Centre for Advanced Learning Technologies

CALT

Director’s Research & Development Report

Research Focus
Impact on Learning Processes & Management Development

- Advanced Learning Methods & Systems
  - Multimedia Case Design Studies
  - Web Authoring Studies
  - Web-based Training Studies and Modules
  - Virtual Learning Platforms
- Advanced Business Simulation Studies
  - Business Navigator Studies
  - Simulations Evaluation Studies
  - Agent Technology in Simulations
  - Cyber-Entrepreneurship Simulation
  - Change Mgmt in Airlines Simulation

New Media & Technologies

Research Focus
Impact on Management Theory, Practice and Innovation

- Internet & Electronic Commerce Studies
  - Organizational Intranets Studies
  - Internet Strategies Studies & Industry ICDT Analysis
  - E-Commerce: European Studies
  - E-Commerce: 3D Studies
- Knowledge Management & Virtual Communities
  - Organizational KM Studies
  - Knowledge Exchange Platforms
  - Knowledge Exchange Communities
  - Virtual Professional Networks
  - VC Design and Dynamics Studies

December 1998
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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 INSEAD Faculty Members, involved in different CALT Projects or contributing with their work to research relevant to the CALT Agenda. You can learn more about the structure and infrastructure of the centre, as well as about the members of the CALT Team and the contributing Faculty members in Sections 2 and 3.

Corporate Sponsors such as the Reuters Foundation, and a number of academic and corporate R&D partners have provided funds for CALT research and opportunities to exchange experiences and mutually extend our knowledge of the theory and the practice of technology-enhanced learning (see Section 4).

Over the last year, CALT has generated a large amount of learning for all those involved directly in the Centre’s activities, and extensive output 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 world-wide. A complete list of CALT Output is included in Section 7.

By the end of its third year, the 1997/1998 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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[2] ABOUT CALT

[2.1] What is CALT?

CALT, INSEAD’s Centre for Advanced Learning Technologies, is one of the leading research centres in the field of new learning technologies in management education.

CALT was officially launched in the 1995/96 academic year with the aim of studying new media and technologies, better understanding their specific impact on management and learning, and stimulating research and innovative developments in this direction.

The mission of CALT is to set the standards for the next generation of management education approaches in schools and companies and of continuous education at the individual and organisational level. Our objective is to better understand new media and technologies as enablers of new forms of learning (individual and organisational learning processes) and experiment with them in order to contribute both conceptually and with innovative approaches to the emerging learning technologies field.

As reported in a recent European Management Journal article (Vol. 15, No. 3, 1997), CALT was the first Centre to develop and research the effectiveness of CD-ROM based multimedia case studies, Web-based learning environments for distributed groups of executives, and the design of virtual training centres exploiting state-of-the-art Internet-based Virtual Reality technologies.

New insights and systems generated at CALT demonstrate how emerging technologies such as Multimedia, the Internet, virtual environments and intelligent agents can be leveraged to increase the effectiveness with which managers both acquire and master skills and ideas, and innovate how their organisation maximises the value of its key asset, its knowledge base.

[2.2] CALT’s Structure

The core body of CALT is a research team, working under the supervision of Professor Albert Angehrn, Director of CALT, and with the help of Rachel Royer, administrative assistant. A number of external collaborators, mostly researchers from either INSEAD or other institutions, contribute to CALT’s research on a project basis. Many INSEAD faculty also contribute to CALT’s research in several domains, ranging from knowledge management and electronic commerce to new learning methods and change management theory.

CALT also operates on a partnership basis between INSEAD and a number of world-class corporations (e.g. Reuters, its first ‘Corporate Partner’). This combination of academic and real-world business skills and resources allows CALT to build and grow an innovative body of insights and tools in the domains of Management Education and Corporate Knowledge Management.
### [2.3] The CALT Platform

CALT’s infrastructure includes a computer lab, with IBM compatible PCs, Macintosh, an NT server and a Sun server that host CALT’s on-line virtual platforms.

The platform includes a public internet section (http://www.insead.fr/CALT/), that includes CALT’s Knowledge Base, one of the most visited sections on INSEAD’s web site. For more information please refer to the sections [8] CALT’s Web Site and [9] CALT’s presence in Virtual Worlds.

CALT also has a web-based intranet section used as a working platform for CALT members and research partners. This environment should allow the CALT team to:

- communicate in a structured way
- share documents, references and information
- track CALT activities and projects
- jointly write and review papers on a shareware platform
- standardise and share schedules

The platform includes: a web server, a database server and customised database applications.
[3] CALT TEAM & CONTRIBUTING FACULTY

[3.1] The CALT Team

Albert ANGEHRN

Professor Angehrn’s research, teaching and consulting activities focus on organisational decision-making and management implications of technologies such as Multimedia, Groupware, the Internet and Electronic Commerce, particularly in the context of European organisations. His research work received different international awards, including the First Prize at the International Competition for Outstanding Decision Support Achievements sponsored by The Institute of Management Sciences in 1992.

Publications of Professor Angehrn can be found in academic journals such as Communications of the ACM, European Management Journal, Information Systems Management, Human Systems Management, Decision Support Systems, European Journal of Operations Research and Interfaces.

Professor Angehrn has founded and directs the INSEAD Executive Programme “Competing in the Information Age,” courses such as “CyberEntrepreneurship” and Workshops such as the one organised by the European Roundtable (ERT) on the subject “Are European managers ready for leadership in the Information Society”. In the frame of INSEAD’s Centre for Advanced Learning Technologies (CALT), Professor Angehrn has designed a variety of Multimedia- and Internet-based management learning and development tools, including the EIS Simulation, used in international universities such as Harvard, Wharton, and London Business School, and is currently managing large projects in the domain of Internet strategies and advanced learning technologies with companies such as Apple Computers, Lotus Corporation, Ernst & Young, Pfizer, Ford, Reuters, Andersen Consulting and with the European Community.

Recent research projects include the cross-European analysis of Internet strategies, Intelligent Agents and advanced forms of Electronic Commerce, and new approaches to learning and knowledge management in educational institutions and corporations (Virtual Learning Communities).

Jill ATHERTON

Jill is an Associate Fellow of the Australian Institute of Management (AFAIM), a Certified Practising Marketer through the Australian Marketing Institute (AAMI, CPM) a member of the Fund-raising Institute of Australia (FIA) and holds post graduate qualifications in management from INSEAD/Macquarie Graduate School of Management (MBA - 1990), in marketing from the University of New South Wales (1986) and in change management from the Australia Institute of Management and the Change Management Training Institute (1991). She has also lectured in universities, spoken at conferences and taken part in forums on topics as diverse as managing change (including using the EIS simulation which was developed at INSEAD), strategic marketing, public relations and sponsorship strategies, opportunities for the not-for-profit sector and ethics in fund-raising.

Her previous research work resulted in the publication of “Business Navigator: the Next Generation of Management Development Tools” with Professor Angehrn and Professor Doz funded by the International Consortium for Executive Development Research (1993) and reprinted in the European Forum for Management Development (1995/01). Research underway at the present time within the CALT INSEAD agenda concentrates on the management of change. Her other areas of interest include the internet, knowledge management, cause related marketing, learning and using technology effectively.
**Giovanni GIACOMETTI**

Giovanni Giacometti Ceroni has developed his expertise in the fields of corporate information systems and web-based workflow applications design. He is actually involved in two European projects and in a number of CALT activities related to the development, management and analysis of virtual learning environments.

His past work experience includes: project engineer in an air-conditioner manufacturing company, IT analyst in EniData SpA. Giovanni has a University Degree in Business Engineering at the Politecnico of Milan, Italy.

**Alastair GIFFIN**

Alastair Giffin is currently the project manager for the TrainerKit research project, sponsored by the Reuter Foundation.

After completing his INSEAD MBA in December 1992, Alastair helped set up CALT by running the “multimedia case” research project sponsored by Apple Computer. Alastair has subsequently played a number of roles: CALT R&D Manager (general management role within CALT); development work on the EIS Simulation, and running of related workshops; management of relationship with Reuters since 1994, in the field of leveraging the WWW for improving professional training.


**Pooja GOYAL**

Pooja Goyal is presently working on the “KnowNet” project, a pan European research effort which aims to define, develop and test a holistic knowledge leveraging infrastructure.

Before coming to INSEAD, Pooja worked as a senior associate for Feedback Ventures, a management consulting in Asia and as Executive Assistant to the CEO for Solutions Integrated Marketing, a marketing consulting company in India. Pooja has a degree in Chemical Engineering from the Indian Institute of Technology, New Delhi, India.

**Max GRAUERT**

In 1998, Max Grauert coordinated the project “Intranet”. The Intranet prototype supports INSEAD’s MBA students in Faculty and administration. The Intranet changes fundamentally the way employees communicate. To give INSEAD autonomy in accessing information from inside and outside of the campus the Intranet is based on Internet technology (TCP/ IP and HTTP).

Max also worked on two other projects. The first was the Coca-Cola case study: a distance learning module on CD-ROM. The interactive learning tool includes Java calculation applets. The second project was the International Financial Management Simulation which comprises three interactive learning modules for multinational companies. The cases simulate money transfer in Europe between subsidiaries.

**Nicholas LECK**

After having worked for Digital Equipment for ten years as responsible for telecommunication training, analysis and design of network management services, Digital’s external research programme in telecommunications and new education techniques, Nicholas joined CALT in 1997 as a research programme manager.
Nicholas holds an MBA in Innovation, Strategy and Information Technology from Theseus and has extensive experience in consulting advising organisations in Organisational transformation. He has delivered large international telecommunication projects for KLM, Delta, Airbus. He consults in the areas of Knowledge Management, BPR, Distant learning, Organisational transformation though technology (telecomm, and GroupWare).

His research with CALT focused on the impact of technology, telecommunication (GroupWare, Intranets, Internet) on business performance.

**Revital MAROM**

Revital Marom is a research fellow at CALT. Her main area of research is in Electronic Commerce with specific emphasis on online consumer behaviour. While at CALT, she was responsible for the overall evaluation of Surf&Buy, the first online mall in France designed and operated by IBM France. Revital conducted a datamining study looking at the online consumer pattern in the mall. The results of this study are included in the article “European Electronic Commerce: Learning from Surf&Buy experience”. In addition, Revital worked in collaboration with IBM Canada and 3Suisses on the design of a 3DAvatar based shopping environment. The prototype can be viewed on the CALT website.

Prior to her INSEAD experience, Revital worked as a senior researcher for Theseus Institute and was responsible for several projects dealing with the design and implementation of information systems in rural Europe. Other related work was on Telework and Telepresence. Prior to her European venture Revital worked for IBM Canada as a senior researcher where her main project was Telepresence Ontario.

**Jens MEYER**

Jens F. Meyer’s research and teaching are concerned with the influence of new media on Management and Management Education. He is Assistant Professor (Dozent) of Information Systems and Electronic Commerce at the Technical University of Worms (Germany) and Senior Research Fellow at INSEAD’s Centre for Advanced Learning Technologies (CALT).

At CALT his research activities focus on the evaluation of the Internet as management development platform and on the employment of the Internet as a basis for Electronic Commerce (entrepreneurship). His teaching at INSEAD is devoted to the practical employment of the Internet as a managerial Business Intelligence Tool and the acknowledgement and understanding of Electronic Commerce.

Initially trained in banking and law, Jens worked in several positions in the financial service industry, before receiving an MBA in Innovation, Strategy and Information Technology from Theseus Institute (France). Jens has taught in various executive development programmes in France, Germany and Switzerland and has been consulting on Electronic Commerce issues in the field of Retailing, Telecommunications and Publishing.

**Thierry NABETH**

Thierry Nabeth’s current research is focused on the application of advanced information technologies (Internet-related technologies, groupware, agent technologies, virtual reality) to support new models of organisations, new economic models and new forms of learning. He is very much interested in the underlying theoretical models such as experiential learning (the virtual laboratory), cognitive sciences (advanced HCI, behaviour modelling), dynamics of virtual worlds (virtual communities), distributed control (agents based architecture), learning (adaptive systems, artificial life, knowledge management). His most recent work on a European project (WCSN) focused on “The Support for Mediation In Virtual Communities”. The WCSN project is about the development of a platform for supporting virtual communities (professional organisation, groups of learners, etc.). He is now focussing his attention on the use of “bots” (a special category of agents) in multi-users virtual reality platforms for assisting the user in the domain of electronic commerce, (virtual sales person), virtual communities (contributing to the dynamic of the interaction), education (business simulation games).
Thierry Nabeth worked for several years at Bull Systems in the field of Computer Aided Engineering, and at Alcatel in the field of object oriented technologies (methodologies, persistence, distribution, etc.) and artificial Intelligence (constraint propagation, DAI). He holds a diploma in Artificial Intelligence from University Paris 6, and another in Management from University Paris 1.

Joe Tabet is a Research Fellow and Programme Manager at CALT. He holds a Medical Doctorate (MD) from Beirut University, a degree in surgery from the University of Paris, and a Masters of Business Administration (MBA) from INSEAD. He is a visiting lecturer at the Instituto de Empresa (Madrid, Spain) and the Katholieke Universiteit of Leuven (Belgium). He also lectures in several company-specific programmes and workshops. He is a member of the editorial board of Health Policy - Elsevier.

Joe joined INSEAD in 1993 to start the Healthcare Management Initiative (HMI). His research then focused on the service aspect of healthcare delivery, quality and operations management, process re-engineering and managing change.

Within CALT, he is currently researching on the evaluation of computer simulations as a learning tool, the assessment of Internet/Intranet applications in the healthcare sector, and the development of knowledge management and virtual learning communities.

He has written several case-studies and articles, developed Internet interactive modules and is now developing a healthcare specific computer simulation on managing change.
Several faculty members of INSEAD have contributed to the development and growth of CALT up to now. Professor Albert A. Angehrn, as the Centre’s Director, has been involved in the majority of CALT’s research projects and Centre’s development activities, but a large number of Faculty members from all the INSEAD Areas have been collaborating with the CALT Team on research projects, on the development of new pedagogical tools, on INSEAD Web-related initiatives, or on helping CALT to increase its visibility and identify R&D partners and sponsors.

Professors Soumitra Dutta, Dorothy Leidner and Ben Bensaou from the INSEAD IS Group (TM/IS) have contributed with their research in the field of information and communication systems to CALT’s research agenda. Professor Jean-François Manzoni (Acc. & Control) has contributed extensively to CALT projects aimed at designing new forms of groupware-based learning and understanding and improving the impact of business simulations in general and the EIS simulation in particular. His expertise in the field of learning has contributed to significantly enhancing CALT’s Research Agenda. Professor Arnoud De Meyer (TM/POM), Professors Christian Pinson and Reinhard Angelmar (Marketing) have contributed to making CALT the first institution in which multimedia business cases have been designed and evaluated. Professor Yves Doz (Strategy) co-authored the “Business Navigator” article which still provides a key conceptual foundation for CALT’s approach to the design of advanced learning technologies. Professors John Weeks and Charles Galunic (OB) are contributing their help and advice in evaluation experiments taking place at INSEAD. Professor Lee Remmers (Finance), Professor Enver Yücesan (TM/POM), Professor Larry Weiss and Garry Marchant (Acc. & Control) and Professor Antonio Fatas (Econ.) have contributed to CALT’s growth by collaborating on projects aimed at the development of new pedagogical material based on advanced learning technologies. Professor David Weinstein (Marketing), Professor Joe Bissada (Entrepreneurship), Professor Luk Van Wassenhove (TM/POM), Professor Chris Loch (TM/POM) and particularly Professor Heinz Thanhaiser (Strategy) have supported our experimentation with groupware-based learning environments and their application in the INSEAD programmes they have directed.

Several other faculty members, and in particular INSEAD Dean, Professor Antonio Borges, and Professor Ludo Van der Heyden, former co-Dean and colleague sharing our research interest for the dynamics of learning processes, as well as former and current Associate Deans, Professor Dan Muzyka (MBA), Professor Gareth Dyas (Corp. Dev.), Professors Luk Van Wassenhove, Landis Gabel and Yves Doz (R&D), and in particular Professor Arnoud De Meyer whose titles as well as merits have become too many to be listed extensively, contributed with very important institutional support as well as in the identification of project partners, donors and corporate partners interested in supporting CALT’s Research Agenda.

Particular thanks for their contribution to the Centre’s research projects and output during the academic year 1997/98 goes to the colleagues whose short biographies are listed on the following pages.

Ben BENSAOU

Ben M. Bensaou is Associate Professor of Information Technology and Management at INSEAD. He holds a PhD in management from MIT, Cambridge, USA, an MA in management science from Hitotsubashi University, Tokyo, Japan, a Diplôme d’Ingénieur (MS) in civil engineering and a DEA in mechanical engineering from respectively the Ecole Nationale des TPE, Lyon and the Institut National Polytechnique de Grenoble, two Grandes Ecoles in France.

His research and teaching activities focus on (1) new forms of organisations, in particular networked corporations, strategic alliances and value-adding partnerships involving competitors, suppliers or distributors, and (2) the impact of information technology on markets and organisations. Professor Bensaou addresses these issues from an international perspective, with a special focus on Japanese corporations. Professor Bensaou’s research on buyer-supplier relations in the US and Japanese auto industries won him the 1992 best doctoral dissertation in the field of information systems and a finalist award for the 1993 Free Press Award for outstanding dissertation research in the field of business policy and strategy. His publications include papers in Management Science, Information Systems Research, the European Journal of Information Systems, book chapters and conference proceedings.
He has been consulting for Asian, European and US corporations since 1993. At INSEAD, Professor Bensaou developed two new courses: “Managing Networked Organisations” and “Understanding Japanese Business.” He also teaches courses on strategy and on comparative management. In Spring 1994 and 1997, he was a Visiting Professor at Aoyama Gakuin University, Tokyo teaching a course on “Information Technology and Corporate Transformation.” He has also been teaching (in Japanese) in Executive programmes at Keio Business School, Japan.

Soumitra DUTTA

Soumitra Dutta is a Professor in the Technology Management Area at INSEAD, Fontainebleau, France and a Visiting Professor at the Haas School of Business, University of California at Berkeley. He is also a visiting faculty at the Solvay Business School (Université Libre de Bruxelles) in Brussels. He has taught in and consulted with corporations in the USA, Europe and Asia.

His current research is on the management of technology and its role in business process redesign within organisations. He is also studying issues relating to the strategic planning and implementation of technology in organisations. Prior to joining the faculty of INSEAD in 1989, he was employed with Schlumberger in Japan and General Electric in the USA. He obtained a Ph.D. in computer science and a M.S. in business administration from the University of California at Berkeley.

His published research appears in several academic journals. He is co-leading RISE, a multi-year Research Initiative on Software Excellence funded by the European Space Agency, the European Software Institute, EDS and other corporate sponsors. His most recent book is Knowledge Processing and Applied Artificial Intelligence, which has been published by Butterworth-Heinemann, London (1993). He is currently completing a manuscript entitled “Process Reengineering, Organizational Change and Performance Improvement” (to be published by McGraw Hill in 1998).

Charles GALUNIC

Charles Galunic is Associate Professor of Organisational Behaviour at INSEAD. Professor Galunic works within the field of organisational theory and strategy. His general area of research is organisational innovation, change and the resource-based theory of the firm. In particular, he studies managerial networks, examining the creation of “social capital” in companies and how it contributes to the creation and transfer of knowledge resources within the firm. Professor Galunic holds a Ph.D. in Organisational Behaviour from Stanford University, California.

Martin GARGIULO

Martin Gargiulo is Assistant Professor of Organisational Behaviour at INSEAD. His current research focuses on the study of cooperation within and across multinational organisations, as well as the relationship between network structures, social capital, and managerial performance. His work has appeared in Administrative Science Quarterly, the Journal of Management Studies, and the American Journal of Sociology, as well as in various collective books. His teaching at INSEAD concentrates on social capital, organisational politics, and organisational change, for which he has made extensive use of CALT’s EIS Simulation, contributing to its adaptation to MBA and executive audiences.

Dorothy LEIDNER

Dorothy E. Leidner is Associate Professor of Information Systems at INSEAD. She received her PhD in Information Systems from the University of Texas at Austin, from where she also obtained her MBA and BA. Dr. Leidner has published her research in many of the leading journals, including MIS Quarterly, Information Systems Research, Organization Science, Decision Support Systems, and the Journal of Management Information Systems.
Her research interests include executives’ use of information systems, international information systems, and electronic classrooms. She received the best paper award from the Decision Support Systems track at the Hawaii International Conference of System Sciences in 1993 for her research on executive information systems. She and a co-author received the best paper award from MIS Quarterly for their article “The Use of Information Technology to Improve Management Education: The Theoretical View,” published in September 1995. Her current research interests include knowledge management systems, the role of IT in transforming organisational culture, internet based education, and electronic commerce strategies.

Jean-François MANZONI

Jean-François Manzoni is currently Associate Professor at INSEAD. His research, teaching and consulting activities are focused on the management of change at the individual and organisational levels, with a particular emphasis on behavioural issues associated with the development and use of performance measurement, evaluation and reward systems. He is involved in a number of CALT-related projects related to the use and further development of the EIS Simulation and, more generally, to the use of new learning technologies to improve managers’ development of learning, communication and leadership skills.

John WEEKS

Professor John Weeks is Assistant Professor of Organisational Behaviour at INSEAD. Professor Weeks specialises in issues of organisational culture, learning, and change. He is particularly interested in how an organisation’s culture shapes and limits its potential for change and in the building of learning cultures: environments where near constant change is felt as necessary and normal. Professor Weeks holds a PhD in Management from the MIT Sloan School of Management.

[3.3] External Collaborators

Jean-Louis BARSOUX

Jean-Louis Barsoux, a research fellow, has worked on various CALT related or relevant projects. He has worked extensively with Jean-François Manzoni on learning and leadership, with a particular focus on self-fulfilling prophecies, procedural justice and self-determination theory as drivers of learning. Several cases and working papers have emerged from this research, including an article in Harvard Business Review (March-April 1998) entitled “The Set-up To Fail Syndrome”. Jean-Louis’ collaboration with Albert Angehrn, focusing on internet strategies for companies, has resulted in an article in the Financial Times and a chapter in Mastering Enterprise (Pitman Publishing 1997) edited by Sue Birley and Daniel Muzyka.

Elena BRANET

Originally from Silicon Valley, Elena Jeung Branet has ten years experience working in or with the technology industry in U.S. and Europe. Currently, as Manager of Content Development for The Fantastic Corporation in Switzerland, Ms. Branet works with corporations, broadband network operators and media production studios on the development and distribution of broadband applications for business and consumer environments.

While at CALT, she contributed to a study on interactive digital entertainment for McKinsey & Co., advised HypoVereinsbank on its online e-commerce strategy using intelligent agents for personalised interaction, and developed a project to establish a virtual community for European women in business.

Prior to working with CALT, Ms. Branet spent 5 years in Paris, where she was responsible for equity analysis and financial marketing for Value Investing Partners. She has also worked for KPMG Peat Marwick in systems integration consulting and Apple Computer in finance and marketing. Ms. Branet is a licensed representative of the New York Stock Exchange, holds a Bachelor of Arts in Philosophy from the University
of California at Berkeley, and has co-authored a white paper entitled “The Impact of Broadband Channels on Information Dissemination”.

**Jamie McNEIL (Stagiaire)**

Jamie McNeil is of British/ Irish nationality. He was born near Belfast in Northern Ireland in 1980 and moved to France in 1988. He is presently in his last year of school studying Economic and Social Sciences and hoping to study Modern History and Politics in a British university. His work at Calt consisted of designing a prototype of Calt’s Active World for Alumnus named “Virtalun” during the summer of 1998.

**Christian MENOU (Stagiaire)**

Christian Menou is consultant in Domino/ Notes technologies, a messaging, groupware and workflow enabled server. During his internship at INSEAD, his research activities focused on virtual environments and dynamic publishing of information through Domino; he developed one of the first internet interactive applications.

Recently involved in Lotus’ “InterCommunity” project, to host virtual communities at Telcos and ISP, he was in charge of the technical integration with “Domino Instant!Host,” which enables the tracking and billing of online rentable applications. He is working currently on the specifications of a project to push information on handheld devices through the GSM network, using new protocols and Domino servers hosted at ISPs.

**Michael WALLS (Stagiaire)**

Michael Walls is of British nationality. He is presently in his last year at the Westminster School in London preparing for ‘A’ levels in Greek, Latin, Maths and Art. His work at Calt consisted of designing a prototype of Calt’s Active World for Alumnus named “Virtalun” during the summer of 1998.
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:

- Alsthom
- Andersen Consulting
- Apple Computers Europe
- Arthur Andersen Programme
- 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
- Pfizer Europe
- Remy Cointreau
- Reuters
- Swedish Trade Council
- Storz
- Sun Microsystems
- Teledanmark
- Wall Street Journal - Europe

A special thank-you goes to Stephen Somerville, Director of the Reuters Foundation, as well as to 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.

The CALT Team has received the support and cooperation of different INSEAD departments, and in particular of the Computer Development Group directed by Paule Villain, the Audiovisual Group including Jean-Jacques Bernard, Frédéric Chabaud, Frédéric Ligault, and Anders Hall, the Communication Group directed by Kenneth Smith, the Development Group directed by Donna Lawrence, and the Executive Education Department directed by Martine Van den Poel.
The CALT Research Agenda provides an overview of the R&D fields which CALT Projects are contributing to in the form of studies, experiments with emerging technologies (and their impact on business and learning), and innovative learning systems and methodologies.

A first group of CALT Projects aims at studying the impact of new media and technologies on the business environment in general. Over the last few years, the rapid spread of the Internet and the emergence of Electronic Commerce have enabled significant transformations in sectors such as publishing, entertainment, financial services and education, and provided managers with new ways to improve their company's performance ("internal" perspective) or competitiveness ("external" perspective). CALT research in this area has led to and is conceptually based on the "ICDT Model" and on the technical expertise the CALT Team has gathered over the last few years in the analysis, design, and implementation of advanced information and communication technologies such as the World Wide Web. These CALT Projects are starting to generate a number of publications and reports, to provide a sound basis for teaching modules such as the "Cyberentrepreneurship" course or the "Competing in the Information Age" executive programme and the "World Class Internet Presence" Workshop, and to contribute in establishing and extending CALT's expertise in this new, relevant knowledge domain.

The same technologies which are transforming the business environment and management in general are also changing our understanding of learning processes in organisations, providing new opportunities to design more efficient and effective learning systems and solution. A second group of CALT Projects, the majority of which are conceptually based on the "Business Navigator" Model, focus directly on the emergence of new forms of learning at the individual, team and organisational level, and the analysis of their effectiveness compared to traditional management development approaches. Technologies such as multimedia, groupware, the Internet, virtual reality and 3D interfaces, object-oriented modelling and electronic agents are explored in these CALT Projects aiming at analysing and experimenting with their impact on learning systems and methodologies. The first CD-ROM multimedia cases were developed within a CALT Project, and the Centre has been innovating since in domains such as the theory and practice of advanced management simulations, and the design of groupware- or Internet-based learning environments for groups or communities of distributed managers. Also this second group of CALT Projects has started to produce extensive output in the form of articles, prototypes, learning modules and environments, conference presentations, tutorials, and workshops based on CALT's expertise in the field of advanced learning offered in other institutions and international events.
CALT Research Agenda

Research Focus
Impact on Learning Processes & Management Development

Advanced Learning Methods & Systems
- Multimedia Case Design Studies
- Web Authoring Studies
- Web-based Training Studies and Modules
- Virtual Learning Platforms

Advanced Business Simulation Studies
- Business Navigator Studies
- Simulations Evaluation Studies
- Agent Technology in Simulations
- Cyber-Entrepreneurship Simulation
- Change Mgmt in Airlines Simulation

Research Focus
Impact on Management Theory, Practice and Innovation

Internet & Electronic Commerce Studies
- Organizational Intranets Studies
- Internet Strategies Studies & Industry ICDT Analysis
- E-Commerce: European Studies
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[MCDS] 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

Introduction

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

Pascal Romito
Head of Videotelephone at CAMEF

Pascal Romito was analysing the results of
Minitel-based wine service introduced by
Caisse d'Épargne de la Madeleine
La Rochelle in 1989

Try different options

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

Need help?
[WAS] 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.

[WAS-TrainerKit] 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 on-line 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.
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)](image)

**[WTSM-SL] 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.
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, France
- 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)

Scenario "Automated Feedback of ELVIS"

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

MEMPhIS

Methodology for a European Manager in Physiotherapy with Interactive Systems

| English | French | Italian | Portuguese |

About MEMPhIS
Project Overview, Project Partners, MEMPhIS Demo

Frequently Asked Questions
Objectives, Reading References, Answers

News from ELVIS
News, Status Reports, Changes

Inside MEMPhIS
Partners Only - Password-Protected Access

Figure 4: MEMPhIS in ALPHAWORLD
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 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.
[VLP-INSEAD] 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
[BNS] 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.

[SES-EIS] 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

[SES-EIS-A] 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.
Advanced Business Simulation Studies

(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:

![Diagram showing knowledge assessment and simulation groups]

[SES-EIS-B] 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.
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.
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.

[CESVCS] 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.

[RAP] 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/)
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.

[ISS] 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.
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.

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**[ISS-ICDT] ICDT Model and implications**

The ICDT model (Information, Communication, Distribution, Transaction) is used to 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 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.

**[EC3D] 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 1: A virtual storefront as the context for Hi-Tech Hi-Touch interactions with customers](image-url)
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 (IMeE) 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.
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:
- Telematics Applications (TAP - ET), Information Technologies (ESP), Leonardo da Vinci (LdV).
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.
INSEAD Virtual Alumni Universe

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 3-D 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.)
[7] CALT’S OUTPUT

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 1997/1998 Report (Section 6) are marked with [*].

Advanced Learning Methods & Systems


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.


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 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.

**Advanced Business Simulation Studies**


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.


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.

**Internet & Electronic Commerce Studies**


This paper presents an analysis of how the business models of organisations are getting transformed in the Marketspace created by the Internet and WWW. We use a model comprising the four Ps – Product, Price, Promotion and Placement – and one C – Customer Relationship. We study how these four Ps and one C are being transformed by the fundamental characteristics of real-time interactivity and global connectivity in the Marketspace. Our conclusions are drawn from the results of recent survey of 167 organisations chosen from a number or sectors across the globe. We observe that few organisations are exploiting the unique business potential of the Marketspace. Most organisations are simply transporting limited aspects of their current business models into the Marketspace.

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.


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’.


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.

Knowledge Management & Virtual Communities


The knowledge-based theory of the firm suggests that knowledge is the organisational asset that enables sustainable competitive advantage in hypercompetitive environments. The emphasis on knowledge in today’s organisations is based on the assumption that barriers to the transfer and replication of knowledge endow it with strategic importance. Many organisations are developing information systems designed specifically to facilitate the sharing and integration of knowledge. Such systems are referred to as Knowledge Management Systems (KMS). Because KMS are just beginning to appear in organisations, there exists little research and field data to guide the development and implementation of such systems or to guide expectations of the potential benefits of such systems. The current study provides an analysis of current practices and outcomes of KMS and the nature of KMS as they are evolving in fifty organisations. 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.

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.


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 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.

Other Publications

Advanced Learning Methods & Systems

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'expérience de l'INSEAD et plonge aux racines de l'apprentissage.

**Advanced Business Simulation Studies**


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.

**Internet & Electronic Commerce Studies**

Angehrn, A.A., “Towards the high-tech, high-touch website,” Mastering Marketing, Financial Times, 9 November 1998. [*]


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.


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.


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.

**Knowledge Management & Virtual Communities**


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.


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.


Advanced Learning Methods & Systems


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.


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

Advanced Business Simulation Studies


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.


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.

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.


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.

Internet & Electronic Commerce 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.


Angehrn, A.A., “The ICDT Model: Towards a Taxonomy of Internet-related Business Strategies,” 97/12/CALT
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.


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.


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 œuvre une solution opérationnelle.

Knowledge Management & Virtual Communities


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 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”).
[7.3] Learning Systems

Advanced Learning Methods & 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/Worlds/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 system 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/Projects/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.
Advanced Business Simulation Studies

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 & Electronic Commerce Studies

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://caltnt.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”

Knowledge Management & Virtual Communities

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

Advanced Learning Methods & Systems

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


[7.5] Conference Presentations

Advanced Learning Methods & Systems

Forum des Innovations Pédagogiques dans les Formations au Management

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

“21st Century Consultancy – Technology the Driver” Conference

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

2. Formed
25 September 1996, Bari, Italy.

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

Lilis Conference
25 March 1996, Genova, Italy.

EFMD Case Development Workshop

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

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

Advanced Business Simulation Studies

9th Annual Meeting of the EURO DSS Group

17th Annual Strategic Management Society International Conference
7 October 1997, Barcelona, Spain.

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

4th European Conference on Information Systems

Internet & Electronic Commerce Studies

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

EHPF (The European Health Policy Forum) Annual Conference
6 December 1997, Leuven, Belgium.
CASCON '97 Conference
November 1997, Toronto, Canada.

Association of North-Italian CEOs (Assolombarda)
24 October 1997, Milan, Italy.

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

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

Direct Marketing Conference
11 October 1996, Maastricht.

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

ITiMA Conference

EDMA Conference
11 April 1996, Brussels, Belgium.

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

Knowledge Management & Virtual Communities

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

FEFSI
5 December 1996, Brussels, Belgium.
Advanced Learning Methods & Systems


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.


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.


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 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.


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.

‘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 are fishing in the same pool to attract the best students.

‘Research Centres Hit the Market’, International Herald Tribune, 30/5/95.

Business schools are investing in research. As schools jockey for position, the ability to deliver 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.
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.

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.

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.

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.


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).
a search through cyberspace in which - according to him - INSEAD and Harvard Business School regularly have conferences together.

‘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.

**Knowledge Management & Virtual Communities**

‘Knowledge assisted by computer’, Translation of article from L’Express, 25 May 1995.

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?
[7.7] Events

**Advanced Learning Methods & Systems**

**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.

**Advanced Business Simulation Studies**

**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.

**Internet & Electronic Commerce Studies**

**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 Case-studies, 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
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.

Knowledge Management & Virtual Communities

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.
CALT's site is today a valuable resource for researchers, executives, and the general public. It includes a comprehensive source of information, a communication forum, a knowledge-base, and an integrated search engine. The site is structured as follows:

- **About CALT:** CALT's mission, people
- **Research:** CALT's research agenda and projects description
- **Publications:** a selection of CALT academic publications and working papers
- **News and events:** announcements for conferences, workshops and other events
- **The Encyclopedia:** a detailed comprehensive database of useful links to internet resources (see specific section: CALT Knowledge Base)
- **Virtual Communities:** a series of web-based platforms that host virtual communities either around research topics, or to support executive education programmes. These platforms also contain discussion forums.
- **The Forum:** a permanent forum discussion about CALT related issues
- **Search:** a built in search engine to search CALT's site by keyword.

Figure 1: Calt's website

CALT’s web site was created in 1994, shortly after CALT had built the first experimental INSEAD website. Since then, the site has evolved to become one of the most visited section of INSEAD's website (after the MBA section and the general R&D section).
Figure 2: INSEAD website statistics

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CALT’s Knowledge Base: “The Encyclopedia

(http://www.insead.fr/CALT/Encyclopedia/)

The Encyclopedia is a comprehensive compilation of useful resources from the web. These resources, in the form of hypertext links, refer to other websites, resource centres or electronic documents (reports and articles). These referenced resources helped achieve a number of objectives such as:

- Providing visibility for CALT
- Collecting comprehensive information
- Capitalising knowledge
- Structuring knowledge
- Collaborating with others (research centres or managers)
- Improving CALT’s know-how and experience in knowledge management and helped us better understand how to:
  - deal with the complexity of information overload
  - identify knowledge management tasks that could be automated

Overall, CALT’s Encyclopedia is often one of the first reference sites listed by web search engines (Yahoo, Altavista, Infoseek) for a number of IT related subjects (Agents technologies, Virtual Communities, Knowledge Management etc.).

Figure 3: CALT’s Knowledge-Base: “The Encyclopedia”

![Image of CALT's Encyclopedia page](http://www.insead.fr/CALT/Encyclopedia/)

Topics

- **Education**: Education, distance learning, technologies for education, etc.
- **Economy & Business**: Economics, business, marketing, technology management, etc.
- **Information Technologies**: Internet, IT, etc.
- **Management**: Strategy, Human organisations and behaviour, sociology, psychology, etc.
- **Media**: Communication, Public relations, cinema, multimedia, etc.

See also Entertainment.
[9] CALT's presence in Virtual Worlds

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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<td>The Meet INSEAD Day Space</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.).