www.itim.unige.it/strategos

www.strategos.it



BENEFITS FOR DEFENSE PLAYERS

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 win or lose.

Sun Tzu, Art of War, Laying Plans, 7, 500 BC







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

"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"





STRATEGIC ENGINEERING

- STRATEGIC ENGINEERING is a pretty new approach, emerging in Excellence Centers around the World, where New Technologies and Methods face Challenges & Uncertainty in Complex Systems
- **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 IN 10 POINTS: 5...



- •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 **Industrial Partners** 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 Modeling & Simulation, Al/IA & Machine Learning, Data Analytics to support Strategic Decision Making





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 <u>English</u>, with Workshops in <u>Virtual Labs</u>, <u>Simulation</u>, <u>RPG</u>, <u>Serious Games</u>, <u>eXtended Reality</u> (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
IoE Internet of Everything
HBM Human Behavior Models
RPG Role Playing Game

VR Virtual Reality
AR Augmented Reality
MR Mixed Reality





Business, Service of Society, Government & Defense



DEFENSE INSTITUTIONS IN STRATEGOS

- Leading one of first **Strategic Engineering Degree Programs**
- Active role in STRATEGOS RPG, Exercises, Simulations, Experiences
- Possibility to enroll your Officers in the STRATEGOS MSc Program
- Free attendance to **STRATEGOS** Workshop and **Seminars**
- Possibility to use **STRATEGOS** Students during **Internships** & **Stages**
- Active Participation in **Specific Experimentation & Training Modules** integrated in STRATEGOS in respect of Security and Clearance Requirements
- Active Role in STRATEGOS and its **Excellence Network with International**

Entities, Institutions & Agencies

Benefits from STRATEGOS activities in Public Affairs, Media,









SPECIFIC ROLES FOR STRATEGOS PARTNERS



- Members in **STRATEGOS** <u>Steering Committee</u> contribute actively in Student Profiles, Tailoring Programs, Lectures and Internship Planning
- Members in the **STRATEGOS** <u>International Scientific Committee</u> contributing in defining Workshops, Seminars on Topics & Methods
- Offer Stages and Internship Experience to **STRATEGOS** Students
- Partners contribute to create STRATEGOS Modules for Education & Training consistent with <u>Defence & Homeland Security Needs</u>
- Experience the new **Simulation Tools, Solutions & Approaches**
- Your Officers get the opportunity to achieve the STRATEGOS MSc









ADVANTAGES FROM STRATEGOS PARTNERSHIPS

- Sending freely your Staff to <u>Workshops, Seminars, Training Sessions</u>
- Qualify you Officers as Strategic Engineers by STRATEGOS MSC
- Proposing <u>Personal Project Works</u> to STRATEGOS Students



- Attending Joint Activities & <u>Table Top Exercises</u> within STRATEGOS
- Partnership in Developing STRATEGOS Workshops, Seminars, RPG
- Hosting Internships & Thesis Students (2nd year, 2nd Semester, 4-6 months)
- Student Summer Stages (1st year, June-Sept, 4 weeks)
- Contribution in <u>Social media</u>, <u>Web links</u>, <u>References</u>, etc.









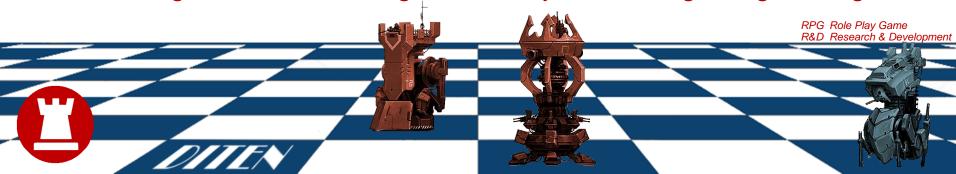






OPPORTUNITIES IN STRATEGOS

- Involvement of <u>Defense 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 <u>Center</u> within <u>STRATEGOS</u> Classes & Simulations
- Access to <u>Computer Simulators, Intelligent Systems & Serious</u>
 <u>Games</u> developed for Agencies and adapted for STRATEGOS
- Promotion of **STRATEGOS** <u>Scholarships for Gifted Personnel</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 Officers & Experts</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
- Sending <u>Officers & Staff</u> to STRATEGOS Courses, Seminars & Workshops, or even to obtain the full Master Degree in Strategic Engineering
- Enhancement of Personnel, Active in different Sites 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









STRATEGOS FOR COMMADERS & HIGH OFFICERS

- Enhance your Capabilities by introducing High Officers in **Strategic Engineering**
- Use their Experience and Skills to *lead the development of your future Models*
- Evolve the traditional <u>Table Top Exercises</u> into <u>Interactive Immersive Virtual</u> **Experiences** to develop new doctrines, strategies and plans.
- Experience realistic scenarios on <u>Hybrid Warfare</u> and <u>Cyber Defense</u>
- Develop and Carry out Simulation to learn how to fight over new Domains
- Train Commanders & Staff to get benefits of Innovative Technologies & Models
- To introduce **Yours Leaders** into the **evolution of the Operations**



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





STRATEGOS FOR YOUNG OFFICERS

- Evolve your young Officers as Key Resources for Applying <u>Strategic Engineering</u>
- Prepare them to <u>serve as enablers of new technologies</u> to Commanders
- Train young staff to support operations over <u>Hybrid Warfare</u> and <u>Cyber Defense</u>
- Train the New Generation to fight over and inside the new Domains & Doctrines
- Prepare Resources able to deal with modern <u>Simulation Systems</u> and <u>DSS</u>
- Have Technical Staff prepared to <u>Design, Define</u> and <u>Supervise Projects</u> related to development and deployment of <u>new Hi-Tech Solutions</u>, <u>IoT</u>, etc.
- To introduce <u>Future Leaders</u> into the <u>evolution of the Operations</u>

By the way the Tuition Fee for Governmental People and Officers are very convenient







WHY DOES A DEFENSE CENTER JOIN STRATEGOS?

- Being part of International Entities leading <u>Strategic Engineering New Concept</u>
- Having access to STRATEGOS <u>Scientists</u> & <u>Engineers</u> for <u>Internships</u> & <u>Stages</u>
- Being active in STRATEGOS Committee for <u>Program & Scenario Development</u>
- Your Officers could attend to STRATEGOS <u>Workshops</u> & <u>Seminars</u>
- Benefits of STRATEGOS promotions all over the world in <u>Public Affairs</u>, <u>Media</u>,
 <u>Table Top Exercises</u>, <u>Simulations</u>, <u>Special Events</u>, etc.
- <u>Networking</u> in STRATEGOS with other <u>Leading Entities</u>

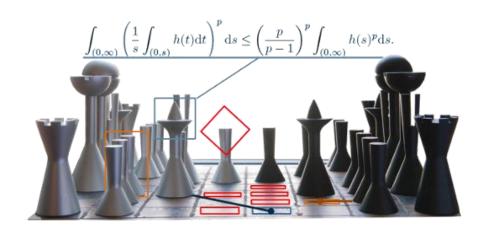
By the way the partnership is Free for Governmental Entities





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

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







STRATEGOS ENGINEER SKILLS

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

Company Strategies and Business Development













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













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 companies (e.g., B2C, B2B, software houses, mechanical electrical and electronic components and systems, etc.) interested in Decision Managery and Engineering, especially considering Product/System/Service Strategy. This should concern also SMEs



STRATEGOS

1st Year

Modelling and Design of Complex Systems, Complex Systems in Industry and Defense

Continuous & Discrete Modelling and Simulation

Operation Research for Strategic Decisions

Advanced Methods of Monitoring and Design of Systems

Strategies for Energy

Economics

Elements of Business Economics

Computational

Intelligence

Security Studies: Foreign & Defense **Policies**

Strategies for

Telecommunications

Integrative Workshops

Comparative Political **Economy of Development**

PROGRAM

2nd Year

Computer Games and Simulation

Autonomous Agents in **Games**

Architectures and **Models for Numerical Methods**

Organization and Strategic Business Management

Integrative Workshops

Training Modules



Project Work

Thesis



21















STRATEGOS LABS & PARTNERSHIP

STRATEGOS MSc relies on its strong partnership with major Industries, Agencies, Institutions, DoD & MoD. Currently there are already Endorsements for cooperation with several Entities and additional Agreements are on going for Development





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

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).









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





STRATEGOS REFERENCES

POINTS OF CONTACT

STRATEGOS General Chair

Prof. Agostino Bruzzone email: agostino@itim.unige.it Tel. (+39) 320 798 - 2138

STRATEGOS Co-Chair

Prof. Marco Invernizzi email: marco.invernizzi@unige.it Tel. (+39) 010 353 - 2184

STRATEGOS General Email

email: info.strategos@diten.unige.it

STRATEGOS URLs

www.itim.unige.it/cs/strategos

STRATEGOS Didactic Manager

Dott.ssa Grazia Maria Esposito email: grazia.esposito@unige.it Tel. (+39) 010 353 - 2429

STRATEGOS Co-Chair

Prof. Alessandro De Gloria email: adg@elios.unige.it Tel. (+39) 010 353 - 2785

STRATEGOS Main Address

Via Opera Pia 11a Genova 16145, Italy

www.strategos.it







