Modelling Uncertainty: Scenario Engineering

COST 605 Econ@Tel A Telecommunications Economics COST Network

1st Management Committee and Workgroup meeting
Seville, Spain
2-4 April 2008

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COST Action IS0605
Memorandum of Understanding

- "Uncertainty Modelling: …uncertainty needs to be modelled using stochastic programming aided by scenario trees and worst-case analysis."
- "EconTel will …support the e-Europe initiative by identifying the customer needs, the social value, and the institutional value of improved communications solutions, especially by helping these parties select viable technical options for their special needs."

Fondazione Ugo Bordoni

Group: "Scenarios and methods for strategic planning"

Research activities

- adaptation of methods and techniques from technical literature
- design and development of new methods
- application of scenario methodologies in several areas of the telecommunications world

Fondazione Ugo Bordoni

Group: "Scenarios and methods for strategic planning"

Methodologies developed in the group

- interpretative methods for cross impact analysis
- integration of deterministic and probabilistic scenarios:
  - SEARCH (Scenario Evaluation & Analysis through Repeated Cross impact Handling)
- structural analysis:
  - WISE (Weighted Impact Structured Evaluation)
- multitemporal models integrating scenario analysis and actors' strategies
- constructive methods:
  - Metaproject Analysis

Scenario Engineering

A generic set of methods and techniques of Scenario Analysis for Strategic Planning and Pre-planning

These methodologies can be:

- traditional (e.g. interpretative) and constructive (e.g. project-oriented)
- quantitative and qualitative
- analytical and simulative

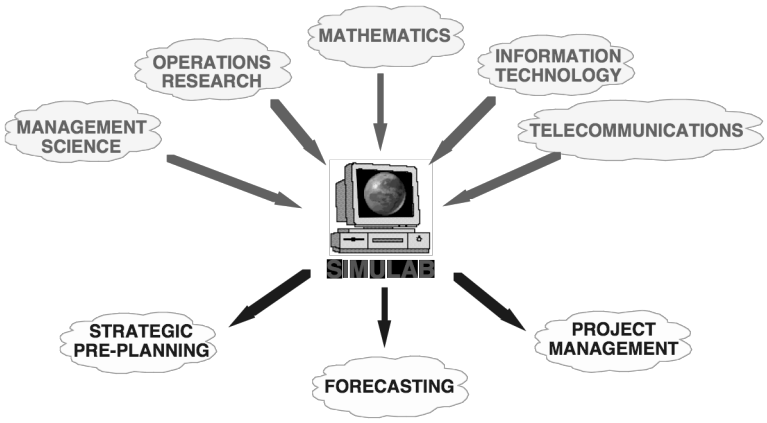
Why the SIMULAB?

- synoptic view of different techniques
- integration of research experiences
- rationalization of the use of work tools
- adaptation to the advanced technological level of new cooperative research environments

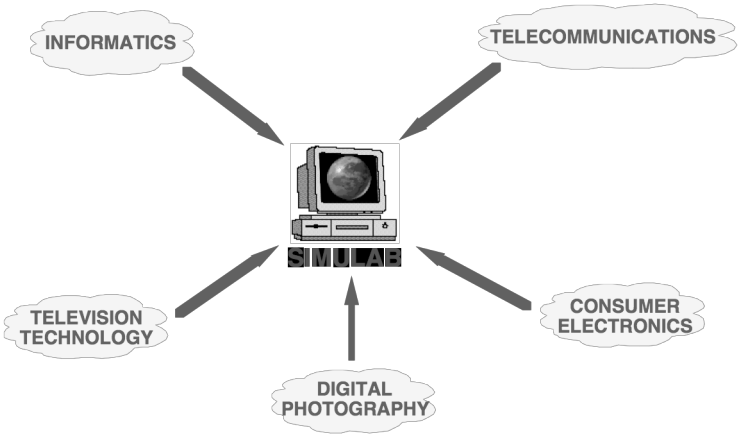
The concept of SIMULAB
(Scenario-engineering Interactive MUltimedia LABoratory)

- SIMULAB is an advanced working environment, inter-connected with global communication networks, and suitably arranged to carry out research activities in the field of Scenario Engineering and to handle multimedia information in an interactive way
- SIMULAB has advanced processing, memory, presentation and communication capabilities
- SIMULAB is made up of methodological, technical (hardware and software), infrastructural and human resources necessary to generate, analyze, store, present and transfer scenarios

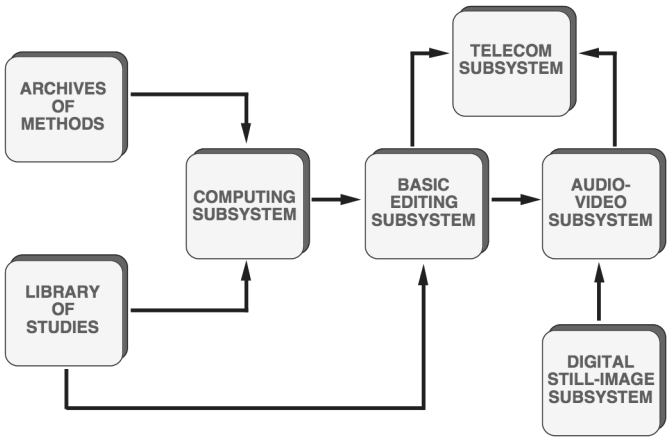
Main input disciplines and output areas for SIMULAB



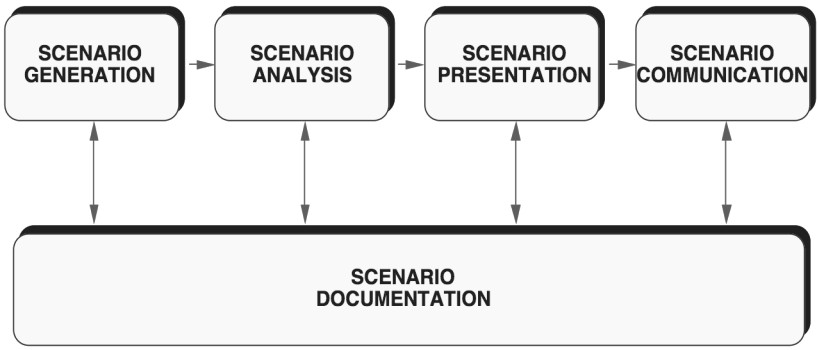
SIMULAB component technologies



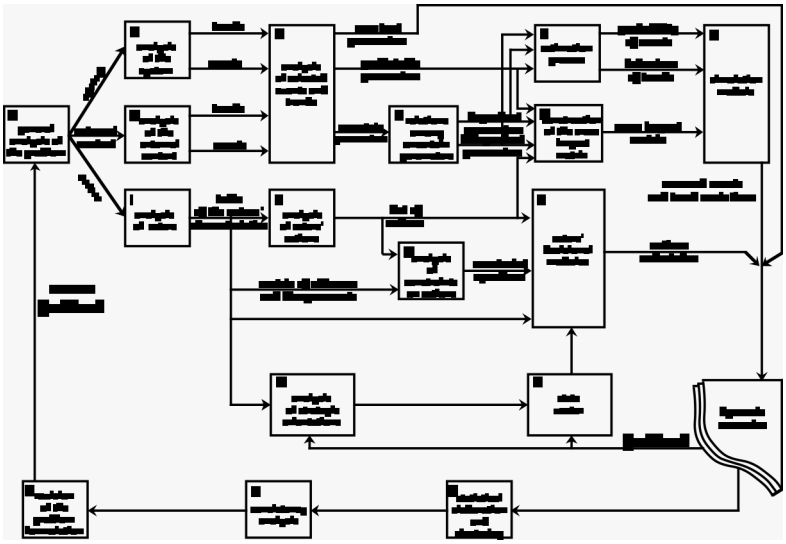
Conceptual structure of SIMULAB



Phases of Scenario Engineering



Scenario engineering



COST Action A22
"Exploring new ways to explore the future"

Goals and objectives

Main objective: to develop foresight methodology specifically in the areas of

- identifying seeds of change
- integrating narratives and numbers
- interaction between researchers, decision makers, and the public

Scientific Programme

- **WG 0:** Definition of concepts
- **WG 1:** Identifying seeds of change
- **WG 2:** Integrating narratives and numbers
- **WG 3:** Interactions between researchers, decision-makers, and the public

COST 298 ID

NAME: Participation in the Broadband Society

CODE NAME: COST 298

AREA: Information and Communication Technologies

START DATE: 14 October 2005
END DATE: 22 January 2010
FIRST MC MEETING: 23 January 2006

ACTION WEBSITE: www.cost298.org

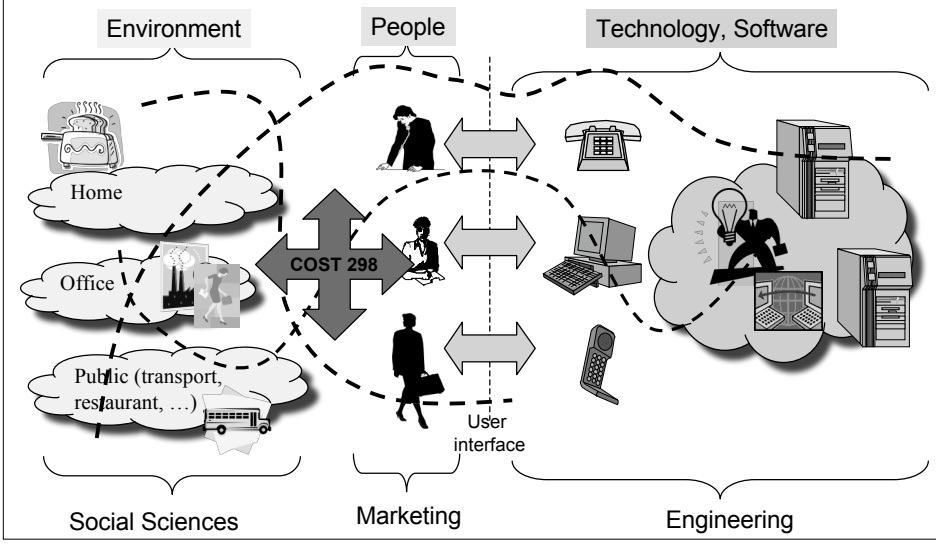
SIGNATORIES

- Austria
- Belgium
- Bulgaria
- Croatia
- Cyprus
- Denmark
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Netherlands
- Portugal
- Romania
- Serbia
- Slovenia
- Spain
- Sweden
- Switzerland
- United Kingdom

AFFILIATED NON-COST COUNTRIES

- Australia
- Russian Federation
- China

ICT Research and Development today



Working groups

- WG1: Users as innovators
- WG2: Humans as e-Actors
- WG3: The multiple cultures of the European Information Society
- WG4: Future directions

Transversal projects

- Broadband definition
- Broadband performance benchmarking
- Broadband prices
- Digital television
- Privacy - how to trace ICT users
- Database of European research on the experience of broadband

Digital Television Revisited:
Linking Users, Markets and Policies

A transdisciplinary workshop organized by COST Action 298

Budapest (Hungary), 15th May 2008
Venue : Corvinus University of Budapest

- Changing viewing practices
- Business models in a changing business environment
- Challenges for policy making

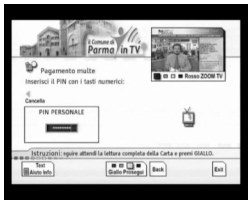
Public Call for Co-funding of T-government Projects

- A joint initiative of Ministry of Communications (through CNIPA) and Ministry of Innovation and Technology (through FUB), to boost
  - Provision and use of T-government
  - Higher degree of interactivity
    - Advanced types of return channel
  - More effective and more secure use of interactivity
    - Use of smart cards
  - Business and financial viability
  - Willingness to share T-governement solutions among different local administrations

T-government Projects

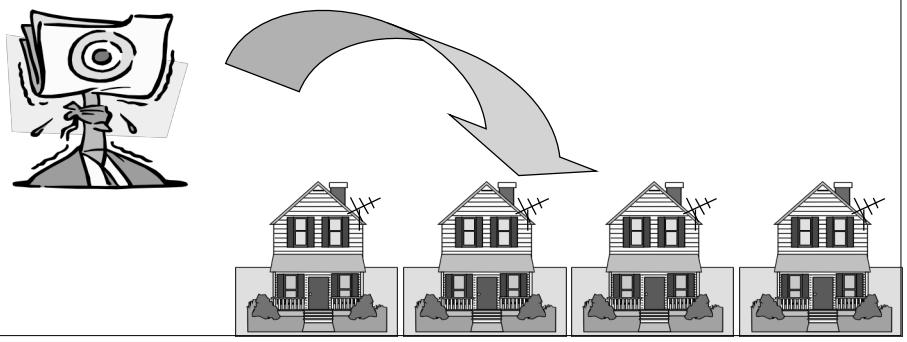
1. Services to citizens through DTT (certificates, tax payments)
2. City of Parma (demographic, sanctions)
3. Socio and health services to citizens with regional card (reservations, news, choice of personal doctors)
4. Five interactive DTT applications (utilities, telemedicine, T-learning, asbestos removal)
5. T-islessia (dyslexia rehabilitation)
6. DTT Employment Channel (T-learning, employment services, community)

T-gov service screens



Research interests

- Relevant factors of DTV technology adoption
- Policy implications



Microsimulations

- Microscopic elements are represented individually, with all their individual characteristics
- Rules of behaviour are implied dynamically in time
- Agents can grow old, adopt ICTs...

Some properties

- MS enable experiments
- The observed "micropopulation" is created virtually; its characteristics can be based on real society (sample or entire)
- Rules can be derived
  - in a form of statistical models
  - in other ways (e.g. decision trees)

Some properties

- MS helps to avoid some problems with analytical models:
  - models (especially macromodels) are built upon assumptions
  - in attempts to deal with assumptions, they can become complex and difficult to analyse
- They present new research possibilities
  - representation of every individual agent
  - direct inclusion of social networks
  - behavioral studies under different policies

MS model for DTV

- Data about DTV adoption available through questionnaires
- We decided to use decision trees
  - to study different factors (and develop better questionnaires)
  - their structure gives more freedom in relation to statistical ("regression") models

Steps

- Preliminary analysis and data collection
- Relationships among agents and system dynamics
- Programming and running the microsimulation model
- Results examination
- Further research (on adoption factors)

Thank you for your attention…

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