























STRATEGOS INDEPENDENCE DAY WORKSHOP



WELCOME TO









Prof. Agostino Bruzzone

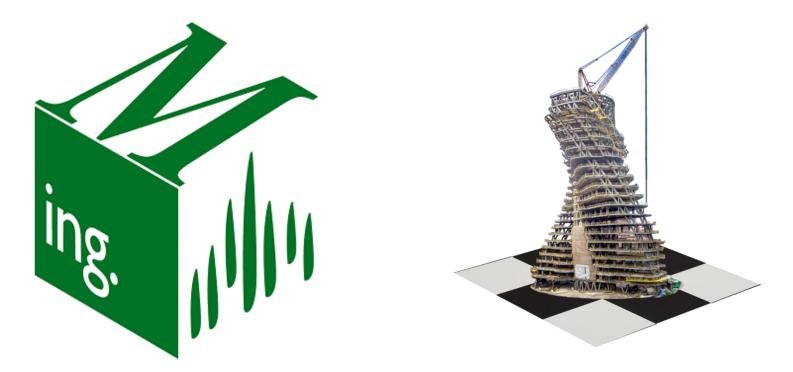
President Simulation Team & STRATEGOS Council Chair, Genoa University





Ing. Enrico Pio Mariani

Vicepresidente Ordine degli Ingegneri di Milano



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









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, AI/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



www.itim.unige.it/cs/strategos



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。



10

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.



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

11

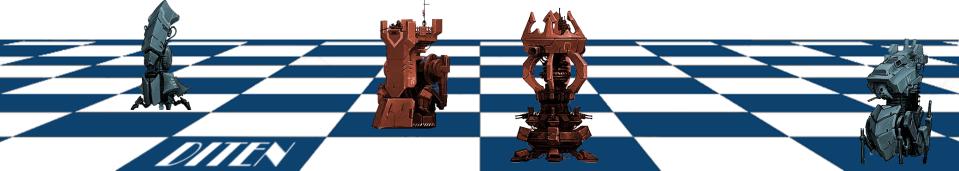
"Strategy is a system of expedients" "No plan of operations extends with any certainty beyond the first contact with the main hostile force" Von Moltke, Militarische Werke, 1871

"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



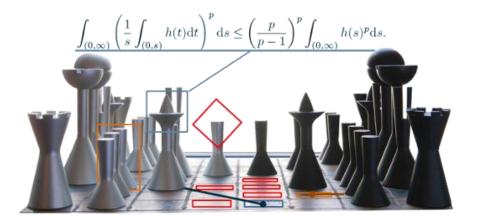
STRATEGIC ENGINEERING

- **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 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 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 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

AR Augmented Reality VR Virtual Reality









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 Main and Engineering, especially considering Product/System/Service Strategy. This should concern also SMEs

1

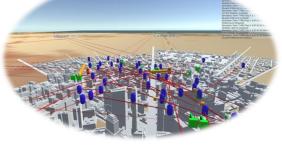
BoD Board of Directors, SME Small, Medium Size Enterprise



STRATEGOS

PROGRAM









DITEN





STRATEGOS LABS & PARTNERSHIP



www.itim.unige.it/cs/strategos 19



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.





WHY TO JOIN STRATEGOS ?

- Turning into one of Leaders on new **<u>Strategic Engineering</u>** 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>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 Companies</u>

By the way, basic Patronage is Free and requires to evaluate the Student Curricula for potential Internship proposals





20



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 the first ones in the world
- **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, by courses in 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 talent 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



COMPANIES, INSTITUTIONS IN STRATEGOS

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



innovation

ent success

organizing nountin

nnovation realtionship

keting analysis manage

implemen





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>



 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 <u>Topics and Solutions</u> 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</u> year, June-Sept, 4 weeks)

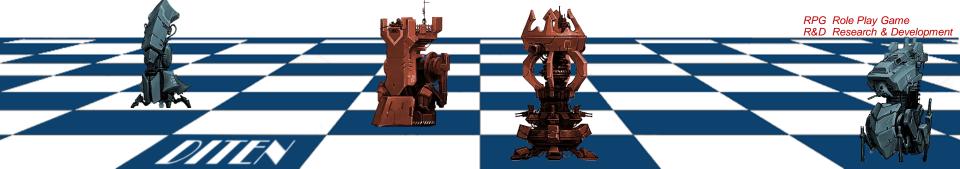






OPPORTUNITIES IN STRATEGOS

- 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 & and Workshops, or even to obtain the full Master Degree in Strategic Engineering
- <u>Enhancement of Personnel, Active in Branch Offices</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







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 Antishar Lillah by Email Simulation Team T-REX Day 0 2:31:30 ID Shahd Bitar of Antishar Lillah by Phone Simulation Team T-REX Day 0 2:31:30 ID Adara Gabor of Fanh Al/Aelae by Instagram Simulation Team T-REX Day 0 2:31:30 ID NafisahHadad o Fanh Al/Aelae by Mobile Simulation Team T-REX Day 0 2:31:30 ID Muhsinah Essa Fanh Al/Aelae by Mobile Simulation Team T-REX Day 0 2:34:57 ID Adara Gabor of Fanh Al/Aelae by Mobile Simulation Team T-REX Day 0 2:34:57 ID Adara Gabor of Fanh Al/Aelae by Phone Simulation Team T-REX Day 0 2:34:57 ID Lubab Essa of Antishar Lillah by Mobile Simulation Team T-REX Day 0 2:43:42 ID Shahd Bitar of Antishar Lillah by Email

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





EXAMPLE: JANUS IMPROVING PROCESSES & PEOPLE

- JANUS is a Serious Games that uses Avatars and Human Behavior Models to reproduce Meeting Dynamics and Digitalization Initiatives
- The system has been developed to train & educate people, but also to complete assessments
- JANUS allows to finalize quickly Digitalization in Companies by improving People and Processes



JANUS Joint Avatars & Networking Unified Simulation



EXAMPLE AT *BLUE*: MULTI-LAYER ENGINEERING FOR STRATEGIC SECURITY

Blue Exhibition Hall is the latest infrastructures at the major Italian Boat & Yacht Show: up to 350'000 visitors, indoor and at sea exhibitions Multi-Layer Engineering Approach is applied by Simulation respect Ancient Ships: a Humankind's Heritage Exhibit





STRATEGOS Engineering Technology for Strategy & Security in Industry, Business, Service of Society, Government & Defense FIRE & SAFETY ENGINEERING... CYBER SECURITY... DRONES & MUCH MORE!







Simulating: Joint Threats, WiFi & Speakers hacking, Fake News, attracting People in most critical area, Blocking Doors by Cyber, using Drones to disable igniting Fire, using Trucks to block Exits and to create Panic

tion Team, DIME, MIPET, SIM4Future, C3I, Orvieto Studio

STRATEGOS Engineering Technology for Strategy & Security in Industry Business, Service of Society, Government & Defense CYBER SECURITY____ DRONES & MUCH MORE !



Blocking Doors by Trucks





Simulating: Joint Threats, WiFi & Speakers hacking, Fake News, attracting People in most critical area, Blocking Doors by Cyber, using Drones to disable Fans, igniting Fire, using Trucks to block Exits and to create Panic

tion Team, DIME, MIPET, SIM4Future, C3I, Orvieto Studio





MODELING & SIMULATION FOR COMPLEX SCENARIOS

- MS2G 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
- MS2G provides Immersive Interactive Interoperable Environment for Decision Makers to understand the Scenario and to support decisions



MS2G Monoradia interoperable Simulation & Serious Games COA





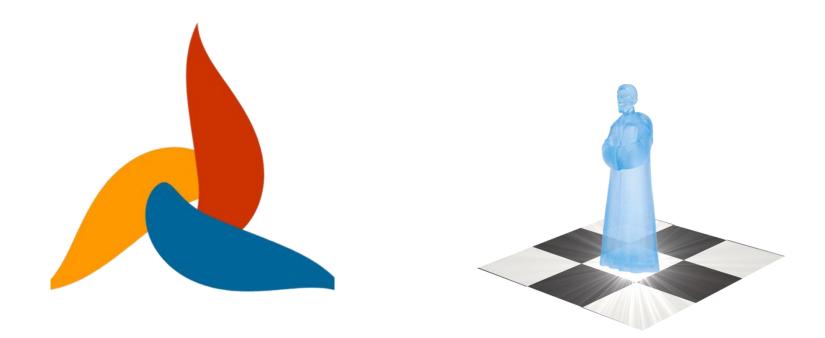
JOIN STRATEGOS BY LISTENING OUR PATRONS...





Prof. Riccardo Berta

Strategies Board Member, Elios Lab, Genoa University



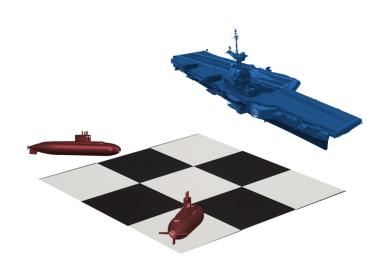


Prof. Lt.Col.Jan Mazal

Doctrine, Education & Training Chief NATO M&S Center of Excellence









Ing. Alberto Storace

Digital Managing Director, Accenture







Dott.ssa Roberta Colombari

CTO & Engineering Governance Director Leonardo Electronics Division







Ing.Paolo Uggetti

Partner, Production Industry, BearingPoint

BearingPoint_®

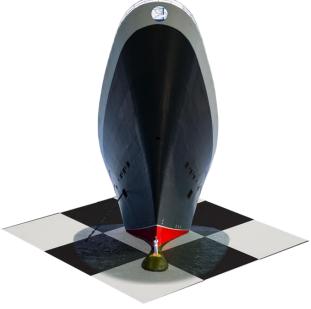




Ing.Giovanni Gambaro

Corporate Digital Innovation Director, Rina







Ing. Massimo Romairone

Engineering Director, Thales

THALES





Ing. Franco Accarino

CEO Sobean







Ing. Riccardo Rovelli

Regional Area Manager, Antycip Simulation Italy







Ing. Luca Bucchianica

CEO Brandnew Promoter







Ing. Giorgio Minestrini

R&D Director, Stara Glass









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 Irene Bastreri email: irene.bastreri@unige.it Tel. (+39) 010 353 - 2410 / 2041

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



www.strategos.it