ Club</td>
<td>AW</td>
<td>24N 2110W</td>
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<td>TIBM Surf &amp; Buy</td>
<td>CALT</td>
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<td>INSEAD Virtual Alumni Space</td>
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<tr>
<td>The Meet INSEAD Day Space</td>
<td>INSEAD</td>
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Aerial view of INSEAD in AlphaWorld

Research In Organisation

The CALT Lab

This space is the “virtual” version (or extension) of the CALT Website. It includes the CALT Virtual Offices, a meeting place from which to access information on CALT-related work and initiatives. For instance, some of the panels map the CALT Knowledge Base and Research areas.
Research In Education

The Virtual INSEAD: CALT Virtual Training Centre

This space is the “virtual” version (or extension) of a traditional campus set up, with a large amphitheatre and a set of meeting and discussion rooms developed in the context of a number of Executive Programmes (Competing in the Information Age, Roche, ERT, etc.). A number of panels indicate the way to other CALT-related spaces.

Research In E-commerce

The Virtual Bank Prototype and the Investor’s Club

This space is the “virtual” version of an environment in which people can gather information and discuss about financial products. The space was developed in the context of a project sponsored by a German bank aimed at exploring advanced forms of virtual communities. The Virtual bank area is a virtual representation of a traditional bank, whereas the Investor’s Club introduces a more innovative approach for a bank to manage its relationships with its customers.
Virtual Shop Prototype I: TIBM Surf&Buy

This space is the “virtual” version of a traditional shopping place. The space was developed in the context of a project carried out in collaboration with IBM’s Centre for Advanced Studies aimed at exploring the design of 3D shopping environments and consumer behaviour online (traditional shop vs Electronic Commerce website vs 3D).

Virtual Shop Prototype II: The Beach

This space is an advanced version of the Virtual Shop Prototype I but including features such as the use of different metaphors (beach, stadium, etc.) and bots. The space was developed in the context of a project carried out in collaboration with the French retailer 3Suisses and IBM’s Centre for Advanced Studies.
The Virtual Shop Prototype III: The House

This space is another version of the Virtual Shop Prototype 2 space adapted to the selling of house furniture. The space was developed after suggestions from Yves Bayard (3 Suisses).

Research on Computer Mediated Communication (Virtual community)

INSEAD Virtual Alumni Space

The Virtual Alumni Space is an initiative that was set up to experiment the development of virtual communities in 3 dimensional virtual worlds. The project provides an opportunity for INSEAD Alumni to enter and benefit from the “digital age” and will be used in the near future by the INSEAD Alumni community.
Meet Insead Day

This space has been developed to host the 1998 Meet INSEAD Day event, allowing visitors to acquire information about INSEAD and its programmes. The space was developed in collaboration with the INSEAD EDP Department.

The components of the MID world:
- Information Desk.
- Booths of the research Centres (CALT, CMER, HMI, RISE, CIMSO, 3I Venturelab).
- Conference Centre (which includes the agenda, the videos of the professors, some presentation).
- Virtual EDP. (which includes the display of the brochures of the executive programme).
- Virtual Bar (for socialising).
- Company area (for clients, sponsors, etc.).