www.itim.unige.it/strategos WWW.STRATEGOS.IT



BENEFITS FOR COMPANIES STRATEGOS Engineering Technology for Strategy & Security in Industry, Business, Service of Society, Government & Defense







STRATEGOS

... is about the Art to Know better what is Happening or is Likely to Happen.

Socrates in Laches, 198 E, 423 B.C.





STRATEGOS: MASTER SCIENCE IN ENGINEERING

- **STRATEGOS** is the new International MSc (Master Science) in Strategic Engineering (Laurea Magistrale in Italia, 2 anni)
- **STRATEGOS** promotes Quantitative Modeling to Support Decisions by developing a new generation of Engineers able to deal with Strategic Thinking and to interact with Decision Makers
- **STRATEGOS** prepares Engineers with strong foundation in Modeling, Simulation, Big Data Analysis, Al/IA as well as Enabling Technologies for Strategic Decision Making
- **STRATEGOS** is Trans-Disciplinary over Engineering, Economics and International Affairs to enable candidates to address effectively Security, Scenario & Risk Analysis





STRATEGOS & SMART COMPUTATION

夫未戰而廟算勝者,得算多也;
未戰而廟算不勝者,得算少也;
多算勝,少算不勝,而況於無算乎?
吾以此觀之,勝負見矣。



Now the general who wins a battle makes many calculations in his temple ere the battle is fought. The general who loses a battle makes but few calculations beforehand.

Thus do many calculations lead to victory, and few calculations to defeat: how much more no calculation at all! It is by attention to this point that I can foresee who is likely to it win or lose.



STRATEGY: !?!



Classic Definitions: Strategy relies on effective plans able to achieve success in challenging situations such as business, industry, politics, war, etc.

Strategy, Greek word, combines stratos (army) and ago (leading): Leading Resources

"La Stratégie est l'art de bien diriger"

Gen. Jomini, Prècis de l'Art de la Guerre, 1838

"We need a philosophy of **Strategy** that contains the seeds of its constant rejuvenation, a way to chart strategy in an unstable environment"

Von Clausewitz, Vom Kriege, 1832

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"Strategy is a system of expedients" "No plan of operations extends with any certainty beyond the first contact with the main hostile force" Von Moltke, Militarische Werke, 1871

"Today, to be a great company, think about what Social Problem you could solve" Ma Yun, Alibaba Executive Chair, in 2018: Personal Net Worth 42.2 GUSD; 23.8GUSD Alibaba Revenues 6.2GUSD Profits, 56% Net Revenues Growth, Stocks +15% in 1 month



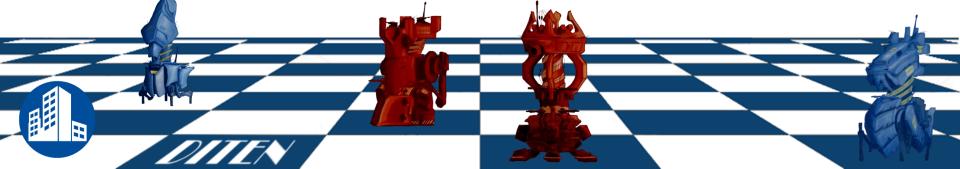
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STRATEGIC ENGINEERING

Uncertainty in Complex Systems

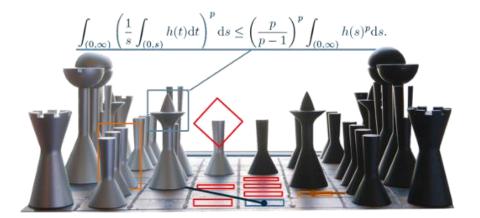
- STRATEGIC ENGINEERING is a pretty new approach, emerging in Excellence Centers around the World, where New Technologies and Methods face Challenges &
- **STRATEGIC ENGINEERING** is the process of designing and analyzing New Solutions in order to achieve Strategic Results against *risks, uncertainty, competitors, threats and* within *critical environments*
- **STRATEGIC ENGINEERING** is crucial to develop Modern Solutions for Defense, Homeland Security, Government as well as for Industries, Companies, International Agencies & Public Authorities







STRATEGOS MISSION



- **STRATEGOS** creates a New Generation of Engineers able to deal with Decision Making and Strategic Thinking in complex Scenarios
- **STRATEGOS** prepares Engineers to master Modeling, Simulation, Enabling Technologies such as: Machine Learning, AI & IA, ICT, IoT & IoE, Big Data, MR, Data Farming, Data Analytics, Innovative Robotic and Autonomous Systems





STRATEGOS IN 10 POINTS: 5...



AI Artificial Intelligence IA Intelligent Agents

- **STRATEGOS** is the <u>first Master Science in Strategic Engineering</u> (*Laurea Magistrale*) <u>in Italy</u>, among <u>the first ones in the world</u>
- **STRATEGOS** lasts 2 years in total, including the **<u>six-month internship</u>** and the related thesis conducted entirely within an Enterprise (48 Credits)
- **STRATEGOS** has <u>Industrial Partners</u> of the caliber of Accenture, Ansaldo, Axpo, BearingPoint, Hitachi, Leonardo, Thales, Tenova, etc.
- **STRATEGOS** provides <u>high-profile job opportunities</u> in <u>Big Industries</u>, <u>Consulting Firms</u>, <u>Hi-Tech Startups</u> & <u>Int. Agencies</u> (e.g. NATO M&S COE)
- **STRATEGOS** teaches how to combine <u>Modeling & Simulation</u>, <u>AI/IA</u> & <u>Machine</u> <u>Learning</u>, <u>Data Analytics</u> to support <u>Strategic Decision Making</u>





STRATEGOS IN 10 POINTS: 5... PLUS 5

- **STRATEGOS** integrates new technologies with enabling factors such as IoT, IoE, Social Media, HBM to develop new Solutions
- STRATEGOS is really Transdisciplinary and, thanks to its courses within **Economics & Int.Affairs**, teaches Engineers to work with Decision Makers
- STRATEGOS is International, all in English, with Workshops in Virtual Labs, Simulation, RPG, Serious Games, eXtended Reality (VR/AR/MR)
- STRATEGOS accepts all types of talents from Scientific & Engineering BS and provides assessments on the potential in Strategic Engineering
- STRATEGOS for additional information www.itim.unige.it/strategos or contact us by email info.strategos@diten.unige.it IoT Internet of Things Virtual Reality

IoE Internet of Everything HBM Human Behavior Models **RPG Role Playing Game**

AR Augmented Reality MR Mixed Reality



COMPANY BENEFITS IN JOINING STRATEGOS

- Turning into one of Leaders on new Strategic Engineering Concept
- Having access to best STRATEGOS <u>Students</u> for <u>Internships</u> & <u>Stages</u>
- Being part of STRATEGOS Committee for <u>Program Development</u>, participation to <u>Selection Process</u>, creation of new <u>RPGs</u> and <u>Experiences</u>
- Your Employers & Executives could access to STRATEGOS <u>Workshops</u> & <u>Seminars</u>
- Benefits of STRATEGOS promotions all over the world in <u>Tublic Affairs</u>, <u>Mediators</u>, <u>Table Top Exercises</u>, <u>Simulations</u>, <u>Special Events</u>, etc.
- <u>Networking</u> in **STRATEGOS** with other <u>Leading Companies</u> By the way, basic Patronage is Free and requires to evaluate the Student urricula for potential Internship proposals





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COMPANIES, INSTITUTIONS IN STRATEGOS

- Leading the <u>Strategic Engineering</u> within its <u>First Italian</u>
 <u>Degree Program</u>
- Evaluation of STRATEGOS Engineering Students by <u>RPG</u>, <u>Internships</u>, <u>Exercises</u>, <u>Simulations</u>, <u>Experiences</u> & <u>Stages</u>
- Active Participation in <u>Specific Experimentation & Training</u> <u>Modules</u> integrated in STRATEGOS and open to Company Employers
- Active Role in STRATEGOS and its <u>Excellence</u> <u>Network</u> <u>with</u>
 <u>International Companies, Institutions & Agencies</u>
- Promotion of STRATEGOS within <u>Public Affairs</u>, <u>Media</u>, <u>Table</u>
 <u>Top Exercises</u>, <u>Simulation</u>, <u>Workshops</u>, <u>Special Events</u>, etc.



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SPECIFIC ROLES FOR STRATEGOS PARTNERS

- Members in **STRATEGOS** <u>Steering Committee</u> contribute actively in Student Profile, Tailoring Programs, Lectures and Internship Planning
- Members in the **STRATEGOS** <u>International Scientific Committee</u> contributing in defining Workshops, Seminars on Topics & Methods
- Partners contribute in creating STRATEGOS Modules for Education and Training consistent with <u>Industrial Interests and Needs</u>



- Partners in STRATEGOS by <u>Suitability Survey & Feedback</u> analyze & quantify this new Degree profile respect Modern World Expectations
- Promoters of <u>Specific Tools, Solutions & Approaches</u> experience the **STRATEGOS** Students to enhance their own Capabilities





ADVANTAGES FROM STRATEGOS PARTNERSHIPS

- Interaction with Students and Engagement in Selection Process
- **Hosting Internships & Thesis Students** (2nd year, 2nd Semester, 4-6 months)
- Proposing <u>Personal Project Works</u> to STRATEGOS Students
- Proposing *Topics and Solutions* for **STRATEGOS** Program & Seminars
- Attending Joint Activities & <u>Table Top Exercises</u> within STRATEGOS
- Partnership in Developing STRATEGOS <u>Workshops</u>, <u>Seminars</u>, <u>RPG</u>
- Active Actor in STRATEGOS <u>Selections & Final Assessments</u>
- Contribution in <u>Social media</u>, <u>Web links</u>, <u>References</u>, etc.
- <u>Student Summer Stages (1st year</u>, June-Sept, 4 weeks)

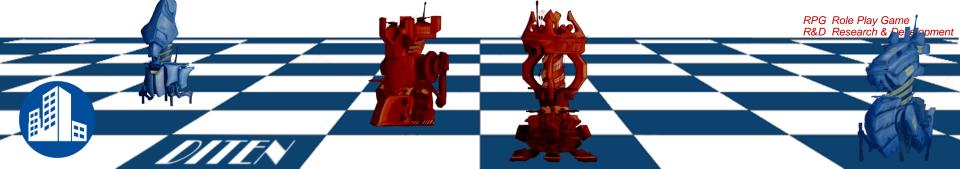






OPPORTUNITIES IN STRATEGOS

- Involvement of <u>Company Experts</u> in Seminars, Workshops, Meetings, physically & virtually, with **STRATEGOS** Classes on specific topics
- Organization of <u>RPGs, Virtual Experiences & Table Top Exercises</u> of interest for the Company within STRATEGOS Classes & Simulations
- Access to <u>Computer Simulators, Intelligent Systems & Serious</u> <u>Games</u> developed for Industries & Agencies & adapted for STRATEGOS
- Promotion of STRATEGOS <u>Scholarships for Gifted Students</u> and involvement in the Related Selection and Evaluation Process
- <u>Activation of R&D Initiatives</u> on Modeling, Simulation, Decision Making, Machine Learning, Data Analytics, Strategic Engineering, etc.







PARTNER INTERNAL GROWTH BY STRATEGOS

- <u>**Rewards to Company Staff**</u> as members of the *International Faculty* of **STRATEGOS** when they are involved in the teaching and experimentation activities in Classrooms, Labs and/or Experimentation
- Access of <u>Company Managers & Employees</u> to STRATEGOS Courses, Seminars & Workshops, or even to the whole Master Degree in Strategic Engineering
- <u>Enhancement of Personnel, Active in Different Sites</u> or in other Areas, by Live/Remote **STRATEGOS** Training



 Synergies among STRATEGOS and other Initiatives, already active in Companies, Agencies and/or within specific Business Sectors





The Skills associated with **STRATEGOS** Engineers include among the others:

- Engineering and Modeling applied to Complex Systems
- Modeling and Simulation
- Data Farming and Data Analytics
- Scenario Analysis
- Artificial Intelligence, Intelligent Agents and Machine Learning
- Economic and Political Analysis of Scenario and Operational Context
- Feasibility Analysis of the Alternative Solutions
- Context Engineering for the Technical Sustainability of the Strategies
- Strategic Planning to implement Strategies and Operations
- Robotic Process Automation, Autonomous Systems and Heterogeneous Networks
- AR, VR, Graphics and Visualization, to move results into an easily accessible and understandable, interactive, immersive and interoperable framework
- Mathematics, Information Technology and Engineering for Implementation
- Security of Cyber Physical Spaces & over Multi Domain Frameworks
- Comparé Strategies and Business Development

AR Augmented Reality VR Virtual Reality







STRATEGOS ENGINEER ROLES

The **STRATEGOS** Engineers could serve in multiple roles such as:

- Scenario Identification, Definition and Analysis
- Development of Models of Complex Systems
- Strategic Planning and Analysis
- Strategic Analysis and Decision Support in Defense & Homeland Security
- Support Decision Makers by Quantitative Methods , Models and Analytical Approaches
- Support to Governmental & International Institutions, Policy Makers and Public Authorities
- Support to Industries in Strategic Decision Making, Planning and Scenario Definition
- Data Farming by Simulation to extend, integrate and fuse Big Data for Data Analytics
- Development of New Algorithms, Models and Architecture devoted to model Complex Systems
- Supporting Organization Management in objectives definition and strategic planning
- Simulation, through the implementation of self-built systems, of the evolution of events
- Strategic Modelling & Analysis for Hybrid Warfare, STRATCOM, Cyber Warfare,
- Modeling, also through capture of data & information conditioning, of the Scenario
- Development of plans to defend and restore systems and organizations











SME Small, Medium Size_En

BoD Board of Directors.

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STRATEGOS ENGINEER PLACEMENT

STRATEGOS Master Program offers a professional engineer profile with a strong foundation in the area of modeling, analysis and strategy planning for Systems, Operations, Organizations and Products. The expected employment target include large companies, but also SMEs that could benefit from this engineering background and by their specific skills and competences. Employment in Public/Pivate Research and Management/Administration Centers is targeted as well as in Industries and Companies. Hereafter some examples are proposed:

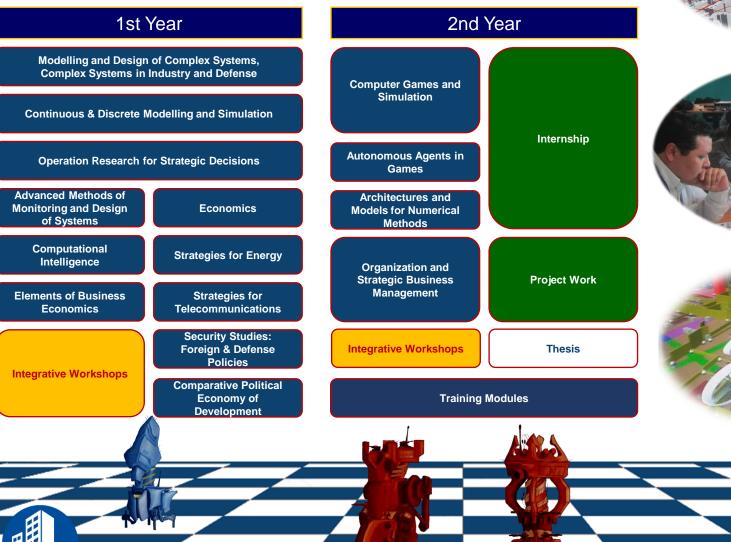
- BoD Staff in Major Industries (Oil & Gas, Defense, Energy, Manufacturing, Resilience & Sustainability, Investments, etc.)
- Support to Directors on Operations, Multi-Project Management, Operational Level, Grand Tactics devoted to implement Strategies, etc.
- Strategies for Specific Domains: Defense, Energy, Shipping, Marine Sector, Aerospace, Communications, Finance, Process Plants, Retail
- New developments enabled by Autonomous Systems and Enabling Technologies (e.g. Security, Aerospace, Sea Robotic Systems, etc)
- Support to Defense & Homeland Security: Commander Decision Support in Operational Planning
- To design, develop and manage Security Solutions over Multi Domain and Layers for Business and Governmental Users -COA Definition, Quantitative Support to Negotiation and Consensus, Strategies for Homeland Security & Defense, -New Programs and Simulation Based Acquisition, etc.
- Support to Agencies & Governmental Institutions (e.g. EDA, ONU, NATO): Strategies on International Affairs, Consensus, Strategies in Service to Society, Health Care & Strategies, etc.
- Models for Companies specialized in Complex Systems and Plants, Predictive and Distributed Maintenance, Smart Services etc.
- Design, service and management companies (including Banks and Insurances) requiring scenario simulation, data processing, etc.
- Generic componies (e.g., B2C, B2B, software houses, mechanical electrical and electronic components and systems, etc.) interested in Decision Ma and Engineering, especially considering Product/System/Service Strategy. This should concern also SMEs

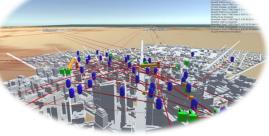
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STRATEGOS

DITL

PROGRAM













STRATEGOS LABS & PARTNERSHIP







STRATEGOS & GENOA UNIVERSITY

STRATEGOS is led by Genoa University, founded in 1471 AD and located in middle of Italian Riviera, covering all disciplines and counting around 40,000 students in total. The Engineering School of the Genoa University was created n 1870 AD and is among most prestigious Internationally (in 2018 we rank 1st in Italy) and provides BE, MSc and PhD Programs to 7,500 students.

STRATEGOS promoters in Genoa University are active in International projects with major Agencies and Companies at International Level, as well as in co-operations with Prestigious Universities and Institutes all around the world. Genoa University offers **STRATEGOS** Workshops and Seminars, closed

And open to external attendees and/or invited guests, jointly with NATO Excellence Centers, Research Labs and R&D Departments in leading International Companies.







EXAMPLE OF STRATEGIC DECISION SUPPORT

- T-REX is a Decision Support System based on MS2G devoted to reproduce Hybrid Warfare and to be federated with other elements to evaluate the impacts and scenario evolution.
- T-REX is solution from Simulation Team, reproducing
 - Human Behaviors
 - Population & Interest Groups
 - Social Media
 - Urban & extra Urban Contexts
 - Layers (i.e. economic, political, social, etc.)
 - •Multiple domains (e.g. land, air, sea, space and cyberspace).

Simulation Team T-REX Day 0 2:27:1 ID Anbarin Toma of Amithan Lillah by Email Simulation Team T-REX Day 0 2:31:30 ID Shahd Bitar of Amithan Lillah by Phone Simulation Team T-REX Day 0 2:31:30 ID Adara Gaber of Farth ArAolas by Instagram Simulation Team T-REX Day 0 2:31:30 ID NafisahHadad of Farth ArAolas by Mobile Simulation Team T-REX Day 0 2:31:30 ID Muhsinah Essa of Arth ArAolas by Mobile Simulation Team T-REX Day 0 2:31:457 ID Adara Gaber of Farth ArAolas by Mobile Simulation Team T-REX Day 0 2:31:457 ID Lubab Essa of Antistahar Lillah by Mobile Simulation Team T-REX Day 0 2:34:57 ID Lubab Essa of Antistahar Lillah by Mobile Simulation Team T-REX Day 0 2:34:342 ID Shahd Bitar of Antistahar Lillah by Email

T-REX Threat network simulation for REactive eXperience MS2G Modeling, interoperable Simulation & Serio D Game





MODELING & SIMULATION FOR COMPLEX SCENARIOS

- T-REX includes Models of media communications, fake news and different assets to experiment virtually different *Decisions* and *COAs*
- The Simulation of Social Networks, Cyber Space and Population estimates their reactions based on Scenario Evolution
- T-REX Immersive Interactive Interoperable Environment for Decision Makers to understand the Scenario and to support decisions



COA

Course of Actions





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