

# aselsan

## C4I System Solutions

# C4I SYSTEM SOLUTIONS

Information dominance is the key enabler for the commanders for making accurate and faster decisions. C4I systems support the commander in situational awareness, collaborative planning, fast and precise decision making and provide operational flexibility. Objective of utilizing C4I systems is to enable all units and systems to participate in the battle with a faster reaction, achieve information dominance over the enemy and conduct decisive operations.

The existence of C4I systems at the battlefield will ensure fast and accurate acquisition, exchange and analysis of the battlefield information, providing a clear and accurate representation of the situation to the commander. C4I systems allow tailoring of the situational representation to the needs of commanders at each level of command providing support for planning, execution and after mission evaluation phases.

ASELSAN has been a major C4I systems supplier for more than 30 years. ASELSAN has developed and successfully deployed C4I systems covering the main functional areas of the battlefield. ASELSAN provides C4I system solutions meeting the requirements of the Network Enabled Capability concept of the modern armies looking for ways to make use of information technologies and C4I systems as a force multiplier.



- Informed Decision Making
- Operation Support in Real Time
- Joint Operations
- Collaborative Planning
- Interoperability
- Situational Awareness
- Digital Communications
- Enhanced Command & Control
- Decision Support



## Integrated Tactical C4I Systems

ASELSAN's suite of tactical C4I systems, provide an integrated solution for the maneuver, intelligence, air defense, fire support, logistics and personnel functional areas and for units at the tactical and operational levels. ASELSAN's C4I systems enable total force effectiveness and automate the command control process enhancing the ability to operate in the unpredictable and changing battlefield conditions.

### **Battlefield Management**

Battlefield management system provides situational awareness and friendly force tracking for units of the battalion task force and higher levels of command with automated distribution of battlefield information enabling command and control of all maneuver units. Collaborative planning and preparation of orders and overlays are conducted with the use of digital maps and Geographical Information System (GIS) tools. Digital transmission of military reports and messages, control of operational and logistics status of subordinate units, movement planning and control are supported.

### **Fire Support**

Fire Support System integrates all fire support units and target acquisition systems with each other and the other functional areas of the battlefield to provide the most effective, efficient and timely fire support as required by Corps HQ. It is a combination of subsystems for tactical and technical fire direction that covers the entire fire-support functionality, ranging from Corps HQ to gun and forward observer levels. It automates fire support command, control and communications functions of the battlefield and provide full interoperability of fire support with the other battlefield functional areas.

System enables the fire support commander to plan and execute attacks on the right target, on the right time, with the most available weapon system and the right ammunition to support the maneuver. System provides the maximum utilization of the fire support assets in the battlefield.

**Air Defense**

Air Defense Command Control System, manages air defense activities at tactical and operational levels providing command and control of ground based air defense activities and fixed assets (base, harbour, etc.) protection for Land, Naval and Air Forces. Gathering information from all available Air Defense radars, integrated air picture is produced and distributed to all levels of command and weapon systems in real time. Appropriate weapon system can be assigned to suppress the air threat manually or automatically using the Threat Evaluation Weapon Assignment Algorithm.

**Intelligence and Electronic Warfare**

ASELSAN designs and produces ground surveillance radars, air defense radars, electro optic sensors and EW (Electronic Warfare) sensors. ASELSAN's C4I systems solutions can be deployed with ASELSAN's indigenously developed own sensor systems. With the open architecture and use of well established standards ASELSAN's C4I systems can be integrated with all sensor systems.

**Communication**

The tactical battlefield has become a ground for extensive digital data exchange where many sensors, weapons, computers and command centers need to exchange high speed data in order to perform effectively and coherently. Moreover, these units need to carry out their data exchange while on the move because the new military doctrines heavily emphasize on mobility and flexibility. On the battlefield, several command control functions such as air defence, fire support, maneuver control, intelligence, electronic warfare and logistic support need to be executed simultaneously through rapid and reliable exchange of information. Communication infrastructure provides the necessary communication support to all of these applications.

## Battle Management

ASELSAN Battle Management System (BMS) is a command control and information system that provides common tactical picture, decision aids and functionalities to support the preparation, execution and after mission phases of operation for the contact units, multiplying the effectiveness of the maneuvers.

BMS provides seamless battle command and increases the operational capabilities of the maneuver units from army to platform / single soldier level.

ASELSAN, offers Network Enabled Capability solution. With this solution, in addition to already in inventory Command and Control Information Systems (CCIS) by the way of gaining needed additional CCIS capabilities command and control activities are supported by digital capabilities. Therefore, the digital network structure of all the elements from military level to one and only weapon level are aimed to connect.

Future Soldier system located within the solution of battlefield management systems gives lever / team effectiveness in the target, operational compatibility, aims to improve the situational awareness and holistic warfare capabilities. System is planned for the use of elements such as special forces, infantry and capable of sharing of information, such as health, location.

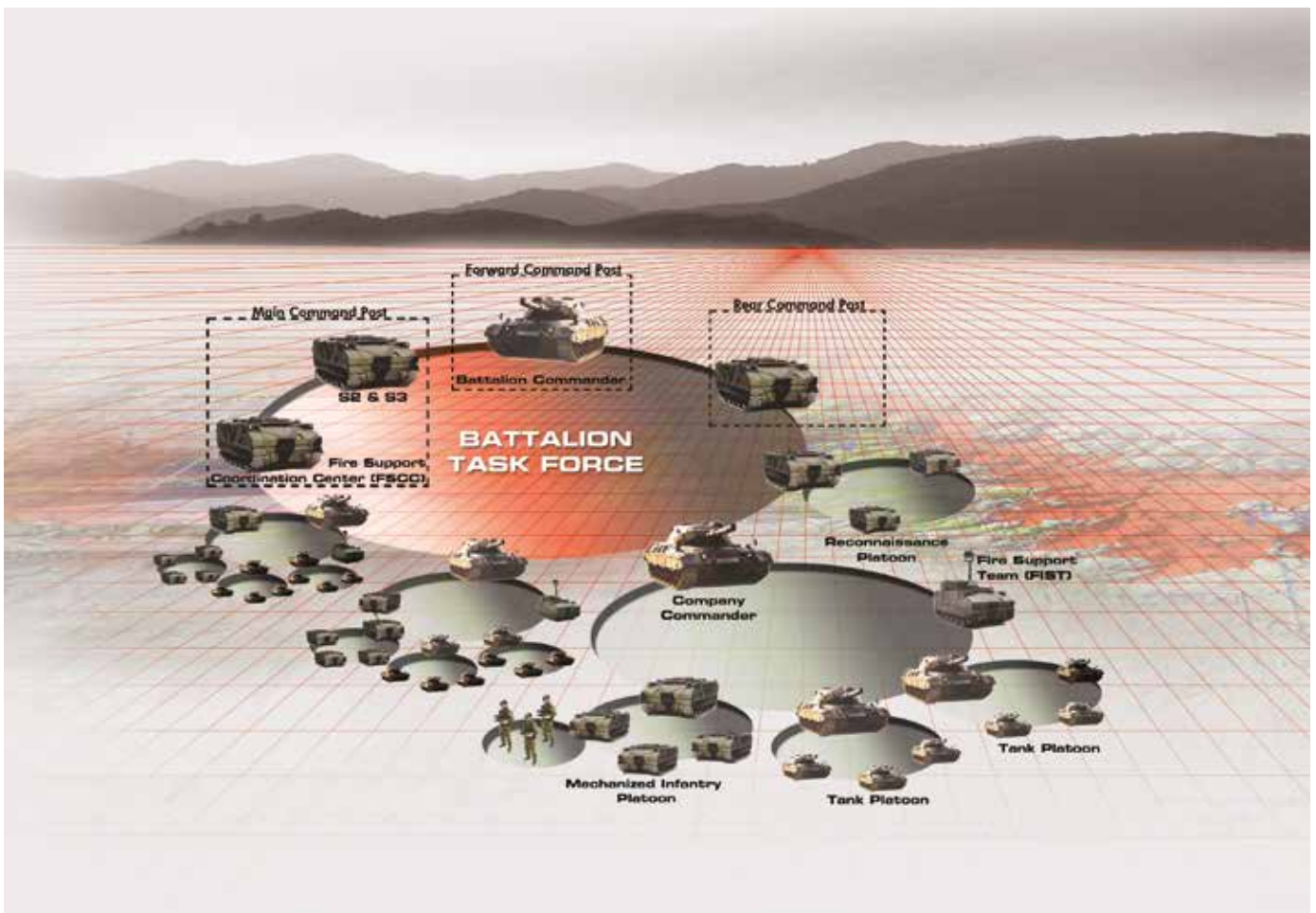
BMS can be deployed in a number of military platforms providing an integrated solution:

- Command vehicles
- Main Battle Tanks
- Armored Personnel Carriers and Fighting Vehicles
- Surveillance and Reconnaissance Vehicles
- Engineering and Logistics Vehicles
- Dismounted Infantry Personnel



Main Features of the Battle Management System are:

- Situational Awareness
- Force Tracking
- Battlefield Information
- Graphical Display on Digital Map
- Mission Planning
- Plan/Order and Overlay Creation and Dissemination
- Movement Planning and Control
- Operational and Logistics Status
- Military Reports and Messages
- Decision Support and Automation
- Sensor Management
- Interoperability with Other Armed Forces Systems



## Fire Support

ASELSAN Fire Support System provides the planning and execution of fire support. The system has the capability of performing all command and control functions of the fire support. System provides highly mobile, survivable, flexible and reconfigurable architecture for different tactical requirements of the armies.

System integrates all fire supporting units ranging from the uppermost command centers at the corps level to the lowermost individual units at gun and forward observer levels through the secure radio and wire communications. System can be integrated to the artillery and mortar target locating radars and other functional areas of the battlefield, such as maneuver, intelligence, air defense and combat service support.

Targets are analyzed in accordance with the commander's intent and criteria, status of all available fire support assets, tactical situation, battlefield conditions, status of friendly and hostile units as well as fire support coordination measures.

System assures that targets are fired at the right time, with the most appropriate weapons and right ammunitions. System provides the most effective, efficient and timely fire support as required by the first commander.

ASELSAN Fire Support System is a combination of subsystems that covers the entire fire support functionality;

- Tactical Fire Direction System,
- Battery Fire Direction System,
- Mortar Fire Direction System,
- Multiple Launch Rockets Fire Direction System,
- Forward Observer Systems,
- Survey Systems.





### Main Capabilities of Fire Support System;

- Fire Support Planning,
- Target Management,
- Munitions Effects Analysis,
- Situational Awareness,
- Fire Support Execution,
- Technical Fire Direction,
- Integration to the other C4I Systems,
- Support Management,
- Digital Communication,
- Integration to the other C4I Systems,
- Support Management,
- Digital Communication.



## Air Defense

ASELSAN Air Defense Command and Control System manages the air defense activities on tactical and operational levels and provides the interface among radar and weapon systems and organizes these individual systems so that they act as a coherent integrated air defense system. System is in operational use since 2001.

The mission of the Air Defense Command and Control System is to produce real time air picture by using the air threat information received from various radar systems and to assign appropriate air defence weapons to the selected targets (Threat Evaluation Weapon Assignment (TEWA)).

Air Defense Command and Control System comprises command and control units, air defense weapons, air defense radars, communications equipment and air defense system software, which are integrated to meet specific customer requirements. These integrated systems are interoperable and can be combined to form a system within the command-control chain.

System has open system architecture, giving scope for sensor and weapon development, and modular hardware and software on a distributed architecture.

Communication infrastructure covers data and voice communications among system units either by using Wireless Networks (Radios, Radio Links, etc.) or using cable connections (Copper lines, fiber optical communications, etc.).



Features of Air Defense Command and Control System are;

- Air defense planning
- Producing real-time air picture by combining target track information from various distributed sensors (Sensor Fusion)
- Track identification
- Target identification utilizing IFF (Identification Friend or Foe) Systems at radars
- Distributing air picture to command centers and weapon systems
- Manual, semi-automatic or fully automatic optimum target assignment
- Display and distribution of the position, operational status, and equipment information of system units
- Defining and distributing Airspace Control Orders (ACO) and Battlefield Geometries for the control of airspace
- Defining and distributing intelligence reports
- Link-16/JREAP-C/Link-11B/Link-1 interfaces
- Interchange the air picture with the systems interoperable with LLAPI (Low Level Air Picture Interface) according to NATO standards
- Reliable, secure and fast communication infrastructure
- Real-time monitoring of the airspace utilizing digital maps
- Various analysis tools over digital maps
- Preparation of simulation scenarios for training of system operators
- Record and replay function
- Compatibility with military standards
- Open system architecture compatible with modern sensor and weapon systems, and technological upgrades



Electromagnetic spectrum comprises all the hints of tactical and strategic electronic order of battle. In today's new electronic warfare concept, EW systems provide a significant capability, using the state-of-the-art receivers, antennas, processing and user interface technologies and supply excellent solutions.

ASELSAN intelligence product range covers individual sensor and communications equipment, which can be integrated to meet specific customer requirements. These integrated systems are interoperable and can be combined to form a system within the command control chain.

ASELSAN offers numerous Electronic Support (ES) and Electronic Attack (EA) System solutions for hostile environment in the battle field.

ASELSAN supply the solution of Electronic Warfare Command Control and Information System providing Electronic Warfare Systems' more efficient use in coordination, enabling Electronic Warfare command units make faster and more accurate evaluation of obtained information and transfer of obtained filtered Electronic Warfare information to troops and upper command units on time.



ASELSAN Electronic Warfare Systems consist of wide range of mature technologies leading to design and integration of highly advanced systems in regards to;

- Electronic Intelligence (ELINT)
- Communication Intelligence (COMINT)
- Radar Electronic Support
- Communication Electronic Support
- Radar Electronic Attack
- Communication Electronic Attack

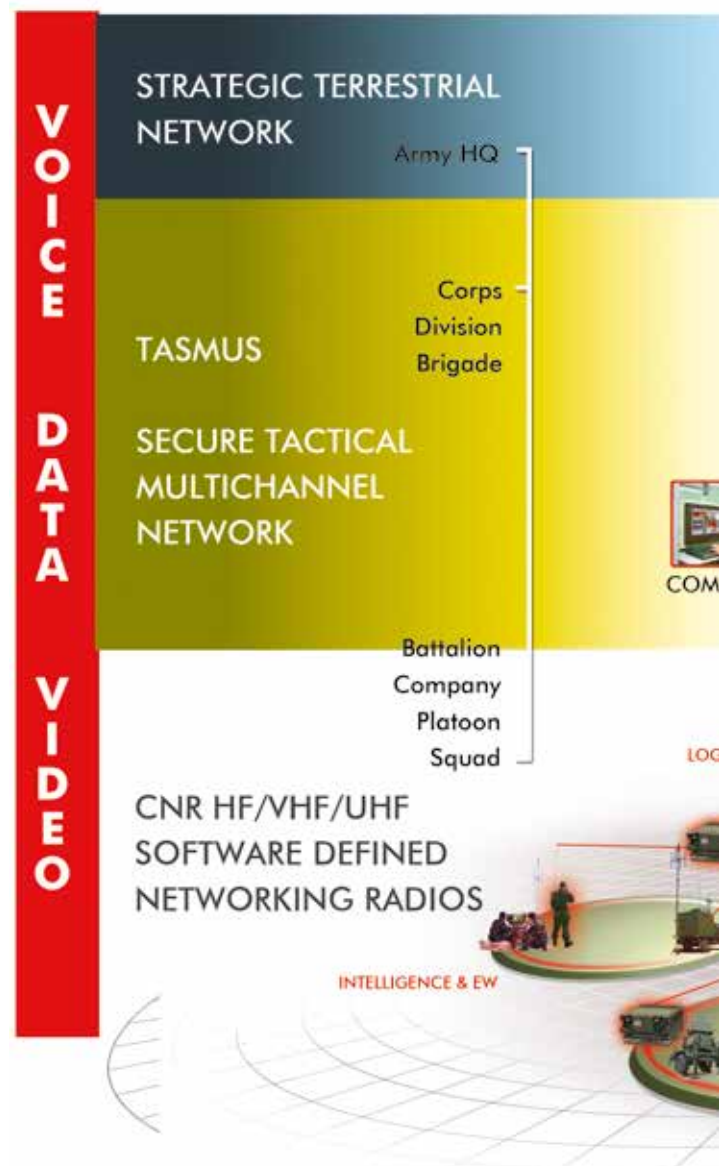


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## Communication

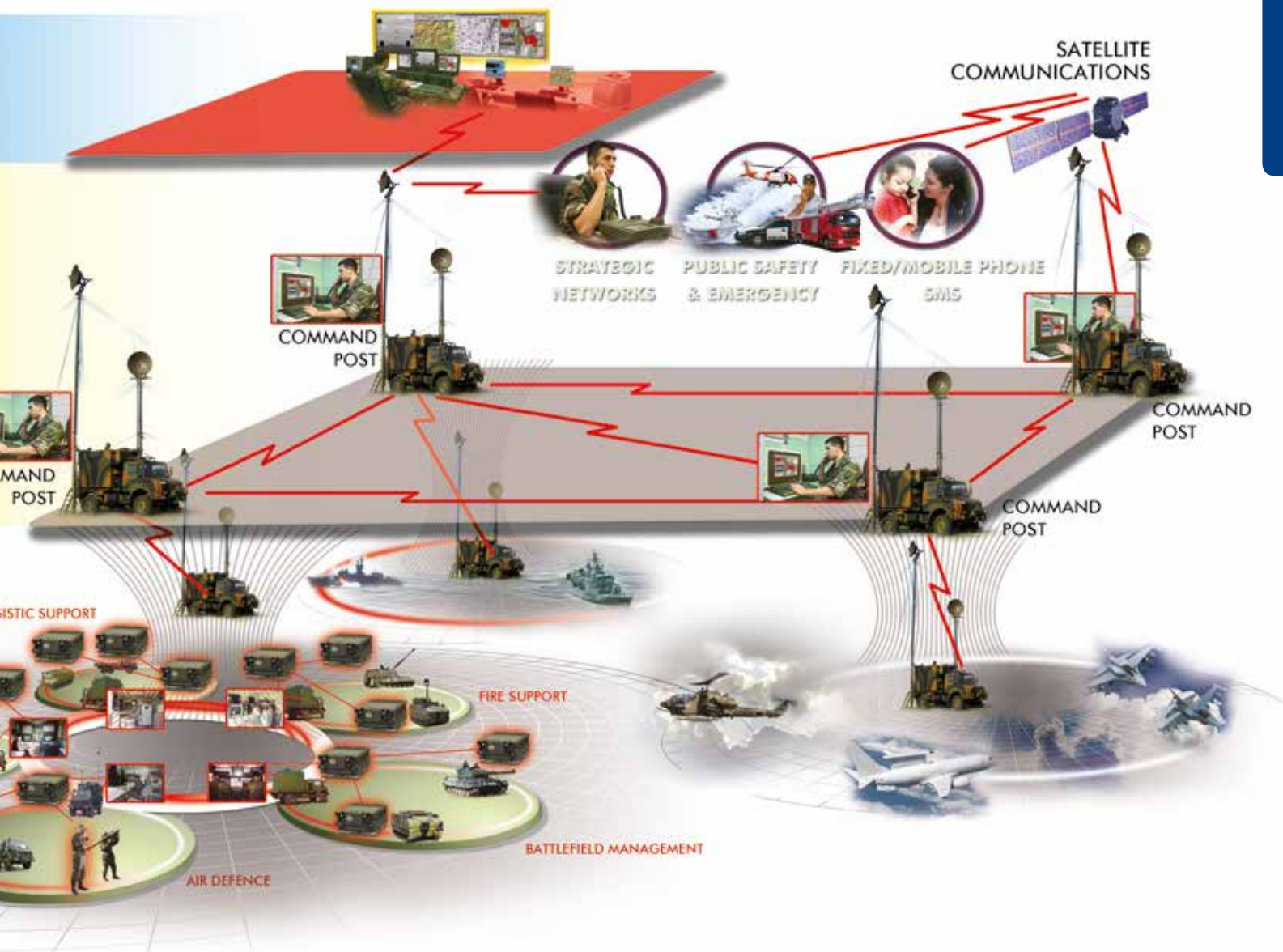
ASELSAN Tactical Area Communications System (TASMUS) provides network centric communication infrastructure. TASMUS provides a common picture of the battlefield in near-real time and shares data among battlefield systems. It facilitates fusion and display of intelligence information to commanders at all levels and handles the exchange of targeting data from sensor to weapon systems.

TASMUS aims to form mobile, survivable, flexible and secure network to support all the present and future communication requirements of the commanders in the tactical field.



TASMUS brings together state-of-the-art military communication technologies while enabling access through wired user terminals, mobile radios, integrated Combat Net Radio networks and Tactical Wireless Local Area Network (LAN) in the tactical field.

TASMUS is deployed in area of military operations such that seamless communication between the army and battalion / company level is achieved. It provides interfaces to the strategic telecom and data networks, while providing connection to the existing Combat Net Radio systems via Combat Net Radio Interface.





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ASELSAN A.Ş. is a Turkish Armed Forces Foundation company.

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