The research group of MISS M&S Net-DIPTEM of Genoa University is active from ‘60 in Simulation applied to Industrial Engineering.

The activities involve modeling, simulation, VV&A and analysis of Industrial Applications and Services (design, re-engineering, management, training etc.) as:

- Chemical Facilities
- Power Plants
- Harbor Terminals
- Public Services
- Manufacturing
- Assembling
- Public Transportation
- Environment
- Logistics
- PM

The Department staff is in touch world-wide with the simulation community and is present actively to conferences, exhibitions and working meetings with the major Associations, Agencies and Companies.

24 MISS Centers World-Wide & 4 Satellite Centers
DIPTEM was founded in 1997 as evolution of the Institute of Technology and Industrial Management (ITIM) that was operative from ‘60. DIPTEM is composed by about 40 faculty members, 15 technicians and administrative, plus several PhD Students, external Researchers and Consultants. DIPTEM teachers are involved in Undergraduate, Postgraduate and Professional activities in Engineering, Management. DIPTEM active in R&D Projects for major Institutions, Companies and Governmental Organisations. DIPTEM co-operates actively with major Excellence Centers World-Wide. In fact DIPTEM was changing name from DIP to DIPEM after ITIM.
University of Genoa: an Overview

The University of Genoa is one of the oldest in Italy and in the World (founded in 1471 AD), it is located in middle of Italian Riviera. The students are about 40,000 (about 8,000 new entries), and the engineering departments has about 7,500 students (12% in Savona Branch Departments); in effect the Savona Campus Savona holds about 1,000 Engineering Students. That campus is located about 2 km from Savona Downtown, in an old complex of barracks recently converted into new University Buildings (over an area of 200,000 m²).

For further Information about the University of Genoa:
  http://st.itim.unige.it
  http://www.unige.it
Savona Campus & Facilities

The University of Genoa includes a new campus in Savona about 2 km outside Downtown; bus services and large parking areas guarantee easy access. That structure has been obtained transforming Army barracks; today the campus includes a big park with facilities such as tennis courts and sport grounds. The campus holds Dept. on Engineering and also Economical courses; new laboratories have been realised in Simulation, Logistics & Industrial Eng. (SAMS Project), Ecology and Chemical. Facilities for Professional Congress Centres are available in the surroundings.
MISS -M&S Net DIPTEm Genoa Univ.

The MISS-M&S Net DIPTEm of *Genoa University* carries out many industrial simulation projects in cooperation with the large corporations and small and medium sized Enterprises; some example of recent industrial simulation project are following:

- **ADtranz**: On-Line Simulation for Distributed Production Management of Locomotives
- **ABB Daimler-Benz**: Distributed Synthetic Environment for Power Plant Design
- **Ansaldo**: Distributed Synthetic Environment for Power Plant Design
- **Cetena**: Simulation & Virtual Project Management of Car Deck Construction for Fast Ferry
- **Fincantieri**: Simulation & Virtual Project Management of Car Deck Construction for Fast Ferry
- **COOP**: Simulation for Re-Engineering Supply Chain in a National Chain of Grocery Stores

Members of MISS was appointed in several positions in simulation community such as:

- Italian Point of Contact of ISAG (International Simulation Advisory Group)
- Associate Vice President of SCS and Chairman of Industrial Relations for Europe
- Member of NATO Industrial Advisory Group for Simulation & VV&A for Design
MISS - M&S Net Genoa
Projects in 2009

Production & Assembling
LAPIS: Power Plant Service (Ansaldo) 2009

Logistics Networks & Supply Chain Management
CYBERSAR Simulator for Portainer, (University of Cagliari) 2007-2008-2009
RAS Simulator for Trucks, (CCSTRA) 2008-2009

Business & Services
LEXIS: Layout Optimization and Process Analysis (Piaggio AI) 2008-2009

Service for the Society
Green Logistics: Environmental Impact of Logistics (Assologistica) 2008-2009
SIBILLA (Joint Venture, LAMCE-DIPTEM-NASA), 2008-2009

Military Applications
PIOVRA: Examples on Intelligent Agent for CGF (Italian MoD, LSIS, DGA France) 2005-2008-2009
MISS - M&S Net Genoa
International Cooperations in 2009

PIOVRA
• LSIS

I_M_CS Common Activities
• Arcavacata University
• LSIS, Marseille, France
• UAB, IPC, Spain
• Liophant Simulation

Cybersar, Logistics & Erasmus
• Riga TU, Latvia, Rugers Univ.
• Bogazici Univ., LAMCE UFRJ Brazil
The MISS organized the following events during 2008/2009:

WORKSHOP HMS2008, Campora SG, Italy in Co-operation with MSC-LES, Sept.2008
WORKSHOP I3M2008, Campora SG, Italy in Co-operation with MSC-LES, Sept.2008
WORKSHOP EMSS2008, Campora SG, Italy in Co-operation with MSC-LES, Sept.2008
WORKSHOP MAS2008, Campora SG, Italy in Co-operation with MSC-LES, Sept.2008
WORKSHOP M&S in Medical Science, Genoa, Italy, in Co-operation with Liophant, Feb.2009
WORKSHOP M&S in Medical Science, Bologna, Italy, in Co-operation with Rizzoli Ist., Feb.2009

and MISS Genoa is co-organizing:
WORKSHOP HMS2009, Tenerife, SP, in Co-operation with I_M_CS, Sept.2009
WORKSHOP EMSS2009, Tenerife, SP, in Co-operation with I_M_CS, Sept.2009
WORKSHOP MAS2009, Tenerife, SP, in Co-operation with I_M_CS, Sept.2009
MISS - M&S Net Genoa

MISS Genoa Guests

• Prof. Joe Rose, from Dartmouth College, (February 2008)
• Prof. Miquel Angel Piera, Prof. Juan Jose Ramos, UAB Barcelona, (March 2008)
• Prof. Yuri Merkuriev, Riga TU, (March 2008)
• Prof. Gaby Neuman, Magdeburg Univ., (March 2008)
• Adeline Queau, Guests in DIPTEM (July 2008-Jan 2009)

MISS Genoa Visitors

• Agostino Bruzzone, Guests in CSU Australia (May-June 2009)

Scientific Issues

Publications 32: Journal Papers (1), Conference Papers (14), Technical Reports (9), Tutorial & Invited Speechs (5), Books (3)

ACTIVE PARTICIPATION AT CONFERENCES IN 2008/2009: 12 Conferences
Project: PIOVRA

Polyfunctional Intelligent Operational Virtual Reality Agents

PIOVRA is developed for Italian and French MoDs in the frame of the EUCLID Program CEPA11. Project aims are:

• To develop a new Generation of CGF able to simulate “Intelligent” behaviour, filling up the gap between user requirements and current available CGF performances

• To create PIOVRA intelligent CGF as effective models to be integrated in HLA Simulation for:
  – Training
  – Operation Planning
  – Operation Support

• To guarantee the possibility to Define/Configure PIOVRA CGF using Libraries and Effective Paradigms in order to guarantee Accreditation, Effectiveness and Usability of PIOVRA developments
Simulation has evolved over the centuries but has not been applied to medicine until the 20th century with the introduction of virtual reality and computers. Prior to the 20th century simulation took the forms of physical models and cadavers. With the introduction of flight simulation there was an effort to move similar approaches into medicine. This was pushed by the demands of minimally invasive surgery and the introduction of robotics in surgery. More recently we have seen the introduction of cognitive task analysis to further define how we measure the success of the introduction of simulation to surgical procedures. In the 21st century in addition to cognitive task analysis tools we are beginning to see the migration of advanced intelligence tools to simulation. This is the introduction of algorithms that allow us to model the actions of a human as an adversary or in the medical case the actions of a surgeon in the operating room. We are just at the beginning of how we will use adversarial reasoning in the medical environment and in high risk time constrained situations like surgery. This talk will have as its goal the introduction of many more questions than answers for the audience to solve in the upcoming decades. Its further goal is to unite the Italian community of scientists with the Americans in exploring solutions to these problems.

Prof. Rosen visit to Simulation Team in Genoa provides the opportunity to organize a SIREN Meeting for presenting advance in M&S applied to Medicine in Joint Cooperation with DIMS PhD Program; the Agenda includes:
12 febbraio 2009, ore 15.30
Aula Campanacci
Istituto Ortopedico Rizzoli

“Simulation & Medicine,
Innovation in Regenerative Medicine and Surgery”
Project: DIMS

Dottorato in Ingegneria Matematica and Simulazione

DIMS is a PhD program in Mathematical Engineering and Simulation started in 2005 in Genoa University. This PhD program was activated DIPTEM (Production Engineering & Mathematical Modelling Dept.) and DIBE (BioEngineering Dept.) during fall 2005 and become active with beginning of 2006.

Today DIMS involves about 20 courses in M&S for PhD Students. Currently 11 PhD Students are enrolled in this program and for 2008 another 4 positions was activated.
MISS Genoa and DIPTETM are working forward to establish a new Master in Modelling & Simulation focused on Defense sector and Interoperability in joint cooperation with Major Italian MoD Institutions active in M&S.
DIMS Courses

Dottorato in Ingegneria Matematica and Simulazione

Sviluppo di una Tesi di Simulazione, Report Annuale e 5-6 Corsi nei primi due Anni:

- P. Bagnerini  Metodi numerici per la soluzione di equazioni differenziali
- A. Bruzzone  High Level Architecture/Distributed Interactive Simulation
- A. Bruzzone  Verification, Validation & Accreditation in Modeling & Simulation
- A. Bruzzone  Advanced Logistics Models
- A. Bruzzone  Project Management & Concurrent Engineering in R&D Projects
- A. Bruzzone  Modellistica e Simulazione (Modeling & Simulation)
- C. Cervellera  Statistica e Regressione Non Lineare
- R. Cianci  Equazioni differenziali alle derivate parziali ed applicazioni
- M. Muselli  Machine Learning
- M. Parodi  PDE nei Modelli per l'Ingegneria
- F. Patrone  Teoria dei Giochi
- M. Sanguineti  Reti Neurali per l’Optimizzazione
- M. Storace  Analisi dei Sistemi Dinamici Non Lineari
- D. Percivale, T. Zolezzi  Calcolo delle variazioni ed applicazioni
Teaching Style

The courses are organised based on different modes:

• Lecturing

• Interactive Exercises on PC

• M&S Team Working Games
  • Co-operative: i.e. SUMBA
  • Competitive: i.e. BABEL
  • Co-operative & Competitive: i.e. J20

• Innovative Solutions integrated in Courses
  • Clickers for Real-Time Dynamic Teaching/Testing
  • E-Learning Platforms
Blended Education

Dottorato in Ingegneria Matematica and Simulazione

Opportunità di Lavorare in Remoto ed interagire con le nuove soluzioni tecnologiche.
MISS Professional Certification

MISS established a procedure for certify people attending to MISS Professional Courses; currently this procedure involves MISS courses and it is based on an operative protocol to appoint Certifications to course attendees.
MISS Professional Certification
Over the Time

MISS People are subjected to Certification Exam and to an additional check after one year. Credits related to M&S Activities during following years are recorded on Individual Resume:

- Conference Attendance
- Posters at Conferences
- Papers at Conferences
- Journal Papers
- Program Committees
- Project Teams
- M&S Tutorials
- M&S Courses
M&S Professional Certificates

Professional MISS Certificates for SIREN Courses are ranked based on the following levels:

<table>
<thead>
<tr>
<th>PM</th>
<th>Project Management for M&amp;S Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>M&amp;S</td>
<td>Modeling &amp; Simulation Course</td>
</tr>
<tr>
<td>HLA</td>
<td>High Level Architecture Course</td>
</tr>
<tr>
<td>VV&amp;A</td>
<td>Verification, Validation &amp; Accreditation Course</td>
</tr>
<tr>
<td>DIS</td>
<td>Distributed Interactive Simulation Course</td>
</tr>
</tbody>
</table>

Professional MISS Certificates for SIREN Courses are ranked based on the following progression:

- Introduction
- Elements
- Basic
- Intermediate
- Regular (Default)
SIREN Course Satisfaction Levels

Data Sample

SIREN Courses are checked versus attendee’s satisfaction level and needs in order to be properly tailored for each case and every user.
The quality of SIREN Courses resulted to be very satisfactory both based on the immediate feedback and in term of operative follow up measured after one year from Course Completion.
SIREN Self Evaluation

The SIREN is continuously monitoring the Course Attendee’s Background and Needs in term of M&S fundamentals and Simulation Advances.

Data Sample
SIREN Quantitative Improvements

Course Involvement vs. Grade Obtained for Attendees

Certification of SIREN Courses corresponds to an improvement in M&S knowledge that is quantitatively measured.

Data Sample
SIREN Impact vs. Traditional Education

Grade Obtained in SIREN Test

Results are compared statistically among different communities, backgrounds and users in order to guarantee effectiveness of SIREN Courses.

Data Sample
SIREN Impact vs. Traditional Education

Improvements on a Class on Detailed Issues related to:
DIS - HLA - M&S PM - VV&A

Examples on Long Classes and Detailed Certification Exams in Multiple Topics demonstrates an Improvement in Obtained Grades overpassing 200% as average.

So it is evident the need for Creating an Homogeneous Knowledge Base and the Efficiency of the Process for Teaching and Measuring Performances

Data Sample
The 5th International Mediterranean Modelling Multiconference
Campora SG, South Riviera, Italy
September 17-19 2008

I3M 2008: the 5th edition of I3M was held in Briatico (a wonderful riviera described in Latin and Greek Epic Poems) renovating the opportunity to have an International Multiconference involving the different topics related to Modelling & Simulation and providing an ideal opportunity to meet together in the unique framework of the “Magna Graecia”.

I3M 2008 is sponsored by:
The 5th International Mediterranean Modelling Multiconference

I3M08 Pictures!!!

Important information on rooms reservation!
I3M 2008 Final Program!!!
(including EMSS 2008, MAS 2008, HMS 2008)
SHUTTLE SERVICE INFORMATION!!!
I3M 2009 EDITION - CANARY ISLAND STATE!!!

International Journal of Simulation and Process Modelling
Special Issue:
“Modelling & Applied Simulation in Industry and Industrial Logistics”


Conference aim
Next year the 6th edition of I3M will be held in Campora San Giovanni (Southern Italy)
Conference aims
Puerto de la Cruz (Tenerife - Canary Islands) will hold the 6th edition of the International Mediterranean Modelling Multiconference in 2009. This new edition is intended to be a unique opportunity to meet together and discuss about every topic related to Modelling and Simulation surrounded by the incomparable framework of the so-called “Fortunate Islands”.

The following conferences are tentatively scheduled:
- The 21st European Modelling & Simulation Symposium - EMSS 2009
- The International Workshop on Modelling & Applied Simulation - MAS 2009
- The International Workshop on Harbour, Maritime & Multimodal Logistics M&S - HMS 2009

Extended Notification of Acceptance and Final Submission
Posted June 2nd, 2009 by IMM2009
Due to the numerous contributions to the EMSS, MAS and HMS conferences and the rigorous revision process that must be carried out, the notifications of acceptance may be delayed until the end of this week. Consequently, the Organization Committee has decided to extend the Final Submission Deadline as well as the Early Registration to June 24th.

Registration online!
Posted May 11th, 2009 by IMM2009
The registration procedure is online. Registration fees are available at Registration and Fees.
Please fill in the registration form for receiving the instructions for fulfilling the registration process.

Submission closed
Posted May 6th, 2009 by IMM2009
The submission systems are now closed. We want to thank all the numerous contributors.
The organization will start the review process and notify the authors the June 5th, 2009.

Internet availability info
Posted March 25th, 2009 by IMM2009
Project: SIREN
Professional Courses

The professional courses have been organized since 2000 for WorldWide professionists, in Italian, French and English, focusing on the following subjects:
• PM: Project Management in M&S Projects
• M&S: Modeling & Simulation
• HLA: High Level Architecture
• VV&A: Verification, Validation and Accreditation

The courses include lecturing and exercises; teachers are world-wide experts from major excellence centers (i.e. Boston College, Genoa University, NASA, DMSO, National Center for Simulation, SAIC, Aegis Technologies, California State University, Riga TU, UCF, McLeod Institute of Simulation Science).
Simulation Technology Transfer

Since 2000 MISS-M&S Net DIPTEM organised Simulation Professional Courses:

- Project Management
- Modelling & Simulation
- High Level Architecture
- Verification, Validation & Accreditation

The Lecturers included experts from major excellence centres (i.e. Boston College, University of Genoa, NASA, DMSO, National Center for Simulation, SAIC, Aegis, California State University, Riga TU, UCF, McLeod Institute of Simulation Science).

The course attendance (PM ~60, M&S 15, HLA 20, VV&A 10) included Companies (i.e. Piaggio Aero Industries, Alenia Aeronautica, Alenia Marconi, SIA, Fincantieri, COOP) and Academia (Pol.Torino, TU Delft, Univ.Marseille, Pol.Milano, Univ.Firenze, Univ.Bari, Univ.L’Aquila, etc.).
Conclusions

The Liophant Simulation and MISS M&S Net DIPTEM are acting as a reference point between users and providers in simulation area. The integration of experts, technicians is providing very good results on real case studies and complex projects.

A new active area of development is related to distributed simulation and web-based modeling for extending the impact and exploitation of these proposed systems.

Every year MISS M&S Net DIPTEM organizes Conferences and International Workshops focusing on application of Modelling & Simulation; for instance, this year: HMS, MAS and EMSS on the Spanish Canarias and SCSC2009 in Turkey.

There is a constant interest in fostering joint cooperation and exchanges with international Excellence Centers working on simulation.