

STRATEGOS

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



Logos and Images:

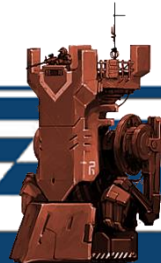
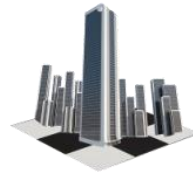
- Top Left:** Photos of people in a meeting, a woman with a yellow hard hat, a man in a suit, and a person in a VR environment.
- Top Right:** **ANSALDO ENERGIA** logo.
- Middle Left:** **Kibernetes**, **pass...**, **LEONARDO**, **HITACHI** (Inspire the Next), **rulex** (Innovation Labs), **tenova**, **MBDA**, **VEGA research laboratories**, **BearingPoint**, **THALES**, **BRANDNEW FROMCIER**, **ANTYCIP simulation**.
- Middle Right:** **apolo**, **MCA**, **Horsa devLab**, **STAR GLASS**, **NeMeA Sistemi**, **SOBEAN CONSULTING plus**, **SEASTEMA**, **amiu GENOVA**.
- Bottom Left:** **elios**, **CONSIGLIO NAZIONALE INGEGNERI**, **DIEC**, **DISPO**, **Simulation Team** (www.simulationteam.com), **TMC** (PEOPLE DRIVE TECHNOLOGY), **RINA**, **ICM**, **ICMI**, **Leggiamo**, **SEMENTO DEL LAVORO**.
- Bottom Right:** **Agostino Bruzzone**, **agostino@itim.unige.it**.
- Bottom Center:** **DITEN** logo on the checkered floor.

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



STRATEGOS & SMART COMPUTATION



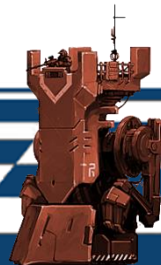
夫未戰而廟算勝者，得算多也；
未戰而廟算不勝者，得算少也；
多算勝，少算不勝，而況於無算乎？
吾以此觀之，勝負見矣。



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, Précis 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"

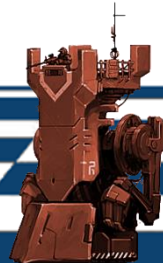
Ma Yun, Alibaba Executive Chair, in 2018: Personal Net Worth 42.2 GUSD; 23.8GUSD Alibaba Revenues 6.2GUSD Profits, 56% Net Revenues Growth, Stocks +15% in 1 month



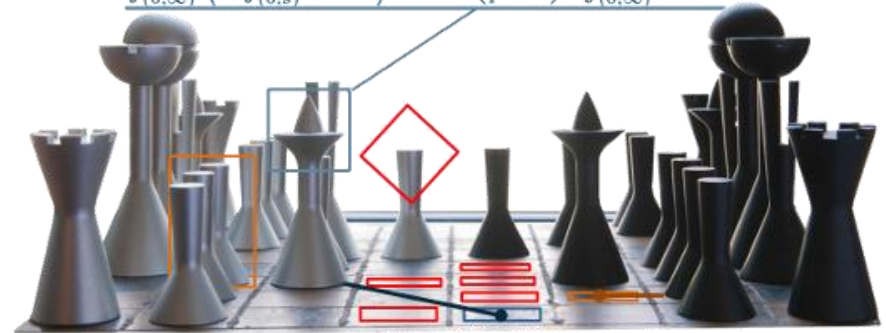
STRATEGIC ENGINEERING



- **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*

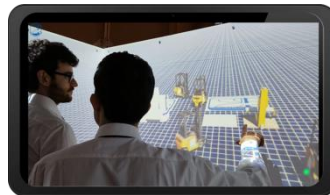


$$\int_{(0,\infty)} \left(\frac{1}{s} \int_{(0,s)} h(t)dt \right)^p ds \leq \left(\frac{p}{p-1} \right)^p \int_{(0,\infty)} h(s)^p ds.$$

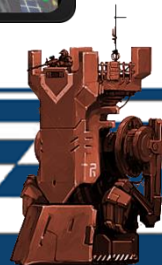


STRATEGOS MISSION

- **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



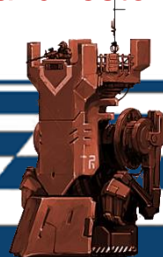
AI Artificial Intelligence
IA Intelligent Agents
ICT Information & communication technology
IoE Internet of Everything
IoT Internet of Things
MR Mixed Reality



STRATEGOS ENGINEER ROLES

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

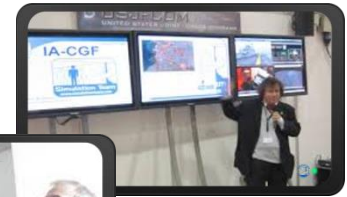
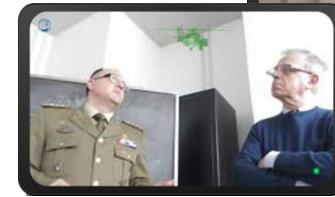
- Scenario Identification, Definition and Analysis
- Development of Models of Complex Systems
- Strategic Planning and Analysis
- Strategic Analysis and Decision Support in Defense & Homeland Security
- Support Decision Makers by Quantitative Methods , Models and Analytical Approaches
- Support to Governmental & 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



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

BoD Board of Directors, SME Small, Medium Size Enterprise



STRATEGOS

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STRATEGOS

PROGRAM

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

Economics

Computational
Intelligence

Strategies for Energy

Elements of Business
Economics

Strategies for
Telecommunications

Integrative Workshops

&

Summer Stages
(3-6 weeks)

Security Studies:
Foreign & Defense
Policies

Comparative Political
Economy of
Development

2nd Year

Computer Games and
Simulation

Internship
(6 months)

Autonomous Agents in
Games

Architectures and
Models for Numerical
Methods

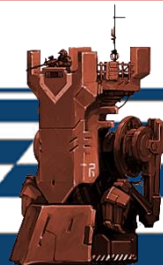
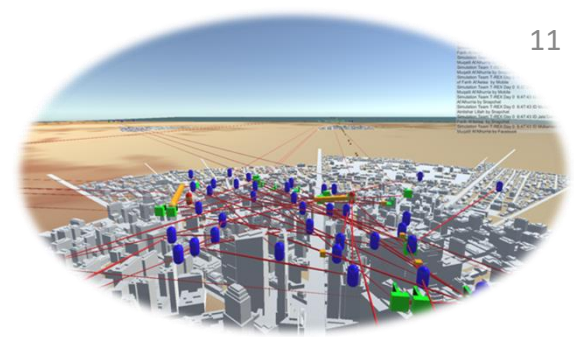
Project Work

Organization and
Strategic Business
Management

Integrative Workshops

Thesis

Training Modules



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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



The collage includes logos for the following organizations and institutions:

- Government & Defense:** Italian flag, DITEN, tenova, DoD Department of Defense, MoD Ministry of Defence.
- Energy & Industry:** ANSALDO ENERGIA, elios, BearingPoint, THALES, DIEC, DISPO, M&SNet, RIB, FAIRWIND, IAL, PASS...
- Academia & Research:** RINA, accenture, SOBEAN CONSULTING PLUS, RIA, TMC, CENTRALABS, NeMeA Sistemi, Kibernetes, MBDA, SEASTEMA, amiu GENOVA, ISPI, ANTYCIP simulation, VEGA research laboratories, MCA.
- Other Partners:** tenova, Simulation Team, iims, HITACHI Inspire the Next, HORSADeVLab, HORSA, BRANDNEW FLYCROW, STARA GLASS.



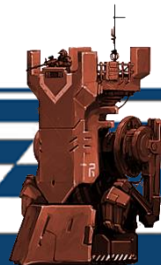
DITEN

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 in 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.

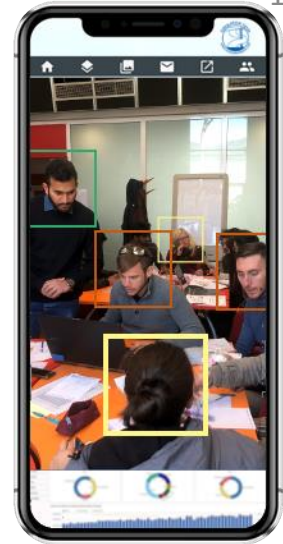
STRATEGOS promoters in Genoa University are active in International projects with major Agencies and Companies at International Level, as well as in co-operations with Prestigious Universities and Institutes all around the world.

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.

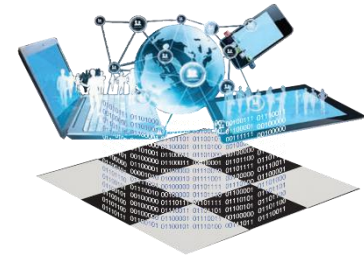


WHY TO JOIN STRATEGOS ?

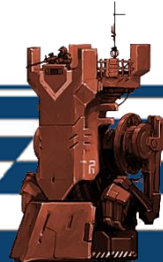
- Turning into one of Leaders on new Strategic Engineering Concept
- Having access to best **STRATEGOS Students** for Internships & Stages
- Being part of **STRATEGOS** Committee for Program Development, participation to Selection Process, creation of new RPGs and Experiences
- Your Employers & Executives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



STRATEGOS IN 10 POINTS: 5...



- **STRATEGOS** is the first Master Science in Strategic Engineering (Laurea Magistrale) in Italy, among the first ones in the world
- **STRATEGOS** lasts 2 years in total, including the six-month internship 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 high-profile job opportunities in Big Industries, Consulting Firms, Hi-Tech Startups & Int. Agencies (e.g. NATO M&S COE)
- **STRATEGOS** teaches how to combine Modeling & Simulation, AI/IA & Machine Learning, Data Analytics to support Strategic Decision Making



AI Artificial Intelligence
IA Intelligent Agents

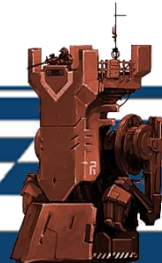


STRATEGOS IN 10 POINTS: 5... PLUS 5

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

VR *Virtual Reality*
AR *Augmented Reality*
MR *Mixed Reality*



COMPANIES, INSTITUTIONS IN STRATEGOS

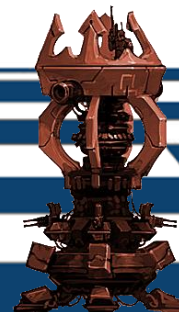
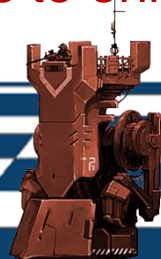
- Leading the Strategic Engineering within its First Italian Degree Program
- Evaluation of STRATEGOS Engineering Students by RPG,
- Internships, Exercises, Simulations, Experiences & Stages
- Active Participation in Specific Experimentation & Training Modules integrated in STRATEGOS and open to Company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





SPECIFIC ROLES FOR STRATEGOS PARTNERS

- Members in **STRATEGOS Steering Committee** contribute actively in Student Profile, Tailoring Programs, Lectures and Internship Planning
- Members in the **STRATEGOS International Scientific Committee** contributing in defining Workshops, Seminars on Topics & Methods
- Partners contribute in creating **STRATEGOS** Modules for Education and Training consistent with **Industrial Interests and Needs**
- Partners in **STRATEGOS** by **Suitability Survey & Feedback** analyze & quantify this new Degree profile respect Modern World Expectations
- Promoters of **Specific Tools, Solutions & Approaches** experience the **STRATEGOS** Students to enhance their own Capabilities

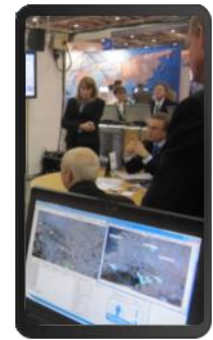




ADVANTAGES FROM STRATEGOS PARTNERSHIPS

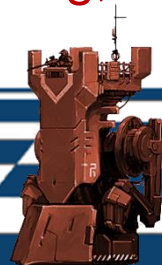
- Interaction with Students and Engagement in Selection Process
- Hosting Internships & Thesis Students (2nd year, 2nd Semester, 4-6 months)
- Proposing Personal Project Works to STRATEGOS Students
- Proposing Topics and Solutions for STRATEGOS Program & Seminars
- Attending Joint Activities & Table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





OPPORTUNITIES IN STRATEGOS

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



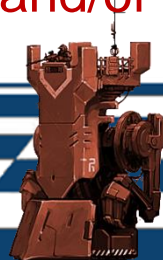
RPG Role Play Game
R&D Research & Development





PARTNER INTERNAL GROWTH BY STRATEGOS

- Rewards to Company Staff 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 Company Managers & Employees to **STRATEGOS** Courses, Seminars & and Workshops, or even to obtain the full *Master Degree in Strategic Engineering*
- Enhancement of Personnel, Active in Branch Offices 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

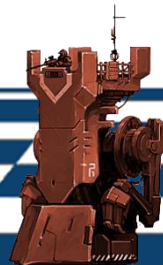




EXAMPLE OF STRATEGIC DECISION SUPPORT

- **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 Aintishar Lillah by Email
Simulation Team T-REX Day 0 2:31:30 ID Shahd Bitar of Aintishar Lillah by Phone
Simulation Team T-REX Day 0 2:31:30 ID Adara Gaber of Farih AfAelaa by Instagram
Simulation Team T-REX Day 0 2:31:30 ID NafisahHadad of Farih AfAelaa by Mobile
Simulation Team T-REX Day 0 2:31:30 ID Muhsinah Essa of Farih AfAelaa by Mobile
Simulation Team T-REX Day 0 2:34:57 ID Adara Gaber of Farih AfAelaa by Phone
Simulation Team T-REX Day 0 2:34:57 ID Lubab Essa of Aintishar Lillah by Mobile
Simulation Team T-REX Day 0 2:43:42 ID Shahd Bitar of Aintishar Lillah by Email



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

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 & www.strategos.it

STRATEGOS Didactic Manager

Dott.ssa Grazia Maria Esposito
email: grazia.esposito@unige.it
Tel. (+39) 010 335 - 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

