

CONSULTANCY







STM Savunma Teknolojileri, Mühendislik ve Ticaret A.Ş.

STM was established in 1991 for the provision of project management, system engineering and consultancy services to the Defense Industry Agency (SSB) and the Turkish Armed Forces (TAF).

The SSB continues to be the majority shareholder in the company, which has a workforce of 850 people, 63 percent of whom are engineers.

STM is among the leading companies operating in the defense sector, and is engaged in projects, particularly in the fields of naval platforms, tactical mini UAV systems, cybersecurity and IT services, command and control projects, satellite technologies, military aviation, radar and electronic warfare, and procurement and consultancy services.

Aside from its involvement in many national projects being conducted by the Turkish defence sector, STM is also engaged in export and business development activities for NATO with operations in more than 30 countries.

In addition to acting as the main subcontractor in the MiLGEM Project for the development of Türkiye's first national corvette, STM is also carrying out the detailed design as the main contractor in the project for the construction of TCG İSTANBUL (F-515), Türkiye's first national frigate.

STM has undertaken important tasks in submarine modernization and construction projects for the Turkish Navy, and is also responsible for Türkiye's first submarine modernization export, taking the lead role in the Pakistan AGOSTA 90B project.

STM developed KARGU, Türkiye's first indigenous attack UAV System, and launched Türkiye's first Cyber Fusion Center in 2016.

Through the INTEL-FS2 Project, STM ensures the flow of intelligence between all NATO headquarters around the world, and is successfully engaged in one of Türkiye's largest software exports to the Organization.

STM diversifies its technology-based activities to meet the needs of the public and private sectors – in particular those related to the Turkish defense sector.

STM is headquartered in Ankara, the capital of Türkiye, and continues its operations out of nine facilities, located in İstanbul, Gölçük and Ankara, as well as Pakistan.

STM was for three consecutive years listed on the Defense News Top 100 list of the world's top 100 defense companies.



THINKTECH FUTURE TECHNOLOGY INSTITUTE

STM ThinkTech, Turkey's first technology-based think tank, was launched on 2017. STM ThinkTech's mission is to develop unique solutions and technological insights in strategic areas related to Defense and Security, Science and Technology, Aerospace and Aviation, Transportation, Health, Education, and Energy sectors. STM ThinkTech, turning into a sustainable and adaptive structure in a short period with its genuine approaches, products, and services, continues to create distinct value to decision-makers who are surrounded by a very complex environment. STM ThinkTech is moving confidently into the vision of making a difference in the consultancy area in cooperation with public institutes, academia, private companies, and other think tanks.

Decision Support Systems And Consultancy

STM ThinkTech develops unique decision support systems that will enable strategy and policy makers in the public and private sectors to make information-based decisions about investment, competition, development, and increasing added-value actions. In this context, the herein below decision support systems developed via systems thinking approach, system dynamics and economic complexity methodologies were successfully delivered to domestic and foreign stakeholders.

National Power Model: In this model, a country's power is dynamically discussed with its economic, human, military, geographical, technological, psychosocial, and political power dimensions. In this decision support system, unlike the existing studies in the literature, the national power concept is presented with a mental model through a holistic perspective. This mental model takes national power as a complex phenomenon and reveals the structural and behavioral dimensions that can be referred in understanding and analyzing this complexity. The National Power model, which can also be considered as a high-level investment model for strategic level managers provides its users with the opportunity to make foresights through different scenarios. For instance; the National Power model can at least provide answers to the below questions:

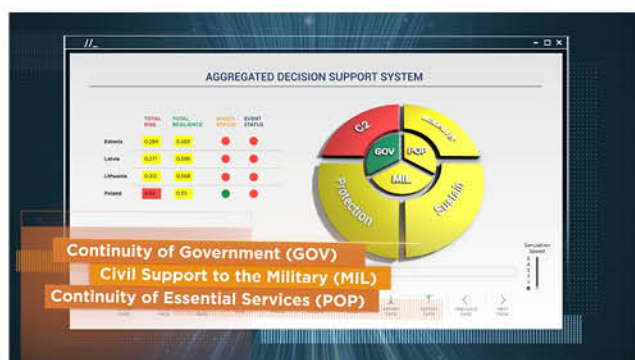
- How can we make smarter decisions in the economy, defense, health, and education sectors?
- What is my current capacity and which pattern will it follow in a 20-year projection?

- How can I develop a more viable incentive mechanism that will increase added-value?
- Which sector shall we invest first and most? And how and when can we see the results of such investment?
- How can I increase my overall capacity/power?
- How can I make the best choices among alternative strategies?



NATO Resilience Models: Four models have been developed by STM ThinkTech since 2019 and successfully delivered to NATO Allied Command Transformation (ACT). These models supporting NATO's decision-making processes in the face of strategic shocks such as pandemics, large-scale power outages, cyber-attacks, and big human movements and events (attack, natural disaster, large-scale failure, etc.) that may destruct infrastructures have been developed by "system thinking" approach and "system dynamics" methodology. In these models, the resilience levels of energy, transportation, health, food, water and communication are evaluated upon strategic shock or event occurrences and the possible secondary effects on the military units are analysed.

The aggregated resilience model currently used in the NATO SHAPE experimentation activities provides strategic level decision support to NATO. In the model development process; (1) necessary inputs have been gathered from NATO subject matter experts in a series of online workshops through "community-based modeling" technique, (2) system definition was made with "casual loop diagrams", (3) analysis and synthesis have been done on these diagrams, (4) and the system itself was verified by NATO experts. Moreover; the approach and the methodology used in the development process have been verified by scientific articles published in prestigious journals. STM ThinkTech has been continuing to provide state of the art strategic level decision support systems for resilience domain to NATO stakeholders.



Sector Capability Atlas Decision Support System: Benchmarking the Harvard's economic complexity method, a unique algorithm has been developed that calculates complexities of companies and products. Using this algorithm, the Sector Capability Atlas was created for the Electronic Warfare and Radar sector. This Atlas deals with the relationships among technologies in the electronic warfare and radar sectors and the capabilities of companies to produce these technologies. The decision support system enables the following analyzes

- Complexity index calculations for each technology
- Economic complexity and total complexity indices in line with the capabilities of companies
- Determination of the most competent company to develop a technology that can not be produced
- Identifying new technological opportunities for each company

Capability Complexity Model: In the model; the data gathered via the question sets created by using the international capability and product catalogs (International Standard Industrial Classification - ISIC, Central Product Classification - CPC) are converted into information by a unique capability-based algorithm that was developed by adapting the Harvard's economic complexity method. With the model, information such as company complexity values, product complexity values, opportunity potential values and opportunity gain values are produced and alternative product portfolios can be created where a company can create more added value. Model outputs can be actively used in the capability-based analysis of production ecosystems operating in different sectors, in the preparation of future action plans and in shaping investment decisions (incentive, infrastructure, consultancy, trained human resources, etc.). The model has been used to create strategic roadmaps for increasing the added value of two different domestic production ecosystems.

As a result, in the context of decision support systems; by using the ThinkTech decision support systems, our domestic and foreign stakeholders can make foresights about the actions that can be taken in the short-medium-long term, the financial dimensions and possible consequences of these actions, and they can make simulations with the changes in the relevant parameters. The uniqueness of these decision support systems is due to the design of an exclusive solution for each problem and the development according to this design. In this context, STM ThinkTech's core competencies are complex problem analysis & synthesis, modelling & simulation, reporting, and consultancy.

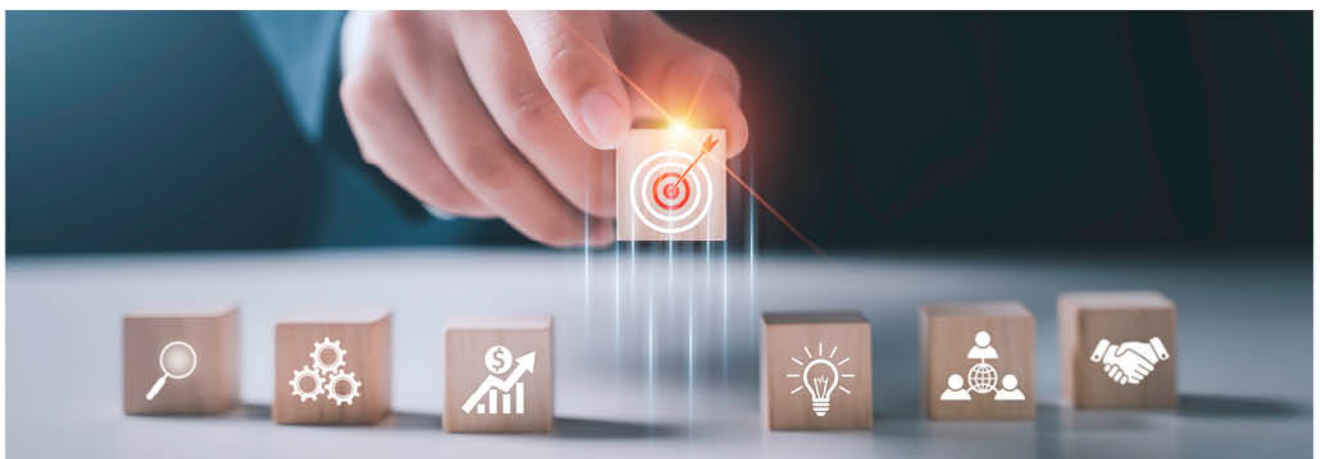


BUSINESS WARGAME

STM ThinkTech, which designed and conducted wargames for the strategy development processes in the information and consultancy sectors, provides training, design and implementation services related to the method. This competence has been acquired through the training of trainers from Dr. Benjamin GILAD, who discovered the business wargame concept and applied in many Fortune 500 companies. ThinkTech arranged the scenario of four business wargames. For example; STM's Blockchain strategy has been determined by using a wargame arranged by ThinkTech. STM ThinkTech can design a wargame for an organization as a whole operating in a competitive environment, as well as for a unit, function or process of that organization.

Business Wargame is a “role-based simulation” developed especially for the companies. Business Wargame is played by the participants in person (company's employees) in a certain format and within a time schedule and has a structure, which is not restricted by the narrow framework of the simulation software. When the companies use Business Wargame in such processes and practices as strategy determination and road map forming, strategy testing and developing, crisis intervention, foresight acquisition and change management, they have the opportunity to understand dynamics of the real world, possible movements of their rivals and consistency of their assumptions about their rivals and obtain real info. The main features that distinguish the Business Wargame, which is used as an accelerated learning method, from other analysis methods:

- Active participation of employees
- Predicting the progress of the simulation
- Using different perspectives
- Having different learning patterns
- Building team culture
- Dynamic simulation application



ANALYSIS, REPORTING AND NETWORK ACTIVITIES

STM ThinkTech makes in-depth analysis and produces reports presenting technological insights with an objective approach.

With its unique and comprehensive publications in the areas of defense and security, science and technology, aerospace and aviation, transportation, health, education, and energy STM ThinkTech provides innovative and different perspectives to the strategic decision-makers, academicians, and related stakeholders.

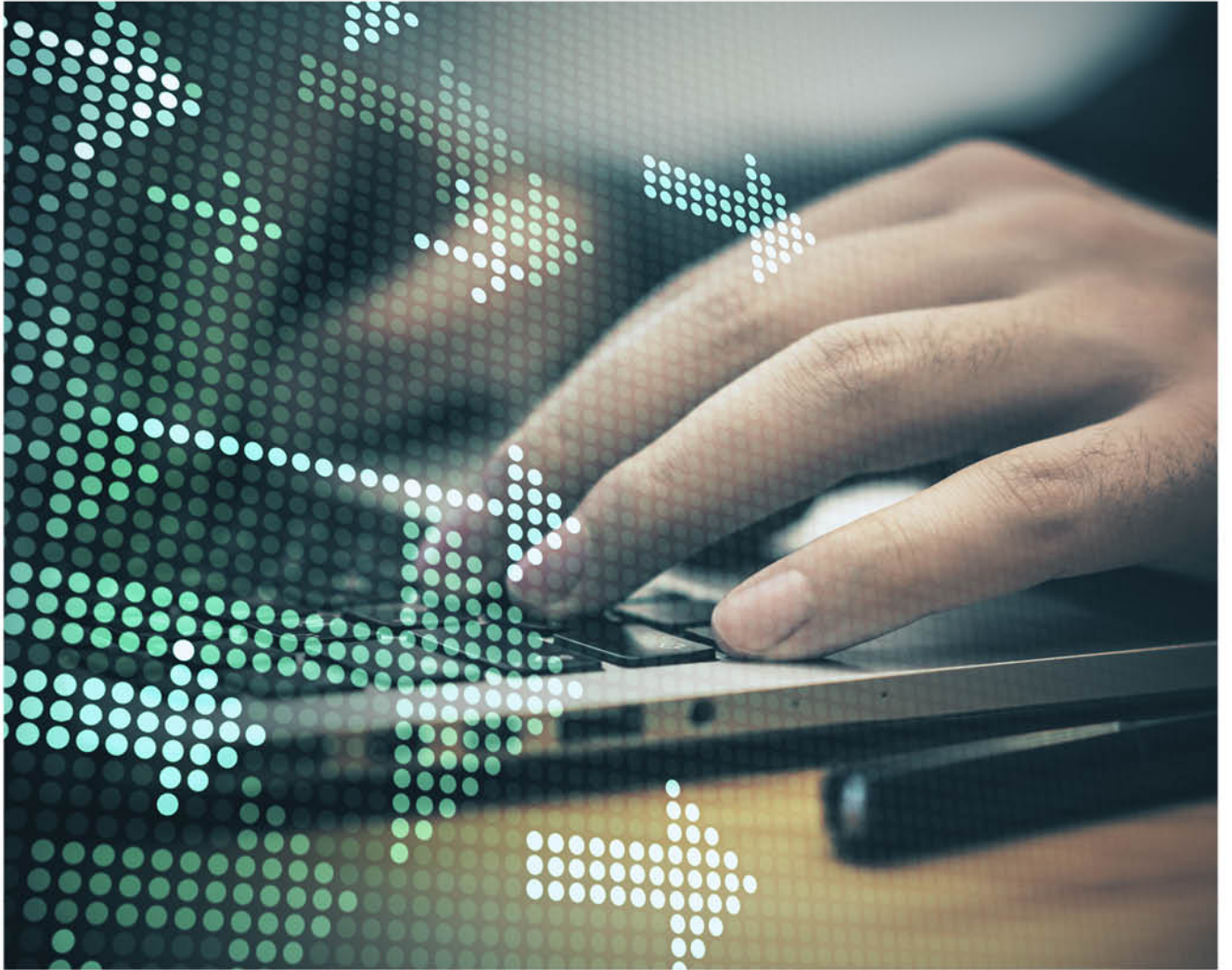
STM ThinkTech organizes and moderates professional network activities (panels, round-table meetings, and workshops) in which critical subjects of public interest are discussed with the participation of the strategic level decision makers and subject matter experts.





FEASIBILITY AND PROCESS CONSULTANCY

We provide feasibility and analysis services to public institutions and organizations and the private sector that will be the basis for their subsequent studies and projects. In this context, we carry out studies such as sector analysis, needs analysis, detection and analysis of existing solutions, concept design for the solution that suits the need. We also offer consultancy services on defence systems domestically since 1991 and abroad since 2010.





Our Reference Projects

- Presidency of the Republic of Turkey Presidency of Defence Industries (SSB) Consultancy Services Project (1991-2018)
- Presidency of the Republic of Turkey Presidency of Defence Industries (SSB) Technology Management Consultancy Project
- United Arab Emirates (UAE) Consultancy Services Project
- Presidency of the Republic of Turkey Presidency of Defence Industries (SSB) Land Vehicles Test Center Feasibility Project
- Presidency of the Republic of Turkey Presidency of Defence Industries (SSB) Conceptual Design Analysis of RCC Subsonic and High Speed Wind Tunnel Project
- Presidency of the Republic of Turkey Presidency of Defence Industries (SSB) Satellite Launch Center Installation Project Feasibility Study
- Presidency of the Republic of Turkey Presidency of Defence Industries (SSB) Satellite Based Approach Landing Systems Feasibility
- Presidency of the Republic of Turkey Presidency of Defence Industries (SSB) Satellite Space Sub-Unit and Technologies Feasibility
- TÜBİTAK MAM Aviation Technologies Test and Excellence Center Feasibility Study

Our Current Projects

• **National Combat Aircraft (TF-X) Program Management Consultancy**

Within the scope of the Turkish National Fighter (TF-X) Program Management Consultancy Services, we provide technical consultancy to SSB during the preliminary design phase of the TF-X Development Project maintained by Turkish Aerospace.

• **Konya Defense Industry Center Feasibility Project**

Within the scope of the project we conducted with the Konya Chamber of Industry, a feasibility study was carried out to strengthen the capacity of the manufacturing industry in the Konya region to become a supplier to the defence industry sector in our country, and to establish a “Konya Defence Industry Centre”, which will take necessary steps with activities that will improve the capabilities of the companies.

• **Export Support Project**

As part of the Export Support Project between SSB and STM, we provide coordination support for corporate communication activities and the promotion of defence industry products to the public and foreign markets, as well as fair, promotion and organizational activities.

• **Machine Tools Localization Feasibility Project**

In the feasibility project we carried out under the auspices of the SSB Industrialization Department, it was aimed to increase the total added value of CNC machines used or to be used domestically, to minimise the effects of foreign constraints related to the supply and logistics support of CNC machines and subsystems.



LOCALIZATION AND SECTOR ANALYSIS

We provide research and analysis services to public institutions and organizations and domestic and foreign companies to increase their domestic and national contributions in the projects they will carry out in Turkey, in order to contribute to reducing Turkey's dependency on foreign countries, increasing productivity in industrial production, and achieving a positive export-import balance. In this context, we carry out sector analysis of Turkey, infrastructure identification and analysis studies, identification of new business areas, economic impact analysis, localisation and indigenisation analysis, and clustering and industry coordination activities.



Our Reference Projects

- Presidency of the Republic of Turkey Presidency of Defence Industries (SSB) Kazan Defense and Aviation Industry Cluster Project
- Sinop Nuclear Power Plant Economic Impact Analysis Localization Project
- Export-Focused Localization Project for Nuclear Power Plants

Our Current Projects

- **Presidency of the Republic of Turkey Presidency of Defence Industries (SSB) Sector Capability Atlas Project**

In the project we conducted under the auspices of the SSB Electronic Warfare and Radar Systems Department, it is aimed to determine the current state of the Electronic Warfare and Radar (EWR) sector, obtain the basic data required for sector analysis and create a Technology Space in the light

of the relevant data in order to follow and to direct the EWR sector. Within the scope of the project, visits were made to the companies, data on company capabilities were collected, and this data was processed to create a Company Capability Map for each company and Turkey Capability Map for the whole Turkey.

In addition, a Technology Space Platform was prepared in which various visual analysis can be performed by blending the data obtained from the companies through Technology Breakdown and Taxonomy studies carried out in 10 different technology fields focused on or related to Electronic Warfare.





CERTIFICATION SERVICES

STM Design Organization Approval (EASA.21J.633) was published by EASA (European Aviation Safety Agency) on 20 October 2017.

We develop changes and repair designs for domestic/international airlines, private aircraft operators and state aircraft in the technical fields covered by the STM DOA (Design Organisation Approval) business and approve them with EASA authorization. In this context, 44 projects were carried out between 2018-2020. Our company continues to carry out various projects, primarily THY and SunExpress companies at home with the design works carried out within the scope of approval, and the number of airlines we serve abroad has reached six.

In addition to our project activities, we provide consultancy services. Our studies in this context:

- Providing design consultancy and airworthiness training to companies in the civil and military aviation industry
- Providing support and consultancy to civil/military authorities and industry in the creation and maintenance of the infrastructure necessary to operate the certification process
- Providing companies in the civil/military aviation sector with consultancy services for infrastructure and technical issues
- Providing support and consultancy to companies in the design organisation and production organisation approval processes
- Conducting design activities requiring STC (Supplemental Type Certificate) and ETSO (European Technical Standard Order), ensuring their approval (certification) through DGCA and validation by EASA, and providing consultancy services to the sector in these works.



Our Reference Projects

- Fly Bosnia Airlines, A319-112 aircraft EYOF 2019 Wrapping Project
- Nordwind Airlines, B737-800 Aircraft Painting Project
- MNG Jet Airlines, Bombardier Challenger 605 aircraft Carpet Replacement Project
- THY, A321 Neo Aircraft Mirror Mounting Project on Overhead Bins
- SunExpress Airlines, B737-800 Placard Standardisation Project
- THY, A340 aircraft Project of Relocating Portable Fire Extinguisher

Our Current Projects

- **SunExpress Consultancy Service within the Scope of EASA DOA Certification**

Training and consultancy services were provided to SunExpress within the scope of obtaining Design Organization Approval. As a result of the services provided, EASA European Aviation Safety Agency approval EASA.21J.557, has been granted to the SunExpress Design Organization on 10 July 2020.

STM experts are providing Compliance Verification Engineering support services to Sun Express Design Organization.

- **Minor Change Design and Minor Repair Design Projects**

It contains the design data package required for the realisation of the project to meet the minor change and minor repair design requirements of domestic and international airlines and for the application of the change/repair to the aircraft.

Training Activities

- Introduction to Airworthiness Certification
- Introduction to EASA PART-21 Regulation
- EASA Part-21 Regulation/Certification Training in accordance with Design Organisation Approval (DOA)
- EASA Part-21 Regulation/Certification Training in accordance with Production Organisation Approval (POA)
- Introduction to CS-25 Certification Specifications
- Introduction to System Safety Assessment in Aviation Projects
- SAE ARP 4761 Standard Rules and Methods for Operating the Safety Assessment Process in Civil Aviation Systems and Equipment
- Basic Avionics
- Introduction to Avionics Certification
- SAE ARP 4754A Standard Rules for Developing Civil Aircraft and Systems
- RTCA / DO-178 Software Certification Processes in Aviation
- RTCA / DO-254 Hardware Certification Processes in Aviation
- DO-160 Equipment Environmental Requirements Qualification
- Aircraft Structural
- Cockpit Design
- Cabin Safety
- Continuous Flight Availability and Operational Suitability Data (OSD)



PROCUREMENT AND LOGISTICS

With our effective expertise background and sectoral dominance, we continue to increase our efforts in the fields of defence and security sector procurement cost-effectively, planning an effective infrastructure for the management of the logistics phase and creating the required structures.

In this regard, from the evaluation stage, we meet the urgent requirements of the Turkish Armed Forces and Republic of Turkey Ministry of Interior in the shortest time possible by providing qualified expertise within the framework of our experience and product knowledge.



Projects

- **Procurement Project of Special-Purpose Equipment (SPE) and Services for Homeland Security**

Within the scope of the Project we have been conducting since 2007, the urgent supply needs of the TAF and the Republic of Turkey Ministry of the Interior are effectively procured, tested and qualified as soon as possible. Significant knowledge of procurement has been created for a wide range of products, particularly for weapons, ammunition, C4ISR, armoured vehicles and ballistic products. By increasing the efficiency, speed and user benefit of our procurement activities, demands are met in the best way.

- **Vertical Wind Tunnel (VWT) Maintenance, Repair and Management Project**

In the project we carried out under the auspices of the SSB, we carry out the maintenance and repair

activities needed for the VWT system, which provides training for the Turkish Armed Forces paratroopers, and provide detailed reports on periodic maintenance and repair activities and the delivery status of the stock level materials to SSB. We also continue our efforts to renew the composite blades used in the system.

- **Procurement Project of Emergency Needs of the Republic of Turkey Ministry of Interior**

We carry out Emergency Procurement Activities for the Presidency, the Turkish National Police (TNP) and General Command of Gendarmerie within the scope of the project we started in 2015 to meet the urgent needs of the Republic of Turkey Ministry of Interior.



STM SAVUNMA TEKNOLOJİLERİ MÜHENDİSLİK VE TİCARET A.Ş.

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