

CEY Defense and Simulation Systems

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Commercial Title: CEY
Defense and Simulation
Systems Industry and
Trade Incorporation

Commercial Registration
Number: 391970

Center: Ankara

Founded in: January 26th,
2016

CEY Defense and Simulation Systems is a young and dynamic company incorporated by the engineers who have vast knowledge and experience in defense and simulation areas. The average industry experience of the staff is above 15 years.

The main focus area of the company is advanced and comprehensive simulation technologies and the targeted sector is defense industry.

Via its innovative systems and novel applications, CEY Defense and Simulation Systems aims to be the leading and pioneer company in advanced simulation technologies area in Turkey and hence a



world-wide well-known brand in this field.

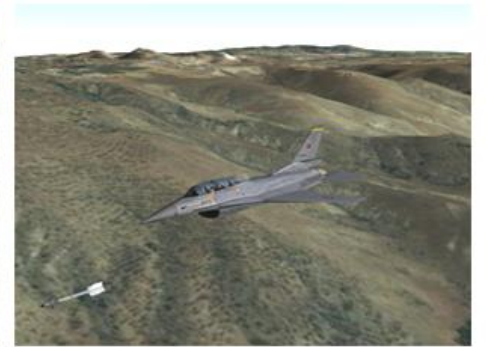
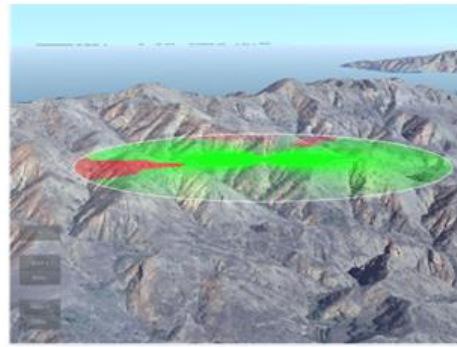
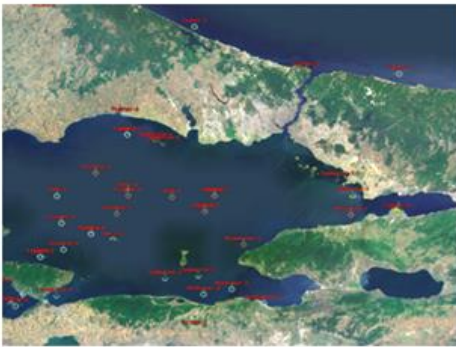
We focused on providing creative, innovative and distinguishing solutions to our customers with our values, capacity and capabilities. Meeting customer requirements with superlative quality, on schedule, within the budget and cost-effective solutions is our priority.

Additionally, we also aim to support the customer expectations with the strong engineering solutions using high technologies and

competing with similar systems in the world.

In addition to simulation, our research & development activities are ongoing in various fields in defense industry, such as environmental modeling, scenario development and execution, data fusion, command and control, man-machine interaction, etc.

We believe in ourselves in our experienced working area; thus we promise that we will not break your faith in us.



“We determined 3 main activity areas: Modeling and Simulation, Command and Control, Visual Applications”



Modeling and Simulation

Nowadays, developed countries consider modeling and simulation among the most critical technologies. CEY Defense and Simulation Systems uses its core competencies in these areas in order to produce distinguishing, flexible and user friendly products and solutions using high technologies, for national and international markets.

Our company operates in the following subjects in modeling and simulation area:

- Live, virtual and constructive simulations
- Operational, strategic and tactical simulations
- Wargame simulations
- Tactical environment modeling
- Geographical environment modeling
- Sensor, weapon, platform, sub-system modeling
- Naval warfare simulations (surface, submarine, anti-submarine, air support for maritime operations, mine warfare, electronics warfare, logistics operations, etc.)
- Simulation and modeling infrastructures (model execution, simulation execution, distributed simulation management)
- Integrated simulation development environment (planning, execution, after action review)
- Simulation tools (scenario planning, map editor, record and replay, analysis and reporting)
- Interoperability infrastructures

Command and Control

Command and control systems are quite critical and important systems since they enable the command to perceive the war field in a continuous, complete and correct manner; moreover, they provide continuous, complete and correct data in a timely manner to the decision makers in order to enable their decision making right and on-time.

CEY Defense and Simulation Systems, with its core

competencies produce dynamic, flexible, agile and easy to use command and control solutions in fields listed below:

- Data fusion, which integrates the data coming from different sources
- Common operating picture, which combines and displays the data to the users in a unified picture
- Situational awareness, in which all of the conditions in battlefield
- Big data management, in which the data with large volumes, velocities and varieties
- Software based integration, in which different types of system components are used together
- Video processing and analytics, where real time video obtained from various sources are processed and analyzed.

Visual Applications

Applications with high and effective visuality gained increasing importance in military and civil applications. Fast accessible, simple and easy to use, platform independent, 2 and 3-dimensional applications are considered as the

required features for majority of the systems. CEY Defense and Simulation Systems with its competencies in this area, has been developing visual applications that can be used in simulation and modeling, command and

control and many similar systems.

Some of our visual application solutions are map applications, geographical information systems, tactical environment modeling, touchscreens, virtual and augmented reality (VR/AR) applications.

Tactical Environment Simulation - Graphical User Interfaces

Tactical Environment Simulation is a system that provides the tactical environment required for tactical training of the mission simulators. It consists the software components for defining the fixed and moving entities located in virtual training environment, planning the virtual training scenarios, executing the planned scenarios and debriefing after the training, in addition to the hardware

components these software run on. The package that consists of the software components handling the user interactions in all modes is called Graphical User Interfaces. User can follow the information and status of the fixed entities and players in the system and he/she can provide the required inputs to the system by the help of these interfaces.

Tactical Environment Simulation is a system being

developed nationally in Turkey and the Graphical User Interfaces are developed by CEY Defense and Simulation Systems for Meteksan Defense. The system will be used in ATAKSIM Project first, which is being developed by the main contracting of Havelsan and management of Undersecretariat for Defense Industries for Turkish Land Forces Command within the scope of T129 ATAK Helicopter training.



Model Library

Model Library is a research and development project, which is aiming to provide an infrastructure for future projects of CEY Defense and Simulation Systems enhancing its existing capabilities on simulation and modeling.

Model Library will contain commonly used models in simulation domain with different levels of fidelity and mathematical functions and calculations of the

related domain. Besides commonly used simulation models like radar and sonar, model library will also contain acoustics and RF propagation functions. The library will not contain geographic and tactical environment structure to reduce dependency and improve integrity. All required data will be provided to the library. The library will not be dependent to third party

products.

The library will have multi-platform support and will aim high performance and stability. A simulation infrastructure will be excluded, yet a multi-layered development library for any simulation project will be provided.

For analysis of performance and fidelity testing user interfaces will also be developed.



“We are working with Meteksan, Havelsan and Tübitak. We aim that our products are used in all levels of Armed Forces especially in Navy.”

A New Generation Joint Wargame Simulation Infrastructure

CEY Defense and Simulation Systems has initiated a research and development project to demonstrate its simulation capabilities and to build an infrastructure. This simulation will be an interactive, multi-user, multi-force constructive simulation that models a

wargame at sea, air and land warfare environments.

System will have basic services such as environmental conditions, map and generic model library. It will comprise user friendly interfaces for planning, execution and

evaluation tasks. It will be designed with flexibility, performance, scalability and simplicity in mind.

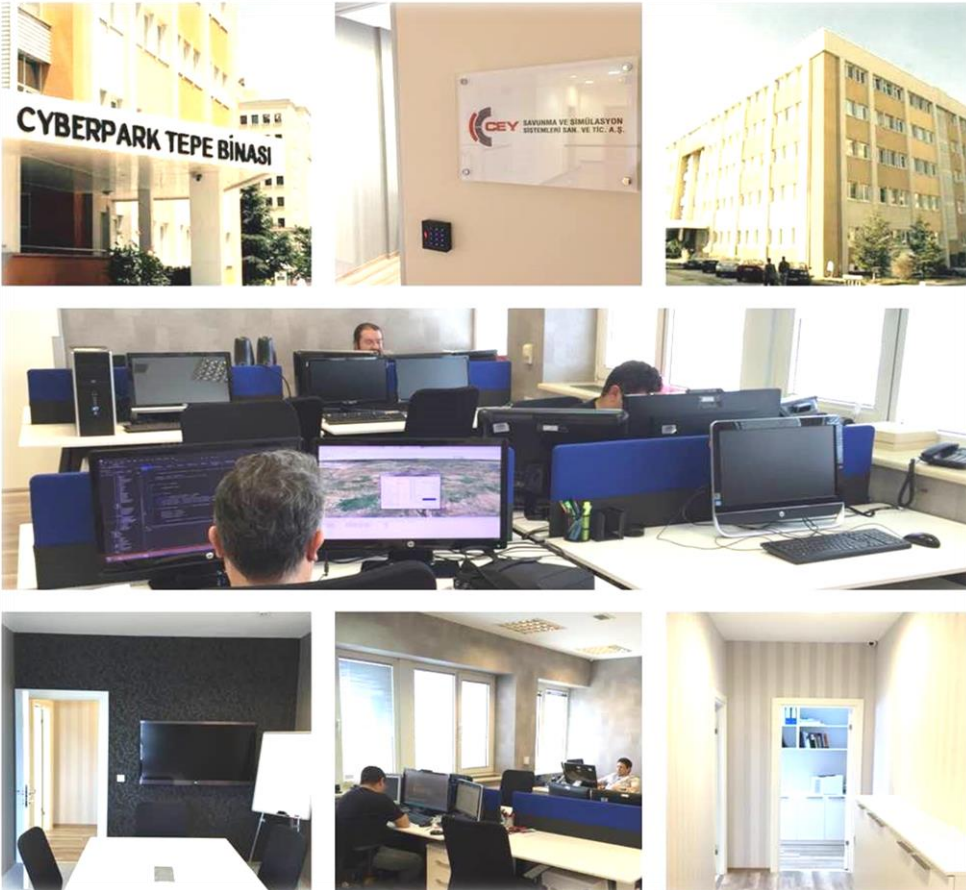
One of the most important properties of this system is its visuality and technology emphasis. Tabletop application, mobile use, touchscreen and virtual reality are important innovations in this project.

Software Development Infrastructures

- User Interface Design and Development: QT, Swing, Touchscreen Interfaces, Kinect, Oculus Rift, LeapMotion, Augmented & Virtual Reality Applications
- High Performance Computing: Parallel Programming, Concurrency, Multi-threaded Design, GPU Programming, Data Oriented Programming, Entity/Component Systems, Actor Based Communication Middleware
- Cross Platform Applications: Linux, Windows, Android
- Design and Development: Design Patterns, Object Oriented Analysis & Design, Agile Development, IEEE 12207, MIL-STD-498
- Database Applications: Oracle, MySql, MariaDB, PostgreSQL
- Web-Based Applications: HTML5, LibGDX
- Geographical Information Systems: ESRI, Luciad, OSG, GDAL, SİMGÖR
- Interoperability: HLA&DIS, MAK, Pitch, RTI NGPro, SimBA
- Systems Engineering and Domain Expertise: Integration, Wargames, Command and Control, Serious Games, Big Data Applications
- Test Engineering: Verification and Validation

Quality and Process Management

CEY Defense and Simulation Systems Inc. provides qualified products and services with worldwide standards in simulation technologies and defense software areas. Products are developed and projects are realized with the appropriate management techniques for particular product and projects; hence analysis, design, development, test and integration methods. Additionally, the support processes such as requirements management, quality assurance, configuration management, decision analysis, risk management and process management are also utilized in all project and products.



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Ankara Teknoloji Geliştirme Bölgesi, Cyberpark Tepe Binası, Beytepe Lodumlu Köyü Yolu No: 5, Kat: 3, 06800 Bilkent, Çankaya Ankara, Turkey

Phone (+90) (312) 266 22 55
 Fax (+90) (312) 266 22 56
 E-mail info@ceysavunma.com



www.ceysavunma.com